Defence Aviation Safety Regulation

DASR Release 29 February 2024

Superseded

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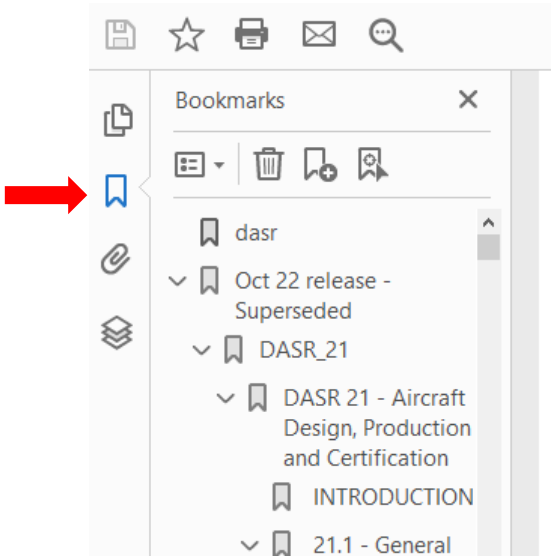

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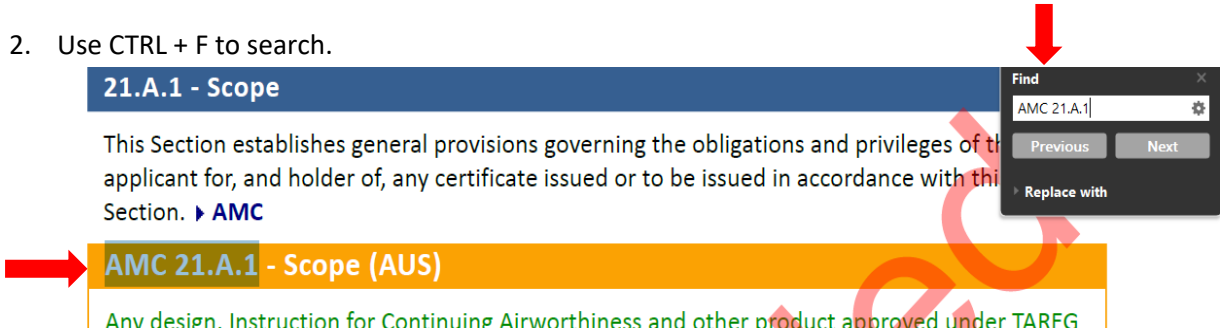


Volume 1: Requirements for the DASP

1. Introduction

The Defence Aviation Safety Program

Context

1. The Defence Aviation Safety Framework (DASF) is established by the Secretary of the Department of Defence and the Chief of the Defence Force through Joint Directive 21/2021 *The Defence Aviation Safety Framework*. The DASF defines Aviation Safety in the Defence context and sets out responsibilities and accountabilities for the management, oversight and review of Aviation Safety.

2. This structured aviation safety framework is underpinned by the:

    a. Appointment of a Defence Aviation Authority;

    b. Establishment of a Defence Aviation Safety Authority;

    c. Implementation of a Defence Aviation Safety Program;

    d. Promulgation of effective Defence Aviation Safety Regulations; and,

    e. Establishment of an independent accident and incident investigative capability.

3. The basis for the safety obligations on commanders and managers to manage aviation risks is found under the Commonwealth Work, Health Safety and Act 2011. However, the Defence AA is authorised to impose a DASF across Defence to assure the Chief of Defence Force, Secretary of Defence and Government that the management of Aviation Safety is credible and defensible in the context of statutory legislation. As such, commanders and managers who are responsible for the design, construction, maintenance and operation of State aircraft and identified support systems must comply with the DASF.

Functions and responsibilities

4. The Defence Aviation Safety Program (DASP) is the ongoing fulfilment of the functions and accountabilities established by the DASF. Described at the highest level, these are:

    a. independent safety assurance applied by the Defence Aviation Safety Authority (DASA), specifically:

        (1) the prescription and interpretation of Aviation Safety management policy, inclusive of Defence Aviation Safety Regulation (DASR) and related standards

        (2) the issuance of authorisations, including permits, approvals and licenses, to certify that Defence Aviation platforms, systems, organisations and personnel have shown compliance with applicable DASR

(3) ongoing oversight and enforcement activities to assure compliance with the DASR and the continued validity of authorisations issued by DASA

(4) the promotion of aviation safety through education, training, and dissemination of safety information

b. independent accident and incident investigations performed by DASA in order to prevent recurrence and improve safety performance

c. independent reviews of Aviation Safety coordinated by DASA on behalf of the Defence Aviation Authority.

5. The DASP also identifies continuing processes of hazard identification and safety risk management for execution by commanders and managers.

Scope of aviation activities

6. The following aviation activities are within the scope of the DASP:

a. the operation of aircraft by, or on behalf of, Defence

b. the operation of aircraft by Defence Personnel [1]***All Australian Public Service employees in the Department of Defence, Defence locally engaged employees, Defence civilians, Defence members and the equivalents from other Defence organisations on exchange to Defence. [Source: Australian Defence Glossary.]***, Australian Defence Force (ADF) Cadets and ADF Cadet Staff in the course of their duties, including ADF Currency Flying Scheme participants

c. the design, production and maintenance of State Aircraft[2]***Aircraft operated by or on behalf of Defence, including Uncrewed Aircraft Systems. [Source: DASR Glossary, supplemented to clarify that Uncrewed Aircraft Systems are within scope.]*** and components thereof

d. the operation, management and certification of Defence aerodromes, including shipborne heliports

e. the provision of Air Traffic Management services and Air Navigation Services by Defence, including equipment and systems

f. the operation of foreign military aircraft within national airspace.

7. The following are outside the scope of the DASP:

a. materiel systems or support equipment, to the extent that they do not affect Aviation Safety

b. Defence personnel acting as crew, or travelling as passengers, on flights which are not exclusively for Defence use.

The DASP Manual

Purpose and applicability

8. The DASP Manual is issued by the Defence AA to establish policy and guidance for the implementation of the DASP. It is applicable to:

   a. Commanders and managers responsible for aviation activities identified as being within the scope of the DASP. Aviation safety is a command responsibility and therefore commanders and managers are accountable for ensuring aviation systems under their command or control are designed, constructed, maintained, and operated to approved standards and limitations by competent and authorised personnel acting as members of an approved organisation.

   b. The Defence Aviation Safety Authority as the organisation responsible for the implementation of the DASP.

   c. Independent reviewers, appointed by the Defence AA, to examine, and make recommendations on, the safety of Defence Aviation activities.

Structure

9. The DASP Manual is published in three volumes:

   a. Volume 1 expands on Joint Directive 21/2021 to establish requirements for the implementation of the DASP; in particular:

      (1) legal and governance arrangements

      (2) independent safety assurance

      (3) the Defence Aviation Safety Regulation

      (4) the independent investigation of accidents and incidents

      (5) independent reviews of Aviation Safety.

   b. Volume 2 *Defence Aviation Safety Regulation* establishes all requirements and provisions for the management of Aviation Safety by commanders and managers.

   c. Volume 3 *DASP Guidance* provides an overview of the DASP and how its various elements collectively achieve the required safety objectives. Volume 3 also provides supporting information to promote understanding of concepts and processes spanning multiple requirements or provisions established through Volumes 1 and 2.

Principles

10. The requirements detailed in this manual are based on recognition that:

   a. A credible and defensible level of military Aviation Safety performance is assured in military aviation, by the adoption of common safety rules and by

measures assuring that products, persons and organisations comply with such rules.

b. Foreign military aircraft operating in our national airspace are to be subject to appropriate oversight.

c. The Defence AA will establish, in line with standards and recommended practices (SARPs) set by the Chicago Convention, essential requirements applicable to aeronautical products, parts and appliances, to persons and organisations involved in aircraft operations, and to persons and products involved in the training of aircrew, aerodromes, and Air Navigation Service Providers (ANSP).

d. DASA will be empowered to develop the necessary regulations for giving effect to the requirements of this manual.

e. The scope and requirements of the DASP are clearly defined so that persons, organisations, and products subject to the DASP can be identified without ambiguity.

f. Aeronautical products, parts and appliances, persons and organisations involved in aircraft operations, as well as persons, products and organisations involved in their training should be certified, licensed or approved once they have been found to comply with the essential Aviation Safety requirements.

g. Adequate flexibility is provided to effectively address special circumstances such as urgent safety measures, and compelling operational imperatives or emergencies. Provision will also be made for achieving an equivalent safety level by other means. Exemptions to the requirements of this manual are also able to be granted, provided they are strictly limited in scope and subject to appropriate control.

h. The effective functioning of a military Aviation Safety scheme requires strong cooperation between the Defence AA, DASA and regulated organisations, to detect unsafe conditions and take remedial measures as appropriate.

i. The promotion of a 'culture of safety' and the proper functioning of a regulatory system in the fields covered by this manual requires that incidents and occurrences be promptly reported. Such reporting is to be facilitated by the establishment of a non-punitive environment, and appropriate measures should be taken by the Defence AA, DASA and regulated organisations to provide for the protection of such information and of those who report it.

j. Recommendations from air accident/incident investigations are to be acted upon as a matter of urgency, in order to assure confidence in military Aviation Safety management.

k. The objectives of this manual may be efficiently achieved through the recognition of other aviation safety authorities by DASA.

l. In order to properly assist the Defence AA, DASA should develop its expertise in all aspects of military Aviation Safety covered by this manual, and will assist regulated organisations in its implementation. DASA should issue certification

specifications and guidance material, make technical findings and issue authorisations as required. The DASA is to also monitor the application of this requirement and associated Regulations, and be given the necessary authority to carry out its tasks.

m. DASA will support the Defence AA in the field of international relations, including the harmonisation of rules, recognition of approvals and technical cooperation, and be entitled to establish the appropriate relations with the military aviation authorities of foreign countries and international organisations competent in matters covered by this manual.

2. Legal and Governance

Legal Considerations

Context

1. Under the Commonwealth *Work Health and Safety Act 2011*, commanders and managers have an obligation to ensure that aviation safety risks are managed appropriately.

2. The Defence Aviation Safety Program (DASP), although independent, supports commanders and managers to meet their statutory safety obligations in respect of Defence Aviation through the promulgation of regulations that provide a framework for aviation safety risk management. Commanders and managers may fulfil aspects of their statutory obligations through ensuring compliance with the Defence Aviation Safety Regulation (see Volume 2 *Defence Aviation Safety Regulation*).

3. By contrast, independent safety assurance activities carried out within the DASP are not intended to support commanders and managers to fulfil their statutory safety obligations and must not be construed as doing so. No decision, or absence of a decision, by the Defence AA or DASA is to be construed as fulfilling, in whole or in part, the due diligence obligations of commanders and managers. Examples of activities that are separate from the due diligence obligations include:

   a. the review by DASA of evidence demonstrating compliance with DASR

   b. a decision by DASA to issue, amend, suspend or revoke an authorisation, including any approval, permit or licence.

State Aircraft

4. Article 3(a) of the 1944 *Convention on International Civil Aviation* (Chicago Convention) states that the Convention itself shall be applicable only to civil aircraft, and shall not be applicable to state aircraft. Article 3(b) defines state aircraft as being aircraft used in military, customs and police services.

5. In the Australian context, the *Civil Aviation Act 1988 (Cth)* and *Air Navigation Act 1920 (Cth)* alter the state aircraft definition as follows:

a. aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force in the course of duties as such a member); and

b. aircraft used in the military, customs or police services of a foreign country.

6. Therefore for the purposes of this manual, state aircraft are defined as:

Aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force in the course of duties as such a member); and aircraft used in the military, customs or police services of a foreign country.

Note: 'Aircraft' includes both crewed and uncrewed aircraft.

Australia's Aviation State Safety Programme

7. Australia maintains an aviation State Safety Programme (SSP) in accordance with its obligations under the Chicago Convention. The Australian Aviation SSP describes, inter alia, how the various Australian Government agencies, including Defence, work together to achieve the Aviation Safety outcomes required by the International Civil Aviation Organisation (ICAO). In doing so, the Australian Aviation SSP recognises the role of the DASP in regulating Defence Aviation Safety.

8. Within Australia, the Defence Aviation Safety Authority (DASA) and the Civil Aviation Safety Authority (CASA) perform similar roles in their respective aviation sectors. Both regulatory authorities have established frameworks for the assurance and management of aviation safety, and, both are responsible for the promulgation of effective regulations to support their respective frameworks. While it is intended that the two regulators work similarly to each other, they operate under different legal authorities.

9. CASA derives its authority from the *Civil Aviation Act 1988 (Cth)* and makes the *Civil Aviation Regulations* (CARs) which are legislative instruments. DASA derives its authority from Joint Directive 21/2021, which is an exercise of the administrative power under the *Defence Act 1903 (Cth)* and DASA makes non-legislative regulations called the Defence Aviation Safety Regulations (DASRs). The DASRs are designed to recognise and support compliance with Defence's statutory safety requirements. DASRs are applied to commercial organisations who perform work on aircraft and systems within the DASP through the terms of their contracts/agreements with Defence.

10. Defence maintains an independent aviation accident and incident investigative capability as well as a system for the collection and analysis of safety data. These functions are carried out by the Defence Flight Safety Bureau within DASA (DASA-DFSB), consistent with the principles of relevant ICAO standards and recommended practices (SARPs). In the Defence context, DASA-DFSB performs a similar function to that of the Australian Transport Safety Bureau (ATSB). The ATSB is established by the *Transport Safety Investigation Act 2003 (Cth).* The non-legislative nature of investigative powers held by DASA-DFSB means that there is often a requirement for close collaboration with ATSB and other civilian agencies.

11. Defence maintains Memoranda of Understanding (MoU) with CASA and the ATSB as follows:

a. CASA/Defence - The MoU provides a high-level basis for cooperation on harmonisation, where practicable, of civil and military regulatory system outcomes to improve safety, efficiency, consistency and capacity. The MoU allows for the use of implementation agreements to enable seamless interfaces between the two parties and their respective regulations.

b. Defence/ATSB - The MoU provides a framework to support cooperation between Defence and ATSB in the investigation of transport safety matters.

Governance and Oversight

12. The Defence AA must be supported in the ongoing governance and oversight of the DASP by a board comprising senior executives within and external to Defence.

13. The board, led by the Defence AA, must:

a. oversee the performance of the DASP, inclusive of commanders and managers and the DASA

b. set the DASP strategic direction with respect to proposed Aviation Safety assurance activities

c. review and provide direction on any significant Defence Aviation Safety related matter

d. foster ongoing cooperation and alignment of functions between Defence, CASA and ATSB

e. be cognisant of global Aviation Safety 'best practice'.

Safety Performance Assessment

14. In support of the Defence AA's obligations to report to the Secretary and CDF on Defence Aviation Safety performance, a safety assessment must be published annually by DASA. This safety assessment must contain analysis of all relevant information received through Aviation Safety reporting systems and DASA assurance activities. The analysis must be easy to understand and must indicate whether there are increased safety risks.

15. The safety assessment must:

a. assess the safety performance of the regulated community, including an analysis of related safety metrics

b. identify key Aviation Safety issues for commanders and managers

c. assess the effectiveness of DASA's performance

d. analyse safety intelligence data, identifying trends where applicable

e. identify actions and activities taken to address issues and trends of concern in the field of Aviation Safety.

3. Independent Safety Assurance

Introduction

Definitions

1. Aviation Safety is the state in which continuing processes of hazard identification and risk management ensure that risks to the health and safety of personnel arising from aircraft operations are eliminated so far as is reasonably practicable (SFARP) and, if it is not reasonably practicable to eliminate risks, those risks are minimised SFARP.

2. Independent safety assurance refers to the Defence Aviation Authority's (Defence AA's) confidence that the Aviation Safety objective stated above is met in the conduct of Defence Aviation operations. Independent safety assurance is the product of activities that are separate from Aviation Safety risk management processes and decisions, which are the responsibility of commanders and managers. Independent safety assurance activities, or their absence, do not alter commanders' and managers' statutory obligation to ensure safety.

Purpose

3. This chapter establishes requirements and provisions for the conduct of independent safety assurance activities within the DASP.

The Defence Aviation Safety Authority

Functions of the Authority

4. The Defence Aviation Safety Authority (DASA) is responsible for conducting independent safety assurance activities within the DASP. In discharging its responsibilities, DASA must:

   a. prescribe and interpret policy for the management of Defence Aviation safety, inclusive of the Defence Aviation Safety Regulation (DASR) and related standards

   b. issue authorisations, including permits, approvals and licences, to certify that Defence Aviation platforms, systems, organisations and personnel have shown compliance with applicable DASR

   c. conduct ongoing oversight and enforcement activities to assure compliance with the DASR and the continued validity of authorisations issued by DASA

   d. promote Aviation Safety through education, training, and dissemination of safety information.

5. The Director General Defence Aviation Safety Authority (DG DASA) is accountable to the Defence AA to fulfil the requirements prescribed within this chapter.

6. In conducting its functions, DASA must have regard to international best practices in military Aviation Safety, including those established by:

a. the European Military Airworthiness Requirements (EMAR)

b. the principles of the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs).

c. the Civil Aviation Safety Regulations (CASR)

d. the European Union Regulations developed by the European Aviation Safety Authority (EASA)

Prescribe and interpret policy

7. DASA must manage the DASR on behalf of the Defence AA. In doing so, DASA must:

   a. ensure that the DASR conforms to the requirements of Chapter 4 of this Volume

   b. ensure that the Defence AA is afforded adequate oversight and control[3] ***Through the approval of artefacts recommended by the Office of Best Practice Regulation within the Department of Prime Minister and Cabinet*** of DASR amendments that may appreciably increase the compliance burden or appreciably reduce Aviation Safety.

8. DASA must issue standards, inclusive of airworthiness codes, as required for the implementation of the DASR. Such standards must reflect the state of the art and the best practices in the fields concerned and must be updated, taking into account worldwide aviation experience in service, and scientific and technical progress.

9. DASA must issue supporting material to promote understanding of, and compliance with, the DASR. Such supporting material may include an acceptable means to comply with the DASR.

10. When requested, DASA must provide authoritative interpretation of DASR and advice regarding DASR compliance. Such interpretation and advice must not prescribe a particular course of action with respect to the management of Aviation Safety unless there is evidence that the safety level of the system may otherwise be compromised.

11. DASA must establish transparent procedures for developing and issuing Aviation Safety policy, standards and support material. Such procedures must include appropriate provisions for consultation with relevant regulated entities during the development process.

Issue authorisations

12. DASA may issue all authorisations, including permits, approvals, licences and similar artefacts, as necessary for the implementation of the DASR.

13. DASA must only issue authorisations when the applicant has shown, to DASA's satisfaction, that the applicable DASR have been met.

14. DASA must only issue authorisations:

   a. to applicants that are part of Defence; or

b. to applicants that have a contractual relationship with Defence, or a Defence contractor, and where that contractual relationship permits enforcement of the DASR by DASA; or

c. to applicants who are in the process of entering into such a relationship; or

d. are employees or staff members of an entity with such a relationship; or

e. where it is in Australia's interest to do so.

Conduct oversight and enforcement

15. DASA must conduct inspections, monitoring and investigations as necessary to assure compliance with the DASR and the ongoing validity of authorisations it has issued.

16. DASA's oversight and enforcement policies, procedures and decisions must:

a. promote a generative and just safety culture that supports voluntary reporting of safety issues

b. ensure that any response to a non-compliance is effective, fair, proportional and graduated

c. be transparent and evidence-based.

17. DASA must establish transparent procedures for making enforcement decisions. Those procedures must:

a. ensure the hearing of the entity subject to the enforcement decision is addressed in the decision, as well as that of any other party with a direct concern

b. provide for notification of the decision to all affected entities

c. ensure that the decision contains reasons for the decision.

18. DASA may amend, suspend or revoke any authorisation issued by, or under privilege from, DASA when DASA identifies that:

a. the conditions applying to its issue are no longer fulfilled; or

b. the entity holding the authorisation fails to fulfil the obligations imposed on it by the DASR.

19. Special procedures must be established to address immediate action to be taken by DASA to react to a safety problem, and to inform the relevant interested parties of the action they are to take.

20. Where practicable, DASA must notify the Defence AA prior to any enforcement action that may appreciably impact Defence aviation capability.

21. The requirements of this Manual do not prevent DASA from immediately addressing any Aviation Safety risk or issue of which it becomes aware.

Promote Aviation Safety

22. DASA must promote Aviation Safety through education, training, and the dissemination of safety information. In performing this function, DASA must provide an ongoing education and training program to promote understanding of, and compliance with, the DASR.

23. Key objectives of Aviation Safety promotion must include:

    a. fostering the maintenance and improvement of Aviation Safety

    b. supporting the development of a generative safety culture

    c. increasing awareness of prominent safety issues

    d. supporting the implementation and maintenance of an effective Safety Management System (SMS)

24. The delivery of education and training regarding DASR compliance for specific organisational contexts is outside of DASA's remit.

Administrative responsibilities and provisions

25. **Administration of the DASP Manual.** DASA must manage the DASP Manual on behalf of the Defence AA.

26. **DG DASA delegation.** To assist the Defence AA in fulfilling their obligations, DG DASA is delegated authority to:

    a. approve amendments to, and provide authoritative interpretation of:

        (1) DASP Manual Volume 2, inclusive of all DASR

        (2) DASP Manual Volume 3

        (3) associated standards and supporting material issued under the authority of the Defence AA

    b. issue all authorisations, including permits, approvals, licences, and similar artefacts, as necessary for implementation of the DASR

    c. amend, suspend or revoke any authorisation issued by, or under privilege from, DASA.

27. **Administration of DASA.** DG DASA must take all necessary steps, including the issue of internal administrative instructions and the publication of respective information, to ensure proper functioning of DASA in accordance with this Chapter. In doing so, DG DASA must ensure that the Defence Flight Safety Bureau (DFSB) is able to provide an effective and independent accident and incident investigative capability in accordance with Chapter 5 of this Volume.

28. **Delegation of functions and authorities.** DG DASA may delegate functions and authorities, subject to robust internal control mechanisms, to suitably qualified and experienced personnel, including:

    a. DASA staff and contractors

b. Defence staff and contractors

c. staff of contracted organisations.

29. Any delegation of functions and authorities per paragraph 28 above must specify appropriate limitations on any further delegation of functions and authorities by the delegate.

30. When delegating a specific certification task to an entity external to Defence, DG DASA must ensure that the entity complies with the criteria detailed in Annex A to this Chapter. In such instances the respective authorisation must be issued by DASA.

31. **Engagement with the Defence AA and environmental commanders.** DG DASA or any DASA Director, may liaise directly with the Defence AA to report matters of concern that may impact Aviation Safety.

32. DG DASA, or any DASA Director, may liaise directly with Commander Australian Fleet, Commander Aviation Command, and Air Commander Australia, and their subordinate commanders, to discuss matters of concern that may impact Aviation Safety.

33. Access to the Defence AA and environmental commanders supports a generative safety culture by enabling the provision of accurate advice on Aviation Safety matters of concern that require expertise in specific operational or technical domains.

34. **Confidentiality.** DASA must take necessary measures to ensure appropriate confidentiality of information received. Information must be handled in accordance with the *Privacy Act 1988 (Cth)*, the *Freedom of Information Act 1982 (Cth)* and Defence policies applicable to that information. Subject to satisfying security requirements, information subpoenaed or otherwise required by a judicial process must be provided in accordance with the form of the notice issued to Defence that requires the information.

35. **Defence register.** DASA must maintain a register of Defence-registered aircraft.

36. **Recognition of other aviation authorities.** DASA may recognise the independent safety assurance applied by other civil and military aviation authorities in order to promote efficiency and interoperability. Recognition must only be permitted when it can be demonstrated that the candidate authority applies credible and defensible Aviation Safety oversight.

37. **Harmonisation.** DASA must establish arrangements with relevant Australian Government agencies in order to harmonise Aviation Safety frameworks where there is potential benefit in doing do.

Annex A – Criteria for Non-Defence Entities Carrying Out Certification Tasks

1. The entity, its director and the staff responsible for carrying out the checks, may not become involved, either directly or as authorised representatives, in the design, manufacture, marketing or maintenance of the products, parts, appliances, constituents or systems or in their operations, service provision or use. This does not exclude the possibility of an exchange of technical information between the involved organisations and the entity carrying out the checks.

2. The entity and the staff responsible for the certification tasks must carry out their duties with the greatest possible professional integrity and the greatest possible technical competence and must be free of any pressure and incentive, in particular of a financial type, which could affect their judgment or the results of their investigations, in particular from persons or groups of persons affected by the results of the certification tasks.

3. The entity must employ staff and possess the means required to adequately perform the technical and administrative tasks linked with the certification process; it should also have access to the equipment needed for exceptional checks.

4. The staff responsible for investigation must have:

   a. sound technical and vocational training,

   b. satisfactory knowledge of the requirements of the certification tasks they carry out and adequate experience of such processes, and

   c. the ability required to draw up the declarations, records and reports to demonstrate that the investigations have been carried out.

5. The impartiality of the investigation staff must be guaranteed. Their remuneration must not depend on the number of investigations carried out or on the results of such investigations.

6. Commercial entities must take out liability insurance.

7. The staff of the entity must observe professional secrecy with regard to all information acquired in carrying out their tasks.

4. Regulation of Aviation Safety

Introduction

Purpose

1. This Chapter establishes requirements for the management of the Defence Aviation Safety Regulation (DASR) and related standards. The requirements contained therein are applicable only to the Defence Aviation Safety Authority (DASA) as the custodians of the DASR, and are not directly applicable to commanders and managers.

Responsibilities

2. The Defence Aviation Safety Authority (DASA) must ensure that the DASR address the requirements established in this Chapter.

3. Commanders and managers responsible for aviation activities within the scope of the DASP must:

   a. ensure compliance with the applicable DASR, which are promulgated in DASP Manual Volume 2 *Defence Aviation Safety Regulation*; and

b. take all measures necessary to support independent safety assurance activities carried out by DASA in accordance with Chapter 3.

Application of the regulations

4. Where it can be shown that an equivalent level of safety to that attained by the application of the DASR can be achieved by other means, DASA may approve such other means as compliant with the intended regulatory outcome.

5. DASA may allow a credible and defensible level of military Aviation Safety performance where an equivalent level of safety to that provided by the application of the DASR cannot be demonstrated, but can be supported by the application of sound risk management principles.

The Defence Aviation Safety Regulation

Scope

6. The DASR must be applicable to the safety management of all aviation activities within the scope of the DASP as defined in Chapter 1 of this Volume.

Objectives

7. DASA must ensure that the DASR:

   a. continues to be credible, defensible, and suitable for the Defence context

   b. supports Commanders and managers to comply with statutory safety obligations while retaining the flexibility to respond to compelling operational imperatives

   c. continues to reflect international best practices in military Aviation Safety, including by aligning, where appropriate, with:

      (1) the European Military Airworthiness Requirements (EMARs)

      (2) the principles of the International Civil Aviation Organisation (ICAO) Standards and Recommended Practices (SARPs)

      (3) the Civil Aviation Safety Regulations (CASR)

      (4) the European Union regulations developed by the European Aviation Safety Authority (EASA)

   d. is updated as necessary to address emerging or newly identified aviation safety hazards.

Initial and Continuing Airworthiness

8. The DASR must require that Defence registered aircraft comply with the essential requirements set out in Annex A *Essential Requirements for Initial and Continuing Airworthiness*.

9. The DASR must require that the following entities demonstrate their capability and means to discharge their responsibilities:

a. organisations responsible for the maintenance of products, parts and appliances

b. organisations responsible for the management of Continuing Airworthiness

c. organisations responsible for the design and manufacture of products, parts and appliances

d. personnel responsible for the release of a product, part or appliance after maintenance

e. maintenance training organisations.

10. Unless otherwise accepted, these capabilities and means must be recognised through the issuance of an approval. The privileges granted to the approved entity and the scope of the approval must be specified in the terms of approval.

11. The DASR must specify:

a. conditions for establishing and notifying to an applicant the type-certification basis applicable to a product

b. conditions for establishing and notifying to an applicant the detailed airworthiness specifications applicable to parts and appliances

c. conditions for establishing and notifying to an applicant the specific airworthiness specifications applicable to aircraft eligible for a restricted certificate of airworthiness

d. conditions for issuing and disseminating mandatory information in order to ensure the continuing airworthiness of products

e. conditions for issuing, maintaining, amending, suspending or revoking type-certificates, restricted type-certificates, approval of changes to type-certificates, individual certificates of airworthiness, restricted certificates of airworthiness, permits to fly and certificates for products, parts or appliances, including:

(1) conditions on the duration of these certificates, and conditions to renew certificates when a limited duration is fixed

(2) restrictions applicable to the issue of permits to fly. These restrictions should in particular concern the following:

i. purpose of the flight

ii. airspace used for the flight

iii. operational limitations

iv. qualification of flight crew

v. carriage of persons other than flight crew

(3) aircraft eligible for restricted certificates of airworthiness, and associated restrictions

(4) the minimum syllabus of maintenance certifying staff type rating training

(5) the minimum syllabus of aircrew type rating and the qualification of associated flight simulators

(6) the master minimum equipment list (MMEL) as appropriate and additional airworthiness specifications for a given type of operation

f. conditions to issue, maintain, amend, suspend or revoke approvals for organisations engaged in the design, manufacture or maintenance of products parts and appliances

g. conditions to issue, maintain, amend, suspend or revoke approvals for maintenance training organisations

h. conditions to issue, maintain, amend, suspend or revoke approvals for members conducting aircraft maintenance or component maintenance

i. responsibilities of the holders of certificates.

Crew

12. The DASR shall require that personnel involved in the operation of Defence registered aircraft, as well as flight simulation training devices, persons and organisations involved in the training, testing, checking or medical assessment of these crew, comply with the essential requirements set out in Annex B *Essential Requirements for Operations Personnel* [4]***To be issued***.

13. The DASR must require that:

a. A person may only act as crew if they are authorised and hold a medical certificate appropriate to the operation to be performed.

b. A person must only be authorised as crew when they comply with the essential requirements on theoretical knowledge, practical skill, language proficiency and experience.

c. Crew must only be issued a medical certificate when they comply with the essential requirements on medical fitness. This medical certificate must be issued by aviation medical examiners.

d. The privileges granted to crew and the scope of the authorisation and medical certificate must be specified in such authorisation and certificate.

e. The capability of crew training organisations to discharge the responsibilities associated with their privileges in relation to the issuance of aircrew authorisations may be recognised by the issuance of an approval.

f. Crew training organisations may be issued an approval when they comply with the rules established to ensure compliance with the relevant essential requirements. The privileges granted by the approvals shall be specified thereon.

g. Flight simulation training devices used for the training of crew must be authorised by the appropriate authority. The authorisation must be issued when

the applicant has shown that the device complies with the relevant essential requirements.

h. Persons responsible for providing flight training or flight simulation training, or for assessing crew skill must hold an authorisation. Such authorisation must be issued when it is shown that the person concerned complies with the relevant essential requirements.

14. The DASR must specify:

a. the different ratings for crew authorisations

b. the conditions for issuing, maintaining, amending, limiting, suspending or revoking authorisations, ratings for authorisations and approvals applicable to crew

c. the privileges and responsibilities of the holders of authorisations, ratings for authorisations and approvals applicable to crew, crew training staff, and flight simulation training devices.

15. When implementing the DASR for crew, DASA must take specific care that they reflect the state of the art and have considered the best practice.

Air Operations

16. The DASR must require that the operation of Defence registered aircraft complies with the essential requirements for air operations set out at Annex C *Essential Requirements for Air Operations* [5]***To be issued***.

17. The DASR must specify:

a. conditions to operate an aircraft

b. conditions for issuing, maintaining, amending, limiting, suspending or revoking authorisations for the conduct of flight operations

c. privileges and responsibilities of the holders of authorisations

d. conditions under which operations must be prohibited, limited or subject to certain conditions in the interest of safety

e. conditions for suspending flying operations.

18. The DASR must:

a. define different types of operations and allow for related requirements and compliance demonstrations proportionate to the complexity of operations and the risk involved

b. be based on a risk assessment and be proportional to the scale and scope of the operation

c. allow for immediate reaction to established causes of accidents and serious incidents

d. take into account the safety aspects related to Air Traffic Management and Air Navigation Services (ATM/ANS).

19. When implementing the DASR for air operations, DASA must take specific care that they reflect the state of the art and have considered the applicable best practice.

Standard Rules of the Air

20. Rules of the Air, as they apply to Defence Aviation, must be harmonised with international and domestic civil practice wherever practical, in order to enable Defence aviation interoperability with non-Defence aviation activities.

Aerodromes

21. The DASR must require that aerodromes, aerodrome equipment and the operation of aerodromes comply with the essential requirements set out at Annex D *Essential Requirements for Aerodromes* [6]***To be issued***.

22. DASA may decide to exempt Defence aerodromes with only a few movements a year from certification requirements described at paragraph 21, 23 and 24.

23. The DASR must require that:

a. A certificate must be required in respect of each aerodrome. The certificate and certification of changes to that certificate must be issued when the applicant has shown that the aerodrome complies with the applicable aerodrome certification basis, and that the aerodrome has no feature or characteristic making it unsafe for operation. The certificate must cover the aerodrome, its operation and its safety-related equipment.

b. The certification basis for an aerodrome must consist of the following:

(1) the applicable certification specifications related to the type of aerodrome

(2) the provisions for which an equivalent level of safety, if required, has been authorised

(3) the special detailed technical specifications necessary to address unique design or operational issues outside of the scope of the applicable certification specifications.

c. Organisations responsible for the operation of aerodromes must demonstrate their capability to and means to discharge the responsibilities associated with their privileges. These capabilities must be recognised through the issuance of a certificate. The privileges grated to the certified organisation and the scope of the certificate must be specified.

d. Aerodrome operators must establish and maintain an accident prevention and safety programme, including an occurrence reporting programme, to aid in continually improving the safety of operations.

e. Aerodrome operators must monitor activities and developments which may cause unacceptable safety risks to aviation in the aerodrome surroundings, and take mitigating measures as appropriate.

24. The DASR must specify:

a. the conditions for establishing and notifying to an applicant the certification basis, including design standards, applicable to an aerodrome

b. the conditions for establishing and notifying to an applicant the detailed specifications applicable to aerodrome equipment

c. the conditions for issuing, maintaining, amending, suspending or revoking certificates for aerodromes and certificates for aerodrome equipment, including operating limitations related to the specific design of the aerodrome

d. the conditions for operating an aerodrome in compliance with the essential requirements

e. the conditions for issuing, maintaining, amending, suspending or revoking aerodrome operator certificates

f. the responsibilities of the holders of certificates.

Air Traffic Management and Air Navigation Services

25. The DASR must require that the provision of ATM/ANS complies with the essential requirements set out at Annex E *Essential Requirements for Air Traffic Management and Air Navigation Services* [7]***To be issued***.

26. The DASR must require that:

a. ATM/ANS providers must be required to hold an authorisation. The authorisation must be issued when the provider has demonstrated its capability and means of discharging the responsibilities associated with the provider's privileges. The privileges granted and the scope of the services provided must be specified in the authorisation

b. ATM/ANS providers must suspend operations where necessary in the interests of safety

c. ATM/ANS providers must react appropriately to accidents and serious incidents

d. Air Traffic Controllers hold an appropriate licence for the ATM/ANS operations to be performed and a current medical certificate

e. the capability of air traffic controller training organisations to discharge the responsibilities associated with their privileges in relation to the issuance of authorisations shall be recognised by the issuance of a certificate. The privileges granted shall be specified therein.

27. The DASR must specify:

a. conditions for the provision of ATM/ANS

b. conditions for establishing and notifying to an applicant the detailed specifications applicable to ATM/ANS systems and components

c. conditions for issuing, maintaining, amending, suspending or revoking the authorisations required for the provision of ATM/ANS.

Uncrewed Aircraft Systems

28. The DASR must require that the design, production, maintenance and operation of uncrewed aircraft, and their engines, propellers, parts, non-installed equipment and equipment to control them remotely, as well as the personnel, including remote pilots, and organisations involved in those activities, comply with the essential requirements set out in Annex F *Essentinal Requirements for Uncrewed Aircraft Systems*[8] ***To be issued***.

29. The DASR may require an authorisation for the design, production, maintenance and operation of uncrewed aircraft, as well as for the personnel, including remote pilots, and organisations involved in those activities.

30. For instances where an authorisation is required, the DASR must require that:

a. the authorisation is issued upon application, when the applicant has demonstrated that it complies with the relevant DASR

b. the authorisation specifies the safety-related limitations, operating conditions and privileges. The authorisation may be amended to add or remove limitations, conditions and privileges

c. the authorisation may be limited, suspended or revoked when the holder no longer complies with the conditions, rules and procedures for issuing or maintaining such instrument.

31. The DASR must specify:

a. the specific rules and procedures for the operation of uncrewed aircraft as well as for the personnel, including remote pilots, and organisations involved in those operations

b. the conditions for issuing, maintaining, amending, limiting, suspending, or revoking authorisations

c. the privileges and responsibilities of the holders of certificates

d. the rules and procedures for the registration of uncrewed aircraft.

Aviation Safety Management Systems

32. DASA must require the creation and maintenance of organisational Aviation Safety Management Systems (ASMS).

33. The DASR regarding ASMS must specify:

a. when an ASMS is required within regulated organisations

b. how the required ASMS elements, namely safety policy and objectives, safety risk management, safety assurance and safety promotion, are to be applied to applicable regulated organisations.

Occurrence Reporting

34. The DASR must require the establishment, operation and management of an Occurrence Reporting system. The Occurrence Reporting system must enable assessment of the safety implications of each occurrence, including previous similar occurrences, in order to facilitate the achievement of aviation safety assurance requirements.

35. The DASR shall specify:

a. conditions for the collection, exchange and dissemination of information

b. conditions for conducting ramp inspection, including systematic ones.

Non-Defence Registered Aircraft

36. The DASR must specify:

a. obligations on the Sponsor who purchases, wet lease, dry leases, charters or authorises operation of a non-Defence registered aircraft by, or on behalf of, Defence, including:

(1) regulatory oversight by a Defence recognised CAA/MAA

(2) implementation of safety controls such that it is reasonably expected that suitability for flight will not be compromised

(3) a framework for suspension of flight

b. the approval process for any Defence operation of a non–Defence registered aircraft to be operated under an Experimental Certificate of Airworthiness

c. obligations on Defence personnel to comply with Defence recognised CAA or MAA relevant regulatory requirements and any further controls imposed by the relevant sponsor

d. obligations on the Sponsor who approves foreign military aircraft to operate within Australian airspace, including a framework for suspension of flight.

Oversight and Enforcement

38. In the context of oversight and enforcement, the DASR must specify:

a. conditions for the collection, exchange and dissemination of information

b. conditions for conducting ramp inspections, including systematic ones.

Defence Registration

39. The DASR must specify the conditions for introducing and removing aircraft from the register.

Annex A – Essential Requirements for Initial and Continuing Airworthiness

AIM

1. The aim of this Annex is to define joint essential military airworthiness requirements. The detailed product specification including the airworthiness certification basis, shall be established for each product with due regard to the airworthiness essential requirements.

2. These airworthiness requirements do not apply to foreign military aircraft. The safety management of these aircraft is provided through DASR Non-Defence Registered Aircraft.

REQUIREMENTS

3. **Product integrity.** Product integrity must be assured for all anticipated flight conditions and ground operations for the operational life of the aircraft. Compliance with all requirements must be shown by assessment or analysis, supported, where necessary, by tests.

   a. **Structures and materials.** The integrity of the structure must be ensured throughout, and by a defined margin beyond, the operational envelope for the aircraft, including its propulsion system, and maintained for the operational life of the aircraft.

      (1) All parts of the aircraft, the failure of which could reduce the structural integrity, must comply with the following conditions without detrimental deformation or failure. This includes all items of significant mass and their means of restraint.

         i. All combinations of load reasonably expected to occur within, and by a defined margin beyond, the weights, centre of gravity range, operational envelope and life of the aircraft must be considered. This includes loads due to gusts, manoeuvres, pressurisation, movable surfaces, control and use of armaments and propulsion systems both in flight and on the ground.

         ii. Where applicable to the product, consideration must be given to the loads and likely failures induced by emergency landings either on land or water.

         iii. Dynamic effects must be covered in the structural response to these loads.

      (2) The aircraft must be free from any aeroelastic instability and excessive vibration.

      (3) The manufacturing processes and materials used in the construction of the aircraft must result in known and reproducible structural properties. Any changes in material performance related to the operational environment must be accounted for.

      (4) The effects of cyclic loading, environmental degradation, accidental and discrete source damage must not reduce the structural integrity below

an acceptable residual strength level. All necessary instructions for ensuring continued airworthiness in this regard must be promulgated.

b. **Propulsion.** The integrity of the propulsion system, i.e. engine and, where appropriate, propeller, must be demonstrated throughout, and by a defined margin beyond, the operational envelope of the propulsion system and must be maintained for the operational life of the propulsion system.

(1) The propulsion system must produce, within its stated limits, the thrust or power demanded of it at all required flight conditions, taking into account environmental effects and conditions.

(2) The fabrication process and materials used in the construction of the propulsion system must result in known and reproducible structural behaviour. Any changes in material performance related to the operational environment must be accounted for.

(3) The effects of cyclic loading, environmental and operational degradation and likely subsequent part failures must not reduce the integrity of the propulsion system below acceptable levels. All necessary instructions for ensuring continued airworthiness in this regard must be promulgated.

(4) All necessary instructions, information and requirements for the safe and correct interface between the propulsion system and the aircraft must be promulgated.

c. **Systems and equipment.**

(1) The aircraft must not have design features or details that experience has shown to be hazardous.

(2) The aircraft, with those systems, equipment and appliances required for military type-certification, or by operating rules, must function as intended under any foreseeable operating conditions, throughout, and by a defined margin beyond, the operational envelope of the aircraft, taking due account of the system, equipment or appliance operating environment. Other systems, equipment and appliances not required for certification, or by operating rules, whether functioning properly or improperly, must not reduce safety and must not adversely affect the proper functioning of any other system, equipment or appliance. Systems, equipment and appliances must be operable without needing exceptional skill or strength.

(3) The aircraft systems, equipment and associated appliances, including the control station, its data links etc for the uncrewed aircraft systems, considered separately and in relation to each other, must be designed such that any catastrophic failure condition does not result from a single failure not shown to be extremely improbable. An inverse relationship must exist between the probability of a failure condition and the severity of its effect on the aircraft, crew, ground-crew, passengers (where relevant), other airspace users or other third parties. Due allowance must be made for the size and broad configuration of the aircraft (including specific military systems and operations) and that this may

prevent this single failure criterion from being met for some parts and some systems on helicopters, small and single engine aeroplanes and uncrewed aircraft systems.

(4) Information needed for the safe conduct of the flight and information concerning unsafe conditions must be provided to the crew, or maintenance personnel, as appropriate, in a clear, consistent and unambiguous manner. Systems, equipment and controls, including signs and announcements must be designed and located to minimise errors which could contribute to the creation of hazards.

(5) Design precautions must be taken to minimise the hazards to the aircraft, crew, ground-crew, passengers (where relevant), other airspace users or other third parties from reasonably probable threats, both inside and external to the aircraft, including protecting against the possibility of a significant failure in, or disruption of, any aircraft appliance.

d. **Continuing airworthiness**

(1) Instructions for continuing airworthiness must be established to ensure that the aircraft military type certification airworthiness standard is maintained throughout the operational life of the aircraft.

(2) Means must be provided to allow inspection, adjustment, lubrication, removal or replacement of parts and appliances as necessary for continuing airworthiness.

(3) The instructions for continuing airworthiness must be in a format appropriate for the quantity of data to be provided, eg paper or electronic. The instructions must cover maintenance instructions, servicing information, trouble-shooting and inspection procedures, including necessary parts data, tools and calibration data.

(4) The instructions for continuing airworthiness must contain airworthiness limitations that set forth each mandatory replacement time, inspection interval and related inspection procedure.

4. **Airworthiness aspects of product operation**

a. The following must be shown to have been addressed to ensure a credible and defensible level of military aviation safety for those on-board or on the ground during the operation of the product:

(1) The kinds of operation for which the aircraft is approved must be established and limitations and information necessary for safe operation, including environmental limitations and performance, must be established.

(2) The aircraft must be safely controllable and maneuverable under all anticipated operating conditions and where applicable, up to the point where the in-flight emergency escape system is activated or in the case of a UAS the activation of the recovery system. Due account must be taken of pilot strength, flight deck environment, aircrew workload and

other human-factor considerations and of the phase of flight and its duration.

(3) It must be possible to make smooth transition(s) from one flight phase to another without requiring exceptional piloting skill, alertness, strength or workload under any probable operating condition.

(4) The aircraft must have handling qualities that ensure the demands made on the pilot are not excessive taking into account the phase of flight and its duration.

(5) Procedures for normal operations, failure and emergency conditions must be established.

(6) Warnings, or other deterrents intended to prevent exceeding the normal flight envelope, must be provided, as appropriate to type.

(7) The characteristics of the aircraft and its systems must allow a safe return from extremes of the flight envelope that may be encountered.

b. The operating limitations and other information necessary for safe operation must be made available to the crew members.

c. Product operations must be protected from hazards resulting from adverse external and internal conditions, including environmental conditions.

(1) In particular, account must be taken of the exposure to phenomena such as, but not limited to, adverse weather, lightning, bird strike, high frequency radiated fields, ozone, use of armaments (hot gas ingestion, debris etc.), etc, reasonably expected to occur during product operation.

(2) Where applicable, cabin compartments must provide passengers with suitable transport conditions and adequate protection from any expected hazard arising in flight operations or resulting in emergency situations, including fire, smoke, toxic gases and rapid decompression hazards. Provisions must be made to give occupants every reasonable chance of avoiding serious injury and quickly evacuating the aircraft and to protect them from the effect of the deceleration forces in the event of an emergency landing on land or water. Clear and unambiguous signs or announcements must be provided, as necessary, to instruct occupants in appropriate safe behaviour and the location and correct use of safety equipment. Required safety equipment must be readily accessible.

(3) Crew compartments must be arranged in order to facilitate flight operations, including means providing situational awareness, and management of any expected situation and emergencies. The environment of crew compartments must not jeopardise the crew's ability to perform their tasks and its design must be such as to avoid interference during operation and misuse of the controls.

5. **Organisations** (including natural persons undertaking design, manufacture or continuing airworthiness activities)

a. Organisations involved in design (including flight test), production (manufacture) or continuing airworthiness activities must satisfy the following conditions:

(1) The organisation must have all the means necessary for the scope of work. These means comprise, but are not limited to, the following: facilities, personnel, equipment, tools and material, documentation of tasks, responsibilities and procedures, access to relevant data and record-keeping.

(2) The organisation must implement and maintain a management system to ensure compliance with these essential requirements for airworthiness, and aim for continuous improvement of this system.

(3) The organisation must establish arrangements with other relevant organisations, as necessary, to ensure continuing compliance with these essential requirements for airworthiness.

(4) The organisation must establish an occurrence reporting and/or handling system, which must be used by the management system under sub-paragraph 4.a.(ii) and the arrangements under paragraph 4.a.(iii), in order to contribute to the aim of continuous improvement of the safety of products ('continued airworthiness of the type design').

b. In the case of maintenance training organisations, the conditions under sub-paragraphs 4.a.(iii) and 4.a.(iv) do not apply.

5. Independent Investigation Capability

Introduction

Scope

1. Joint Directive 21/2021 *The Defence Aviation Safety Framework* directs DASA to establish an independent investigative capability aligned to ICAO standards and recommended practices (SARPs). This capability is provided by the Defence Flight Safety Bureau within DASA (DASA-DFSB).

Context

2. The DASA-DFSB functions described in this chapter are consistent with the international standards outlined by ICAO in:

a. Annex 13 to the Convention on International Civil Aviation *Aircraft Accident and Incident Investigation*

b. Annex 19 to the Convention on International Civil Aviation *Safety Management,* including Amendment 1

c. ICAO Document 9756 *Manual of Aircraft Accident and Incident Investigation.*

Independent Investigation Capability

Responsibilities

3. In order to discharge the DASA obligations in an effective and impartial manner, DASA-DFSB has been established as the independent Defence Aviation investigation organisation, with the necessary powers, resources, and expertise to oversee Defence Aviation investigation processes and reporting systems.

4. International convention requires the independent investigation organisation to be functionally independent of the authorities responsible for Defence Aviation regulation and, in general, any other party or entity that could conflict with, or influence, its objectivity. Accordingly:

   a. DASA-DFSB is to be functionally independent of the DASA Directorates responsible for airworthiness, certification, flight operation, maintenance, licensing, air traffic control or airport operation

   b. Director DFSB is accorded powers for autonomous action outside of both DASA and the command chain to directly report matters of concern to the Defence Aviation Authority (Defence AA) that may impact aviation safety

   c. Director DFSB may liaise directly with Commander Australian Fleet, Commander Forces Command and Air Command Australia and their subordinate commanders as required to fulfil their responsibilities

   d. DASA-DFSB is to investigate all aviation accidents and selected *9* ***DFSB investigation of serious events and safety issues is to be based on criteria established by DFSB*** aviation safety events or issues. Director DFSB is accorded powers to approve an investigation into selected aviation safety events or issues, without an environmental commander's appointment, informing the Defence AA and the applicable environmental commander

   e. Director DFSB is to oversee, and be the point of contact for, the Defence Aviation confidential reporting scheme

   f. Director DFSB is to ensure acting arrangements are in place to meet the responsibilities laid out in this chapter when necessary

   g. DCAF is, in the event of the Defence AA's absence, the appointing authority for DASA-DFSB investigations of aviation events and issues that involve more than one Service

5. This enables DASA-DFSB to be strictly objective and totally impartial, and to also be perceived to be so.

Functions of DASA-DFSB

6. An aviation investigative capability is intended to do more than the retrospective investigation of accidents and incidents. DASA-DFSB shall take a proactive approach to preventing military aerospace accidents and enhancing flight safety through a

systematic approach to investigation, research, education and promotion, as detailed at paragraph 8 through to 12.

7. DASA-DFSB shall establish and maintain the Defence Aviation safety reporting framework by:

   a. developing and maintaining the Defence Aviation safety reporting system, including an aviation safety accident/incident database

   b. developing and maintaining appropriate documentation (policy and guidance) to define the reporting framework

   c. establishing a confidential reporting scheme to enable confidential reporting of issues that effect, or might effect, aviation safety

   d. defining notification requirements and mechanisms (immediate and routine) for aviation safety reports

   e. defining taxonomies to facilitate safety information exchange that are compatible with the ICAO Accident/Incident Data Reporting system and broadly aligned with those of the Australian Transport Safety Bureau (ATSB)

   f. defining the classification system for aviation safety reporting

   g. developing processes to monitor the health of the aviation safety reporting system.

8. DASA-DFSB shall establish and maintain safety data collection and processing system(s) to capture, store, aggregate and enable the analysis/exchange of safety data and safety information, including but not limited to:

   a. data and information pertaining to DASA-DFSB accident and incident investigations

   b. data and information related to the Defence aviation safety reporting framework

   c. data and information related to DASA-DFSB data gathering and research activities.

9. DASA-DFSB shall conduct safety data analysis, safety related research and review of contemporary practices in aviation safety including, but not limited to:

   a. producing statistical reports and conducting research into specific matters of concern and contemporary best practices in aviation safety

   b. administering aviation safety surveys

   c. participating in the Australian State Safety Programme through the Joint Agency Aviation Safety Analysis Coordination Group

   d. providing Human Factors guidance and tools.

10. DASA-DFSB shall conduct independent investigation and reporting of all accidents, selected incidents, and selected systemic safety issues including, but not limited to:

a. developing and maintaining appropriate documentation (policy and guidance) to define the conduct of independent investigations

b. establishing and maintaining a Flight Data Recorder and Cockpit Voice Recorder download and analysis capability.

11. DASA-DFSB shall foster safety awareness, knowledge and action through promotional and education programs, utilising the outcomes from safety analysis, research and investigation functions to influence organisational learning.

Conduct of Investigations

12. The following principles are to apply to the conduct of DASA-DFSB independent investigations:

a. The objective of the safety investigation is to identify and reduce safety-related risk.

b. It is not a function of the DASA-DFSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings.

c. The investigation must commence as soon as practicable to ensure all perishable information is collected and protected.

d. The size and scope of the investigation, and the resources expended, must be commensurate with the classification and scale of the event and the anticipated safety outcomes.

e. The investigation must follow a structured process to gather information, determine an event sequence, determine what active failures occurred, analyse how and why those active failures occurred, and compile findings.

f. Investigations must seek to identify the systemic factors that contributed to the event to enable appropriate and effective recommendations to be proposed to improve the safety system.

g. Safety actions and recommendations must focus on the implementation (or improvement) of controls that will eliminate or minimise safety hazards and prevent re-occurrence of the event in an enduring manner.

h. In the course of an investigation, safety actions and recommendations should also be made against evidence of sub-optimal practices, even if not contributory to the event, in order to further enhance safety programs.

i. Safety actions and recommendations in investigations must not recommend disciplinary or administrative action against individuals.

j. Investigation reports must be communicated organisation-wide and distributed to other parties that are likely to benefit.

k. Where safety actions are deemed necessary before investigations and/or reports are complete, relevant authorities must be informed of the immediate

action required so that they can decide whether such action is appropriate, and implement accordingly.

Protection of Safety Data and Safety Information

13. DASA-DFSB's Safety Data Collection and Processing System(s) (SDCPs) are to be supported by data governance arrangements to ensure that safety data, safety information and related sources are afforded appropriate protection. When an independent investigation by DASA-DFSB has been initiated, all information gathered, including interviews and ambient workplace recordings (e.g. cockpit voice recorders or recordings of air traffic controller work stations) are not subject to release without the formal approval of the Defence AA.

Additional Functions of DASA-DFSB

14. The activities entrusted to DASA-DFSB may be extended to support MAOs and broader DASA activities in so far as these activities do not affect the functional independence of DASA-DFSB.

6. Independent Review of Aviation Safety

Introduction

Background

1. The Defence Aviation Authority (Defence AA) has, since 1991, used independent boards of review to provide assurance that a satisfactory basis for airworthiness has been established and is being maintained. The introduction of the Defence Aviation Safety Program (DASP) in 2011 resulted in a broadening of the emphasis beyond airworthiness, to include review of all aviation safety aspects.

Purpose

2. This chapter details the authority for the use of independent review boards, and their execution.

Authority for independent review boards

3. Joint Directive *21/2021 The Defence Aviation Safety Framework* provides the basis for the Defence AA to convene independent boards to review the safety of Defence Aviation activities [10] ***The Defence AA may convene independent boards of review to examine, and make recommendations on, the safety of Defence Aviation activities.***

4. The Defence AA requires that review boards be convened to provide independent assurance that aviation safety is being effectively managed. The review board should complement the assurance activities undertaken by DASA and focus on aspects where the DASA assurance activities may provide limited confidence, particularly from a 'system of systems' perspective that examines the relationships and interaction between the separate entities that collectively ensure that aviation safety is being effectively managed. In practice review boards are convened by the DASA on behalf of

the Defence AA, however board members remain accountable to the Defence AA for reviewing Defence Aviation aspects as directed, and for providing findings regarding the management of aviation safety.

Review Board Execution

Composition of independent review boards

5. Each review board must comprise at least one operational and one technical member. DASA will assign officers to each board from a panel of review board members in accordance with prescribed criteria. Officers appointed by the Defence AA to the review board panel must:

   a. be star rank officers of the permanent forces, or reserve forces on active duty

   b. possess either:

      (1) an operational background with extensive experience in Defence operation of Aviation Systems

      (2) a technical background with extensive experience in Defence technical management of Aviation Systems.

Scope of independent review boards

6. The Defence AA may convene a board to provide an independent review of, and make recommendations in response to, the management of aviation safety for:

   a. Crewed aircraft being introduced into service [11] ***This includes aircraft being introduced into service under a Military Type Certificate (MTC), Military Restricted Type Certificate (MRTC) or Military Permit to Fly (MPTF). Aircraft being introduced into service would normally be subject to a review board, unless there is compelling evidence that the risks are known, well defined and effectively managed, and that an independent review is highly unlikely to result in further elimination or minimisation of risks associated with operation of the aircraft type.***

   b. Certified or Specified Type A category Uncrewed Aircraft Systems (UAS) being introduced into service [12] ***Certified or large Specified Type A category UAS being introduced into service would normally be subject to a review board, unless there is compelling evidence that the risks are known, well defined and effectively managed, and that an independent review is highly unlikely to result in further elimination or minimisation of risks associated with operation of the UAS.***

   c. Defence Registered Aircraft, and Certified and Specified Type A category UAS, at a periodicity [13] ***There are three broad periodicity categories - heightened (<12***

months), normal (12 - 23 months) and lessened (> 23 months). commensurate with the safety risk

d. Air Navigation Services and Aerodromes, at a periodicity commensurate with the safety risk

e. any other reason as appropriate.

7. The default periodicity review of Defence Registered Aircraft, Air Navigation Service, Aerodromes and other reasons is 'normal' periodicity [14]***There are three broad periodicity categories - heightened (<12 months), normal (12 - 23 months) and lessened (> 23 months).*** The period may be increased or decreased after consideration of the following criteria:

a. the outcomes of previous review board

b. appreciable changes to the operations (including Statement of Operating Intent and Usage (SOIU)) or major changes to configuration since the previous review board

c. safety events or DASA assurance evidence, with a specific focus on any trends that may indicate the existence of systemic issues

d. the adequacy of the operations, support arrangements and safety management arrangements established to satisfy statutory safety obligations

e. any other concerns regarding the management of aviation safety.

8. At the discretion of the Defence AA, a review board may also be convened to provide an independent review of, and make recommendations regarding, the effectiveness of aviation safety management for operation of Non-Defence Registered Aircraft (NDRA).

Conduct of independent review boards

9. As part of providing confidence that aviation safety is being effectively managed, the review board may consider any aviation safety aspect of concern. Notwithstanding this, their review should predominantly focus on operations, design, support arrangements and safety management criteria likely to pose the greatest risks, and seek a detailed explanation of any significant changes or reasons for non-compliance with safety requirements. Where a high degree of confidence exists in specific aviation safety aspects, the scope of a review board may be limited to those aspects that have been assessed as being likely to pose significant risks to aviation safety.

10. The review board must be made aware of any significant changes affecting the way Defence Aviation is undertaken. These changes, their impact and the actions taken to address any resultant risk should be detailed in submissions provided by DASA and applicable entities regulated under DASR [15] ***Specific guidance will be contained in a future issue of the DASP Manual Volume 3. Until that time, the Defence Aviation Safety Assurance Manual provides guidance supporting the execution of review boards. Where there is an actual or perceived conflict in requirements, the DASP***

Manual takes precedence.. Regulated entities are required to support the conduct of each review board by making appropriate facilities and relevant personnel available, for both the review board and any preparatory activities undertaken by the review board members. DASA is to provide secretariat support for the review board system, including for each review board convened.

Outcomes of the independent review board

11. The review board is to provide a report detailing any concerns, including recommending corrective actions for consideration by the Defence AA, where it considers there are deficiencies with the effective management of aviation safety.

12. DASA will record any concerns, corrective actions and recommendations raised by a review board. DASA will also monitor actions taken to address any concerns, corrective actions or recommendations raised by a review board.

The Defence Aviation Safety Program Manual

Volume 2: Defence Aviation Safety Regulation

Introduction

Purpose

1. This Volume establishes requirements for the management of Defence Aviation Safety by commanders and managers.

Structure

2. The Defence Aviation Safety Regulation (DASR) is comprised of:

    a. General Requirements (GR), which are set out below in two subparts:

        i. Subpart A *Scope and applicability* defines the scope of the DASR and the applicability of the DASR parts.

        ii. Subpart B *Common requirements and provisions* establishes requirements and provisions that are each applicable to a significant proportion of regulated entities.

    b. the DASR parts, which are set out in Annex A.

3. DASR clauses and sub-clauses may have associated supporting information in the form of:

    a. **Acceptable Means of Compliance (AMC).** AMC is information published by DASA to identify a means of meeting one or more requirements of the DASR. Regulated entities are not required to comply with AMC and may instead propose an Alternative Means of Compliance to DASA. Any such proposal will be subject to separate assessment by DASA to determine whether the approach is compliant with the DASR.

    b. **Guidance Material (GM).** GM provides additional explanation to assist the application of the requirement and/or explain the AMC.

Context

4. This Volume implements applicable requirements set out in DASP Manual Volume 1 *Requirements for the DASP.*

5. DASP Manual Volume 3 *DASP Guidance* provides further information to support understanding of, and compliance with, the DASR.

Definitions

6. The following definitions apply within this Volume and its annex:

Continuing Airworthiness. All of the processes ensuring that, at any time in its operating life, an aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.

Defence Personnel. All Australian Public Service employees in the Department of Defence, Defence locally engaged employees, Defence civilians, Defence members and the equivalents from other Defence organisations on exchange to Defence.

Defence Registered Aircraft. An aircraft listed on the Defence aircraft register maintained by DASA.

State Aircraft. Aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force in the course of duties as such a member); and aircraft used in the military, customs or police services of a foreign country. This includes Uncrewed Aircraft Systems (UAS).

7. Further definitions are available in the DASP Glossary.

General Requirements

Subpart A: Scope and applicability

GR.10 Aircraft registration

(a) State Aircraft operated by Defence must be:

(1) Defence Registered Aircraft; or

(2) managed in accordance with DASR NDR *Non-Defence Registered aircraft.*

(b) Paragraph (a) is not applicable to Uncrewed Aircraft Systems except as required by DASR UAS *Uncrewed Aircraft Systems.*

GR.15 Airworthiness of Defence Registered Aircraft

(a) The design, production and certification of Defence Registered Aircraft must be managed in accordance with DASR 21 *Aircraft Design, Production and Certification.*

(b) The Continuing Airworthiness of Defence Registered Aircraft, and components thereof, must be managed in accordance with:

(1) DASR M *Continuing Airworthiness Management*

(2) DASR 145 *Requirements for Maintenance Organisations*

(3) DASR 66 *Military Aircraft Maintenance Licencing*

(4) DASR 147 *Aircraft Maintenance Training Organisations.*

GR.20 Operations personnel

(a) Personnel and organisations involved in Defence aviation operations must comply with:

(1) DASR *Aircrew*

(2) DASR MED *Medical*

(3) DASR AVFM *Aviation Fatigue Management*

(4) DASR NTS *Non-Technical Skills.*

(b) Paragraph (a) is not applicable to Uncrewed Aircraft Systems except as required by DASR UAS *Uncrewed Aircraft Systems*.

GR.25 Operation of State Aircraft

(a) The operation of State Aircraft by Defence must be in accordance with:

(1) DASR AO.Gen *Air Operations – General*

(2) DASR ARO *Authority Requirements for Air Operations*

(3) DASR ORO *Organisation Requirements for Air Operations*

(4) DASR NDR *Non-Defence Registered aircraft*

(5) DASR SPA *Specific Purpose Approval*

(6) DASR SPO *Special Purpose Operations*

(7) DASR UAS *Uncrewed Aircraft Systems*

(8) DASR FT *Flight Tests*

(9) DASR ACD *Air Cargo Delivery*

(10) DASR RoA *Rules of the Air.*

(b) Defence Registered Aircraft must have a valid type-certificate[1] ***Including applicable restricted type-certificates issued in accordance with DASR 21 Subpart B.*** to conduct operations. The type-certificate must be issued in accordance with DASR 21 Subpart B *Military Type-Certificates and Military Restricted Type-Certificates.*

(c) Defence Registered Aircraft must have a valid certificate of airworthiness[2] ***Including applicable restricted certificates of airworthiness issued in accordance with DASR 21 Subpart H*** to conduct operations. The certificate must be issued in accordance with DASR 21 Subpart H *Military Certificates of Airworthiness and Military Restricted Certificates of Airworthiness.*

(d) By way of exception from paragraph (b) and (c), an aircraft may be operated where a valid permit to fly has been issued. Any such permit to fly must be issued in accordance with DASR 21 Subpart P *Military Permit to Fly.*

(e) By way of exception from paragraph (b) and (c), UAS may be operated without a type-certificate or certificate of airworthiness, provided they are compliant with DASR UAS.10.

GR.27 Operation of foreign military aircraft

(a) The operation of foreign military aircraft in Australian national airspace must be managed in accordance with DASR NDR *Non-Defence Registered aircraft.*

GR.30 Flight Simulation Training Devices

(a) Flight Simulation Training Devices and their use must be managed in accordance with DASR FSTD *Flight Simulation Training Devices.*

GR.35 Aerodromes

(a) Defence Aerodromes, including shipborne heliports, must be operated, managed and certified in accordance with DASR 139 *Aerodromes.*

GR.37 Air Navigation Services

(a) The provision of Air Traffic Management services and Air Navigation Services by Defence, including equipment, systems, and organisations must be in accordance with:

(1) DASR ANSP *Air Navigation Service Providers*; and

(2) the regulations identified by GR.20 *Operations personnel*, as applicable.

GR.38 Air Battle Management

(a) The provision of Air Battle Management operations conducted by Defence, including equipment, systems and organisations, must be in accordance with:

(1) DASR ABM *Air Battle Management*

(2) the regulations identified in GR.20 *Operations personnel*, as applicable

(3) DASR AO.GEN.05 *Management of OIP.*

Subpart B: Common requirements and provisions

GR.40 Occurrence reporting

(a) Where required by other DASR, regulated entities must report aviation safety occurrences to DASA in a form and manner acceptable to DASA. ▸ **AMC**

AMC GR.40 – Occurrence Reporting

Intent

1. AMC GR.40 identifies which aviation safety occurrences should be reported to the Authority, and details the timescale for submission of such reports. It also describes the objective of the overall occurrence reporting system including internal and external functions.

Applicability

2. This AMC applies to occurrence reporting by persons / organisations regulated by the Defence Aviation Safety Regulation (DASR). In most cases the obligation to report is on the holders of a certificate or approval, which are primarily organisations, but in some cases may be an individual. In addition some reporting requirements are directed to persons. However, in order not to complicate the text, only the term 'organisation' is used throughout this AMC.

   NOTE: This AMC does not apply to dangerous goods or explosive ordnance reporting.

Objective of Occurrence Reporting

3. The occurrence reporting system is an essential part of the overall monitoring function. The objective of the occurrence reporting, collection, investigation and analysis systems described in operating and airworthiness regulation, is to use the reported information to contribute to accident prevention, the improvement of aviation safety, and not to attribute blame, or take other enforcement actions.

4. The detailed objectives of the occurrence reporting systems are:

a. To enable an assessment of the safety implications of each occurrence to be made, including previous similar occurrences, so that any necessary action can be initiated. This includes determining what and why it had occurred and what might prevent a similar occurrence in the future.

b. To ensure that knowledge of occurrences is disseminated so that others may learn from them.

5. The occurrence reporting system is complementary to the normal day to day procedures and 'control' systems and is not intended to duplicate or supersede any of them. The occurrence reporting process is to identify those occasions where controls have failed.

6. Occurrences should remain in the databases when judged non-reportable by the person submitting the report as the significance of such reports may only become obvious at a later date.

Reporting to the Authority

7. Requirements:

a. Occurrences are defined as an incident, malfunction, defect, technical defect or exceedance of limitations that endangers or could endanger the safe operation of aircraft and must be reported to the Authority.

b. Reporting does not remove the reporter's or organisation's responsibility to commence corrective actions to prevent similar occurrences in the future. Known and planned preventive actions should be included within the report.

NOTE: Section I to IV of this AMC identifies what should be reported by an organisation or individual to the Authority.

Notifying Other Authorities

8. Where applicable and relevant, other (domestic and international) civil and military aviation safety authorities should be advised of the occurrences.

Reportable Occurrences

9. General. There are different reporting requirements for operators (and/or commanders), maintenance organisations, design organisations and production organisations. The criteria for all these different reporting lines are not the same. For example, the Authority will not receive the same kind of reports from a design organisation as from an operator or an Air Navigation Service Provider. This is a reflection of the different perspectives of the organisations based on their activities.

10. Many of the occurrences which are considered 'reportable occurrences' for crewed aircraft would not endanger safe operation of a UAS due to the absence of people on board. As such, reportable occurrences for UAS are found in the UAS implementing regulations.

11. List of reportable occurrences. Section I to IV is a list of reportable occurrences. Not all examples are applicable to each reporting organisation.

a. **Section I - Aircraft Flight Operations**

Section I to AMC GR.40 - Aircraft Flight Operations

Under DASR Phase 1, reporting of Aircraft Flight Operations based occurrences using the Hazard Reporting and Tracking framework articulated within the Defence Aviation Safety Manual, and supporting procedures meets the intent of this SECTION.

A listing of specific Authority reportable Aircraft Flight Operations based occurrences will be consulted / promulgated in 2018.

b. **Section II - Aircraft Technical**

Section II to AMC GR.40 - Aircraft Technical

This section is structured in such a way that the pertinent occurrences are linked with categories of activities during which they are normally observed, according to experience, in order to facilitate the reporting of those occurrences. However, this presentation must not be

understood as meaning that occurrences must not be reported in case they take place outside the category of activities to which they are linked in the list.

Structural

For Structural Integrity (SI), an unsafe condition is not always obvious. Engineering judgement is required to decide whether defects or damage is serious enough to be reported, if in doubt advice should be sort. The following examples can be taken into consideration:

a. Defect or damage that may affect structural strength or life, to critical structure exceeding admissible damage or where no pre-approved repair exists from previous investigation activity. Critical structure is that which contributes significantly to carrying flight, ground, and pressurisation loads, and whose failure could result in a catastrophic failure of the aircraft.

b. Damage to or defect exceeding allowed tolerances of structural element which failure could reduce the structural stiffness to such an extent that the required flutter, divergence or control reversal margins are no longer achieved.

c. Damage to or defect of a structural element, which could result in the liberation of items of mass that may injure occupants of the aircraft.

d. Damage to or defect of a structural element, which could jeopardise proper operation of systems. See SYSTEMS (including software) below.

e. Loss of any part of the aircraft structure in flight.

Systems (including software)

a. The following generic criteria applicable to all systems are proposed: Loss, significant malfunction or defect of any system, subsystem or set of equipment that could endanger flight safety when standard operating procedures, drills etc, could not be satisfactorily accomplished.

b. Inability of the crew to control the system, for example:

   i. uncommanded actions;

   ii. incorrect and or incomplete response, including limitation of movement or stiffness;

   iii. runaway;

   iv. mechanical disconnection or failure.

c. Failure or malfunction of the exclusive function(s) of the system (one system could integrate several functions).

d. Interference within or between systems.

e. Failure or malfunction of the protection device or emergency system associated with the system.

f. Loss of redundancy of the system.

g. Any occurrence resulting from unforeseen behaviour of a system.

h. Leakage of hydraulic fluids, fuel, oil or other fluids which resulted in a fire hazard or possible hazardous contamination of aircraft structure, systems or equipment, or risk to occupants.

i. Malfunction or defect of any indication system when this results in the possibility of misleading indications to the crew.

j. Any failure, malfunction or defect if it occurs at a critical phase of flight and relevant to the operation of that system.

k. Asymmetry of flight controls; eg flaps, slats, spoilers.

Enclosure 1 to SECTION II, gives a list of examples of reportable occurrences resulting from the application of these generic criteria to specific systems.

Propulsion Systems (including engines, propellers, rotor systems and transmissions) and Auxiliary Power Units (APU)

Engines. The following criteria applicable to engines are proposed:

a. Overspeed or inability to control the speed of any high speed rotating component, for example: auxiliary power unit, air starter, air cycle machine, air turbine motor, propeller or rotor.

b. Failure or malfunction of any part of an engine or powerplant resulting in any one or more of the following:

   i. non containment of components/debris;

   ii. uncontrolled internal or external fire, or hot gas breakout;

   iii. thrust in a different direction from that demanded by the pilot;

   iv. thrust reversing system failing to operate or operating inadvertently;

   v. inability to control power, thrust or rpm;

   vi. failure of the engine mount structure;

   vii. partial or complete loss of a major part of the powerplant;

   viii. Dense visible fumes or concentrations of toxic products sufficient to incapacitate crew or passengers;

   ix. inability, by use of normal procedures, to shutdown an engine;

   x. inability to restart a serviceable engine.

c. A flameout, uncommanded thrust/power loss or malfunction:

   i. for a single engine aircraft; or

   ii. where it is considered excessive for the application, or

iii. where this could affect more than one engine in a multi-engine aircraft, particularly in the case of a twin engine aircraft; or

iv. for a multi engine aircraft where the same, or similar, engine type is used in an application where the event would be considered hazardous or critical.

d. Any defect in a propulsion system critical part causing retirement before completion of its full life.

e. Defects of common origin which could cause an in flight shut down rate so high that there is the possibility of more than one engine being shut down on the same flight.

f. An engine limiter or control device failing to operate when required or operating inadvertently.

g. Exceedance of engine parameters.

h. Volcanic ash encounter.

Propellers and transmission.

a. Failure or malfunction of any part of a propeller or powerplant resulting in any one or more of the following:

i. an overspeed of the propeller;

ii. the development of excessive drag;

iii. a thrust in the opposite direction to that commanded by the pilot;

iv. a release of the propeller or any major portion of the propeller;

v. a failure that results in excessive unbalance;

vi. the unintended movement of the propeller blades below the established minimum in-flight low-pitch position;

vii. an inability to feather the propeller;

viii. an inability to command a change in propeller pitch;

ix. an uncommanded change in pitch;

x. an uncontrollable torque or speed fluctuation;

xi. The release of low energy parts.

Rotors and transmission:

a. Damage or defect of main rotor gearbox or attachment which could lead to in flight separation of the rotor assembly, and /or malfunction/loss of rotor control.

b. Damage or defect to tail rotor, transmission and equivalent systems.

Auxiliary Power Units:

a. Shut down or failure when the APU is required to be available by operational requirements, eg Defence Long Range Operations (DLRO) / Extended Twin-engined Operations (ETOPS) / Extended Range Operations (EROPS), Minimum Equipment List (MEL).

b. Inability to shut down the APU.

c. Overspeed.

d. Inability to start the APU when needed for operational reasons.

ENCLOSURE 1 TO SECTION II - REPORTABLE TECHNICAL OCCURRENCES TO SPECIFIC SYSTEMS

The following give examples of reportable occurrences resulting from application of the generic criteria to specific systems listed under SYSTEMS (including software), in SECTION II.

Air conditioning / ventilation

- complete loss of avionics cooling
- depressurisation

Autoflight system

- failure of the autoflight system to achieve the intended operation while engaged
- significant reported crew difficulty to control the aircraft linked to autoflight system functioning
- failure of any autoflight system disconnect device
- uncommanded autoflight mode change

Bleed air system

- hot bleed air leak resulting in a fire warning or structural damage
- loss of bleed air systems
- failure of bleed air leak detection system

Cockpit / cabin / cargo

- pilot seat control loss during flight
- failure of any emergency system or equipment, including emergency evacuation
- signalling system, all exit doors, emergency lighting, etc
- loss of retention capability of cargo loading system

Communications

- total loss of communication in flight

Electrical system

- loss of one electrical system distribution system (AC or DC)
- total loss or loss of more than one electrical generation system
- failure of back-up (emergency) electrical generating system
- serious damage to electrical wiring and interconnection system (EWIS)

Explosive ordnance

- inadvertent release of stores due to mechanical or system failure
- hung store
- stores management system failure

Fire protection system

- fire warnings, except those immediately confirmed as false
- undetected failure or defect of fire/smoke detection/protection system, which could lead to loss or reduced fire detection/protection
- absence of warning in case of actual fire or smoke

Flight controls

- asymmetry of flaps, slats spoilers, etc
- limitation of movement, stiffness or poor or delayed response in the operation primary
- Flight control surface runaway
- mechanical flight control disconnection or failure
- significant interference with normal control of the aircraft or degradation of flying qualities

Fuel system

- fuel quantity indicating system malfunction resulting in total loss or erroneous indicated fuel quantity on board
- leakage of fuel which resulted in major loss, fire hazard, significant contamination
- malfunction or defects of the fuel jettisoning system which resulted in advertent loss of significant quantity, fire hazard, hazardous contamination of aircraft equipment or inability to jettison fuel
- fuel system malfunctions or defects which had a significant effect on fuel supply and/or distribution

Hydraulics

- loss of one hydraulic system (extended twin-engined operations (ETOPS) only)

- failure of the isolation system to operate
- loss of more than one hydraulic circuit
- failure of the back-up hydraulic system
- inadvertent Ram Air Turbine extension

Ice detection / protection system

- undetected loss or reduced performance of anti ice/de-ice system
- loss of more than one of the probe heating systems
- inability to obtain symmetrical wing de-icing
- abnormal ice accumulation leading to significant effects on performance or handling qualities
- crew vision significantly affected

Indicating / warning / recording systems

- malfunction or defect of any indicating system when the possibility of significant misleading indications to the crew could result in an inappropriate crew action on an essential system
- for glass cockpits: loss or malfunction of more than one display unit or computer involved in the display/warning function

Landing gear system / brakes / tyres

- brake fire
- significant loss of braking action
- unsymmetrical braking leading to significant path deviation
- failure of the landing gear free fall extension system (including during scheduled tests)
- unwanted landing gear or landing gear doors extension/retraction
- multiple tyre bursts

Navigation systems (including precision approaches system) and air data systems

- total loss or multiple navigation equipment failures
- total failure or multiple air data system equipment failures
- significant misleading indication
- significant navigation errors attributed to incorrect data or a database coding error
- unexpected deviations in lateral or vertical path not caused by pilot input

- problems with ground navigational facilities leading to significant navigation errors not associated with transitions from inertial navigation mode to radio mode

Oxygen

- for pressurised aircraft: loss of oxygen supply in cockpit
- loss of oxygen supply to a significant number of passengers, (more than 10%),including when found during maintenance or training or test purposes

c. ▸ **Section III - Aircraft Maintenance and Repair**

Section III to AMC GR.40 - Aircraft Maintenance and Repair

This section is structured in such a way that the pertinent occurrences are linked with categories of activities during which they are normally observed, according to experience, in order to facilitate the reporting of those occurrences. However, this presentation must not be understood as meaning that occurrences must not be reported in case they take place outside the category of activities to which they are linked in the list.

Maintenance and Maintenance Related

a. Incorrect assembly of parts or components of the aircraft found during an inspection or test procedure not intended for that specific purpose.

b. Hot bleed air leak resulting in structural damage.

c. Identified burning, melting, smoke, arcing, overheating or fire occurrences.

d. Any defect in a critical structure or propulsion system critical part causing retirement before completion of its full life.

e. Any damage or deterioration, ie fractures, cracks, corrosion, delamination, disbonding, (size is by no means a reliable indication of significance) resulting from any cause (such as flutter, loss of stiffness or structural failure) to:

   i. Critical structure (as defined by the certified type design) where such damage or deterioration exceeds allowable limits specified in the Repair Manual and requires a repair or complete or partial replacement of the structure;

   ii. secondary structure which consequently has or may have endangered the aircraft; or

   iii. the engine, propeller or rotorcraft rotor system.

f. Exceedance of critical structure or propulsion system critical part airworthiness limitations or maintenance requirements.

g. Any failure, malfunction or defect of any system or equipment, or damage or deterioration found as a result of compliance with an Airworthiness Directive or other mandatory instruction issued by a Regulatory Authority, when:

   i. it is detected for the first time by the reporting organisation implementing compliance;

ii. on any subsequent compliance where it exceeds the permissible limits quoted in the instruction and/or published repair/rectification procedures are not available.

h. Failure of any emergency system or equipment, including all exit doors and lighting, to perform satisfactorily, including when being used for maintenance or test purposes.

i. Non compliance or significant errors in compliance with required maintenance procedures.

j. Wrong assessment of a serious defect, or serious non-compliance with the Minimum Equipment List (MEL) and Technical logbook procedures.

k. Incorrect control or application of aircraft maintenance limitations or scheduled maintenance.

l. Releasing an aircraft to service from maintenance in case of any non-compliance which endangers the flight safety.

m. Serious damage caused to an aircraft during maintenance activities due to incorrect maintenance or use of inappropriate or unserviceable ground support equipment that requires additional maintenance actions.

n. Any occurrence where the human performance, including fatigue of personnel, has directly contributed to or could have contributed to an accident or a serious incident.

o. Products, parts, appliances and materials of unknown or suspect origin.

p. Misleading, incorrect or insufficient maintenance data or procedures that could lead to maintenance errors, which could endanger flight safety.

q. Failure, malfunction or defect of ground equipment used for test or checking of aircraft systems and equipment when the required routine inspection and test procedures did not clearly identify the problem when this results in a hazardous situation, which could endanger flight safety.

r. Significant malfunction, reliability issue, or recurrent recording quality issue affecting a flight recorder system (such as a flight data recorder system, a data link recording system or a cockpit voice recorder system) or lack of information needed to ensure the serviceability of a flight recorder system.

d. **Section IV - Air Navigation Services, Aerodromes Facilities and Ground Services**

Section IV to AMC GR.40 - Air Navigation Services, Aerodrome Facilities and Ground Services

Under DASR Phase 1, reporting of Air Navigation Services (ANS), Aerodrome (ADR) and Ground based occurrences using the Hazard Reporting and Tracking framework articulated within the Defence Aviation Safety Manual, and supporting procedures meets the intent of this Section.

A listing of specific Authority reportable ANS, ADR and Ground-based occurrences will be consulted / promulgated in 2018.

12. Reportable occurrences are those where the safety of operation was or could have been endangered or which could have led to an unsafe condition. If in the view of the reporter an occurrence did not hazard the safety of the operation but if repeated in different but likely circumstances would create a hazard, then a report should be made.

Immediate Notification of Accidents and Serious Incidents

13. Accidents and Serious Incidents are serious occurrences (deaths, serious injury and serious damage to aircraft and property or had a high potential/likelihood to do so due to the lack or remaining controls) require additional and immediate notification to the aviation safety investigation Authority. This immediate reporting requirement extends to any occurrence where there is an exposure to a serious risk of death, injury or damage.

14. The need to report an occurrence in accordance with this AMC does not immediately constitute the need to conduct Accident or Serious Incident investigation.

15. List of immediately notifiable occurrences. Section V is a list of accidents and serious incidents that require immediate notification to the aviation safety investigation Authority. It is possible for occurrences listed under **Reportable Occurrences** above, (SECTIONs I to IV), to be further categorised as serious incidents and would therefore subject to immediate notification requirements. In these instances professional judgement is required. **Section V - Immediate Notification of Accidents and Serious Incidents**

Section V to AMC GR.40 - Immediate Notification of Accidents and Serious Incidents

It is possible for occurrences not listed here to be further categorised as serious incidents and therefore subject to immediate notification requirements. In this instance professional judgement is required. Categorisation of these occurrences into accidents or serious incidents, is often circumstance dependent so it is most important to note that the categorisation of any occurrence should only be finalised after a thorough examination of all the circumstances of that occurrence.

The immediate notification of Accidents and Serious Incidents should occur as soon as is reasonably practicable.

Accident:

a. Death of any person

b. Loss of an aircraft, ie unrepairable, missing or inaccessible for recovery.

Serious Incident.

The list is not exhaustive and only serves as guidance to the definition of serious incident.

a. Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.

b. Controlled flight into terrain only marginally avoided.

c. Aborted take-offs on a closed or engaged runway, on a taxiway1 or unassigned runway.

d. Take-offs from a closed or engaged runway, from a taxiway2 or unassigned runway.

e. Landings or attempted landings on a closed or engaged runway, on a taxiway3 or unassigned runway.

f. Gross failures to achieve predicted performance during take-off or initial climb.

g. Fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.

h. Events requiring the emergency use of oxygen by the flight crew.

i. Aircraft structural failures or engine disintegrations, including uncontained turbine engine failures, not classified as an accident.

j. Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.

k. Flight crew incapacitation in flight.

l. Fuel quantity requiring the declaration of an emergency by the pilot.

m. Runway incursions.

n. Take-off or landing incidents. Incidents such as under-shooting, overrunning or running off the side of runways.

o. System failures, weather phenomena, operations outside the approved flight envelope or other occurrences which could have caused difficulties controlling the aircraft.

Reporting Time

16. The reporting time starts from when the occurrence took place or from the time when the reporter determined that there was, or could have been, a potentially hazardous or unsafe condition. The immediate notification of Accidents and Serious Incidents should occur as soon as reasonably practicable.

17. The reporting period for all other occurrences that have not required immediate notification is 72 hours. Within the overall limit of 72 hours for the submission of a report, the degree of urgency should be determined by the level of hazard judged to have resulted from the occurrence. Subsequent reporting from organisations made aware of an occurrence is to be within 72 hours of initial notification.

Content of Reports

18. Notwithstanding other required reporting means as promulgated by other legislation, regulation or policy, reports may be transmitted in any form considered acceptable to the Authority. The amount of information in the report should be commensurate with the severity of the occurrence. Each report should at least contain the following elements, as applicable to each organisation:

a. Organisation details

b. Information necessary to identify the affected:

(1) aircraft and / or component affected, including software version (if applicable),

(2) ANS system,

(3) Aerodrome.

c. Date and time if relevant

d. Summary description of the occurrence

e. Any other specific/ relevant information

19. For any occurrence involving a system or component, which is monitored or protected by a warning and/or protection system, for example: fire detection/extinguishing or separation alert, the occurrence report should always state whether such system(s) functioned properly.

Reporting Between Organisations

20. Requirements exist that address the reporting of data relating to unsafe or unairworthy conditions. These reporting lines are:

a. Production Organisation to the organisation responsible for the design;

b. Maintenance organisation to the organisation responsible for the design;

c. Maintenance organisation to operator;

d. Operator to organisation responsible for the design;

e. Production organisation to production organisation;

f. Design organisation to production organisation.

21. The 'Organisation responsible for the design' is a general term, which can be any one or a combination of the following organisations:

a. Holder of a Military Type-certificate (MTC) of an Aircraft, Engine or Propeller.

b. Holder of a Military Supplemental Type-certificate (MSTC) on an Aircraft, Engine or Propeller.

c. Holder of an Approved Design.

NOTE: In the ADF context this usually means the Systems Program Office (SPO) with embedded Military Type-certificate holder, Total Logistics Support Contractor, or both. If it can be determined that the occurrence has an impact on or is related to other aircraft types then the holders of such approval/authorisation should be informed. Figure 1 presents a simplified scheme of reporting lines for Initial and Continuing Airworthiness organisations.

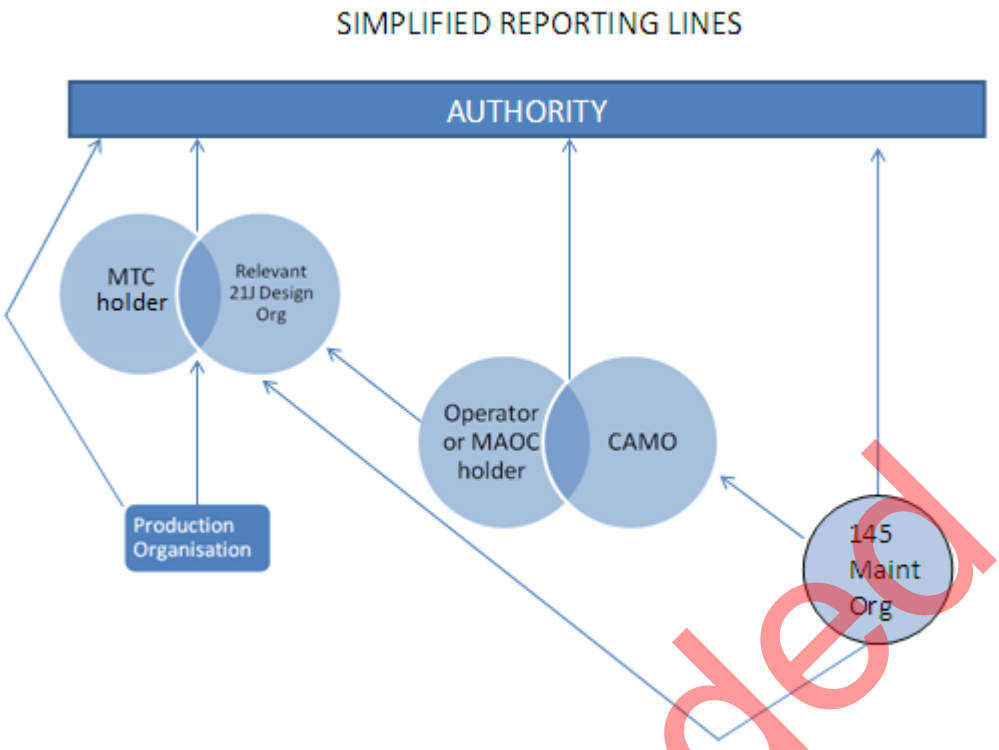


Figure 1 - Reporting Lines

GR.60 Oversight and enforcement

(a) Regulated entities must cooperate with DASA with a view to assuring compliance with the DASR.

(b) For the purposes of the implementation of paragraph (a), regulated entities must conduct investigations, including ramp inspections, and must take any measure to prevent the continuation of a non-compliance.

(c) In order to facilitate the taking of appropriate enforcement action by competent authorities, regulated entities shall exchange information on identified infringements with DASA.

GR.80 Flexibility provisions

(a) (Reserved)

(b) Where an equivalent level of protection to that attained by the application of the DASR can be achieved by other means, DASA may approve exception from those DASR.

(c) DASA may allow a credible and defensible level of military aviation safety performance where an equivalent level of protection to that provided by the application of the DASR cannot be demonstrated, but can be supported by the application of sound risk management principles. ▸ **GM**

GM GR.80 (c) – Flexibility Provisions

1. This regulation recognises that Defence is a military force that sometimes needs to operate at levels of risk greater than would be acceptable to national civil aviation authorities. Such increased risks may result from:

   a. incomplete type certification activities without sufficient controls to achieve the safety requirements, due, for example, to:

      i. production inconsistencies or flaws

      ii. incompatibilities between original civil/military type certifications and Defence's configurations, roles and operating environments

      iii. uncertainty about original certification basis requirements for long-serving legacy aircraft and aerodromes; and

      iv. an inability to obtain, for acquired aircraft, adequate disclosure of the original certification basis requirements on which Defence will base its military type certification.

   b. operational imperatives necessitating unairworthy aircraft to be operated; that is the certificate of airworthiness is invalid.

   c. operating imperatives necessitating operations outside the scope of the MAOC (such as for specific missions and crew compositions, specific flying orders not being able to be met).

   d. enduring operational imperatives such as an inability to achieve desired capability outcomes whilst compliant with contemporary crash protection requirements.

2. The flexibility provided by this regulation allows Defence, inter alia, to operate outside a type certification basis, to operate outside the scope of the MAOC, to operate with open 'design/type certification' issue papers, as well as continued operations with known unserviceabilities, unrepaired damage or deferred maintenance, eg where the certificate of airworthiness is invalid.

3. This flexibility provision does not exempt Defence from a duty under the Australian Work Health and Safety (WHS) Act. Consequently, where operations under the flexibility provision are contemplated, the risks to health and safety of persons must be eliminated so far as is reasonably practicable and if this is not possible then reduced so far as is reasonably practicable in the circumstance.

(d) DASA must acknowledge that regulated organisations may deviate from the substantive requirements laid down in this Regulation in the event of compelling operational imperatives or emergencies. ▸ **GM**

GM GR.80 (d) – Flexibility Provisions

1. This regulation continues the long-standing flexibility arrangement whereby operational commanders may deviate from aviation safety requirements in an emergency or compelling circumstance. Such deviations should only be made where there is insufficient time either to seek:

a. permit to fly as described in DASR Subpart P, or

b. prior Authority approval for an exception or a reduced level of protection as provided for at GR.80 (b) and GR.80 (c) respectively.

Annex A: DASR parts

See menu page

- DASR 21 *Aircraft Design, Production and Certification*
- DASR 66 *Military Aircraft Maintenance Licencing*
- DASR 139 *Aerodromes*
- DASR 145 *Requirements for Maintenance Organisations*
- DASR 147 *Aircraft Maintenance Training Organisations.*
- DASR ABM *Air Battle Management*
- DASR ACD *Air Cargo Delivery*
- DASR *Aircrew*
- DASR ANSP *Air Navigation Service Providers*
- DASR AO.Gen *Air Operations General*
- DASR ARO *Authority Requirements for Air Operations*
- DASR AVFM *Aviation Fatigue Management*
- DASR FSTD *Flight Simulation Training Devices*
- DASR FT *Flight Tests*
- DASR M *Continuing Airworthiness Management*
- DASR MED *Medical*
- DASR NDR *Non-Defence Registered aircraft*
- DASR NTS *Non-Technical Skills*
- DASR ORO *Organisation Requirements for Air Operations*
- DASR RoA *Rules of the Air.*
- DASR SMS *Aviation Safety Management Systems*
- DASR SPA *Specific Purpose Approval*
- DASR SPO *Special Purpose Operations*

- DASR UAS *Uncrewed Aircraft Systems*

DASR 21 - Aircraft Design, Production and Certification

21.1 - General

▸ GM

GM 21.1 - General (AUS)

As the sponsor of DASR 21, unless otherwise stated the Authority will mean 'DASA'.

DASR 21 is only applicable to aircraft on the Defence register; non-Defence (civil) registered aircraft will continue to abide by the regulations of the applicable civil aviation authority.

(a) When reference is given to 'design organisation' the following shall apply:

1. An organisation responsible for the design of products, parts and appliances or for changes or repairs thereto shall demonstrate its capability in compliance with national military airworthiness regulation being in accordance to this DASR, further referred to as DASR 21. In the case that governmental organisations undertake design activities with any other organisation responsible for the design of products, parts and appliances or for changes or repairs thereto, they shall be treated as a single organisation when demonstrating their capability in accordance with DASR 21.

2. By way of exception from point 1, an organisation whose principal place of business is in a non-participating Member State, or where a participating Member State (pMS) has not yet transposed EMAR 21 in their national military airworthiness regulations, may demonstrate its capability by holding a certificate or similar approval issued by an authority of that State for the product, part and appliance for which it applies, provided:

   i. that State is providing oversight as State of Design; and

   ii. through Recognition (EMAD–R) it can be determined, that the national airworthiness system of that State includes the same independent level of checking of compliance as provided by DASR 21, either through an equivalent system of approvals of organisations or through direct involvement of the authority of that State.

(b) All references to 'aircraft' throughout this DASR means 'military aircraft', defined as those that follow special laws and regulations and are designed with specific characteristics for military operations.

(c) 'Authority' shall be, unless otherwise specified in this DASR:

1. The Authority in charge of the type certification process:

   i. For a multinational programme, the Military Airworthiness Authorities of the participating Nations/States; or

ii. For a national programme, the Military Aviation Authority of this Nation/ State,

2. The Authority in charge of the production / design organisation approval:

i. For a multinational programme, the Military Airworthiness Authorities of the participating Nations/States; or

ii. For a national programme, the Military Aviation Authority of this Nation/ State,

3. The Authority in charge to issue the military permit to fly

4. The registration Authority in charge to issue the Certificate of Airworthiness; or

5. For unregistered aircraft, the Authority which prescribed the identification marks.

(d) 'Applicant' shall be:

1. The contractor which should comply with this DASR; or

2. Any organisation which must obtain from an Authority a type-certificate, a restricted type-certificate, a supplemental type-certificate, an Australian Military Technical Standard Order (AUSMTSO) authorisation, a major change or a major repair design approval based on this DASR. It should be included herein the certificate of airworthiness, as mentioned in DASR 21.A.172, and Military Permit to Fly / Flight Conditions, as mentioned in DASR 21.A.703.

3. Any organisation or operator or its representative which applies for an airworthiness certificate under Subpart H of this DASR.

(e) 'Certification' - the process of recognition that a product, part or appliance, organisation or person complies with the applicable airworthiness requirements followed by the declaration of compliance.

(f) 'continued (design) airworthiness' means all tasks to be carried out to verify that the conditions under which a type-certificate or a supplemental type-certificate has been granted continue to be fulfilled at any time during its period of validity (Type Design)

(g) 'continuing (preservation of) airworthiness' means all of the processes ensuring that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation (Maintenance).

(h) All references to 'certificates' throughout this DASR means 'military certificates (Although credit can be taken from any prior Civil Certificate issued by a recognised Civil Authority).

(i) All references to 'organisation approvals' throughout this DASR means 'organisational approvals accepted or issued by military authorities'.

(j) Where this DASR requires specific DASR forms to be used, equivalent forms approved by the Authority are permitted.

SECTION A - TECHNICAL REQUIREMENTS

SUBPART A - GENERAL PROVISIONS

21.A.1 - Scope

This Section establishes general provisions governing the obligations and privileges of the applicant for, and holder of, any certificate issued or to be issued in accordance with this Section. ▸ **AMC**

AMC 21.A.1 - Scope (AUS)

Any design, Instruction for Continuing Airworthiness and other product approved under TAREG continues to be applicable and authoritative under DASR for its equivalent purpose, and hence does not require re-approval under DASR by default.

21.A.2 - Undertaking by another organisation than the applicant for, or holder of, a certificate

The actions and obligations required to be undertaken by the holder of, or applicant for, a certificate for a product, part or appliance under this Section may be undertaken on its behalf by any other organisation, provided the holder of, or applicant for, that certificate can show that it has made an agreement with the other organisation such as to ensure that the holder's obligations are and will be properly discharged. ▸ **AMC**

AMC 21.A.2 - Undertaking by another organisation than the applicant for, or holder of, a certificate

In order to undertake the actions and obligations of the holder of, or applicant for, the certificate, the organisation should have an agreement in place with an approved Design Organisation who has access to the Type Design data.

21.A.3A - Failures, malfunctions and defects

(a) System for Collection, Investigation and Analysis of Data. ▸ **AMC** ▸ **AMC1** ▸ **AMC2** ▸ **GM**

GM 21.A.3A(a) - System for collection, investigation and analysis of data (AUS)

In the context of this requirement the word 'Collection' means the setting up of systems and procedures which will enable relevant malfunctions, failures and defects to be properly reported when they occur.

There are instances where a failure, malfunction or defect, or analysis of failures, malfunctions or defects represents some level of shortfall to the type design but may not result in a reportable occurrence in accordance with DASR 21.A.3A(b) based on an assessment of the available information at that time. In these situations, the holder ought to make a judgement as to whether the shortfall constitutes a risk or not.

Where the shortfall is judged to be within the level of safety inherent to the certification baseline, the holder should continue monitoring and assessing relevant information for risks to the type design.

Where a risk is judged to exist, the risk or hazard must be eliminated So Far As is Reasonably Practicable (SFARP), or if it is not practicable to do so, minimised SFARP in accordance with the requirements of the Work Health and Safety Act 2011, the Work Health and Safety Regulations 2011 and DASR SMS.A.25(b)(2.2).

In meeting the DASR SMS requirements the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR, should formalise arrangements with operators of the product to ensure timely and effective characterisation and communication of risks when deficiencies are being managed. This may constitute immediate communication in support of the development of a Service Bulletin, MPTF Flight Conditions, a Command Clearance, or other operator decisions affecting ongoing flying; or it may be periodic communication of shortfalls at the discretion of, or agreement with, the operator / down-stream duty holder.

AMC2 21.A.3A(a) - System for collection, investigation and analysis of data (AUS)

Airworthiness Directives (ADs), or equivalent, issued by airworthiness authorities other than DASA should be treated in accordance with DASR 21.A.3A. Such ADs should be assessed for applicability to the ADF type design by the holder of the airworthiness instrument listed in DASR 21.A.3A(a). ADs assessed as applicable should be further treated in accordance with DASR 21.A.3A(b) and DASR 21.A.3A(c) to this regulation.

As a minimum, the holder of an airworthiness instrument listed in DASR 21.A.3A(a) should monitor relevant ADs issued by any aviation authority whose prior certification was recognised by DASA in issuing that instrument.

AMC1 21.A.3A(a) System for collection, investigation and analysis of data for structure and propulsion systems (AUS).

Some risks and hazards associated with the type design may only become evident from a longer-term view of relevant data. The system for collecting, investigating and analysing reports of, and information related to, failures, malfunctions, defects or other occurrences should therefore include longer-term aggregation, trending and analysis of such reports and information.

Investigation and analysis should compare failures, malfunctions, defects and other occurrences with the design and certification assumptions to ensure that the type certificate continues to comply with the applicable Type Certification Basis and that the risk of failure has been eliminated or otherwise minimised SFARP. This may identify the need to change the type certificate, including new/amended operating limitations or new/amended airworthiness limitations (see DASR AMC 21.A.41), or revise the Instructions for Continuing Airworthiness furnished to operators (see DASR 21.A.61, DASR 21.A.107, DASR 21.A.120 and DASR 21.A.449).

For aircraft structure and propulsions systems, longer-term aggregation, trending and analysis of relevant failures, malfunctions, defects and other occurrences should be conducted through

the Aircraft Structural Integrity Program (ASIP) and Propulsion System Integrity Program (PSIP) for each aircraft (see DASR 21.A.44(c)). Investigation and analysis of failures, malfunctions, defects and other occurrences for aircraft structure and propulsion systems also often requires specific skills due to the complex nature of these systems and their associated failure modes, and the specialised design methods and tools typically employed. Each failure, malfunction, defect or other occurrence related to aircraft structure and propulsion systems should therefore be promptly collected, investigated and analysed using the expertise available within the ASIP, PSIP and / or the responsible design organisation (if separate).

AMC 21.A.3A(a) - Collection, investigation and analysis of data related to Flammability Reduction Means (FRM) reliability

Holders of a type-certificate, restricted type-certificate, supplemental type-certificate or any other relevant approval deemed to have been issued under DASR 21 and which have included an FRM in their design should assess on an on-going basis the effects of aeroplane component failures on FRM reliability. This should be part of the system for collection, investigation and analysis of data required by DASR 21.A.3A(a). The applicant/holder should do the following:

d. Demonstrate effective means to ensure collection of FRM reliability data. The means should provide data affecting FRM reliability, such as component failures.

b. Unless alternative reporting procedures are approved by the Authority, provide a report to the Authority every six months for the first five years after service introduction. After that period, continued reporting every six months may be replaced with other reliability tracking methods found acceptable to the Authority or eliminated if it is established that the reliability of the FRM meets, and will continue to meet, the exposure specifications as defined by the applicable airworthiness requirements.

c. Develop service instructions or revise the applicable aeroplane manual, according to a schedule approved by the Authority, to correct any failures of the FRM that occur in service that could increase any fuel tanks Fleet Average Flammability Exposure to more than that specified by the applicable airworthiness requirements.

The holder of a type certificate, restricted type certificate, supplemental type certificate, Australian Military Technical Standard Order (AUSMTSO) authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR shall have a system for collecting, investigating and analysing reports of and information related to failures, malfunctions, defects or other occurrences which cause or might cause adverse effects on the airworthiness of the product, part or appliance covered by the type-certificate, restricted type-certificate, supplemental type-certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR. Information about this system shall be made available to all known operators of the product, part or appliance and, on request, to any person authorised under other associated DASR.

(b) Reporting Occurrences to the Authority. ▸ **GM**

GM 21.A.3A(b) - Occurrence reporting (AUS)

Relevant design organisations are to independently report on the occurrences to the Authority, with a focus on impact to the on-going validity of the certified design.

Typically, relevant design organisations will be made aware of occurrences by DASR 145 and Continuing Airworthiness Management Organisations (CAMO) fulfilling their reporting requirements.

However, in the course of conduct of design activities, analysis or relevant Military Type-certificate holder obligations, identified occurrences are to be reported to the Authority. These instances may not have a corresponding DASR 145 or CAMO Occurrence Report.

A list of occurrences to be reported are detailed in AMC GR.40 - Occurrence Reporting. This is not a comprehensive list and an additional requirement may need to be considered dependent on the scope of the organisations operations.

The following Sections are the most relevant to DASR 21J:

SECTION I: AIRCRAFT FLIGHT OPERATIONS

SECTION II: AIRCRAFT TECHNICAL

SECTION V: IMMEDIATE NOTIFICATION OF ACCIDENTS AND SERIOUS INCIDENTS

In particular:

(a) The products and part and appliances design rules prescribe that occurrences defined as a failure, malfunction, defect or other occurrence which has resulted in or may result in an unsafe condition must be reported to the Authority;

(b) According to the product and part and appliances production rules occurrences defined as a deviation which could lead to an unsafe condition must be reported to the Authority.

1. The holder of a type certificate, restricted type certificate, supplemental type certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR, shall report to the issuing / approving Authority any failure, malfunction, defect or other occurrence of which it is aware related to a product, part or appliance covered by the type certificate, restricted type certificate, supplemental type certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR, and which has resulted in or may result in an unsafe condition.

2. These reports shall be made in a form and manner established by the Authority, as soon as practicable and in any case dispatched not later than 72 hours after the identification of the possible unsafe condition, unless exceptional circumstances prevent this. ▸ **AMC** ▸ **AMC1**

AMC1 21.A.3A(b)(2) - Reporting to the Authority (AUS)

Occurrence Reports may be transmitted by any method.

Urgent unsafe conditions should be reported verbally, ie via telephone, in the first instance. All reporting should be followed up by a written report, as time allows.

The occurrence reporting process, content and format should be defined in the DASR 21J – Design Organisation Exposition.

Each report should contain at least the following information:

a. organisation details,

b. information necessary to identify the subject aircraft and/or products, parts and appliances affected, including software version, (if applicable)
details of the occurrence,

c. implications to on-going validity of the type design (recommended), as to whether an unsafe condition exists, and

d. any other relevant information.

AMC 21.A.3A(b)(2) - Reporting to the Authority

Within the overall limit of 72 hours the degree of urgency for submission of a report should be determined by the level of hazard judged to have resulted from the occurrence.

Where an occurrence is judged by the person identifying the possible unsafe condition to have resulted in an immediate and particularly significant hazard the Authority expects to be advised immediately and by the fastest possible means of whatever details are available at that time. This initial report should be followed up by a full written report within 72 hours. A typical example would be an uncontained engine failure resulting in damage to aircraft primary structure.

Where the occurrence is judged to have resulted in a less immediate and less significant hazard, report submission may be delayed up to the maximum of three days in order to provide more details.

(c) Investigation of Reported Occurrences.

1. When an occurrence reported under paragraph b, or under DASR 21.A.129(f)(2) or DASR 21.A.165(f)(2) results from a deficiency in the design, or a manufacturing deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR, or the manufacturer (Production Organisation) as appropriate, shall investigate the reason for the deficiency and report to the Authority the results of its investigation and any action it is taking or proposes to take to correct that deficiency.

2. If the Authority finds that an action is required to correct the deficiency, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, AUSMTSO authorisation, major repair design approval or any other relevant approval deemed to have been issued under this DASR, or the manufacturer as appropriate, shall submit the relevant data to the Authority.

21.A.3B - Airworthiness Directives

(a) An Airworthiness Directive means a document issued or adopted by the Authority which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised. ▸ **GM**

GM 21.A.3B(a) - Airworthiness Directives (AUS)

The Authority will issue all Airworthiness Directives. In some circumstances the Authority's issuing function may be conducted by a Delegate of the Safety Authority (DoSA) within the scope of their delegation.

(b) The Authority shall issue an airworthiness directive when: ▸ **AMC** ▸ **GM**

GM 21.A.3B(b) - Determination of an unsafe condition

It is important to note that these guidelines are not exhaustive. However, this material is intended to provide guidelines and examples that will cover most cases, taking into account the applicable certification requirements.

1. INTRODUCTION

Certification or approval of a product, part or appliance is a demonstration of compliance with requirements which are intended to ensure an acceptable level of safety. This demonstration however includes certain accepted assumptions and predicted behaviours, such as:

- fatigue behaviour is based on analysis supported by test,
- modelling techniques are used for Aircraft Flight Manual (AFM) performances calculations,
- the systems safety analyses give predictions of what the systems failure modes, effects and probabilities may be,
- the system components reliability figures are predicted values derived from general experience, tests or analysis,
- the crew is expected to have the skill to apply the procedures correctly, and
- the aircraft is assumed to be maintained in accordance with the prescribed instructions for continuing airworthiness (or maintenance programme), etc.

In service experience, additional testing, further analysis, etc, may show that certain initially accepted assumptions are not correct. Thus, certain conditions initially demonstrated as safe, are revealed by experience as unsafe. In this case, it is necessary to mandate corrective actions in order to restore a level of safety consistent with the applicable certification requirements.

See DASR AMC 21.A.3B(b) for definition of 'unsafe condition' used in DASR 21.A.3B(b).2.

2. GUIDELINES FOR ESTABLISHING IF A CONDITION IS UNSAFE

The following paragraphs give general guidelines for analysing the reported events and determining if an unsafe condition exists, and are provided for each type of product, part or appliance subject to a specific airworthiness approval: Military Type-Certificates (MTC) or Military Supplemental Type-Certificates (MSTC) for aircraft, engines or propellers, or Australian Military Technical Standard Orders (AUSMTSO).

This analysis may be qualitative or quantitative, ie formal and quantitative safety analyses may not be available for older or small aircraft. In such cases, the level of analysis are to be consistent with that required by the airworthiness requirements and may be based on engineering judgement supported by service experience data.

2.1 Analysis method for aircraft

2.1.1 – Accidents or incidents without any aircraft, engines, system, propeller or part or appliance malfunction or failure

When an accident/incident does not involve any component malfunction or failure but when a crew human factor has been a contributing factor, this has to be assessed from a human-machine interface standpoint to determine whether the design is adequate or not. Paragraph 2.5 gives further details on this aspect.

2.1.2 – Events involving an aircraft, engines, system, propeller or part or appliance failure, malfunction or defect

The general approach for analysis of in service events caused by malfunctions, failures or defects will be to analyse the actual failure effects, taking into account previously unforeseen failure modes or improper or unforeseen operating conditions revealed by service experience.

These events may have occurred in service, or have been identified during maintenance, or been identified as a result of subsequent tests, analyses, or quality control.

These may result from a design deficiency or a production deficiency (non-conformity with the type design), or from improper maintenance. In this case, it has to be determined if improper maintenance is limited to one aircraft, in which case an airworthiness directive may not be issued, or if it is likely to be a general problem due to improper design and/or maintenance procedures, as detailed in paragraph 2.5.

2.1.2.1 – Flight

An unsafe condition exists if:

- There is a significant shortfall of the actual performance compared to the approved performance (taking into account the accuracy of the performance calculation method), or
- The handling qualities, although having been found to comply with the applicable airworthiness requirements at the time of initial approval, are subsequently shown by service experience not to comply.

2.1.2.2 – Structural or mechanical systems

- An unsafe condition exists if the deficiency may lead to a structural or mechanical failure which:
- Could exist in a Principal Structural Element that has not been qualified as damage tolerant. Principal Structural Elements are those which contribute significantly to carrying flight, ground, and pressurisation loads, and whose failure could result in a catastrophic failure of the aircraft.
- Typical examples of such elements are listed, as guidance, in EASA Certification Specification for Large Aircraft (CS–25) AMC 25.571(a) 'damage tolerance and fatigue evaluation of structure', and in the equivalent material for rotorcraft.
- Could exist in a Principal Structural Element that has been qualified as damage tolerant, but for which the established inspections, or other procedures, have been shown to be, or may be, inadequate to prevent catastrophic failure.
- Could reduce the structural stiffness to such an extent that the required flutter, divergence or control reversal margins are no longer achieved.
- Could result in the loss of a structural piece that could damage vital parts of the aircraft, cause serious or fatal injuries to persons other than occupants.
- Could, under ultimate load conditions, result in the liberation of items of mass that may injure occupants of the aircraft.
- Could jeopardise proper operation of systems and may lead to hazardous or catastrophic consequences, if this effect has not been taken adequately into account in the initial certification safety assessment.

2.1.2.3 – Systems

The consequences of reported systems components malfunctions, failures or defects are to be analysed.

For this analysis, the certification data may be used as supporting material, in particular systems safety analyses.

The general approach for analysis of in service events caused by systems malfunctions, failures or defects will be to analyse the actual failure effects.

As a result of this analysis, an unsafe condition will be assumed if it cannot be shown that the safety objectives for hazardous and catastrophic failure conditions are still achieved, taking into account the actual failure modes and rates of the components affected by the reported deficiency.

The failure probability of a system component may be affected by:

- A design deficiency (the design does not meet the specified reliability or performance);
- A production deficiency (non-conformity with the certified type design) that affects either all components, or a certain batch of components;

- Improper installation (for instance, insufficient clearance of pipes to surrounding structure);
- Susceptibility to adverse environment (corrosion, moisture, temperature, vibrations etc.);
- Ageing effects (failure rate increase when the component ages);
- Improper maintenance.

When the failure of a component is not immediately detectable (hidden or latent failures), it is often difficult to have a reasonably accurate estimation of the component failure rate since the only data available are usually results of maintenance or flight crew checks. This failure probability is therefore be conservatively assessed.

As it is difficult to justify that safety objectives for the following systems are still met, a deficiency affecting these types of systems may often lead to a mandatory corrective action:

- Back up emergency systems, or
- Fire detection and protection systems (including shut off means).

Deficiencies affecting systems used during an emergency evacuation (emergency exits, evacuation assist means, emergency lighting system ...) and to locate the site of a crash (Emergency Locator Transmitter) will also often lead to mandatory corrective action.

2.1.2.4 – Others

In addition to the above, the following conditions are considered unsafe:

- There is a deficiency in certain components which are involved in fire protection or which are intended to minimise/retard the effects of fire / smoke in a survivable crash, preventing them to perform their intended function (for instance, deficiency in cargo liners or cabin material leading to non-compliance with the applicable flammability requirements).
- There is a deficiency in the lightning or High Intensity Radiated Fields protection of a system which may lead to hazardous or catastrophic failure conditions.
- There is a deficiency which could lead to a total loss of power or thrust due to common mode failure.
- If there is a deficiency in systems used to assist in the enquiry following an accident or serious incident, eg Cockpit Voice Recorder, Flight Data Recorder, preventing them to perform their intended function, the Authority may take mandatory action.

2.2 Engines

The consequences and probabilities of engine failures have to be assessed at the aircraft level in accordance with paragraph 2.1, and applicable airworthiness requirements. Further guidance at the engine level for those failures considered as hazardous can be found in CS–E–510 under EASA Certification Specification – Engines (CS–E).

The latter will be assumed to constitute unsafe conditions, unless it can be shown that the consequences at the aircraft level do not constitute an unsafe condition for a particular aircraft installation.

2.3 Propellers

The consequences and probabilities of propeller failures have to be assessed at the aircraft level in accordance with paragraph 2.1, and applicable airworthiness requirements. Further guidance at the propeller level for those failures considered as hazardous can be found in CS–P–70 under EASA Certification Specification – Propellers (CS–P).

The latter will be assumed to constitute unsafe conditions, unless it can be shown that the consequences at the aircraft level do not constitute an unsafe condition for a particular aircraft installation.

2.4 Parts and appliances

The consequences and probabilities of equipment failures have to be assessed at the aircraft level in accordance with paragraph 2.1.

2.5 Human factors aspects in establishing and correcting unsafe conditions

This paragraph provides guidance on the way to treat an unsafe condition resulting from a maintenance or crew error observed in service.

It is recognised that human factors techniques are under development. However, the following is a preliminary guidance on the subject.

Systematic review is to be used to assess whether the crew or maintenance error raises issues that require regulatory action (whether in design or other areas), or is to be noted as an isolated event without intervention. This may need the establishment of a multidisciplinary team (designers, crews, human factors experts, maintenance experts, operators etc.)

The assessment is to include at least the following:

- Characteristics of the design intended to prevent or discourage incorrect assembly or operation;
- Characteristics of the design that allow or facilitate incorrect operation;
- Unique characteristics of a design feature differing from established design practices;
- The presence of indications or feedback that alerts the operator to an erroneous condition;
- The existence of similar previous events, and whether or not they resulted (on those occasions) in unsafe conditions;
- Complexity of the system, associated procedures and training (has the crew a good understanding of the system and its logic after a standard crew qualification programme?);

- Clarity / accuracy / availability / currency and practical applicability of manuals and procedures;
- Any issues arising from interactions between personnel, such as shift changeover, dual inspections, team operations, supervision (or lack of it), or fatigue.

Apart from a design change, the corrective actions, if found necessary, may consist of modifications of the manuals, inspections, training programmes, and/or information to the operators about particular design features. The Authority may decide to make mandatory such corrective action if necessary.

AMC 21.A.3B(b) - Unsafe condition

An unsafe condition exists if there is factual evidence (from service experience, analysis or tests) that:

(a) An event may occur that would result in fatalities, usually with the loss of the aircraft, or reduce the capability of the aircraft or the ability of the crew to cope with adverse operating conditions to the extent that there would be:

i. A large reduction in safety margins or functional capabilities, or

ii. Physical distress or excessive workload such that the flight crew cannot be relied upon to perform their tasks accurately or completely, or

iii. Serious or fatal injury to one or more occupants,

unless it is shown that the probability of such an event is within the limit defined by the applicable airworthiness requirements, or

(b) There is an unacceptable risk of serious or fatal injury to persons other than occupants, or

(c) Design features intended to minimise the effects of survivable accidents are not performing their intended function.

NOTE 1: Non-compliance with applicable airworthiness requirements is generally considered as an unsafe condition, unless it is shown that possible events resulting from this non-compliance do not constitute an unsafe condition as defined under paragraphs (a), (b) and (c).

NOTE 2: An unsafe condition may exist even though applicable airworthiness requirements are complied with.

NOTE 3: The above definition covers the majority of cases where the Authority considers there is an unsafe condition. There may be other cases where overriding safety considerations may lead the Authority to issue an airworthiness directive.

NOTE 4: There may be cases where events can be considered as an unsafe condition if they occur too frequently (significantly beyond the applicable safety objectives) and could eventually lead to consequences listed in paragraph a) in specific operating environments. Although having less severe immediate consequences than those listed in paragraph a), the referenced events may reduce the capability of the aircraft or the ability of the crew to cope with adverse

operating conditions to the extent that there would be, for example, a significant reduction in safety margins or functional capabilities, a significant increase in crew workload, or in conditions impairing crew efficiency, or discomfort to occupants, possibly including injuries.

1. An unsafe condition has been determined by the Authority to exist in an aircraft, as a result of a deficiency in the aircraft, or an engine, propeller, part or appliance installed on this aircraft; and

2. That condition is likely to exist or develop in other aircraft, including engine, propeller, part or appliance installed on those aircraft that may be affected by this unsafe condition.

(c) When an Airworthiness Directive has to be issued by the Authority to correct the unsafe condition referred to in paragraph (b), or to require the performance of an inspection, the holder of the type-certificate, restricted type-certificate, supplemental type-certificate, major repair design approval, AUSMTSO authorisation or any other relevant approval deemed to have been issued under this DASR, shall:

1. Propose the appropriate corrective action and/or required inspections and submit details of these proposals to the Authority for approval; ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.3B(c)(1) - Airworthiness Directives for aircraft structures and propulsion systems (AUS)

For unsafe conditions related to structures and propulsion systems the proposed corrective actions and inspections should take into account the following specific considerations in addition to those of DASR AMC1 21.A.3B(c)(1).

AIRCRAFT STRUCTURE

The proposed corrective actions and inspections should be based on conservative engineering analysis and judgement. The proposal submitted to the Authority by the holder should include:

(a) Relevant assumptions and details of the analysis performed.

(b) Justification that the proposed corrective actions and inspections eliminate or otherwise minimise the risk(s) SFARP.

Most airworthiness design standards for structures are based on deterministic criteria, and it follows that proposed corrective actions and inspections will often be based on similar methods. Therefore, the guidance on compliance time under DASR 21.A.3B(d)(4) will usually not be suitable for aircraft structures unless probabilistic methods are used in development of the proposed corrective actions and inspections. Where probabilistic methods are not used, compliance times should be established using conservative analysis and judgement.

PROPULSION SYSTEMS

The proposed corrective actions and inspections should be based on:

(a) FAA AC 39–8 - Continued Airworthiness Assessment Methodologies (CAAM), or

(b) conservative engineering analysis and judgement.

The proposal submitted to the Authority by the holder should include:

(a) Relevant assumptions and input data (including fleet data and statistical model parameters).

(b) Risk profile over the full duration of the fleet management strategy.

(c) Justification that the proposed corrective actions and inspections eliminate or otherwise minimise the risk(s) SFARP

The application of FAA AC 39–8 for determining compliance time of corrective actions and inspections will typically require detailed design data and complex statistical and probabilistic analyses. The Authority expects that the propulsion system OEM will normally be involved in this process.

AMC1 21.A.3B(c)1 - Airworthiness Directives (AUS)

Corrective actions and inspections that are proposed by the holder are to eliminate all risks associated with the unsafe condition So Far As is Reasonably Practicable (SFARP), or if it is not reasonably practicable to do so, minimise the risk(s) SFARP. To fulfil this requirement, the holder should ensure that the safety risk management requirements outlined in DASR SMS.A.25(b)(2)(2.2) are applied for all safety related risks.

Foreign Airworthiness Directives

The holder may submit an AD, or equivalent, in support of the proposed corrective action where the Airworthiness Directive (AD) addresses the unsafe condition referred to in DASR 21.A.3B(b) and:

(a) has been issued by an aviation authority whose certifications are recognised by DASA, and

(b) has been assessed as applicable to the ADF type design in accordance with DASR AMC2 21.A.3A(a).

2. Following the approval by the Authority of the corrective action and/or required inspections referred to under subparagraph (c)1, make available to all known operators or owners of the product, part or appliance and, on request, to any person required to comply with the airworthiness directive, appropriate descriptive data and accomplishment instructions.

(d) An Airworthiness Directive shall contain at least the following information:

1. An identification of the unsafe condition;

2. An identification of the affected aircraft; operating and maintenance associated documentation;

3. The action(s) required;

4. The compliance time for the required action(s); ▸ **GM**

GM 21.A.3B(d)(4) - Compliance time charts for military aircraft

If it is not possible to find mitigations and/or limitations that re-establish compliance with all the applicable safety requirements, an increased risk for an individual failure could be acceptable for a fixed period of time if it is demonstrated that during this period the cumulative probability of catastrophic event per flight hour is still compliant with the type-certification basis.

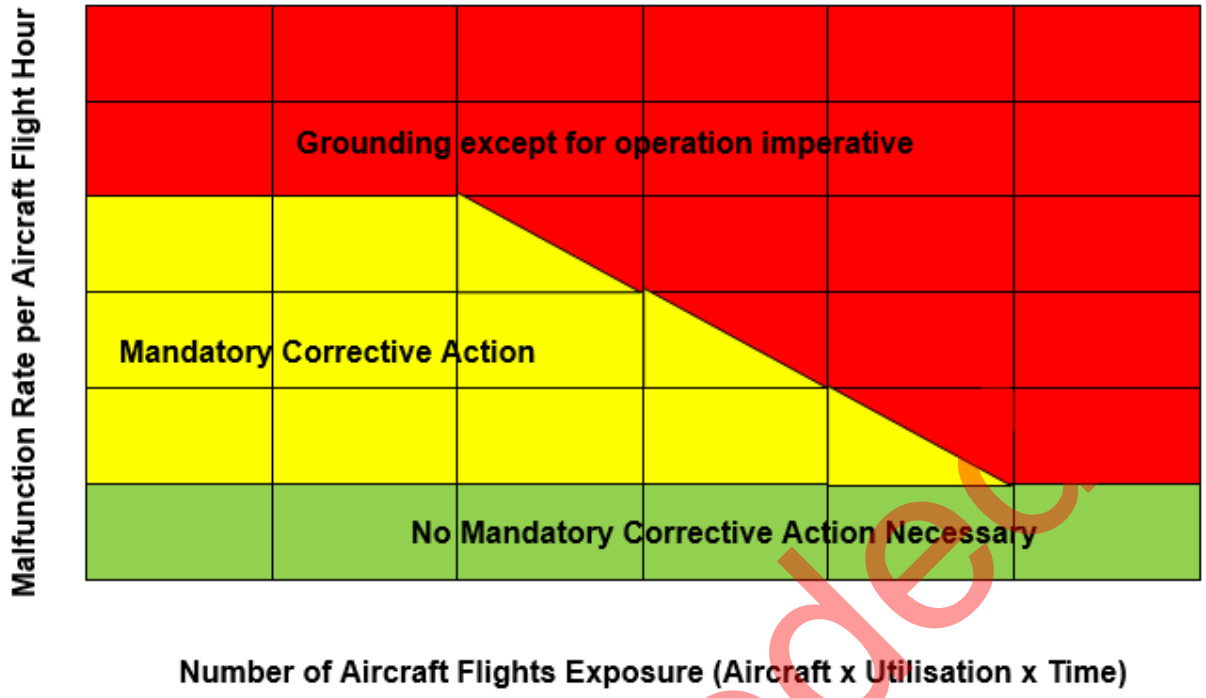
Exceptions are possible in accordance with National regulations.

The residual risk during the time allowed to fix the defect is to be identified and minimized. Risk assessment techniques could be used to establish the deadline period to fix defects as agreed by the National Authority.

The civil regulations EASA Part 21 (21.A.3B) allow a time period that is directly related to the level risk, ie higher the risk the shorter the time period. These regulations have hard limits for the maximum instantaneous risk, the maximum risk for an individual aircraft and maximum cumulative risk for the fleet. The basis of these regulations considers typical civil operation, of 10 major safety campaigns during an aircraft life, a hull life of 60,000 hours and that 75% of the risk is attributed to the design. Using the above assumptions they calculate an acceptable time period for restoration of risk levels to certification levels.

For military aircraft the above assumptions are not necessarily valid and the acceptable levels of risk likely to be different, however the principles of the civil system can be equally applied to the military regulations. The graphical representation below, on a logarithmic scale, is adapted from civil regulations AMC to EASA Part 21.A.3B, without the numerical limits, and can be used to enable the Authority (where national regulations allow) to determine appropriate numerical limits, considering the role of the aircraft. There will be different limits for Catastrophic and Hazardous failures.

Risk and Reaction Times



5. The date of entry into force.

21.A.4 - Co-ordination between design and production

Each holder of a type-certificate, restricted type-certificate, supplemental type-certificate, AUSMTSO authorisation, approval of a change to type certificate or approval of a repair design, shall ensure collaboration between the design organisation and the production organisation as necessary to achieve:

(a) The satisfactory coordination of design and production required by DASR 21.A.122, DASR 21.A.130(b)(3) and (b)(4), DASR 21.A.133 or DASR 21.A.165(c)(2) and (c)(3), as appropriate; and

(b) The proper support of the continued airworthiness of the product, part or appliance. ▸ **AMC**

AMC 21.A.4(b) - Transferring of information on eligibility and approval status from the design organisations to production organisations

Where there is a need to provide (normally outside the design organisation) a visible statement of approved design data or airworthiness data associated with the approved design data, the following minimum information should be provided. The need for a visible statement may be in relation to Company holding a military production organisation approval (MPOA) in relation to DASR 21.A.163(c).

The procedures related to the use of forms or other electronic means to provide this information should be agreed with the Authority.

Information to be provided:

Company Name: the name of the responsible design organisation (MTC, MSTC, approval of repair or minor change design, AUSMTSO authorisation holder) issuing the information.

Date: the date at which the information is released.

Eligibility: indicate the specific products or articles, in case of AUSMTSO authorisation, for which data have been approved.

Identification: the part number of the part or appliance. Preference should be given to the use of the Illustrated Parts Catalogue (IPC) designation. Alternatively the reference to the instruction for continuing airworthiness could be stated. Marking requirements of DASR 21 Section A Subpart Q should be taken into account.

Description: the name or description of the part or document should be given. In the case of a part or appliance preference should be given to use of IPC designation. The description is to include reference to any applicable AUSMTSO authorisation or AUSMPA marking, or previous national approvals still valid.

Purpose of data: the reason for the provision of the information should be stated by the design approval holder.

Examples:

a. Provision of approved design data to a production organisation to permit manufacture (AMC1 to 21.A.133(b) and AMC1 to 21.A.133(c))

b. Information regarding eligibility for installation (replacement parts, repair, modification, etc.)

c. Direct Delivery Authorisation (AMC1 to 21.A.133(b) and AMC1 to 21.A.133(c)).

If the data is in support of a change or repair, then reference to the aircraft level approval should be given (make reference to the approved MSTC, change or repair).

Limitations/Remarks: state any information, either directly or by reference to supporting documentation that identifies any particular data or limitations (including specific importing requirements) needed by a production organisation to complete Block 12 of the DASR Form 1—Authorised Release Certificate.

Approval: provide reference information related to the approval of the data (Authority document or MDOA privilege).

Authorised signature: name and hand-written normal or electronic signature of a person who has written authority from the design organisation, as indicated in the procedures agreed with the Authority.

SUBPART B - MILITARY TYPE-CERTIFICATES AND MILITARY RESTRICTED TYPE-CERTIFICATES

21.A.11 - Scope

This Subpart establishes the procedure for issuing Military Type-Certificates (MTCs) for products and Military Restricted Type-Certificates (MRTCs) for aircraft, and establishes the rights and obligations of the applicants for, and holders of, those certificates.

21.A.13 - Eligibility

Any organisation that has demonstrated, or is in the process of demonstrating, its capability in accordance with DASR 21.A.14 shall be eligible as an applicant for a type-certificate or a restricted type-certificate under the conditions laid down in this Subpart.

21.A.14 - Demonstration of capability

(a) Any organisation applying for a type-certificate or restricted type-certificate shall demonstrate its capability by holding a military design organisation approval (MDOA), issued by the Authority in accordance with DASR 21 Subpart J.

(b) By way of exception from paragraph (a), as an alternative procedure to demonstrate its capability, an applicant may seek Authority agreement for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this DASR, under the following: ▸ **AMC** ▸ **GM**

GM 21.A.14(b) - Eligibility for alternative procedures

Design organisations approved under DASR 21 Section A Subpart J ("Subpart J MDOA") is to be the normal approach for military type-certification, military supplemental type-certification, approval of major changes to type design or approval of major repair design, except when agreed otherwise by the Authority in accordance with DASR 21.A.14, DASR 21.A.112B and DASR 21.A.432B.

The acceptance of alternative procedures, as defined in DASR AMC 21.A.14(b), is to be limited where the Authority finds it more appropriate for the conduct of military type-certification, military supplemental type-certification, approval of changes to type design, approval of repair design.

Products with simple or limited scope of design

As the complexity of a product grows, so does the size of a design organisation, along with an increasing degree of specialisation of various parts of the organisation to meet the growing demands of different disciplines. This creates complex communication relationships and workflows.

'Simple or limited scope of design' should therefore be understood as the opposite of 'complex', see also DASR AMC 21.A.15(b)(6) Level of involvement (LoI).

When determining the complexity of the scope of design, the complexity of the product as well as the structure of the design organisation and relationships with suppliers should be considered.

AMC 21.A.14(b) - Alternative procedures

Alternative procedures are an acceptable means to demonstrate design capability in the cases described in DASR 21.A.14, DASR 21.A.112B, or DASR 21.A.432B. In the context of specific projects, the implementation of procedures required for a design organisation approval in accordance with DASR 21 Subpart J will ensure that the applicant performs the relevant activities as expected by the Authority. The establishment of these alternative procedures may be seen as a starting phase for a Subpart J MDOA, allowing at a later stage, at the discretion of the applicant, to move towards a full Subpart J MDOA by the addition of the missing elements.

1. Scope

1.1 As alternative to MDOA, a manual of procedures should set out specific design practices, resources and sequence of activities relevant for the specific projects, taking account of DASR 21 requirements.

1.2 These procedures should be concise and limited to the information needed for quality and proper control of activities by the applicant/holder, and by the Authority.

2. Management of the (supplemental) type-certification process

2.1 Certification Programme: See DASR AMC 21.A.15(b) for type-certification and DASR AMC 21.A.93(b) for supplemental type-certification.

2.2 Compliance demonstration: see DASR GM 21.A.20

2.3 Reporting: see DASR GM 21.A.20(b)

2.4 Compliance documentation: see DASR AMC 21.A.20(c).

2.5 Declaration of compliance: see GM 21.A.20(d)

3. Management of changes to type certificates, repair designs and production deviations

3.1 Management of changes to a type certificate or supplemental type certificate (hereinafter referred to as 'changes'), repair designs and production deviations from the approved design data

The applicant should provide procedures that are acceptable to the Authority for classification and approval of changes (see paragraphs 3.2 and 3.3), and repair designs and production deviations from the approved design data (see paragraph 3.4).

3.2 Classification

3.2.1 – Content

The procedure should address the following points:

- the identification of the product configuration(s) to which the change is to be made,

- the identification of the areas of the product that are changed or affected by the change,
- the identification of any reinvestigations that are necessary (see DASR 21.A.93(b)(2)), including the identification of the applicable airworthiness requirements, or environmental protection requirements and means of compliance,
- changes initiated by subcontractors;
- documents to justify the classification;
- authorised signatories.

The criteria used for classification should be in compliance with DASR 21.A.91 and corresponding interpretations.

3.2.2 – Identification of changes

The procedure should indicate how the following are identified:

- major changes;
- those minor changes where additional work is necessary to demonstrate compliance with the airworthiness requirements;
- other minor changes requiring no further demonstrating of compliance.

3.2.3 – Airworthiness classification

The procedure should show how the effects on airworthiness are analysed, from the very beginning, by reference to the applicable airworthiness requirements.

If no specific airworthiness requirements are applicable to the change, the above review should be carried out at the level of the part or system where the change is integrated and where specific airworthiness requirements are applicable.

3.2.4 – Control of changes initiated by subcontractors

The procedure should indicate, directly or by cross-reference to written procedures, how changes initiated by subcontractors are controlled.

3.2.5 – Documents to justify the classification

All decisions of classification of changes should be documented and approved by the Authority. It may be in the format of meeting notes or register.

3.2.6 – Authorised signatories

The procedure should identify the persons authorised to sign the proposed classification before release to the Authority for approval.

3.3 Approval of changes

3.3.1 – Content

The procedure should address the following points:

- compliance documentation;
- approval process;
- authorised signatories.

3.3.2 – Compliance documentation

For major changes and those minor changes where additional work to demonstrate compliance with the applicable type-certification basis and environmental protection requirements (hereinafter referred to as the 'certification basis') is necessary, compliance documentation should be established in accordance with DASR AMC 21.A.20(c).

3.3.3 – Approval process

A. For the approval of major changes, a certification programme as defined in DASR AMC 21.A.93(b) must be established.

B. For major changes and those minor changes where additional work to show compliance with the applicable certification basis is necessary, the procedure should define a document to support the approval process.

This document should include at least:

- identification and brief description of the change and its classification;
- references to the applicable certification basis;
- references to the compliance documents;
- effects, if any, on limitations and on the approved design data;
- the name of the authorised signatory.

C. For the other minor changes, the procedure should define a means:

- to identify the change;
- to present the change to the Authority for approval.

3.3.4 – Authorised signatories

The procedure should identify the persons authorised to sign the change before release to the Authority for approval.

3.4 Repair designs and production deviations from the approved design data

A procedure following the principles of paragraphs 3.2 and 3.3 should be established for the classification and approval of repair designs and unintentional deviations from the approved design data occurring in production (concessions or non-conformance's). For repair designs, the procedure should be established in accordance with DASR 21 Section

A Subpart M and associated acceptable means of compliance (AMC) or guidance material (GM).

4. Issue of data and information (including instructions) to owners, operating organisations and others required to use the data and information

4.1 General

(Reserved)

4.2 Data related to changes

The data and information (including instructions) issued by the holder of a (military) design approval (a MTC, MSTC, approval of a change, approval of repair design) are intended to provide the owners of a product with all necessary data to embody a change or repair on the product, or to inspect it.

The data and information (including instructions) may be issued in a format of a Service Bulletin as defined in S1000D Chapters, or in Structural Repair Manuals, Maintenance Manuals, Engine and Propeller Manuals, etc.

The preparation of this data involves design, production and inspection. The three aspects should be properly addressed and a procedure should exist.

4.3 Procedure

The procedure should address the following points:

- preparation;
- verification of technical consistency with corresponding approved change(s), repair design(s) or approved data, including effectivity, description, effects on airworthiness or operational suitability, especially when limitations are changed;
- verification of the feasibility in practical applications;
- approval for the release of the data and information.

The procedure should include the information or instructions prepared by subcontractors or vendors, and declared applicable to its products by the holder of the MTC, MSTC, approval of changes to type design or approval of repair design.

4.4 Statement

The data and information (including instructions) should contain a statement showing Authority approval.

5. Obligations addressed in DASR 21.A.44 (MTC holder), DASR 21.A.118A (STC holder) or DASR 21.A.451 (major repair design approval holder)

The applicant for alternative procedures to demonstrate their design capabilities should establish the necessary procedures to show to the Authority how it will fulfil the obligations required under DASR 21.A.44, DASR 21.A.118A or DASR 21.A.451, as appropriate.

6. Control of design subcontractors

The applicant for alternative procedures to demonstrate their design capabilities should establish the necessary procedures to show to the Authority how it will control design subcontractors and ensure the acceptability of the parts or appliances that are designed, or the design tasks that are performed.

1. Products with simple or limited scope of design.

2. Starting phase toward a military design organisation approval or limited duration of design activities.

3. Products for which the major part of the Type Design certification activities have already been accepted by the Authority concerned.

4. Reserved.

(c) By way of exception from paragraph (a) and (b), any government organisation applying for a type-certificate or restricted type-certificate may demonstrate its capability by having an agreement in place, accepted by the Authority, in accordance with DASR 21.A.2 with a design organisation which has access to the type design data. The agreement shall include detailed statements how the actions and obligations are delegated to enable the government organisation, in cooperation with the contracted organisation, to comply with the requirements of DASR 21 Subpart J, including demonstration of compliance with DASR 21.A.44. ▸ **AMC** ▸ **AMC1** ▸ **GM**

GM 21.A.14(c) - MTC holder organisations (AUS)

Unlike civil TC obligations, Defence MTC and MRTC obligations are not enforceable via national legislation; DASR (in general) are enforceable for commercial organisations only via contract law. As a result, during the certification or approval process, the Authority will assess a nominated Australian government organisation, and when satisfied issue the Australian MTC to that organisation. That organisation becomes responsible for conduct of the holder obligations as detailed in DASR 21.A.44. DASR AMC 21.A.14(c) defines the assessment criteria for the MTC holder organisation that will conduct the holder responsibilities and manage major changes to the issued MTC or MRTC.

Contracting of holder responsibilities. Where the government organisation does not meet DASR 21.A.14(a) or (b) provisions, or is unable to meet all obligations internally DASR 21.A.14(c) allows for the government organisation to contract the provision of the DASR 21.A.44, DASR 21.A.118A and DASR 21.A.451(a) aligned holder obligations to commercial engineering organisations under DASR 21.A.2.

Where extant procurement/ support arrangements preclude a DASR MDO being contracted under these provisions, the holder organisation will need to use the DASA recognition framework to assist demonstration of the external design organisation as suitable to meet the DASR 21 Subpart J requirements and should also pay particular attention to the equivalence of obligations in the areas of major/minor design change classification (DASR 21.A.91) and reporting to the Authority of failures, malfunctions and defects (DASR 21.A.3A). This is to ensure that Authority interfaces are established at the same equivalent level and hence the Authority's safety assurance function is not compromised by the incorrect translation of processes. Attention should also focus on the processes to meet the Safety Management

System requirements (DASR 21.A.239(c)) equivalence. This is to ensure that the holder organisation's risk management of operational hazards is based on a sound risk and safety management system.

Application. During the Certification Program culminating in issue of a new MTC or MRTC the Project Office will identify an appropriate government organisation best placed to fulfil the DASR 21.A.44 holder obligations. The PO, in conjunction with the proposed MTC holder will develop an exposition, known as the Type Continued Airworthiness Exposition (TCAE), to show how compliance with the DASR 21J requirements and holder obligations is achieved.

Type Continued Airworthiness Exposition. The purpose of the TCAE is to inform the Authority of the proposed MTC holder management arrangements. The nature of those arrangements will vary considerably between aircraft types, and will depend on the product's design itself; how the product is operated; and the depth and ability of organisations supporting the product's design.

A TCAE satisfies the following needs:

a. Contains, or references to, the agreement that shows how the government organisation, in cooperation with the supporting design organisation(s) will comply with the requirements of DASR 21 Subpart J, including demonstration of compliance in meeting the holder obligation.

b. Provides confidence that the applicant government organisation understands the nature of the product's design and its supporting organisations sufficiently to meet the holder obligations.

c. Identifies the senior Defence engineer responsible for oversighting delivery of the holder functions.

d. Provides key information influencing the specific solution to meet the MTC holder obligations, particularly where obligations are fulfilled via non-commercial arrangement, eg via foreign military sales or other global fleet support arrangement.

e. Is a working document able to expand to reflect arrangements for subsequent MTC Changes, MSTC issues, and major repair design approvals.

AMC1 21.A.14(c) - Alternative Demonstration (AUS)

MTC holder demonstration of capability

Government organisations seeking to become an MTC holder shall submit a Type Continued Airworthiness Exposition (TCAE) to the Authority. The TCAE should justify the arrangements for management of the MTC and be capable of expanding for subsequent changes to type design, MSTC and major repairs.

Government organisations seeking to become a MTC holder are required to identify an individual (a senior Defence engineer) responsible for managing the in-house and contracted holder obligations. The individual shall comply with the following qualifications and experience requirements:

Qualifications:

1. Bachelor of Engineering degree in Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Software or Electrical Engineering.

2. Qualifications must be Australian accredited or assessed to be equivalent to Australian qualification by Engineers Australia, the Australian Computer Society or the Australian Institute of Project Management.

Experience:

1. Chartered Professional Engineer (CPEng) in the Institute of Engineers Australia or an equivalent professional body recognised by the IEAust.

2. Ten years of Aviation experience. The experience must comprise of at least two years' combined experience as staff of DASA or an organisation holding a Design Organisation Approval under EASA, CASA, EMAR or DASR 21 Section A Subpart J.

The TCAE should contain the following:

a. Information regarding the eligibility of the organisation to hold the Type Certificate (and subsequent changes to type design, MSTC and major repairs) in accordance with the requirements of DASR 21.A.14 (and / or DASR 21.A.92(a) and / or DASR 21.A.112B and / or DASR 21.A.117(c) and / or DASR 21.A.432B if applicable). This includes demonstration against the recognition framework criteria (see below) where external design organisations have been engaged via DASR 21.A.2 to provide DASR 21 Subpart J, or holder functions.

b. An overview of the Product's Type Design and Certification including subsequent modifications (and / or Supplementary Certificates and major repairs if applicable). Access arrangements to type design data for the life of type should be included here.

c. ADF configuration, Role and Environment (including a link to the SOIU).

d. ADF Capabilities to support the Product including specialist support.

e. Key organisations involved in the management of the product's design, including their contractual relationships with Defence; their maturity, experience, capabilities, limitations, responsiveness, quality of product, impartiality, past performance, and future viability; and any gaps in overall coverage. Information related to DASR 21 subpart J approval held by the organisation or equivalent approvals held under recognised authorities should be included.

f. An assessment of the likelihood of leveraging other military and civil operator's programs to support the Defence product's design, including Defence's ability to influence those programs, and the type of data that will be accessible.

g. Information related to the performance of holder obligations under DASR 21.A.44 (and / or DASR 21.A.118A and / or DASR 21.A.451 if applicable), including systems, processes and procedures used.

h. Information related to how the organisation, or the design organisation(s) with which they have an agreement, will perform its function as an applicant for and holder of any subsequent major changes to type design after the issue of the MTC. This information should include a methodology for major or minor classification of recognised design certifications.

i. Information related to how the requirements of DASR 21.A.42 for integration of Products, Weapons and other Systems onto the aircraft will be conducted.

j. Information about the nominated individual responsible for managing the in-house and contracted holder obligations and QTE compliance information.

k. System of managing changes to the TCAE including frequency of review and notifying the Authority of any changes.

l. How the organisation conducts internal governance including over their supporting design organisation(s)/network.

m. A compliance matrix describing how the organisation shall comply with each DASR applicable to fulfil the MTC Holder obligations.

n. Information related to how the requirements of DASR 21.A.3A for reporting failures, malfunction, defects and the rectification of unsafe conditions to the type design will be conducted.

Project Office demonstration of capability

Government organisations, (e.g. an Acquisition Project Office (PO)) seeking to apply for MTC / MRTC or MSTC also attain eligibility via DASR 21.A.14(c). PO's should engage DASA to obtain DASA acceptance on the arrangements for:

a. establishing procedures for a Design Assurance System that:

   1. complies with the requirements of DASR 21 Subpart J, or

   2. where the PO expects to exclusively base their application upon an aircraft type-design that has been certified by a recognised CAA / MAA, is sufficient to conduct the required certification programme activities (includes developing the Defence TCB and CPP, conduct applicability assessment against Defence CRE and context, and provide a declaration of compliance).

b. when engaging an external design organisation, include demonstration against the recognition criteria as described below.

The agreed arrangements should be formalised within relevant project or acquisition documents (such as the Acquisition Airworthiness Management Plan).

DASA recognition of other CAA / MAA

Where possible the engaged design organisation(s) should be approved under DASR 21 Subpart J (Military Design Organisation Approval). If the government organisation engages an external

design organisation the DASA recognition framework should be used to support the eligibility assessment. Certificates for each recognised authority are available through the DASA website.

Requirements applicable to all applicants are:

a. the external design organisation (DO) is an approved design organisation within a recognised CAA / MAA or develops designs for certification by a recognised CAA / MAA,

b. the DO has appropriate technical scope and expertise for the ADF design,

c. the DO's systems, processes and personnel used in developing other designs for certification by the parent CAA / MAA will be used in the design development or holder activities associated with the ADF design,

d. the DO will provide an attestation of compliance against the Type Certification Basis for any provided design product,

e. any oversight by the DO's parent CAA / MAA is appropriate, and

f. where applicable, arrangements for DASA oversight are in place.

The government organisation should monitor the external DO to ensure continued adherence to requirements during the design development activities or provision of holder duties.

AMC 21.A.14(c) - Alternative Demonstration

In specific cases, governmental organisations might be required to act as the holder of military type-certificates or restricted type-certificates. Often, these entities do not meet the qualification requirement of 21.A.14(a) by own means. In such cases, 21.A.2 is usually considered being sufficient to discharge actions and obligations to another person or organisation. However, some legal arrangements still require the accountability to remain with the government owned entity, in which case the qualification requirement of 21.A.14(a) can only be met jointly. In such cases, the agreement required by 21.A.2 should also provide sufficient detail on the processes and procedures governing the cooperation, including allocation of tasks, rights, obligations, and privileges among the entities involved.

To undertake actions and obligations on behalf of the holder of a military certificate, the contracted organisation shall

- ensure the necessary access to the data related to the type design
- establish sufficient cooperation with the Authority to ensure oversight

In the case that alternative procedures (refer to DASR 21.A.14(b)) for establishing a Design Assurance System are used, such procedures shall be acceptable to the Authority in fulfilling the obligations required under DASR 21.A.44 - Obligations of the Holder.

21.A.15 - Application

(a) An application for a type-certificate or restricted type-certificate shall be made in a form and manner established by the Authority. ▸ **AMC** ▸ **AMC1** ▸ **GM**

GM 21.A.15(a) - Application for a Military Type Certificate

When the application for an MTC (including MRTC or MSTC) is based on a Type Certificate issued under a different legal framework (such as EASA), such a Type Certificate may contain OSD as approved data. The OSD available will be dependent of the class of the Aircraft in the following areas:

1. Minimum syllabus of pilot type rating training, including determination of type rating.
2. Definition of scope of the aircraft validation source data to support the objective qualification of simulator(s) associated to the pilot type rating training, or provisional data to support their interim qualification.
3. Minimum syllabus of maintenance certifying staff type rating training, including determination of type rating.
4. Determination type specific data for cabin crew training.
5. The master minimum equipment list.
6. Other type-related operational suitability elements.

The application for approval of such OSD will lead to the validation of this data in the scope of the military type definition and military operation of the aircraft, taking into account the difference in the assumptions that were the basis for the previously approved OSD, as well as the compatibility with Flight Crew (including Cabin Crew with airworthiness tasks such as Loadmaster) training and Maintenance Certifying Staff training.

AMC1 21.A.15(a) - Application for approval of Operational Suitability Data (OSD)

Where Operational Suitability Data (OSD) is already available for the product and/or where it is required by national regulations, an application under Subpart B, D or E should be supplemented by an application for approval of OSD.

AMC 21.A.15(a) - Form and manner

The application referenced in DASR 21.A.15 refers to the initial formal notification to the Authority of the intent to seek an MTC or MRTC. This can be achieved through notifying the Authority in writing of the intent, otherwise the submission of the first version of the certification programme will be taken as the initial application.

Final application for a type-certificate or restricted type-certificate is to be provided in writing to the Authority and shall address the requirements of DASR 21.A.21.

(b) An application for a type-certificate or restricted type-certificate shall include, as a minimum, preliminary descriptive data of the product, the intended use of the product and the kind of operation for which certification is requested. In addition, it shall include, or be supplemented after the initial application, a certification programme for the demonstration of compliance in accordance with DASR 21.A.20, consisting of: ▸ **AMC** ▸ **GM** ▸ **GM1**

GM1 to 21.A.15(b) - Certification Programme (AUS)

The certification programme for issue of an MTC / MRTC provided to the Authority by the applicant may take a variety of forms depending on the acquisition arrangements:

a. if the applicant is an MDOA holder, then the MDOA holder will develop and submit the certification programme;

b. if the applicant is a Defence Project Office and the prime design / integration organisation is an MDOA holder, or recognised equivalent, then the certification programme will be developed by the prime designer / integrator and provided to the Authority through the Defence Project Office;

c. if the Defence Project Office is the integrator of multiple design elements, then the Defence Project Office develops and submits the certification programme as the Applicant; or

d. if design organisation/s do not hold an MDOA or recognised equivalent, or have not been contracted to develop a certification programme, then the Defence Project Office will be required to develop and submit the certification programme as the Applicant.

For software certification aspects, the Authority encourages applicants to develop a Plan for Software Aspects of Certification (PSAC), or equivalent document, and provide it as an enclosure to the certification programme.

GM 21.A.15(b) - Operating Characteristics and Intended Use of the Product (AUS)

The requirements of 21.A.15(b)2 and (b)3 will normally be covered in the aircraft Statement of Operating Intent and Usage (SOIU). Where the requirements of 21.A.15(b)2 and b(3) have been addressed, to the level of detail specified in AMC 21.A.15(b), through an SOIU which has received endorsement from the Authority, the certification programme can include reference to the SOIU without need for duplication of that information. Any detail not sufficiently covered in an endorsed SOIU will need to be provided in the certification programme.

AMC 21.A.15(b) - Content of the certification programme

The certification programme is a document that allows the applicant and the Authority to manage and control the evolving product type design, as well as the process of compliance demonstration by the applicant and its verification by the Authority when required.

The certification programme may be based on modules that may be updated independently.

The level of detail in the certification programme depends on the complexity of the product and its intended use.

In particular, the following information should typically be expected:

General

– Identification of the key organisations (eg Acquisition Project Office, prime design organisation) and of the relevant personnel who make decisions affecting airworthiness

and environmental protection, and who will interface with the Authority, unless otherwise identified to the Authority (e.g. within the MDOA procedures).

– Identification of any prior certification intended to be leveraged, including details of which TCB elements will leverage prior certification, and how compliance will be demonstrated when prior certification can only be partially leveraged.

– A project schedule including major milestones.

– Subcontracting arrangements for design, environmental protection and/or production as well as military design organisation approval (MDOA) responsibility sharing.

DASR 21.A.15(b)(1) 'a detailed description of the type design, including all the configurations to be certified'

An overview of the:

– architecture, functions, systems;

– dimensions, design weights, payloads, design speeds;

– engines and power/thrust rating;

– materials and technologies;

– maximum passenger seating capacity, minimum flight and cabin/mission crew;

– cabin configuration aspects;

– options (e.g. weight variants, power/thrust rating variants, optional avionics equipment items, auxiliary power unit (APU) choices, brake options, tire options, floats, skids);

– mission (role) configuration options (other than cabin configuration), including aircraft level provisions for external stores, pods, tanks, or other similar equipment options,

– noise/emissions level; and

– other items, if considered to be more appropriate, that address the specific aeronautical product.

DASR 21.A.15(b)(2) 'proposed operating characteristics and limitations'

– Operating speed limitations.

– Service ceiling, maximum airfield elevation.

– Cabin pressure.

– Limit load factors.

– Number of passengers, minimum crew, payload, range.

– Weight and centre-of-gravity (CG) envelope and fuel loading.

– Performance.

– Environmental envelope.

– Runway surface conditions.

– Other items, if considered to be more appropriate, that address the specific aeronautical product.

DASR 21.A.15(b)(3) 'the intended use of the product and the kind of operations for which certification is requested'

– Category of aircraft (for example the civil categories defined under the FARs/CSs or the kind of military aircraft such as small fast jet, heavy airlift, rotary wing, etc.), ditching, take-off and landing on water, emergency floatation equipment.

– Extended overwater operation, high-altitude operation (above 41 000 ft).

– High-airfield operation, steep approach, short take-off and landing, Defence Long Range Operations (DLRO), all-weather operations (AWO), visual flight rules (VFR)/instrument flight rules (IFR), reduced vertical separation minimum (RVSM), performance based navigation (PBN) type, increased bank angles, single-pilot operation, flight into known icing conditions.

– Flight in ice crystal icing.

– Engine operations in ice-forming conditions, helicopter hoist operations, operation on unpaved runway, operation on narrow runway.

– Take-off and landing in tailwind.

– Volcanic-ash operation (for example operations of the type covered by EASA CS 25.1593).

– Design service goal (DSG)/limit of validity targets.

– Fatigue missions (general description of assumptions for flight durations, main phases, and parameters, as appropriate).

– Military kind of operations (e.g. Air to Air refuelling, Low Level Flight, Ship-Based-Operations and Landing, carriage or release of weapons and stores)

– Other items, if considered to be more appropriate, that address the specific aeronautical product.

DASR 21.A.15(b)(4) 'a proposal for the initial type-certification basis and environmental protection requirements, considering the requirements and options specified in DASR 21.A.17A, and 21.A.18'

The proposed certification basis should include applicable airworthiness codes, proposed special conditions, proposed equivalent safety findings, as well as a proposed 'elect to comply' and proposed exceptions, as applicable. When the certification basis is established (refer to AMC 21.A.17A), the justification for the de-selection of criteria (tailoring) as well as justification for the mapping of specific requirements to each selected criteria shall be documented.

DASR 21.A.15(b)(5) 'a proposal for a breakdown of the certification programme into meaningful groups of compliance demonstration activities and data, hereinafter referred as

“compliance demonstration items” (CDIs), including references to their proposed means of compliance and related compliance documents’

See DASR AMC 21.A.15(b)(5) for the determination of the compliance demonstration items (CDIs).

DASR 21.A.15(b)(6) on information relevant for the determination of the level of involvement (LoI)

The applicant should provide sufficient detailed information about the novelty, complexity, and criticality aspects of each proposed CDI.

It is recommended to provide this information at the level of each technology discipline(s) affected by a proposed CDI. Further interpretative material on the necessary level of details is provided in DASR AMC 21.A.15(b)(6).

The applicant should provide detailed information about the proposed means of compliance with the applicable requirements identified under DASR 21.A.15(b)(4). The information provided should be sufficient for the Authority to determine its (initial) LoI. This should include the following, as far as this information is available at the time of submission to the Authority:

– A compliance checklist addressing each requirement, the proposed means of compliance (see **Appendix A to DASR AMC 21.A.15(b)** below for the relevant codes), and the related compliance document(s);

Appendix A to AMC 21.A.15(b) - Means of compliance codes

Type of compliance	Means of compliance	Associated compliance documents
Engineering evaluation	MC0: (a) compliance statement (b) reference to design data (c) election of methods, factors, etc. (d) definitions	(a) Design data (b) Recorded statements
	MC1: design review	(c) Descriptions (d) Drawings
	MC2: calculation/analysis	(e) Substantiation reports
	MC3: safety assessment	(f) Safety analysis
Tests	MC4: laboratory tests	(g) Test programmes (h) Test reports (i) Test interpretations
	MC5: ground tests on related product(s)	
	MC6: flight tests	
	MC8: simulation	
Inspection	MC7: design inspection/audit	(j) Inspection or audit reports
Equipment qualification	MC9: equipment qualification	Note: Equipment qualification is a process that may include all previous means of compliance at equipment level.

– Identification of industry standards (Society of Automotive Engineers (SAE), American Society for Testing and Materials (ASTM), European Organisation for Civil Aviation Equipment (EUROCAE), AeroSpace and Defence Industries Association of Europe (ASD), etc.), methodology documents, handbooks, technical procedures, technical documents

and specifications specified in the type certificate data sheet, certification memoranda, policy statements, guidance material, etc., that should be followed in the demonstration of compliance;

– When the compliance demonstration involves testing, a description of the ground and flight test article(s), test method(s), test location(s), test schedule, test house(s), test conditions (e.g. limit load, ultimate load), as well as of the intent/objective(s) of the testing; and

– When the compliance demonstration involves analyses/calculations, a description/ identification of the tools (e.g. name and version/release of the software programs) and methods used, the associated assumptions, limitations and/or conditions, as well as of the intended use and purpose; furthermore, the validation and verification of such tools and methods should be addressed.

For every aspect mentioned above, the applicant should clearly identify whether the demonstration of compliance involves any method (analysis or test) which is novel or unusual for the applicant. This should include any deviations from the published AMC to the relevant airworthiness requirements (eg EASA AMC for EASA CSs, FAA ACs for FARs, MILSTDs for military certified aircraft).

1. a detailed description of the type design, including all the configurations to be certified;

2. the proposed operating characteristics and limitations;

3. the intended use of the product and the kind of operations for which certification is requested;

4. a proposal for the initial type-certification basis, and environmental protection requirements, prepared in accordance with the requirements and options specified in DASR 21.A.17A, and 21.A.18;

5. a proposal for a breakdown of the certification programme into meaningful groups of compliance demonstration activities and data, including a proposal for the means of compliance and related compliance documents; ▸ **AMC**

AMC 21.A.15(b)(5) - Breakdown of the certification programme into compliance demonstration items (CDIs)

1. **What is a CDI?**

A CDI is a meaningful group of compliance demonstration activities and data identified in the certification programme which can be considered in isolation for the purpose of performing the risk assessment that allows the Authority to determine its level of involvement (LoI) using a risk-based approach.

The possibility to create this grouping of compliance demonstration activities and data is intended to facilitate the risk assessment. However, there may be cases in which the risk assessment may also be performed at the level of the compliance demonstration activity or data, or at the level of the whole certification project.

The chosen breakdown into CDIs may affect the resulting risk classes (please refer to DASR 21.A.15(b)(6) and AMC 21.A.15(b)(6)), but should not have any effect on the compliance demonstration itself or on the Authority's LoI.

2. **The grouping of compliance demonstration activities and data**

The compliance demonstration activities and data grouped in a CDI may demonstrate compliance with a requirement, a group of requirements, or even a part of a requirement. In this context, 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements as specified in DASR 21.A.18.

A CDI may comprise any of the means of compliance listed in Appendix A to DASR AMC 21.A.15(b).

CDIs may be tailored to the scope and size of the project. On simple projects, a CDI may address all the compliance demonstration activities within a given technical area (e.g. avionics, flight, structures, hydromechanical systems, etc.) or of the whole project.

A CDI should not be too large, by combining completely unrelated compliance demonstration activities or data, so that it becomes meaningless, but neither should it be so small that it might not be considered in isolation from some other related compliance demonstration activities or data.

A way of meaningfully grouping compliance demonstration activities and data, for example, is to select some activities and data and group them into a single CDI, as the certification programme must already contain the applicable requirements, the proposed means of compliance for each requirement, as well as the associated compliance documents for each means of compliance.

Another way to meaningfully group the data is to do it at the level of the technically related compliance demonstration activities and data. This may facilitate the assessment of those activities and data against the novelty, complexity, and criticality criteria (see DASR 21.A.15(b)(6) and AMC 21.A.15(b)(6)). The resultant CDI may encompass various means of compliance.

3. **Description of CDIs**

Each CDI should be sufficiently described in the certification programme, and should detail the following:

– the scope of the CDI; and

– the information on the novelty, complexity, and criticality of the item being certified.

However, in cases where the rationale of the assessment is obvious, it is considered to be sufficient to indicate whether or not a CDI is novel or complex, and whether or not the impact is critical.

Note: Obvious cases are cases for which the classification is straightforward and does not require additional clarifications. In general, applicant explanations/notes regarding the proposed classification should be provided, since this will also facilitate the

acceptance of the LOI proposal. Nevertheless, to avoid unnecessary additional effort, these explanations can be omitted if they are obvious.

Additionally, it is recommended to identify the technology discipline(s) affected by each CDI, as this will support the determination of the novelty, complexity, and criticality, and finally identify the performance of the military design organisation approval (MDOA) holder.

6. a proposal for the assessment of the meaningful groups of compliance demonstration activities and data, addressing the likelihood of an unidentified non-compliance with the type-certification basis or environmental protection requirements and the potential impact of that non-compliance on product safety or environmental protection; and ▸ **AMC** ▸ **GM**

GM 21.A.15(b)(6) - Level of Involvement (AUS)

The Authority will determine the depth and extent of its inspections for each group of compliance demonstration activities and data, based on the information provided in the certification programme and the applicant proposal.

The Authority determination of LoI will be confirmed as part of the Authority's acceptance of the certification programme. The Authority LoI must be confirmed as completed prior to the applicant issuing the final declaration of compliance required by DASR 21.A.20(d).

The depth and extent of the Authority inspections may change throughout the project in order to account for changes that affect the basis of initial determinations. The provisions of DASR 21.A.257(b) continue to apply.

The Authority may appoint individuals outside the Authority, including individuals within another CAA/MAA, to complete the Authority inspections.

AMC 21.A.15(b)(6) - Level of Involvement

1. Definitions

Risk: the combination of the likelihood and the potential impact of a non-compliance with part of the certification basis.

Likelihood: a prediction of how likely an occurrence of non-compliance with part of the certification basis is, based on a combination of the novelty and complexity of the proposed design and its related compliance demonstration activities, as well as on the performance of the design organisation.

Criticality: a measure of the potential impact of a non-compliance with part of the certification basis on product safety or on the environment.

Compliance demonstration item (CDI): a meaningful group of compliance demonstration activities and data of the certification programme, which can be considered in isolation for the purpose of performing a risk assessment.

Technology discipline(s): The Authority's certification team may be structured in sub-groups (like EASA panels) covering dedicated areas of expertise and being composed of one or more experts who are responsible for a particular technical area.

Discipline: a discipline is a technical subarea of a certification panel.

Level of involvement (LoI): the compliance demonstration activities and data that the Authority retains for verification during the certification process, as well as the depth of the verification.

2. Background

The applicant has to submit a certification programme for their compliance demonstrations in accordance with DASR 21.A.15(b). The applicant has to break down the certification programme into meaningful groups of compliance demonstration activities and data, hereinafter referred as 'CDIs', and provide their proposal for the Authority's LoI.

The applicant should also indicate the technology discipline(s) that is (are) affected by each CDI.

This AMC explains:

a. how to propose the Authority's LoI for each CDI as per DASR 21.A.15(b)(6), DASR 21.A.93(b)(3)(iii), DASR 21.A.432C(b)(6) as well as DASR 21.A.113(b); and

b. how the Authority will determine its LoI.

The Authority will review the proposal and determine its LoI. Both parties, in mutual trust, should ensure that the certification project is not delayed through the LoI proposal and determination.

In determining LoI, the Authority will take into account any part of the certification programme for which 'Prior Certification from another CAA/MAA' will be leveraged to demonstrate compliance against the Type Certification Basis. In such cases, the corresponding means and methods of compliance, as well as the corresponding certification activities may not be available to the Authority. To support the use of prior certification, the certification programme should also include how the criteria in DASR AMC 21.A.20 will be, or have been assessed.

Additionally, in accordance with DASR 21.A.20, the applicant has the obligation to update the certification programme, as necessary, during the certification process, and report to the Authority any difficulty or event encountered during the compliance demonstration process which may require a change to the LoI that was previously notified to the applicant.

In such a case, or when the Authority has other information that affects the assumptions on which the LoI was based, the Authority will revisit its LoI determination.

In accordance with DASR 21.A.33, DASR 21.A.447 and DASR 21.A.615, irrespective of the LoI, the Authority has the right to review any data and information related to compliance demonstration.

Note: This AMC should not be considered to be interpretative material for the classification of changes or repairs.

3. Principles and generic criteria for the LoI determination

The Authority determines its LoI based on the applicant's proposal in view of the risk (the combination of the likelihood of an unidentified non-compliance and its potential impact). This is performed after proper familiarisation with the certification project in three steps:

- Step 1: identification of the likelihood of an unidentified non-compliance,
- Step 2: identification of the risk class, and
- Step 3: determination of the Authority's LoI.

This AMC contains criteria, common to all technology discipline(s), for the determination of:

- any novel or unusual features of the certification project, including operational, organisational and knowledge management aspects;
- the complexity of the design and/or compliance demonstration;
- the performance and experience of the design organisation of the applicant in the domain concerned;
- the criticality of the design or technology and the related safety and environmental risks, including those identified on similar designs; and
- the performance and experience of the design organisation of the applicant in the domain concerned.
- the data and activities to be retained by the Authority.

Note: EASA provides additional information on the criteria for the determination of the LoI in product certification, e.g. as contained in EASA Certification Memorandum (CM) 21.A/21.B-001, which may be used for reference but should not be considered to be AMC.

3.1. LoI determination at CDI level

The determination of the Authoriy's LoI may be performed at the level of the CDI (please refer to AMC 21.A.15(b)(5)).

The applicant should demonstrate that all affected elements of the type-certification basis as specified in DASR 21.A.17A and of the environmental protection requirements as specified in DASR 21.A.18, the corresponding means and methods of compliance, as well as the corresponding certification activities and data, are fully covered by the proposed CDIs. If the provided data does not clearly show that this is the case, the applicant should clearly state to the Authority that all the above-mentioned elements are fully covered.

Note: There could be different ways to 'clearly show' that all the elements of the certification basis are included in at least one CDI. For instance, this could be achieved by means of a 'CDI reference' column added in the table that lists all the elements of the certification basis.

3.2. Method for determining the likelihood of an unidentified non-compliance

3.2.1. Principle

The likelihood of an unidentified non-compliance is assessed on the basis of the following criteria:

- novelty,
- complexity, and
- the performance of the design organisation.

3.2.2. Novelty

For the purpose of risk class determination, the following simplification has been made: a CDI may be either novel or non-novel.

Whether or not a CDI is novel is based on the extent to which the respective elements of the certification project, as well as the related requirement or means of compliance, are new/novel to either the industry as a whole, or to the applicant, including their subcontractors, or from a technology discipline(s) perspective.

The determination that a CDI is novel may be driven by the use of new technology, new operations, new kind of installations, the use of new requirements or the use of new means of compliance.

When an applicant utilises a type of technology for the first time, or when that applicant is relatively unfamiliar with the technology, this technology is considered to be 'novel', even if other applicants may be already familiar with it. This also means that a type of technology may no longer be novel for one applicant, while it may still be novel for other applicants.

The following list includes some examples:

- new materials or combinations of materials;
- a new application of materials or combinations of materials;
- new manufacturing processes;
- a new or unusual aircraft configuration and/or system architecture;
- a novel reconfiguration of systems;
- a new interface or interaction with other parts or systems;
- the unusual location of a part or a system, or an unusual construction;
- a new or unusual use;
- new functions;
- new kinds of operations;
- the potential for new failure modes;
- the introduction of a new threat (e.g. new threats regarding fire, fuel, hydrogen, energy storage devices, etc.) or a new prevention/detection/mitigation method;
- new maintenance techniques;
- novel operating conditions or limitations;

– a new human-machine interface (HMI); or

– new flight or cabin crew tasks.

Note: Flight crew may also consist of additional crew members, such as load master or jump master, hoist operator etc., as applicable.
Another consideration is the extent to which the requirements, means of compliance or guidance have changed or need to be adapted due to particular novel features of the design. The following list includes some examples:

– recently issued or amended airworthiness codes with which the applicant has little or no experience;

– new or adapted special conditions;

– new or adapted equivalent safety findings;

– new or adapted exceptions;

– new or adapted guidance or interpretative material;

– new or adapted means of compliance (i.e. other than those previously applied by the applicant) or unusual means of compliance (different from the existing guidance material and/or different from industry standard practices), e.g. the replacing of tests by simulation, numerical models or analytical methods;

– the use of new or adapted industry standards or in-house methods, as well as the Authority's familiarity with these standards and methods;

– a change in methodology, tools or assumptions (compared with those previously applied by the applicant), including changes in software tools/ programs; or

– novelty in the interpretation of the results of the compliance demonstration, e.g. due to in-service occurrences (compliance demonstration results are interpreted differently from the past).

Additional new guidance/interpretative material, e.g. in the form of new EASA certification memoranda (EASA CM) or new essential requirements from the DASDRM, may be considered for the determination of novelty if its incorrect application/use may lead to an unidentified non-compliance. In the context of novelty, the time between the last similar project and the current project of the applicant should also be considered.

Regardless of the extent of an organisation's previous experience in similar projects, a CDI may be classified as novel if there are specific discontinuities in the process for transferring information and know-how within the organisation.

3.2.3 Complexity

For the purpose of risk class determination, the following simplification has been made: a CDI may be either complex or non-complex. For each CDI, the determination of whether it is complex or not may vary based on factors such as the design, technology, associated manufacturing process, compliance demonstration (including test set-ups or analysis),

interpretation of the results of the compliance demonstration, interfaces with other technical disciplines/CDIs, and the requirements. The compliance demonstration may be considered to be 'complex' for a complex (or highly integrated) system, which typically requires more effort from the applicant. The following list includes some examples:

- Compliance demonstration in which challenging assessments are required, e.g.:
  - for requirements of a subjective nature, i.e. they require a qualitative assessment, and do not have an explicit description of the means of compliance with that requirement, or the means of compliance are not a common and accepted practice; this is typically the case where the requirement uses terms such as 'subjective', 'qualitative', 'assessment' or 'suitable'/'unsuitable'
  - in contrast, engineering judgement for a very simple compliance demonstration should not be classified as 'complex';
  - a test for which extensive interpretation of the results may be anticipated;
  - an analysis that is sensitive to assumptions and could potentially result in a small margin of safety;
  - the classification of structures, depending on the conservatism of the method;
  - an advanced analysis of dynamic behaviour;
  - a multidisciplinary compliance demonstration in which several panels are involved and interface areas need to be managed (e.g. sustained engine imbalance, extended-range twin-engine operation performance standards (ETOPS), 2X.1309 assessment, flight in known icing conditions, full authority digital engine control (FADEC)-controlled engines, etc.);
  - when the representativeness of a test specimen is questionable, e.g. due to its complexity;
- the introduction of complex work-sharing scheme with system or equipment suppliers.

For major changes, the complexity of the change should be taken into account, rather than the complexity of the original system.

Whether or not a CDI is complex should be determined in a conservative manner if this cannot be determined at an early stage of the certification project. When greater clarity has been achieved, the complexity may be re-evaluated and the LoI adapted accordingly.

3.2.4. Performance of the design organisation

The assessment of the level of performance of the design organisation takes into account the applicant's experience with the applicable certification processes, including their performance on previous projects and their degree of familiarity with the applicable certification requirements.

For approved design organisations, the Authority uses relevant data to consider the design organisation's expected performance at an organisational, panel or discipline level, depending on the availability of data.

This data stems from design organisation audits, the applicant's measured level of performance on previous projects, and their performance during the development of certification programmes. The Authority shares the data with the respective design organisation in an appropriate manner.

Note: The ultimate objective is to define the organisation's performance at the discipline level.

For each CDI proposed by the applicant, the design organisation's performance associated with the affected disciplines or panels is to be considered.

If one CDI affects more panels or disciplines than the others, a conservative approach should be followed in selecting the lower performance level. As an alternative, that CDI may be assessed separately for each affected technology discipline(s).

If, for a well-established organisation, there is no shared performance data available at the panel level, it may be acceptable to propose the overall design organisation's performance. If the organisation or its scope are fundamentally new, the 'unknown' level of performance should be conservatively proposed by the applicant.

The determination of the performance of the design organisation may also take into consideration information that is more specific or more recent, e.g. experience gained during technical familiarisation with the current certification project, the performance of compliance verification engineers and of the affected technical areas, as well as the performance of the design organisation in overseeing subcontractors and suppliers.

The performance of some applicants' organisations is not known if:

- the Authority has agreed in accordance with DASR 21.A.14(b) that the applicants may use procedures that set out specific design practices, as an alternative means to demonstrate their capability (excluding military technical standard order (AUSMTSO) applicants for other than APU, covered by DASR AMC 21.A.15(b)(6))

In these cases, the assumed level of performance is 'unknown'.

Exceptionally, the Authority may consider a higher level of performance for a specific CDI if that is proposed and properly justified by the applicant.

The following list includes some examples:

- a CDI with which the Authority is fully familiar and satisfied (from previous similar projects) regarding the demonstration of compliance proposed by the applicant;
- if the applicant fully delegates the demonstration of compliance to a supplier that holds an MDOA, the performance level of the supplier may be proposed.

3.2.5. Likelihood of an unidentified non-compliance

Assessing the likelihood of an unidentified non-compliance is the first step that is necessary to determine the risk class.

The likelihood of an unidentified non-compliance should not be confused with the likelihood of occurrence of an unsafe condition as per AMC to DASR 21.A.3B(b). In fact, that AMC provides the Authority's confidence level that the design organisation addresses all the details of the certification basis for the CDI concerned, and that a non-compliance will not occur.

The likelihood of an unidentified non-compliance is established as being in one of four categories (very low, low, medium, high), depending on the level of performance of the design organisation as assessed by the Authority, and on whether the CDI is novel or complex, as follows:

Step 1 — Likelihood of an unidentified non-compliance			
CDI Performance level of the DOAH	No novel aspects, no complex aspects	No novel aspects, but complex ones; Novel aspects, but no complex ones	Novel and complex aspects
High	Very low	Low	Medium
Medium	Low	Medium	High
Low or unknown	Medium	High	High

3.3. Criticality

The second step that is necessary to determine the risk class is the assessment of the potential impact of a non-compliance on part of the certification basis regarding the airworthiness or the environmental protection of the product. For the purpose of risk class determination, the following simplification has been made: the impact of a non-compliance can be either critical or non-critical.

Some of the guidance below has been derived from DASR GM 21.A.91, not due to a major/ minor change classification, but because the same considerations may be applied to determine the effect of a non-compliance on the airworthiness or environmental protection at the CDI level. It is therefore normal that some of the CDIs of a major change that consists of several CDIs may be critical, and others may be non-critical.

The potential impact of a non-compliance within a CDI should be classified as critical if, for example:

– a function, component or system is introduced or affected where the failure of that function, component or system may contribute to a failure condition that is classified as hazardous or catastrophic at the aircraft level, for instance for 'equipment, systems and installations', e.g. where applicable as defined in EASA CS.2X.1309;

– a CDI has an appreciable effect on the human–machine interface (HMI) (displays, approved procedures, controls or alerts);

– airworthiness limitations or operating limitations are established or potentially affected;

– a CDI is affected by an existing airworthiness directive (AD), or affected by an occurrence (or occurrences) potentially subject to an AD, a known in-service issue or by a safety information bulletin (SIB); or

– a CDI affects parts that are classified as critical, e.g. as per EASA CS 27.602/29.602, CS-E 515, or that have a hazardous or catastrophic failure consequence (e.g. a principal structural element as per EASA CS 25.571).

If the classification of the potential impact of a non-compliance within a CDI as critical is based on the criterion that the CDI is affected by an AD, then the impact of a non-compliance within that CDI may be reclassified by the Authority as non-critical due to the involvement of the Authority in the continued-airworthiness process.

During the early stages of a project, the criticality in terms of the potential safety consequence of a failure may not always be known, but should be conservatively estimated and the LoI should be subsequently re-evaluated, if appropriate.

3.4. Method for the determination of risk classes

The risk is determined as a combination of the potential impact of an unidentified non-compliance with part of the certification basis (vertical axis) and of the likelihood of the unidentified non-compliance (horizontal axis) using the following matrix. As a consequence, four qualitative risk classes are established at the CDI level.

Step 2 — Risk classes				
Likelihood (see Section 3.2.5) Criticality (see Section 3.3)	Very low	Low	Medium	High
Non-critical	Class 1	Class 1	Class 2	Class 3
Critical	Class 1	Class 2	Class 3	Class 4

The various inputs and the resulting risk class determination are of a continuous nature, rather than consisting of discrete steps. The selected risk class provides the order of magnitude of the Authority's involvement and is used as a qualitative indicator for the determination of the Authority's involvement described in Section 3.5 below.

Under specific circumstances, the risk class that is determined on the basis of the above criteria may be reduced or increased on the basis of justified and recorded arguments. For a reused and well-proven item of compliance demonstration for which:

– the CDI is independent of the affected product type or model; and

– the design, operation, qualification, and installation of the product are basically the same; and

– the certification process is identical to one that was used in a modification already approved by the Authority,

the CDI may be accepted as being similar, resulting in reduced LoI, as the likelihood of an unidentified non-compliance is low. Furthermore, when an identical CDI is reused for the compliance demonstration in a new project, there is no involvement in the compliance demonstration verification, as the likelihood of an unidentified non-compliance is very low.

3.5. Determination of the Authority's LoI

The Authority's LoI in the verification of compliance demonstration is proposed by the applicant and determined by the Authority in Step 3 on the basis of the qualitative risk class identified per CDI in Step 2, as well as by applying sound engineering judgement.

The Authority's LoI is reflected in a list of activities and data, in which the Authority retains the verification of compliance demonstration (e.g. review and acceptance of compliance data, witnessing of tests, etc.), as well as the depth of the verification. The depth of the verification for individual compliance reports, data, test witnessing, etc., may range from spot checks to extensive reviews. The Authority always responds to those retained compliance demonstration activities and data with corresponding comments or a 'statement of no objection'.

In addition, some data that is not retained for verification may be requested for information. In this case, no 'statement of no objection' will be provided.

It is recommended that an LoI should be proposed for each of the technical areas (see technology disciplines) involved. Depending on the risk classes determined in Section 3.4 above, the Authority's LoI in:

a. compliance demonstration verification data; and

b. compliance demonstration activities (witnessing of tests, audits, etc.),

may be as follows:

- risk Class 1: there is no Authority involvement in verifying the compliance data/ activities performed by the applicant to demonstrate compliance at the CDI level;
- risk Class 2: the Authority's LoI is typically limited to the review of a small portion of the compliance data; there is either no participation in the compliance activities, or the Authority participates in a small number of compliance activities (witnessing of tests, audits, etc.);
- risk Class 3: in addition to the LoI defined for Class 2, the Authority's LoI typically comprises the review of a large amount of compliance data, as well as the participation in some compliance activities (witnessing of tests, audits, etc.); and
- risk Class 4: in addition to the LoI defined for Class 3, the Authority's LoI typically comprises the review of a large amount of compliance data, the detailed interpretation of test results, and the participation in a large number of compliance activities (witnessing of tests, audits, etc.).

The following activities may require the Authority's involvement:

– initial issues of, and changes to, a flight manual (for those parts that require approval by the Authority and that do not fall under the MDOA holder's privilege);

– classification of failure cases that affect the handling qualities and performance, when:

  – performed through test (in flight or in a simulator); and

  – initial issues of, and non-editorial changes to, airworthiness limitations.

If the risk assessment (Steps 1 and 2 above) is made on the level of a compliance demonstration activity or on the level of a document, the risk class provides an indication for the depth of the involvement, i.e. the verification may take place only for certain compliance data within a compliance document.

4. Documentation of the LoI

The LoI proposal in the certification programme should include the applicant's proposal regarding the compliance demonstration verification activities and data that would be retained by the Authority, as well as the data on which the LoI proposal has been based. For this purpose, the applicant should appropriately document the analysis per CDI, considering the above criteria. In cases where the rationale for the assessment is obvious, it is considered to be sufficient for the applicant to indicate whether or not a CDI is novel or complex, and whether or not the impact is critical.

The Authority documents the LoI determination by accepting the certification programme or, if it deviates from the proposal, by recording its analysis regarding the deviations from the proposal, and notifies the applicant accordingly.

5. Sampling during surveillance of the applicant

It should be noted that all the previously defined risk classes may be complemented by the sampling of project files during surveillance of the applicant, independently from the ongoing certification project. This is necessary in order to maintain confidence in the system and to constantly monitor its performance.

7. a project schedule including major milestones.

(c) After its initial submission to the Authority, the certification programme shall be updated by the applicant when there are changes to the certification project affecting any of the points 1 to 7 of (b). ▸ **GM**

GM 21.A.15(c) - Updates to the certification programme

DASR 21.A.15(b) recognises that the initial submission of the certification programme may not be fully complete, e.g. due to schedule constraints of the design, analysis and testing activities.

Furthermore, even if the initial submission of the certification programme is complete, it may be necessary to amend it throughout the duration of the project.

The certification programme should be updated and resubmitted to the Authority. In particular, updates to the following elements should be provided:

1. any complementary information that was not included in the initial submission of the certification programme;

2. any change in the intended use or kind of operations of the product itself, or of the aircraft on which the product is installed;

3. a change in the key characteristics of the product such as but not limited to any declared limits that are intended to be recorded in the type certificate data sheet (TCDS);

4. any change in the product design or its characteristics that may affect the criteria used to assess the likelihood of an unidentified non-compliance with the type-certification basis or the environmental protection requirements, including the potential impact of that non-compliance on product safety or environmental protection, as defined in DASR 21.A.15(b)(6) and DASR AMC 21.A.15(b)(6);

5. any change to the initial type-certification basis or environmental protection requirements, as applicable to the product, regardless whether the change is initiated by the Authority or by the applicant;

6. any change in the breakdown of the certification programme into compliance demonstration items (CDIs) or in the content of those CDIs;

7. any change in the proposed means of compliance, including its/their methodology;

8. any change in the structure of compliance documents that may affect the determination of the Authority's level of involvement (LoI), based on the criteria in DASR AMC 21.A.15(b)(6);

9. any relevant change to the military design organisation approval (MDOA) holder's personnel (and military design organisation (MDO) suppliers) who are involved in the project; and

10. any changes to the schedule that impact on the LoI of the Authority.

Following each update to the certification programme as submitted by the applicant, the Authority may update the determination of its LoI in accordance with AMC to DASR 21.A.15(b)(6).

(d) (Reserved)

(e) An application for a type-certificate or restricted type-certificate shall be valid for five years, unless the Authority agrees at the time of application that its product requires a longer time period for the applicant to demonstrate and declare compliance. ▸ **GM**

GM 21.A.15(e) Period of validity for the application for a Military Type Certificate (MTC) or Military Restricted Type Certificate (MRTC)

DASR 21.A.15(e) establishes a maximum period of validity for an application for an MTC or an MRTC. During this period, the type-certification basis and the environmental protection requirements (hereinafter referred to as the 'certification basis'), established in accordance with DASR 21.A.17A, and DASR 21.A.18, remain effective. However, the period of validity of the

certification basis is limited so that the standards established as part of the certification basis at the time of application do not become outdated.

For various reasons (e.g. development, business, commercial, etc.), the applicant may not be able to complete the certification within the established time limit. In this case, the applicant can apply for an extension of the initial application (see DASR 21.A.15(f)):

In this case, the applicant proposes a 'new target date' to the Authority for the issuance of the certificate. Respecting the time limits established under 21.A.15(e), the Authority may then use that date to notify airworthiness codes and standards that will become the reference for a revised certification basis.

(f) In the case where a type-certificate or restricted type-certificate has not been issued, or it is evident that it will not be issued, within the time agreed in point (e), the applicant shall apply for an extension of the validity of the application and comply with any changes to the type-certification basis and environmental protection requirements, as established and notified by the Authority in accordance with DASR 21.A.17A, and 21.A.18 for a new date that is in compliance with the time period established under (e).

▸ **GM**

GM 21.A.15(f) Period of validity for the application for a Military Type Certificate (MTC) or Military Restricted Type Certificate (MRTC)

DASR 21.A.15(e) establishes a maximum period of validity for an application for an MTC or an MRTC. During this period, the type-certification basis and the environmental protection requirements (hereinafter referred to as the 'certification basis'), established in accordance with DASR 21.A.17A, and 21.A.18,, remain effective. However, the period of validity of the certification basis is limited so that the standards established as part of the certification basis at the time of application do not become outdated.

For various reasons (e.g. development, business, commercial, etc.), the applicant may not be able to complete the certification within the established time limit. In this case, the applicant can apply for an extension of the initial application (see DASR 21.A.15(f):

In this case, the applicant proposes a 'new target date' to the Authority for the issuance of the certificate. Respecting the time limits established under 21.A.15(e), the Authority may then use that date to notify airworthiness codes and standards that will become the reference for a revised certification basis.

21.A.16A - Airworthiness Codes (AUS)

▸ **AMC** ▸ **GM**

GM 21.A.16A - Airworthiness Codes (AUS)

Rather than define a Defence-unique Airworthiness Code, the Authority has elected to recognise the suite(s) of airworthiness design requirements, ie Airworthiness Codes, prescribed by several other CAAs and MAAs that have been demonstrated to achieve safe flight, and then prescribe supplementation as required. The Defence Aviation Safety Design Requirements Manual (DASDRM) identifies the Authority recognised Airworthiness Codes.

AMC 21.A.16A - Airworthiness Codes (AUS)

The Authority prescribes approved Airworthiness Codes in the Defence Aviation Safety Design Requirements Manual (DASDRM).

The Authority shall approve the use of airworthiness codes and other detailed specifications, including codes and specifications for airworthiness and environmental protection, that may be used to demonstrate compliance of products, parts and appliances with the relevant essential requirements of Annex A to DASP Manual Volume 1 Chapter 4 Such codes and specifications shall be sufficiently detailed and specific to indicate to applicants the conditions under which certificates are to be issued, amended or supplemented.

21.A.16B - Special conditions (AUS)

AMC GM GM1

GM1 21.A.16B - Special conditions (AUS)

The Airworthiness Code selected for use under DASR 21.A.16A may contain deficiencies against contemporary airworthiness requirements and/or may not account for Defence's unique Configuration, Role and operating Environment (CRE). This may require the application of special conditions in addition to an Airworthiness Code. The Defence Aviation Safety Design Requirements Manual (DASDRM) defines 'essential' design requirements and standards that must be applied as special conditions to supplement Airworthiness Codes due to deficiencies in the Codes or to account for the Defence CRE in addition to the reasons described in DASR 21.A.16B(a). The DASDRM also defines a number of 'recommended' design requirements and standards for which compliance is not prescribed, but which should be applied where reasonably practicable.

GM 21.A.16B - Special Conditions

General

The term 'novel or unusual design features' should be judged in view of the applicable certification basis for the product. A design feature, in particular, should be judged to be a 'novel or unusual design feature' when the certification basis does not sufficiently cover this design.

The term 'unsafe condition' is used with the same meaning as described in DASR GM1 21.A.3B(b).

The term 'newly identified hazards' is intended to address new risks that may be recognised in the design (e.g. questionable features) or its operational characteristics (e.g. volcanic ash) for which there is not yet enough in-service experience.

AMC 21.A.16B - Special Conditions (AUS)

Authority prescribed 'Special Conditions' may be documented as Military Certification Review Items (MCRI) or inserted directly in the aircraft Type-certification Basis (TCB).

(a) The Authority shall prescribe any special detailed technical specifications, named 'special conditions', for a product if the related airworthiness codes and specifications do not contain adequate or appropriate safety standards for the product because:

1. The product has novel or unusual design features relative to the design practices on which the applicable airworthiness codes are based;

2. The intended use of the product is unconventional;

3. Experience from other similar products in service or products having similar design features or newly identified hazards have shown that unsafe conditions may develop; or

4. Applicable airworthiness codes do not exist for the concerned product class or do not address the requested kind of operations.

(b) Special conditions contain such safety standards as the Authority finds necessary in order to establish a level of safety equivalent to that of the applicable airworthiness codes or a level of safety acceptable if airworthiness codes do not exist for the concerned product.

21.A.17A - Type-certification basis for a type-certificate or restricted type-certificate (AUS)

AMC ▸ AMC1 ▸ GM ▸ GM1

GM1 21.A.17A - Type Certification Basis (AUS)

The Type Certification Basis (TCB) for a new Defence aircraft should be developed and agreed with the Authority as early as practicable in the aircraft acquisition lifecycle. While an Authority-agreed TCB should be pursued prior to entering into an acquisition contract, this will not always be possible. In those cases, the Acquisition Project Office may elect to present a draft TCB for Authority assessment as a cost and schedule risk reduction measure.

The TCB for a Defence aircraft must be consistent with Defence's intended role and operating environment for the aircraft. Information on the intended role and operating environment is to be provided in the certification programme, per the requirements at DASR 21.A.15(b)4 and (b)5, but will normally reference out to an endorsed Statement of Operating Intent and Usage (SOIU) which provides this detail. TCB agreement is obtained through approval of the certification programme in accordance with DASR 21.A.15(b).

In the aircraft Type Certification domain, Configuration, Role and operating Environment (CRE) is a pivotal concept. Where an ab initio Type Certification programme is proposed for a Defence aircraft, defining the CRE is essential to ensure that the basis of certification is consistent with the intended Defence use of the aircraft.

Where the Defence Type Certification programme intends to leverage prior certification from a recognised CAA/MAA to any extent, a CRE delta assessment is required to confirm the applicability of that prior certification to the intended Defence use. Areas where the prior certification is not entirely applicable to the Defence CRE must be addressed through further

compliance demonstration evidence, inclusion of additional requirements in the TCB, or tailoring of requirements for the TCB.

GM 21.A.17A - Type-certification basis for a Military Type Certificate (MTC) or Military Restricted Type Certificate (MRTC) (AUS)

1. **Introduction**

This GM addresses the type-certification basis for an MTC or an MRTC.

2. **Applicable Requirements of the Airworthiness Code (see DASR 21.A.17A(a))**

The type-certification basis for an MTC or an MRTC consists of the requirements from the established airworthiness code that were effective on the date of application and were applicable for that certificate.

The effectivity date of the initial application may be changed, as per DASR 21.A.15(f)(2), when the period of validity of an application for a type certificate is exceeded, or it is evident that it will be exceeded, and the applicant requests an extension; see DASR GM 21.A.15(e) and (f).

The certification basis is then revised accordingly.

3. **Elect to Comply (see DASR 21.A.17A(a)(1))**

It is also possible for an applicant to elect to comply with an airworthiness requirement that entered into force after the date on which the applicant has submitted the application.

The Authority will assess whether the proposed certification basis is appropriate to ensure that the 'elect to comply' proposal includes any other airworthiness requirements that are 'directly related' to one or several of the airworthiness requirements in it. Directly related airworthiness requirements are those that are deemed to contribute to the same safety objective by building on each other's requirements, addressing complementary aspects of the same safety concern, etc. Typically, they are adopted simultaneously with, or prior to, the airworthiness requirements with which the applicant has elected to comply.

4. **Equivalent Level of Safety (see DASR 21.A.17A(a)(2))**

In cases in which the applicable airworthiness requirements cannot be literally complied with, either fully or in part, the Authority may accept a suitable alternative which provides an equivalent level of safety through the use of appropriate compensating factors.

In cases in which the requirements contain not only objectives but also prescriptive parts, an equivalent level of safety may be accepted if:

– the objectives are met by designs or features other than those required in the airworthiness requirements; or

– suitable compensating factors are proposed.

5. **Exceptions (see DASR 21.A.17A(a)(3))**

If the intent of the airworthiness requirements defined in DASR 21.A.17A(a) or Special Conditions defined in 21.A.17A(b) cannot be met, the Authority may accept an Exception against the airworthiness requirement in order to account for military capability imperatives. In accordance with DASR GR.80(c), these exceptions must be underpinned by sound risk management which demonstrates a credible and defensible level of safety has been achieved for the intended military operations. 'Sound risk management' requires an understanding of the risk associated with the compliance shortfall, management of that risk in accordance with DASR SMS.A.25(b)2.2, and documentation of that risk management via an Airworthiness Issue Paper or equivalent.

Note: While DASR 21.A.17A(a)(3) links the issue of an MTC to compliance with the relevant essential requirements of Annex A to DASP Manual Volume 1 Chapter 4, the Authority may issue MTC to aircraft that do not meet those requirements when tailoring has been agreed via a Military Certification Review Item. See DASR AMC 21.A.21(a).

6. **Special Conditions (see DASR 21.A.16B)**

The Authority may also prescribe special conditions in accordance with DASR 21.A.16B. Guidance on special conditions is provided in DASR GM 21.A.16B, DASR GM1 21.A.16B and DASR GM2 21.A.16B.

AMC1 to 21.A.17A – Supplementation and tailoring of the primary certification code (AUS)

Supplementation to, or tailoring of, a Primary Certification Code (PCC), as described at 21.A.17A(a)1- (a)3, (b) and (c), shall be agreed with the Authority and documented via Military Certification Review Items (MCRIs) as follows:

a. **Elect to Comply.** Compliance with requirements at later amendments (per DASR 21.A.17A(a)(1)) shall be documented in an Elect to Comply MCRI when further justification for adoption of the later amendment is required to be recorded. Further justification would be required if there is a need to establish why the change to the later amendment does not have a negative impact on safety, or where there is a need to place limits or conditions on the use of the later amendment. Other use of later amendments may be documented directly in the TCB section of the Type Certificate Data Sheet (TCDS).

b. **Equivalent Safety Finding.** Any alternative to a designated airworthiness requirement justified via an equivalent level of safety (per DASR 21.A.17A(a)(2)) shall be documented in an Equivalent Safety Finding MCRI.

c. **Exception.** Exceptions (per DASR 21.A.17A(a)(3)) shall be documented in an Exception MCRI which must be underpinned by an understanding of the risk associated with the compliance shortfall, and management of that risk in accordance withDASR SMS.A.25(b)2.2.

d. **Special Condition.** Special conditions (per DASR 21.A.17A(b) and 21.A.16B) shall be documented in a Special Condition MCRI where they implement a requirement that requires tailoring, discussion or explanation, or where the special condition relates to internal Defence documents which are not readily available to external designers. In all

other cases the special condition may be implemented via direct reference to the relevant requirement/standard within the TCB section of the TCDS.

e. **Interpretive Material/Means of Compliance/Acceptable Means of Compliance (IM/MOC/AMC).** An IM/MOC/AMC MCRI may be used to record the development of new interpretative material or acceptable means of compliance for TCB elements or where the applicant proposes to use an extant IM/MOC/AMC, but only in parts or with some changes to the content.

Requirements for military operations (per DASR 21.A.17A(c)) may include requirements in the form of special conditions, alternate requirements justified via an equivalent level of safety, or exceptions against requirements to account for military capability imperatives. These shall be documented per the above guidance for each type of requirement/tailoring.

Note: A single MCRI may collate multiple claims if the applicable elements are all related, eg fatigue and damage tolerance shortfalls may affect multiple elements of a TCB and hence one MCRI may be appropriate.

AMC 21.A.17A - Type-certification basis (AUS)

Airworthiness requirements specified in the Type Certification Basis (TCB) shall include; the applicable requirements from the Authority recognised Primary Certification Code selected as a basis for the Defence aircraft certification; the applicable 'essential' requirements prescribed in the Defence Aviation Safety Design Requirements Manual (DASDRM); and any supplementation or tailoring approved by the Authority in accordance with DASR AMC1 to 21.A.17A.

The scope of the TCB shall be limited to those requirements necessary to cover all the criteria listed in the European Military Airworthiness Certification Criteria (EMACC) for the intended Configuration, Role and operating Environment (CRE). For novel aircraft designs, where necessary and sufficiently applicable airworthiness criteria are not included in the EMACC, additions may be approved by the Authority.

The type-certification basis for a type-certificate or restricted type-certificate shall consist of:

(a) The requirements of the airworthiness code established according to DASR 21.A.16A from those applicable to the product at the date of application for that certificate, unless: ▸ **AMC**

AMC 21.A.17A(a) – Date of application (AUS)

In cases where the certification approach for an MTC or MRTC relies on prior certification from another CAA/MAA, the Authority may agree to consider the 'date of application' IAW DASR 21.A.17A(a) to be the date of application to the original certifying CAA/MAA, for the purpose of determining the applicable airworthiness requirements under 21.A.17A(a). In assessing a request to use the date of application of the original CAA/MAA certification, the Authority shall consider the following:

– The period of time since the original CAA/MAA certification was provided.

– The safety improvements in the relevant airworthiness code since the original CAA/MAA certification was provided.

– The deltas in configuration, role and operating environment which would limit the extent to which the prior certification could be leveraged.

1. The applicant chooses to comply, or is required to comply with DASR 21.A.15(f), with requirements of the airworthiness code which became applicable after the date of the application. In that case, the type-certification basis shall include any other requirements of the airworthiness code or other detailed specifications that the Authority finds are directly related; or

2. The Authority accepts any alternative to a designated airworthiness requirement that cannot be complied with, for which compensating factors have been found that provide an equivalent level of safety; or

3. The Authority accepts or prescribes other means that: ▸ **GM**

GM 21.A.17A(a)(3) - Type-certification Basis (AUS)

The EMACC Guidebook offers guidance on how to tailor the criteria for the type-certification basis, based on the intended military use of the product.

i. In the case of a type-certificate, demonstrate compliance with the relevant essential requirements of Annex A to DASP Manual Volume 1 Chapter 4; or

ii. In the case of a restricted type-certificate, provide a level of safety adequate with regard to the intended use; and

(b) Any special condition prescribed by the Authority in accordance with DASR 21.A.16B(a).

(c) Dedicated airworthiness requirements and means of compliance established to account for military operations that are not covered under (a).

21.A.17B - Reserved

21.A.18 - Designation of applicable environmental protection requirements (AUS)

The applicable environmental protection requirements shall be established when certifying a product, taking account of the military operational need.

21.A.19 - Changes requiring a new type-certificate

Any applicant proposing to change a product, shall apply for a new type-certificate if the Authority finds that the change in design, configuration, power, thrust, or mass is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

21.A.20 - Demonstration of compliance with the type certification basis and environmental protection requirements

GM2 21.A.20 - Demonstration of compliance with the type certification basis and environmental protection requirements (AUS)

When leveraging prior certification by a CAA/MAA to claim part or full relief against the requirement to develop compliance evidence, the Configuration, Role and operating Environment (CRE) used to underpin the prior certification needs to be understood and compared to the intended Defence CRE at a detailed level. In isolation, basic comparisons of high-level aircraft role(s), mission mix or flight profiles (as articulated in the SOIU) will usually not provide the fidelity required.

For aircraft structures and propulsion systems, the CRE in terms of configuration, and role-related loads and environmental factors (including operating weights, altitudes, repeated manoeuvre, dynamic and gust environments) should be assessed in detail. For propulsion systems, the initial CRE assessment should follow the mission analysis requirements of the Defence Aviation Safety Design Requirements Manual (DASDRM) and DASR AMC 21.A.44(c).

GM1 21.A.20 - Compliance with the type-certification basis and environmental protection requirements (where applicable) (AUS)

1. **Full Relief from Developing Compliance Demonstration Evidence**

The certification programme should document those Type Certification Basis (TCB) elements for which 'Prior Certification from another CAA/MAA' will be leveraged to demonstrate compliance against the TCB. To support the use of prior certification, the certification programme should also include how the criteria in DASR AMC 21.A.20 will be, or have been assessed.

Certifications that were granted sometime prior to the Defence acquisition can be problematic, particularly if they are from a CAA/MAA that has not been recognised by Defence. Current day assessments may not be reflective of the CAA/MAA at the time of the certification and hence present limited value to the Compliance Demonstration process. The certification programme will need to discuss these issues and document an approach to addressing the issues that is acceptable to the Authority.

Some MAAs do not use a 'TCB like' construct for defining the design requirements used for a particular design. Depending on the data access provisions permitted by the contracting arrangement used, full knowledge of the design requirements applied may not be possible. The certification programme will need to discuss this issue and document an approach to addressing this issue that is acceptable to the Authority

2. **Partial Relief from Developing Compliance Demonstration Evidence**

The prior certification provided by the CAA/MAA may not always be entirely applicable for the Defence Configuration, Role and operating Environment (CRE) (and as such may not be entirely applicable for demonstrating compliance to the Defence TCB). There are a number of reasons why this would be the case:

a. the prior CAA/MAA certification cannot be shown to apply for all standards specified in the Defence TCB;

b. The CRE assessment identified material differences between the CRE assumed by the prior certifying CAA/MAA and the intended Defence CRE (particularly applicable for those cases where civil CAA certification is being leveraged which does not cover military roles and environment); or

c. The CAA/MAA certification is underpinned by risk treatments that require further consideration in the Australian Work Health and Safety Act 2011 and the Work Health and Safety Regulations 2011 framework.

Known issues associated with leveraging prior certification should be documented in the certification programme, along with an agreed approach for addressing them. Possible treatments include:

a. Investigating if relevant additional evidence exists and obtaining that additional evidence from the design organisation;

b. Development of additional evidence (which will require a MDOA holder (or Authority- accepted equivalent));

c. A change to the design (either the configuration or Instructions for Continuing Airworthiness (ICA)); or

d. Seeking Authority agreement to amend the TCB, by adding or tailoring requirements, IAW AMC1 21.A.17A.

GM 21.A.20 - Compliance demonstration process

DASR 21.A.20 applies to the compliance demonstration process for a Military Type Certificate (MTC) (or a Military Restricted Type Certificate (MRTC)) and, by cross references to DASR Part 21 Subpart D and E, to compliance demonstration processes for major changes to an MTC (see DASR 21.A.97(b)(3)) and an MSTC (see DASR 21.A.115(b)(4)).

Applicants for an MTC (or an MRTC) should apply DASR 21.A.20 in full. Applicants for a major change to an MTC (or an MSTC) are required (see DASR 21.A.97(b)(3) and DASR 21.A.115(b)(4)) to apply DASR 21.A.20 as applicable to the change.

'As applicable to the change' means that:

1. The certification programme to be followed is the one prepared for the major change or MSTC in accordance with DASR 21.A.93, as accepted by the Authority; and

2. The certification basis (consisting of the type-certification basis and the environmental protection requirements) is the one established in accordance with DASR 21.A.101.

DASR 21.A.20 also applies to major changes to an MTC or an MSTC approved by military design organisation approval (MDOA) holders under their privilege as per DASR 21.A.263(c)(8) or (9) (see also DASR 21.A.97(b)(3) and DASR 21.A.115(b)(4)). As in this case there is no application and no involvement of the Authority, DASR 21.A.20 should be applied with the following adaptions:

– the certification programme to be followed, including the certification basis and the detailed means of compliance, should be almost identical to the one accepted by the Authority for a major change or an MSTC when approved for the scope of the privilege as per DASR 21.A.263(c)(8) or (9); it may differ in some aspects (e.g. the detailed description of the changes), but it should be shown to remain in the frame of the corresponding justification document; and

– the means by which such compliance has been demonstrated (see DASR 21.A.20(a)) and the final declaration of compliance (see DASR 21.A.20(e)) should be kept on record and submitted to the Authority only if requested during its DOA continued surveillance process.

AMC 21.A.20 - Demonstration of compliance with the type certification basis and environmental protection requirements (AUS)

1. **Demonstration of Compliance**

The applicant shall demonstrate compliance with the type-certification basis either:

a. through Compliance Demonstration evidence developed by a MDOA holder (or alternative as agreed by the Authority); or

b. through appropriate evidence of prior certification provided by another CAA / MAA.

Note: Compliance Demonstration evidence comprises of reports, drawings, specifications, calculations, analysis etc. and provides a record of the means by which compliance with the applicable Type Certification Basis (TCB) and environmental protection requirements is demonstrated.

2. **Prior Certification from another CAA / MAA**

Where Defence is procuring off-the-shelf aircraft or equipment, the applicant may seek relief from the need to develop Compliance Demonstration evidence. The applicant may claim that requisite inspections / analyses / tests (as required by DASR 21.A.33 – Inspections and tests) have already been performed, as evidenced by an extant certification by a CAA / MAA whose certification is recognised by the Authority. The applicant, in leveraging a prior certification to claim part or full relief against the requirement to develop Compliance Demonstration evidence shall ensure:

a. the certification is within the scope, conditions and caveats specific to DASA Recognition of the certifying CAA / MAA;

b. the CAA / MAA is sufficiently experienced in certification of the particular design activity;

c. the certification requirements employed by the CAA / MAA are understood and any deltas from the Defence TCB have been addressed through additional compliance demonstration evidence, or changes to the TCB in accordance with DASR AMC1 to 21.A.17A;

d. the Configuration, Role and operating Environment (CRE) applied to the prior certification is understood and any deltas from the intended Defence CRE have

been addressed through additional compliance demonstration evidence, or changes to the TCB in accordance with DASR AMC1 to 21.A.17A;

e. any safety risks associated with the CAA / MAA certification:

i. have been identified, and

ii. have been eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP) for the Defence CRE.

The list of recognised CAA / MAA whose prior certification may be exploited by applicants in seeking relief from developing compliance demonstration evidence, is available via the DASA website: *Recognition of other Aviation Authorities*. Individual recognition certificates establish scope, conditions and caveats.

If, during the course of the project, Defence learns of some breakdown or deficiency in the application of the CAA / MAA usual processes, those cannot be ignored. The Authority will determine what additional Compliance Demonstration evidence must be produced by the MDOA holder (or Authority-accepted equivalent) as a result of the breakdown or deficiency.

(a) Following the acceptance of the certification programme by the Authority, the applicant shall demonstrate compliance with the type-certification basis and environmental protection requirements, as established in accordance with DASR 21.A.17A, and 21.A.18, and shall provide the Authority with the means by which such compliance has been demonstrated.

(b) The applicant shall report to the Authority any difficulty or event encountered during the process of demonstration of compliance that may have an appreciable effect on the risk assessment under DASR 21.A.15(b)(6) or on the certification programme, or may otherwise necessitate a change to the level of involvement of the Authority previously notified to the applicant. ▸ **GM**

GM 21.A.20(b) Reporting on the compliance demonstration process

The applicant should report to the Authority any unexpected difficulty or event encountered during the compliance demonstration that invalidates or appreciably affects the assumptions previously made, for example:

1. An increase in the severity of the consequences of a certain condition (e.g. failure mode) of the product;

2. Significantly reduced margin(s) for the 'pass–fail' criteria of the compliance demonstration;

3. Changes to the test sequences and conditions that are not in line with the certification specifications or guidance;

4. An unusual interpretation of the results of the compliance demonstration; and

5. Any significant failure or finding resulting from the tests performed as per DASR 21.A.33 or DASR 21.A.35.

The applicant should also evaluate whether the unexpected difficulty or event encountered will impact on the certification programme and, if necessary, amend it as per DASR 21.A.15(c).

(c) The applicant shall record justification of compliance within compliance documents as referred to in the certification programme. ▸ **AMC**

AMC 21.A.20(c) - Compliance documentation

1. Compliance documentation comprises one or more test or inspection programmes/ plans, reports, drawings, design data, specifications, calculations, analyses, etc., and provides a record of the means by which compliance with the applicable type-certification basis and environmental protection requirements is demonstrated.

2. Each compliance document should normally contain:

   - The reference of the elements of airworthiness requirements prescribed in the certification basis, special conditions or environmental protection requirements addressed by the document;
   - Substantiation data demonstrating compliance (except test or inspection programmes/plans);
   - A statement by the applicant declaring that the document provides the proof of compliance for which it has been created; and
   - The appropriate authorised signature.

3. Each compliance document should be unequivocally identified by its reference and issue date. The various issues of a document should be controlled and comply with DASR 21.A.55.

(d) After completion of all demonstrations of compliance in accordance with the certification programme, including any inspections and tests in accordance with DASR 21.A.33, and after all flight tests in accordance with DASR 21.A.35, the applicant shall declare that: ▸ **GM**

GM 21.A.20(d) - Final statement

All compliance demonstrations in accordance with the certification programme, including all the inspections and tests in accordance with DASR 21.A.33 and all flight tests in accordance with DASR 21.A.35, should be completed before the issuance of the final statement of compliance required by DASR 21.A.20(d).

If so agreed by the Authority, some compliance documentation may be produced after the issuance of the final statement of compliance required by 21.A.20(d).

'No feature or characteristics' in DASR 21.A.20(d)2 means the following: while every effort is made to address in the applicable certification basis all the risks to product safety or to the environment that may be caused by the product, experience shows that safety-related events may occur with products in service, even though compliance with the certification basis is fully demonstrated. One of the reasons may be that some existing risks are not properly addressed in the certification basis. Therefore, the applicant has to declare that they have not identified any such features or characteristics.

DASR 21.A.20 also applies by reference to minor changes, in which case the risk to product safety or to environmental protection is quite low. Nevertheless, minor changes should not be approved if either the applicant/military design organisation approval (MDOA) holder approving minor changes under their privileges, or the Authority, is aware of a feature or characteristic that may make the product unsafe for the uses for which certification is requested.

Where a recognised certified design has been leveraged to relieve the applicant from developing compliance demonstration evidence, the basis upon which the declaration of compliance is made is the applicant's completion of the requirements of DASR AMC 21.A.20.

1. it has demonstrated compliance with the type-certification basis and environmental protection requirements, as established under DASR 21.A.17A, and 21.A.18, following the certification programme as accepted by the Authority; and

2. no feature or characteristic has been identified that may make the product unsafe for the uses for which certification is requested.

(e) The applicant shall submit to the Authority the declaration of compliance provided for in (d). Where the applicant holds an appropriate design organisation approval, the declaration of compliance shall be made in accordance with DASR 21 Subpart J and submitted to the Authority.

21.A.21 - Issue of a type-certificate

(a) In order to be issued a product type-certificate or, when the aircraft does not meet the essential requirements of Annex A to DASP Manual Volume 1 Chapter 4 an aircraft restricted type-certificate, the applicant shall: ▸ **AMC**

AMC 21.A.21(a) - Issue of an MTC or MRTC (AUS)

In accordance with DASR GR.80(c), the Authority may issue a Military Type Certificate (MTC) to an aircraft that does not meet the essential requirements of Annex A to DASP Manual Volume 1 Chapter 4, to support military capability needs. Tailoring of those essential requirements (through tailoring of the applicable elements of the TCB) must be agreed with the Authority through a Military Certification Review Item (MCRI), underpinned by sound risk management, per DASR AMC1 to 21.A.17A.

1. demonstrate its capability in accordance DASR 21.A.14; ▸ **AMC**

AMC 21.A.21(a)(1) - Alternative Demonstration (AUS)

Establishment of MTC holder

Where the applicant is an acquisition Project Office that has demonstrated its capability under DASR 21.A.14(c), the PO must ensure that an MTC holder who will hold the type-certificate has been established and the associated TCAE reviewed by the Authority.

Engagement of external design organisation(s)

Prior to issue of the type-certificate, and where the applicant has demonstrated its capability under DASR 21.A.14(c) through engagement of a foreign design organisation, the applicant should confirm, to the Authority, that the expected specific and generic DASA recognition requirements detailed in DASR 21.A.14(c) continued to be valid during the design and certification programme, and specifically that:

a. the DO's systems, processes and personnel used in developing other designs for certification by the parent CAA / MAA were used in the design development or holder activities associated with the ADF design, and

b. that the DO provided an attestation of compliance against the Type Certification Basis for the provided design product,

2. comply with DASR 21.A.20

3. demonstrate that the engine and propeller, if installed in the aircraft:

a) have a type-certificate issued in accordance with this DASR; or ▸ **GM**

GM 21.A.21(a)(3)(A) - Issue of type-certificates for engines and propellers (AUS)

While an Australian MTC will be issued for every aircraft type to be Defence registered, Australian MTCs will not ordinarily be issued for engines and propellers of Defence registered aircraft unless exceptional circumstances exist. Exceptional circumstances include, but are not limited to, an engine or propeller not previously type certified under another recognised aviation authority, or where Defence elects to manage the engine or propeller configuration independently from other users of the same engine or propeller.

b) have been demonstrated to be in compliance with the aircraft type-certification basis and the environmental protection requirements established by the Authority a necessary to ensure the safe flight of the aircraft.

(b) (Reserved)

21.A.31 - Type design

(a) The type design shall consist of:

1. The drawings and specifications, and a listing of those drawings and specifications, necessary to define the configuration and the design features of the product shown to comply with the applicable type-certification basis and environmental protection requirements;

2. Information on materials and processes and on methods of manufacture and assembly of the product necessary to ensure the conformity of the product;

3. An approved airworthiness limitations section of the instructions for continuing airworthiness as defined by the applicable airworthiness codes; and

4. Any other data allowing by comparison the determination of the airworthiness and, if relevant, the environmental characteristics of later products of the same type.

(b) Each type design shall be adequately identified.

21.A.33 - Inspections and tests

AMC

AMC 21.A.33 - Inspections and tests

Use of the term 'applicant': DASR 21.A.33 is applicable to type certification, major changes, major repairs and military supplemental type certificates (MSTCs), and through reference in DASR 21.A.604 to AUSMTSO for auxiliary power units (APUs). Despite using the word 'applicant', it is also applicable to major repairs approved under MDOA privileges (see DASR 21.A.263(c)(5)).

Proposed type design: this term defines the type design (or the portion of the type design) as it is determined at the time when the inspection or test is undertaken.

Statement of conformity: for each certification inspection or test, the statement of conformity issued in accordance with DASR 21.A.33(c) must address the conformity of the test specimen (see DASR 21.A.33(b)(1)) as well as of the test equipment and measuring equipment (see DASR 21.A.33(b)(2)).

Conformity of the test specimen: the statement of conformity required by DASR 21.A.33(c) is intended to ensure that the manufactured test specimen adequately represents the proposed type design. Possible types of non-conformity may be the following:

1. Non-conformity between the design of the test specimen and the proposed type design at the time of the test. These are typically identified in the early stage of the test planning, and should be addressed as early as possible (e.g. in the test plan). There may be several reasons for such a non-conformity: to account for interfaces with the test equipment, to conservatively cover several or future design configurations, etc.
2. Non-conformity between the manufactured test specimen and the design of the test specimen. Such a non-conformity may be the result of the manufacturing of the test specimen.

While it is convenient to define any possible non-conformity in (a) as early as possible, the applicant does not need to make the distinction between the two types of non-conformity above as long as they are explicitly addressed and justified in the statement of conformity or by cross reference to the test plan or other documents.

Type certification is typically an iterative process in which the design is under continuous evolution. If the type design evolves after the time of the inspection or test, then the final type design should be checked against the proposed type design (as it was at the time of the inspection or test), and the differences (if any) should be analysed to ensure that the inspection or test results are representative of the final configuration. However, such changes made to the type design may lead to the invalidation of the inspection or test results and a need to repeat

the inspection or test. It is recommended that the design organisation should have a thorough configuration management process to track the evolving type design.

Conformity of test and measuring equipment: the configuration of the test and measuring equipment should be defined in the test plan and include the following:

3. Definition/design of the test equipment (relevant tools, mechanical parts, electronic components used to execute the test); and

4. Definition of the measuring equipment:

   – type/model of sensors, together with their technical characteristics;

   – position and orientation of exciters and sensors; and

   – electronic measuring equipment (in some cases, this may also include the acquisition and post-processing of data).

The configuration of the test and measuring equipment should be defined and controlled through certification test plans and supporting documentation, according to the design assurance system, if applicable. The test plan should also include the following elements:

5. the test cases, methods, and procedures for test execution;

6. the pass–fail criteria; and

7. pre-, during- and post-test inspections.

The statement of conformity of DASR 21.A.33(c) should confirm that the test and measuring equipment conform to its purpose, and that the sensors and measuring system are appropriately calibrated. Any non-conformity should be assessed, and it should be justified that it will not compromise the test purpose and results. This can be done either in the statement of conformity or by cross reference to other documents (test minutes of meetings, test notes, etc.).

Use of the term 'adequate': the test specimen, as well as the test and measuring equipment, are considered to be 'adequate' as long as the test execution on the manufactured test specimen (including any non-conformity) and the use of the installed test set-up does not compromise the test purpose and results (for example, by providing better performance than the proposed type design, or masking any potential failure mode or behaviour).

Changes that affect the validity of the statement of conformity (see DASR 21.A.33(e)(2)): if changes need to be introduced to the test specimen or to the test and measurement equipment after the statement of conformity is issued (and before the test is undertaken), the statement of conformity must be updated. The updated statement of conformity must be made available to the Authority before the test if the Authority has informed the applicant that it will witness or carry out the tests.

Development versus certification tests: sometimes, tests of specimens that conform to a preliminary design, but are not intended for certification (known as development tests), are performed as part of a risk control strategy and to develop knowledge of a subject. Problems and failures found during development are part of the process of increasing the understanding

of the design, including its failure modes and the potential for optimisation. Such development tests do not need to meet the requirements of DASR 21.A.33.

Any planned test event should be classified in advance as either a development test or a certification test. Tests that support the compliance demonstration should be classified as certification tests.

Nevertheless, if agreed by the Authority, it is acceptable for a development test to finally form part of the compliance demonstration, and it may be declared afterwards to be a certification test as long as it meets the requirements of DASR 21.A.33. For this reason, it is important to keep the configuration of such tests under the control of the design organisation.

In addition to this, the level of involvement (LoI) notified by the Authority should be taken into account: if the Authority has determined that it will witness or conduct a certain test, this test may need to be repeated so that the Authority can witness or conduct the test.

If the test specimen used for a certification test has already undergone a series of previous tests that may affect or ultimately invalidate its acceptance as required by DASR 21.A.33(b), this aspect should be considered when issuing the statement of conformity required by DASR 21.A.33(c), and specific analyses or inspections may be required to support such a statement.

Because of the above aspects, the Authority advises applicants to inform the Authority if they intend to conduct a campaign of development tests that may eventually be used as certification tests.

Availability of compliance data (see DASR 21.A.33(d)(1)): data and information requested from the applicant for review should be made available in a reliable and efficient way that is agreed between the applicant and the Authority.

DASR 21.A.33(d)(1) refers to any data or information related to compliance data; the scope of that requirement is therefore not limited to inspections and tests. In particular, DASR 21.A.33(d)(1) is not limited to data and information related to compliance demonstration items (CDIs) in which the Authority is involved.

(a) (Reserved)

(b) Before each test is undertaken during the demonstration of compliance required by DASR 21.A.20, the applicant shall have verified:

1. For the test specimen, that:

   i. The materials and processes adequately conform to the specifications for the proposed type design;

   ii. The parts of the products adequately conform to the drawings in the proposed type design;

   iii. The manufacturing processes, construction and assembly adequately conform to those specified in the proposed type design; and

2. For the test and measuring equipment to be used for the test, that those are adequate for the test and appropriately calibrated.

(c) On the basis of the verifications carried out in accordance with (b), the applicant shall issue a statement of conformity listing any potential non-conformity, together with a justification that this will not affect the test results, and shall allow the Authority to make an inspection it considers necessary to check the validity of that statement.

(d) The applicant shall allow the Authority to: ▸ **GM**

GM 21.A.33(d) - Inspections and tests

The applicant should inform the Authority sufficiently in advance about the execution of inspections and tests that are used for compliance demonstration purposes unless the Authority has explicitly excluded these inspections and tests from its involvement.

Additionally, the applicant may propose to the Authority to perform or witness flight or other tests of particular aspects of the product during its development and before the type design is fully defined. However, before the Authority performs or witnesses any flight test, the applicant should ensure by appropriate means that the design is mature enough so that no features of the product preclude the safe conduct of the evaluation requested.

The Authority may require any such tests to be repeated once the type design is fully defined to ensure that subsequent changes have not adversely affected the conclusions from any earlier evaluation.

1. Review any data and information related to the demonstration of compliance; and

2. Witness or carry out any test, including any flight and ground test, or inspection conducted for the purpose of the demonstration of compliance.

(e) For all the tests and inspections witnessed or carried out by the Authority in accordance with (d)(2):

1. The applicant shall submit to the Authority a statement of conformity provided for in (c); and

2. No change that affects the validity of the statement of conformity shall be made to the test specimen, or the test and measuring equipment, between the time the statement of conformity provided for in (c) was issued and the time the test specimen is presented to the Authority for test.

21.A.35 - Flight Tests

▸ **GM** ▸ **GM1**

GM1 21.A.35 – Flight Tests (AUS)

In-service flight test activities are covered under Subpart P – Military Permit to Fly, and DASR GM 21.A.35 establishes the approval arrangements for MPTFs according to category, see ▸ **Categories of Flight Tests**.

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to ‘basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

GM 21.A.35 - Flight Tests

Detailed material on flight testing is included in the applicable certification criteria and GM.

(a) Flight testing for the purpose of obtaining a type-certificate shall be conducted in accordance with conditions for such flight testing approved by the Authority.

(b) The applicant shall make all flight tests that the Authority finds necessary:

1. To determine compliance with the applicable type-certification basis, and environmental protection requirements; and

2. To determine whether there is reasonable assurance that the aircraft, its parts and appliances are reliable and function properly. ▸ **GM**

GM 21.A.35(b)(2) - Objective and content of function and reliability testing

1. **Objective**

The objective of this testing is to expose the aircraft to the variety of uses, including training, that are likely to occur when in routine service to provide an assurance that it performs its intended functions to the standard required for certification and will continue to do so in service.

2. **Content of function and reliability testing**

The testing is to cover both routine operations and some simulation of abnormal conditions. The details of the programme are to be agreed with the Authority prior to commencement of testing.

It may be possible to combine this testing with any required to demonstrate compliance with the applicable certification criteria. This will be agreed on a case-by-case basis with the Authority.

Where possible, testing conditions are to be defined with the co-operation of an operator.

A substantial proportion of the flying is to be on a single aircraft. The flying is to be carried out to a continuous schedule on an aircraft that is very close to the final type design, operated as though it were in service and is to include a range of representative ambient operating conditions and airfields.

(c) Reserved

(d) Reserved

(e) Reserved

(f) The flight tests prescribed in subparagraph (b)(2), shall include:

1. For aircraft incorporating turbine engines of a type not previously used in type-certificated aircraft, at least 300 hours of operation or as agreed by the Authority, with a full complement of engines that conform to a type-certificate; and ▸ **GM**

GM 21.A.35(f)(1) - Flying time for function and reliability testing

All flying carried out with engines and associated systems not significantly different from the final type-certificate standard may count towards the 300 hours airframe flight time required by DASR 21.A.35(f)(1). At least 150 of the 300 flying hours is to be conducted on a dedicated production configured aircraft. The requirement for 300 hours relevant flight time whenever a new turbine engine is incorporated applies regardless of whether the airframe/engine combination is subject to a new type-certificate or is to be certificated as a change or supplement to an existing type-certificate.

2. For all other aircraft, at least 150 hours of operation or as agreed by the Authority. ▸ **GM**

GM 21.A.35(f)(2) - Flying time for function and reliability testing

All flying carried out on an aircraft not significantly different from the final type design may count towards the 150 hours airframe flight time required by DASR 21.A.35(f)(2).

21.A.41 - Type-certificate and restricted type-certificate

The type-certificate and restricted type-certificate shall include the type design, the operating limitations, the type-certificate data sheet for airworthiness, the applicable type-certification basis and environmental protection requirements with which the Authority records compliance, and any other conditions or limitations prescribed for the product in the applicable airworthiness requirements and environmental protection requirements. ▸ **AMC**

AMC 21.A.41 - Structural and Propulsion System Critical Parts and Airworthiness Limitations (AUS)

CRITICAL PARTS

It is vital to have an understanding of which parts of the aircraft structure and propulsion system are essential for safe flight and therefore could have a significant impact on safety if they were to fail or not perform their intended function. The applicant for a type certificate should identify a list of critical parts, as required by the Type Certification Basis (TCB) and the intended Defence Configuration Role and Environment (CRE), and submit this to the Authority as part of the application.

Once reviewed by the Authority, the definition and list of critical parts should be included, either directly or by reference, in the Aircraft Structural / Propulsion System Integrity Management Plan (ASIMP/PSIMP).

The primary consideration for defining structural or propulsion system critical parts should be the certification basis for the aircraft and propulsion system. In recognition that not all airworthiness codes are equivalent, and that some are not explicit on a definition for critical parts, the Authority provides applicants with the following acceptable definitions.

STRUCTURAL CRITICAL PART ACCEPTABLE DEFINITION

Any structural part or element where the failure of that part or element could result in a fatality or loss of aircraft. The fatality or loss of aircraft could occur immediately upon failure or subsequently if the failure remained undetected. A structural part is one that contributes significantly to the carrying of flight, ground, or pressurization loads. For rotorcraft, identification of structural critical parts should include consideration of the rotors, rotor drive systems between the engines and rotor hubs, controls, fuselage, fixed and movable control surfaces, engine and transmission mountings, landing gear, and their related primary attachments.

PROPULSION SYSTEM CRITICAL PART ACCEPTABLE DEFINITION

Rotating and major static structural parts, and sub-systems of the propulsion system whose primary failure is likely to result in a hazardous propulsion system effect. Typically, propulsion system critical parts include, but are not limited to disks, spacers, hubs, shafts, high-pressure casings, propellers and non-redundant mounts or non-redundant sub-system components.

For the purposes of this section, a hazardous propulsion system effect is any of the following conditions:

a. Non-containment of high-energy debris, including release of the propeller or any major portion of the propeller

b. Concentration of toxic products in the engine bleed air intended for the cabin sufficient to incapacitate crew or passengers

c. Significant thrust in the opposite direction to that commanded by the pilot

d. Uncontrolled fire

e. Failure of the engine mount system leading to inadvertent engine separation

f. Complete inability to shut the engine down

g. Propeller failure resulting in the development of excessive drag or excessive imbalance

h. Partial or complete loss of thrust or power for single engine aircraft. **NOTE:** Typically in the case of multi-engine aircraft, discrete failures in which the only consequence is partial or complete loss of thrust or power (and associated engine services) from an engine is typically not considered a hazardous propulsion system effect.

AIRWORTHINESS LIMITATIONS

Airworthiness Limitations (AwLs) are established through the certification process as being essential for preventing and/or detecting failures that may lead to an unsafe condition. AwLs may apply to many systems including the aircraft structure, propulsion system, wiring and Certification Maintenance Requirements (CMRs) arising from system safety analyses. For aircraft structures and propulsion systems AwLs will be associated with critical parts, as identified above. AwLs are mandatory actions and should be segregated from the other elements of the Instructions for Continuing Airworthiness (ICA).

For the aircraft structure and propulsion system, AwLs are considered to encompass:

a. Mandatory modification, retirement or replacement intervals

b. Mandatory inspection requirements: including inspection interval(s) and the inspection method

c. Mandatory post-flight inspections and maintenance actions associated with any use of either the rated 30-Second One-Engine-Inoperative (OEI) or 2-Minute OEI Power (for rotorcraft engines with such power ratings)

d. The definition of the interval under a. and b. above includes:

   i. The interval metric, eg flight hours, landings, Equivalent Flight Hours (EFH), Fatigue Index (FI) / Fatigue Life Expended Index (FLEI), engine cycles etc, and

   ii. Any algorithm, equation, factor(s) or other engineering data which must be used to calculate life accrual against the interval.

Under point b. above, the inspection method is considered to include the inspection technique, reference standards, and any other inspection procedure parameters which impact the detectable flaw size or Probability of Detection (POD).

The applicant for a type certificate should define and identify the AwLs for the aircraft structure and propulsion system, as required by the TCB and the intended Defence CRE, and submit this to the Authority as part of the application. When prior certification is being leveraged then detailed assessment is required to ensure the baseline structural and propulsion system AwLs adequately account for the Defence CRE (see DASR 21.A.20).

Once approved by the Authority, the definition and list of AwLs should be included, either directly or by reference, in the Type Certificate Data Sheet (TCDS) and ASIMP/PSIMP.

CONTINUED VALIDITY OF CRITICAL PARTS LIST AND AIRWORTHINESS LIMITATIONS

The list of critical parts and AwL should be maintained by the MTC holder based on actual operational experience, changes in the Defence CRE and information received from other operators and CAA/MAAs (see DASR 21.A.3A(a) and DASR 21.A.44(c))

21.A.42 - Integration

The aircraft MTC holder shall be responsible for the integration of Products, Weapons and other Systems onto the aircraft, except for approvals under Subpart E. ▸ **GM**

GM 21.A.42 - Integration

The principles for the military type-certification (taking in account DASR 21.A.17A) are predicated on the hierarchy of the Military Type Certificate and subordinate certification:

a. The use of the MTC is limited to Products, namely aircraft, engine or propeller.

b. The certification of Parts is to be undertaken in accordance with Subpart K.

21.A.44 - Obligations of the holder

Each holder of a type-certificate or restricted type-certificate shall: ▸ **AMC** ▸ **GM**

GM 21.A.44 - Obligations of the holder (AUS)

DASR GM 21.A.14 defines the role of a government MTC holder organisation in holding all DASA issued MTC / MRTC and subsequent major design change approval, STCs and major repair design approvals.

AMC 21.A.44 - Obligations of the holder (AUS)

Australian MTCs will be issued by the Authority to Australian government organisations.

Duties of the holding organisation consist of the following:

a. Responsibilities specific to the MTC:

i. Obligations of the holder (under DASR 21.A.44).

ii. The integration of Products, Weapons and other Systems onto the aircraft, except for approvals under Subpart E (under DASR 21.A.42).

iii. Manage all applications for approval of major changes to a type design under DASR 21.A.92(a).

iv. Make arrangements with MSTC applicants under DASR 21.A.115 with respect to the MSTC impact on the MTC or MRTC, including the effect of any major design changes on certification basis elements.

b. Responsibility for holding subsequent DASR MSTC and major repair design approvals issued against the MTC, which entails:

i. For MSTC, obligations of the holder (under DASR 21.A.118A).

ii. For Major Repairs, obligations of the holder (under DASR 21.A.451(a)).

c. For all MTC, MSTC and major repair design approvals held, ensure that a system for the in-service management of product hazards is implemented and maintained.

Where the holding organisation is unable to provide the holder services internally an external design or engineering organisation that is compliant to DASR 21.A.14(a) or (b) may be contracted/ tasked to perform any outstanding holder duties defined in paragraphs (a) through (b) above.

The Authority will issue all major design change approvals, MSTC and major repair design approvals to MTCs. The holder organisation will be responsible for the holder obligations of those instruments as defined in DASR 21.A.118A for MSTC and DASR 21.A.451(a) for major repairs.

(a) Undertake the obligations laid down in DASR 21.A.3A, DASR 21.A.3B, DASR 21.A.4, DASR 21.A.55, DASR 21.A.57 and DASR 21.A.61; and, for this purpose, shall continue to meet the requirements of DASR 21.A.14; ▸ **AMC**

AMC 21.A.44(a) Continue to meet the qualification requirements for eligibility

To ensure that the holder of a type certificate or restricted type certificate remains capable to undertake the required actions and obligations, DASR 21.A.44 (a) also requires the holder to continue to meet the requirements of DASR 21.A.14.

To comply with this requirement, the holder of a type-certificate or restricted type-certificate shall inform the Authority without undue delay of any circumstances that significantly affect the ability of the holder to effectively discharge its obligations.

If the actions and obligations of the holder of a type-certificate or restricted type-certificate are undertaken on its behalf by another person or organisation in accordance with DASR 21.A.2, these circumstances shall include any changes to the relevant arrangements with the other organisation or findings regarding its safety performance.

(b) Specify the marking in accordance with DASR 21 Subpart Q; and

(c) Ensure the continued integrity of the aircraft structure and propulsion system through ongoing monitoring and periodic assessment. ▸ **AMC**

AMC 21.A.44(c) Continued integrity of the Aircraft Structural and Propulsion System (AUS)

In order to demonstrate compliance with product integrity requirements in the Type Certification Basis (TCB), assumptions are made by OEMs during design regarding factors such as operational usage, loads and environment; material performance; and manufacturing and assembly processes.

The periodic assessments undertaken by the MTC holder should ensure that the assumptions made during design and certification that could affect the integrity of structural and propulsion system critical parts (see DASR AMC 21.A.41) remain valid for the Defence Configuration Role and Environment (CRE). Periodic assessments should identify whether there is a need to update the type certificate (including Airworthiness Limitations (AwL)), Instructions for Continuing Airworthiness or monitoring provisions (e.g. life tracking or health monitoring) in order to ensure continued compliance with the TCB. These subsequent updates are separate to the periodic assessment process and should be conducted in accordance with the relevant DASR.

The MTC holder should undertake ongoing monitoring of service experience throughout the operational life of the fleet in order to determine the periodicity of assessments, and collect the data required for the assessments. Relevant service experience data should include, but is not limited to: operational usage; failures, malfunctions, defects and other occurrences (see DASR 21.A.3A(a)), and other unserviceabilities; maintenance findings, results of inspections and repair data; health monitoring data; and detailed inspection or testing of parts with service history. Where available, service experience from other operators should also be considered. The MTC holder should define the data required and establish a relationship with the operator(s) to collect this data.

Ongoing monitoring and periodic assessment for aircraft structures should include capture and routine evaluation of data through usage monitoring and structural condition monitoring, as well as periodic structural integrity assessments.

Ongoing monitoring and periodic assessment for propulsion systems should be achieved through the periodic conduct of a mission analysis. The mission analysis should be undertaken by the respective Original Equipment Manufacturer (OEM) or a suitably experienced organisation with access to necessary type design data. The mission analysis should explicitly confirm (through formal written correspondence from the OEM/organisation) that the propulsion system critical part AwLs (defined in DASR AMC 21.A.41) remain valid for the Defence CRE.

The Defence Aviation Safety Design Requirements Manual (DASDRM) includes essential design requirements related to ongoing monitoring and periodic assessment for aircraft structures and propulsion systems. Compliance with these DASDRM essential design requirements ensures that the relevant system and process requirements are clearly defined up-front as part of type certification.

The MTC holder obligations under DASR 21.A.44(c) should be implemented as part of the Aircraft Structural Integrity Program (ASIP) and Propulsion System Integrity Program (PSIP) for each aircraft. The Aircraft Structural / Propulsion System Integrity Management Plan (ASIMP/ PSIMP) for each platform should detail the systems, processes and responsibilities for ongoing monitoring and periodic assessment.

21.A.47 - Transferability

Transfer of a type-certificate or restricted type-certificate may only be made to an organisation that is able to undertake the obligations under DASR 21.A.44, and, for this purpose, has demonstrated its ability to qualify under the criteria of DASR 21.A.14.

21.A.51 - Duration and continued validity

(a) A type-certificate and restricted type-certificate shall be issued for an unlimited duration. They shall remain valid subject to:

1. The holder remaining in compliance with this DASR; and

2. The certificate not being surrendered or revoked under the applicable administrative procedures established by the Authority.

(b) Upon surrender or revocation, the type-certificate and restricted type-certificate shall be returned to the Authority.

(c) The type-certificate or restricted type-certificate holder must inform the Authority, as soon as practicable, when it is no longer able to meet the type-certificate or the restricted type-certificate holder responsibilities defined by this DASR, for one or several types of product.

21.A.55 - Record keeping

All relevant design information, drawings and test reports, including inspection records for the product tested, shall be held by the type-certificate or restricted type-certificate holder at the disposal of the Authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness and compliance with applicable environmental protection requirements of the product. ▸ **GM**

GM 21.A.55 - Record keeping (AUS)

Records should be retained for at least two years after the removal from service of the last aircraft of the type certified.

21.A.57 - Manuals

The holder of a type-certificate or restricted type-certificate shall produce, maintain and update master copies of all manuals required by the applicable type-certification basis and environmental protection requirements for the product, and provide copies, on request, to the Authority. ▸ **AMC**

AMC 21.A.57 - Manuals (AUS)

The system to produce, maintain and update manuals shall ensure:

a. manuals are complete, current, and uniquely identified;

b. manuals contain their authority for use, document name, date of issue, and document / amendment status details;

c. manuals are provided in a medium compatible with user requirements;

d. new issues, re-issues and/or amendments are approved and/or endorsed by appropriate appointments prior to their release, noting that the process to update a manual may be separate from the process to approve or authorise the content of the manual, eg approve AwL limitations in ICA;

e. manual management records are accurately maintained, controlled, traceable and are accessible; and

f. manuals can be reproduced to any previous amendment status.

21.A.61 - Instructions for continuing airworthiness

AMC GM

GM 21.A.61 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) details the methods, inspections, processes, and procedures necessary for the air operator to keep aircraft and / or engine, propeller, parts and appliances airworthy during its intended life.

The contents of ICA can be divided into two categories:

a. an approved airworthiness limitations (AwL) section as defined by the applicable airworthiness codes during the certification process, which forms part of the type design / type-certificate (DASR 21.A.31(a)(3) and DASR 21.A.41):

   i. any limitations determined through the certification of the product, and instructions on how to determine that these limits have been exceeded.

   ii. any inspection, servicing or maintenance actions determined to be necessary by the certification process.

b. sections that do not contain approved data from the certification process and are not considered as part of type design/type-certificate:

   i. any inspection or troubleshooting actions determined to be necessary to establish the nature of faults and the necessary remedial actions.

   ii. sufficient general information on the operation of the product to enable an understanding of the instructions in paragraphs (a)(i), (a)(ii), and (b)(i) above.

AMC 21.A.61 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) shall be distributed in accordance with DASR AMC 21.A.57 – Manuals.

The system for distributing ICA and their amendments to users shall ensure that:

a. details of the authorised distribution of ICA to each user is recorded; and

b. ICA are accessible to organisations and personnel.

(a) The holder of the type-certificate or restricted type-certificate shall furnish at least one set of complete instructions for continuing airworthiness, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable type-certification basis, to each known operator of one or more aircraft, engine or propeller upon its delivery or upon issue of the first certificate of airworthiness for the affected aircraft, whichever occurs later and thereafter make those instructions available on request to any other operator required to comply with any of the terms of those instructions. The availability of some manual or portion of the instructions for continuing airworthiness, dealing with overhaul or other forms of heavy maintenance,

may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight-hours/cycles.

(b) In addition, changes to the instructions for continuing airworthiness shall be made available to all known operators of the product and shall also be provided on request to any other operator required to comply with any of those instructions. A programme showing how changes to the instructions for continuing airworthiness are distributed shall be submitted to the Authority.

21.A.62 - Reserved

SUBPART C - (NOT APPLICABLE)

SUBPART D - CHANGES TO MILITARY TYPE-CERTIFICATES AND MILITARY RESTRICTED TYPE-CERTIFICATES

21.A.90 - Scope

▸ GM

GM 21.A.90A – Scope

The term 'changes to the type certificate' is consistently used in DASR 21 Section A Subpart D and E, as well as in the related AMC and GM. This term does not refer to changing the document that reflects the Military Type Certificate (MTC) but to the elements of the MTC as defined in DASR 21.A.41. It means that the processes for the approval of changes, as described in the said two Subparts, do not only apply to changes to the type design, but may also apply to changes to:

– the operating limitations;

– the type certificate data sheet (TCDS) for airworthiness;

– the applicable type-certification basis and environmental protection requirements with which the applicant has to demonstrate compliance;

– any other conditions or limitations prescribed for the product by the Authority.

This Subpart establishes the procedure for the approval of changes to type-certificates, and establishes the rights and obligations of the applicants for, and holders of, those approvals. In this Subpart, references to type-certificates include type certificate and restricted type certificate.

21.A.91 - Classification of changes to a type-certificate

Changes to a type-certificate are classified as minor and major. A 'minor change' has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product or its environmental characteristics. Without prejudice to DASR 21.A.19, all other changes are "major

changes" under this Subpart. Major and minor changes shall be approved in accordance with DASR 21.A.95 or DASR 21.A.97 as appropriate, and shall be adequately identified. ▸ **GM**

GM 21.A.91 - Classification of changes to a Military Type Certificate (MTC)

1. Purpose of classification

1.1 Classification of changes to a Military Type Certificate (MTC) into 'MAJOR' or 'MINOR' is to determine the approval route to be followed in DASR 21 Section A Subpart D, ie either DASR 21.A.95 or DASR 21.A.97, or alternatively whether application and approval has to be made in accordance with DASR 21 Section A Subpart E

2. Introduction

2.1 DASR 21.A.91 proposes criteria for the classification of changes to an MTC as minor and major.

(a) This GM is intended to provide guidance on the term 'appreciable effect' affecting the airworthiness of the product or affecting any of the other characteristics mentioned in DASR 21.A.91, where 'airworthiness' is interpreted in the context of a product in conformity with type design and in condition for safe operation. It provides complementary guidelines to assess a change to the MTC in order to fulfil the requirements of DASR 21.A.91 and DASR 21.A.117 where classification is the first step of a procedure.

NOTE: For classification of Repairs see DASR GM 21.A.435(a).

(b) Although this GM provides guidance on the classification of major changes, as opposed to minor changes as defined in DASR 21.A.91, the GM and DASR 21.A.91 are deemed entirely compatible.

2.2 For an AUSMTSO authorisation, DASR 21.A.611 gives specific additional requirements for design changes to AUSMTSO articles.

For APU, this GM 21.A.91 is to be used.

3. Assessment of a design change for classification

3.1 Changes to the MTC

DASR 21.A.91 addresses all changes to any of the aspects of an MTC. This includes changes to a type design, as defined in DASR 21.A.31, as well as to the other constituents of an MTC, as defined in DASR 21.A.41.

3.2 (Reserved)

3.3 Classification Process (see diagram in ▸ Appendix A to GM 21.A.91)

Appendix A to GM 21.A.91 - Examples of 'MAJOR' Changes per discipline

The information below is intended to provide a few major change examples per discipline, resulting from application of DASR 21.A.91 and GM 21.A.91 paragraph 3.4 conditions. It is not intended to present a comprehensive list of all major changes. Examples are categorised per

discipline and are applicable to all products (aircraft, engines and propellers). However a particular change may involve more than one discipline, e.g., a change to engine controls may be covered in engines and systems (software).

Those involved with classification are to always be aware of the interaction between disciplines and the consequences this will have when assessing the effects of a change (i.e. operations and structures, systems and structures, systems and systems, etc.; see example in paragraph 2.b).

Specific rules may exist which override the guidance of these examples.

In the DASR 21 a negative definition is given of minor changes only. However in the following list of examples it was preferred to give examples of major changes.

Where in this list of examples the words 'has effect' or 'affect(s) are used, they have always to be understood as being the opposite of 'no appreciable effect' as in the definition of minor change in DASR 21.A.91. Strictly speaking the words 'has appreciable effect' and 'appreciably affect(s)' would have been used, but this has not been done to improve readability.

1. Structure

a) Changes such as a cargo door cut-out, fuselage plugs, change of dihedral, addition of floats;

b) Changes to materials, processes or methods of manufacture of primary structural elements, such as spars, frames and critical parts;

c) Changes that adversely affect fatigue or damage tolerance or life limit characteristics;

d) Changes that adversely affect aero-elastic characteristics;

e) Changes that affect primary structural element loads and their path.

2. Cabin Safety

a) Changes which introduce a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.

Items to consider include, but are not limited to:

- changes to or introduction of dynamically tested seats;
- change to the pitch between seat rows;
- change of distance between seat and adjacent obstacle like a divider;
- changes to cabin layouts that affect evacuation path or access to exits;
- installation of new galleys, toilets, wardrobes, etc.;
- installation of new type of electrically powered galley insert.

b) Changes to the pressurisation control system which adversely affect previously approved limitations.

3. Flight

a) Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance, deck landing, operation with night vision devices, air to air refuelling, low level flight.

b) Changes which adversely affect the flight envelope.

c) Changes which adversely affect the handling qualities of the product including changes to the flight controls function (gains adjustments, functional modification to software) or changes to the flight protection or warning system.

4. Systems

For systems assessed under the applicable airworthiness requirements the classification process is based on the functional aspects of the change and its potential effects on safety:

a) Where failure effect is 'CATASTROPHIC' or 'HAZARDOUS', the change is to be classified as major.

b) Where failure effect is 'MAJOR', the change is to be classified as major if:

- aspects of the compliance demonstration use means that have not been previously accepted for the nature of the change to the system; or
- the change affects the pilot/system interface (displays, controls, approved procedures); or
- the change introduces new types of functions/systems such as GPS primary, TCAS, Predictive wind-shear, HUD.

The assessment of the criteria for software changes to systems also needs to be performed.

When software is involved, account is to be taken also of the following guidelines:

Where a change is made to software produced in accordance with the guidelines of EUROCAE ED12C/RTCA DO–178C 'Software Considerations in Airborne Systems and Equipment Certification', the change is to be classified as major if either of the following apply, and the failure effect is CATASTROPHIC, HAZARDOUS or MAJOR:

a) the executable code for software, determined to be Level A or Level B in accordance with the guidelines, is changed unless that change involves only a variation of a parameter value within a range already verified for the previous certification standard; or

b) the software is upgraded to or downgraded from Level A, Level B or Level C; or

c) the executable code, determined to be Level C, is deeply changed, eg after a software re-engineering process accompanying a change of processor.

For software developed to guidelines other than EUROCAE ED12C/RTCA DO–178C, the applicant is to assess changes in accordance with the foregoing principles.For other

codes the principles noted above may be used. However, due consideration is to be given to specific requirements/interpretations.

5. Propellers

Changes to:

a) diameter;

b) airfoil;

c) planform;

d) material;

e) blade retention system, etc.

6. Engines

Changes:

a) that adversely affect operating speeds, temperatures, and other limitations;

b) that affect or introduce parts (as identified by the applicable airworthiness requirements) where the failure effect has been shown to be hazardous;

c) that affect or introduce engine critical parts (as identified by the applicable airworthiness requirements) or their life limits;

d) to a structural part which requires a re-substantiation of the fatigue and static load determination used during certification;

e) to any part of the engine which adversely affects the existing containment capability of the structure;

f) that adversely affect the fuel, oil and air systems, which alter the method of operation, or require reinvestigation against the type-certification basis;

g) that introduce new materials or processes, particularly on critical components.

7. Rotors and drive systems

Changes that:

a) adversely affect fatigue evaluation unless the service life or inspection interval are unchanged. This includes changes to materials, processes or methods of manufacture of parts, such as:

- rotor blades;
- rotor hubs including dampers and controls;
- gears;
- drive shafts;
- couplings.

b) affect systems the failure of which may have hazardous or catastrophic effects. The design assessment will include:

- cooling system;
- lubrication system;
- rotor controls.

c) adversely affect the results of the rotor drive system endurance test, such as the rotor drive system required in EASA CS 27/29–917.

d) adversely affect the results of the shafting critical speed analysis such as required by EASA CS 27/29–931.

8. Environment (where applicable)

A change that introduces an increase in noise or emissions. Where a change is made to an aircraft or aircraft engine for which compliance with ICAO Standards and Recommended Practices for environmental protection (ICAO Annex 16) is required or stated, the effect of the change on the product's environmental characteristics should be taken into account. Examples of changes that might have an appreciable effect on the product's environmental characteristics, and might therefore be classified as major changes, can be found in Appendix A to EASA GM 21.A.91. The examples are not exhaustive and will not, in every case, result in an appreciable change to the product's environmental characteristics, and therefore, will not always result in a 'major change' classification.

9. Power plant Installation

Changes which include:

a) control system changes which affect the engine/propeller/airframe interface;

b) new instrumentation displaying operating limits;

c) modifications to the fuel system and tanks (number, size and configuration);

d) change of engine/propeller type.

10. Operational capabilities

Integration or modification of mission equipment that could adversely affect safety of third parties include, but are not limited to:

a) in-flight refuelling capabilities;

b) external stores and tanks, including jettison devices;

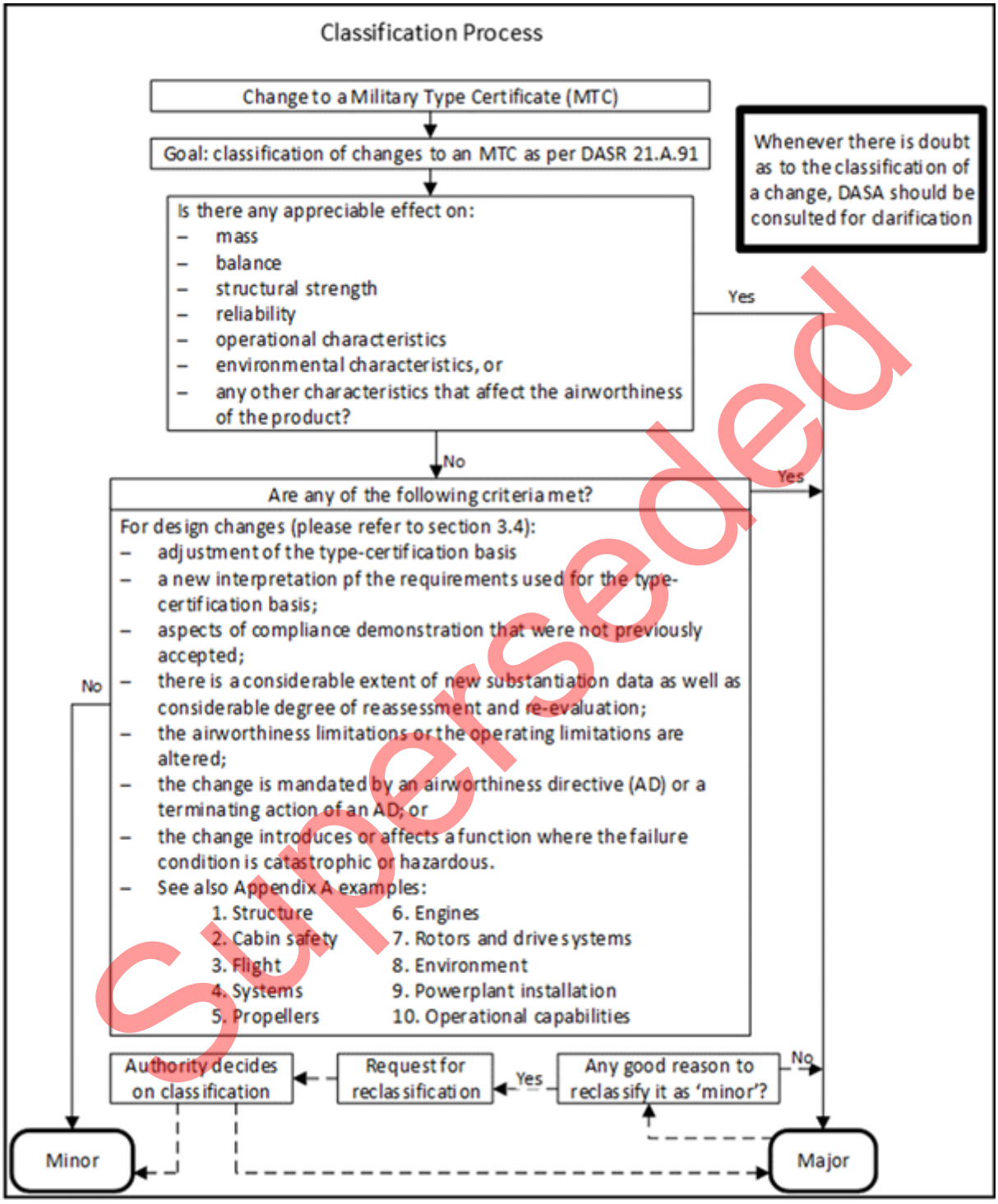
c) armament, including high power laser;

d) equipment that may affect Electromagnetic Environmental Effects (E^3) integrity, (e.g. new radar);

e) aerial delivery systems;

f) flare and chaff system;

A classification process would be:



DASR 21.A.91 requires all changes to be classified as either major or minor, using the criteria of DASR 21.A.91

Wherever there is doubt as to the classification of a change, the Authority is to be consulted for clarification.

When the strict application of the paragraph 3.4 criteria results in a major classification, the applicant may request reclassification, if justified, and the Authority could take the responsibility in reclassifying the change.

A simple design change planned to be mandated by an airworthiness directive may be reclassified minor due to the involvement of the Authority in the continued airworthiness process when this is agreed between the Authority and the MDOA holder.

The reasons for a classification decision should be recorded.

3.4 Complementary guidance for classification of changes

A change to the MTC is judged to have an 'appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the airworthiness of the product or its environmental characteristics' and, therefore, should be classified as major, in particular but not only, when one or more of the following conditions are met:

(a) Where the change requires an adjustment of the type-certification basis (such as special conditions, equivalent safety findings or exceptions) other than electing to comply with airworthiness requirements that are derived from a later amendment to an airworthiness code;

(b) Where the applicant proposes a new interpretation of the airworthiness requirements used for the type certification basis that has not been published as AMC material or otherwise agreed with the Authority;

(c) Where the demonstration of compliance uses methods that have not been previously accepted as appropriate for the nature of the change;

(d) Where the extent of new substantiation data necessary to comply with the applicable airworthiness requirements and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable;

(e) Where the change alters the airworthiness limitations or the operating limitations;

(f) Where the change is made mandatory by an airworthiness directive or the change is the terminating action of an airworthiness directive (reference DASR 21.A.3B), see NOTE 1; and

(g) Where the change introduces or affects functions where the failure effect is classified catastrophic or hazardous.

NOTE 1: A change previously classified as minor and approved prior to the airworthiness directive issuance decision needs no reclassification. However, the Authority retains the right to review the change and reclassify/reapprove it if found necessary.

NOTE 2: The conditions listed in (a) through (g) above are an explanation of the criteria noted in DASR 21.A.91.

For an understanding of how to apply the above conditions, it is useful to take note of the examples given in ▸ **Appendix A to GM 21.A.91**

Appendix A to GM 21.A.91 - Examples of 'MAJOR' Changes per discipline

The information below is intended to provide a few major change examples per discipline, resulting from application of DASR 21.A.91 and GM 21.A.91 paragraph 3.4 conditions. It is not intended to present a comprehensive list of all major changes. Examples are categorised per discipline and are applicable to all products (aircraft, engines and propellers). However a particular change may involve more than one discipline, e.g., a change to engine controls may be covered in engines and systems (software).

Those involved with classification are to always be aware of the interaction between disciplines and the consequences this will have when assessing the effects of a change (i.e. operations and structures, systems and structures, systems and systems, etc.; see example in paragraph 2.b).

Specific rules may exist which override the guidance of these examples.

In the DASR 21 a negative definition is given of minor changes only. However in the following list of examples it was preferred to give examples of major changes.

Where in this list of examples the words 'has effect' or 'affect(s) are used, they have always to be understood as being the opposite of 'no appreciable effect' as in the definition of minor change in DASR 21.A.91. Strictly speaking the words 'has appreciable effect' and 'appreciably affect(s)' would have been used, but this has not been done to improve readability.

1. Structure

a) Changes such as a cargo door cut-out, fuselage plugs, change of dihedral, addition of floats;

b) Changes to materials, processes or methods of manufacture of primary structural elements, such as spars, frames and critical parts;

c) Changes that adversely affect fatigue or damage tolerance or life limit characteristics;

d) Changes that adversely affect aero-elastic characteristics;

e) Changes that affect primary structural element loads and their path.

2. Cabin Safety

a) Changes which introduce a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability or which adversely affect other aspects of passenger or crew safety.

Items to consider include, but are not limited to:

- changes to or introduction of dynamically tested seats;
- change to the pitch between seat rows;
- change of distance between seat and adjacent obstacle like a divider;
- changes to cabin layouts that affect evacuation path or access to exits;

- installation of new galleys, toilets, wardrobes, etc.;
- installation of new type of electrically powered galley insert.

b) Changes to the pressurisation control system which adversely affect previously approved limitations.

3. Flight

a) Changes which adversely affect the approved performance, such as high altitude operation, brake changes that affect braking performance, deck landing, operation with night vision devices, air to air refuelling, low level flight.

b) Changes which adversely affect the flight envelope.

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For systems assessed under the applicable airworthiness requirements the classification process is based on the functional aspects of the change and its potential effects on safety:

a) Where failure effect is 'CATASTROPHIC' or 'HAZARDOUS', the change is to be classified as major.

b) Where failure effect is 'MAJOR', the change is to be classified as major if:

- aspects of the compliance demonstration use means that have not been previously accepted for the nature of the change to the system; or
- the change affects the pilot/system interface (displays, controls, approved procedures); or
- the change introduces new types of functions/systems such as GPS primary, TCAS, Predictive wind-shear, HUD.

The assessment of the criteria for software changes to systems also needs to be performed.

When software is involved, account is to be taken also of the following guidelines:

Where a change is made to software produced in accordance with the guidelines of EUROCAE ED12C/RTCA DO–178C 'Software Considerations in Airborne Systems and Equipment Certification', the change is to be classified as major if either of the following apply, and the failure effect is CATASTROPHIC, HAZARDOUS or MAJOR:

a) the executable code for software, determined to be Level A or Level B in accordance with the guidelines, is changed unless that change involves only a variation of a parameter value within a range already verified for the previous certification standard; or

b) the software is upgraded to or downgraded from Level A, Level B or Level C; or

c) the executable code, determined to be Level C, is deeply changed, eg after a software re-engineering process accompanying a change of processor.

For software developed to guidelines other than EUROCAE ED12C/RTCA DO–178C, the applicant is to assess changes in accordance with the foregoing principles.For other codes the principles noted above may be used. However, due consideration is to be given to specific requirements/interpretations.

5. Propellers

Changes to:

a) diameter;

b) airfoil;

c) planform;

d) material;

e) blade retention system, etc.

6. Engines

Changes:

a) that adversely affect operating speeds, temperatures, and other limitations;

b) that affect or introduce parts (as identified by the applicable airworthiness requirements) where the failure effect has been shown to be hazardous;

c) that affect or introduce engine critical parts (as identified by the applicable airworthiness requirements) or their life limits;

d) to a structural part which requires a re-substantiation of the fatigue and static load determination used during certification;

e) to any part of the engine which adversely affects the existing containment capability of the structure;

f) that adversely affect the fuel, oil and air systems, which alter the method of operation, or require reinvestigation against the type-certification basis;

g) that introduce new materials or processes, particularly on critical components.

7. Rotors and drive systems

Changes that:

a) adversely affect fatigue evaluation unless the service life or inspection interval are unchanged. This includes changes to materials, processes or methods of manufacture of parts, such as:

- rotor blades;
- rotor hubs including dampers and controls;

- gears;
- drive shafts;
- couplings.

b) affect systems the failure of which may have hazardous or catastrophic effects. The design assessment will include:

- cooling system;
- lubrication system;
- rotor controls.

c) adversely affect the results of the rotor drive system endurance test, such as the rotor drive system required in EASA CS 27/29–917.

d) adversely affect the results of the shafting critical speed analysis such as required by EASA CS 27/29–931.

8. Environment (where applicable)

A change that introduces an increase in noise or emissions. Where a change is made to an aircraft or aircraft engine for which compliance with ICAO Standards and Recommended Practices for environmental protection (ICAO Annex 16) is required or stated, the effect of the change on the product's environmental characteristics should be taken into account. Examples of changes that might have an appreciable effect on the product's environmental characteristics, and might therefore be classified as major changes, can be found in Appendix A to EASA GM 21.A.91. The examples are not exhaustive and will not, in every case, result in an appreciable change to the product's environmental characteristics, and therefore, will not always result in a 'major change' classification.

9. Power plant Installation

Changes which include:

a) control system changes which affect the engine/propeller/airframe interface;

b) new instrumentation displaying operating limits;

c) modifications to the fuel system and tanks (number, size and configuration);

d) change of engine/propeller type.

10. Operational capabilities

Integration or modification of mission equipment that could adversely affect safety of third parties include, but are not limited to:

a) in-flight refuelling capabilities;

b) external stores and tanks, including jettison devices;

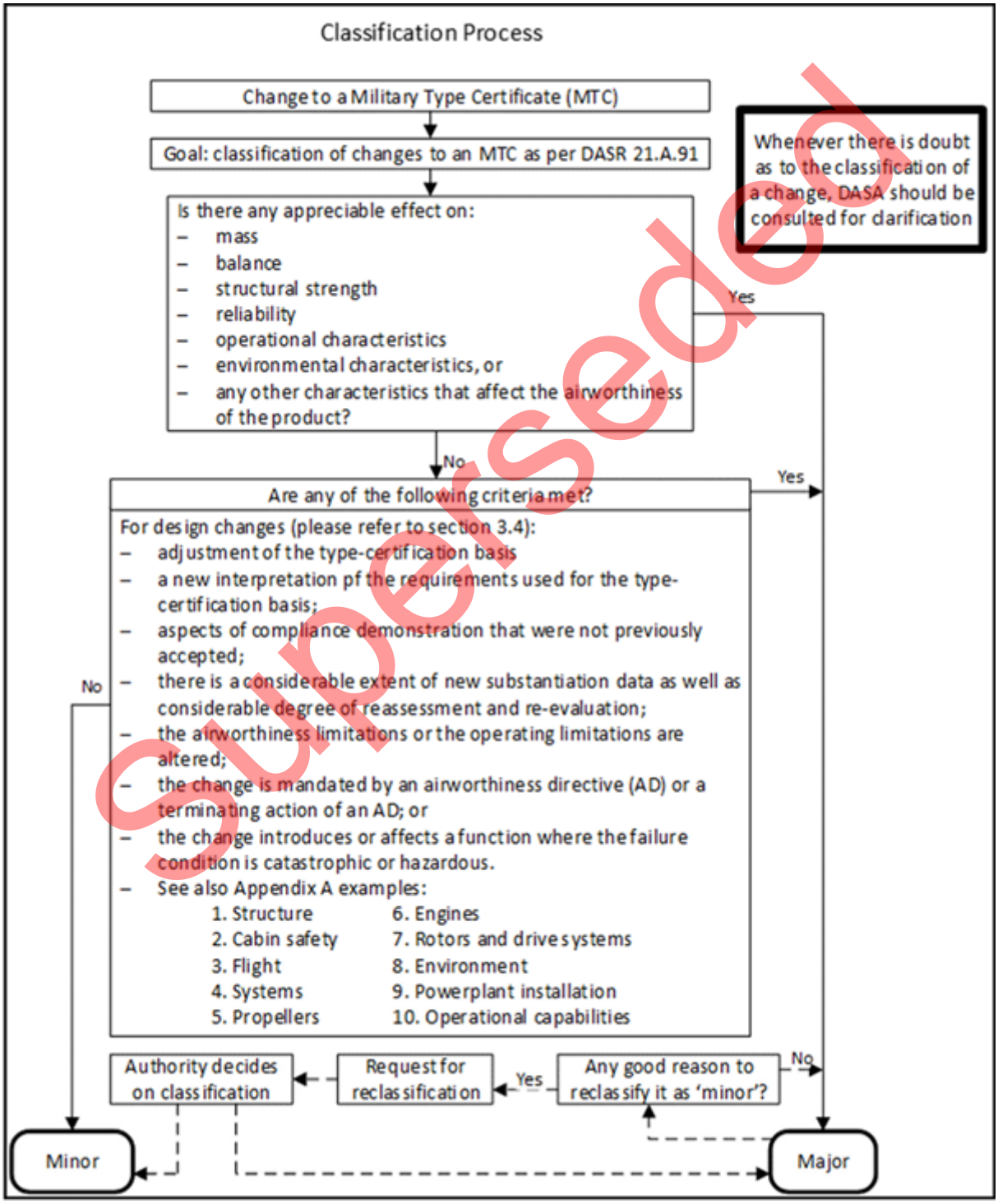
c) armament, including high power laser;

d) equipment that may affect Electromagnetic Environmental Effects (E^3) integrity, (e.g. new radar);

e) aerial delivery systems;

f) flare and chaff system;

A classification process would be:



3.5 (Reserved)

3.6 Complementary guidance for the classification of changes to aircraft flight manuals (AFMs)

The following changes to the AFM are deemed to be minor:

(a) revisions to the AFM associated with changes to the type design that are classified as minor in accordance with DASR 21.A.91;

(b) revisions to the AFM that are not associated with changes to the type design (also identified as stand-alone revisions) which fall into one of the following categories:

1. changes to limitations or procedures that remain within already certified limits (e.g. weight, structural data, noise, etc.);

2. consolidation of two or more previously approved and compatible AFMs into one, or the compilation of different parts taken from previously approved and compatible AFMs that are directly applicable to the individual aircraft (customisation); and

3. the introduction into a given AFM of compatible and previously approved AFM amendments, revisions, appendices or supplements; and

(c) administrative revisions to the AFM, defined as follows:

1. for the AFMs issued by the MTC holder:

i. editorial revisions or corrections to the AFM;

ii. changes to parts of the AFM that do not require approval by the Authority;

iii. conversions of previous Authority approved combinations of units of measurement added to the AFM in a previously approved manner;

iv. the addition of aircraft serial numbers to an existing AFM where the aircraft configuration, as related to the AFM, is identical to the configuration of aircraft already covered by that AFM;

v. the removal of references to aircraft serial numbers no longer applicable to that AFM;

2. for AFM supplements issued by MSTC holders:

i. editorial revisions or corrections to the AFM supplement;

ii. changes to parts of the AFM supplement that are not required to be approved by the Authority;

iii. conversions of previous Authority approved combinations of units of measurement added to the AFM supplement in a previously approved manner;

iv. the addition of aircraft serial numbers to an existing AFM supplement where the aircraft configuration, as related to the AFM supplement, is identical to that of the aircraft already in that AFM supplement;

'identical' means here that all the aircraft have to belong to the same type and model/variant;

vi. the addition of a new MSTC to an existing AFM supplement, when this supplement is fully applicable to the new MSTC;

vii. the removal of references to aircraft serial numbers that are no longer applicable to that AFM supplement.

21.A.92 - Eligibility

(a) Only the type-certificate holder may apply for approval of a major change to a type-certificate under this Subpart; all other applicants for a major change to a type-certificate shall apply under DASR 21 Subpart E. ▸ **GM**

GM 21.A.92 (a) - Eligibility to apply for approval of a major change to a type-certificate

The expression "Only the type-certificate holder may apply for approval of a major change to a type-certificate under this Subpart" includes any person or organisation acting on behalf of the type-certificate holder in accordance with DASR 21.A.2, subject to the arrangements with the Holder.

(b) Any organisation may apply for approval of a minor change to a type-certificate under this Subpart.

21.A.93 - Application

▸ **AMC**

AMC 21.A.93 - Application - Form and Manner

The application referenced in DASR 21.A.93 refers to the initial formal notification to the Authority of the intent to seek approval of a change. This can be achieved through submission of DASR Form 31. In the absence of a Form 31, submission of the first version of the certification programme will be taken as the initial application.

Final applications for approval of changes to type certificates should be made as follows:

– For a 'major' change to type design, via DASR Form 31a

– For a 'major' repair, via DASR Form 31b

– For a 'minor' change to type design or a 'minor' repair, via DASR Form 32

– For other changes to type certificates, DASA should be contacted to confirm the appropriate Form and Manner for the application.

(a) An application for approval of a change to a type-certificate shall be made in a form and manner established by the Authority.

(b) An application shall include, or be supplemented after the initial application with, a certification programme for the demonstration of compliance in accordance with DASR 21.A.20, consisting of: ▸ **AMC** ▸ **GM** ▸ **GM1**

GM1 to 21.A.93(b) - Software aspects of a Certification Programme (AUS)

The certification programme may include software certification requirements for Major changes to type design. The Authority encourages applicants to develop a Plan for Software Aspects of Certification (PSAC), or equivalent document, and provide it as an enclosure to the certification programme.

GM 21.A.93(b) - 'Simple' Major Changes (AUS)

For a 'simple' major change, the certification programme may be provided with the final application for approval.

A 'simple' major change is a change which does not require long or complex compliance demonstration activities, where the proposal for the Authority Level of Involvement (based on DASR 21.A.93(b)3(iii)) is nil. A change which requires tailoring of the certification basis would not normally be considered simple, unless the tailoring can be assessed without an understanding of the specific programme (for example, inclusion of a Special Condition covering DASDRM requirements for a capability or technology not currently covered in the TCB). Tailoring must be formally agreed with the Authority before submission of the final application and the associated declaration of compliance.

Some examples of major changes that may be considered 'simple' are:

– Changes to Airworthiness Limitations (AwLs) and Certification Maintenance Requirements (CMRs) or revised OEM source publications previously certified by a recognised CAA/MAA

– Changes to the Operating Limitations of an MTC previously certified by a recognised CAA/MAA.

– Other major changes previously certified by a recognised CAA/MAA, where there are no CRE deltas

While the above examples would typically be considered 'simple' the Authority may, on presentation of an application, identify a requirement for LoI or otherwise identify an issue with the presented certification programme. These issues may result in additional work and/or a requirement for the certification programme to be separated from the final application.

AMC 21.A.93(b) - Certification programme for a change to an MTC or an MSTC

The description of the change should include an explanation of the purpose of the change, the pre-modification and post-modification configuration(s) of the product, schematics/pictures, and any other detailed features and boundaries of the physical change (this may be supplemented by drawings or outlines of the design, if this helps to understand the design change), as well as the identification of the changes in areas of the product that are functionally

affected by the change, and the identification of any changes to the approved manuals. Guidance on areas that are changed and affected by the change is found in DASR GM 21.A.101, Section 3.9.1.

Identification of reinvestigations referred to in DASR 21.A.93(b)(2), necessary to demonstrate compliance, does not mean the demonstration of compliance itself, but the list of affected items of the applicable certification basis for which a new demonstration is necessary, together with the means (e.g. calculation, test or analysis) by which it is proposed to demonstrate compliance.

Before submitting the application for a change, the analysis and classification activities of DASR 21.A.91 and DASR 21.A.101 should be performed using the corresponding GM.

For repair designs, the analysis of DASR 21.A.91 should be performed using DASR GM 21.A.435(a). For a major change, DASR AMC 21.A.15(b) should be used as applicable to the change.

1. A description of the change identifying:

   i. the configuration(s) of the product in the type-certificate upon which the change is to be made;

   ii. all areas of the product in the type-certificate, including the approved manuals, that are changed or affected by the change;

2. An identification of any reinvestigations necessary to demonstrate compliance of the change and areas affected by the change with the type-certification basis and environmental protection requirements; ▸ **GM**

GM 21.A.93(b)(2) - Type-certification Basis for a change to a type-certificate (AUS)

The type-certification basis referenced in DASR 21.A.93(b)2 is established through DASR 21.A.95 for a minor change and DASR 21.A.101 for a major change. DASR 21.A.95 and DASR 21.A.101 state that the existing certification basis established in the type certificate is considered adequate for 'minor' and non-significant 'major' changes. However, Australia's Work Health and Safety Act (Commonwealth) 2011 (WHS Act), levies additional obligations on designers, namely to exercise 'reasonable knowledge' when determining that any risk inherent in designs has been minimised So Far As is Reasonably Practicable (SFARP). Updates to applicable standards may provide insight into hazards and potential controls that are not identified in the version of the standards prescribed in the existing aircraft's type certificate. The requirements prescribed in the Defence Aviation Safety Design Requirements Manual (DASDRM) provide a source of requirements and standards that can assist engineers to satisfy their obligation to exercise reasonable knowledge of hazards and associated controls in aircraft design.

3. For a major change to a type-certificate:

   i. a proposal for the initial type-certification basis and environmental protection requirements, prepared in accordance with the requirements and options specified in DASR 21.A.101;

ii. a proposal for a breakdown of the certification programme into meaningful groups of compliance demonstration activities and data, including a proposal for the means of compliance and related compliance documents;

iii. a proposal for the assessment of the meaningful groups of compliance demonstration activities and data, addressing the likelihood of an unidentified non-compliance with the type-certification basis, operational suitability data certification basis or environmental protection requirements and the potential impact of that non-compliance on product safety or environmental protection; and ▸ **AMC** ▸ **GM**

GM 21.A.93(b)(3)(iii) - Level of Involvement (AUS)

For guidance on Authority determination of Level of Involvement see DASR GM 21.A.15(b)(6).

AMC 21.A.93(b)(3)(iii) - Level of Involvement (AUS)

The proposed assessment shall take into account at least the following elements:

1. novel or unusual features of the certification project, including operational, organisational and knowledge management aspects;
2. complexity of the design and/or demonstration of compliance;
3. criticality of the design or technology and the related safety and environmental risks, including those identified on similar designs; and
4. performance and experience of the design organisation of the applicant in the domain concerned.

Based on this assessment, the application shall include a proposal for the Authority's involvement in the verification of the compliance demonstration activities and data.

iv. a project schedule including major milestones.

(c) An application for a change to a type-certificate shall be valid for five years unless the Authority agrees at the time of application on a longer time period. In the case where the change has not been approved, or it is evident that it will not be approved, within the time limit provided for in this point, the applicant shall apply for an extension of the validity of the application and comply with the type-certification basis and environmental protection requirements, established in accordance with DASR 21.A.101. ▸ **GM**

GM 21.A.93(c) - Period of validity for the application

For guidance on the determination of the period of validity for the application, refer to GM 21.A.15(e) and (f).

21.A.95 - Requirements for approval of a minor changes

▸ **AMC**

AMC 21.A.95 - Requirements for the approval of a minor change

(a) Applicability of DASR 21.A.95

DASR 21.A.95 has to be complied with by applicants for the approval of a minor change to a Military Type Certificate (MTC), and by Military Design Organisation Approval (MDOA) holders that approve minor changes under their own privileges.

DASR 21.A.95(e), however, only applies to projects for which an application is submitted to the Authority. For MDOA holders that approve minor changes under their privileges, the substantiating data and the statement of compliance required by DASR 21.A.95(e) should be produced but do not need to be submitted to the Authority. They should be, however, kept on record and submitted to the Authority on request during its MDOA continued surveillance process.

(b) The approval process

The approval process comprises the following steps:

Note: Steps 1, 2 and 5 should be followed only by applicants for minor changes approved by the Authority. MDOA holders that approve minor changes under their privileges should refer to DASR AMC1 to 21.A.263(c)(2) or DASR AMC2 to 21.A.263(c)(2), as applicable to their approval process.

1. Application

2. When the minor change is approved by the Authority, an application should be submitted to the Authority as described in DASR 21.A.93(a) and DASR 21.A.93(b) and in DASR AMC 21.A.93(a).

3. Certification programme

   The certification programme should consist of the information defined in DASR 21.A.93(b)(1) and DASR 21.A.93(b)(2). Please refer to DASR AMC 21.A.93(b) for further information.

5. Certification basis

6. Demonstration of compliance

7. Statement of compliance

(c) Certification basis

The certification basis for a minor change consists of a subset of the elements of the product's certification basis 'incorporated by reference in the type certificate' (see also the additional guidance below on the meaning of airworthiness requirements that became applicable after those 'incorporated by reference in the type certificate'), which have been identified in accordance with DASR 21.A.93(b)(2) due to a reinvestigation of compliance being necessary because compliance was affected by the minor change (see also additional guidance below on the meaning of 'specific configurations').

The certification basis 'incorporated by reference in the type certificate' is the certification basis for the product as recorded in the type certificate data sheet (TCDS)

for the product type/model in the configuration(s) identified in accordance with DASR 21.A.93(b)(1)(i).

The certification basis contains the applicable airworthiness and environmental protection requirements specified by reference to their amendment level, as complemented by special conditions, equivalent safety findings, exceptions, and 'elect to comply', etc., as applicable.

By way of exception from the above, airworthiness requirements that became applicable after those incorporated by reference in the MTC may be used for the approval of a minor change (see the guidance below on airworthiness requirements that became applicable after those 'incorporated by reference in the type certificate').

If other changes are required for the embodiment of the minor change, the certification basis corresponding to the product modified by these other changes should also be considered when determining the certification basis for the minor change.

(d) Demonstration of compliance required by DASR 21.A.95(b)(1) and (2)

The applicant needs to demonstrate compliance with the certification basis established for the minor change for all areas that are either physically changed or functionally affected by the minor change.

1. Means of compliance: the applicant should define and record the means (calculation, test or analysis, etc.) by which compliance is demonstrated. Appendix A to AMC 21.A.15(b) may be used to describe how compliance is demonstrated.

2. Compliance documents: the compliance demonstration should be recorded in compliance documents. For minor changes, one comprehensive compliance document may be sufficient, provided that it contains evidence of all aspects of the compliance demonstration. AMC 21.A.20(c) can also be used, where applicable.

   See also the additional guidance in item (e).

3. Aircraft manuals: where applicable, supplements to manuals (e.g. aircraft flight manual (AFM), aircraft maintenance manual (AMM), etc.) may be issued.

   See also additional guidance below on embodiment/installation instructions (item (f)).

(e) Definition of the change to the type certificate

The change to the type certificate should be defined in accordance with GM 21.A.90A.

(f) Embodiment/installation instructions

The instructions for the embodiment/installation of the change (e.g. service bulletin, modification bulletin, production work order, etc.) should be defined. This may include the installation procedure, the required material, etc.

(g) (Reserved)

(h) Meaning of 'specific configurations' in DASR 21.A.95(f)

These 'specific configurations' are defined as the combination of the product type/ model (on which the minor change will be installed) with (if applicable) the list of those already approved changes (minor, major, Military Supplemental Type Certificate (MSTC)) that are required for the installation of the minor change.

(i) Airworthiness requirements that became applicable after those incorporated by reference in the type certificate

1. Minor changes are those changes that do not affect the airworthiness of the product and thus are, by definition, non-significant as per DASR 21.A.101. This means that the certification basis for the minor change may consist of the items of the certification basis incorporated by reference in the TCDS of the product type/model, and normally it should not be necessary for a minor change to use airworthiness requirements that became applicable after those that are incorporated by reference in the type certificate.

2. On the other hand, the applicant may elect to use later amendments of the affected airworthiness requirements for the compliance demonstration. This does not affect the classification of the change; however, the applicant should also comply with any other airworthiness requirements that the Authority considers to be directly related.

3. If other changes are required for the installation of the minor change (as explained in 'specific configurations'), the certification basis for the minor change should also take into account the corresponding certification basis.

(j) Meaning of 'no feature or characteristics' in DASR 21.A.95(b)(4) See GM 21.A.20(d).

See GM 21.A20(d)

(a) Minor changes to a type-certificate shall be classified and approved by:

1. the Authority; or

2. an approved military design organisation within the scope of its privileges provided for in (1) and (2) of DASR 21.A.263(c), as recorded in the terms of approval.

(b) A minor change to a type-certificate shall only be approved: ▸ **GM**

GM 21.A.95(b) - Requirements for the approval of a minor change

The level of detail of the documents that are referred to in DASR 21.A.93(b) should be the same regardless of whether the change is approved by the Authority or under a Military Design Organisation Approval (MDOA) privilege, to allow the change to be assessed in the frame of the MDOA surveillance.

1. when it has been demonstrated that the change and areas affected by the change comply with the type-certification basis and the environmental protection requirements incorporated by reference in the type-certificate;

2. (Reserved)

3. when compliance with the type-certification basis that applies in accordance with (1) has been declared and the justifications of compliance have been recorded in the compliance documents; and

4. when no feature or characteristic has been identified that may make the product unsafe for the uses for which certification is requested.

(c) By way of exception from (b)(1), airworthiness requirements which became applicable after those incorporated by reference in the type-certificate can be used for approval of a minor change, provided they do not affect the demonstration of compliance.

(d) (Reserved)

(e) The applicant shall submit to the Authority the substantiation data for the change and a statement that compliance has been demonstrated in accordance with (b).

(f) An approval of a minor change to a type-certificate shall be limited to the specific configuration(s) in the type-certificate to which the change relates.

21.A.97 - Requirements for approval of a major change

▸ AMC ▸ AMC1

AMC1 21.A.97 - Structural and Propulsion System Critical Parts and Airworthiness Limitations (AUS)

Where critical parts or airworthiness limitations are affected by a major change, the applicant should refer to DASR AMC 21.A.41 and submit the necessary data to the Authority.

AMC 21.A.97 - Requirements for the approval of a major change

1. AMC/GM to DASR 21.A.20 should be used for a major change approved by the Authority.

2. (Reserved).

3. In accordance with DASR 21.A.97(d), the compliance demonstration process always takes into account the specific configuration(s) in the Military Type Certificate (MTC) to which the major change under approval is applied. These configurations may be defined by type models/variants or by design changes to the type design. The demonstration of compliance covers these applicable specific configurations. Consequently, the approval of the major change excludes any other configurations, in particular those that already exist but are not considered in the compliance demonstration process, as well as those that may be certified in future.

4. For major changes approved by the military design organisation approval (MDOA) holder on the basis of their privilege as per DASR 21.A.263(c)(8), the process described under AMC2 DASR 21.A.263(c)(5), (8) and (9) applies.

5. For major changes approved by the holder of a type certificate on the basis of their privilege as per DASR 21.A.263(d)(2), the process described under DASR AMC1 21.A.263(d)(1) and (2) applies.

(a) Major changes to a type-certificate shall be classified and approved by:

1. the Authority; or

2. an approved design organisation or holder of a type certificate within the scope of its privileges provided for in (1) and (8) of DASR 21.A.263(c) or (2) of DASR 21.A.263(d), as recorded in the terms of approval.

(b) A major change to a type-certificate shall only be approved: ▸ **GM**

GM 21.A.97(b) - Requirements for the approval of a major change

The level of detail of the documents that are referred to in DASR 21.A.93(b) should be the same regardless of whether the change is approved by the Authority or under a military design organisation approval (MDOA) privilege, to allow the change to be assessed in the frame of the MDOA surveillance.

1. When it has been demonstrated that the change and areas affected by the change comply with the type certification basis and environmental protection requirements, as established by the Authority in accordance with DASR 21.A.101;

2. (Reserved); and

3. When compliance with (1) has been demonstrated in accordance with DASR 21.A.20, as applicable to the change.

(c) (Reserved).

(d) An approval of a major change to a type-certificate shall be limited to the specific configuration(s) in the type-certificate to which the change relates.

21.A.101 - Type-certification basis and environmental protection requirements for a major change to a type-certificate

▸ **AMC** ▸ **GM**

GM 21.A.101 - Establishing the certification basis of changed aeronautical products

This guidance material (GM) provides guidance for the application of the 'Changed Product Rule (CPR)', pursuant to DASR 21.A.101, *Type-certification basis and environmental protection requirements for a major change to a type-certificate*, and DASR 21.A.19, *Changes requiring a new type-certificate,* for changes made to type-certified aeronautical products.

1. INTRODUCTION

1.1 Purpose.

This GM provides guidance for establishing the certification basis for changed aeronautical products pursuant to DASR 21.A.101, *Type-certification basis and environmental protection requirements for a major change to a type-certificate*. The guidance is also intended to help applicants and approved design organisations to determine whether it will be necessary to apply for a new Military Type Certificate (MTC) under DASR 21.A.19, *Changes requiring a new type certificate.* The guidance describes the process for establishing the certification basis for a change to an MTC, for a Military Supplemental Type Certificate (MSTC), or for a change to an MSTC, detailing the requirements (evaluations, classifications, and decisions) throughout the process.

1.2 Applicability.

1.2.1 This GM is for an applicant that applies for changes to MTCs under Subpart D, for MSTCs, or changes to MSTCs under Subpart E, or for changes to Australian Military Technical Standard Order (AUSMTSO) authorisations for auxiliary power units (APUs) under Subpart O.

1.2.2 This GM applies to major changes under DASR 21.A.101 for aeronautical products certified under Part 21, and the airworthiness requirements applicable to the changed product. References to 'change' include the change and areas affected by the change pursuant to DASR 21.A.101.

1.2.3 (Reserved)

1.2.4 This GM also applies to changes to restricted type certificates.

1.2.5 The term 'aeronautical product', or 'product', means a type-certified aircraft, aircraft engine, or propeller and, for the purpose of this GM, an AUSMTSO approved APU.

1.2.6 This GM primarily provides guidance for the designation of applicable airworthiness requirements for the type-certification basis for the changed product. This GM is not intended to be used to determine the applicable environmental protection requirements for changed products.

1.2.7 This GM is not mandatory. This GM describes an acceptable means, but not the only means, to comply with DASR 21.A.101. However, an applicant who uses the means described in this GM must follow it entirely.

1.3 Reserved.

1.4 GM Content.

This GM contains 5 chapters and 10 appendices.

1.4.1 This chapter clarifies the purpose of this GM, describes its content, specifies the intended audience affected by this GM, clarifies which changes are within the scope of this GM, and references the definitions and terminology used in this GM.

1.4.2 Chapter 2 provides a general overview of DASR 21.A.101 and DASR 21.A.19, clarifies the main principles and safety objectives, and directs an applicant to the applicable guidance contained in subsequent chapters of this GM.

1.4.3 Chapter 3 contains guidance for the implementation of DASR 21.A.101(b) to establish the certification basis for changed aeronautical products. It describes in detail the various steps for developing the certification basis, which is a process that applies to all changes to aeronautical products. Chapter 3 also addresses the DASR 21.A.19 considerations for identifying the conditions under which an applicant for a change is required to submit an application for a new MTC, and it provides guidance regarding the stage of the process at which this assessment is performed.

1.4.4 Chapter 4 is reserved.

1.4.5 Chapter 5 contains considerations for:

- design-related operating requirements,
- defining a baseline product,
- using special conditions under DASR 21.A.101(d),
- documenting revisions to the MTC basis,
- incorporating MSTCs into the type design,
- removing changes,
- determining a certification basis after removing an approved change, and
- sequential changes.

1.4.6 Appendix A contains a reference to examples of typical type design changes for products (small aeroplanes, large aeroplanes, rotorcraft, engines, and propellers), as categorised by the European Union Aviation Safety Agency (EASA) into individual tables according to the classifications of design change: ‘substantial’, ‘significant’, and ‘not significant’.

1.4.7 Appendix B contains the application chart for applying the DASR 21.A.101 process.

1.4.8 Appendix C contains a reference to the method proposed by the European Union Aviation Safety Agency (EASA) for determining the changed and affected areas of a product.

1.4.9 Appendix D contains additional guidance on affected areas that is not discussed in other parts of this GM.

1.4.10 Appendix E is Reserved.

1.4.11 Appendix F provides guidance and reference to examples on the use of relevant service experience in the certification process as one way to demonstrate that a later amendment may not contribute materially to the level of safety, allowing the use of earlier airworthiness codes or specifications.

1.4.12 Appendix G provides guidance on the structure of a CPR decision record.

1.4.13 Appendix H provides a reference to examples of documenting a proposed certification basis list.

1.4.14 Appendix I lists DASR 21 requirements related to this GM.

1.4.15 Appendix J lists the definitions and terminology applicable for the application of the changed product rule.

1.5 Terms Used in this GM.

1.5.1 The following terms are used interchangeably and have the same meaning: 'specifications', 'standards', 'airworthiness requirements', 'requirements', 'airworthiness codes' and 'certification standards' . They refer to the elements of the type-certification basis for airworthiness. Examples of such elements are EASA CS, FAA FAR, Mil Hdbk, JSSG, STANAG, Def-STAN, etc., as declared applicable by the Authority. See the Defence Aviation Safety Design Requirements Manual (DASDRM) Section 1 Chapter 1 for discussion on the differences between requirements and standards.

1.5.2 The term 'certification basis' refers to the type-certification basis for airworthiness provided for in DASR 21.A.17A.

1.6 For more terms, consult Appendix J.

2. OVERVIEW OF DASR 21.A.19 AND DASR 21.A.101

2.1 DASR 21.A.19.

2.1.1 DASR 21.A.19 requires an applicant to apply for a new MTC for a changed product if the Authority finds that the change to the design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable type-certification basis is required.

2.1.2 Changes that require a substantial re-evaluation of the compliance findings of the product are referred to as 'substantial changes'. For guidance, see paragraph 3.3 in Chapter 3 of this GM. Appendix A of this GM provides a reference to examples of changes that will require a new TC for aircraft classes used in civil aviation.

2.1.3 If the Authority determines through DASR 21.A.19 that a proposed change does not require a new MTC, see DASR 21.A.101 for the applicable requirements to develop the certification basis for the proposed change. For guidance, see Chapter 3 and the examples referred to in Appendix A of this GM.

2.2 DASR 21.A.101.

2.2.1 DASR 21.A.101(a).

DASR 21.A.101(a) requires a change to an MTC, and the areas affected by the change to comply with the airworthiness requirements that are applicable to the changed product and that are in effect on the date of application for the change (i.e. the latest airworthiness requirements in effect at the time of application), unless the change meets the criteria for the exceptions identified in DASR 21.A.101(b), or unless an applicant chooses to comply with amendments of the airworthiness requirements that became effective after the date of application in accordance with DASR 21.A.101(f). The intent of DASR 21.A.101 is to enhance safety by incorporating the latest requirements into the certification basis for the changed product to the greatest extent practicable.

2.2.2 DASR 21.A.101(b).

DASR 21.A.101(b) pertains to when an applicant may show that a changed product complies with an earlier amendment of an airworthiness requirement, provided that the earlier amendment is considered to be adequate and meets the criteria in DASR 21.A.101(b)(1), DASR 21.A.101(b)(2), or DASR 21.A.101(b)(3). When changes involve features or characteristics that are novel and unusual in comparison with the airworthiness standards at the proposed amendment, more recent airworthiness standards and/or special conditions will be applied for these features.

Compliance with earlier amendments of the airworthiness requirements may be considered in accordance with DASR 21.A.101(b), when:

a. a change is not significant (see DASR 21.A.101(b)(1));

b. an area, system, part or appliance is not affected by the change (see DASR 21.A.101(b)(2));

c. compliance with a later amendment for a significant change does not contribute materially to the level of safety (see DASR 21.A.101(b)(3)); or

d. compliance with the latest amendment would be impractical (see DASR 21.A.101(b)(3)).

Earlier amendments may not precede the amendment level of the certification basis of the identified baseline product.

DASR 21.A.101(b)(1)(i) and DASR 21.A.101(b)(ii) pertain to changes that meet the automatic criteria where the change is significant.

2.2.3 (Reserved)

2.2.4 DASR 21.A.101(d).

DASR 21.A.101(d) provides for the use of special conditions, under DASR 21.A.16B, when the proposed certification basis and any later airworthiness requirements do not provide adequate standards for the proposed change because of a novel or unusual design feature.

2.2.5 DASR 21.A.101(e)

DASR 21.A.101(e) provides the basis under which an applicant may propose to certify a change and the areas affected by the change against alternative requirements to those established under 21.A.101(a) and 21.A.101(b).

2.2.6 DASR 21.A.101(f).

DASR 21.A.101(f) requires that if an applicant chooses (elects) to comply with an airworthiness requirement that is effective after the filing of the application for a change to a MTC, the applicant shall also comply with any other airworthiness requirements that the Authority finds are directly related. The airworthiness requirements which are directly related must be, for the purpose of compliance demonstration, considered together at the same amendment level to be consistent.

3. PROCESS FOR ESTABLISHING THE CERTIFICATION BASIS FOR CHANGED PRODUCTS

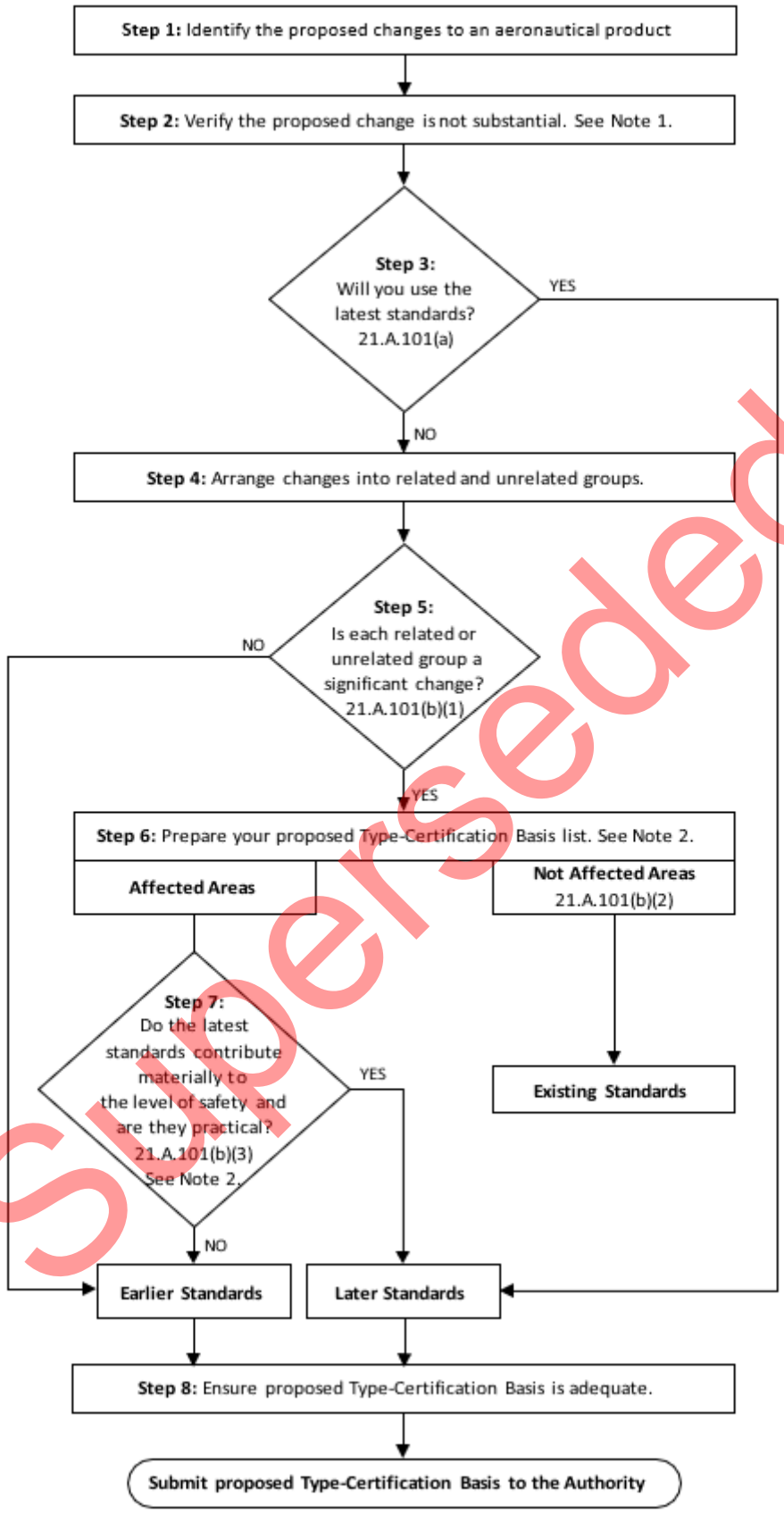
3.1 Overview.

3.1.1 The applicant and the Authority both have responsibilities under DASR 21.A.101(a) and DASR 21.A.101(b). As an applicant for the certification of a change, the applicant must demonstrate that the change and areas affected by the change comply with the latest applicable airworthiness requirements unless the applicant proposes exception(s) under DASR 21.A.101(b). An applicant proposing exception(s) should make a preliminary classification whether the change is 'significant' or 'not significant', and propose an appropriate certification basis. The Authority is responsible for determining whether the applicant's classification of the change, and proposal for the certification basis, are consistent with the applicable rules and their interpretation. The Authority determination does not depend on whether the MTC holder or applicant for an MSTC is originating the change. The certification basis can vary depending on the magnitude and scope of the change. The steps below present a streamlined approach for making this determination.

3.1.2 The tables referred to in appendix A of this GM are examples of classifications of typical type design changes. See paragraph 3.6.3 of this chapter for instructions on how to use those tables.

3.1.3 The following steps in conjunction with the flow chart in Figure 3-1 of this GM can be used to develop the appropriate certification basis for the change. For clarification, the change discussed in the flow chart also includes areas affected by the change. See paragraph 3.9.1 of this GM for guidance about affected areas.

Figure 3-1. Developing a Proposed Certification Basis for a Changed Product Pursuant to DASR 21.A.101



Notes:

1. Changed products that are substantially changed do not follow this flowchart. Refer to DASR 21.A.19
2. Process and propose each applicable standard individually. If standards are linked together,

then they should be assessed together.

3.2 Step 1. Identify the proposed changes to an aeronautical product.

– Identify the type design being changed (the baseline product).

– Identify the proposed change.

– Use high-level descriptors.

3.2.1 Identify the type design being changed (the baseline product).

Prior to describing the proposed change(s), it is important to clearly identify the specific type design configuration being changed.

Note: For additional guidance on the baseline product, see paragraph 5.3 of this GM.

3.2.2 Identify the proposed change.

3.2.2.1 The purpose of this process step is to identify and describe the change to the aeronautical product. Changes to a product can include physical design changes and functional changes (e.g. operating envelope or performance changes). An applicant must identify all changes and areas affected by the change, including those where they plan to use previously approved data. The Authority considers all of these changes and areas affected by the change to be part of the entire proposed type design and they are considered as a whole in the classification of whether the proposed change is substantial, significant, or not significant. The change can be a single change or a collection of changes. In addition to the proposed changes, an applicant should consider the cumulative effect of previous relevant changes incorporated since the last time the certification basis was upgraded. An applicant for a change must consider all previous relevant changes and the amendment level of the airworthiness requirements in the certification basis used for these changes.

3.2.2.2 When identifying the proposed changes, an applicant should consider previous relevant changes that create a cumulative effect, as these may influence the decisions regarding the classification of the change later in the process. By ‘previous relevant changes,’ the Authority means changes where effects accumulate, such as successive thrust increases, incremental weight increases, or sectional increases in fuselage length. An applicant must account for any previous relevant changes to the area affected by the proposed change that did not involve an upgrade of the certification basis in the proposed change.

3.2.2.3 Example:

An applicant proposes a 5 per cent weight increase, but a previous 4 per cent and another 3 per cent weight increase were incorporated into this aircraft without upgrading the existing certification basis. In the current proposal for a 5 per cent weight increase, the cumulative effects of the two previous weight increases that did not involve an upgrade of the certification basis will now be accounted for as an approximate 12 per cent increase in weight. Note that the

cumulative effects the applicant accounts for are only those incremental increases since the last time the airworthiness requirements in the type-certification basis applicable to the area affected by the proposed change were upgraded.

3.2.3 Use High-Level Descriptors.

To identify and describe the proposed changes to any aeronautical product, an applicant should use a high-level description of the change that characterises the intent of, or the reason for, the change. No complex technical details are necessary at this stage. For example, a proposal to increase the maximum passenger-carrying capacity may require an addition of a fuselage plug, and as such, a 'fuselage plug' becomes one possible high-level description of this change. Similarly, a thrust increase, a new or complete interior, an avionics system upgrade, or a passenger-to-cargo conversion are all high-level descriptions that characterise typical changes to the aircraft, each driven by a specific goal, objective, or purpose.

3.2.4 Evolutionary Changes

Evolutionary changes that occur during the course of a certification program may require re-evaluation of the certification basis, and those changes that have influence at the product level may result in re-classification of the change.

3.3 Step 2. Verify the proposed change is not substantial.

3.3.1 DASR 21.A.19 requires an applicant to apply for a new MTC for a changed product if the change to design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable regulations is required. A new MTC could be required for either a single extensive change to a previously type-certified product or for a changed design derived through the cumulative effect of a series of design changes from a previously type-certified product.

3.3.2 A 'substantially complete investigation' of compliance is required when most of the existing substantiation is not applicable to the changed product. In other words, an applicant may consider the change 'substantial' if it is so extensive (making the product sufficiently different from its predecessor) that the design models, methodologies, and approaches used to demonstrate a previous compliance finding could not be used in a similarity argument. The Authority considers a change 'substantial' when these approaches, models, or methodologies of how compliance was shown are not valid for the changed product.

3.3.3 A substantial change requires an application for a new MTC. See DASR 21.A.17A, DASR 21.A.18 and DASR 21.A.19. If the change is not substantial, proceed to step 3. If it is not initially clear that a new MTC is required, appendix A of this GM provides references to examples of substantial changes to aid in this classification.

3.4 Step 3. Will the applicant use the latest standards?

3.4.1 An applicant can use the latest airworthiness requirements for their proposed change and the area affected by the change. If they use the latest airworthiness requirements, they will have met the intent of DASR 21.A.101 and no further

classification (significant or not significant) and justification is needed. Even though an applicant elects to use the latest airworthiness requirements, the applicant will still be able to apply DASR 21.A.101 for future similar changes, and use the exceptions under DASR 21.A.101(b). However, the decision to comply with the latest airworthiness requirements sets a new basis for all future related changes to the same affected area for that amended MTC.

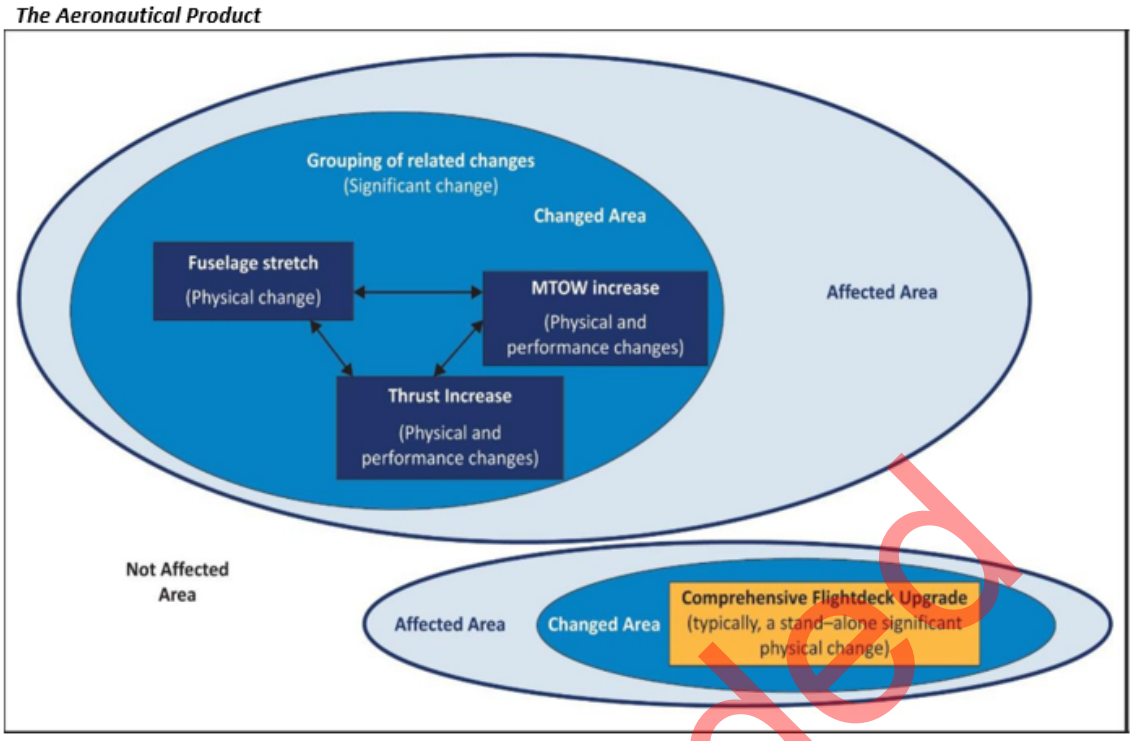
– If using the latest airworthiness requirements, an applicant should proceed to Step 6 (in paragraph 3.9 of this GM)

– If not using the latest airworthiness requirements, an applicant should proceed to Step 4 below.

3.5 Step 4. Arrange changes into related and unrelated groups.

3.5.1 An applicant should now determine whether any of the changes identified in Step 1 are related to each other. Related changes are those that cannot exist without another, are co-dependent, or a prerequisite of another. For example, a need to carry more passengers could require the addition of a fuselage plug, which will result in a weight increase, and may necessitate a thrust increase. Thus, the fuselage plug, weight increase, and thrust increase are all related, high-level changes needed to achieve the goal of carrying more passengers. A decision to upgrade the flight deck to more modern avionics at the same time as these other changes may be considered unrelated, as the avionics upgrade is not necessarily needed to carry more passengers (it has a separate purpose, likely just modernisation). The proposed avionics upgrade would then be considered an unrelated (or a stand-alone) change. However, the simultaneous introduction of a new cabin interior is considered related since occupant safety considerations are impacted by a cabin length change. Even if a new cabin interior is not included in the product-level change, the functional effect of the fuselage plug has implications on occupant safety (e.g. the dynamic environment in an emergency landing, emergency evacuation, etc.), and thus the cabin interior becomes an affected area. Figure 3-2 below illustrates the grouping of related and unrelated changes using the example of increasing the maximum number of passengers.
Note: An applicant who plans changes in sequence over time should refer to the discussion on 'sequential design changes' in paragraph 5.13 of this GM.

Figure 3-2. Related and Unrelated Changes for Example of Increasing the Maximum Number of Passengers



3.5.2 Once the change(s) is (are) organised into groupings of those that are related and those that are unrelated (or stand-alone), an applicant should proceed to Step 5 below.

3.6 Step 5. Is each group of related changes or each unrelated (stand-alone) change a significant change?

3.6.1 The applicant is responsible for proposing the classification of groups of related changes or unrelated changes as 'significant' or 'not significant'. Significant changes are product-level changes that could result from an accumulation of changes, or occur through a single significant change that makes the changed product distinct from its baseline product. The grouping of related and unrelated changes is particularly relevant to the Authority's significant Yes/No decision (DASR 21.A.101(b)(1)) described in Step 1 of Figure 3-1. The Authority evaluates each group of related changes and each unrelated (stand-alone) change on its own merit for significance. Thus, there may be as many evaluations for significance as there are groupings of related and unrelated changes. Step 1 of Figure 3-1 explains the accumulation of changes that an applicant must consider. Additionally, DASR 21.A.101(b)(1) defines a change as 'significant' when at least one of the three automatic criteria applies:

3.6.1.1 Changes where the general configuration is not retained (significant change to general configuration).

A change to the general configuration at the product level is one that distinguishes the resulting product from other product models, for example, performance or interchangeability of major components. Typically, for these changes, an applicant will designate a new product model, although this is not required.

3.6.1.2 Changes where the principles of construction are not retained (significant change to principles of construction).
A change at the product level to the materials and/or construction methods that affects the overall product's operating characteristics or inherent strength and would require extensive reinvestigation to demonstrate compliance is one where the principles of construction are not retained.

3.6.1.3 Product-level changes that invalidate the assumptions used for certification of the baseline product. Examples include:

– change of an aircraft from an unpressurised to pressurised fuselage,

– change of operation of a fixed-wing aircraft from land-based to water-based, and

– operating envelope expansions that are outside the approved design parameters and capabilities.

3.6.2 The above criteria are used to determine whether each change grouping and each stand-alone change is significant. These three criteria are assessed at the product level. In applying the automatic criteria an applicant should focus on the change and how it impacts the existing product (including its performance, operating envelope, etc.). A change cannot be classified or reclassified as a significant change on the basis of the importance of a later amendment.

3.6.3 Appendix A of this GM includes references to tables of typical changes (examples) for various product classes (e.g. small aeroplanes, transport aeroplanes, rotorcraft, engines, and propellers) that would meet the criteria for a significant design change. These references also include tables of typical design changes that would not be classified as significant. The tables can be used in one of two ways:

3.6.3.1 To identify the classification of a proposed design change listed in the table, or

3.6.3.2 In conjunction with the three automatic criteria, to help classify a proposed design change not listed in the table by comparison to determinations made for changes with similar type and magnitude.

In any case, the final classification should be accepted by the Authority.

3.6.4 In many cases, a significant change may involve more than one of these criteria and will be obvious and distinct from other product improvements or production changes. There could be cases where a change to a single area, system, component, or appliance may not result in a product-level change. There could also be other cases where the change to a single system or component might result in a significant change due to its effect on the product overall. Examples may include the addition of winglets or leading-edge slats, or a change to primary flight controls of a fly-by-wire system.

3.6.5 If an unrelated (stand-alone) change or a grouping of related changes is classified as:

3.6.5.1 Significant (DASR 21.A.101(a)):

You must comply with the latest airworthiness standards for certification of the change and areas affected by change, unless you justify use of one of the exceptions provided in DASR 21.A.101(b)(2) or (3) to show compliance with earlier amendment(s). The final certification basis may consist of a combination of the requirements recorded in the certification basis ranging from the original aircraft certification basis to the most current regulatory amendments.

3.6.5.2 Not Significant (DASR 21.A.101(b)(1)):

You may comply with the existing certification basis unless the standards in the proposed certification basis are deemed inadequate. In cases where the existing certification basis is inadequate or no regulatory standards exist, later requirements and/or special conditions will be required. See paragraph 3.11 of this GM for a detailed discussion.

3.6.6 A new model designation to a changed product is not necessarily indicative that the change is significant under DASR 21.A.101. Conversely, retaining the existing model designation does not mean that the change is not significant. Significance is determined by the magnitude of the change.

3.6.7 The Authority determines the final classification of whether a change is significant or not significant. To assist an applicant in its assessment, the Authority may predetermine the classification of several typical changes that an applicant could use for reference. Such examples are referred to in appendix A of this GM.

3.6.8 At this point, the determination of significant or not significant for each of the groupings of related changes and each stand-alone change is completed. For significant changes, an applicant that proposes to comply with an earlier amendment of a requirement should use the procedure outlined in paragraph 3.7 below. For changes identified as not significant, see paragraph 3.8 below.

3.7 Proposing an amendment level for a significant change.

3.7.1 Without prejudice to the exceptions provided for in DASR 21.A.101(b), if the classification of a group of related changes or a stand-alone unrelated change is significant, all areas, systems, components, parts, or appliances affected by the change must comply with the airworthiness requirements at the amendment level in effect on the date of application for the change, unless the applicant elects to comply with airworthiness requirements that have become effective after that date (see DASR 21.A.101(a)).

3.7.2 In certain cases, an applicant will be required by the Authority to comply with airworthiness requirements that have become effective after the date of application (see DASR 21.A.101(a)):

3.7.2.1 If an applicant elects to comply with a specific airworthiness requirement or a group of airworthiness requirements at an amendment which has become effective after the date of application, the applicant must comply

with any other airworthiness requirement that the Authority finds is directly related (see DASR 21.A.101(f)).

3.7.2.2 In a case where the change has not been approved, or it is clear that it will not be approved under the time limit established, the applicant will be required to comply with an upgraded certification basis established according to DASR 21.A.17A and 21.A.18 from the airworthiness requirements that have become effective since the date of the initial application.

3.7.3 Applicants can justify the use of one of the exceptions in DASR 21.A.101(b)(2) or (3) to comply with an earlier amendment, but not with an amendment introduced earlier than the existing certification basis. See paragraphs 3.9 and 3.10 of this GM. Applicants who elect to comply with a specific airworthiness requirement or group of airworthiness requirements at an earlier amendment will be required to comply with any other airworthiness requirements that the Authority finds are directly related.

3.7.4 The final certification basis may combine the latest, earlier (intermediate), and existing amendment levels of requirements, but cannot contain airworthiness requirement spreceding the existing certification basis.

3.8 Proposing an amendment level for a not significant change.

3.8.1 When the Authority classifies the change as not significant, the DASR 21.A.101(b) rule allows compliance with earlier amendments, but not prior to the existing certification basis. Within this limit, the applicant may propose an amendment level for each airworthiness requirement for the affected area. However, each applicant should be aware that the Authority will review their proposals for the certification basis to ensure that the certification basis is adequate for the proposed change under Step 8. (See paragraph 3.11 of this GM.)

3.8.2 Even for a not significant change, an applicant may elect to comply with airworthiness requirements which became applicable after the date of application. Applicants may propose to comply with a specific airworthiness requirement or a group of airworthiness requirements at a certain amendment of their choice. In such a case, any other airworthiness requirements of that amendment that are directly related should be included in the certification basis for the change.

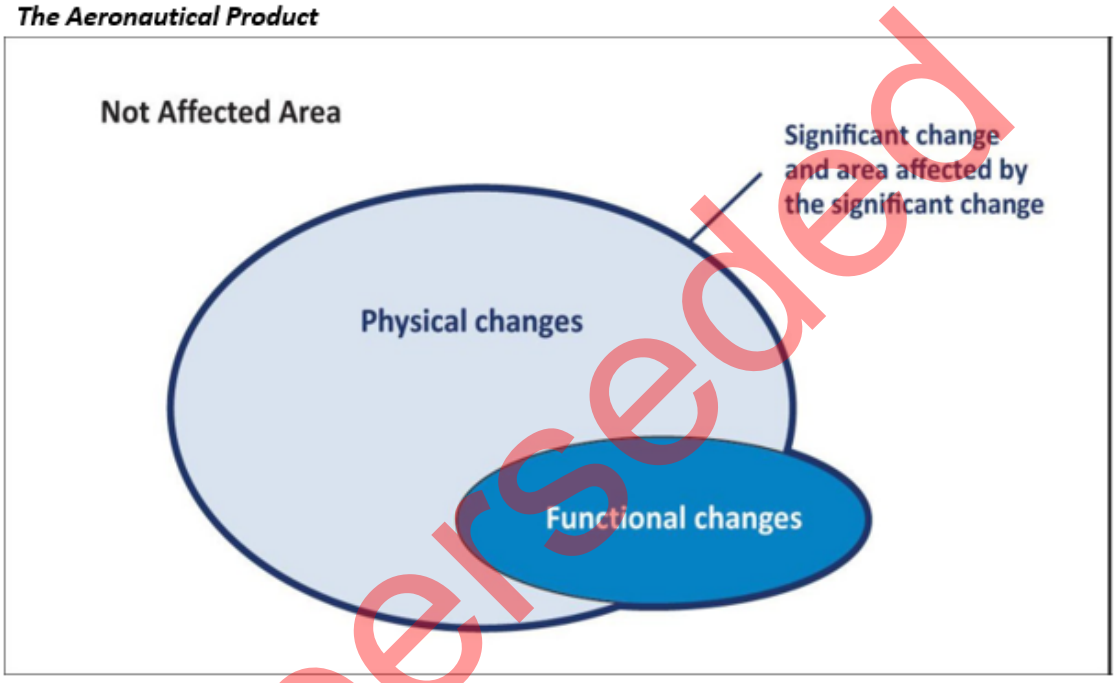
3.9 Step 6. Prepare the proposed certification basis list.

As part of preparing the proposed certification basis list, an applicant must identify any areas, systems, parts or appliances of the product that are affected by the change and the corresponding airworthiness requirements associated with these areas. For each group, the applicant must assess the physical and/or functional effects of the change on any areas, systems, parts or appliances of the product. The characteristics affected by the change are not only physical changes, but also functional changes brought about by the physical changes. Examples of physical aspects are structures, systems, parts and appliances, including software in combination with the affected hardware. Examples of functional characteristics are performance, handling qualities, aeroelastic characteristics, and emergency egress. The intent is to encompass all aspects where there is a need for re-evaluation, that is, where the substantiation presented for the product being changed should be updated or rewritten.

3.9.1 An area affected by the change is any area, system, component, part, or appliance of the aeronautical product that is physically and/or functionally changed.

3.9.2 Figure 3-3 of this GM illustrates concepts of physical and functional changes of an affected area. For each change, it is important for the applicant to properly assess the effects of such change on any areas, systems, parts or appliances of the product because areas that have not been physically changed may still be considered part of the affected area. If a new compliance finding is required, regardless of its amendment level, it is an affected area.

Figure 3-3. Affected Areas versus Not Affected Areas



3.9.3 An area not affected by a change can remain at the existing certification basis, provided that the applicant presents to the Authority an acceptable justification that the area is not affected.

3.9.4 For sample questions to assist in determining affected areas, see below. If the answer to any of these questions is yes, then the area is considered to be affected.

– Is the area changed from the identified baseline product?

– Is the area impacted by a significant product-level change?

– Is there a functional effect on the unchanged area by a change to the system or system function that it is a part of?

– Does the unchanged area need to comply with a system or product-level certification specification that is part of the change?

– Are the product-level characteristics affected by the change?

– Is the existing compliance for the area invalidated?

3.9.5 Consider the following aspects of a change:

3.9.5.1 Physical aspects.

The physical aspects include direct changes to structures, systems, equipment, components, and appliances, and may include software/ airborne electronic hardware changes and the resulting effects on systems functions.

3.9.5.2 Performance/functional characteristics.

The less obvious aspect of the word 'areas' covers general characteristics of the type-certified product, such as performance features, handling qualities, emergency egress, structural integrity (including load carrying), aeroelastic characteristics, or crashworthiness. A product-level change may affect these characteristics. For example, adding a fuselage plug could affect performance and handling qualities, and thus the airworthiness requirements associated with these aspects would be considered to be part of the affected area. Another example is the addition of a fuel tank and a new fuel conditioning unit. This change affects the fuel transfer and fuel quantity indication system, resulting in the aircraft's unchanged fuel tanks being affected. Thus, the entire fuel system (changed and unchanged areas) may become part of the affected area due to the change to functional characteristics. Another example is changing turbine engine ratings and operating limitations, affecting the engine rotors' life limits.

3.9.6 All areas affected by the proposed change must comply with the latest airworthiness requirements, unless the applicant shows that demonstrating compliance with the latest amendment of a requirement would not contribute materially to the level of safety or would be impractical. Step 7 below provides further explanation.

3.9.7 The applicant should document the change and the area affected by the change using high-level descriptors along with the applicable airworthiness requirements and their proposed associated amendment levels. The applicant proposes this change to the certification basis that the Authority will consider for documentation in the type certificate data sheet (TCDS) or MSTC, if they are different from that recorded for the baseline product in the TCDS.

3.10 Step 7. Do the latest standards contribute materially to the level of safety and are they practical?

Pursuant to DASR 21.A.101(a), compliance with the latest airworthiness requirements is required. However, exceptions may be allowed pursuant to DASR 21.A.101(b)(3). The applicant must provide justification to support the rationale for the application of earlier amendments for areas affected by a significant change in order to document that compliance with later standards in these areas would not contribute materially to the level of safety or would be impractical. Such a justification should address all the aspects of the area, system, part or appliance affected by the significant change. See paragraphs 3.10.1 and 3.10.1.4 of this GM.

3.10.1 Do the latest standards contribute materially to the level of safety?

Applicants could consider compliance with the latest standards to 'not contribute materially to the level of safety' if the existing type design and/or relevant experience demonstrates a level of safety comparable to that provided by the latest standards. In cases where design features provide a level of safety greater than the existing certification basis, applicants may use acceptable data, such as service experience, to establish the effectiveness of those design features in mitigating the specific hazards addressed by a later amendment. Applicants must provide sufficient justification to allow the Authority to make this determination. This exception could be applicable in the situations described in the paragraphs below.

Note: Compliance with later standards is not required where the amendment is of an administrative nature and made only to correct inconsequential errors or omissions, consolidate text, or to clarify an existing requirement.

3.10.1.1 Improved design features.

Design features that exceed the existing certification basis standards, but do not meet the latest airworthiness requirements, can be used as a basis for granting an exception under DASR 21.A.101(b)(3) since complying with the latest amendment of the airworthiness requirements would not contribute materially to the level of safety of the product. If the Authority accepts these design features as justification for an exception, the applicant must incorporate them in the amended type design configuration and record them, where necessary, in the certification basis. The description of the design feature would be provided in the TCDS or MSTC at a level that allows the design feature to be maintained, but does not contain proprietary information. For example, an applicant proposes to install winglets on a large aeroplane, and part of the design involves adding a small number of new wing fuel tank fasteners. Assuming that the latest applicable amendment of the certification requirement requires structural lightning protection, the applicant could propose an exception from these latest structural lightning protection requirements because the design change uses new wing fuel tank fasteners with cap seals installed. The cap seal is a design feature that exceeds the requirement of the previous amendment level, but does not meet the latest amendment. If the applicant can successfully substantiate that compliance with the latest amendment would not materially increase the level of safety of the changed product, then this design feature can be accepted as an exception to compliance with the latest amendment.

3.10.1.2 Consistency of design.

This provision gives the opportunity to consider the consistency of design. For example, when a small fuselage plug is added, additional seats and overhead bins are likely to be installed, and the lower cargo hold extended. These components may be identical to the existing components. The level of safety may not materially increase by applying the latest airworthiness requirements in the area of the fuselage plug.

Compliance of the new areas with the existing certification basis may be acceptable.

3.10.1.3 Service experience.

3.10.1.3.1 Relevant service experience, such as experience based on fleet performance or utilisation over time (relevant flight hours or cycles), is one way of showing that the level of safety will not materially increase by applying the latest amendment, so the use of earlier amendments of requirements could be appropriate.

3.10.1.3.2 When establishing the highest practicable level of safety for a changed product, the Authority has determined that it is appropriate to assess the service history of a product, as well as the later airworthiness standards. It makes little sense to mandate changes to well-understood designs, whose service experience has been acceptable, merely to comply with new standards. The clear exception to this premise is if the new standards were issued to address a deficiency in the design in question, or if the service experience is not applicable to the new standards.

3.10.1.3.3 There may be cases where relevant data may not be sufficient or not available at all because of the low utilisation and the insufficient amount and type of data available. In such cases, other service history information may provide sufficient data to justify the use of earlier amendments of requirements, such as: warranty, repair, and parts usage data; accident, incident, and service difficulty reports; service bulletins; airworthiness directives; or other pertinent and sufficient data collected by the manufacturers, authorities, or other entities.

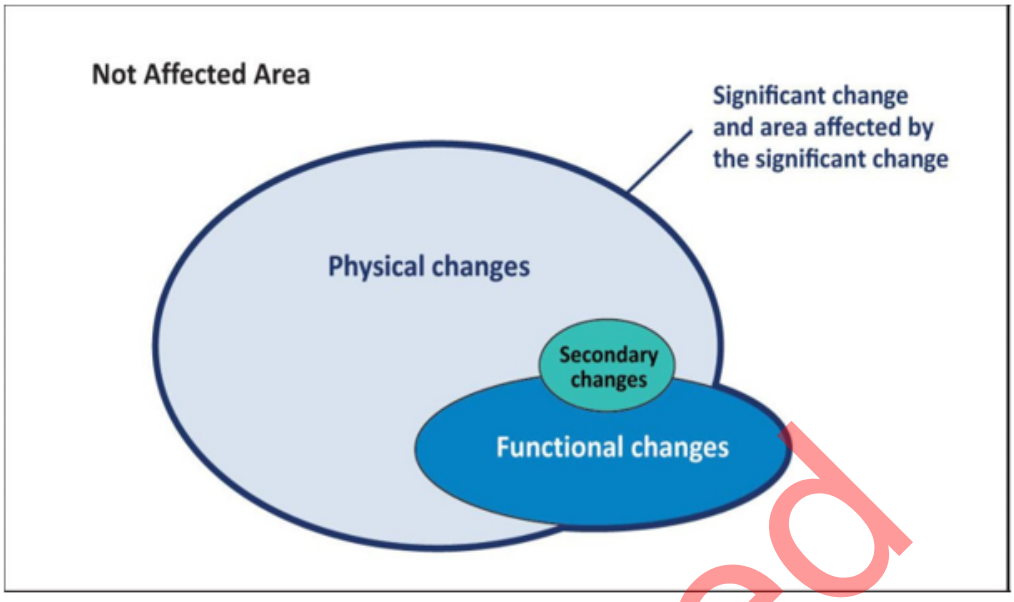
3.10.1.3.4 The Authority will determine whether the proposed service experience levels necessary to demonstrate the appropriate level of safety as they relate to the proposed design change are acceptable.

3.10.1.4 Secondary changes.

3.10.1.4.1 The change proposed by the applicant can consist of physical and/or functional changes to the product. See Figure 3-4 below. There may be aspects of the existing type design of the product that the applicant may not be proposing to change directly, but that are affected by the overall change. For example, changing an airframe's structure, such as adding a cargo door in one location, may affect the frame or floor loading in another area. Further, upgrading engines with new performance capabilities could require additional demonstration of compliance for minimum control speeds and aeroplane performance requirements.

Figure 3-4. Change-Affected Areas with Secondary Changes

The Aeronautical Product



3.10.1.4.2 For each change, it is important that the effects of the change on other systems, components, equipment, or appliances of the product are properly identified and assessed. The intent is to encompass all aspects where there is a need for re-evaluation, that is, where the substantiation presented for the product being changed should be reviewed, updated, or rewritten.

3.10.1.4.3 In assessing the areas affected by the change, it may be helpful to identify secondary changes. A secondary change is a change to physical and/or functional aspects that is part of, but consequential to, a significant physical change, whose only purpose is to restore, and not add or increase, existing functionality or capacity. The term 'consequential' is intended to refer to:

– a change that would not have been made by itself; it achieves no purpose on its own;

– a change that has no effect on the existing functionality or capacity of areas, systems, structures, components, parts, or appliances affected by the change; or

– a change that would not create the need for: (1) new limitations or would affect existing limitations; (2) a new aircraft flight manual (AFM) or instructions for continued airworthiness (ICA) or a change to the AFM or ICA; or (3) special conditions, equivalent safety findings, or Exceptions.

3.10.1.4.4 A secondary change is not required to comply with the latest airworthiness requirements because it is considered to be 'not contributing materially to the level of safety' and, therefore, eligible for an exception under DASR 21.A.101. Determining whether a change meets the description for a secondary change, and is thus eligible for an exception, should be straightforward. Hence, the substantiation or

justification need only be minimal. If this determination is not straightforward, then the proposed change is not a secondary change.

3.10.1.4.5 In some cases, a secondary area of change that restores functionality may in fact contribute materially to the level of safety by meeting a later amendment. If this is the case, it is not considered a secondary change.

3.10.2 Are the latest standards practical?

The intent of DASR 21.A.101 is to enhance safety by applying the latest airworthiness requirements to the greatest extent practicable. The concepts of contributing materially and practicality are linked. If compliance with the latest airworthiness requirements does contribute materially to the level of safety, then the applicant may assess the incremental costs to see whether they are commensurate with the increase in safety. The additional resource requirements could include those arising from changes required for compliance and the effort required to demonstrate compliance, but excluding resource expenditures for prior product changes. The cost of changing compliance documentation and/or drawings is not an acceptable reason for an exception.

3.10.2.1 Applicants should support their position that compliance is impractical with substantiating data and analyses. While evaluating that position and the substantiating data regarding impracticality, the Authority may consider other factors (e.g. the costs and safety benefits for a comparable new design).

3.10.2.2 A review of large aeroplane projects showed that, in certain cases where the Authority allowed an earlier amendment of applicable airworthiness requirements, the applicants made changes that nearly complied with the latest amendments. In these cases, the applicants successfully demonstrated that full compliance would require a substantial increase in the outlay or expenditure of resources with a very small increase in the level of safety. These design features can be used as a basis for granting an exception under DASR 21.A.101(b)(3) on the basis of 'impracticality.'

3.10.2.3 (Reserved)

3.10.2.3.1 The exception of impracticality is a qualitative and quantitative cost–safety benefit assessment for which it is difficult to specify clear criteria. Experience to date with applicants has shown that a justification of impracticality is more feasible when both the applicant and the Authority agree during a discussion at an early stage that the effort (in terms of cost, changes to manufacturing, etc.) required to comply would not be commensurate with a small incremental safety gain. This would be clear even without the need to perform any detailed cost–safety benefit analysis (although an applicant could always use cost analysis to support an appropriate amendment level). However, there should be enough detail in the applicant's rationale to justify the exception.

Note: An applicant should not base an exception due to impracticality on the size of the applicant's company or their financial resources. The applicant must evaluate the costs to comply with a later amendment against the safety benefit of complying with the later amendment.

3.10.2.3.2 For example, a complex redesign of an area of the baseline aircraft may be required to comply with a new requirement, and that redesign may affect the commonality of the changed product with respect to the design and manufacturing processes of the existing family of models. Relevant service experience of the existing fleet of the baseline aircraft family would be required to show that there has not been a history of problems associated with the hazard that the new amendment in question was meant to address. In this way, the incremental cost/impact to the applicant is onerous, and the incremental safety benefit realised by complying with the later amendment would be minimal. This would be justified by demonstrated acceptable service experience in relation to the hazard that the new airworthiness requirement addresses.

3.11 Step 8. Ensure the proposed certification basis is adequate.

The Authority considers a proposed certification basis for any change (whether it is significant or not significant) to be adequate when:

– the airworthiness requirements provide an appropriate level of safety for the intended change, and

– the change and the areas affected by the change do not result in unsafe design features or characteristics for the intended use.

3.11.1 For a change that contains new design features that are novel and unusual for which there are no applicable airworthiness requirements at a later amendment level, the Authority will designate special conditions pursuant to DASR 21.A.16B. The Authority will impose later airworthiness requirements that contain adequate or appropriate safety standards for this feature, if they exist, in lieu of special conditions. An example is adding a flight-critical system, such as an electronic air data display on a large aeroplane whose existing certification basis does not cover protection against lightning and high-intensity radiated fields (HIRF). In this case, the Authority will require compliance with the airworthiness requirements for lightning and HIRF protection, even though the Authority determined that the change is not significant.

3.11.2 For new design features or characteristics that may pose a potential unsafe condition for which there are no later applicable airworthiness requirements, new special conditions may be required.

3.11.3 In cases where inadequate or no standards exist for the change in the existing certification basis, but adequate standards exist in a later amendment of the applicable airworthiness requirements, the later amendment will be made part of the certification basis to ensure the adequacy of the certification basis.

3.11.4 The Authority determines the final certification basis for a product change. This may consist of a combination of those standards ranging from the existing certification basis of the baseline product to the latest amendments and special conditions.

4. (Reserved)

5. Other Considerations

5.1 Design-related requirements from other aviation domains.

Some implementing rules in other aviation domains (air operations, ATM/ANS) impose airworthiness standards that are not required for the issue of a MTC or MSTC. If not already included in the certification basis, any such applicable airworthiness standard may be added to the type certification basis by mutual agreement between the applicant and the Authority. The benefit of adding these airworthiness standards to the type certification basis is to increase awareness of these standards, imposed by other implementing rules, during design certification and future modifications to the aircraft. The use of exceptions under DASR 21.A.101(b) is not intended to alleviate or preclude compliance with operating regulations.

5.2 (Reserved)

5.3 Baseline product.

A baseline product consists of one unique type design configuration, an aeronautical product with a specific, defined, approved configuration and certification basis that the applicant proposes to change. As mentioned in paragraph 3.2.1 of this GM, it is important to clearly identify the type design configuration to be changed. The Authority does not require an applicant to assign a new model name for a changed product. Therefore, there are vastly different changed products with the same aircraft model name, and there are changed products with minimal differences that have different model names. The identification of the baseline product, for the purposes of DASR 21.A.101, is as defined below.

The baseline product is an approved type design that exists at the date of application and is representative of:

– a single certified build configuration, or

– multiple approvals over time (including MSTC(s) or service bulletins) and may be representative of more than one product serial number.

Note: The type design configuration, for this purpose, could also be based on a proposed future configuration that is expected to be approved at a later date but prior to the proposed changed product.

5.4 (Reserved)

5.5 Special conditions, DASR 21.A.101(d).

DASR 21.A.101(d) allows for the application of special conditions, or for changes to existing special conditions, to address the changed designs where neither the proposed certification basis nor any later amendments of requirements in the certification basis

provide adequate standards for an area, system, part or appliance related to the change. The objective is to achieve a level of safety consistent with that provided for other areas, systems, parts or appliances affected by the change by the other requirements in the proposed certification basis. The application of special conditions to a design change is not, in itself, a reason to classify it as either a substantial change or a significant change. Whether the change is significant, with earlier amendments of airworthiness requirements allowed through exceptions, or not significant, the level of safety intended by the special conditions must be consistent with the agreed certification basis.

5.6 (Reserved)

5.7 (Reserved)

5.8 (Reserved)

5.9 Documentation.

5.9.1 Documenting the proposal.

In order to efficiently determine and agree upon a certification basis with the Authority, the following information is useful to understand the applicant's position:

- The current certification basis of the product being changed, including the amendment level.
- The amendment level of all the applicable airworthiness requirements at the date of application.
- The proposed certification basis, including the amendment levels.
- Description of the affected area.
- Applicants who propose a certification basis that includes amendment levels earlier than what was in effect at the date of application should include the exception as outlined in DASR 21.A.101(b) and their justification if needed.

5.9.2 (Reserved)

5.9.3 Documenting the certification basis.

5.9.3.1 The Authority will amend the certification basis for all changes that result in a revision to the product's certification basis on the amended TCDS or MSTC.

5.10 Incorporation of MSTCs into the Type Design.

The incorporation of MSTCs into the product type design may generate an additional major change when that change is needed to account for incompatibility between several MSTCs that were initially not intended to be applied concurrently.

5.10.1 If the incorporation of the MSTC(s) does not generate an additional major change, the incorporation is not evaluated pursuant to DASR 21.A.101. The existing certification basis should be updated to include the later amendments of the MSTC(s) being incorporated.

5.10.2 If the incorporation of the MSTC(s) generates an additional major change, the change must be evaluated pursuant to DASR 21.A.101, and the existing certification basis should be updated to include the amendments resulting from the application of DASR 21.A.101.

5.11 Removing changes.

Approved changes may be removed after incorporation in an aeronautical product. These changes will most commonly occur via an MSTC or a service bulletin kit.

5.11.1 The applicant should identify a product change that they intend at its inception to be removable as such, and should develop instructions for its removal during the initial certification. The Authority will document the certification basis for both the installed and removed configuration separately on the TCDS or MSTC.

5.11.2 If specific removal instructions and a certification basis corresponding to the removed condition are not established at the time of the initial product change certification, the removal of changes or portions of those changes may constitute a significant change to type design. A separate MSTC or an amended MTC may be required to remove the modifications and the resulting certification basis established for the changed product.

5.12 The certification basis is part of the change.

A new change may be installed in a product during its production or via a service bulletin or MSTC. In terms of DASR 21.A.101, each of the approved changes has its own basis of certification. If an applicant chooses to remove an approved installation (e.g. an interior installation, avionics equipment) and install a new installation, a new certification basis may be required for the new installation, depending on whether the change associated with the new installation is considered significant compared to the baseline configuration that the applicant chooses. If the new installation is a not significant change, the unmodified product's certification basis may be used (not the previous installation certification basis), provided the certification basis is adequate.

5.13 Sequential changes — cumulative effects.

5.13.1 Any applicant who intends to accomplish a product change by incorporating several changes in a sequential manner should identify this to the Authority up front when the first application is made. In addition, the cumulative effects arising from the initial change, and from all of the follow-on changes, should be included as part of the description of the change in the initial proposal. The classification of the intended product change will not be evaluated solely on the basis of the first application, but rather on the basis of all the required changes needed to accomplish the intended product change. If the Authority determines that the current application is a part of a sequence of related changes, then the Authority will re-evaluate the determination of significance and the resulting certification basis as a group of related changes.

5.13.2 Example: Cumulative effects — advancing the certification basis.

The type certificate for aeroplane model X lists three models, namely X-300, X-200, and X-100. The X-300 is derived from the X-200, which is derived from the original X- 100 model. An applicant proposes a change to the X-300 aeroplane model. During the review of the X-300 certification basis and the airworthiness requirements affected by the proposed change, it was identified that one requirement, damage tolerance, remained at the same amendment level as the X-100 original certification basis (exception granted on the X-200). Since the amendment level for this particular requirement was not changed for the two subsequent aeroplane models (X-200 and X-300), the applicant must now examine the cumulative effects of these two previous changes that are related to the proposed change and the damage tolerance requirements to determine whether the amendment level needs to advance.

Appendix A to GM 21.A.101 - Classification of design changes

Appendix A to GM 21.A.101 - Classification of design changes

This appendix refers to Appendix A to EASA GM 21.A.101 Classification of design changes, as per ED Decision 2017/024/R, which contains tables of 'substantial', 'significant', and 'not significant' changes, that are adopted by the FAA, Agência Nacional de Aviação Civil (ANAC), the European Aviation Safety Agency (EASA), and Transport Canada Civil Aviation (TCCA) through international collaboration. These tables should be used as a reference for the classification of design changes to military aircraft. In any case, the aircraft category to be used should be confirmed by the Authority and the final classification may change due to cumulative effects and/or combinations of individual changes.

Appendix B to GM 21.A.101 - Application charts for changed product rule

Appendix B to GM 21.A.101 Application charts for changed product rule

This appendix contains the application chart for applying the DASR 21.A.101 process.

<table>
<tr><th>Substantial
(21.A.19)</th><th colspan="3">Significant
(21.A.101(a) and (b))</th><th colspan="2">Not Significant
(21.A.101)(b)(1))</th></tr>
<tr><td rowspan="3">Substantially changed product
Compliance with all latest airworthiness codes and standards required for product certification. Previously approved type design and compliance data may be allowed if valid for the changed product.</td><td colspan="3">Affected area
(Changed and/or affected areas)
New demonstration of compliance is required
Previously approved type design and compliance data may be allowed if valid for the changed product.</td><td rowspan="3">Unaffected area
No new demonstration of compliance is required. Unaffected area continues to comply with the existing certification basis.</td><td rowspan="3">Affected area
(Changed and/or affected areas) New demonstration of compliance is required. The applicant may propose a certification basis using an earlier amendment but not earlier than in the existing TC basis. Previously approved type design and compliance data may be allowed if valid for the changed product.</td><td rowspan="3">Unaffected area
No new demonstration of compliance is required. Unaffected area continues to comply with the existing certification basis.</td></tr>
<tr><td colspan="2">Compliance with the latest amendment materially contributes to safety</td><td>No material contribution to safety</td></tr>
<tr><td>Practical
—</td><td>Impractical
The applicant may propose a certification basis using earlier airworthiness codes and standards, but not earlier than the existing TC basis.</td><td>The applicant may propose a certification basis using earlier airworthiness codes and standards, but not earlier than the existing TC basis.</td></tr>
<tr><td colspan="6">Certification Basis Proposed by the Applicant</td></tr>
<tr><td colspan="2">New certification basis using latest airworthiness codes and standards.</td><td colspan="2">Airworthiness codes and standards at earlier amendments with supporting rationale.</td><td>Existing certification basis.</td><td>Existing certification basis including 'elects to comply'.</td><td>Existing certification basis.</td></tr>
<tr><td colspan="6">Resultant Type-Certification Basis, subject to acceptance by the Authority</td></tr>
<tr><td colspan="2">New certification basis using the latest airworthiness codes and standards, and special conditions if required.</td><td colspan="2">New certification basis using the airworthiness codes and standards at earlier approved amendments, and special conditions if required.</td><td>Existing certification basis.</td><td>Existing certification basis (if adequate); if not, first appropriate later amendment(s) and/or special conditions including 'elects to comply'.</td><td>Existing certification basis.</td></tr>
</table>

Appendix C to GM 21.A.101 - A method to determine the changed and affected areas

Appendix C to GM 21.A.101 A method to determine the changed and affected areas

When a product is changed, some areas may change physically, while others may change functionally. GM to DASR 21.A.101 refers to this combination as changed and affected areas. Appendix C to EASA GM 21.A.101 as per ED Decision 2017/024/R contains a process to determine physical and functional changes, including affected areas, and to develop the combined list of physical and functional changes with applicable requirements of airworthiness codes. In principle, this process may also be applied where airworthiness codes and standards other than EASA Certification Specifications (CS) are used.
NOTE: The referenced process is provided as guidance only.

Appendix D to GM 21.A.101 - Other guidance for affected areas

Appendix D to GM 21.A.101 Other guidance for affected areas

D.1 Sample Questions in Determining Affected Areas.

Below are sample questions to assist in determining whether an area is affected by the change. If the answer to any of these questions is yes, then the area is considered to be affected.

1. Is the area changed from the identified baseline product?
2. Is the area impacted by a significant product-level change?
3. Is there a functional effect on the unchanged area by a change to the system or system function that it is a part of?
4. Does the unchanged area need to comply with a system or product-level airworthiness requirement that is part of the change?
5. Are the product-level characteristics affected by the change?
6. Is the existing compliance for the area invalidated?

D.2 Sub-Areas within an Affected Area.

Within areas affected by a change, there may be 'sub-areas' of the area that are not affected. For those sub-areas, the amendment levels at the existing certification basis remain valid, along with the previous compliance findings.

For example, if a passenger seat fitting is changed as part of a significant change, then the structure of the seat is affected. Thus, the amendment level for all applicable structural requirements (e.g. EASA CS 25.561 and EASA CS 25.562) would be at the amendment level on the date of application (unless an exception is granted). However, the seat fabric is not affected, so the amendment level of flammability requirements (e.g. EASA CS 25.853) may remain at the existing certification basis, and a new compliance finding would not be required.

Appendix E to GM 21.A.101

Appendix E to GM 21.A.101

(Reserved)

Appendix F to GM 21.A.101 - The use of service experience in the exception process

Appendix F to GM 21.A.101 The use of service experience in the exception process

F.1 Introduction.

Service experience may support the application of an earlier airworthiness codes or standards pursuant to EMAR 21.A.101(b)(3) if, in conjunction with the applicable service experience and other compliance measures, the earlier airworthiness code or standard provides a level of safety comparable to that provided by the latest airworthiness codes or standards. The applicant must provide sufficient substantiation to allow the Authority to make this determination. A statistical approach may be used, subject to the availability and relevance of data, but sound engineering judgment must be used. For service history to be acceptable, the data must be both sufficient and pertinent. The essentials of the process involve:

- A clear understanding of the change of the airworthiness code or standard, and the purpose for the change,
- A determination based on detailed knowledge of the proposed design feature,
- The availability of pertinent and sufficient service experience data, and
- A comprehensive review of that service experience data.

In case that civil service experience is used in the process, military specific kinds of operations and operational conditions must be sufficiently addressed and factored in. Similarly, it needs to be ensured that service experience from different operating organisations is relevant or representative for the intended use.

F.2 Guidelines.

The substantiation by the applicant and the determination by the Authority should be documented together with the type-certification basis.

Note: Special conditions (SCs), equivalent safety findings (ESFs) / equivalent level of safety (ELOSs), deviations, reversions, and most elects to comply (ETC) are formally part of the type-certification basis (TCB). A process like the Certification Review Item (CRI) process of the European Union Aviation Safety Agency (EASA) may be used to keep record of the applicant's substantiation and the Authority's determination, either as a stand-alone CRI or included in the type-certification basis CRI A-01.

The documentation provided by the applicant should support the following:

F.2.1 The identification of the differences between the airworthiness codes or standards in the existing basis and the airworthiness codes or standards as amended, and the effect of the change to the requirements.

F.2.2 A description as to what aspect(s) of the latest airworthiness codes or standards the proposed changed product would not meet.

F.2.3 Evidence showing that the proposed certification basis for the changed product, together with applicable service experience, relative to the hazard, provides a level of safety that approaches the latest airworthiness codes or standards, yet is not fully compliant with the latest airworthiness codes or standards.

F.2.4 A description of the design feature and its intended function.

F.2.5 Data for the product pertinent to the requirement.

F.2.5.1 Service experience from such data sources, such as:

- Accident reports,
- Incident reports,
- Service bulletins,
- Airworthiness directives,
- Repairs,
- Modifications,
- Flight hours/cycles for fleet leader and total fleet,
- World airline / operating organisation accident summary data,
- Service difficulty reports,
- Accident Investigation Board reports, and
- Warranty, repair, and parts usage data.

F.2.5.2 Show that the data presented represent all relevant service experience for the product, including the results of any operator surveys, and is comprehensive enough to be representative.

F.2.5.3 Show that the service experience is relevant to the hazard.

F.2.5.4 Identification and evaluation of each of the main areas of concern with regard to:

- Recurring and/or common failure modes,
- Cause,
- Probability by qualitative reasoning, and
- Measures already taken and their effects. F.2.5.5 Relevant data pertaining to aircraft of similar design and construction may be included.

F.2.5.6 Evaluation of failure modes and consequences through analytical processes. The analytical processes should be supported by:

- A review of previous test results,

– Additional detailed testing as required, or

– A review of aircraft functional hazard assessments (FHA) and any applicable system safety assessments (SSA) as required.

F.2.6 A conclusion that draws together the data and the rationale.

F.2.7 These guidelines are not intended to be limiting, either in setting the required minimum elements or in precluding alternative forms of submission. Each case may be different, based on the particulars of the system being examined and the requirement to be addressed.

F.3 Example: EASA CS/FAA FAR.25.1141(f) for Transport Category Aeroplanes.
NOTE: This example is taken from the certification experience of the Federal Aviation Administration (FAA), so references to FAR sections and amendments are kept.

F.3.1 The following example, for transport category aeroplanes (§ 25.1141(f), APU Fuel Valve Position Indication System), illustrates the typical process an applicant follows. The process will be the same for all product types.

F.3.2 This example comes from a derived model transport aeroplane where significant changes were made to the main airframe components, engines and systems, and APU. The baseline aeroplane has an extensive service history. The example shows how the use of service experience supports a finding that compliance with the latest certification specifications would not contribute materially to the level of safety and that application of the existing certification basis (or earlier amendment) would be appropriate. The example is for significant derived models of transport aeroplanes with extensive service history. It illustrates the process, following the guidelines in this Appendix, but does not include the level of detail normally required.

F.3.2.1 Determine the differences between the certification specifications applied in the original certification basis and the latest certification specification, and the effect of the change to the certification specifications. The original certification basis of the aeroplane that is being changed is the initial release of Part 25. Amendment 25-40 added requirement § 25.1141(f), which mandates that power-assisted valves must have a means to indicate to the flight crew when the valve is in the fully open or closed position, or is moving between these positions. The addressed hazard would be risk of APU fire due to fuel accumulation caused by excessive unsuccessful APU start attempts.

F.3.2.2 What aspect of the proposed changed product would not meet the latest certification specifications? The proposed APU fuel valve position indication system does not provide the flight crew with fuel valve position or transition indication and, therefore, does not comply with the requirements of § 25.1141(f).

F.3.2.3 The applicant provides evidence that the proposed certification basis for the changed product, together with applicable service experience of the existing design, provide a level of safety that approaches, yet is not fully compliant with, the latest certification specifications. The APU fuel shut-off valve and actuator are unchanged from those used on the current family of

aeroplanes, and have been found to comply with the earlier Amendment 25-11 of § 25.1141. The existing fleet has achieved approximately (#) flights during which service experience of the existing design has been found to be acceptable. If one assumes a complete APU cycle, i.e. start-up and shutdown for each flight, the number of APU fuel shut-off valve operations would be over 108 cycles, which demonstrates that the valve successfully meets its intended function and complies with the intent of the certification specification.

F.3.2.4 The applicant provides a description of the design feature and its intended function. The fuel shut-off valve, actuator design, and operation is essentially unchanged with the system design ensuring that the valve is monitored for proper cycling from closed to open at start. If the valve is not in the appropriate position (i.e. closed), then the APU start is terminated, an indication is displayed on the flight deck, and any further APU starts are prevented. Design improvements using the capability of the APU electronic control unit (ECU) have been incorporated in this proposed product change. These design changes ensure that the fuel valve indication system will indicate failure of proper valve operation to the flight crew, and these features increase the level of functionality and safety, but the system does not indicate valve position as required by § 25.1141(f).

F.3.2.5 The FAA and the applicant record this in an issue paper. The FAA can use the G-1 or a technical issue paper for this purpose. An issue paper was coordinated, included data, or referenced reports documenting relevant service experience compiled from incident reports, fleet flight hour/cycle data, and maintenance records. The issue paper also discussed existing and proposed design details, failure modes, and analyses showing to what extent the proposed aeroplane complies with the latest amendment of § 25.1141. Information is presented to support the applicant's argument that compliance with the latest amendment would not materially increase the level of safety. Comparative data pertaining to aircraft of similar design and construction are also presented.

F.3.2.6 The conclusion, drawing together the data and rationale, is documented in the G-1 issue paper. The additional features incorporated in the APU fuel shut-off valve will provide a significant increase in safety to an existing design with satisfactory service experience. The applicant proposes that compliance with the latest amendment would not materially increase the level of safety and that compliance with § 25.1141 at Amendment 25-11 would provide an acceptable level of safety for the proposed product change.

▸ Appendix G to GM 21.A.101 - Changed product rule (CPR) decision record

Appendix G to GM 21.A.101 Changed product rule (CPR) decision record

The changed product rule (CPR) decision should be recorded as part of the certification programme plan. Appendix G to EASA GM 21.A.101 as per ED Decision 2017/024/R may be used to determine the general structure and information that is expected for a changed product rule (CPR) decision record. Generally, the decision sheet should

- identify the project,

- identify the related MTC/MSTC No,
- document each step of the process outlined in GM to DASR 21.A.101 with appropriate justification and decision (YES/NO),
- detail the reference to the proposed certification basis to be accepted by the Authority.

Appendix H to GM 21.A.101 - Examples of documenting the proposed certification basis list

Appendix H to GM 21.A.101 Examples of documenting the proposed certification basis list

Appendix H to EASA GM 21.A.101 as per ED Decision 2017/024/R provides examples for establishing the applicable airworthiness codes or standards that will become part of the type-certification basis for airworthiness as well as for documenting a proposed certification basis.

Appendix I to GM 21.A.101 - Related documents

Appendix I to GM 21.A.101 Related documents

I.1 Related DASR 21 requirements.

– 21.A.15, Application

– 21.A.16A, Airworthiness Codes

– 21.A.16B, Special Conditions

– 21.A.17A, Type-certification basis for a type-certificate or restricted type-certificate

– 21.A.19, Changes requiring a new type certificate

– 21.A.31, Type design

– 21.A.41, Type certificate

– 21.A.91, Classification of changes to a type certificate

– 21.A.93, Application

– 21.A.97, Requirements for approval of a major change

– 21.A.101, Type-certification basis, operational suitability data certification basis and environmental protection requirements for a major change to a type-certificate

– 21.A.113, Application for a supplemental type-certificate

– 21.A.115, Requirements for approval of major changes in the form of a supplemental type-certificate

Appendix J to GM 21.A.101 - Definitions and terminology

Appendix J to GM 21.A.101 - Definitions and terminology

J.1 Aeronautical product.

The terms 'aeronautical product' or 'product' used in this guidance material include type- certified aircraft, engines, or propellers and, for the purpose of this GM, an AUSMTSO approved APU.

J.2 Assumptions used for certification.

The assumptions used for certification are the evaluations and decisions that led to the approval of the baseline product's characteristics. Examples of the product's baseline characteristics include but are not limited to the following:

- Design methodologies, methods of compliance, and standards used to achieve compliance with the airworthiness requirements making up the certification basis;
- Structural, mechanical, electrical, propulsion, aerodynamic, performance, operational, and maintenance characteristics;
- Operational and flight envelopes defining the product performance and capabilities at specified weights, speeds, altitudes, load factors, and centres of gravity;
- Crashworthiness;
- Role or mission;
- Airworthiness and operational limitations; or
- Pilot training, if necessary.

J.3 Baseline product.

It is an aeronautical product with a specific, defined approved configuration and certification basis that the applicant proposes to change.

J.4 Certification basis.

The combination of the:

- airworthiness requirements as provided for in DASR 21.A.17A
- environmental protection requirements, as provided for in DASR 21.A.18, as established for the change according to DASR 21.A.101, as well as the:
- special conditions;
- equivalent safety findings;
- elects to comply; and
- exceptions

applicable to the product to be certified.

J.5 Change.

The term 'change' refers to a change to a product type certificate (as defined in DASR 21.A.41) approved or to be approved under Subpart D or Subpart E (as a military supplemental type certificate) of Part 21, including a change to an MSTC or a change to the AUSMTSO approval for auxiliary power units (APUs) under Subpart O. A change may consist of a single stand-alone change to one MTC component or several interrelated changes to different MTC components (e.g. the type design, operating characteristics, environmental protection characteristics, etc. (see DASR 21.A.41 and GM to 21.A.90A)).

J.6 Design change.

The term 'design change' refers to a change to the type design (as defined in DASR 21.A.31) of an aeronautical product. In the context of this document, the terms 'change to the type design', 'modification', 'design change', and 'type design change' are synonymous.

J.7 Earlier standards.

The airworthiness requirements or previous standards in effect prior to the date of application for the change, but not prior to the existing certification basis.

J.8 Existing certification basis.

The airworthiness requirements or previous standards incorporated by reference in the type certificate of the baseline product to be changed.

J.9 Latest standards.

The airworthiness requirements in effect on the date of application for the change.

J.10 Previous relevant design changes.

Previous design changes, the cumulative effect of which could result in a product significantly or substantially different from the original product or model, when considered from the last time the latest standards were applied.

J.11 Product-level change.

A change or combination of changes that makes the product distinct from other models of the product (e.g. range, payload, speed, design philosophy). Product-level change is defined at the aircraft, aircraft engine, or propeller level of change.

J.12 Secondary change.

A change that is part of a significant physical change that does not contribute materially to the level of safety. Guidance is contained in paragraph 3.10.1.4 of this GM.

J.13 Significant change.

A change to the type certificate to the extent that it changes one or more of the following, but not to the extent to be considered a substantial change: the general configuration, principles of construction, or the assumptions used for certification. The significance of the change is considered in the context of all previous relevant design changes and all related revisions to the applicable standards. Not all product-level changes are significant.

J.14 Significant change to area.

Not used in the context of DASR 21

J.15 Substantial change.

A change that is so extensive that a substantially complete investigation of compliance with the applicable certification basis is required, and consequently a new military type certificate is required pursuant to DASR 21.A.19.

AMC 21.A.101 - Type-certification basis and environmental protection requirements for a major change to a type-certificate (AUS)

In addition to the design requirements applied during initial type certification of the aircraft, 'MAJOR' changes to type design that are determined by the Authority to be significant shall comply with the relevant 'essential' design requirements defined in the Defence Aviation Safety Design Requirements Manual (DASDRM) and the latest amendments of standards used during initial certification of the aircraft.

AMC1 to 21.A.17A is to be used to determine where a Military Certification Review Item (MCRI) is required to record changes to the certification basis for the product as recorded in the type certificate data sheet (TCDS).

(a) A major change to a type-certificate and areas affected by the change shall comply with either the airworthiness requirements applicable to the changed product on the date of the application for the change or airworthiness requirements which became applicable after that date in accordance with (f) below. The validity of the application shall be determined in accordance with DASR 21.A.93(c). In addition, the changed product shall comply with the environmental protection requirements established in accordance with DASR 21.A.18.

(b) By way of exception from (a), an earlier amendment to an airworthiness requirement referred to in (a), and to any other airworthiness requirement which is directly related may be used in any of the following situations, unless the earlier amendment became applicable before the date at which the corresponding airworthiness requirements incorporated by reference in the type-certificate became applicable:

1. A change that the Authority finds not to be significant. In determining whether a specific change is significant, the Authority considers the change in context with all previous relevant design changes and all related revisions to the applicable airworthiness requirements incorporated by reference in the type-certificate for the product. Changes meeting one of the following criteria shall automatically be considered significant:

i. The general configuration or the principles of construction are not retained;

ii. The assumptions used for certification of the product to be changed do not remain valid.

2. Each area, system, part or appliance that the Authority finds not affected by the change.

3. Each area, system, part or appliance that is affected by the change, for which the Authority finds that compliance with the airworthiness requirements described in (a) would not contribute materially to the level of safety of the changed product or is impractical.

(c) (Reserved)

(d) If the Authority finds that the airworthiness requirements applicable on the date of the application for the change do not provide adequate standards with respect to the proposed change, the applicant shall also comply with any special conditions, and amendments to those special conditions, prescribed by the Authority in accordance with DASR 21.A.16B, to provide a level of safety equivalent to that established in the airworthiness requirements applicable on the date of the application for the change.

(e) By way of exception from (a) and (b), the change and areas affected by the change may comply with an alternative to an applicable airworthiness requirement if proposed by the applicant, provided that the Authority finds that the alternative provides a level of safety which is:

1. In the case of a type-certificate:

i. equivalent to that of the airworthiness requirements designated under (a) or (b) above; or

ii. compliant with the essential requirements of Annex A to DASP Manual Volume 1 Chapter 4.

2. In the case of a restricted type-certificate, adequate with regard to the intended use.

(f) If an applicant chooses to comply with airworthiness requirements set out in an amendment that becomes applicable after submitting the application for a change to a type-certificate, the change and areas affected by the change shall also comply with any other airworthiness requirement which is directly related.

21.A.105 - Record keeping

(a) For each change, all relevant design information, drawings and test reports, including inspection records for the changed product tested, shall be held by the applicant at the disposal of the Authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness and compliance with applicable environmental protection requirements of the changed product.

(b) Unless otherwise laid down by the Authority, the records must be retained for at least two years after the removal of service of the last aircraft of the type certified.

21.A.107 - Instructions for Continuing Airworthiness

AMC **GM**

GM 21.A.107 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) details the methods, inspections, processes, and procedures necessary for the air operator to keep aircraft and / or engine, propeller, parts and appliances airworthy during its intended life.

The contents of ICA can be divided into two categories:

a. an approved airworthiness limitations (AwL) section as defined by the applicable airworthiness codes during the certification process, which forms part of the type design / type-certificate (DASR 21.A.31(a)(3) and DASR 21.A.41):

   i. any limitations determined through the certification of the product, and instructions on how to determine that these limits have been exceeded.

   ii. any inspection, servicing or maintenance actions determined to be necessary by the certification process.

b. sections that do not contain approved data from the certification process and are not considered as part of type design/type-certificate:

   i. any inspection or troubleshooting actions determined to be necessary to establish the nature of faults and the necessary remedial actions.

   ii. sufficient general information on the operation of the product to enable an understanding of the instructions in paragraphs (a)(i), (a)(ii), and (b)(i) above.

   i.

AMC 21.A.107 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) shall be distributed in accordance with DASR AMC 21.A.57 – Manuals (AUS).

The system for distributing ICA and their amendments to users shall ensure that:

   a. details of the authorised distribution of ICA to each user is recorded; and

   b. ICA are accessible to organisations and personnel.

(a) The holder of a minor change approval to a type-certificate shall furnish at least one set of the associated variations, if any, to the instructions for continuing airworthiness of the product on which the minor change is to be installed, prepared in accordance with the applicable type-certification basis, to each known operator of one or more aircraft, engine, or propeller incorporating the minor change, upon its delivery, or upon issuance of the first certificate of airworthiness for the affected aircraft, whichever occurs later,

and thereafter make those variations in instructions available, on request, to any other person or organisation required to comply with any of the terms of those instructions.

(b) In addition, changes to those variations of the instructions for continuing airworthiness shall be made available to all known operators of a product incorporating the minor change and shall be made available, on request, to any person or organisation required to comply with any of those instructions.

21.A.108 - Reserved

21.A.109 - Obligations and Australian Military Parts Approval marking

The holder of a minor change approval to type-certificate shall:

(a) Undertake the obligations laid down in DASR 21.A.4, DASR 21.A.105, DASR 21.A.107;

(b) Specify the marking, including AUSMPA (herein 'Australian Military Part Approval') letters, in accordance with DASR 21.A.804.

SUBPART E - MILITARY SUPPLEMENTAL TYPE-CERTIFICATES

21.A.111 - Scope

This Subpart establishes the procedure for the approval of major changes to the type-certificate under supplemental type-certificate procedures, and establishes the rights and obligations of the applicants for, and holders of, those certificates. In this Subpart, the references to type-certificates include type-certificates and restricted type-certificates.

21.A.112A - Eligibility

Any Organisation that has demonstrated, or is in the process of demonstrating, its capability under DASR 21.A.112B shall be eligible as an applicant for a Supplemental Type-Certificate (STC) under the conditions laid down in this Subpart.

21.A.112B - Demonstration of capability

▸ **GM**

GM 21.A.112B - Demonstration of capability for Military supplemental type-certificate cases

See also DASR AMC 21.A.14(b) for the details of the alternative procedures.

The following examples of major changes to type design (see DASR 21.A.91) are classified in two groups. Group 1 contains cases where a design organisation approved under DASR 21 Section A Subpart J ('Subpart J MDOA') will be required, and Group 2 cases where the alternative procedure may be accepted. They are typical examples but each MSTC case is to be

addressed on its merits and there would be exceptions in practice. This classification is valid for new MSTCs, not for evolution of MSTCs, and may depend upon the nature of the MSTC (complete design or installation).

PRODUCT	DISCIPLINE	KIND OF MSTC	GROUP
SMALL AIRCRAFT (products where Subpart J MDOA is required for MTC)			
NOTES: * MSTC which leads to reassess the loads on large parts of primary structure will be in Group 1. * 2/1 means that an assessment of consequences in terms of handling qualities, performance or complexity of demonstration of compliance may lead to classification in Group 1.			
	Aircraft		
		Conversion to tail wheel configuration	1
		Auxiliary fuel tank installations	2/1
		Glass fibre wing tips	2/1
		Fairings: nacelle, landing gear	2
		Gap seals: aileron, flap, empennage, doors	2
		Vortex generators	2/1

		Spoiler installation	1	
		Increase in Maximum Take-off Weight (MTOW)	1	
	Structures			
		Stretcher installation	2	
		Change to seating configuration	2	
		Windshield replacement (heated, single piece, etc)	2	
		Light weight floor panels	2	
		Ski installations	2/1	
	Propulsion			
		Engine model change	1	
		Fixed pitch propeller installation	2	
		Constant speed propeller installation	2/1	

	Installation of exhaust silencer	2	
	Installation of Graphic engine monitor	2	
	Installation of fuel flow meter	2	
	Accessory replacement (alternator, magnetos, etc.)	2	
	Inlet modifications: oil cooler; induction air	2	
Equipment			
	Avionics upgrades (Electronic Flight Instrument System (EFIS), Global Posistioning System (GPS), etc)	2/1	
	Engine instrument replacements	2	
	Carburetor ice detection system	2	
	Autopilot system installation	1	
	Wing tip landing light; recognition lights	2	
	Weather (WX) radar installation	2	

		Aeromedical system installations	2	
		De- and anti-ice system installations	1	
		Emergency power supply installations	2	
LARGE AIRCRAFT				
	Cabin safety			
NOTE: Basically all changes related to cabin configuration will be in Group 2.		Cabin layout (installation of seats (16G), galleys, single class or business / economy class, etc)	2	
		Floor path marking	2	
		Crew rest compartment	1	
		Change of cargo compartment classification (from class D to class C)	1	
	Structure			
NOTE: MSTC which leads to reassess the loads on large parts of primary structure will be in Group 1.		Cargo door	1	
		Change from Passenger to Freighter configuration	1	

	Avionics			
NOTES: For large aircraft products, the existence of AUSMTSO is not taken into account for the classification ; Impact on aircraft performance, and influence of aircraft performance are criteria to assess the classification ; Subjective assessment of human factors is considered for determination of classification.		Cockpit Voice Recorder (CVR)	2	
		Very High Frequency (VHF)	2	
		Navigation (NAV) - (Automatic Direction Finder (ADF), VH Omnidirectional Range (VOR), GPS, Basic Area Navigation (B-RNAV)	2	
		Autopilot, Head-up Display (HUD), EFIS, Flight Management System (FMS)	1	
		Digital Flight Data Recorder (DFDR)	2/1	
		Meteo radar	2	
		Instrument Landing System (ILS) Cat 3	1	
		Reduced Vertical Separation Minima (RVSM)	1	
		Traffic Collission Avoidance System (TCAS), Enhanced Ground Proximity Warning System (EGPWS)	1	

		Ground Proximity Warning System (GPWS)	2	
	Powerplant			
		Auxiliary fuel tanks	1	
		Thrust Reverser system	1	
		Hushkit	1	
		Fire detection	1	
		Fuel gauging	1	
		Change of Engine or Propeller	1	
HELICOPTERS				
	All disciplines			
NOTE: 2/1 means that an assessment of consequences in terms of handling qualities and performance may lead to classification in Group 1.		Main rotor or tail rotor blades replacement	1	
		Autopilot	1	

	Engine type change	1	
	GPS installation	2	
	Jettisonable overhead raft installation	2	
	Utility basket installation	2/1	
	Nose or side mount camera installation	2/1	
	Passenger access step installation	2/1	
	Protection net & handle installation (parachuting)	2	
	Very Important Person (VIP) cabin layout	2	
	Navigation system installation	2	
	Fuel boost pump automatic switch-on installation	2	
	Decrease of maximum seating capacity	2	
	Agricultural spray kit installation	2/1	

	Long exhaust pipe installation	2	
	Flotation gear installation	2/1	
	Wipers installation	2	
	Engine oil filter installation	2	
	Skid gear covering installation	2/1	
	Gutter installation (top pilot door)	2	
	Cable cutter installation	2	
	Auxiliary fuel tank fixed parts installation	2	
	Cabin doors windows replacement	2	
	Radio-altimeter aural warning installation	2	
	Stand-by horizon autonomous power supply	2	
	Fire attack system	2/1	

	Hoisting system installation	2/1	
	External loads hook installation	2	
	Emergency flotation gear installation	2/1	
	Heating/demisting (P2 supply)	2	

(a) Any organisation applying for a supplemental type-certificate shall demonstrate its capability by holding a military design organisation approval (MDOA), issued by the Authority in accordance with DASR 21 Subpart J.

(b) By way of exception from paragraph a, as an alternative procedure to demonstrate its capability, an applicant may seek Authority agreement for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Subpart.

(c) By way of exception from paragraph (a) and (b), any government organisation applying for a supplemental type-certificate may demonstrate its capability by having an agreement in place, accepted by the Authority, in accordance with DASR 21.A.2 with a design organisation which has access to the type design data. The agreement shall include detailed statements how the actions and obligations are delegated to enable the government organisation, in cooperation with the contracted organisation, to comply with the requirements of DASR 21 Subpart J, including demonstration of compliance with DASR 21.A.118A must be acceptable to the Authority. ▸ **AMC**

AMC 21.A.112B(c) - Alternative Demonstration

In some countries a government organisation is approved by the Authority to execute the Military Supplemental Type Certificate (MSTC) holder responsibilities. This government organisation may apply for a military supplemental type-certificate, without being the original design organisation. In this case the government organisation should, in accordance with DASR 21.A.2, enter an agreement with a design organisation which has access to the Type Design data to ensure the undertaking of specific actions and obligations. Alternative procedures (refer to DASR 21.A.14(b)) for establishing a Design Assurance System and Safety Management System to fulfil the obligations required under DASR 21.A.118A must be acceptable to the Authority

Where an MTC holder or Project Office applies under these provisions, the DASR AMC 21.A.14(c) requirements for 'DASA recognition of CAA / MAA' and 'Project Office demonstration of capability' also apply.

21.A.113 - Application for a Military Supplemental Type-certificate

(a) An application for a supplemental type-certificate shall be made in a form and manner established by the Authority. ▸ **AMC**

AMC 21.A.113(a) - Form and Manner (AUS)

The application referenced in DASR 21.A.113 refers to the initial formal notification to the Authority of the intent to seek issue of an MSTC. This can be achieved through submission of DASR Form 31. In the absence of a Form 31, submission of the first version of the certification programme will be taken as the initial application.

Final applications for an MSTC should be made using DASR Form 31a.

(b) When applying for a supplemental type-certificate, the applicant shall:

i. include in the application the information required by DASR 21.A.93(b);

ii. specify whether the certification data has been or will be prepared completely by the applicant or on the basis of an arrangement with the owner of the type-certification data.

(c) DASR 21.A.93(c) applies to the requirements for the time limits of the application effectivity as well as the requirements related to the need to update the type-certification basis and environmental protection requirements, when the change has not been approved or it is evident that it will not be approved within the time limit established.

21.A.115 - Requirements for approval of major changes in the form of a supplemental type-certificate

▸ **AMC** ▸ **GM**

GM 21.A.115 - Issue of a Military Supplemental type Certificate (AUS)

In response to applications the Authority shall issue all MSTC or major design change approval to the relevant government MTC holder.

AMC 21.A.115 - Requirements for the approval of major changes in the form of a Military Supplemental Type Certificate (MSTC)

(a) For STCs approved by the Authority, the AMC and GM to DASR 21.A.20 should be followed by the applicant.

(b) (Reserved).

(c) In accordance with DASR 21.A.115(d), the compliance demonstration process must always cover the specific configuration(s) in the Military Type Certificate (MTC) to which the MSTC under approval is applied. These configurations should be defined by the change to the type certificate considering the type certificate data sheet (TCDS) and the relevant optional installations. The demonstration of compliance should cover these specific applicable configurations. Consequently, the approval of the MSTC excludes any

other configurations, in particular those that already existed, but were not considered in the compliance demonstration process, and those that may be certified in future.

(d) For STCs approved by the military design organisation approval (MDOA) holder under their privilege as per DASR 21.A.263(c)(9), the process described under DASR AMC2 21.A.263(c)(5), (8) and (9) applies.

(a) Supplemental type-certificates shall be issued by:

1. the Authority; or

2. an approved design organisation within the scope of its privileges provided for in (1) and (9) of DASR 21.A.263(c), as recorded in the terms of approval.

(b) A supplemental type-certificate shall only be issued when; ▸ **AMC**

AMC 21.A.115(b) - Alternative demonstration (AUS)

Prior to issue of the type-certificate, and where the applicant has demonstrated its capability under DASR 21.A.112B(c) through the engagement of a foreign design organisation, the applicant should confirm, to the Authority, that the expected specific and generic DASA recognition requirements detailed in DASR AMC 21.A.14(c) continued to be valid during the design and certification programme, and specifically that;

a. the DO's systems, processes and personnel used in developing other designs for certification by the parent CAA / MAA were used in the design development or holder activities associated with the ADF design, and

b. the DO provided an attestation of compliance against the Type Certification Basis for the provided design product.

1. The applicant has demonstrated its capability in accordance with DASR 21.A.112B;

2. It has been demonstrated that the change to a type-certificate and areas affected by the change comply with the type-certification basis and the environmental protection requirements, as established in accordance with DASR 21.A.101;

3. (Reserved);

4. Compliance with (2) has been demonstrated in accordance with DASR 21.A.20, as applicable to the change; and

5. In case the applicant has specified that it provided certification data on the basis of an arrangement with the owner of the type-certification data in accordance with DASR 21.A.113(b):

   i. The type-certificate holder has indicated that it has no technical objection to the information submitted under DASR 21.A.93; and

   ii. The type-certificate holder has agreed to collaborate with the supplemental type-certificate holder to ensure discharge of all

obligations for continued airworthiness of the changed product through compliance with DASR 21.A.44 and DASR 21.A.118A.

(c) (Reserved).

(d) A supplemental type-certificate shall be limited to the specific configuration(s) in the type-certificate to which the related major change relates.

21.A.116 - Transferability

A supplemental type-certificate shall only be transferred to an organisation that is able to undertake the obligations of DASR 21.A.118A and for this purpose has demonstrated its ability to qualify under the criteria of DASR 21.A.112B.

21.A.117 - Changes to that part of a product covered by a supplemental type-certificate

(a) Minor changes to that part of a product covered by a supplemental type-certificate shall be classified and approved in accordance with DASR 21 Subpart D.

(b) Each major change to that part of a product covered by a supplemental type-certificate shall be approved as a separate supplemental type-certificate in accordance with this Subpart.

(c) By way of exception from paragraph b, a major change to that part of a product covered by a supplemental type-certificate submitted by the supplemental type-certificate holder itself may be approved as a change to the existing supplemental type-certificate.

21.A.118A - Obligations and Australian Military Parts Approval marking

Each holder of a supplemental type-certificate shall:

(a) Undertake the obligations: ▸ **AMC**

AMC 21.A.118(a) Continue to meet the criteria of DASR 21.A.112B

To ensure that the holder of a supplemental type-certificate remains capable to undertake the required actions and obligations, DASR 21.A.118(a) also requires the holder to continue to meet the criteria of DASR 21.A.112B.

To comply with this requirement, the holder of a supplemental type-certificate shall inform the Authority without undue delay of any circumstances that significantly affect the ability of the holder to effectively discharge its obligations.

If the actions and obligations of the holder of a supplemental type-certificate are undertaken on its behalf by another person or organisation in accordance with DASR 21.A.2, these circumstances shall include any changes to the relevant arrangements with the other organisation or findings regarding its safety performance.

1. Laid down in DASR 21.A.3A, DASR 21.A.3B, DASR 21.A.4, DASR 21.A.105, DASR 21.A.119 and DASR 21.A.120;

2. Implicit in the collaboration with the type-certificate holder under DASR 21.A.115(b)(5); and for this purpose continue to meet the criteria of DASR 21.A.112B.

(b) Specify the marking, including AUSMPA letters, in accordance with DASR 21.A.804.

21.A.118B - Duration and continued validity

(a) A supplemental type-certificate shall be issued for an unlimited duration. It shall remain valid subject to:

1. The holder remaining in compliance with this DASR; and

2. The certificate not being surrendered or revoked under the applicable administrative procedures established by the Authority.

(b) Upon surrender or revocation, the supplemental type-certificate shall be returned to the Authority.

(c) The supplemental type-certificate holder shall inform the Authority, as soon as practicable, when it is no longer able to meet the supplemental type-certificate holder responsibilities defined by this DASR, for one or several types of product. In this case, it shall provide access to the Authority with all the information necessary for the latter to ensure, or have ensured, the continued airworthiness of the type design of the concerned products.

21.A.119 - Manuals

The holder of a supplemental type-certificate shall produce, maintain, and update master copies of variations in the manuals required by the applicable type-certification basis and environmental protection requirements for the product, necessary to cover the changes introduced under the supplemental type-certificate, and furnish copies of these manuals to the Authority, on request. ▸ **AMC**

AMC 21.A.119 - Manuals (AUS)

The system to produce, maintain and update manuals shall ensure:

a. manuals are complete, current, and uniquely identified;

b. manuals contain their authority for use, document name, date of issue, and document / amendment status details;

c. manuals are provided in a medium compatible with user requirements;

d. new issues, re-issues and/or amendments are approved and/or endorsed by appropriate appointments prior to their release, noting that the process to

update a manual may be separate from the process to approve or authorise the content of the manual, eg approve AwL limitations in ICA;

e. manual management records are accurately maintained, controlled, traceable and are accessible; and

f. manuals can be reproduced to any previous amendment status.

21.A.120A - Instructions for Continuing Airworthiness

AMC **GM**

GM 21.A.120A - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) details the methods, inspections, processes, and procedures necessary for the air operator to keep aircraft and / or engine, propeller, parts and appliances airworthy during its intended life.

The contents of ICA can be divided into two categories:

a. an approved airworthiness limitations (AwL) section as defined by the applicable airworthiness codes during the certification process, which forms part of the type design / type-certificate (DASR 21.A.31(a)(3) and DASR 21.A.41):

i. any limitations determined through the certification of the product, and instructions on how to determine that these limits have been exceeded.

ii. any inspection, servicing or maintenance actions determined to be necessary by the certification process.

b. sections that do not contain approved data from the certification process and are not considered as part of type design/type-certificate:

i. any inspection or troubleshooting actions determined to be necessary to establish the nature of faults and the necessary remedial actions.

ii. sufficient general information on the operation of the product to enable an understanding of the instructions in paragraphs (a)(i), (a)(ii), and (b)(i) above.

AMC 21.A.120A - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) shall be distributed in accordance with DASR AMC 21.A.57 – Manuals (AUS).

The system for distributing ICA and their amendments to users shall ensure that:

a. details of the authorised distribution of ICA to each user is recorded; and

b. ICA are accessible to organisations and personnel.

(a) The holder of the supplemental type-certificate for an aircraft, engine, or propeller, shall furnish at least one set of the associated variations to the instructions for continuing airworthiness, prepared in accordance with the applicable type-certification basis, to each known operator of one or more aircraft, engine, or propeller incorporating the

features of the supplemental type-certificate, upon its delivery, or upon issuance of the first certificate of airworthiness for the affected aircraft, whichever occurs later, and thereafter make those variations in instructions available, on request, to any other operator required to comply with any of the terms of those instructions. Availability of some manual or portion of the variations to the instructions for continuing airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight-hours/cycles.

(b) In addition, changes to those variations of the instructions for continuing airworthiness shall be made available to all known operators of a product incorporating the supplemental type-certificate and shall be made available, on request, to any operators required to comply with any of those instructions. A programme showing how changes to the variations to the instructions for continuing airworthiness are distributed shall be submitted to the Authority.

21.A.120B - Reserved

SUBPART F - PRODUCTION WITHOUT MILITARY PRODUCTION ORGANISATION APPROVAL

21.A.121 - Scope

▸ **GM**

GM 21.A.121 - Scope (AUS)

DASR 145.A.42(c) has provision for the fabrication of parts by an Approved Maintenance Organisation under certain conditions and during the course of overhaul, maintenance, modifications, or repair of aircraft or components within its own facility. Notably, permission to fabricate under DASR 145 does not constitute manufacture/production approval, and parts do not qualify for certification on DASR Form 1—Authorised Release Certificate. Subpart F is therefore necessary to produce parts that require certification on a DASR Form 1.

(a) This Subpart establishes the procedure for demonstrating the conformity with the applicable design data of a product, part and appliance that is intended to be manufactured without a production organisation approval under DASR 21 Subpart G.

(b) This Subpart establishes the rules governing the obligations of the manufacturer of a product, part or appliance being manufactured under this Subpart. ▸ **GM1** ▸ **GM2**

GM2 to 21.A.121(b) - Applicability – Applicable design data

Applicable design data is defined as all necessary drawings, specifications and other technical information provided by the applicant for, or holder of a design organisation approval, MTC, MSTC, approval of repair or minor change design, or AUSMTSO authorisation (or equivalent when DASR 21 Section A Subpart F is used for production of products, parts or appliances, the design of which has been approved other than according to DASR 21), and released in a controlled manner to the manufacturer producing under DASR 21 Section A Subpart F. This will

be sufficient for the development of production data to enable manufacture in conformity with the design data.

Prior to issue of the MTC, MSTC, approval of repair or minor change design or AUSMTSO authorisation, or equivalent, design data is defined as 'not approved', but parts and appliances may be released with a DASR Form 1—Authorised Release Certificate, as a certificate of conformity.

After issue of the MTC, MSTC, approval of repair or minor change or AUSMTSO authorisation, or equivalent, this design data is defined as 'approved' and items manufactured in conformity are eligible for release on a DASR Form 1 for airworthiness purposes.

GM1 to 21.A.121(b) - Applicability - Individual product, part or appliance

In this context, 'demonstrating the conformity with the applicable design data of a product, part and appliance' means that conformity with the applicable design data has to be established and shown for each and every product, part or appliance.

21.A.122 - Eligibility

Any organisation may apply to show conformity of individual products, parts or appliances under this Subpart, if: ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.122 - Eligibility – Link between design and production

In accordance with DASR AMC1 to 21.A.122 the person producing or intending to produce under DASR 21 Section A Subpart F should demonstrate to the Authority that it has entered into an arrangement with the design organisation. The arrangement should be documented irrespective of whether the two organisations are separate legal entities or not.

The documented arrangement should facilitate the person producing or intending to produce under DASR 21 Section A Subpart F to demonstrate compliance with the requirement of DASR 21.A.122 by means of written documents agreed.

In the case where the design organisation and the person producing or intending to produce under DASR 21 Section A Subpart F are part of the same legal entity these interfaces may be demonstrated by company procedures accepted by the Authority.

In all other cases to define such a design/production interface the following sample format is offered:

Arrangement Sample Form:

Arrangement In accordance with DASR 21.A.122	
The undersigned agree on the following commitments:	relevant interface procedures
The design organisation [NAME] takes responsibility to	

? assure correct and timely transfer of up-to-date applicable design data, eg drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc, to the person producing under DASR 21 Section A Subpart F [NAME] ? provide visible statement(s) of approved design data	
The person producing under DASR 21 Section A Subpart F [NAME] takes responsibility to ? assist the design organisation [Name] in dealing with continuing airworthiness matter and for required actions ? assist the design organisation [Name] in case of products prior to type-certification in demonstrating compliance with airworthiness requirements ? develop, where applicable, its own manufacturing data in compliance with the airworthiness data package	
The design organisation [Name] and the person producing under DASR 21 Section A Subpart F [Name] take joint responsibility to ? deal adequately with production deviations and non conforming parts in accordance with the applicable procedures of the design organisation and the manufacturer producing under DASR 21 Section A Subpart F. ? achieve adequate configuration control of manufactured parts, to enable the manufacturer producing under DASR 21 Section A Subpart F to make the final determination and identification for conformity.	
The scope of production covered by this arrangement is detailed in ... [DOCUMENT REFERENCE/ ATTACHED LIST]	
[When the design organisation is not the same legal entity as the manufacturer producing under DASR 21 Section A Subpart F] Transfer of approved design data The MTC/MSTC/AUSMTSO authorisation holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved by the Authority and therefore parts and appliance manufactured in accordance with these data and found in a condition for safe operation may be released certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation.	
[When the design organisation is not the same legal entity as the manufacturer producing under DASR 21 Section A Subpart F] Direct Delivery Authorisation This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.	
for the [NAME of the design organisation/MDOA holder]	for the [NAME of the person producing under DASR 21 Section A Subpart F]

date signature xx.xx.xxxx ([NAME in block letters])	date signature xx.xx.xxxx ([NAME in block letters])

Instructions for completion:

Title: The title of the relevant document should clearly indicate that it serves the purpose of a design/production interface arrangement in accordance with DASR 21.A.122.

Commitment: The document should include the basic commitments between the design organisation and the manufacturer producing under DASR 21 Section A Subpart F as addressed in DASR AMC 21.A.4 and DASR AMC1 to 21.A.122.

Relevant Procedures: Identify an entry point into the documentary system of the organisations with respect to the implementation of the arrangement (for example a contract, quality plan, handbooks, common applicable procedures, working plans).

Scope of arrangement: The scope of arrangement should state by means of a list or reference to relevant documents those products, parts or appliances that are covered by the arrangement.

Transfer of approved design data: Identify the relevant procedures for the transfer of the applicable design data required by DASR 21.A.122 and DASR AMC1 to 21.A.122 from the design organisation to the person producing under DASR 21 Section A Subpart F. The means by which the design organisation advises the person producing under DASR 21 Section A Subpart F whether such data is approved or not approved should also be identified (see DASR 21.A.4 and DASR AMC 21.A.4).

Direct Delivery Authorisation: Where the design organisation and the person producing under DASR 21 Section A Subpart F are separate legal entities the arrangement should clearly identify whether authorisation for direct delivery to end users is permitted or not.

Where any intermediate production/design organisation is involved in the chain between the original design organisation and the person producing under DASR 21 Section A Subpart F, evidence should be available that this intermediate organisation has received authority from the design organisation to grant Direct Delivery Authorisation.

Signature: DASR AMC1 to 21.A.122 requests the identification of the responsible persons/ offices who control the commitments laid down in the arrangement. Therefore the basic document should be signed mutually by the authorised representatives of the design organisation and the manufacturer producing under DASR 21 Section A Subpart F in this regard.

AMC1 21.A.122 - Eligibility – Link between design and production

An 'arrangement' is considered suitable if it is documented and satisfies the Authority that co-ordination is satisfactory.

To achieve satisfactory co-ordination the documented arrangements should at least define the following aspects irrespective of whether the design organisation and the person producing or intending to produce under DASR 21 Section A Subpart F are separate legal entities or not:

a. The responsibilities of a design organisation which assure correct and timely transfer of up-to-date applicable design data, eg drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements,);

b. The responsibilities and procedures of the manufacturer for receiving, managing and using the applicable design data provided by the design organisation;

c. The responsibilities and procedures of the manufacturer for developing, where applicable, its own manufacturing data in compliance with the applicable design data package;

d. The responsibilities of the manufacturer to assist the design organisation in dealing with continuing airworthiness matters and for required actions, eg traceability of parts in case of direct delivery to users, retrofitting of modifications, traceability of processes' outputs and approved deviations for individual parts as applicable, technical information and assistance,);

e. The scope of the arrangements covering DASR 21 Section A Subpart F requirements, in particular: DASR 21.A.126(a)(4), DASR 21.A.129(d) and DASR 21.A.129(f) and any associated GM or AMC;

f. The responsibilities of the manufacturer, in case of products prior to type-certification to assist a design organisation in demonstrating compliance with Certification Basis (access and suitability of production and test facilities for manufacturing and testing of prototype models and test specimen);

g. The procedures to deal adequately with production deviations and non-conforming parts;

h. The means to achieve adequate configuration control of manufactured parts, to enable the manufacturer to make the final determination and identification for conformity or airworthiness release and eligibility status;

i. The identification of responsible persons/offices who controls the above;

j. The acknowledgment by the holder of the MTC/MSTC/repair or change approval/AUSMTSO authorisation that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved.

In many cases the person producing or intending to produce under DASR 21 Section A Subpart F may receive the approved design data through an intermediate production organisation. This is acceptable provided an effective link between the design approval holder and the production organisation can be maintained to satisfy the intent of DASR 21.A.122.

When the design organisation and the manufacturer are two separate legal entities a Direct Delivery Authorisation should be available for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

Where there is no general agreement for Direct Delivery Authorisation, specific permissions may be granted (see DASR AMC 21.A.4).

(a) It holds or has applied for an approval covering the design of that product, part or appliance; or

(b) It has ensured satisfactory coordination between production and design, through an appropriate arrangement with the applicant for, or holder of, an approval of such a design.

21.A.124 - Application

(a) Each application for an agreement to the showing of conformity of individual products, parts and appliances under this Subpart shall be made in a form and manner established by the Authority. ▸ **GM**

GM 21.A.124(a) – Application – Application form

DASR Form 60—Application for agreement of production under DASR 21 Subpart F, is to be completed by the applicant.

An application may be accepted from:

a. An individual applying on their own behalf, or

b. In the case of an organisation, an individual with the authority to make agreements on behalf of the organisation.

The completed form is to be forwarded to the Authority.

(b) Such application shall contain:

1. Evidence which demonstrate, where applicable, that: ▸ **GM**

GM 21.A.124(b)(1) - Re-use of Evidence

Organisations recognised by competent civil aviation authorities or certified as per AS/EN 9100—Quality Management Systems, or the equivalent AQAP (Aerospace Quality Assurance Program), may re-use part or all of the same process evidences in the demonstration of compliance with DASR 21 Section A Subpart F—Production without Military Production Organisation Approval, as agreed by the Authority.

i. The issuance of a production organisation approval under DASR 21 Section A Subpart G—Military Production Organisation Approval Production, would be inappropriate; or ▸ **GM**

GM 21.A.124(b)(1)(i) - Applicability - Inappropriate approval under Subpart G

The issue of a letter of agreement of production under DASR 21 Section A Subpart F may be agreed by the Authority when:

a. The applicant produces or intends to produce aeronautical products, parts and/or appliances intended for airborne use as part of a type-certificated product (this excludes simulators, ground equipment and tools), and

b. The Authority determines that DASR 21 Section A Subpart G would be inappropriate, and consequently DASR 21 Section A Subpart F applies. The main difference between DASR 21 Section A Subparts G and F is that Subpart G requires the existence of a Quality System which provides the Authority with the necessary confidence to grant to the manufacturer the privileges of certifying its own production. There are situations where a Quality System, including independent monitoring and continuous internal evaluation functions, is not justified and /or feasible. In making the determination that Subpart F may apply, the Authority may take into account one or a combination of parameters such as the following:

i. no flow production (infrequent or low volume of production);

ii. simple technology (enabling effective inspection phases during the manufacturing process);

iii. very small organisation.

ii. The certification or approval of a product, part or appliance under this Subpart is needed pending the issuance of a production organisation approval under DASR 21 Section A Subpart G. ▸ **GM**

GM 21.A.124(b)(1)(ii) - Certification or approval needed in advance of the issue of a MPOA

In cases where DASR 21 Section A Subpart G is applicable, but when some time is needed for the organisation to achieve compliance with Subpart G, ie to establish the necessary documented quality system, the Authority may agree to use DASR 21 Section A Subpart F for a limited period (transient phase).

In cases where DASR 21 Section A Subpart G is applicable, such as to produce AUSMTSO articles, a letter of agreement to produce under DASR 21 Section A Subpart F will not be given unless an application has been made for organisation approval under Subpart G, and reasonable progress is being made towards compliance with Subpart G. Long-term production under DASR 21 Section A Subpart F will not be permitted.

2. An outline of the information required by DASR 21.A.125A(b). ▸ **GM**

GM 21.A.124(b)(2) - Application - Minimum information to include with the application

At this early stage, provision of the complete manual is not necessary, but at least the following items are to be covered:

a. Table of Contents of the Manual (including list of existing inspection system documents or procedures);

b. Description of items to be manufactured (including intended quantities / deliveries);

c. List of possible suppliers;

d. General description of facilities;

e. General description of production means;

f. Human resources.

21.A.125A - Issue of a letter of agreement

The applicant shall be entitled to have a letter of agreement issued by the Authority agreeing to the showing of conformity of individual products, parts and appliances under this Subpart, after: ▸ **GM**

GM 21.A.125A - Letter of agreement - Meaning of individual

'Individual' means that each part number or type of item, ie product, part or appliance, to be produced is to be specifically referenced, either directly or through a referenced capability list, in the letter of agreement from the Authority. The letter may also specify any limitation in the production rate.

(a) Having established a production inspection system that ensures that each product, part or appliance conforms to the applicable design data and is in condition for safe operation.

(b) Providing a manual that contains: ▸ **GM1** ▸ **GM2**

GM2 to 21.A.125A(b) - Letter of agreement - Production Inspection System: Functional Tests

All items produced are to be subject to inspection to be carried out at suitable phases which permit an effective verification of conformity with the design data.

These inspections may provide for the execution of tests to measure performances as set out in the applicable design data.

Considerations of complexity of the item and/or its integration in the next level of production will largely determine the nature and time for these tests, for example:

a. appliances - will require full functional testing to the specifications;

b. parts - will at least require basic testing to establish conformity, but due allowance may be made for further testing carried out at the next level of production;

c. material - will require verification of its stated properties.

GM1 21.A.125A(b) - Letter of agreement - Contents of the Manual

The manual referred in DASR 21.A.125A(b) is to include, at least the following information:

a. Declaration by the applicant of undertaking in respect of:

i. the requirements defined in DASR 21 Section A Subpart F;

ii. the procedures contained in the manual and in the documentation mentioned herein;

iii. every legal provision laid down for the carrying on of the business activities (statutory declaration).

b. Declaration by the applicant certifying the conformity of the manual to the requirements defined in DASR 21 Section A Subpart F;

c. Jobs, power and responsibilities of the accountable personnel;

d. Organisation chart, if required by the Authority;

e. Description of the resources, including human resources, with an indication of the personnel qualification criteria;

f. Description of location and equipment;

g. Description of the scope of work, the production processes and techniques, and reference to the 'capability list';

h. Communications with the Authority, and specifically those required by DASR 21.A.125A(c);

i. Assistance and communication with the design approval holder, and the means of compliance with DASR 21.A.125A(c);

j. Amendments to the Manual;

k. Description of the Inspection System (including test), (see DASR GM2 to DASR 21.A.125A(b), and DASR 21.A.127 and DASR 21.A.128), and the procedures to meet DASR 21.A.126 and associated GM;

l. List of suppliers;

m. Issuing of the Statement of Conformity and Authority inspection for validation.

If the information is listed in the Manual in a different order a cross reference to the above list is to be made available in the Manual.

1. A description of the production inspection system required under paragraph a;

2. A description of the means for making the determinations of the production inspection system; and

3. A description of the tests of DASR 21.A.127 and DASR 21.A.128, and the names of persons authorised for the purpose of DASR 21.A.130(a).

(c) Demonstrating that it is able to provide assistance in accordance with DASR 21.A.3A, and DASR 21.A.129(d). ▸ **GM**

GM 21.A.125A(c) - Letter of agreement - Assistance

The Authority is to be provided with material which defines the means of providing assistance as required by DASR 21.A.125A(c). Suitable descriptive material is to be included in the Manual, as described in GM1 to 21.A.125A(b).

21.A.125B - Findings

(a) When objective evidence is found showing non-compliance of the holder of a letter of agreement with the applicable requirements of this DASR, the finding shall be classified as follows: ▸ **GM1** ▸ **GM2**

GM2 21.A.125B(a) - Examples for level one findings

Examples for Level 1 findings are non-compliances with any of the following paragraphs, that could affect the safety of the aircraft:

DASR 21.A.126, DASR 21.A.127, DASR 21.A.128 and DASR 21.A.129.

It is to be anticipated that a non-compliance with these paragraphs is only considered a level one finding when objective evidence has been found that this finding is an uncontrolled non-compliance that could affect the safety of the aircraft.

GM1 to 21.A.125B(a) - Uncontrolled non-compliance with applicable design data

An uncontrolled non-compliance with applicable design data is a non-compliance:

a. that cannot be discovered through systematic analysis; or

b. that prevents identification of affected products, parts, appliances, or material.

1. A level one finding is any non-compliance with this DASR which could lead to uncontrolled non-compliances with applicable design data and which could affect the safety of the aircraft.

2. A level two finding is any non-compliance with this DASR which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under paragraph a.

(c) After receipt of notification of findings:

1. In case of a level one finding, the holder of the letter of agreement shall demonstrate corrective action to the satisfaction of the Authority within a period of no more than 21 working days after written confirmation of the finding;

2. In case of level two findings, the corrective action period granted by the Authority shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and

subject to the nature of the finding the Authority may extend the three month period subject to a satisfactory corrective action plan agreed by the Authority;

3. A level three finding shall not require immediate action by the holder of the letter of agreement. If appropriate, the Authority will specify a compliance time.

(d) In case of level one or level two findings, the letter of agreement may be subject to a partial or full limitation, suspension and revocation of the letter of agreement. The holder of the letter of agreement shall provide confirmation of receipt of the notice of limitation, suspension or revocation of the letter of agreement in a timely manner.

21.A.125C - Duration and continued validity

(a) The letter of agreement shall be issued for a limited duration not exceeding one year, or as agreed by the Authority. It shall remain valid unless:

1. The holder of the letter of agreement fails to demonstrate compliance with the applicable requirements of this Subpart; or

2. There is evidence that the manufacturer cannot maintain satisfactory control of the manufacture of products, parts, or appliances under the agreement; or

3. The manufacturer no longer meets the requirements of DASR 21.A.122; or

4. The letter of agreement has been surrendered, revoked, or has expired.

(b) Upon surrender, revocation or expiry, the letter of agreement shall be returned to the Authority.

21.A.126 - Production inspection system

GM

GM 21.A.126 - Production Inspection System

DASR GM under paragraphs 21.A.126(a) and 21.A.126(b), have been developed for persons producing under DASR 21 Section A Subpart F on the long term basis as defined in DASR 21.A.124(b)(1)(i).

For those persons producing under DASR 21 Section A Subpart F as a transient phase under DASR 21.A.124(b)(1)(ii), compliance with DASR 21.A.126 may also be demonstrated to the satisfaction of the Authority by using the equivalent DASR 21 Section A Subpart G AMC/GM.

(a) The production inspection system required under DASR 21.A.125A(a) shall provide a means for determining that:

1. Incoming materials, and bought or subcontracted parts, used in the finished product are as specified in the applicable design data; **GM**

GM 21.A.126(a)(1) - Production Inspection System – Conformity of supplied parts, appliances and material

a. The person producing under DASR 21 Section A Subpart F—Production without Military Production Organisation Approval, is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity, as appropriate, of raw materials, subcontracted works, and supplied products, parts, appliances or material, whether to be used in production or delivered to customers as spare parts. This responsibility also includes Government Furnished Equipment (GFE) items.

b. Control may be based upon use of the following techniques, as appropriate:

i. first article inspection, including destruction if necessary, to verify that the article conforms to the applicable data for new production line or new supplier,

ii. incoming inspections and tests of supplied parts or appliances that can be satisfactorily inspected on receipt,

iii. identification of incoming documentation and data relevant to the showing of conformity to be included in the certification documents,

iv. any additional work, tests or inspection which may be needed for parts or appliances which are to be delivered as spare parts and which are not subject to the checks normally provided by subsequent production or inspection stages.

c. The person producing under DASR 21 Section A Subpart F may rely upon a DASR Form 1—Authorised Release Certificate, issued in accordance with DASR 21 if provided as evidence of conformity with applicable design data.

d. For suppliers not holding a MPOA the inspection system of the person producing under DASR 21 Section A Subpart F is to establish a system for control of incoming materials and bought or subcontracted items which provides for inspections and tests of such items by the person producing under DASR 21 Section A Subpart F at the supplier's facility, if the item cannot or will not be completely inspected upon receipt.

2. Incoming materials, and bought or subcontracted parts, are properly identified;
GM

GM 21.A.126(a)(2) - Production Inspection System - Identification of incoming materials and parts

All parts and materials coming from external parties are to be identified and inspected to ascertain that they have not been damaged during transport or unpacking, that the incoming parts and materials have the appropriate and correct accompanying documentation and that the configuration and condition of the parts or materials is as laid down in that documentation.

Only on completion of these checks and of any incoming further verifications laid down in the procurement specification, may the part or material be accepted for warehousing and used in production.

This acceptance is to be certified by an inspection statement.

A suitable recording system is to allow reconstruction at any time of the history of every material or part.

The areas where the incoming checks are carried out and the materials or parts are stored pending completion of the checks are to be physically segregated from other departments.

3. Processes, manufacturing techniques and methods of assembly affecting the quality and safety of the finished product are accomplished in accordance with specifications accepted by the Authority; ▸ **GM1** ▸ **GM2**

GM2 to 21.A.126(a)(3) - Production Inspection System - Means of checking of the production processes

The Production Inspection System is to be provided with appropriate means of checking that production processes, whether performed by the person producing under DASR 21 Section A Subpart F or by subcontractors under its control, are carried out in accordance with applicable data, including:

a. A system for the control and authorised amendment of data provided for the production, inspection and test to ensure that it is complete and up-to-date at the point of use;

b. Availability of personnel with suitable qualification, experience, and training for each required production, inspection, and test task. Special attention is to be paid to tasks requiring specialised knowledge and skill, eg NDT/NDI, welding;

c. A working area where the working conditions and environment are controlled as appropriate in respect of: cleanliness, temperature, humidity, ventilation, lighting, space/access, protection against noise and pollution;

d. Equipment and tools sufficient to enable all specified tasks to be accomplished in a safe and effective manner without detrimental effect on the items under production. Calibration control of equipment and tools which affect critical dimensions and values are to demonstrate compliance with, and be traceable to, recognised national or international standards.

GM1 21.A.126(a)(3) - Production Inspection System - List of specifications

It is the responsibility of:

a. The designer, to define all necessary processes, techniques and methods to be followed during manufacture (DASR 21.A.31) and this information will be provided as part of the applicable design data.

b. The manufacturer, to ensure that all processes are carried out strictly in accordance with the specifications provided as part of the applicable design data.

4. Design changes, including material substitutions, have been approved under DASR Subpart D or DASR Subpart E and controlled before being incorporated in the finished product. ▸ **GM**

GM 21.A.126(a)(4) - Production Inspection System – Applicable design/ production data procedures

a. When a person producing under DASR 21 Section A Subpart F is developing its own manufacturing data from the design data package delivered by a Design holder, procedures are to demonstrate the correct transcription of the original design data.

b. Procedures are to define the manner in which applicable design data is used to issue and update the production/inspection data, which determines the conformity of products, parts, appliances and materials. The procedure is to also define the traceability of such data to each individual product, part, appliance or material for the purpose of stating the condition for safe operation and for issuing a Statement of Conformity.

c. During execution, all works are to be accompanied by documentation giving either directly or by means of appropriate references, the description of the works as well as the identification of the personnel in charge of inspection and execution tasks for each of the different work phases.

(b) The production inspection system required by DASR 21.A.125A(a), shall also be such as to ensure that:

1. Parts in process are inspected for conformity with the applicable design data at points in production where accurate determinations can be made; ▸ **GM**

GM 21.A.126(b)(1) - Production Inspection System - Inspection of parts in process

The purpose of the Production Inspection System is to check at suitable points during production and provide objective evidence that the correct specifications are used, and that processes are carried out strictly in accordance with the specification.

During the manufacturing process, each article is to be inspected in accordance with a plan which identifies the nature of all inspections required and the production stages at which they occur. The plan is to also identify any particular skills or qualification required of person(s)

carrying out the inspections, eg NDT personnel. A copy of the plan is to be included in, or referenced by, the manual required by DASR 21.A.125A(b).

If the parts are such that, if damaged, they could compromise the safety of the aircraft, additional inspections for such damage are to be performed at the completion of each production stage.

2. Materials subject to damage and deterioration are suitably stored and adequately protected; ▸ **GM**

GM 21.A.126(b)(2) - Production Inspection System – Suitable storage and protection

a. Storage areas are to be protected from dust, dirt, or debris, and adequate blanking and packaging of stored items is to be practised.

b. All parts are to be protected from extremes of temperatures and humidity and, where needed, temperature-controlled or full air-conditioned facilities are to be provided.

c. Racking and handling equipment is to be provided such as to allow storage, handling and movement of parts without damage.

d. Lighting is to be such as to allow safe and effective access and handling, but is to also cater for items which are sensitive to light, eg rubber items.

e. Care is to be taken to segregate and shield items which can emit fumes, eg wet batteries, substances or radiation, eg magnetic items, which are potentially damaging to other stored items.

f. Procedures are to be in place to maintain and record stored parts identities and batch information.

g. Access to storage areas is to be restricted to authorised personnel who are fully trained to understand and maintain the storage control arrangements and procedures.

h. Provisions are to be made for segregated storage of non-conforming items pending their disposition (see DASR GM 21.A.126(b)(4)).

3. Current design drawings are readily available to manufacturing and inspection personnel, and used when necessary; ▸ **GM**

GM 21.A.126(b)(3) - Production Inspection System – Use of derived data instead of original design data

Where derived data, eg worksheets, process sheets, fabrication/inspection instructions, is used instead of original design drawings, documents identification and control procedures are to be used to ensure that the documentation in use is always accurate and current.

4. Rejected materials and parts are segregated and identified in a manner that precludes installation in the finished product; ▸ **GM**

GM 21.A.126(b)(4) - Production Inspection System – Segregation of rejected material

All materials and parts which have been identified at any stage in the manufacturing process as not conforming to the specific working and inspection instructions are to be suitably identified by clearly marking or labelling, to indicate their non-conforming status.

All such non-conforming material or parts are to be removed from the production area and held in a restricted access segregated area until an appropriate disposition is determined in accordance with DASR 21.A.126(b)(5).

5. Materials and parts that are withheld because of departures from design data or specifications, and that are to be considered for installation in the finished product, are subjected to an approved engineering and manufacturing review procedure. Those materials and parts determined by this procedure to be serviceable shall be properly identified and re-inspected if rework or repair is necessary. Materials and parts rejected by this procedure shall be marked and disposed of to ensure that they are not incorporated in the final product; ▸ **GM**

GM 21.A.126(b)(5) - Production Inspection System – Engineering and manufacturing review procedure

a. The procedure is to permit to record the deviation, to present it to the Design holder under the provisions of DASR 21.A.122, and to record the results of the review and actions taken consequently as regards the part/product.

b. Any unintentional deviation from the manufacturing/inspection data is to be recorded and handled in accordance with DASR 21 Section A Subpart D—Changes to Military Type-certificates and Restricted Type-certificates, or DASR 21 Section A Subpart E—Military Supplemental Type-certificates, as changes to the approved design.

6. Records produced under the production inspection system are maintained, identified with the completed product or part where practicable, and retained by the manufacturer in order to provide the information necessary to ensure the continued airworthiness of the product. ▸ **GM**

GM 21.A.126(b)(6) - Production Inspection System – Recording and record keeping

a. Records within a production environment satisfy two purposes. Firstly, they are to, during the production process, ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the person producing under DASR 21 Section A Subpart F—Production without Military Production Organisation Approval, is to implement a system for the compilation and retention of records during all stages of

manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.

The management of such information is to be subject to appropriate documented procedures in the Manual required by DASR 21.A.125A(b).

All forms of recording media are acceptable (paper, film, magnetic ...) provided they can meet the required duration for archiving under the conditions provided.

b. The related procedures are to:

i. Identify records to be kept.

ii. Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information, eg by product, subject.

iii. Control access and provide effective protection from deterioration or accidental damage.

iv. Ensure continued readability of the records.

v. Demonstrate to the Authority proper functioning of the records system.

vi. Clearly identify the persons involved in conformity determination.

vii. Define an archiving period for each type of data taking into account importance in relation to conformity determination subject to the following:

1. Data which supports conformity of a product, part, or appliance is to be kept for not less than three years from the issue date of the related Statement of Conformity or Authorised Release Certificate.

2. Data considered essential for continuing airworthiness is to be kept throughout the operational life of the product, part or appliance.

viii. Data related to supplied parts may be retained by the supplier if the supplier has a system agreed under DASR 21 Section A Subpart F by the Authority. The manufacturer is to, in each case, define the archiving period and satisfy themselves and the Authority that the recording media are acceptable.

21.A.127 - Tests: Aircraft

(a) Each manufacturer, of an aircraft manufactured under this Subpart, shall establish an approved production ground and flight test procedure and check-off forms, and in accordance with those forms, test each aircraft produced, as a means of establishing relevant aspects of compliance with DASR 21.A.125A(a). ▸ **GM**

GM 21.A.127(a) - Approved production ground and flight tests

The production ground and flight tests for new aircraft will be specified by the aircraft design organisation in conjunction with the applicable flight test authority.

(b) Each production test procedure shall include at least the following:

1. A check on handling qualities;
2. A check on flight performance (using normal aircraft instrumentation);
3. A check on the proper functioning of all aircraft equipment and systems;
4. A determination that all instruments are properly marked, and that all placards and required flight manuals are installed after flight test;
5. A check of the operational characteristics of the aircraft on the ground;
6. A check on any other items peculiar to the aircraft being tested.

21.A.128 - Tests: Engines and propellers

Each manufacturer of engines or propellers, manufactured under this Subpart, shall subject each engine, or variable pitch propeller, to an acceptable functional test as specified in the type-certificate holder's documentation, to determine if it operates properly throughout the range of operation for which it is type-certificated, as a means of establishing relevant aspects of compliance with DASR 21.A.125A(a). ▸ **GM1** ▸ **GM2** ▸ **GM3**

GM3 21.A.128 - Acceptable functional test - Engines and Propellers

After functional test, each engine or propeller is to be inspected to determine that the engine or propeller is in condition for safe operation. Such inspection will be specified by the design organisation and is to normally include internal inspection and examination. The degree of internal inspections will normally be determined on the basis of the positive results of previous inspections conducted on the first production engines, and on the basis of service experience.

GM2 21.A.128 - Acceptable functional test – Variable pitch propellers

The functional tests required for a new propeller will be specified by the propeller design organisation and is to normally include a number of complete cycles of control throughout the propeller pitch and rotational speed ranges. In addition, for feathering and/or reversing propellers, several cycles of feathering operation and reversing operation from the lowest normal pitch to the maximum reverse pitch, will normally be required.

GM1 21.A.128 - Acceptable functional test - Engines

The functional test required for a new engine will be specified by the engine design organisation and will normally include at least the following:

a. Break-in runs that include a determination of fuel and oil consumption and a determination of power characteristics at rated maximum continuous power or thrust and, if applicable, at rated takeoff power or thrust;

b. A period of operation at rated maximum continuous power or thrust. For engines having a rated takeoff power or - thrust, part of that period is to be at rated takeoff power or - thrust.

The test equipment used for the test run is to be capable of output determination of accuracy sufficient to assure that the engine output delivered complies with the specified rating and operation limitations.

21.A.129 - Obligations of the manufacturer

Each manufacturer of a product, part or appliance being manufactured under this Subpart shall:

(a) Make each product, part or appliance available for inspection by the Authority; ▸ **GM**

GM 21.A.129(a) - Availability for inspection by the Authority

Each product, part or appliance is to be made available for inspection at any time at the request of the Authority.

It is recommended that a pre-defined plan of inspection points be established and agreed with the Authority to be used as a basis for such inspections.

The manufacturer is to provide such documentation, tools, personnel, access equipment etc. as necessary to enable the Authority to perform the inspections.

(b) Maintain at the place of manufacture the technical data and drawings necessary to determine whether the product conforms to the applicable design data;

(c) Maintain the production inspection system that ensures that each product conforms to the applicable design data and is in condition for safe operation; ▸ **AMC1** ▸ **AMC2** ▸ **AMC3**

AMC3 21.A.129(c) - Obligations of the manufacturer – Condition for safe operation

Before issue of the Statement of Conformity to the Authority the manufacturer under this Subpart should make an investigation so as to be satisfied in respect to each of the items listed below. The documented results of this investigation should be kept on file by the manufacturer. Certain of these items may be required to be provided (or made available) to the operator or owner of the aircraft, and, for validation of the statement of conformity, to the Authority.

a. Equipment or modifications which do not meet the requirements of the state of manufacture but have been accepted by the Authority of the importing country.

b. Identification of products, parts or appliances which:

i. Are not new;

ii. Are furnished by the buyer or future operator (including those identified in DASR 21.A.801 and DASR 21.A.805).

c. Technical records which identify the location and serial numbers of components that have traceability requirements for continued airworthiness purposes including those identified in DASR 21.A.801 and DASR 21.A.805.

d. Log book and a modification record book for the aircraft as required by the Authority.

e. Log books for products identified in DASR 21.A.801 installed as part of the type design as required by the Authority.

f. A weight and balance report for the completed aircraft.

g. A record of missing items or defects which do not affect airworthiness these for example could be furnishing or GFE (Items may be recorded in a technical log or other suitable arrangement such that the operator and Authority are formally aware).

h. Product support information required by Certification Basis, such as a Maintenance Manual, a Parts Catalogue, or MMEL all of which are to reflect the actual build standard of the particular aircraft. Also an Electrical load analysis and a wiring diagram.

i. Records which demonstrate completion of maintenance tasks appropriate to the test flight flying hours recorded by the aircraft. These records should show the relationship of the maintenance status of the particular aircraft to the manufacturers recommended maintenance task list and the Maintenance Review Board (MRB) document/report.

j. Details of the serviceability state of the aircraft in respect of, a) the fuel and oil contents, b) provision of operationally required emergency equipment such as life rafts, etc.

k. Details of the approved interior configuration if different from that approved as part of the type design.

l. An approved Flight Manual which conforms to the build standard and modification state of the particular aircraft should be available.

m. Show that inspections for foreign objects at all appropriate stages of manufacture have been satisfactorily performed.

n. The registration has been marked on the exterior of the aircraft as required by Defence policy.

o. Where applicable, there should be a certificate for noise and, for the aircraft radio station.

p. Where applicable, the installed compass and or compass systems have been adjusted and compensated and a deviation card displayed in the aircraft.

q. Software criticality list.

r. A record of rigging and control surface movement measurements.

s. Details of installations which will be removed before starting commercial air transport operations, eg ferry kits for fuel, radio or navigation.

t. List of all applicable Service Bulletins and airworthiness directives that have been implemented.

AMC2 21.A.129(c) - Obligations of the manufacturer – Conformity with Applicable Design Data

Individual configurations are often based on the needs of the customer and improvements or changes which may be introduced by the type-certificate holder. There are also likely to be unintentional divergences (concessions or non-conformances) during the manufacturing process. All these changes are required to have been approved by the design approval applicant/holder, or when necessary by the Authority.

AMC1 21.A.129(c) - Obligations of the manufacturer – Conformity of prototype models and test specimens

DASR 21.A.33 requires determination of conformity of prototype models and test specimens to the applicable design data. For a complete aircraft a 'conformity document', that has to be validated by the Authority, should be provided as part of the assistance to the design approval applicant. For products other than a complete aircraft, and for parts and appliances, a DASR Form 1—Authorised Release Certificate, validated by the Authority may be used as a conformity document as part of the assistance to the design approval applicant.

(d) Provide assistance to the holder of the type-certificate, restricted type-certificate or design approval in dealing with any continuing airworthiness actions that are related to the products, parts or appliances that have been produced;

(e) Establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to extract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;

(f) :

1. Report to the holder of the type-certificate, restricted type-certificate or design approval, all cases where products, parts or appliances have been released by the manufacturer and subsequently identified to have deviations from the applicable design data, and investigate with the holder of the type-certificate, restricted type-certificate or design approval to identify those deviations which could lead to an unsafe condition;

2. Report to the Authority the deviations which could lead to an unsafe condition identified according to subparagraph (f)1. Such reports shall be made in a form and manner established by the Authority under DASR 21.A.3A(b)(2) or accepted by the Authority; ▸ **AMC**

AMC 21.A.129(f)(2) - Reporting to the Authority - Form and manner (AUS)

Form AE 061—Report on Aircraft and Aeronautical Product or DASR Form 44—Technical Occurrence Report, should be completed as established by the Authority.

Form AE 061 and DASR Form 44 may be accepted from:

a. An individual reporting on their own behalf, or

b. In the case of an organisation, an individual with the authority to report on behalf of the organisation.

Urgent unsafe conditions should be reported verbally, ie via telephone, in the first instance, while all reporting should be followed up by the completed form, as time allows.

The completed form is to be forwarded to the Authority, carbon copied (Cc) the applicable DIA desk officer or other working level point of contact. NOTE: Depending on organisational arrangements, concurrent reporting to the applicable CAMO may also be necessary.

3. Where the manufacturer acts as supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data.

21.A.130 - Statement of Conformity

(a) Each manufacturer of a product, part or appliance manufactured under this Subpart shall raise a Statement of Conformity, a DASR Form 52 - Military Aircraft Statement of Conformity, for complete aircraft, or a DASR Form 1 - Authorised Release Certificate, for other products, parts or appliances. This statement shall be signed by an authorised person who holds a responsible position in the manufacturing organisation.

(b) A statement of conformity shall include: ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.130(b) - Statement of Conformity for Products (other than complete aircraft), parts, appliances and materials - The Authorised Release Certificate (DASR Form 1)

The DASR 21 AMC associated with DASR Form 1 can be found in the DASR Forms document.

AMC1 21.A.130(b) - Statement of Conformity for Complete Aircraft

Purpose and scope

The description for this AMC is contained in DASR Form 52—Military Aircraft Statement of Conformity, and refers only to the use of the aircraft Statement of Conformity issued under DASR 21 Section A Subpart F. Statement of Conformity under DASR 21 Section A Subpart F for products other than complete aircraft, and for parts and appliances is described in DASR AMC2 to 21.A.130(b).

Additionally, for production under DASR 21 Section A Subpart F, this Block should include validation by the Authority. For this purpose, the validation statement below should be

included in the Block 21 itself, and not referred in a separate document. The statement can be pre-printed, computer generated or stamped, and should be followed by the signature of the representative of the Authority validating the certificate, the name and the position/ identification of such representative of the Authority, and the date of such validation by the Authority.

VALIDATION STATEMENT:

'After due inspection the < Defence Aviation Authority > is satisfied that this document constitutes an accurate and valid Statement of Conformity in accordance with DASR 21 Section A Subpart F'.

1. For each product, part or appliance a statement that the product, part or appliance conforms to the approved design data and is in condition for safe operation;

2. For each aircraft, a statement that the aircraft has been ground and flight checked in accordance with DASR 21.A.127(a);

3. For each engine, or variable pitch propeller, a statement that the engine or propeller has been subjected by the manufacturer to a final functional test, in accordance with DASR 21.A.128, and

4. Additionally, in the case of engines, a statement that the completed engine is in compliance with the applicable emission requirements (where applicable) on the date of manufacture of the engine.

(c) Each manufacturer of such a product, part or appliance shall present a current statement of conformity, for validation by the Authority: ▸ **AMC**

AMC 21.A.130(c) - Validation of the Statement of Conformity

It is the responsibility of the applicant to ensure that each and every product, part and appliance conforms to the applicable design data and is in condition for safe operation before issuing and signing the relevant Statement of Conformity. During manufacture, the applicant is expected to use such facilities, systems, processes and procedures as described in the Manual and have been previously agreed with the Authority.

The Authority should then make such inspection and investigation of records and product, part or appliance as are necessary to determine that the agreed facilities, systems, processes and procedures have been used, and that the Statement of Conformity may be regarded as a valid document.

To enable timely inspection and investigation by the Authority, the Statement of Conformity should be prepared and submitted to the Authority immediately upon satisfactory completion of final production inspection and text.

1. Upon the initial transfer by it of the ownership of such a product, part or appliance; or ▸ **AMC**

AMC 21.A.130(c)(1) - Initial transfer of ownership

Upon transfer of ownership:

a. For a complete aircraft, whether or not an application for a Certificate of Airworthiness is to be made, a DASR Form 52—Military Aircraft Statement of Conformity, should be completed and submitted to the Authority for validation.

b. For anything other than a complete aircraft a DASR Form 52 is inappropriate, and a DASR Form 1—Authorised Release Certificate, should be completed and submitted to the Authority for validation.

NOTE: If there is significant delay between the last production task and presentation of DASR Form 52, or DASR Form 1, to the Authority, then additional evidence relating to the storage, preservation and maintenance of the item since its production should be presented to the Authority.

2. Upon application for the original issue of an aircraft certificate of airworthiness; or

3. Upon application for the original issue of an airworthiness release document for an engine, a propeller, a part or appliance.

(d) The Authority shall validate by counter-signature the Statement of Conformity if it finds after inspection that the product, part or appliance conforms to the applicable design data and is in condition for safe operation.

SUBPART G - MILITARY PRODUCTION ORGANISATION APPROVAL

21.A.131 - Scope

This Subpart establishes: ▸ **GM**

GM 21.A.131 - Scope - Applicable design data

Applicable design data is defined as all necessary drawings, specifications and other technical information provided by the applicant for, or holder of a design organisation approval, MTC, MSTC, approval of repair or minor change design, or AUSMTSO authorisation (or equivalent when DASR 21 Section A Subpart G is used for production of products, parts or appliances, the design of which has been approved other than according to DASR 21) and released in a controlled manner to a production organisation approval holder. This is to be sufficient for the development of production data to enable repeatable manufacture to take place in conformity with the design data.

Prior to issue of the MTC, MSTC, approval of repair or minor change design or AUSMTSO authorisation, or equivalent, design data is defined as 'not approved' but parts and appliances may be released with a DASR Form 1—Authorised Release Certificate, as a certificate of conformity.

After issue of the MTC, MSTC, approval of repair or minor change or AUSMTSO authorisation, or equivalent, this design data is defined as 'approved' and items manufactured in conformity are eligible for release on a DASR Form 1 for airworthiness purposes.

(a) The procedure for the issuance of a military production organisation approval (MPOA), for a production organisation showing conformity of products, parts and appliances with the applicable design data;

(b) The rules governing obligations and privileges of the applicant for, and holders of, such approvals.

21.A.133 - Eligibility

Any organisation shall be eligible as an applicant for an approval under this Subpart. The applicant shall: ▸ **GM**

GM 21.A.133 - Issue of Military Production Organisation Approval

a. Where a production organisation has an extant EASA Part 21 production organisation approval, and when the military production activity is within the scope of the EASA term of approval, the organisation may be accepted by the Authority to satisfy the DASR 21 requirements for that scope of work with any further investigation limited only to the delta between the two approvals. The Authority is to be kept informed by the production organisation of significant changes to the organisation and of any EASA findings that may impact the military production activity.

b. Where a production organisation has an extant EASA Part 21 production organisation approval, and when the scope of the EASA term of approval does not entirely cover the military production activity, those parts of the organisation's EASA Part 21 exposition that are equally applicable to satisfy the DASR 21 may be accepted by the Authority as equivalent in respect of the DASR 21 requirements. It is permissible that only those parts of the organisation that are specific to the military activity or requirements are addressed in the DASR 21 exposition. Those requirements covered by read-across of the sections of the EASA exposition document are to be identified and the EASA document clause reference quoted.

(a) Justify that, for a defined scope of work, an approval under this Subpart is appropriate for the purpose of showing conformity with a specific design; and ▸ **GM**

GM 21.A.133(a) - Eligibility – Approval appropriate for showing conformity

'Appropriate' is to be understood as follows:

a. The applicant produces or intends to produce aeronautical products, parts and/or appliances intended for airborne use as part of a type-certificated product (this excludes simulators, ground equipment and tools).

b. The applicant will be required to show a need for an approval, normally based on one or more of the following criteria:

i. Production of aircraft, engines or propellers (except if the Authority considers a MPOA inappropriate);

ii. Production of AUSMTSO articles and parts marked AUSMPA;

iii. Direct delivery to users such as owners or operators maintenance organisations with the need for exercising the privileges of issuing Authorised Release Certificates – DASR Form 1—Authorised Release Certificate;

iv. Participation in an international co-operation programme where working under an approval is considered necessary by the Authority;

v. Criticality and technology involved in the part or appliance being manufactured. Approval in this case may be found by the Authority as the best tool to exercise its duty in relation to airworthiness control;

vi. Where an approval is otherwise determined by the Authority.

c. It is not the intent of the Authority to issue approvals to manufacturing firms that perform only sub-contract work for main manufacturers of products and are consequently placed under their direct surveillance.

d. Where standard parts, materials, processes or services are included in the applicable design data (see guidance on applicable design data in DASR GM 21.A.131) their standards are to be controlled by the MPOA holder in a manner which is satisfactory for the final use of the item on the product, part or appliance. Accordingly, the manufacturer or provider of the following will not at present be considered for production organisation approval:

i. consumable materials;

ii. raw materials;

iii. standard parts;

iv. parts identified in the product support documentation as 'industry supply' or 'no hazard';

v. non-destructive testing or inspection;

vi. processes (heat treatment, surface finishing, shot peening, etc,).

(b) Hold or have applied for an approval of that specific design; ▸ **AMC1** ▸ **AMC2** or

AMC2 21.A.133(b) and 21.A.133(c) - Eligibility – Link between design and production organisations

In accordance with AMC1 to 21.A.133(b) and 21.A.133(c) the MPOA holder should demonstrate to the Authority that it has entered into an arrangement with the design organisation. The arrangement should be documented irrespective of whether the two organisations are separate legal entities or not.

The documented arrangement should facilitate the MPOA holder to demonstrate compliance with the requirement of DASR 21.A.133(b) and DASR 21.A.133(c) by means of written documents agreed.

In the case where the design organisation and MPOA holder are part of the same legal entity these interfaces may be demonstrated by company procedures accepted by the Authority.

In all other cases to define such a design/production interface the following sample format is offered:

Arrangement Sample Form:

ARRANGEMENT In accordance with DASR 21.A.133(b) and DASR 21.A.133(c)	
The undersigned agree on the following commitments:	relevant interface procedures
The design organisation [NAME] takes responsibility to ? assure correct and timely transfer of up-to-date applicable design data, eg drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements, etc, to the production organisation approval holder [NAME] ? provide visible statement(s) of approved design data	
The production organisation approval holder [NAME] takes responsibility to ? assist the design organisation [Name] in dealing with continuing airworthiness matter and for required actions ? assist the design organisation [Name] in case of products prior to type-certification in demonstrating compliance with airworthiness requirements ? develop, where applicable, its own manufacturing data in compliance with the airworthiness data package	
The design organisation [Name] and the MPOA holder [Name] take joint responsibility to ? deal adequately with production deviations and non-conforming parts in accordance with the applicable procedures of the design organisation and the production organisation approval holder ? achieve adequate configuration control of manufactured parts, to enable the MPOA holder to make the final determination and identification for conformity.	
The scope of production covered by this arrangement is detailed in ... [DOCUMENT REFERENCE/ ATTACHED LIST]	
[When the design organisation is not the same legal entity as the production organisation approval holder] Transfer of approved design data The MTC/MSTC/AUSMTSO holder [NAME] acknowledges that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved by the Authority and therefore the parts and appliances manufactured in accordance with these data and found in a condition for	

safe operation may be released certifying that the item was manufactured in conformity to approved design data and is in a condition for safe operation.	
[When the design organisation is not the same legal entity as the production organisation approval holder] Direct Delivery Authorisation This acknowledgment includes also [OR does not include] the general agreement for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.	
for the [NAME of the design organisation/MDOA holder] date signature xx.xx.xxxx ([NAME in block letters])	for the [NAME of the MPOA holder] date signature xx.xx.xxxx ([NAME in block letters])

Instructions for completion:

Title: The title of the relevant document should clearly indicate that it serves the purpose of a design/production interface arrangement in accordance with DASR 21.A.133(b) and DASR 21.A.133(c).

Commitment: The document should include the basic commitments between the design organisation and the MPOA holder as addressed in DASR AMC 21.A.4 and AMC1 to 21.A.133(b) and DASR 21.A.133(c).

Relevant Procedures: Identify an entry point into the documentary system of the organisations with respect to the implementation of the arrangement (for example a contract, quality plan, handbooks, common applicable procedures, working plans.).

Scope of arrangement: The scope of arrangement should state by means of a list or reference to relevant documents those products, parts or appliances that are covered by the arrangement.

Transfer of applicable design data: Identify the relevant procedures for the transfer of the applicable design data required by DASR 21.A.131 and DASR GM 21.A.131 from the design organisation to the MPOA holder. The means by which the design organisation advises the MPOA holder whether such data is approved or not approved is also to be identified (see DASR 21.A.4 and DASR AMC 21.A.4).

Direct Delivery Authorisation: Where the design organisation and the MPOA holder are separate legal entities the arrangement should clearly identify whether authorisation for direct delivery to end users is permitted or not.

Where any intermediate production/design organisations are involved in the chain between the original design organisation and the MPOA holder evidence should be available that this intermediate organisation has received authority from the design organisation to grant Direct Delivery Authorisation.

Signature: AMC1 to 21.A.133(b) and 21.A.133(c) requests the identification of the responsible persons/offices who control the commitments laid down in the arrangement. Therefore the basic document should be signed mutually by the authorised representatives of the design organisation and the MPOA holder in this regard.

AMC1 21.A.133(b) and 21.A.133(c) - Eligibility – Link between design and production organisations

An arrangement is considered appropriate if it is documented and satisfies the Authority that co-ordination is satisfactory.

To achieve satisfactory coordination the documented arrangements should at least define the following aspects irrespective of whether the two organisations are separate legal entities or not:

a. The responsibilities of a design organisation which assure correct and timely transfer of up-to-date airworthiness data, eg drawings, material specifications, dimensional data, processes, surface treatments, shipping conditions, quality requirements;

b. The responsibilities and procedures of a MPOA holder/applicant for developing, where applicable, its own manufacturing data in compliance with the airworthiness data package;

c. The responsibilities of a MPOA holder/applicant to assist the design organisation in dealing with continuing airworthiness matters and for required actions, eg traceability of parts in case of direct delivery to users, retrofitting of modifications, traceability of processes' outputs and approved deviations for individual parts as applicable, technical information and assistance;

d. The scope of the arrangements should cover DASR 21 Section A Subpart G requirements and associated AMC and GM, in particular: DASR 21.A.145(b), DASR 21.A.165(c), DASR 21.A.165(f) and DASR 21.A.165(g);

e. The responsibilities of a MPOA holder/applicant, in case of products prior to type-certification to assist a design organisation in demonstrating compliance with airworthiness requirements (access and suitability of production and test facilities for manufacturing and testing of prototype models and test specimen);

f. The procedures to deal adequately with production deviations and non-conforming parts;

g. The procedures and associated responsibilities to achieve adequate configuration control of manufactured parts, to enable the production organisation to make the final determination and identification for conformity or airworthiness release and eligibility status;

h. The identification of the responsible persons/offices who control the above;

i. The acknowledgment by the holder of the MTC/MSTC/repair or change approval/ AUSMTSO authorisation that the approved design data provided, controlled and modified in accordance with the arrangement are recognised as approved.

In many cases the production organisation may receive the approved design data through an intermediate production organisation. This is acceptable provided an effective link between the design approval holder and the production organisation can be maintained to satisfy the intent of DASR 21.A.133.

When the design and production organisations are two separate legal entities a Direct Delivery Authorisation should be available for direct delivery to end users in order to guarantee continued airworthiness control of the released parts and appliances.

Where there is no general agreement for Direct Delivery Authorisation, specific permissions may be granted (see DASR AMC 21.A.4).

(c) Have ensured, through an appropriate arrangement with the applicant for, or holder of, an approval of that specific design, satisfactory coordination between production and design.

21.A.134 - Application

Each application for a production organisation approval shall be made to the Authority in a form and manner established by that Authority, and shall include an outline of the information required by DASR 21.A.143 and the terms of approval requested to be issued under DASR 21.A.151. ▸ **GM**

GM 21.A.134 - Application – Application form and manner

DASR Form 50—Application for DASR 21 Production Organisation Approval, is to be obtained from the Authority, and completed by the Accountable Manager of the organisation.

The completed form, an outline of the production organisation exposition, and details of the proposed terms of approval are to be forwarded to the Authority.

Organizations recognised by competent civil aviation authorities or certified as per AS/EN 9100 or the equivalent AQAP, may re-use part or all of the same process evidences in the demonstration of compliance with DASR 21 Section A Subpart G, as agreed by the Authority.

21.A.135 - Issue of Production Organisation Approval

▸ **GM**

GM 21.A.135 - Issue of Military Production Organisation Approval

a. Where a production organisation has an extant Part 21 Production Organisation Approval (POA) issued by a recognised CAA/MAA, and when the military production activity is within the scope of the CAA/MAA term of approval, the

organisation may be accepted by the Authority to satisfy the DASR 21 requirements for that scope of work with any further investigation limited only to the delta between the two approvals. The Authority is to be kept informed by the production organisation of significant changes to the organisation and of any CAA/MAA findings that may impact the military production activity.

b. Where a production organisation has an extant Part 21 POA issued by a recognised CAA/MAA, and when the scope of the CAA/MAA term of approval does not entirely cover the military production activity, those parts of the organisation's CAA/MAA Part 21 exposition that are equally applicable to satisfy the DASR 21 may be accepted by the Authority as equivalent in respect of the DASR 21 requirements. It is permissible that only those parts of the organisation that are specific to the military activity or requirements are addressed in the DASR 21 exposition. Those requirements covered by read-across of the sections of the CAA/MAA exposition document are to be identified and the CAA/MAA document clause reference quoted.

c. The civil airworthiness release certificates signed under the civil POA authority can be recognised and accepted. Authorised signatures may be accepted by the MAA for the common civil-military parts manufactured and delivered to a military organisation. Appropriate procedures are to be established to demonstrate that validation of the military applicability of civil parts installed is performed. Suitable consideration must be given to the impact on continued airworthiness especially with regard to the implementation of applicable civil and military Airworthiness Directives.

An organisation shall be entitled to have a production organisation approval issued by the Authority when it has demonstrated compliance with the applicable requirements under this Subpart.

21.A.139 - Quality System

(a) The production organisation shall demonstrate that it has established and is able to maintain a quality system. The quality system shall be documented. This quality system shall be such as to enable the organisation to ensure that each product, part or appliance produced by the organisation or by its partners, or supplied from or subcontracted to outside parties, conforms to the applicable design data and is in condition for safe operation, and thus exercise the privileges set forth in DASR 21.A.163.

GM1 **GM2**

GM2 21.A.139(a) - Quality System – Conformity of supplied parts or appliances

The MPOA holder is responsible for determining and applying acceptance standards for physical condition, configuration status and conformity of supplied products, parts or appliances, whether to be used in production or delivered to customers as spare parts. This responsibility also includes GFE.

To discharge this responsibility the quality system needs an organisational structure and procedures to adequately control suppliers. Elements of the quality system for the control of

suppliers may be performed by other parties provided that the conditions of AMC1 or AMC2 to 21.A.139(b)(1)(ii) are met.

Control can be based upon use of the following techniques (as appropriate to the system or product orientation necessary to ensure conformity):

a. qualification and auditing of supplier's quality system,

b. evaluation of supplier capability in performing all manufacturing activities, inspections and tests necessary to establish conformity of parts or appliances to type design,

c. first article inspection, including destruction if necessary, to verify that the article conforms to the applicable data for new production line or new supplier,

d. incoming inspections and tests of supplied parts or appliances that can be satisfactorily inspected on receipt,

e. identification of incoming documentation and data relevant to the showing of conformity to be included in the certification documents,

f. a vendor rating system which gives confidence in the performance and reliability of this supplier,

g. any additional work, tests or inspection which may be needed for parts or appliances which are to be delivered as spare parts and which are not subjected to the checks normally provided by subsequent production or inspection stages.

The MPOA holder may rely on inspection/tests performed by supplier if it can establish that:

a. personnel responsible in charge of these tasks satisfy the competency standards of the MPOA quality system,

b. quality measurements are clearly identified,

c. the records or reports showing evidence of conformity are available for review and audit.

The control of suppliers holding a MPOA for the parts or appliances to be supplied can be reduced, to a level at which a satisfactory interface between the two quality systems can be demonstrated. Thus, for the purpose of showing conformity, a MPOA holder can rely upon documentation for parts or appliances released under a supplier's DASR 21.A.163 privileges.

A supplier who does not hold a MPOA is considered as a sub-contractor under the direct control of the MPOA quality system.

The MPOA holder retains direct responsibility for inspections/tests carried out either at its own facilities or at supplier's facilities.

GM1 21.A.139(a) - Quality System

The quality system is an organisational structure with responsibilities, procedures, processes, and resources which implement a management function to determine and enforce quality principles.

The quality system is to be documented in such a way that the documentation can be made easily available to personnel who need to use the material for performing their normal duties, in particular:

a. procedures, instructions, data to cover the issues of DASR 21.A.139(b)(1) are available in a written form,

b. distribution of relevant procedures to offices/persons is made in a controlled manner,

c. procedures which identify persons responsible for the prescribed actions are established,

d. the updating process is clearly described.

The manager responsible for ensuring that the quality system is implemented and maintained is to be identified.

The Authority will verify on the basis of the exposition and by appropriate investigations that the production organisation has established and can maintain their documented quality system.

(b) The quality system shall contain:

1. As applicable within the scope of approval, control procedures for: ▸ **GM**

GM 21.A.139(b)(1) - Quality System – Elements of the quality system

a. The control procedures covering the elements of DASR 21.A.139(b)(1) are to document the standards to which the production organisation intends to work.

b. An organisation having a Quality system designed to meet a recognised Standard such as AS/EN 9100 (relevant to the scope of approval being requested) is to expand it to include at least the following additional topics, as appropriate, in order to demonstrate compliance with the requirements of DASR 21 Section A Subpart G:

i. Mandatory Occurrence Reporting and continued airworthiness as required by DASR 21.A.165(e);

ii. Control of work occasionally performed (outside the MPOA facility by MPOA personnel);

iii. Co-ordination with the applicant for, or holder of, an approved design as required by DASR 21.A.133(b), DASR 21.A.133(c) and DASR 21.A.165(g);

iv. Issue of certifications within the scope of approval for the privileges of DASR 21.A.163;

v. Incorporation of airworthiness data in production and inspection data as required in DASR 21.A.133(b), DASR 21.A.133(c) and DASR 21.A.145(b);

vi. When applicable, ground test and/or production flight test of products in accordance with procedures defined by the applicant for, or holder of, the design approval;

vii. Procedures for traceability including a definition of clear criteria of which items need such traceability. Traceability is defined as a means of establishing the origin of an article by reference to historical records for the purpose of providing evidence of conformity;

viii. Personnel training and qualification procedures especially for certifying staff as required in DASR 21.A.145(d).

c. An organisation having a quality system designed to meet a recognised aerospace quality standard will still need to ensure compliance with all the requirements of DASR Section A Subpart G. In all cases, the Authority will still need to be satisfied that compliance with DASR 21 Section A Subpart G is established.

i. Document issue, approval, or change;

ii. Vendor and subcontractor assessment audit and control; ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.139(b)(1)(ii) - Vendor and sub-contractor assessment, audit and control - Military Production Organisation Approval holder using other party supplier certification

1. General

NOTE: For the purpose of this AMC, vendors and sub-contractors are hereafter referred to as 'suppliers, regardless of whether or not they hold a MPOA and audit and control is hereafter referred to as 'surveillance'.

Other party supplier certification is a method whereby a supplier contracts with an appropriately recognised or accredited Other Party (OP) for the purpose of obtaining a certification from that OP. Certification indicates that the supplier has satisfactorily demonstrated to meet the applicable standard on a continuing basis. OP certification results in placing the supplier on the OP list of certified organisations, or in the supplier receiving a certificate identifying the requirements that have been met. Periodic follow-up evaluations are conducted by the OP to verify continued compliance with the requirements of the applicable standard.

The production organisation is required by DASR 21 to demonstrate that it has established and maintains a quality system that enables the organisation to ensure that each item produced conforms to the applicable design data and is in a condition for safe operation. To discharge this responsibility, the quality system should have, among other requirements, procedures to adequately carry out the assessment and surveillance of suppliers.

The assessment and surveillance of suppliers by an OP should be deemed to satisfy the requirements of DASR 21.A.139(b)(1)(ii) when the conditions of this AMC are satisfied. The assessment and surveillance of suppliers by OP as part of supplier certification does not exempt the MPOA holder from its obligations under DASR 21.A.165. The supplier assessment and surveillance, corrective action and follow-up activity conducted at any of its supplier's facilities may be performed by OP.

The purpose of using an OP cannot be to replace the assessment, audit and control of the MPOA holder. It is to allow an element, ie the assessment of the quality system, to be delegated to another organisation under controlled conditions.

The use of suppliers that are certified by OP in accordance with this AMC should be part of a

production organisation quality system.

2. Approval by the Authority

Implementing or changing procedures for using suppliers that are certified by an OP is a significant change to the quality system and requires approval in accordance with DASR 21.A.147.

3. Conditions and criteria for using supplier certification for the supplier assessment and surveillance

a. The MPOA holder should include the use of supplier certification for the supplier assessment and surveillance in the MPOA holder's quality system to demonstrate compliance with the applicable requirements of DASR 21.

b. Procedures required for use of supplier certification for the supplier assessment and surveillance should be consistent with other procedures of the MPOA holders' quality system.

c. Procedures of the MPOA holder that uses supplier certification for the supplier assessment and surveillance should include the following:

1. Listing of the OP that has certified or will certify suppliers and will conduct supplier assessment and surveillance or the scheme under which the accreditation of the OP is controlled. This listing should be maintained by the MPOA holder and made available to the Authority upon request.
2. A listing of the certified suppliers under surveillance by the OP and used by the MPOA holder. This listing should be maintained by the MPOA holder and made available to the Authority upon request.
3. The method used by the MPOA holder to evaluate and monitor the certification process of any OP certification body or OP certification scheme used. This applies not only to new suppliers, but also to any decision by the MPOA holder to rely on OP certification of current suppliers. The method should include the following as a minimum:

i. Verification that certification standards and checklists are acceptable and applied to the applicable scope.
ii. Verification that the OP is appropriately qualified and has sufficient knowledge, experience and training to perform its allocated tasks.
iii. Verification that the OP surveillance frequency of the suppliers is commensurate with the complexity of the product and with the surveillance frequency established by the MPOA holder's suppliers control programme.
iv. Verification that the suppliers' surveillance is conducted on-site by the OP.
v. Verification that the surveillance report will be made available to the Authority upon request.
vi. Verification that the OP continues to be recognised or accredited.
vii. Verification that the OP has access to applicable proprietary data to the level of detail necessary to survey suppliers functions.

Where the POA holder uses an OP accredited and working in accordance with an aviation standard, eg AS/EN 9104 series of requirements, that describes requirements for the OP certification, the items (ii), (iv) and (v) above should be deemed to be complied with.

4. A definition to what scope the OP will conduct suppliers surveillance on behalf of the MPOA holder. If the OP replaces surveillance in part, the MPOA holder should identify the functions that will continue to be surveyed by the MPOA holder.
5. Procedures that ensure that the MPOA is aware of the loss of an existing

certification.

6. Procedures that ensure that the MPOA holder is aware of non-conformities and has access to detailed information of these non-conformities.

7. Procedures to evaluate the consequences of non-conformities and take appropriate actions.

d. The MPOA should make arrangements that allow the Authority to make investigation in accordance with DASR 21.A.157 to include OP activities.

AMC1 21.A.139(b)(1)(ii) - Vendor and sub-contractor assessment, audit and control – Military Production Organisation Approval holder using documented arrangements with other parties for assessment and surveillance of a supplier.

1. General

NOTE: For the purpose of this AMC, vendors and sub-contractors are hereafter referred to as 'suppliers', regardless of whether or not they hold a MPOA and audit and control is hereafter referred to as 'surveillance'.

The production organisation is required by DASR 21 to demonstrate that it has established and maintains a quality system that enables the organisation to ensure that each item produced conforms to the applicable design data and is in a condition for safe operation. To discharge this responsibility, the quality system should have, among other requirements, procedures to adequately carry out the assessment and surveillance of suppliers.

The use of Other Parties (OP), such as a consulting firm or quality assurance company, for supplier assessment and surveillance does not exempt the MPOA holder from its obligations under DASR 21.A.165. The supplier assessment and surveillance, corrective action and follow-up activity conducted at any of its supplier's facilities may be performed by OP.

The purpose of using an OP cannot be to replace the assessment, audit and control of the MPOA holder. It is to allow an element, ie the assessment of the quality system, to be delegated to another organisation under controlled conditions.

The use of OP to perform supplier assessments and surveillance should be part of the production organisation quality system and fulfil the conditions of this AMC.

This AMC is applicable to a method whereby a MPOA holder has a documented arrangement with OP for the purpose of assessing and/or surveying a MPOA's supplier.

2. Approval by the Authority

Implementing or changing procedures for using OP for supplier assessment and surveillance is a significant change to the quality system and requires approval in accordance with DASR 21.A.147.

3. Conditions and criteria for the use of OP to perform supplier assessment and surveillance

a. The MPOA holder should include the use of OP for supplier assessment and surveillance in the MPOA holders' quality system to demonstrate compliance with the applicable requirements of DASR 21.

b. Procedures required for using OP for supplier assessment and surveillance should be consistent with other procedures of the MPOA holders' quality system.
c. Procedures of the MPOA holder that uses OP to perform supplier assessment and surveillance should include the following:

1. Identification of the OP that will conduct supplier assessment and surveillance.
2. A listing of suppliers under surveillance by the OP. This listing should be maintained by the MPOA holder and made available to the Authority upon request.
3. The method used by the MPOA holder to evaluate and monitor the OP. The method should include the following as a minimum:

i. Verification that standards and checklists used by the OP are acceptable for the applicable scope.

ii. Verification that the OP is appropriately qualified and have sufficient knowledge, experience and training to perform their allocated tasks.

iii. Verification that the OP surveillance frequency of the suppliers is commensurate with the complexity of the product and with the surveillance frequency established by the MPOA holder's suppliers control programme.

iv. Verification that the suppliers' assessment and surveillance is conducted on-site by the OP.

v. Verification that the OP has access to applicable proprietary data to the level of detail necessary to survey suppliers functions.

Where the MPOA holder uses an OP accredited and working in accordance with an aviation standard, eg AS/EN 9104 series of requirements, that describes requirements for the other party assessment and surveillance, the items (ii) and (iv) above should be deemed to be complied with.

4. A definition to what scope the OP will conduct suppliers surveillance on behalf of the MPOA holder. If the OP replaces surveillance in part, the MPOA holder should identify the functions that will continue to be surveyed by the MPOA holder.
5. The procedures used by the OP to notify the MPOA holder of non-conformities discovered at the suppliers facility, corrective action and follow-up.

d. The MPOA should make arrangements that allow the Authority to make investigation in accordance with DASR 21.A.157 to include OP activities.

iii. Verification that incoming products, parts, materials, and equipment, including items supplied new or used by buyers of products, are as specified in the applicable design data;

iv. Identification and traceability;

v. Manufacturing processes;

vi. Inspection and testing, including production flight tests;

vii. Calibration of tools, jigs, and test equipment;

viii. Non-conforming item control;

ix. Airworthiness coordination with the applicant for, or holder of, the design approval;

x. Records completion and retention;

xi. Personnel competence and qualification;

xii. Issue of airworthiness release documents;

xiii. Handling, storage and packing;

xiv. Internal quality audits and resulting corrective actions;

xv. Work within the terms of approval performed at any location other than the approved facilities;

xvi. Work carried out after completion of production but prior to delivery, to maintain the aircraft in a condition for safe operation;

xvii. Issue of military permit to fly and approval of associated flight conditions.

The control procedures shall include specific provisions for any critical parts.

2. An independent quality assurance function to monitor compliance with, and adequacy of, the documented procedures of the quality system. This monitoring shall include a feedback system to the person or group of persons referred to in DASR 21.A.145(c)(2) and ultimately to the manager referred to in DASR 21.A.145(c)(1) to ensure, as necessary, corrective action. ▸ **GM1** ▸ **GM2**

GM2 21.A.139(b)(2) - Quality System – Adequacy of procedures and monitoring function

Adequacy of procedures means that the quality system, through the use of the procedures as set forth, is capable of meeting the conformity objectives identified in DASR 21.A.139(a).

The quality assurance function to ensure the above is to perform planned continuing and systematic evaluations or audits of factors that affect the conformity (and, where required, safe operation) of the products, parts or appliances to the applicable design. This evaluation is to include all elements of the quality system in order to demonstrate compliance with DASR 21 Section A Subpart G.

GM1 21.A.139(b)(2) - Quality System – Independent quality assurance function

The quality assurance function which is part of the organisation is required to be independent from the functions being monitored. This required independence relates to the lines of reporting, authority and access within the organisation and assumes an ability to work without technical reliance on the monitored functions.

(c) The organisation shall establish and maintain a Safety Management System (SMS), in accordance with DASR.SMS.

21.A.143 - Production Organisation Exposition

GM

GM 21.A.143 - Exposition – Production Organisation Exposition

The purpose of the MPOE is to set forth in a concise document format the organisational relationships, responsibilities, terms of reference, and associated authority, procedures, means and methods of the organisation.

The information to be provided is specified in DASR 21.A.143(a). Where this information is documented and integrated in manuals, procedures and instruction, the MPOE is to provide a summary of the information and an appropriate cross reference.

The Authority requires the MPOE to be an accurate definition and description of the production organisation. The document does not require approval in itself, but it will be considered as such by virtue of the approval of the organisation.

When changes to the organisation occur, the MPOE is required to be kept up to date per a procedure, laid down in the MPOE. Significant changes to the organisation (as defined in DASR GM 21.A.147(a)) is to be approved by the Authority prior to update of the MPOE.

When an organisation is approved against any other implementing rule containing a requirement for an exposition, a supplement covering the differences may suffice to meet the requirements of DASR 21 Section A Subpart G except that the supplement is to have an index identifying where those parts missing from the supplement are covered. Those items then formally become part of the MPOE. In any combined documents the MPOE is to be easily identifiable.

(a) The organisation shall submit to the Authority a Production Organisation Exposition (POE) providing the following information:

1. A statement signed by the accountable manager confirming that the production organisation exposition and any associated manuals which define the approved organisation's compliance with this Subpart will be complied with at all times;
2. The title(s) and names of managers accepted by the Authority in accordance with DASR 21.A.145(c)(2);
3. The duties and responsibilities of the manager(s) as required by DASR 21.A.145(c)(2) including matters on which they may deal directly with the Authority on behalf of the organisation;
4. An organisational chart showing associated chains of responsibility of the managers as required by DASR 21.A.145(c)(1) and DASR 21.A.145(c)(2);
5. A list of certifying staff as referred to in DASR 21.A.145(d);
6. A general description of human resources;
7. A general description of the facilities located at each address specified in the production organisation's certificate of approval;

8. A general description of the production organisation's scope of work relevant to the terms of approval;

9. The procedure for the notification of organisational changes to the Authority;

10. The amendment procedure for the production organisation exposition;

11. A description of the quality system and the procedures as required by DASR 21.A.139(b)(1);

12. A list of those outside parties referred to in DASR 21.A.139(a); and

13. If flight tests are to be conducted, a flight test operations manual defining the organisation's policies and procedures in relation to flight tests. ▸ **AMC**

AMC 21.A.143(a)(13) - Flight Test Operations Manual (AUS)

The flight test operations manual shall include:

a. a description of the organisation's processes for flight test, including the flight test organisation involvement into the Military Permit to Fly issuance process, see DASR 21 Subpart P – Military Permit to Fly;

b. crewing policy, including composition, competency, currency and flight time limitations;

c. procedures for the carriage of persons other than crew members and for flight test training, when applicable;

d. a policy for risk and safety management and associated methodologies;

e. procedures to identify the instruments and equipment to be carried; and

f. a list of documents that need to be produced for flight test.

The flight test operations manual should be owned by the organisation conducting flight test. If flight test is to be conducted by an organisation outside that of the MPOA holder, eg a Military Air Operator (MAO), reference to that organisation's flight test operations manual (or equivalent) is acceptable.

(b) The production organisation exposition shall be amended as necessary to remain an up-to-date description of the organisation, and copies of any amendments shall be supplied to the Authority.

(c) The organisation shall establish and maintain a Safety Management System (SMS), in accordance with DASR.SMS

21.A.145 - Approval requirements

The production organisation shall demonstrate, on the basis of the information submitted in accordance with DASR 21.A.143 that:

(a) With regard to general approval requirements, facilities, working conditions, equipment and tools, processes and associated materials, number and competence of staff, and general organisation are adequate to discharge obligations under DASR 21.A.165. ▸ **GM**

GM 21.A.145(a) - Approval Requirements

A facility is a working area where the working conditions and the environment are controlled as appropriate in respect of: cleanliness, temperature, humidity, ventilation, lighting, space/ access, noise, air pollution.

Equipment and tools are to be such as to enable all specified tasks to be accomplished in a repeatable manner without detrimental effect. Calibration control of equipment and tools which affect critical dimensions and values are to demonstrate compliance with, and be traceable to, national or international standards.

Sufficient personnel means that the organisation has for each function according to the nature of the work and the production rate, a sufficient quantity of qualified personnel to accomplish all specified manufacturing tasks and to attest the conformity. Their number is to be such that airworthiness consideration may be applied in all areas without undue pressure.

An evaluation of the competence of personnel is performed as part of the quality system. This is to include, where appropriate, verification that specific qualification standards have been implemented, for example NDT, welding. Training is to be organised to establish and maintain the personal competence levels determined by the organisation to be necessary.

(b) With regard to all necessary airworthiness data:

1. The production organisation is in receipt of such data from the Authority, and from the holder of, or applicant for, the type-certificate, restricted type-certificate or design approval, to determine conformity with the applicable design data;

2. The production organisation has established a procedure to ensure that airworthiness data are correctly incorporated in its production data; and ▸ **GM**

GM 21.A.145(b)(2) - Approval Requirements – Airworthiness, noise, fuel venting and exhaust emissions (where applicable)/production data procedures

a. When a MPOA holder/applicant is developing its own manufacturing data, such as computer based data, from the design data package delivered by a design organisation, procedures are required to demonstrate the right transcription of the original design data.

b. Procedures are required to define the manner in which airworthiness, and where applicable noise, fuel venting and exhaust emissions data is used to issue and update the production/quality data, which determines the conformity of products, parts and appliances. The procedure is to also define the traceability of such data to each individual product, part or appliance for the purpose of certifying condition for safe operation and issuing a DASR Form 52—Statement of Conformity or DASR Form 1—Authorised Release Certificate.

3. Such data are kept up to date and made available to all personnel who need access to such data to perform their duties.

(c) With regard to management and staff:

1. A manager has been nominated by the production organisation, and is accountable to the Authority. Their responsibilities within the organisation shall consist of ensuring that all production is performed to the required standards and that the production organisation is continuously in compliance with the data and procedures identified in the exposition referred to in DASR 21.A.143; ▸ **GM**

GM 21.A.145(c)(1) - Approval Requirements – Accountable Manager

Accountable Manager means the manager who is responsible, and has corporate authority for ensuring that all production work is carried out to the required standard. This function may be carried out by the Chief Executive or by another person in the organisation, nominated by them to fulfil the function provided their position and authority in the organisation permits to discharge the attached responsibilities.

The manager is responsible for ensuring that all necessary resources are available and properly used in order to produce under the production approval in accordance with DASR 21 Section A Subpart G.

The manager needs to have sufficient knowledge and authority to enable them to respond to the Authority regarding major issues of the production approval and implement necessary improvements.

The manager needs to be able to demonstrate that they are fully aware of and support the quality policy and maintains adequate links with the quality manager.

2. A person or group of persons have been nominated by the production organisation to ensure that the organisation is in compliance with the requirements of this DASR, and are identified, together with the extent of their authority. Such person(s) shall act under the direct authority of the accountable manager referred to in subparagraph 1. The person(s) nominated shall be able to show the appropriate knowledge, background and experience to discharge their responsibilities; and ▸ **GM**

GM 21.A.145(c)(2) - Approval Requirements – Responsible managers

The person or persons nominated is to represent the management structure of the organisation and be responsible for all functions as specified in DASR 21 Section A Subpart G. It therefore follows that, depending on the size of the DASR 21 Section A Subpart G organisation, the functions may be subdivided under individual managers (and in fact may be further subdivided) or combined in a variety of ways.

The Authority requires the nominated managers to be identified and their credentials submitted on a DASR Form 4—Nominated Personnel Approval, to the Authority in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the production activities as performed by the DASR 21 Section A Subpart G organisation.

The responsibilities and the tasks of each individual manager are required to be clearly defined, in order to prevent uncertainties about the relations, within the organisation. In the case of organisation structures where staff-members are responsible to more than one person, as for instance in matrix and project organisations, responsibilities of the managers are to be defined in such a way that all responsibilities are covered.

Where a DASR 21 Section A Subpart G organisation chooses to appoint managers for all or any combination of the identified DASR 21 functions because of the size of the undertaking, it is necessary that these managers report ultimately to the Accountable Manager. In cases where a manager does not directly report to the Accountable Manager, they are to have a formally established direct access to the Accountable Manager.

One such manager, normally known as the quality manager is responsible for monitoring the organisation's compliance with DASR 21 Section A Subpart G and requesting remedial action as necessary by the other managers or the Accountable Manager as appropriate. They are to have direct access to the Accountable Manager.

3. Staff at all levels have been given appropriate authority to be able to discharge their allocated responsibilities and that there is full and effective coordination within the production organisation in respect of airworthiness matters.

(d) With regard to certifying staff, authorised by the production organisation to sign the documents issued under DASR 21.A.163 under the scope or terms of approval:

1. The knowledge, background (including other functions in the organisation), and experience of the certifying staff are appropriate to discharge their allocated responsibilities; ▸ **AMC**

AMC 21.A.145(d)(1) - Approval Requirements – Certifying staff

a. Certifying Staff are nominated by the production organisation to ensure that products, parts and/or appliances qualify for DASR Form 52—Statements of Conformity or DASR Form 1—Release Certificates. Certifying Staff positions and numbers are to be appropriate to the complexity of the product and the production rate.

b. The qualification of certifying staff is based on their knowledge, background and experience and a specific training (or testing) established by the organisation to ensure that it is appropriate to the product, part, or appliance to be released.

c. Training should be given to develop a satisfactory level of knowledge of organisation procedures, aviation legislation, and associated implementing rules, airworthiness requirements and GM, relevant to the particular role.

d. For that purpose, in addition to general training policy, the organisation should define its own standards for training, including pre-qualification standards, for personnel to be identified as certifying staff.

e. Training policy is part of the Quality System and its appropriateness forms part of investigation by the Authority within the organisation approval process and subsequent surveillance of persons proposed by managers.

f. The training should be updated in response to experience gained and changes in technology.

g. A feedback system to ascertain that the required standards are being maintained should be put in place to ensure the continuing compliance of personnel to authorisation requirements.

h. For release of products, parts or appliances, the responsibilities to issue statements of conformity/release certificates (DASR Form 1) or military permit to fly including approval of flight conditions are allocated to the certifying staff identified in DASR 21.A.145(d)(2).

i. The Authority holds the right to reject those personnel, appointed by the organisation, if found to have inappropriate experience or not to otherwise comply with its requirements.

2. The production organisation maintains a record of all certifying staff which shall include details of the scope of their authorisation; ▸ **AMC**

AMC 21.A.145(d)(2) - Approval Requirements – Record of certifying staff

a. The following is the minimum information to be recorded in respect of each certifying person:

i. Name;

ii. Date of Birth;

iii. Basic Training and standard attained;

iv. Specific Training and standard attained;

v. If appropriate – Continuation Training;

vi. Experience;

vii. Scope of the authorisation;

viii. Date of first issue of the authorisation;

ix. If appropriate – expiry date of the authorisation;

x. Identification Number of the authorisation.

b. The record may be kept in any format and should be controlled by an internal procedure of the organisation. This procedure forms part of the quality system.

c. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner and that confidential records cannot become accessible to unauthorised persons.

d. The certifying person should be given reasonable access on request to their own records.

e. Under the provision of DASR 21.A.157 the Authority has a right of access to the data held in such a system.

f. The organisation should keep the record for at least two years after the certifying person has ceased employment with the organisation or withdrawal of the authorisation, whichever is the sooner.

3. Certifying staff are provided with evidence of the scope of their authorisation. ▸ **AMC**

AMC 21.A.145(d)(3) - Approval requirements – Evidence of authorisation

a. The authorisation document should be in a style that makes its scope clear to the certifying staff and any authorised person who may require to examine the authorisation. Where codes are used to define scope, an interpretation document should be readily available.

b. Certifying staff are not required to carry the authorisation document at all times but should be able to make it available within a reasonable time of a request from an authorised person. Authorised persons include the Authority.

21.A.147 - Changes to the approved production organisation

(a) After the issue of a production organisation approval, each change to the approved production organisation that is significant to the showing of conformity or to the airworthiness of the product, part or appliance, particularly changes to the quality system, shall be approved by the Authority. An application for approval shall be submitted in writing to the Authority and the organisation shall demonstrate to the Authority before implementation of the change that it will continue to comply with this Subpart. ▸ **GM**

GM 21.A.147(a) - Changes to the approved production organisation – Significant changes

a. Changes to be approved by the Authority include:

i. Significant changes to production capacity or methods;

ii. Changes in the organisation structure especially those parts of the organisation in charge of quality;

iii. A change of the Accountable Manager or of any other person nominated under DASR 21.A.145(c)(2);

iv. Changes in the production or quality systems that may have an important impact on the conformity/airworthiness of each product, part or appliance;

v. Changes in the placement or control of significant sub-contracted work or supplied parts.

b. To ensure that changes do not result in non-compliance with DASR 21 Section A Subpart G it is in the interest of both the Authority and the approval holder to establish a relationship and exchange information that will permit the necessary evaluation work to be conducted before the implementation of a change. This relationship is to also permit agreement on the need for variation of the terms of approval (see DASR 21.A.143(a)(9)).

c. Where a change of name or ownership results in the issue of a new approval the investigation will normally take account of the Authority's knowledge and information from the preceding approval.

d. Changes of location are addressed in DASR 21.A.148 and changes of ownership in DASR 21.A.149, change of scope of approval in DASR 21.A.153.

(b) The Authority shall establish the conditions under which a production organisation approved under this Subpart may operate during such changes unless the Authority determines that the approval should be suspended.

21.A.148 - Changes of location

A change of the location of the manufacturing facilities of the approved production organisation shall be deemed of significance and therefore shall comply with DASR 21.A.147. ▸ **AMC**

AMC 21.A.148 - Changes of location – Management during change of location

a. The relocation of any work, to an unapproved location, or a location with inappropriate scope of approval, constitutes a change of significance to the organisation and requires approval by the Authority as prescribed in DASR 21.A.147. An unapproved relocation will invalidate the production organisation approval, and may necessitate re-application for any similar approval required at the new location. However, suitable transitional arrangements may be agreed with the Authority, in advance of the relocation, which can allow continuation of the approval.

b. When an organisation expands its facility to include a new production location or moves parts of its production to a new location the production organisation approval may continue in force, but the approval does not include the new location until the Authority has indicated its satisfaction with the arrangements.

c. For a change in location, taking an extended period of time, suitable transitional arrangements would require preparation of a co-ordination plan for the removal. The plan should, at least, identify the following:

i. A clearly identified person, or group of persons, responsible for co-ordinating the removal and acting as focal point for communication with all parties, including the Authority;

ii. The basis of the co-ordination plan, eg whether by product or area;

iii. Planned timing of each phase of relocation;

iv. Arrangements for maintaining the standards of the approval up to the point where the production area is closed down;

v. Arrangements for verifying continued production quality upon resumption of work at the new location;

vi. Arrangements for check and/or re-calibration of inspection aids or production tools and jigs before resuming production;

vii. Procedures which ensure that goods are not released from the new location until their associated production and quality systems have been verified;

viii. Arrangements for keeping the Authority informed of progress with the relocation.

d. From the co-ordination plan, the Authority can determine the points at which it wishes to conduct investigation.

e. If an agreed co-ordination plan is in operation, the Authority will normally allow the existing approval to remain in force and will, where appropriate, grant an additional approval to cover the new address for the duration of the move.

21.A.149 - Transferability

Except as a result of a change in ownership, which is deemed significant for the purposes of DASR 21.A.147, a production organisation approval is not transferable. ▸ **GM**

GM 21.A.149 - Transferability

Transfer of approval would normally only be agreed in cases where the ownership changes but the organisation itself remains effectively unchanged. For example:

An acceptable transfer situation could be a change of company name (supported by the appropriate certificate from the to evidence from the Australian Business Register (ABR) or Australian Securities and Investments Commission (ASIC) or equivalent) but with no changes to site address, facilities, type of work, staff, Accountable Manager or person nominated under DASR 21.A.145 - Approval (Production) Requirements.

Alternatively, in the event of receivership (bankruptcy, insolvency or other equivalent legal process) there may be good technical justification for continuation of the approval provided that the company continues to function in a satisfactory manner in accordance with their MPOE. It is likely that at a later stage the approval might be voluntarily surrendered or the organisation transferred to new owners in which case the former paragraphs apply. If it does not continue to operate satisfactorily then the Authority could suspend or revoke the approval under DASR 21.A.245 - Approval (Design) Requirements..

In order for the Authority to agree to a transfer of approval, it will normally prescribe it as a condition in accordance with DASR 21.A.147(b) - Changes to the approved production organisation, requirements. that the obligations and responsibilities of the former organisation

are to be transferred to the new organisation, otherwise transfer is not possible and application for a new approval will be required.

21.A.151 - Terms of approval

The terms of approval shall identify the scope of work, the products or the categories of parts and appliances, or both, for which the holder is entitled to exercise the privileges under DASR 21.A.163. Those terms shall be issued as part of a production organisation approval. ▸ **GM**

GM 21.A.151 - Terms of approval – Scope and categories

Terms of approval document(s) will be issued by the Authority under DASR 21.A.135 to identify the scope of work, the products, and/or categories for which the holder is entitled to exercise the privileges defined in DASR 21.A.163.

The codes shown against each scope of work item are intended for use by the Authority for purposes such as managing, administering and filing details of approvals. It may also assist in the production and publication of a list of approval holders.

The scope of work, the Products, Parts, or Appliances for which the MPOA holder is entitled to exercise the privileges defined in DASR 21.A.163 will be described by the Authority as follows:

FOR PRODUCTS:

a. General area, similar to the titles of the corresponding certification codes;

b. Type of Product, in accordance with the type-certificate.

FOR PARTS AND APPLIANCES:

a. General area, showing the expertise, eg mechanical, metallic structure;

b. Generic type, eg wing, landing gear, tyres.

SCOPE OF WORK	**PRODUCTS/CATEGORIES**
A1 Large Aeroplanes	Insert types
A2 Small Aeroplanes	"
A3 Large Helicopters	"
A4 Small Helicopters	"
A5 Gyroplanes	"
A6 Sailplanes	"
A7 Motor Gliders	"
A8 Crewed Balloons	"
A9 Airships	"
A11 Very Light Aeroplanes	"

A12 Other	"
M1 Aircraft for military transport of troops, reconnaissance, patrols, tankers, electronic warfare missions, etc.	"
M2 Combat fixed wing aircraft and advanced trainers	"
M3 Combat helicopter	"
U1 Fixed wing UAV <150kg	"
U2 Fixed wing UAV >150kg	"
U4 Rotary wing UAV <150kg	"
U5 Rotary wing UAV >150kg	"
B1 Turbine Engines	"
B2 Piston Engines	"
B3 APU's	"
B4 Propellers	"
C1 Appliances:	State appliance generic types eg Tyres, Altimeter, etc.) Examples include: Avionics, Com/Nav/Pulse Computer System, Aircraft/Engine/Avionics Instruments, Mechanical/Electrical/ Gyroscopic/Electronic Mechanical/Hydraulic/Pneumatic
C2 Parts:	State part generic types eg Wing, Landing Gear Examples include: Structural, Metallic/non-metallic Mechanical/Hydraulic/Pneumatic Electrical Electronic Defensive Aids
C3 Weapons	

C4 Other military equipment	
D1 Maintenance	Insert aircraft types
D2 Issue of military permit to fly	State aircraft types

21.A.153 - Changes to the Terms of Approval

Each change to the terms of approval shall be approved by the Authority. An application for a change to the terms of approval shall be made in a form and manner established by the Authority. The applicant shall comply with the applicable requirements of this Subpart. **AMC**

AMC 21.A.153 - Changes to the terms of approval – Application for a change to the terms of approval

DASR Form 51—Application for significant changes or variation of scope and terms of DASR 21 Production Organisation Approval, should be completed in accordance with the procedures of the Military Production Organisation Exposition (MPOE).

The information entered on the form is the minimum required by the Authority to assess the need for change of the production organisation approval.

The completed form and an outline of the changed production organisation exposition, and details of the proposed change to MPOA terms of approval should be forwarded to the Authority.

21.A.157 - Investigations

A production organisation shall make arrangements that allow the Authority to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance and continued compliance with the applicable requirements of this Subpart. **GM**

GM 21.A.157 - Investigations – Arrangements

The arrangements made by the applicant for, or holder of an approval under DASR 21 Section A Subpart G are to allow the Authority to make investigations that include the complete production organisation including partners, sub-contractors and suppliers, whether they are in the State of the applicant or not.

The investigation may include; audits, enquiries, questions, discussions and explanations, monitoring, witnessing, inspections, checks, flight and ground tests and inspection of completed products, parts or appliances produced under the MPOA.

In order to maintain its confidence in the standards achieved by a MPOA holder or applicant the Authority may make an investigation of a sample product part or appliance and its associated records, reports and certifications.

The arrangements are to enable the organisation to give positive assistance to the Authority and co-operate in performing the investigation during both initial assessment and for the subsequent surveillance to maintain the MPOA.

Co-operation in performing investigation means that the Authority has been given full and free access to the facilities and to any information relevant to demonstrate compliance to DASR 21 Section A Subpart G requirements, and assistance (personnel support, records, reports, computer data, etc, as necessary).

Assistance to the Authority includes all appropriate means associated with the facilities of the production organisation to allow the Authority to perform these investigations, such as the availability of a meeting room, office and personnel support, documentation and data, and communication facilities, all properly and promptly available as necessary.

The Authority seeks to have an open relationship with the organisation and suitable liaison personnel are to be nominated to facilitate this, including suitable representative(s) to accompany Authority staff during visits not only at the organisations own facilities but also at sub-contractors, partners or suppliers.

21.A.158 - Findings

(a) When objective evidence is found showing non-compliance of the holder of a production organisation approval with the applicable requirements of this DASR, the finding shall be classified as follows: ▸ **GM1** ▸ **GM2**

GM2 21.A.158(a) – Examples of Level 1 findings

Examples of Level 1 findings are non-compliances with any of the following DASR 21 paragraphs, that could affect the safety of the aircraft:

DASR 21.A.139, DASR 21.A.145, DASR 21.A.147, DASR 21.A.148, DASR 21.A.151, DASR 21.A.163 and DASR 21.A.165(b) to DASR 21.A.165(g).

It is to be anticipated that a non-compliance with these paragraphs is only considered a level one finding when objective evidence has been found that this finding is an uncontrolled non-compliance that could affect the safety of the aircraft.

In addition, the failure to arrange for investigations under DASR 21.A.157, in particular to obtain access to facilities, after denial of one written request are to be classified as a Level 1 finding.

GM1 21.A.158(a) Uncontrolled non-compliance with applicable design data

An uncontrolled non-compliance with applicable design data is a non-compliance:

a. that cannot be discovered through systematic analysis; or

b. that prevents identification of affected products, parts, appliances, or material.

1. A level one finding is any non-compliance with this DASR which could lead to uncontrolled non-compliances with applicable design data and which could affect the safety of the aircraft;

2. A level two finding is any non-compliance with this DASR which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under paragraph (a).

(c) After receipt of notification of findings issued by the Authority:

1. In case of a level one finding, the holder of the production organisation approval shall demonstrate corrective action to the satisfaction of the Authority within a period of no more than 21 working days after written confirmation of the finding;

2. In case of level two findings, the corrective action period granted by the Authority shall be appropriate to the nature of the finding but in any case initially shall not be more than three months. In certain circumstances and subject to the nature of the finding the Authority may extend the three months period subject to a satisfactory corrective action plan agreed by the Authority;

3. A level three finding shall not require immediate action by the holder of the production organisation approval. If appropriate, the Authority will specify a compliance time.

(d) In case of level one or level two findings, the production organisation approval may be subject to a partial or full limitation, suspension or revocation of the production organisation approval. The holder of the production organisation approval shall provide confirmation of receipt of the notice of limitation, suspension or revocation of the production organisation approval in a timely manner.

21.A.159 - Duration and continued validity

(a) A production organisation approval can be issued for a limited period. It shall remain valid unless:

1. The production organisation fails to demonstrate compliance with the applicable requirements of this Subpart; or

2. The Authority is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with DASR 21.A.157; or

3. There is evidence that the production organisation cannot maintain satisfactory control of the manufacture of products, parts or appliances under the approval; or ▸ **GM**

GM 21.A.159(a)(3) - Evidence of a lack of satisfactory control

A positive finding by the Authority of:

a. an uncontrolled non-compliance with type design data affecting the airworthiness of product part or appliance;

b. an incident/accident identified as caused by MPOA holder;

c. non-compliance with the MPOE and its associated procedures which could affect conformity of manufactured items to design data;

d. insufficient competence of certifying staff;

e. insufficient resources in respect of facilities, tools and equipment;

f. insufficient means to ensure good production work standards;

g. a lack of effective and timely response to prevent a recurrence of any of paragraphs a. to f.

4. The production organisation no longer meets the requirements of DASR 21.A.133; or

5. The certificate has been surrendered or revoked; or

6. The production organisation has not carried out production activities in the scope of the term of the approval for a period specified by the Authority.

(b) Upon surrender or revocation, the certificate shall be returned to the Authority.

21.A.163 - Privileges

Pursuant to the terms of approval issued under DASR 21.A.135 and if national regulations allow, the holder of a production organisation approval may:

(a) Perform production activities under this DASR;

(b) In the case of complete aircraft and upon presentation of a Statement of Conformity (DASR Form 52 - Military Aircraft Statement of Conformity), under DASR 21.A.174, obtain an aircraft certificate of airworthiness without further showing;

(c) In the case of other products, parts or appliances issue authorised release certificates (DASR Form 1 - Authorised Release Certificate) under DASR 21.A.307 without further showing; ▸ **AMC**

AMC 21.A.163(c) - Computer generated signature and electronic exchange of the DASR Form 1

1. Submission to the Authority

Any Military Production Organisation Approval (MPOA) holder/applicant intending to implement an electronic signature procedure to issue DASR Form 1—Authorised Release Certificate, and/or to exchange electronically such data contained on the DASR Form 1 should document it and submit it to the Authority as part of the documents attached with its exposition.

2. Characteristics of the electronic system generating the DASR Form 1

2.1 The electronic system should:

a) guarantee secure access for each certifying staff;

b) ensure integrity and accuracy of the data certified by the signature of the Form and be able to show evidence of the authenticity of the DASR Form 1 (recording and record keeping) with suitable security, safeguards and backups;

c) be active only at the location where the part is being released with a DASR Form 1;

d) not permit to sign a blank form;

e) provide a high degree of assurance that the data has not been modified after signature (if modification is necessary after issuance, ie re-certification of a part, a new form with a new number and reference to the initial issuance should be made);

f) provide for a 'personal' electronic signature identifying the signatory. The signature should be generated only in the presence of the signatory.

2.2 An electronic signature means data in electronic form which are attached to or logically associated with other electronic data and which serve as a method of authentication and should meet the following criteria:

a) it is uniquely linked to the signatory;

b) it is capable of identifying the signatory;

c) it is created using means that the signatory can maintain under their sole control.

2.3 The electronic signature is defined as an electronically generated value based on a cryptographic algorithm and appended to data in a way to enable the verification of the data's source and integrity.

2.4 MPOA holders/applicants are reminded that additional national and/or European requirements may need to be satisfied when operating electronic systems.

2.5 The electronic system should be based on a policy and management structure (confidentiality, integrity and availability), such as:

a. administrators, signatories;

b. scope of authorisation, rights;

c. password and secure access, authentication, protections, confidentiality;

d. track changes;

e. minimum blocks to be completed, completeness of information;

f. archives;

g. etc.

2.6 The electronic system generating the DASR Form 1 may contain additional data such as:

a. manufacturer code;

b. customer identification code;

c. workshop report;

d. inspection results;

e. etc.

3. Characteristics of the DASR Form 1 generated from the electronic system

3.1 To facilitate understanding and acceptance of the DASR Form 1 released with an electronic signature, the following statement should be in Block 13b: 'Electronic Signature on File'.

3.2 In addition to this statement, it is accepted to print or display a signature in any form such as a representation of the hand-written signature of the person signing, ie scanned signature, or their name.

3.3 When printing the electronic form, it should meet the general format of DASR Form 1. A watermark-type 'PRINTED FROM ELECTRONIC FILE' should be printed on the document.

3.4 When the electronic file contains a hyperlink to data, required to determine the airworthiness of the item(s), the data associated to the hyperlink, when printed, should be in a legible format and be identified as a reference from the DASR Form 1.

3.5 Additional information not required by the DASR Form 1 completion instructions may be added to the printed copies of DASR Form 1 as long as the additional data do not prevent.

4. Electronic exchange of the electronic DASR Form 1

4.1 The electronic exchange of the electronic DASR Form 1 should be accomplished on a voluntary basis. Both parties (issuer and receiver) should agree on electronic transfer of the DASR Form 1.

4.2 For that purpose, the exchange needs to include:

a. all data of the DASR Form 1, including data referenced from the DASR Form 1;

b. all data required for authentication of the DASR Form 1.

4.3 In addition, the exchange may include:

a. data necessary for the electronic format;

b. additional data not required by the DASR Form 1 completion instructions, such as manufacturer code, customer identification code.

4.4 The system used for the exchange of the electronic DASR Form 1 should provide:

a. a high level of digital security; the data should be protected, unaltered or uncorrupted;

b. traceability of data back to its source should be possible.

4.5 Trading partners wishing to exchange DASR Form 1 electronically should do so in accordance with these means of compliance stated in this document. It is recommended that they use an established, common, industry method such as Air Transport Association (ATA) Spec 2000 Chapter 16.

4.6 The applicant(s) is/are reminded that additional national requirements may need to be satisfied when operating the electronic exchange of the electronic DASR Form 1

4.7 The receiver should be capable of regenerating the DASR Form 1 from the received data without alteration; if not the system should revert back to the paper system.

4.8 When the receiver needs to print the electronic form, see paragraph 3 above.

(d) Maintain a new aircraft that it has produced and issue a certificate of release to service (DASR Form 53 - Military Certificate of Release to Service) in respect of that maintenance; or ▸ **AMC**

AMC 21.A.163(d) - Privileges – Maintenance

The applicant may apply for terms of approval, which cover maintenance of a new aircraft that it has manufactured, as necessary to keep it in an airworthy condition, but not beyond the point at which the applicable operational rules require maintenance to be performed by an approved maintenance organisation. If the production organisation intends to maintain the aircraft beyond that point, it would have to apply for and obtain an appropriate maintenance approval.

When the Authority is satisfied that the procedures required by DASR 21.A.139 are satisfactory to control maintenance activities so as to ensure that the aircraft is airworthy, this capability will be stated in the terms of approval.

MAINTENANCE OF AIRCRAFT

Examples of such maintenance activities are:

a. Preservation, periodic inspection visits, etc.;

b. Embodiment of a Service Bulletin;

c. Application of airworthiness directives;

d. Repairs;

e. Maintenance tasks resulting from special flights;

f. Maintenance tasks to maintain airworthiness during flight training, demo flights and other non-revenue flights.

Any maintenance activities should be recorded in the Aircraft Log Book. It should be signed by certifying staff for attesting the conformity of the work to the applicable airworthiness data.

In some cases the Aircraft Log Book is not available, or the production organisation prefers to use a separate form (for instance for a large work package or for delivery of the aircraft to the customer). In these cases, production organisations should use DASR Form 53—Military Certificate of Release to Service, which should subsequently become part of the aircraft maintenance records.

Maintenance of components outside the MPOA capability

Such maintenance activity outside the capability of the Aircraft MPOA holder may still be accomplished under the production approval of the original release organisation. In such circumstances the engine(s), propeller(s), parts and appliances will require re-release in accordance with DASR AMC 21.A.163(c) (DASR Form 1—Authorised Release Certificate).

Records relevant to continued airworthiness or retirement lives, such as engine runs, flight hours, landings, etc, which affect part retirement of maintenance schedules should be specified on any re-release.

As an alternative the engine, propeller, part or appliance may be maintained by the holder of an approval in accordance with DASR 145, classified and released as 'used'.

(e) Under procedures agreed with its Authority for an aircraft it has produced and when the production organisation itself is controlling under its MPOA, the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight, to issue a military permit to fly in accordance with DASR 21.A.711(c) including approval of the flight conditions in accordance with DASR 21.A.710(b). ▸ **AMC** ▸ **GM**

GM 21.A.163(e) - Privilege to issue a military permit to fly (AUS)

The privilege under DASR 21.A.163(e) will generally be granted only for Category 3 flight test activities. See ▸ **Categories of Flight Tests**

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

AMC 21.A.163(e) - Procedure for the issue of a military permit to fly including approval of the flight conditions

1. Intent

This acceptable means of compliance provides means to develop a procedure for the issue of a military permit to fly including approval of the flight conditions.

Each Military Production Organisation Approval (MPOA) applicant or holder should develop its own internal procedure following this AMC, in order to obtain the privilege of DASR 21.A.163(e) to issue permits to fly for an aircraft under procedures agreed with its Authority for production, when the production organisation itself is controlling under its MPOA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight.

2. Procedure for the issue of a military permit to fly

2.1 Content

The procedure should address the following points:

a. as relevant, in accordance with DASR 21.A.710(b), the approval of flight conditions;

b. conformity with approved conditions;

c. issue of the military permit to fly under the MPOA privilege ;

d. authorised signatories;

e. interface with the local Authority for the flight.

2.2 Approval of the flight conditions (when relevant)

The procedure should include the process to establish and justify the flight conditions, in accordance with DASR 21.A.708 and how compliance with DASR 21.A.710(c) is established, and include the DASR Form 18b—Flight Conditions for a Military Permit to Fly (Approval Form), as defined in DASR AMC 21.A.709(b) for the approval under the MPOA privilege. If the flight test is to be conducted by an organisation outside of the MPOA holder approving the MPTF, flight conditions may only be approved after operational endorsement by competent staff of a Military Air Operator (MAO) as determined by the Delegate of the Safety Authority (DoSA) - Flight Test.

2.3 Conformity with approved conditions

The procedure should indicate how conformity with approved conditions is made, documented and attested by an authorised person.

2.4 Issue of the military permit to fly under the MPOA privilege

The procedure should describe the process to prepare the DASR Form 20b—Military Permit to Fly (Approved Organisation), and how compliance with DASR 21.A.711(c) and DASR 21.A.711(e) is established before signature of the military permit to fly.

2.5 Authorised signatories

The person(s) authorised to sign the military permit to fly under the privilege of DASR 21.A.163(e) should be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the Production Organisation Exposition.

2.6 Interface with the local Authority for the flight

The procedure should include provisions describing the communication with the local Authority for compliance with the local requirements which are outside the scope of the conditions of DASR 21.A.708(b) (see DASR 21.A.711(e)).

21.A.165 - Obligations of the holder

The holder of a production organisation approval shall:

(a) Ensure that the production organisation exposition furnished in accordance with DASR 21.A.143 and the documents to which it refers, are used as basic working documents within the organisation; ▸ **GM**

GM 21.A.165(a) - Obligations of the holder – Basic working document

Compliance with the MPOE is a prerequisite for obtaining and retaining a production organisation approval.

The organisation is to make the MPOE available to its personnel where necessary for the performance of their duties. A distribution list is to therefore be established. Where the MPOE mainly refers to separate manuals or procedures, the distribution of the MPOE could be limited.

The organisation is to ensure that personnel have access to and are familiar with that part of the content of the MPOE or the referenced documents, which covers their activities.

Monitoring of compliance with the MPOE is normally the responsibility of the quality assurance function.

(b) Maintain the production organisation in conformity with the data and procedures approved for the production organisation approval;

(c) ▸ **GM1** ▸ **GM2** ▸ **GM3** ▸ **GM4**

GM4 21.A.165(c) - Airworthiness Release or Conformity Certificate

The DASR Form 1—Authorised Release Certificate, when used as a release certificate as addressed in DASR 21.A.165(c)(2) and DASR 21.A.165(c)(3), may be issued in two ways:

a. As an airworthiness release, only when by virtue of the arrangement described in DASR 21.A.133(b) and DASR 21.A.133(c), it can be determined that the part conforms to the approved design data and is in condition for safe operation.

b. As a conformity Certificate, only when by virtue of the arrangement described in DASR 2.1A.133(b) and DASR 21.A.133(c), it can be determined that the part conforms to applicable design data which is not (yet) approved, for a reason that is indicated in Block 12. Parts released with a DASR Form 1 as a conformity Certificate are not eligible for installation in a type-certificated aircraft.

The DASR Form 1 is to only be used for Conformity release purposes when it is possible to indicate the reason that prevents its issue as for airworthiness release purposes.

GM3 21.A.165(c) - Obligations of the holder – Condition for safe operation

Before issue of the Statement of Conformity to the Authority, the holder of a production organisation approval is to make an investigation so as to be satisfied in respect of each of the items listed below. The documented results of this investigation are to be kept on file by the MPOA holder. Certain of these items may be required to be provided (or made available) to the operator or owner of the aircraft:

a. Equipment or modifications which do not meet the requirements of the State of manufacture but have been accepted by the Authority;

b. Identification of products, parts or appliances which:

i. Are not new;

ii. Are furnished by the buyer or future operator (including those identified in DASR 21.A.801 and DASR 21.A.805).

c. Technical records which identify the location and serial numbers of significant components that have special traceability requirements for continued airworthiness purposes including those identified in DASR 21.A.801 and DASR 21.A.805;

d. Log book and a modification record book for the aircraft as required by the Authority;

e. Log books for products identified in DASR 21.A.801 installed as part of the type design as required by the Authority;

f. A weight and balance report for the completed aircraft;

g. A record of missing items or defects which do not affect airworthiness these for example could be furnishing or GFE (Items may be recorded in a technical log or other suitable arrangement such that the operator and Authority are formally aware);

h. Product support information required by other implementing rules and associated airworthiness requirements or GM, such as a Maintenance Manual, a Parts Catalogue, or MMEL all of which are to reflect the actual build standard of the particular aircraft. Also an Electrical load analysis and a wiring diagram;

i. Records which demonstrate completion of maintenance tasks appropriate to the test flight flying hours recorded by the aircraft. These records are to show the relationship of the maintenance status of the particular aircraft to the manufacturers recommended maintenance task list and the MRB document/ report;

j. Details of the serviceability state of the aircraft in respect of: a) the fuel and oil contents, b) provision of operationally required emergency equipment such as life rafts, etc;

k. Details of the approved interior configuration if different from that approved as part of the type design;

l. An approved Flight Manual which conforms to the build standard and modification state of the particular aircraft is to be available;

m. Show that inspections for foreign objects at all appropriate stages of manufacture have been satisfactorily performed;

n. The registration has been marked on the exterior of the aircraft as required by Defence policy. Where required by national legislation fix a fireproof owners nameplate;

o. Where applicable there is to be a certificate for noise and for the aircraft radio station;

p. The installed compass and or compass systems have been adjusted and compensated and a deviation card displayed in the aircraft;

q. Software criticality list;

r. A record of rigging and control surface movement measurements;

s. Details of installations which will be removed before starting commercial air transport operations, eg ferry kits for fuel, radio or navigation;

t. Where maintenance work has been performed under the privilege of DASR 21.A.163(d) issue a release to service that includes a statement that the aircraft is in a condition for safe operation;

u. List of all applicable Service Bulletins and airworthiness directives that have been implemented.

GM2 21.A.165(c) - Obligations of holder – Conformity with type design

Individual configurations are often based on the needs of the customer and improvements or changes which may be introduced by the type-certificate holder. There are also likely to be unintentional divergences (concessions or non-conformances) during the manufacturing process. All these changes are to have been approved by the design approval holder, or when necessary by the Authority.

GM1 21.A.165(c) - Obligations of the holder – Conformity of prototype models and test specimens

DASR 21.A.33 requires determination of conformity of prototype models and test specimens to the applicable design data. The DASR Form 1—Authorised Release Certificate, may be used as a conformity certificate as part of the assistance a MPOA holder provides to a design approval holder/applicant.

1. Determine that each completed aircraft conforms to the type design and is in condition for safe operation prior to submitting Statements of Conformity to the Authority; or

2. Determine that other products, parts or appliances are complete and conform to the approved design data and are in condition for safe operation before issuing DASR Form 1 - Authorised Release Certificate, to certify conformity to approved design data and condition for safe operation;

3. Additionally, in the case of engines, a statement that the completed engine is in compliance with the applicable emissions requirements (where applicable) on the date of manufacture of the engine; or

4. Determine that other products, parts or appliances conform to the applicable data before issuing DASR Form 1, as a conformity certificate.

(d) Record all details of work carried out; ▸ **GM**

GM 21.A.165(d) - Obligations of the holder – Recording and archiving system

Records within a production environment satisfy two purposes. Firstly, they are required, during the production process to ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the approved production organisation is to implement a system for the compilation and retention of records during all stages of manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.

The management of such information is to be subject to appropriate procedures in the Quality System required by DASR 21.A.139.

All forms of recording media are acceptable (paper, film, magnetic, etc.) provided they can meet the required duration for archiving under the conditions provided.

The related organisation procedures are to:

a. Identify records to be kept;

b. Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information, eg by product, subject;

c. Control access and provide effective protection from deterioration or accidental damage;

d. Ensure continued readability of the records;

e. Demonstrate to the Authority proper functioning of the records system;

f. Clearly identify the persons involved in conformity determination;

g. Define an archiving period for each type of data taking into account importance in relation to conformity determination subject to the following:

   i. Data which supports conformity of a product, part, or appliance are to be kept for not less than three years from the issue date of the related DASR Form 52—Statement of Conformity or DASR Form 1—Authorised Release Certificate;

   ii. Data considered essential for continuing airworthiness are to be kept throughout the operational life of the product, part or appliance.

h. Ensure that the recording and record-keeping system used by the partners, supplier and sub-contractors meet the objective of conformity of the product, part or appliance with the same level of confidence as for their own manufacture. They are to define in each case who is to retain the record data (organisation or partner, supplier or sub-contractor). They are to also define

method for surveillance of the recording/record keeping system of the partners, suppliers or sub-contractors.

(e) Establish and maintain an internal occurrence reporting system in the interest of safety, to enable the collection and assessment of occurrence reports in order to identify adverse trends or to address deficiencies, and to extract reportable occurrences. This system shall include evaluation of relevant information relating to occurrences and the promulgation of related information;

(f) :

1. Report to the holder of the type-certificate or design approval, all cases where products, parts or appliances have been released by the production organisation and subsequently identified to have possible deviations from the applicable design data, and investigate with the holder of the type-certificate, or design approval in order to identify those deviations which could lead to an unsafe condition;

2. Report to the Authority the deviations which could lead to an unsafe condition identified according to subparagraph (f)1. Such reports shall be made in a form and manner established by the Authority under DASR 21.A.3A(b)2, or accepted by the Authority; ▸ **AMC**

AMC 21.A.165(f)(2) - Reporting to the Authority - Form and manner (AUS)

Form AE 061—Report on Aircraft and Aeronautical Product or DASR Form 44—Technical Occurrence Report, should be completed as established by the Authority.

Form AE 061 and DASR Form 44 may be accepted from:

a. An individual reporting on their own behalf, or

b. In the case of an organisation, an individual with the authority to report on behalf of the organisation.

Urgent unsafe conditions should be reported verbally, ie via telephone, in the first instance, while all reporting should be followed up by the completed form, as time allows.

The completed form is to be forwarded to the Authority, carbon copied (Cc) the applicable DIA desk officer or other working level point of contact. NOTE: Depending on organisational arrangements, concurrent reporting to the applicable CAMO may also be necessary.

3. Where the holder of the production organisation approval is acting as a supplier to another production organisation, report also to that other organisation all cases where it has released products, parts or appliances to that organisation and subsequently identified them to have possible deviations from the applicable design data.

(g) Provide assistance to the holder of the type-certificate or design approval in dealing with any continuing airworthiness actions that are related to the products, parts or appliances that have been produced;

(h) Establish an archiving system incorporating requirements imposed on its partners, suppliers and subcontractors, ensuring conservation of the data used to justify conformity of the products, parts or appliances. Such data shall be held at the disposal of the Authority and be retained in order to provide the information necessary to ensure the continued airworthiness of the products, parts or appliances; ▸ **GM**

GM 21.A.165(h) - Obligations of the holder – Recording and archiving system

Records within a production environment satisfy two purposes. Firstly, they are required, during the production process to ensure that products, parts, or appliances are in conformity with the controlling data throughout the manufacturing cycle. Secondly, certain records of milestone events are needed to subsequently provide objective evidence that all prescribed stages of the production process have been satisfactorily completed and that compliance with the applicable design data has been achieved.

Therefore, the approved production organisation is to implement a system for the compilation and retention of records during all stages of manufacture, covering short-term and long-term records appropriate to the nature of the product and its production processes.

The management of such information is to be subject to appropriate procedures in the Quality System required by DASR 21.A.139.

All forms of recording media are acceptable (paper, film, magnetic, etc.) provided they can meet the required duration for archiving under the conditions provided.

The related organisation procedures are to:

a. Identify records to be kept;

b. Describe the organisation of and responsibility for the archiving system (location, compilation, format) and conditions for access to the information, eg by product, subject;

c. Control access and provide effective protection from deterioration or accidental damage;

d. Ensure continued readability of the records;

e. Demonstrate to the Authority proper functioning of the records system;

f. Clearly identify the persons involved in conformity determination;

g. Define an archiving period for each type of data taking into account importance in relation to conformity determination subject to the following:

   i. Data which supports conformity of a product, part, or appliance are to be kept for not less than three years from the issue date of the related DASR Form 52—Statement of Conformity or DASR Form 1—Authorised Release Certificate;

   ii. Data considered essential for continuing airworthiness are to be kept throughout the operational life of the product, part or appliance.

h. Ensure that the recording and record-keeping system used by the partners, supplier and sub-contractors meet the objective of conformity of the product, part or appliance with the same level of confidence as for their own manufacture. They are to define in each case who is to retain the record data (organisation or partner, supplier or sub-contractor). They are to also define method for surveillance of the recording/record keeping system of the partners, suppliers or sub-contractors.

(i) Where, under its terms of approval, the holder issues a certificate of release to service, determine that each completed aircraft has been subjected to necessary maintenance and is in condition for safe operation, prior to issuing the certificate;

(j) Where applicable, under the privilege of DASR 21.A.163(e), determine the conditions under which a military permit to fly can be issued; and

(k) Where applicable, under the privilege of DASR 21.A.163(e), establish compliance with DASR 21.A.711(c) and (e) before issuing a military permit to fly to an aircraft.

SUBPART H - MILITARY CERTIFICATES OF AIRWORTHINESS AND MILITARY RESTRICTED CERTIFICATES OF AIRWORTHINESS

AMC to Subpart H

AMC to Subpart H

The initial airworthiness review is due within 12 months of the issue date of the aircraft's initial Military Restricted Certificate of Airworthiness (MRCoA) or Military Certificate of Airworthiness (MCoA).

21.A.171 - Scope

This Subpart establishes the procedure for issuing airworthiness certificates.

21.A.172 - Eligibility

Any organisation or operator under whose name an aircraft is registered or will be registered in a participating State ('State of registry'), or its representative, shall be eligible as an applicant for an airworthiness certificate for that aircraft under this Subpart. **GM**

GM 21.A.172 - Eligibility (AUS)

NOTE: In a participating Member State ('State of Registry')' means 'on the Defence register' for Australian Defence aircraft. To operate an aircraft on the Defence register requires issue of a Military Type Certificate or Military Restricted Type Certificate, as well as a Certificate of Airworthiness or Restricted Certificate of Airworthiness for that particular aircraft.

21.A.173 - Classification

Airworthiness certificates shall be classified as follows: ▸ **GM**

GM 21.A.173 - Classification (AUS)

Defence registered aircraft types will each be issued with an Australian Military Type Certificate (MTC), from which Certificates of Airworthiness (COAs) can be issued. Non-Defence registered aircraft types are not subject to DASR; they are subject to the CAA/MAA regulatory system of registration, eg CASA. The provision for issuing a COA based on a civil Type Certificate issued by a recognised Civil Authority is therefore not applicable to DASR, since there will always be an Australian MTC from which to issue COAs for Defence aircraft.

(a) Certificates of airworthiness shall be issued to aircraft which conform to a type-certificate that has been issued in accordance with this DASR (or if appropriate and if national regulations allow, based upon a Civil Type-certificate issued by a recognised Civil Authority);

(b) Restricted certificates of airworthiness shall be issued to aircraft:

1. which conform to a restricted type-certificate that has been issued in accordance with this DASR; or

2. which have been shown to the Authority to comply with specific airworthiness specifications ensuring adequate safety.

21.A.174 - Application

(a) Pursuant to DASR 21.A.172, an application for an airworthiness certificate shall be made in a form and manner established by the Authority of the State of registry. ▸ **AMC** ▸ **GM1** ▸ **GM2**

GM2 21.A.174(a) – Application (AUS)

The authority must exercise a duty of care before adding individual aircraft to the Defence register. This is particularly true for used aircraft, where records of usage, maintenance, modifications and repairs may not be to the standard normally required by Defence. The authority exercises its duty of care through issuing a DASR Form 25—Certificate of Airworthiness (CoA), for individual aircraft that conform to their type design. Applicants for a CoA are to submit a DASR Form 25*A—Application for Certificate of Airworthiness, to the Authority under a covering Minute.

For new civil derivative aircraft being delivered direct to Defence, the purchaser can seek a civil export CoA, via the prime aircraft Original Equipment Manufacturer, if there is a civil type certificate in force. This CoA can form a robust foundation for the issue of an Australian Military CoA.

For instances where a civil type certificate is not in force or Defence is leasing an aircraft that has been in civilian use, the requirement for a CAA Certificate of Airworthiness can be demonstrated if a CAA authorised delegate provides a document that attests the aircraft would be eligible for issue of a Standard or Export Certificate of Airworthiness, if the aircraft was to be registered by a Civil Aviation Authority. Defence will accept only a Standard Certificate of

Airworthiness under DASR 21.A.172, DASR 21.A.173 and DASR 21.A.174. DIA–DASA staff should be consulted for specific advice.

GM1 21.A.174(a) - Application (AUS)

For the purpose of Defence aircraft, 'the State of registry' means Australia (AUS).

AMC 21.A.174(a) – Application - Form and manner (AUS)

DASR Form 25A—Application for Certificate of Airworthiness, should be completed by the applicant.

(b) Each application for a certificate of airworthiness or restricted certificate of airworthiness shall include:

1. The class of airworthiness certificate applied for;

2. With regard to new aircraft:

   i. A statement of conformity:

   – Issued under DASR 21.A.163(b); or

   – Issued under DASR 21.A.130 and validated by the Authority; or

   – For an imported aircraft, any acceptable evidence to support that the aircraft conforms to a design approved by the Authority of the State of registry.

   ii. A weight and balance report with a loading schedule;

   iii. The flight manual and any other manuals required by the Authority of the State of registry.

3. With regard to used aircraft: ▸ **AMC**

AMC 21.A.174(b)(3) – Inspections (AUS)

1. For used aircraft, specific data should be obtained, and inspections performed, to ensure that the records, maintenance and aircraft condition are to the standard normally required by Defence.

   The applicant should obtain the following data (as a minimum) as part of the acquisition of used aircraft, particularly if originating from another State:

   a. Records of the total hours and landings accrued by each airframe.

   b. For pressurised aircraft, records of the number of cabin pressurisation cycles and the pressure differential to which each cabin has been subjected during its life (if available).

   c. Records showing the total life consumed by each installed life-limited aircraft, engine and propeller component.

d. Data describing the past operational usage of the aircraft, especially any non-standard roles (particularly any use as a flight or ground test vehicle) and the time spent in each role.

e. Records of all major structural and life-limited component changes made to items such as wings, rotors blades and tailplane, and the individual histories of such components unless new when fitted.

f. Records of all major structural repairs and details of salvage schemes, including the nature and cause of the damage in each case, eg corrosion, cracking, lightning strikes, accidental damage.

2. The applicant should arrange for airworthiness inspection(s) to be performed by an appropriately qualified, independent and experienced third party organisation. The inspecting organisation should provide an Airworthiness Inspection Plan (AIP). A comprehensive review of the aircraft design, maintenance and operational documentation is to be conducted and verified by a physical inspection of the airframe structure, engines and other systems. The inspecting organisation is to provide inspection reports detailing the airworthiness inspection result. As a minimum, reports should include the following:

a. details of the aircraft inspected, including civil registration number, manufacturer, serial number, model designation, and CAA Certificate of Airworthiness number;

b. last known inspected configuration of the aircraft;

c. a summary of the usage and maintenance history of the aircraft, engines and propellers, including current maintenance, weight and balance, and life-limited component status;

d. details of any accidents or incidents in which the aircraft has been involved;

e. details of any major repairs or modifications performed on the aircraft, engines and propellers and verification that they have been properly approved and incorporated;

f. details of any applicable aircraft-general, type-specific, engine or equipment airworthiness directives or service bulletins and verification that the aircraft complies;

g. a condition assessment of critical parts and primary structure; and

h. recommendations for the resolution of any airworthiness deficiencies or concerns arising as a result of the airworthiness inspection.

i. Originating from a State applying EASA / EMAR / DASR, a Military Airworthiness Review Certificate issued in accordance with DASR M;

ii. Originating from another State:

- A statement by the Authority of the State where the aircraft is, or was, registered, reflecting the airworthiness status of the aircraft on its register at time of transfer;
- A weight and balance report with a loading schedule;
- The flight manual and any other manuals required by the Authority of the State of registry;
- Historical records to establish the production, modification, and maintenance standard of the aircraft, including all limitations associated with a restricted certificate of airworthiness;
- A recommendation for the issuance of a certificate of airworthiness or restricted certificate of airworthiness and a Military Airworthiness Review Certificate following an airworthiness review in accordance with DASR M.

(c) Unless otherwise agreed, the statements referred to in subparagraphs (b)(2)(i) and (b)(3)(ii) shall be issued no more than 60 days before presentation of the aircraft to the airworthiness Authority of the State of registry.

21.A.175 - Language

The manuals, placards, listings, and instrument markings and other necessary information required by applicable airworthiness codes shall be presented in a language acceptable to the Authority of the State of registry. ▸ GM

GM 21.A.175 - Language (AUS)

For the purpose of Defence aircraft, 'the State of registry' means Australia (AUS).

21.A.177 - Amendment or modification

▸ GM

GM 21.A.177 - Amendment or modification (AUS)

For the purpose of Defence aircraft, 'the State of registry' means Australia (AUS).

An airworthiness certificate may be amended or modified only by the Authority of the State of registry.

21.A.179 - Transferability and re-issuance within States applying EMAR / DASR

▸ GM

GM 21.A.179 – Transferability and re-issuance within States applying DASR (AUS)

The Authority allows for the change of ownership of a Defence registered aircraft in certain circumstances, and should be engaged as early as possible for specific advice.

(a) Where national regulations allow ownership (either nationally or to another State/ Nation) of an aircraft to be changed:

1. If it remains in the same State of registry, the certificate of airworthiness, or the restricted certificate of airworthiness conforming to a restricted type-certificate only, shall be transferred together with the aircraft;

2. If the aircraft is registered in another State applying EMAR / DASR, the certificate of airworthiness, or the restricted certificate of airworthiness conforming to a restricted type-certificate only, shall be issued:

   i. Upon presentation of the former certificate of airworthiness and of a valid Military Airworthiness Review Certificate issued under EMAR M / DASR M; and

   ii. When satisfying EMAR 21.A.175 / DASR 21.A.175.

(b) Where ownership of an aircraft has changed, and the aircraft has a restricted certificate of airworthiness not conforming to a restricted type-certificate, the airworthiness certificates shall be transferred together with the aircraft provided the aircraft remains on the same register, only with the formal agreement of the Authority of the State of registry to which it is transferred.

21.A.180 - Inspections

▸ **GM**

GM 21.A.180 - Inspections (AUS)

For the purpose of Defence aircraft, 'the State of registry' means Australia (AUS).

The holder of the airworthiness certificate shall provide access to the aircraft for which that airworthiness certificate has been issued upon request by the Authority of the State of registry.

21.A.181 - Duration and continued validity

(a) An airworthiness certificate may be issued for an unlimited duration. It shall remain valid subject to:

1. Compliance with the applicable type-design, airworthiness directives and instructions for continuing airworthiness; and

2. The aircraft remaining on the same register;

3. The type-certificate or restricted type-certificate under which it is issued not being previously invalidated under DASR 21.A.51; and

4. The certificate not being surrendered or revoked by the Authority of the State of registry. ▸ **GM**

GM 21.A.181(a)(4) - Duration and continued validity (AUS)

For the purpose of Defence aircraft, 'the State of registry' means Australia (AUS).

(b) Upon surrender or revocation, the certificate shall be returned to the Authority of the State of registry.

21.A.182 - Aircraft identification

Each applicant for an airworthiness certificate under this Subpart shall demonstrate that its aircraft is identified in accordance with DASR 21 Section A Subpart Q—Identification of Products, Parts and Appliances.

SUBPART I - NOISE CERTICATES (to be added later if required)

SUBPART J - MILITARY DESIGN ORGANISATION APPROVAL

21.A.231 - Scope

This Subpart establishes the procedure for the approval of design organisations and rules governing the rights and obligations of applicants for, and holders of, such approvals. In this Subpart, the references to type-certificates include type-certificates and restricted type-certificates.

21.A.233 - Eligibility

At the discretion of the Authority, any organisation shall be eligible as an applicant for an approval under this Subpart:

(a) In accordance with DASR 21.A.14, DASR 21.A.112B, DASR 21.A.432B or DASR 21.A.602B; or

(b) For approval of minor changes or minor repair design, when requested for the purpose of obtaining privileges under DASR 21.A.263.

21.A.234 - Application

Each application for a design organisation approval shall be made in a form and manner established by the Authority and shall include an outline of the information required by DASR 21.A.243, and the terms of approval requested to be issued under DASR 21.A.251. ▸ **AMC**

AMC 21.A.234 - Application - Form and manner (AUS)

DASR Form 80—Application for Design Organisation Approval, is to be obtained from the Authority, and completed by the Head of Design of the organisation.

The completed form, an outline of the design organisation handbook, and details of the proposed terms of approval are to be forwarded to the Authority.

Organisations approved by recognised national aviation authorities or certified under AS/EN 9100 or the equivalent Aerospace Quality Assurance Program (AQAP), may re-use part or all of the same process evidences in the demonstration of compliance with DASR 21 Section A Subpart J, as agreed by the Authority.

21.A.235 - Issue of Military design organisation approval

An organisation shall be entitled to have a design organisation approval issued by the Authority when it has demonstrated compliance with the applicable requirements under this Subpart. ▸ **GM**

GM 21.A.235 - Issue of a Design Organisation Approval

(a) Where a design organisation has an extant EASA Part 21 design organisation approval, and when the military design activity is in the scope of the EASA terms of approval, the organisation may be accepted by the Authority to satisfy the DASR 21 requirements for that scope of work with any further investigation limited only to the delta between the two approvals. The Authority is to be kept informed by the design organisation of significant changes to the organisation and of any EASA findings that may impact the military design activity.

(b) Where a design organisation has an extant EASA Part 21 design organisation approval, and when the scope of the EASA terms of approval does not entirely cover the military design activity, those parts of the organisation's EASA Part 21 handbook that are equally applicable to satisfy DASR 21 may be accepted by the Authority as equivalent in respect of the DASR 21 requirements. It is permissible that only those parts of the organisation that are specific to the military activity or requirements are addressed in the DASR 21 handbook (Military Design Organisation Exposition). Those requirements covered by read-across of the sections of the EASA handbook are to be identified with a reference to the applicable procedures or other basic working documents as referred to in the EASA handbook.

21.A.239 - Design assurance system and Safety Management System

(a) The design organisation shall demonstrate that it has established and is able to maintain a design assurance system for the control and supervision of the design, and of design changes, of products, parts and appliances covered by the application. This design assurance system shall be such as to enable the organisation: ▸ **GM1** ▸ **GM2**

GM2 21.A.239(a) - Design assurance system for minor changes to type design or minor repairs to products

1. Purpose

This GM outlines some basic principles and objectives in order to comply with DASR 21.A.239(a) for organisations designing only minor changes to type design or minor repairs to products.

2. Design assurance system

The design assurance system should include the following:

a) an organisational structure to:

i. control the design;

ii. to demonstrate compliance with applicable airworthiness and environmental protection (where applicable) requirements;

iii. independently check demonstrations of compliance;

iv. liaise with the Authority;

v. continuously evaluate the design organisation;

vi. control sub-contractors.

b) Procedures and responsibilities associated with the functions listed above, taking due account of DASR 21 requirements applicable to design and approval of minor changes to type design or minor repairs to products.

GM1 21.A.239(a) - Design assurance system

1. Purpose

This GM1 outlines some basic principles and objectives of DASR 21.A.239(a).

2. Definitions

2.1 The design assurance system is the organisational structure, responsibilities, procedures and resources to ensure the proper functioning of the design organisation.

2.2 The design assurance means all those planned and systematic actions necessary to provide adequate confidence that the organisation has the capability:

– to design products, or parts in accordance with the applicable airworthiness requirements and environmental protection requirements (where applicable);

– to demonstrate and verify the compliance with these requirements; and

– to demonstrate this compliance to the Authority.

2.3 The 'Type Investigation' means the tasks of the organisation in support of the type-certificate, supplemental type-certificate or other design approval processes necessary to demonstrate and verify and to maintain compliance with the applicable

airworthiness requirements and environmental protection requirements (where applicable).

3. Design Assurance

The complete process, starting with the airworthiness and environmental protection (where applicable) requirements and product specifications and culminating with the issuing of a type-certificate, is shown in the diagram on Figure 3. This identifies the relationship between the design, the Type Investigation and design assurance processes.

Effective Design Assurance demands a continuing evaluation of factors that affect the adequacy of the design for intended applications, in particular that the product, or part, complies with applicable airworthiness and environmental protection (where applicable) requirements and will continue to comply after any change.

Two main aspects should therefore be considered:

– How the planned and systematic actions are defined and implemented, from the very beginning of design activities up to and including the continued airworthiness activities;

– How these actions are regularly evaluated and corrective actions implemented as necessary.

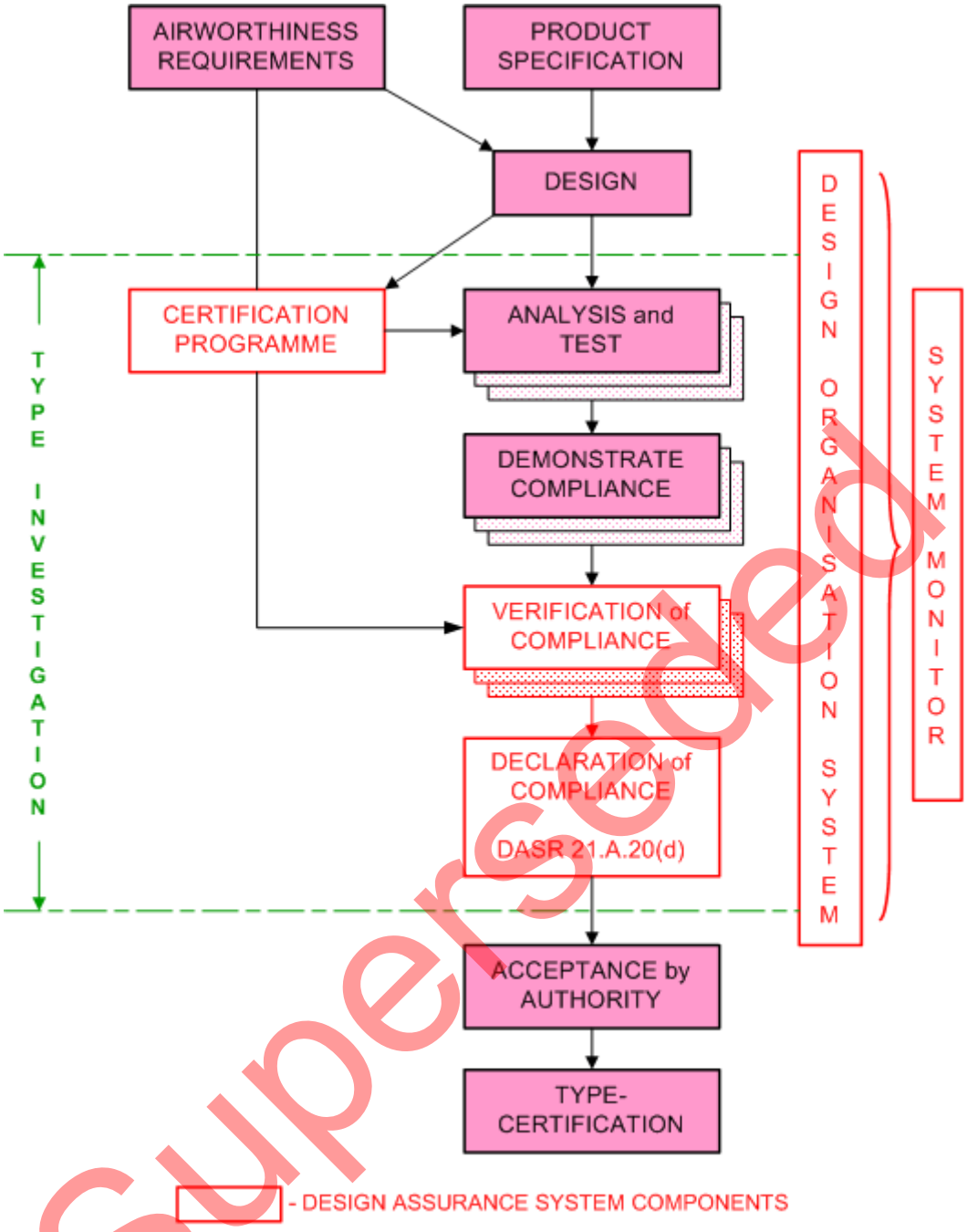


Figure 3 - Relationship between design, design assurance and type investigation

3.1 Planned and Systematic Actions

For design organisations carrying out Type Investigation of products, the planned and systematic actions should cover the following tasks and procedures should be defined accordingly:

3.1.1 General

a) To issue or, where applicable, supplement or amend the design organisation handbook in accordance with DASR 21.A.243, in particular to indicate the initiation of design activities on a product

b) To assure that all instructions of the handbook are adhered to.

c) To conduct Type Investigation.

d) To nominate staff as "compliance verification engineers" responsible to approve compliance documents as defined in paragraph 3.1.3.

e) To nominate personnel belonging to the Office of Airworthiness responsible as defined in paragraph 3.1.4.

f) In the case of an applicant for a supplemental type-certificate, to obtain the agreement of the type-certificate holder for the proposed supplemental type-certificate to the extent defined in DASR 21.A.115.

g) To ensure full and complete liaison between the type design organisation and related organisations having responsibility for products manufactured to the type-certificate.

h) To provide the assurance to the Authority that prototype models and test specimens adequately conform to the type design (see DASR 21.A.33(b)(1)).

3.1.2 Chief Executive and Head of design organisation (or their Deputy)

a) The Chief Executive should provide the necessary resources for the proper functioning of the design organisation.

b) The Head of the design organisation, or an authorised representative, should sign a declaration of compliance (see DASR 21.A.20(d)) with the applicable airworthiness and environmental protection (where applicable) requirements after verification of satisfactory completion of the Type Investigation. In accordance with DASR 21.A.20(e), their signature on the declaration of compliance confirms that the procedures as specified in the handbook have been followed (see also DASR GM 21.A.265(b)).

c) The functions of Chief Executive and Head of the design organisation may be performed by the same person.

3.1.3 Compliance Verification

a. Approval by signing of all compliance documents, including test programmes and data, necessary for the verification of compliance with the applicable airworthiness and environmental protection (where applicable) requirements as defined in the certification programme.

b. Approval of the technical content (completeness, technical accuracy...), including any subsequent revisions, of the manuals approved by the Authority (Aircraft Flight Manual, the Airworthiness Limitations section of the Instructions for Continuing Airworthiness and the Certification Maintenance Requirements (CMR) document, where applicable).

3.1.4 Office of Airworthiness

a) Liaison between the design organisation and the Authority with respect to all aspects of the certification programme.

b) Ensuring that a handbook is prepared and updated as required in DASR 21.A.243.

c) Co-operation with the Authority in developing procedures to be used for the type-certification process.

d) Issuing of guidelines for documenting compliance.

e) Co-operation in issuing guidelines to ensure compliance with the regulations for the preparation of the manuals, Service Bulletins, drawings, specifications, and standards.

f) Ensuring procurement and distribution of applicable airworthiness and environmental protection (where applicable) requirements and other specifications.

g) Co-operating with the Authority in proposing the type-certification basis.

h) Interpretation of applicable airworthiness and environmental protection (where applicable) requirements and requesting decisions of the Authority in case of doubt.

i) Advising of all departments of the design organisation in all questions regarding airworthiness, environmental protection (where applicable) approvals and certification.

j) Preparation of the certification programme and co-ordination of all tasks related to Type Investigation in concurrence with the Authority.

k) Regular reporting to the Authority about Type Investigation progress and announcement of scheduled tests in due time.

l) Ensuring co-operation in preparing inspection and test programmes needed for demonstration of compliance.

m) Establishing the compliance checklist and updating for changes.

n) Checking that all compliance documents are prepared as necessary to demonstrate compliance with all airworthiness and environmental protection (where applicable) requirements, as well as for completeness, and signing for release of the documents.

o) Checking the required type design definition documents described in DASR 21.A.31 and ensuring that they are provided to the Authority for approval when required.

p) Preparation, if necessary, of a draft for a type-certificate data sheet and/ or type-certificate data sheet modification.

q) Providing verification to the head of the design organisation that all activities required for Type Investigation have been properly completed.

r) Approving the classification of changes in accordance with DASR 21.A.91 and granting the approval for minor changes in accordance with DASR 21.A.95(b).

s) Monitoring of significant events on other aeronautical products as far as relevant to determine their effect on airworthiness of products being designed by the design organisation.

t) Ensuring co-operation in preparing Service Bulletins and the Structural Repair Manual, and subsequent revisions, with special attention being given to the manner in which the contents affect airworthiness and environmental protection (where applicable) and granting the approval on behalf of the Authority.

u) Ensuring the initiation of activities as a response to a failure (accident/ incident/in-service occurrence) evaluation and complaints from the operation and providing of information to the Authority in case of airworthiness impairment (continuing airworthiness).

v) Advising the Authority with regard to the issue of airworthiness directives in general based on Service Bulletins.

w) Ensuring that the manuals approved by the Authority, including any subsequent revisions (the Aircraft Flight Manual, MMEL, the Airworthiness Limitations section of the Instructions for Continuing Airworthiness and the Certification Maintenance Requirements (CMR) document, where applicable) are checked to determine that they meet the respective requirements, and that they are provided to the Authority for approval.

3.1.5 Maintenance and Operating Instructions

a) Ensuring the preparation and updating of all maintenance and operating instructions (including instructions for continuing airworthiness and services bulletins) needed to maintain airworthiness (continuing airworthiness) in accordance with relevant airworthiness requirements. For that purpose, the applicant should:

- establish the list of all documents it is producing and that are to be delivered to the operator, such as Flight Manual, ICA, engine configuration and interface documentation (e.g. as required to comply with the applicable airworthiness requirements);
- establish a system to collect in-service experience to be used for the improvement of the instructions;
- define procedures and organisation to produce and issue these documents under the obligation of DASR 21.A.265(h); the procedures should cover:
  - preparation, including the format and language (available industrial standards can be referred to and used);
  - proofreading (checking for clarity, readability, typos, etc.);

– checking of technical consistency with the corresponding approved change(s), repair(s) or approved data, including the effectivity, description, effects on airworthiness and environmental protection, especially when limitations are changed;

– checking of feasibility in practical applications; and

– responsibilities and authorised signatories.

b) In accordance with DASR 21.A.57, DASR 21.A.61, DASR 21.A.107, DASR 21.A.119, DASR 21.A.120A and DASR 21.A.449, ensuring that these documents are provided to all known operators and all involved authorities.

3.1.6 (Reserved).

3.2 Continued Effectiveness of the design assurance system

The organisation should establish the means by which the continuing evaluation (system monitoring) of the design assurance system will be performed in order to ensure that it remains effective.

1. To ensure that the design of the products, parts and appliances or the design change or repair solution thereof, comply with the applicable type-certification basis and environmental protection requirements (where applicable); and

2. To ensure that its responsibilities are properly discharged in accordance with:

   i. The appropriate provisions of this DASR; and

   ii. The terms of approval issued under DASR 21.A.251.

3. To independently monitor the compliance with, and adequacy of, the documented procedures of the system. This monitoring shall include a feed-back system to a person or a group of persons having the responsibility to ensure corrective actions. ▸ **AMC**

AMC 21.A.239(a)(3) - Design assurance system - Independent system monitoring

The system monitoring function required by DASR 21.A.239(a)(3) may be undertaken by the existing quality assurance organisation when the design organisation is part of a larger organisation.

(b) The design assurance system shall include an independent checking function of the showings of compliance on the basis of which the organisation submits compliance statements and associated documentation to the Authority. ▸ **AMC**

AMC 21.A.239(b) - Design assurance system - Independent checking function of the demonstration of compliance

1. The independent checking function of the demonstration of compliance should consist of the verification by a person not creating the compliance data. Such person may work in conjunction with the individuals who prepare compliance data.

2. The verification should be shown by signing compliance documents, including test programmes and data.

3. For a product, there is normally only one compliance verification engineer nominated for each relevant subject. A procedure should cover the non-availability of nominated persons and their replacement when necessary.

4. For MSTC cases, when compliance statement and associated documentation are produced by the MTC holder, and when these data are approved under the system of the authority of MTC holder, then the MSTC applicant not need to provide, within its own MDOA, the independent checking function required in DASR 21.A.239(b) for these data.

(c) The design organisation shall specify the manner in which the design assurance system accounts for the acceptability of the parts or appliances designed or the tasks performed by partners or subcontractor according to methods which are the subject of written procedures. ▸ **GM**

GM 21.A.239(c) - Design assurance system

In meeting the requirements of DASR 21.A.239(c) the applicant for a design organisation approval under DASR 21 Section A Subpart J may adopt the following policy:

1. The satisfactory integration of the Partner/Sub-contractor and applicant's design assurance systems should be demonstrated for the activities covered under the applicant's terms of approval.

2. In the event that a Partner/Sub-contractor holds a military design organisation approval (MDOA), then in accordance with DASR 21.A.239(c), the applicant may take this into account in demonstrating the effectiveness of this integrated system.

3. When any Partner/Sub-contractor does not hold a MDOA then the applicant will need to establish to its own satisfaction and the satisfaction of the Authority, the adequacy of that partner's/sub-contractor's design assurance system in accordance with DASR 21.A.243(b).

(d) The organisation shall establish and maintain a Safety Management System (SMS), in accordance with DASR.SMS.

21.A.243 - Handbook (Design Organisation Exposition)

(a) The design organisation shall furnish a handbook to the Authority describing, directly or by cross-reference, the organisation, the relevant procedures and the products, or changes to products to be designed. ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.243(a) - Handbook (Design Organisation Exposition) Model content for organisations designing minor changes to type design or minor repairs to products

PART 1 - Organisation

1.1 Objective of MDOE and binding statement

1.2 Responsible person for administration of handbook

1.3 Amendment procedure

1.4 List of effective pages

1.5 Distribution list

1.6 Presentation of design organisation (including locations)

1.7 Scope of work (with identification of type and models of products)

1.8 Organisation charts

1.9 Human resources

1.10 Management staff

1.11 Certifying personnel (see DASR GM2 to 21.A.243(d), paragraph 2)

1.12 Independent system monitoring

PART 2 - Procedures

2.1 Management of changes to type design and design of repairs

- configuration control
- classification
- approval of minor changes to type design and minor repairs

2.2 Control of design subcontractors

2.3 Collecting/Investigating of failures, malfunctions and defects

2.4 Co-ordination with production

2.5 Documentation control

- in relations with the changes and repairs
- in relation with failures/malfunctions and defects, ie (Services Bulletins).

2.6 Record keeping

AMC1 21.A.243(a) - Handbook (Design Organisation Exposition) requirements

The handbook (design organisation exposition) should provide the following information for each product covered by the design organisation approval.

1. A description of the tasks which can be performed under the approval, according to the following classification:

a. General areas, like turbojet and turbo-propeller aircraft, small aircraft, Uncrewed Aerial Vehicles (UAV) and rotorcraft;

b. Technologies handled by the organisation (composite, wood or metallic construction, electronic systems, etc.);

c. A list of types and models for which the design approval has been granted and for which privileges may be exercised, supported by a brief description for each product;

d. For repair design, classification and (if appropriate) approval activities it is necessary to specify the scope of activity in terms of structures, systems, engines, etc.

2. A general description of the organisation, its main departments, their functions and the names of those in charge; a description of the line management and of functional relationships between the various departments.

3. A description of assigned responsibilities and delegated authority of all parts of the organisation which, taken together, constitute the organisation's design assurance system together with a chart indicating the functional and hierarchical relationship of the design assurance system to Management and to other parts of the organisation; also the chains of responsibilities within the design assurance system, and the control of the work of all partners and sub-contractors.

4. A general description of the way in which the organisation performs all the design functions in relation to airworthiness and environmental protection (where applicable) approvals including:

a. The procedures followed and forms used in the Type Investigation process to ensure that the design of, or the change to the design of, the product as applicable is identified and documented, and complies with the applicable airworthiness and environmental protection (where applicable) requirements, including specific requirements for import by importing authorities;

b. The procedures for classifying design changes as 'major' or 'minor' and for the approval of minor changes;

c. The procedures for classifying and approving unintentional deviations from the approved design data occurring in production (concessions or non-conformance's);

d. The procedure for classifying and obtaining approval for repairs.

5. A general description of the way in which the organisation performs its functions in relation to the continued airworthiness of the product it designs, including co-operation with the production organisation when dealing with any continued airworthiness actions that are related to production of the product, part or appliance, as applicable.

6. A description of the human resources, facilities and equipment, which constitutes the means for design, and where appropriate, for ground and flight testing.

7. An outline of a system for controlling and informing the Staff of the organisation of current changes in engineering drawings, specifications and design assurance procedures.

8. A description of the recording system for:

   a. The type design, including relevant design information, drawings and test reports, including inspection records of test specimens;

   b. The means of compliance;

   c. The compliance documentation (compliance check list, reports...).

9. A description of the record keeping system to comply with DASR 21.A.55 and DASR 21.A.105.

10. A description of the means by which the organisation monitors and responds to problems affecting the airworthiness of its product during design, production and in service in particular to comply with DASR 21.A.3A (see also DASR GM1 to 21.A.239(a), paragraphs 3.1.4(s) and 3.1.4(u)).

11. The names of the design organisation authorised signatories. Nominated persons with specific responsibilities such as mentioned in DASR 21.A.33 and DASR 21.A.35 should be listed.

12. (Reserved).

13. A clear definition of the tasks, competence and areas of responsibility of the Office of Airworthiness.

14. A description of the procedures for the establishment and the control of the maintenance and operating instructions (see DASR 21.A.57, DASR 21.A.61, DASR 21.A.107, DASR 21.A.119, DASR 21.A.120A and DASR 21.A.449).

15. A description of the means by which the continuing evaluation (system monitoring) of the design assurance system will be performed in order to ensure that it remains effective.

16. (Reserved).

1. If flight tests are to be conducted, the design organisation shall furnish a flight test operations manual defining the organisation's policies and procedures in relation to flight tests. ▸ **AMC**

AMC 21.A.243(a)(1) - Flight Test Operations Manual (AUS)

The flight test operations manual shall include:

a. a description of the organisation's processes for flight test, including the flight test organisation involvement into the Military Permit to Fly issuance process. See DASR 21 Section A Subpart P – Military Permit to Fly;

b. crewing policy, including composition, competency, currency and flight time limitations;

c. procedures for the carriage of persons other than crew members and for flight test training, when applicable;

d. a policy for risk and safety management and associated methodologies;

e. procedures to identify the instruments and equipment to be carried; and

f. a list of documents that need to be produced for flight test.

The flight test operations manual should be owned by the organisation conducting flight test. If flight test is to be conducted by an organisation outside that of the MDOA holder, eg a Military Air Operator (MAO), reference to that organisation's flight test operations manual (or equivalent) is acceptable.

(b) Where any parts or appliances, or any changes to the products are designed by partner organisations or subcontractors, the handbook shall include a statement of how the design organisation is able to give, for all parts and appliances, the assurance of compliance required by DASR 21.A.239(b), and shall contain, directly or by cross-reference, descriptions and information on the design activities and organisation of those partners or subcontractors, as necessary to establish this statement.

(c) The handbook shall be amended as necessary to remain an up-to-date description of the organisation, and copies of amendments shall be supplied to the Authority.

(d) The design organisation shall furnish a statement of the qualifications and experience of the management staff and other persons responsible for making decisions affecting airworthiness and environmental protection (where applicable) in the organisation. ▸ **AMC** ▸ **GM1** ▸ **GM2**

GM2 to 21.A.243(d) - Data requirements - Statement of the qualification and experience- Organisations designing minor changes to type design or minor repairs to products

For organisations designing minor changes to type design or minor repairs to products, the statement of the qualifications and experience required by DASR 21.A.243(d) should be addressed as follows :

1. The nominated managers should be identified and their credentials submitted to the Authority on DASR Form 4—Nominated Personnel Approval, in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the design activities as performed by the organisation.

2. The persons responsible to:

– classify changes to type design or repairs;

– verify compliance [DASR 21.A.239(b)];

– approve minor changes to type design and minor repairs [DASR 21.A.263(c)(2)];

– issue information or instructions [DASR 21.A.265(h)].

should be selected by the organisation in accordance with a procedure and criteria agreed with the Authority.

GM1 21.A.243(d) - Statement of qualifications and experience

1. Purpose

This GM provides guidelines on the following points:

– Who are the persons covered by DASR 21.A.243(d)?

– What is requested from the applicant for these persons?

2. Who are the persons?

Three different types of functions are named or implicitly identified in the requirements of DASR 21 Section A Subpart J or in associated AMC and GM, using qualified and experienced personnel:

– the Chief Executive [see GM1 21.A.239(a) paragraph 3.1.2, DASR GM 21.A.249 and DASR GM 21.A.265(b)].

– the other management staff:

  – the Head of the design organisation [see DASR GM1 to 21.A.239(a) paragraph 3.1.2, DASR GM1 to 21.A.245 paragraph 4.1, DASR GM 21.A.265(b)];

  – the Chief of the Office of Airworthiness, or [see DASR GM1 21.A.245 paragraph 4.2];

  – the Chief of the independent monitoring function of the design assurance system [see DASR AMC1 21.A.243(a)(3) and DASR AMC1 21.A.243(a) paragraph 2].

– the personnel making decisions affecting airworthiness and environmental protection (where applicable):

  – compliance verification engineers [see DASR GM1 21.A.239(a) paragraph 3.1.3; DASR AMC 21.A.239(b)];

  – personnel of the Office of Airworthiness making decisions affecting airworthiness and environmental protection (where applicable), especially those linked with the DASR 21.A.263 privileges (signing documents for release, approving classification of changes and repairs, and granting the approval of minor changes and minor repairs, granting the approval of Service Bulletins, and minor revisions to the aircraft flight manual) [see GM1 to 21.A.239(a) paragraph 3.1.4].

3. Kind of statement

3.1 Chief Executive

The Chief Executive should provide the necessary resources for the proper functioning of the design organisation.

A statement of the qualification and experience of the Chief Executive is normally not required.

3.2 Other management staff

The person or persons nominated should represent the management structure of the organisation and be responsible through the Head of design organisation to the Chief Executive for the execution of all functions as specified in DASR 21 Section A Subpart J. Depending on the size of the organisation, the functions may be subdivided under individual managers.

The nominated managers should be identified and their credentials furnished to the Authority on DASR Form 4—Nominated Personnel Approval, in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the design activities as performed by the organisation.

The responsibilities and the tasks of each individual manager should be clearly defined, in order to prevent uncertainties about the relations, within the organisation. Responsibilities of the managers should be defined in a way that all responsibilities are covered.

3.3 Personnel making decisions affecting airworthiness and environmental protection (where applicable)

For these personnel, no individual statement is required. The applicant should show to the Authority that there is a system to select, train, maintain and identify them for all tasks where they are necessary.

The following guidelines for such a system are proposed:

– These personnel should be identified in the handbook, or in a document linked to the handbook. This, and the corresponding procedures, should enable them to carry out the assigned tasks and to properly discharge associated responsibilities.

– The needs, in terms of quantity of these personnel to sustain the design activities, should be identified by the organisation.

– These personnel should be chosen on the basis of their knowledge, background and experience.

– When necessary, complementary training should be established, to ensure sufficient background and knowledge in the scope of their authorization. The minimum standards for new personnel to qualify in the functions should be established. The training should lead to a satisfactory level of knowledge of the procedures relevant for the particular role.

– Training policy forms part of the design assurance system and its appropriateness forms part of investigation by the Authority within the

organisation approval process and subsequent surveillance of persons proposed by the organisation.

– This training should be adapted in response to experience gained within the organisation.

– The organisation should maintain a record of these personnel which includes details of the scope of their authorisation. The personnel concerned should be provided with evidence of the scope of their authorisation.

– The following minimum information should be kept on record:

a) Name;

b) Date of birth;

c) Experience and training;

d) Position in organisation;

e) Scope of the authorisation;

f) Date of first issue of the authorisation;

g) If appropriate, date of expiry of the authorisation;

h) Identification number of the authorisation.

The record may be kept in any format and should be controlled.

– Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records do not become accessible to unauthorised persons.

– Personnel should be given access to their own record.

– Under the provision of DASR 21.A.257, the Authority has a right of access (subject to contract) to the data held in such a system.

– The organisation should keep the record for at least 2 years after a person has ceased employment with the organisation or withdrawal of the authorisation, whichever is the sooner.

AMC 21.A.243(d) - Statement of qualifications and experience (AUS)

QUALIFICATIONS AND EXPERIENCE REQUIREMENTS FOR KEY PERSONNEL

HEAD OF DESIGN

Qualifications:

Bachelor of Engineering degree in Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Software or Electrical Engineering.

NOTE: Qualifications shall be Australian accredited or assessed to be equivalent to Australian qualification by Engineers Australia, the Australian Computer Society, or the Australian Institute of Project Management.

Experience:

1. Chartered Professional Engineer (CPEng) in the Institute of Engineers Australia (IEAust) or an equivalent professional body recognised by the IEAust.

2. Ten years of aviation experience.

NOTE: For Commonwealth applicants: Ten years of aviation experience shall comprise of at least two years combined experience as staff of DASA, or an organisation holding a Design Organisation Approval under EASA, CASA, EMAR or DASR 21 Section A Subpart J—Military Design Organisation Approval.

CHIEF OF OFFICE OF AIRWORTHINESS

Qualifications:

Bachelor of Engineering degree in Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Software or Electrical Engineering.

NOTE: Qualifications shall be Australian accredited or assessed to be equivalent to Australian qualification by Engineers Australia, the Australian Computer Society, or the Australian Institute of Project Management.

Experience:

1. Chartered Professional Engineer (CPEng) in the Institute of Engineers Australia or an equivalent professional body recognised by the IEAust.

2. Eight years of Aviation experience.

NOTE: For Commonwealth applicants: Eight years of aviation experience shall comprise of at least two years' experience as staff of DASA, or an organisation holding a Design Organisation Approval under EASA, CASA, EMAR or DASR 21 Section A Subpart J.

CHIEF OF THE INDEPENDENT MONITORING FUNCTION

Qualification:

Successfully completed a Lead Auditor course or a Diploma in Quality Auditing delivered by a registered training organisation.

Experience:

Eight years of aviation experience.

NOTE: For Commonwealth applicants: Eight years of aviation experience shall comprise:

1. Two years' experience as staff of DASA, or an organisation holding a Design Organisation Approval under EASA, CASA, EMAR or DASR 21 Section A Subpart J.

2. Three years' experience in aviation quality management.

(e) The organisation shall establish and maintain a Safety Management System (SMS), in accordance with DASR.SMS.

21.A.245 - Approval requirements

The design organisation shall demonstrate, on the basis of the information submitted in accordance with DASR 21.A.243 that, in addition to complying with DASR 21.A.239: ▸ **GM1** ▸ **GM2**

GM2 21.A.245 - Requirements for approval - Organisations designing minor changes to type design or minor repairs to products

The data submitted in accordance with DASR 21.A.243 should show that:

1. The manager responsible for design has the direct or functional responsibility for all departments of the organisation which are involved in the design of minor changes to type design or minor repairs to products.

2. Person(s) have been nominated to liaise with the Authority and to co-ordinate airworthiness and environmental protection (where applicable) matters. Their position in the organisation should allow direct report to the manager responsible for design.

3. Responsibilities for all tasks related to the design and approval of minor changes to type design or minor repairs to products are assigned to ensure that all areas are covered.

4. The responsibility for a number of tasks as in paragraph 3, may be assigned to one person especially in the case of simple projects.

GM1 21.A.245 - Requirements for approval

See DASR 21.A.245

1. General

The data submitted in accordance with DASR 21.A.243 should show that sufficient skilled personnel are available and suitable technical and organisational provisions have been made for carrying out the Type Investigation defined by DASR GM1 to 21.A.239(a), paragraph 2.3.

2. Personnel

The applicant should show that the personnel available to comply with DASR 21.A.245(a) are, due to their special qualifications and number, able to provide assurance of the design or modification of a product, as well as the compilation and verification of all data needed to meet the applicable airworthiness and environmental protection (where applicable) requirements while taking into account the present state of the art and new experience.

3. Technical

The applicant should have access to:

(a) Workshops and production facilities which are suitable for manufacturing prototype models and test specimens;

(b) Accommodation and test facilities which are suitable for carrying out tests and measurements needed to demonstrate compliance with the airworthiness and environmental protection (where applicable) requirements. The test facilities may be subjected to additional technical conditions related to the nature of tests performed.

4. Organisation

The data submitted in accordance with DASR 21.A.243 should show that:

4.1 The Head of the design organisation for which an application for approval has been made, has the direct or functional responsibility for all departments of the organisation which are responsible for the design of the product. If the departments responsible for design are functionally linked, the Head of the design organisation still carries the ultimate responsibility for compliance of the organisation with DASR 21 Section A Subpart J.

4.2 An Office of Airworthiness, or equivalent function, has been established and staffed on a permanent basis to act as the focal point for co-ordinating airworthiness and environmental protection matters (where applicable) (see DASR GM1 to 21.A.239(a) paragraph 3.1.4); it reports directly to the Head of the design organisation or is integrated into an independent quality assurance organisation reporting to the Head of the design organisation.

4.3 [Reserved]

4.4 Responsibilities for all tasks related to Type Investigations are assigned in such a way that gaps in authority are excluded.

4.5 The responsibility for a number of tasks as in paragraph 4.4 may be assigned to one person especially in the case of simple projects.

4.6 Co-ordination between technical departments and the persons in charge of the system monitoring required by DASR 21.A.239(a)(3) has been established:

(h) to ensure quick and efficient reporting and resolution of difficulties encountered using the handbook and associated procedures;

(i) to maintain the design assurance system;

(j) to optimise auditing activities.

(a) the staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to be able to discharge their allocated responsibilities and that these, together with the accommodation, facilities and equipment are adequate to enable the staff to achieve the airworthiness and environmental protection (where applicable) objectives for the product;

(b) there is full and efficient coordination between departments and within departments in respect of airworthiness and environmental protection (where applicable) matters.

21.A.247 - Changes in design assurance system

After the issue of a design organisation approval, each change to the design assurance system that is significant to the showing of compliance or to the airworthiness and environmental protection (where applicable) of the product, shall be approved by the Authority. An application for approval shall be submitted in writing to the Authority and the design organisation shall demonstrate to the Authority, on the basis of submission of proposed changes to the handbook, and before implementation of the change, that it will continue to comply with this Subpart after implementation. ▸ **GM**

GM 21.A.247 - Significant changes in the design assurance system

In addition to a change in ownership (see DASR 21.A.249), the following changes to the design assurance system should be considered as 'significant' to the demonstration of compliance or to the airworthiness or environmental protection (where applicable) of the products:

1. Organisation

- Relocation to new premises (see also DASR GM 21.A.249).
- Change in the industrial organisation (partnership, suppliers, design worksharing) unless it can be shown that the independent checking function of the demonstration of compliance is not affected.
- Change in the parts of the organisation that contribute directly to the airworthiness or environmental protection (where applicable) (independent checking function, office of airworthiness [or equivalent]).
- Change to the independent monitoring principles [see DASR 21.A.239(a)(3)].

2. Responsibilities

- Change of the management staff
  - the Head of the design organisation [DASR GM1 to 21.A.239(a), paragraph 3.1.2, DASR GM1 to 21.A.245, paragraph 4.1, DASR GM 21.A.265(b)];
  - the Chief of the Office of Airworthiness [DASR GM1 to 21.A.245, paragraph 4.2];
  - the Chief of the independent monitoring function of the design assurance system [DASR 21.A.239(a)(3) and DASR AMC1 to 21.A.243(a), paragraph 2].
- New distribution of responsibilities affecting airworthiness or environmental protection (where applicable).

– For organisations designing minor changes to type design or minor repairs to products, change of the persons identified in DASR GM2 to 21.A.243(d).

3. Procedures

Change to the principles of procedures related to:

– the type-certification;

– the classification of changes and repairs as 'major' or 'minor' [DASR 21.A.263(c)(1)];

– the treatment of major changes and major repairs;

– the approval of the design of minor changes and minor repairs [DASR 21.A.263(c)(2)];

– the approval of the design of certain major repairs DASR 21.A.435(b) or DASR 21.A.263(c)(5);

– the approval of the conditions under which a permit to fly can be issued (DASR 21.A.263(c)(6));

– the issue of a permit to fly (DASR 21.A.263(c)(7));

– the approval of certain major changes to a type certificate (DASR 21.A.263(c)(8));

– the approval of certain supplemental type certificates (DASR 21.A.263(c)(9));

– the approval of certain major changes to certain supplemental type certificates; (DASR 21.A.263(c)(9));

– the configuration control, when airworthiness and environmental protection (where applicable) is affected;

– continued airworthiness (see DASR 21.A.3A);

– the acceptability of design tasks undertaken by partners or subcontractors DASR 21.A.239(c);

– the issue of information and instructions under the obligation of DASR 21.A.265(h);

4. Resources

– Substantial reduction in number and/or experience of staff (see DASR 21.A.245(a)).

21.A.249 - Transferability

Except as a result of a change in ownership, which is deemed significant for the purposes of DASR 21.A.247, a design organisation approval is not transferable. ▸ **GM**

GM 21.A.249 - Transferability

1. Transfer of the approval would normally only be agreed in cases where the organisation itself remains substantially unchanged.

2. An acceptable transfer situation could be for example a change of company name supported by the appropriate certificate from the Australian Securities and Investments Commission (ASIC) but with no changes to site address or Chief Executive. However, if the same legal entity were to relocate to new premises with a new Chief Executive and/ or new departmental heads, then a substantial investigation by the Authority would be necessary such that the change would be classified as a re-approval.

3. In the event of receivership there may be good technical justification for continuation of the approval provided that the company continues to function in a satisfactory manner. It is likely that at a later stage the approval might be surrendered by the receiver or transferred to another organisation in which case the former paragraphs apply.

21.A.251 - Terms of approval

The terms of approval shall identify the types of design work, categories of products, parts and appliances for which the design organisation holds a design organisation approval, and the functions and duties that the organisation is approved to perform in regard to the airworthiness of products. For design organisation approval covering type-certification or AUSMTSO authorisation for Auxiliary Power Units (APUs), the terms of approval shall contain in addition the list of products or APUs. Those terms shall be issued as part of a design organisation approval. ▸ **GM1** ▸ **GM2**

GM2 21.A.251 Terms of approval - Organisations designing minor changes to type design or minor repairs to products

Terms of approval issued for organisations designing minor changes to type design or minor repairs to products should contain:

1. Scope of work

This design organisation approval has been granted for:

– designing minor changes to type design or minor repairs to (aircraft, engine, propeller) in accordance with the applicable airworthiness and environmental protection requirements,

– demonstrating and verifying the compliance with these airworthiness and environmental protection requirements (where applicable).

2. Category of products

Any other indication if the Authority has found a limitation related to aircraft systems or technologies and reducing the scope as defined in paragraph 1.

3. Privileges

The holder of this approval is entitled to list the privileges granted with the approval, pursuant to DASR 21.A.263(c)(1) and (2).

GM1 to 21.A.251 - Terms of approval

1. The terms of approval are stated on the certificate of approval issued by the Authority. The certificate states the scope of work and the products, changes or repairs thereof, with the appropriate limitations for which the approval has been granted. For design organisation approval covering type-certification or AUSMTSO authorisation for APU, the list of product types covered by the design assurance system should be included.

2. Approval of a change in the terms of approval in accordance with DASR 21.A.253 will be confirmed by an appropriate amendment of the certificate of approval.

3. The certificate references the handbook of the approved design organisation, provided in accordance with DASR 21.A.243. This handbook defines the tasks which may be performed under the approval.

4. Scopes of work are, for example, 'subsonic turbojet aircraft', 'turbo-propeller aircraft', 'small aircraft', 'rotorcraft'... Technologies are quoted in the scope of work when it is considered by the Authority as a limitation for the military design organisation approval.

5. For repair design activities, the certificate states the scope of work with the appropriate limitations for which the approval has been granted.

21.A.253 - Changes to the terms of approval

Each change to the terms of approval shall be approved by the Authority. An application for a change to the terms of approval shall be made in a form and manner established by the Authority. The design organisation shall comply with the applicable requirements of this Subpart. ▸ **AMC**

AMC 21.A.253 - Application - Form and manner (AUS)

DASR Form 82—Application for Significant Changes to Design Organisation Approval, is to be obtained from the Authority, and completed by the Accountable Manager of the organisation.

The completed form, an outline of the design organisation exposition (handbook), and details of the proposed terms of approval are to be forwarded to the Authority.

21.A.257 - Investigations

▸ **GM**

GM 21.A.257 - Investigations (AUS)

The Authority may grant a delegation to a Commonwealth person to make any investigations necessary for MDOAs, their partners and subcontractors supporting specific aircraft types under this Subpart.

(a) The design organisation shall make arrangements that allow the Authority to make any investigations, including investigations of partners and subcontractors, necessary to determine compliance and continued compliance with the applicable requirements of this Subpart. ▸ **GM**

GM 21.A.257(a) - Investigations

Arrangements that allow the Authority to make investigations include the complete design organisation including partners, sub-contractors and suppliers, whether they are in the State of the applicant or not, assisting and co-operating with the Authority in performing inspections and audits conducted during initial assessment and subsequent surveillance.

Assistance to the Authority includes all appropriate means associated with the facilities of the design organisation to allow the Authority to perform these inspections and audits, such as a meeting room and office support.

(b) The design organisation shall allow the Authority to review any report and make any inspection and perform or witness any flight and ground test necessary to check the validity of the compliance statements submitted by the applicant under DASR 21.A.239(b).

21.A.258 - Findings

(a) When, during the investigations referred to in DASR 21.A.257 and GM 21.A.15(b)(6), objective evidence is found demonstrating non-compliance of the holder of a design organisation approval with the applicable requirements of this DASR, the finding shall be classified as follows:

1. a level one finding is any non-compliance with this DASR which could lead to uncontrolled non-compliances with applicable requirements and which could affect the safety of the aircraft;

2. a level two finding is any non-compliance with this DASR which is not classified as level one.

(b) A level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance under paragraph (a).

(c) After receipt of notification of findings under the applicable administrative procedures established by the Authority,

1. in case of a level one finding, the holder of the design organisation approval shall demonstrate to the satisfaction of the Authority that it has taken adequate corrective action within a period of no more than 21 working days after written confirmation of the finding;

2. in case of level two findings, the holder of a design organisation approval shall demonstrate to the satisfaction of the Authority that it has taken adequate corrective action within a time period set by the Authority which is appropriate to the nature of the finding but in any case initially shall not be more than three months. The Authority may extend the initial time period where it considers that the nature of the finding allows such extension and where the applicant has submitted a corrective action plan which the Authority finds satisfactory; and

3. a level three finding shall not require immediate action by the holder of the design organisation approval.

(d) In case of level one or level two findings, the design organisation approval may be subject to a partial or full suspension or revocation under the applicable administrative procedures established by the Authority. The holder of the design organisation approval shall provide confirmation of receipt of the notice of suspension or revocation of the design organisation approval in a timely manner.

21.A.259 - Duration and continued validity

(a) A design organisation approval can be issued for an unlimited duration, unless otherwise specified by the Authority. It shall remain valid for that duration unless:

1. the design organisation fails to demonstrate compliance with the applicable requirements of this Subpart; or

2. the Authority is prevented by the holder or any of its partners or subcontractors to perform the investigations in accordance with DASR 21.A.257; or

3. there is evidence that the design assurance system cannot maintain satisfactory control and supervision of the design of products or changes thereof under the approval; or

4. the certificate has been surrendered or revoked under the applicable administrative procedures established by the Authority.

(b) Upon surrender or revocation, the certificate shall be returned to the Authority.

21.A.263 - Privileges

(a) (Reserved);

(b) (Reserved);

(c) A holder of a design organisation approval shall be entitled, within the scope of its terms of approval, as established by the Authority, and under the relevant procedures of the design assurance system:

1. to classify changes to a type-certificate or to a supplemental type-certificate and repairs as ‘major’ or ‘minor’; ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.263(c)(1) - Privileges - Organisations that design minor changes to a type certificate (TC) or a supplemental type certificate (STC) and minor repairs to products : Classification procedure

1. Content

The procedure should address the following points:

– configuration control rules, especially the identification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs;

– classification, in compliance with DASR 21.A.91 and DASR GM 21.A.91 for changes and DASR GM 21.A.435 for repairs;

– justification of the classification;

– authorised signatories.

2. Identification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs

The procedure should indicate how the following minor changes to a TC or minor repairs are identified:

– those minor design changes to type design or minor repairs where additional substantiation data is necessary to demonstrate compliance with the airworthiness or environmental protection requirements (where applicable);

– other minor design changes to a TC minor repairs requiring no further demonstration of compliance.

3. Classification

The procedure should show how the effects on airworthiness and environmental protection are analysed, from the very beginning, by reference to the applicable requirements.

If no specific requirements are applicable to the change or the repair, the above review should be done at the level of the part or system where the change or repair is integrated and where specific airworthiness or environmental protection requirements are applicable.

For repair, see also DASR GM 21.A.435.

4. Justification of the classification

All decisions of the classification of the changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs as 'minor' should be recorded and, for those which are not straightforward, also documented.

These records should be easily accessible to the Authority for sample check.

It may be in the format of meeting notes or register.

5. Authorised signatories

All classifications of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs should be accepted by an appropriate authorised signatory.

The procedure should indicate the authorised signatories for the various products listed in the terms of approval.

AMC1 21.A.263(c)(1) - Procedure for the classification of changes to a type certificate (TC) or a supplemental type certificate (STC) and of repair designs as minor and major

1. INTENT

This AMC provides means to develop a procedure for the classification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair deigns.

Each MDOA applicant should develop its own internal classification procedure following this AMC, in order to obtain the associated privilege under DASR 21.A.263(c)(1).

2. PROCEDURE FOR THE CLASSIFICATION OF CHANGES TO A TC, APU AUSMTSO, OR TO THAT PART OF THE PRODUCT COVERED BY AN STC, AND REPAIR DESIGNS

2.1 Content

The procedure should address the following points:

a) the identification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs;

b) classification;

c) justification of the classification;

d) authorised signatories; and

e) supervision of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs initiated by subcontractors.

For changes to TC, APU AUSMTSO or to that part of the product covered by an STC, criteria used for classification should be in compliance with DASR 21.A.91 and DASR GM 21.A.91.

For repairs, criteria used for classification should be in compliance with DASR 21.A.435 and DASR GM 21.A.435.

2.2 Identification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs

The procedure should indicate how the following are identified:

– major changes to a TC, APU AUSMTSO or to that part of the product covered by an STC or major repairs;

– those minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC or minor repairs where additional work is necessary to demonstrate compliance with the applicable airworthiness and environmental protection requirements; and

– other minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC or minor repairs requiring no further demonstration of compliance.

2.3 Classification

The procedure should show how the effects on airworthiness and environmental protection are analysed, from the very beginning, by reference to the applicable requirements.

If no specific airworthiness or environmental protection requirements are applicable to the change or repairs, the above review should be carried out at the level of the part or system where the change or repair is integrated and where specific airworthiness or environmental protection requirements are applicable.

2.3.1 Consultation with operational authorities (AUS)

For designs that require demonstration of compliance with certification basis elements that can only be conducted by aircrew, eg flight characteristics, human machine interface, the procedure should state requirements for consultation with an appropriate operational authority, eg Force Element Group/Wing representatives, Air Warfare Centre, prior to classifying the change.

2.4 Justification of the classification

All decisions of classification of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs as 'major' or 'minor' should be recorded and, for those which are not straightforward, also documented. These records should be easily accessible to the Authority for sample check.

2.5 Authorised signatories

All classifications of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repair designs should be accepted by an appropriate authorised signatory, belonging to or tasked by the Office of Airworthiness, as explained in GM1 DASR 21.A.239(a)(3.1.4)(r).

The procedure should indicate the authorised signatories for the various products listed in the terms of approval.

For those changes or repairs that are handled by subcontractors, as described under paragraph 2.6, it should be described how the MDOA holder manages its classification responsibility.

2.6 Supervision of changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and repairs designs initiated by subcontractors

The procedure should indicate, directly or by cross-reference to written procedures, how changes to that part of the product covered by an STC, and repair designs may be initiated and classified by subcontractors and are controlled and supervised by the MDOA holder.

2. to approve minor changes to type-certificates or to supplemental type-certificates and minor repairs; ▸ **AMC1** ▸ **AMC2** ▸ **AMC3**

AMC3 21.A.263(c)(2) Procedure for the approval of minor changes to a type certificate (TC) which affect the aircraft flight manual (AFM)

1. Intent

This AMC provides additional guidance for developing a procedure for the approval of minor changes to a TC which affect the aircraft flight manual (AFM).

Each military design organisation approval (MDOA) applicant/holder should develop its own internal procedure, based on these guidelines. For guidance on the classification of changes to a TC which affect the AFM, See DASR GM 21.A.91.

2. Procedure for the approval of minor changes to a TC which affect the AFM

2.1 Content

The procedure should address the following points:

– assessment of any change to a TC for the impact of the change on the AFM;

– preparation of revisions or supplements to the AFM;

– classification of the change to a TC, taking into account the impact on the AFM;

– classification of stand-alone revisions or supplements to the AFM;

– control of the configuration of the AFM;

– approval of the revisions or supplements to the AFM; and

– the approval statement.

2.2 Assessment of a change for its impact on the AFM

The procedure should include an assessment of whether or not the AFM is impacted by the change.

2.3 Preparation

The procedure should indicate how revisions or supplements to the AFM are prepared and how the coordination among the persons in charge of design changes is performed.

2.4 Classification

The procedure should indicate how changes to a TC which affect the AFM are classified, in accordance with the criteria of DASR GM 21.A.91 Section 3.4.

The procedure should indicate how classification decisions are recorded, documented and signed.

Easy accessibility of these records to the Authority for sample checking should be ensured. All classifications should be accepted by an appropriately authorised signatory. The procedure should indicate the authorised signatories for the various products listed in the terms of approval.

2.5 Configuration control of the AFM

The procedure should explain the traceability of changes in order to understand who has approved what. Especially if a given page or data module has been revised several times, it should be traceable which part(s) of the page or data module has (have) been approved directly by the Authority under which approval, and which part(s) has (have) been approved under the privilege of a DOA holder.

2.6 Approval

The procedure should indicate how the approval under the privilege of DASR 21.A.263(c)(2) is formalised.

The authorised signatories should be identified (name, signature), together with the scope of the authorisation, in a document that is linked to the DOA handbook.

2.7 Approval statement

The amended AFM, or the supplement to the AFM, approved under the privilege of DASR 21.A.263(c)(2) should be issued under the obligation of DASR 21.A.265(h) (see DASR 21.A.265(h) and the related GM) with a respective statement in the log of revisions.

AMC2 21.A.263(c)(2) - Privileges - Organisations designing minor changes to a type certificate (TC), APU AUSMTSO or a supplemental type certificate (STC) and minor repairs to products: procedure for the approval of minor changes to TC, APU AUSMTSO or minor repairs

1. Content

The procedure should address the following points:

– compliance documentation;

– approval under the MDOA privilege;

– authorised signatories.

2. Compliance documentation

For those minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs where additional work to demonstrate compliance with the applicable airworthiness and environmental protection requirements (where applicable) is necessary, compliance documentation should be established and independently checked as required by DASR 21.A.239(b).

The procedure should describe how the compliance documentation is produced and checked.

3. Approval under the MDOA privilege

3.1 For those minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs where additional work to demonstrate compliance with the applicable airworthiness and environmental protection requirements is necessary, the procedure should define a document to formalise the approval under the MDOA privilege.

This document should include at least:

a) identification and brief description of the change or the repair and reason for change or repair;

b) applicable airworthiness and environmental protection requirements and methods of compliance;

c) reference to the compliance documents;

d) effects, if any, on limitations and on the approved documentation;

e) evidence of the independent checking function of the demonstration of compliance;

f) evidence of the approval under the privilege of DASR 21.A.263(c)(2) by an authorised signatory;

g) the date of the approval.

For repairs, see also DASR 21.A.433(b) and DASR 21.A.447.

3.2 For the other minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs, the procedure should define a means to identify the change or repair and reasons for the change or repair, and to formalise its approval by the appropriate engineering authority under an authorised signatory. This function should be controlled through appropriate procedures of the MDOA holder's design assurance system.

4. Authorised signatories

The persons authorised to sign for the approval under the privilege of DASR 21.A.263(c)(2) should be identified (name, signature and scope of authority) in appropriate documents that may be linked to the handbook.

AMC1 21.A.263(c)(2) - Procedure for the approval of minor changes to a type certificate (TC), APU AUSMTSO or a supplemental type certificate (STC), and minor repairs

1. INTENT

This AMC provides means to develop a procedure for the approval of minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs.

Each MDOA applicant should develop its own internal procedures following this AMC, in order to obtain the associated privilege under DASR 21.A.263(c)(2).

2. PROCEDURE FOR THE APPROVAL OF MINOR CHANGES TO A TC, APU AUSMTSO OR TO THAT PART OF THE PRODUCT COVERED BY AN STC, AND MINOR REPAIRS

2.1 Content

The procedure should address the following points:

– compliance documentation;

– approval under the MDOA privilege;

– authorised signatories;

– supervision of minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs handled by subcontractors.

2.2 Compliance documentation

For those minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs where additional work to demonstrate compliance with the applicable airworthiness and environmental protection (where applicable) requirements is necessary, compliance documentation should be established and independently checked as required by DASR 21.A.239(b).

The procedure should describe how the compliance documentation is produced and checked.

2.3 Approval under the MDOA privilege

2.3.1 For those minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs where additional work to demonstrate compliance with the applicable airworthiness and environmental protection requirements is necessary, the procedure should define a document to formalise the approval under the MDOA privilege.

This document should include at least:

– identification and brief description of the change or repair and reasons for change or repair;

– applicable airworthiness or environmental protection requirements and methods of compliance;

– reference to the compliance documents;

– effects, if any, on limitations and on the approved documentation;

– evidence of the independent checking function of the demonstration of compliance;

– evidence of the approval under the privilege of DASR 21.A.263(c)(2) by an authorised signatory;

– date of the approval.

For repairs, see DASR AMC 21.A.433(b) and DASR AMC 21.A.447.

2.3.2 For the other minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs, the procedure should define a means to identify the change or repair and reasons for the change or repair, and to formalise its approval by the appropriate engineering authority under an authorised signatory. This function may be delegated by the Office of Airworthiness but should be controlled by the Office of Airworthiness, either directly or through appropriate procedures of the MDOA holder's design assurance system.

2.4 Authorised signatories

The persons authorised to sign for the approval under the privilege of DASR 21.A.263(c)(2) should be identified (name, signature and scope of authority) in appropriate documents that maybe linked to the design organisation handbook.

2.5 Supervision of minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs handled by subcontractors

For the minor changes to a TC, APU AUSMTSO or to that part of the product covered by an STC, and minor repairs described in paragraph 2.3.2, that are handled by subcontractors, the procedure should indicate, directly or by cross-reference to written procedures how these minor changes to type design or minor repairs are approved at the subcontractor level and the arrangements made for supervision by the MDOA holder.

3. (Reserved);

4. (Reserved);

5. to approve certain major repair designs under Subpart M to products or Auxiliary Power Units (APUs); ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.263(c)(5), (8) and (9) - Procedure for the approval of a major repair, a major change to a type certificate (TC), or a supplemental type certificate (STC) by a military design organisation approval (MDOA) holder under their privileges

This AMC describes the process to be followed in order to obtain and use the privilege to approve 'certain major repairs' and 'certain major changes' to a TC, and 'certain supplemental type certificates' as defined in points 1(b) and 2 of DASR AMC1 21.A.263(c)(5), (8) and (9).

1. PROCESS FOR OBTAINING A PRIVILEGE

A MDOA holder that applies for the privileges referred to in DASR 21.A.263(c)(5), (8) or (9) should do the following:

(a) Submit to the Authority an application for a significant change in the design assurance system (see DASR 21.A.247 and 21.A.253).

(b) Establish internal procedures for the application of the privilege covering the following elements, and add them to the application:

(1) The definition of the 'list associated with the privilege' of certain major repairs/changes/STCs. The 'list associated with the privilege' is a list of all 'certain major changes', 'certain STCs' and 'certain major repairs' (or families thereof) plus the associated 'justification document' references for which the privileges as per DASR 21.A.263(c)(5), (8) and (9) have been granted.

(2) A 'justification document' for a 'certain major repair', 'certain major change' or a 'certain STC', as applicable. The 'justification document' should contain:

(i) The reference(s) to the Authority-approved major change(s), STC(s) and major repair(s), which is (are) used to demonstrate the MDOA holder's experience and performance.

NOTE: The number of already Authority-approved major change(s), STC(s) or major repair(s) used to demonstrate the MDOA holder's experience and performance is based on an assessment of the scope of the 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' which is requested to be added to the 'list associated with the privilege', as well as on the performance of the MDOA holder during previous projects.

(ii) The certification programme(s) of the major change(s), STC(s), or major repair(s), accepted by the Authority, used to demonstrate the applicant's experience and performance.

(iii) The applicable product configuration(s).

The applicant should list the type(s) and model(s) to which the major change(s)/STC(s)/repair(s) applies (apply) or may apply. Exceptionally, this may be done for a dedicated product, system or equipment if the type or model has no technical influence on the major change(s)/STC(s)/repair(s), i.e. when the installation issues are negligible (eg the TCAS 7.1 software change for a certain equipment), such a listing is not mandatory, but it needs to be justified.

(iv) The list of 'requirements' for the demonstration of compliance, if not identical to the ones referenced in the certification programme.

(v) The certification process, if not identical to the one referenced in the certification programme.

(vi) A detailed description with all the technical data relevant to the installation of the product, the design, the operation and the qualification which ensures the proper use of the privilege for

future major changes, major repairs or STCs. This description should include the criteria defining the conditions that should be met in order to apply the privileges.

(vii) Any other limits on the use of the privilege.

(3) The assessment of the acceptability of using the privilege for major repairs, major changes or STCs against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain STCs'.

(4) The approval process, including the templates to be used, the authorised signatories, records management and the provision of a 'summary list' of major changes, major repairs and STCs approved under the privilege of DASR 21.A.263(c)(5), (8) and (9). This process should clarify that the approval is issued under the MDOA holder's privilege.

The persons authorised under the privilege of DASR 21.A.263(c)(5), (8) and (9) should be identified by their names, signatures and scopes of authority in the appropriate documents and referenced in the procedure.

A 'summary list' of all the major changes, STCs and major repairs approved under a privilege should be provided to the Authority on a regular basis, as agreed with the Authority.

(5) Extension of the 'list associated with the privilege' after the privilege is granted.

After the granting of the privilege, the initial list of 'certain major repairs', 'certain major changes' and 'certain STCs' under the privilege may be further extended by an agreement with the Authority, as shown in Section 2 as well as in Figures 2 and 3 below.

(c) Identify in the 'list associated with the privilege' the eligible major changes, major repairs or STCs proposed for inclusion in the scope of the privilege (see also AMC1 DASR 21.A.263(c)(5), (8) and (9)).

(d) Provide a 'justification document' for each proposed certain major change, certain major repair or certain STC identified under (c) above.

Note: The 'list associated to the privilege' identifying all certain major repairs, certain major changes and certain STCs and the associated 'justification document(s)' are to be referenced in the DOA holder procedure mentioned under (b) above.

The process for obtaining the privilege, referred to in DASR 21.A.263(c)(5), (8) and (9), is summarised in Figure 1 below:

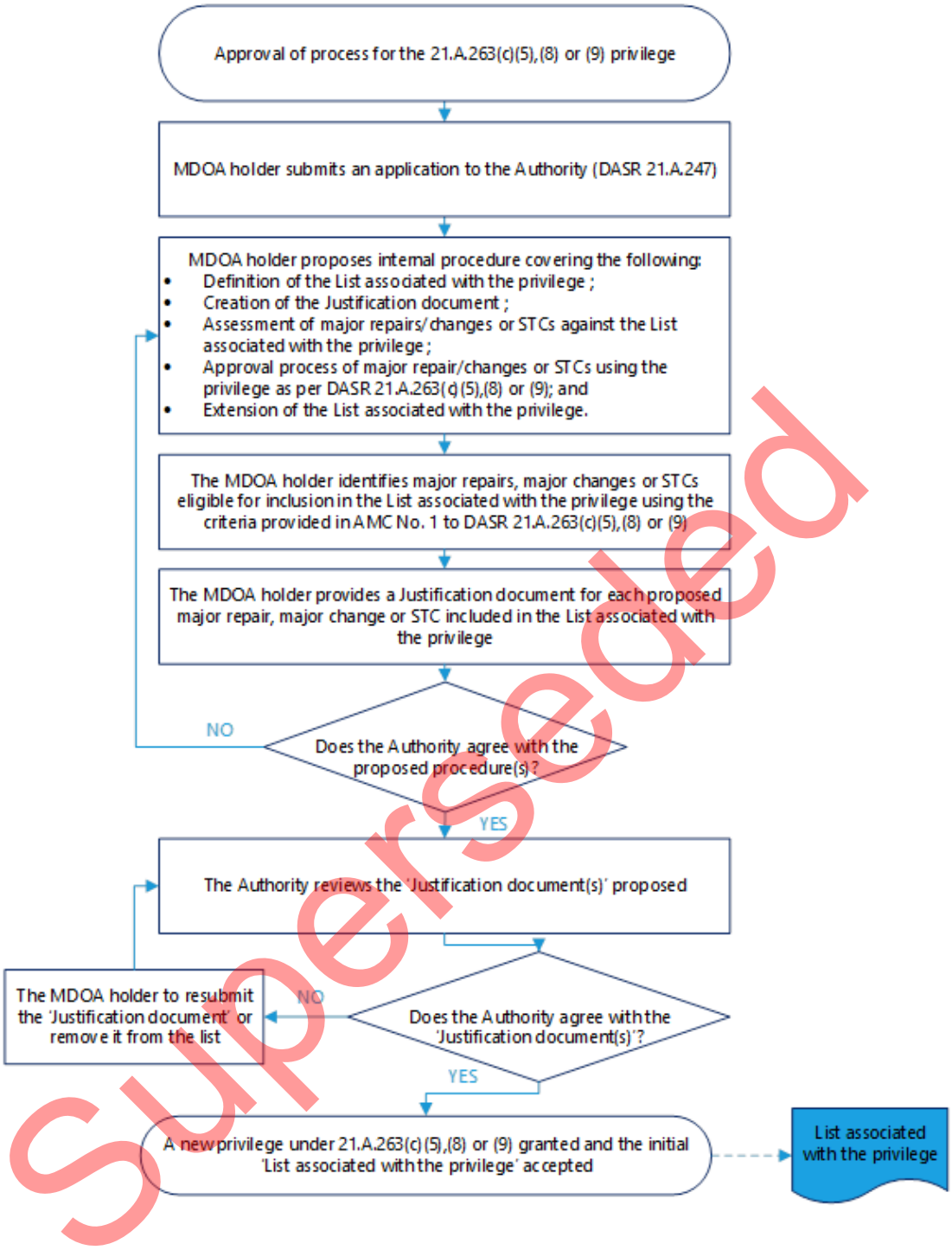


Figure 1

The privilege referred to in DASR 21.A.263(c)(5), (8) and (9) may be used by a MDOA holder for the approval of major repairs, major changes or STCs, as applicable, under the following conditions:

(a) the privilege has already been granted by the Authority;

(b) the major repair/change/STC to be approved falls under the 'List associated with the privilege' agreed by the Authority; and

(c) the criteria established in the relevant 'Justification document' are met and the relevant assessment is recorded.

If all the above conditions are met, the privilege may be used and the approval of major repairs, major changes or STCs, as applicable, can be obtained by the MDOA holder without the Authority's involvement.

2. EXTENSION OF THE 'PRIVILEGE LIST' OF 'CERTAIN MAJOR REPAIRS', 'CERTAIN MAJOR CHANGES' OR 'CERTAIN STCs' AFTER THE PRIVILEGE IS GRANTED

When the MDOA holder intends to update the 'List associated with the privilege', a 'Justification document' needs to be provided to the Authority, as described in Section 1(b)(2) above. After the Authority agrees with the updated 'privilege list' as part of the MDOA holder's procedure, the MDOA holder may proceed as per Section 4 below.

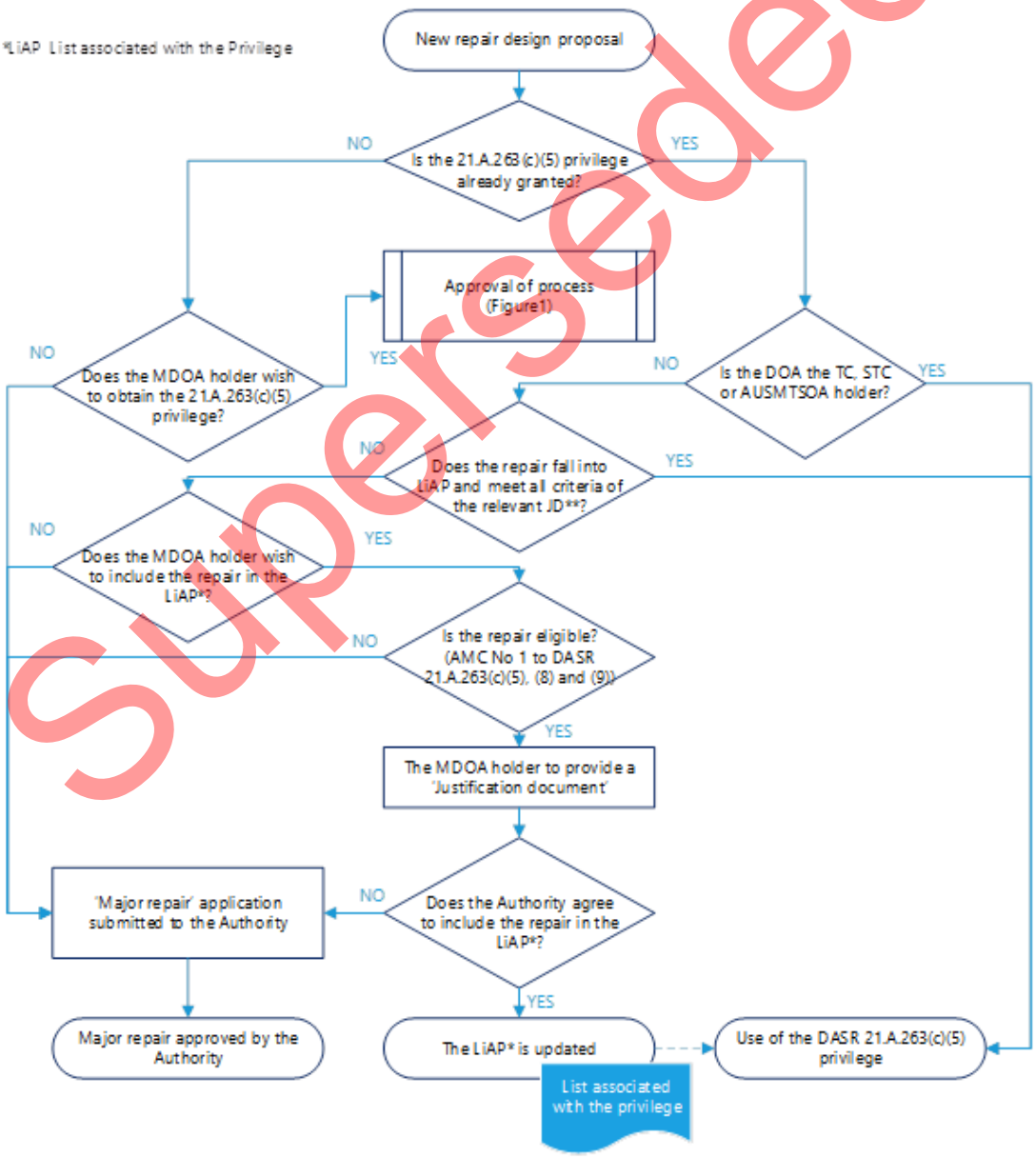


Figure 2

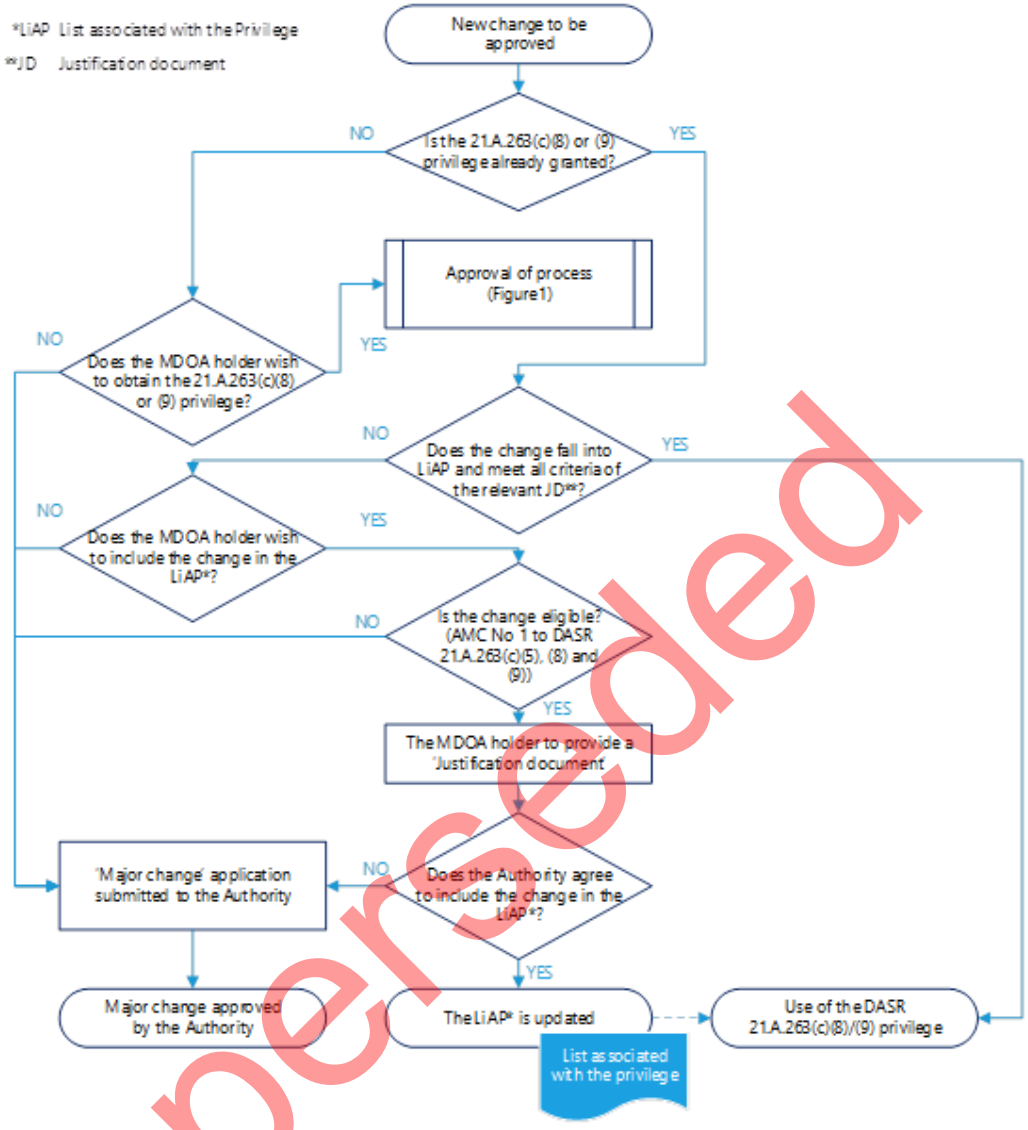


Figure 3

3. TC, STC OR APU AUSMTSOA HOLDER APPROVAL OF A MAJOR REPAIR UNDER A MAJOR REPAIR PRIVILEGE — SPECIFIC CONSIDERATIONS

TC, STC or APU AUSMTSOA MDOA holders that intend to approve a major repair design under the privilege of DASR 21.A.263(c)(5) should ensure that:

(a) the type-certification basis for the product, part or appliance to be repaired is identified, together with all the other relevant requirements;

(b) all the records and substantiation data, including the documents that demonstrate compliance with all the relevant requirements, are provided to the Authority for review; and

(c) for repair designs created for a specific product serial number, an assessment is made as to whether or not the repair design is affected by the presence of any embodied STC, change or repair.

4. MDOA HOLDER'S APPROVAL BASED ON THE PRIVILEGE FOR A MAJOR REPAIR, MAJOR CHANGE OR STC — SPECIFIC CONSIDERATIONS

For the approval of:

– major repairs by MDOA holders that are not the TC, STC or APU AUSMTSO authorisation holders;

– major changes; and

– STCs

by a MDOA holder under the privilege of DASR 21.A.263(c)(5), (8) and (9), the following should be considered.

4.1 Eligibility of the proposed major repair, major change or STC

The MDOA holder should assess the proposed major repair, major change or STC against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' in order to determine whether the criteria of AMC1 DASR 21.A.263(c)(5), (8) and (9) are met.

4.2 Forms for approval certificates

For the issuance of an approval under their privilege the MDOA holder should use forms provided by the Authority.

If such forms are not available or if the MDOA holder chooses to use their own forms, it must be ensured that at least the information as requested by the Authority is presented.

4.3 Approval under the MDOA holder's privilege

When the MDOA holder makes use of the privilege of DASR 21.A.263(c)(5), (8) or (9), they should include the following in the certification data package:

– a record of the assessment as described in 4.1 above;

– the reference to the 'justification document';

– the applicable product configuration;

– the applicable airworthiness requirements or environmental protection requirements and methods of compliance;

– the compliance documents;

– the effects, if any, on limitations and on the approved documentation;

– the evidence of the independent checking of the compliance demonstration;

– the approval document containing the statement of the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9) by an authorised signatory; and

– the date of approval.

In any case, before the major change, STC or major repair is approved under the MDOA privilege, the MDOA holder should ensure that the Part 21 requirements, in particular DASR 21.A.97, 21.A.115 and 21.A.433, are met.

4.4 Authorised signatories

An authorised person that is identified and authorised as described in Section 1(b)(4) above should sign the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9).

4.5 Summary list

The MDOA holder should add to the 'summary list' as described in Section 1(b)(4) above the major change, STC or major repair approved under the privilege of DASR 21.A.263(c)(5), (8) and (9).

AMC1 21.A.263(c)(5), (8) and (9) - Scope and criteria

1. Definition of 'certain major repairs'

'Certain major repairs' for which privileges may be granted as per DASR 21.A.263(c)(5) are:

(a) major repairs to products or auxiliary power units (APUs) for which the military design organisation approval (MDOA) holder holds the type certificate (TC) or the supplemental type certificate (MSTC) or the Australian Military technical standard order authorisation (AUSMTSOA); or

(b) major repairs to products or APUs for which the MDOA holder does not hold the TC or the STC or AUSMTSOA and that meet the criteria of 3(a), (b) and (c) below.

1.1 Criteria for limitations on eligibility

An Authority approval may be required in cases of major repairs proposed by MDOA holders who are the MTC, MSTC or APU AUSMTSOA holders if the major repair is:

(a) related to a new interpretation of any item of the certification basis as used for the type certification (such as the airworthiness requirements, certification review items for special conditions, equivalent safety findings, deviations or 'elect to comply'); and

(b) related to the application of an airworthiness code or standard that is different from the one used for type certification.

Note: This should be established at the time of granting the privilege to the MDOA holder, or later through an Authority-agreed procedure.

2. Definition of 'certain major changes' and 'certain supplemental type certificates'

'Certain major changes' and 'certain supplemental type certificates' for which privileges may be granted as per DASR 21.A.263(c)(8) and (9) are changes similar to those that have been previously approved by the Authority for the same MDOA holder.

The similarity of the changes is to be seen in terms of the design, the installation, and the operational characteristics, whereas their repetitiveness is seen in terms of the applicable requirements and the compliance demonstration.

In this context, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

2.1 Criteria for limitations on eligibility

The following types of changes are not eligible:

(a) changes that require a revision to a type certificate data sheet (TCDS) (e.g. the introduction of a derivative model or variant) or a type certificate data sheet for noise (TCDSN);

(b) changes that require an amendment to the existing certification basis by a special condition, equivalent safety finding, deviation or 'elect to comply';

(c) changes that revise airworthiness limitations or operating limitations, unless otherwise agreed with the Authority;

(d) changes that are intended to be used as alternative method of compliance (AMOC) to an airworthiness directive (AD);

(e) changes that are made mandatory by an AD or that are the terminating action of an AD;

(f) changes that are classified as 'significant' in accordance with DASR 21.A.101;

(g) changes for which, in the affected area and for the operations for which the design is to be certified, more conservative airworthiness requirements are applicable which were not used in the description of the Authority-approved procedure of the MDOA holder, e.g. in the case of a type, model or modification with a later, more stringent certification basis;

(h) changes that affect the noise and/or emissions characteristics of the changed product, unless otherwise agreed with the Authority;

(i) changes that affect a part or system, a single failure of which may have a catastrophic effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity;

(j) changes to engines or propellers, a single failure of which may have a hazardous effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity; and

(k) changes for which a non-compliance has been found in the referenced change during the continued-airworthiness process.

3. Criteria for major repairs, major changes and STCs for which the privileges of DASR 21.A.263(c)(5), (8) and (9) may be granted

The following criteria need to be met:

(a) Similarity

The installation on the product, the design, the operation, and the equipment qualification are basically the same as in projects for which the Authority has already been involved and issued an approval for the same MDOA holder.

(b) Repetitiveness of the certification process

The whole certification process is repetitive, i.e. identical to, or part of, an already approved referenced process. For a change or repair that is a part of the referenced 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates', the certification process is still identical to the one for the affected change. This is the case when each compliance demonstration is performed to the same extent in accordance with the same requirements, GM, and content of the interpretative material, as well as with the same means and method of compliance (not only the same means-of-compliance (MoC) code).

Note: In this AMC, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

(c) Performance and experience in previous projects

To demonstrate 'similarity' and 'repetitiveness, the Authority should have classified the level of performance of the organisation as 'medium' or 'high' during at least the latest project referenced.

In addition, the Authority should have classified the likelihood of an unidentified non-compliance as 'low' or 'very low' for all the included compliance demonstration items (CDIs) identified in at least the latest project referenced, to demonstrate 'similarity' and 'repetitiveness' (applying the criteria for the determination of the Authority's level of involvement (LoI) in product certification, see DASR AMC 21.A.15(b)(6)

The process to obtain and to use the privileges of DASR 21.A.263(c)(5), (8) and (9) is described in AMC2 to DASR 21.A.263(c)(5), (8) and (9).

6. to approve for certain aircraft the flight conditions under which a military permit to fly can be issued in accordance with DASR 21.A.710(a)(2), except for permits to fly to be issued for the purpose of DASR 21.A.701(a)(15), (16) and (17); ▸ **AMC**

AMC 21.A.263(c)(6) - Procedure for the approval of the conditions for issue of a military permit to fly

1. INTENT

This AMC provides means to develop a procedure to determine that an aircraft can fly, under the appropriate restrictions compensating for non-compliance with the airworthiness requirements applicable to the aircraft category.

Each MDOA applicant or holder should develop its own internal procedure following this AMC, in order to obtain the privilege to make this determination and approve associated conditions without Authority involvement, under DASR 21.A.263(c)(6). When the privilege does not apply, the MDOA holder will prepare all necessary data required for the determination in accordance with the same procedure required for the privilege, and will apply for Authority approval.

The establishment of flight conditions may include conditions related to engines/propellers without a type certificate or with unapproved changes that are fitted to the aircraft, for which a military permit to fly (MPTF) is requested. These conditions (i.e. the installation, operating, maintenance conditions or limitations) should be defined by the organisation responsible for the design of the engine/propeller and provided to the organisation responsible for the design of the aircraft. In this context, the organisation responsible for the design of the engine/propeller acts as a supplier of the organisation responsible for the design of the aircraft.

These conditions should be established and substantiated under an arrangement between the organisation responsible for the design of the aircraft and the organisation responsible for the design of the engine/propeller. However, the establishment and substantiation of the flight conditions for the aircraft, including its engine(s), is ultimately the responsibility of the organisation responsible for the design of the aircraft.

2. PROCEDURE FOR THE APPROVAL OF THE CONDITIONS FOR ISSUE OF A MILITARY PERMIT TO FLY

2.1 Content

The procedure should address the following points:

- decision to use the privilege;
- management of the aircraft configuration;
- determination of the conditions that should be complied with to perform safely a flight;
- documentation of flight conditions substantiation;
- approval under the MDOA privilege, when applicable;
- authorised signatories.

2.2 Decision to use the privilege of DASR 21.A.263(c)(6)

The procedure should include a decision to determine:

- flights for which the privilege of DASR 21.A.263(c)(6) will be exercised.

2.3 Management of the aircraft configuration

The procedure should indicate:

- how the aircraft, for which an application for military permit to fly is made, is identified;
- how changes to the aircraft will be managed.

2.4 Determination of the conditions that should be complied with to perform safely a flight

The procedure should describe the process used by the MDOA holder to justify that an aircraft can perform the intended flight(s) safely. This process should include:

- identification of deviations from applicable airworthiness requirements or non-compliance with DASR 21 conditions for the issue of a certificate of airworthiness;
- analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight;
- the establishment of specific maintenance instructions and conditions to perform these instructions;
- independent technical verification of the analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform the intended flight(s) safely;
- statement by the office of airworthiness (or equivalent), that the determination has been made in accordance with the procedure and that the aircraft has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions;
- approval by an authorised signatory.

2.5 Documentation of flight conditions substantiation

1. The analysis, calculations, tests, or other means used to determine under which conditions or restrictions the aircraft can perform safely a flight, should be compiled in compliance documents. These documents should be signed by the author and by the person performing the independent technical verification.
2. Each compliance document should have a number and issue date. The various issues of a document should be controlled.
3. The data submitted and approved by the type-certificate holder can be used as substantiation. In that case, the independent technical verification referred to in paragraph 2.4 is not required.

2.6 Approval under the MDOA privilege

If a Category 1 or Category 2 flight test is to be conducted by an organisation outside of the MDOA holder approving the MPTF, flight conditions may only be approved by a Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)).

2.6.1 Initial approval

The procedure should include DASR Form 18a—*Flight Conditions*, (see DASR Forms document) to support the approval under the MDOA privilege:

When the privilege of DASR 21.A.263(c)(6) is not applicable, the signed form should be presented by the office of airworthiness (or equivalent) to the Authority.

2.6.2 Approval of changes

Except for changes that do not affect the conditions approved for the issue of the military permit to fly, the procedure should specify how changes will be approved by the MDOA holder. The DASR Form 18a should be updated.

2.7 Authorised signatories

The person(s) authorised to sign the approval form should be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the MDOA handbook.

7. to issue a military permit to fly in accordance with DASR 21.A.711(b) for an aircraft it has designed or modified, or for which it has approved in accordance with DASR 21.A.263(c)(6), the flight conditions under which the military permit to fly can be issued, and when the holder of a design organisation approval itself: ▸ **AMC** ▸ **GM**

GM 21.A.263(c)(7) - Procedure for the issue of a military permit to fly

The privilege under DASR 21.A.263(c)(7) will generally be granted only for Category 4 flight test activities. See ▸ **Categories of Flight Tests**

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

AMC 21.A.263(c)(7) - Procedure for the issue of a military permit to fly

1 INTENT

This acceptable means of compliance provides means to develop a procedure for the issue of a military permit to fly.

Each MDOA applicant or holder should develop its own internal procedure following this AMC, in order to obtain the privilege of DASR 21.A.263(c)(7) to issue military permits to fly for aircraft it has designed or modified, or for which it has approved under DASR 21.A.263(c)(6) the conditions under which the military permit to fly can be issued, and when the design organisation itself is controlling under its MDOA the configuration of the aircraft and is attesting conformity with the design conditions approved for the flight.

2 PROCEDURE FOR THE ISSUE OF A MILITARY PERMIT TO FLY

2.1 Content

The procedure should address the following points:

– conformity with approved conditions;

– issue of the military permit to fly under the MDOA privilege;

– authorised signatories;

– interface with the local Authority for the flight.

2.2 Conformity with approved conditions

The procedure should indicate how conformity with approved conditions is made, documented and attested by an authorised person.

2.3 Issue of the military permit to fly under the MDOA privilege

The procedure should describe the process to prepare the DASR Form 20b - Military Permit to Fly (Approved Organisation), and how compliance with DASR 21.A.711(b) and DASR 21.A.711(e) is established before signature of the military permit to fly.

2.4 Authorised signatories

The person(s) authorised to sign the military permit to fly under the privilege of DASR 21.A.263(c)(7) should be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the MDOA exposition.

2.5 Interface with the local Authority for the flight

The procedure should include provisions describing the communication with the local Authority for compliance with the local requirements which are outside the scope of the conditions of DASR 21.A.708(b) (see DASR 21.A.711(e)).

i. controls the configuration of the aircraft, and

ii. attests conformity with the design conditions approved for the flight;

8. to approve certain major changes to a type-certificate under Subpart D; and ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.263(c)(5), (8) and (9) - Procedure for the approval of a major repair, a major change to a type certificate (TC), or a supplemental type certificate (STC) by a military design organisation approval (MDOA) holder under their privileges

This AMC describes the process to be followed in order to obtain and use the privilege to approve 'certain major repairs' and 'certain major changes' to a TC, and 'certain supplemental type certificates' as defined in points 1(b) and 2 of DASR AMC1 21.A.263(c)(5), (8) and (9).

1. PROCESS FOR OBTAINING A PRIVILEGE

A MDOA holder that applies for the privileges referred to in DASR 21.A.263(c)(5), (8) or (9) should do the following:

(a) Submit to the Authority an application for a significant change in the design assurance system (see DASR 21.A.247 and 21.A.253).

(b) Establish internal procedures for the application of the privilege covering the following elements, and add them to the application:

(1) The definition of the 'list associated with the privilege' of certain major repairs/changes/STCs. The 'list associated with the privilege' is a list of all 'certain major changes', 'certain STCs' and 'certain major repairs' (or families thereof) plus the associated 'justification document' references for which the privileges as per DASR 21.A.263(c)(5), (8) and (9) have been granted.

(2) A 'justification document' for a 'certain major repair', 'certain major change' or a 'certain STC', as applicable. The 'justification document' should contain:

(i) The reference(s) to the Authority-approved major change(s), STC(s) and major repair(s), which is (are) used to demonstrate the MDOA holder's experience and performance.

NOTE: The number of already Authority-approved major change(s), STC(s) or major repair(s) used to demonstrate the MDOA holder's experience and performance is based on an assessment of the scope of the 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' which is requested to be added to the 'list associated with the privilege', as well as on the performance of the MDOA holder during previous projects.

(ii) The certification programme(s) of the major change(s), STC(s), or major repair(s), accepted by the Authority, used to demonstrate the applicant's experience and performance.

(iii) The applicable product configuration(s).

The applicant should list the type(s) and model(s) to which the major change(s)/STC(s)/repair(s) applies (apply) or may apply. Exceptionally, this may be done for a dedicated product, system or equipment if the type or model has no technical influence on the major change(s)/STC(s)/repair(s), i.e. when the installation issues are negligible (e.g. the TCAS 7.1 software change for a certain equipment), such a listing is not mandatory, but it needs to be justified.

(iv) The list of 'requirements' for the demonstration of compliance, if not identical to the ones referenced in the certification programme.

(v) The certification process, if not identical to the one referenced in the certification programme.

(vi) A detailed description with all the technical data relevant to the installation of the product, the design, the operation and the qualification which ensures the proper use of the privilege for future major changes, major repairs or STCs. This description should include the criteria defining the conditions that should be met in order to apply the privileges.

(vii) Any other limits on the use of the privilege.

(3) The assessment of the acceptability of using the privilege for major repairs, major changes or STCs against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain STCs'.

(4) The approval process, including the templates to be used, the authorised signatories, records management and the provision of a 'summary list' of major changes, major repairs and STCs approved under the privilege of DASR 21.A.263(c)(5), (8) and (9). This process should clarify that the approval is issued under the MDOA holder's privilege.

The persons authorised under the privilege of DASR 21.A.263(c)(5), (8) and (9) should be identified by their names, signatures and scopes of authority in the appropriate documents and referenced in the procedure.

A 'summary list' of all the major changes, STCs and major repairs approved under a privilege should be provided to the Authority on a regular basis, as agreed with the Authority.

(5) Extension of the 'list associated with the privilege' after the privilege is granted.

After the granting of the privilege, the initial list of 'certain major repairs', 'certain major changes' and 'certain STCs' under the privilege may be further extended by an agreement with the Authority, as shown in Section 2 as well as in Figures 2 and 3 below.

(c) Identify in the 'list associated with the privilege' the eligible major changes, major repairs or STCs proposed for inclusion in the scope of the privilege (see also AMC1 DASR 21.A.263(c)(5), (8) and (9)).

(d) Provide a 'justification document' for each proposed certain major change, certain major repair or certain STC identified under (c) above.

Note: The 'list associated to the privilege' identifying all certain major repairs, certain major changes and certain STCs and the associated 'justification document(s)' are to be referenced in the DOA holder procedure mentioned under (b) above.

The process for obtaining the privilege, referred to in DASR 21.A.263(c)(5), (8) and (9), is summarised in Figure 1 below:

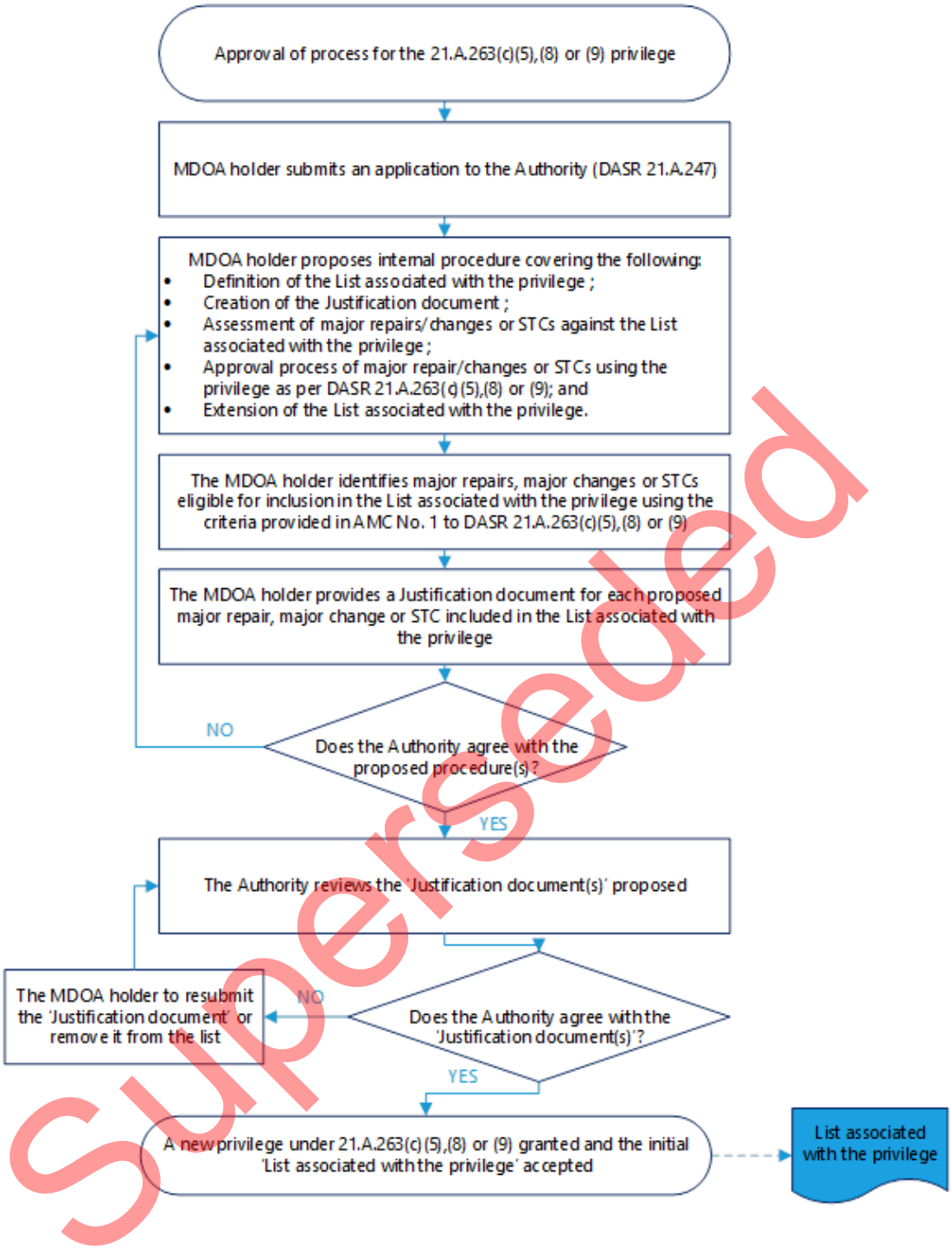


Figure 1

The privilege referred to in DASR 21.A.263(c)(5), (8) and (9) may be used by a MDOA holder for the approval of major repairs, major changes or STCs, as applicable, under the following conditions:

(a) the privilege has already been granted by the Authority;

(b) the major repair/change/STC to be approved falls under the 'List associated with the privilege' agreed by the Authority; and

(c) the criteria established in the relevant 'Justification document' are met and the relevant assessment is recorded.

If all the above conditions are met, the privilege may be used and the approval of major repairs, major changes or STCs, as applicable, can be obtained by the MDOA holder without the Authority's involvement.

2. EXTENSION OF THE 'PRIVILEGE LIST' OF 'CERTAIN MAJOR REPAIRS', 'CERTAIN MAJOR CHANGES' OR 'CERTAIN STCs' AFTER THE PRIVILEGE IS GRANTED

When the MDOA holder intends to update the 'List associated with the privilege', a 'Justification document' needs to be provided to the Authority, as described in Section 1(b)(2) above. After the Authority agrees with the updated 'privilege list' as part of the MDOA holder's procedure, the MDOA holder may proceed as per Section 4 below.

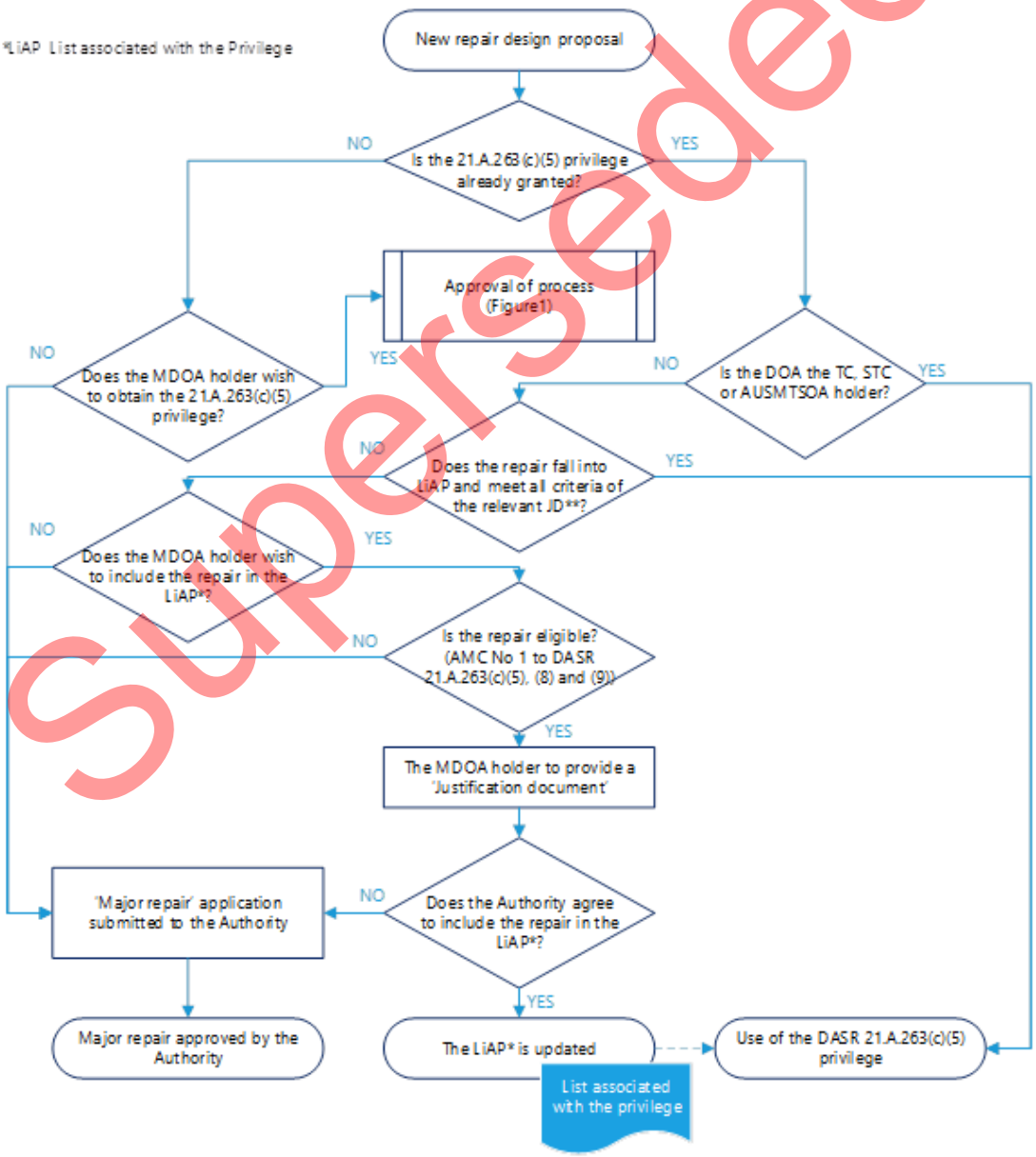


Figure 2

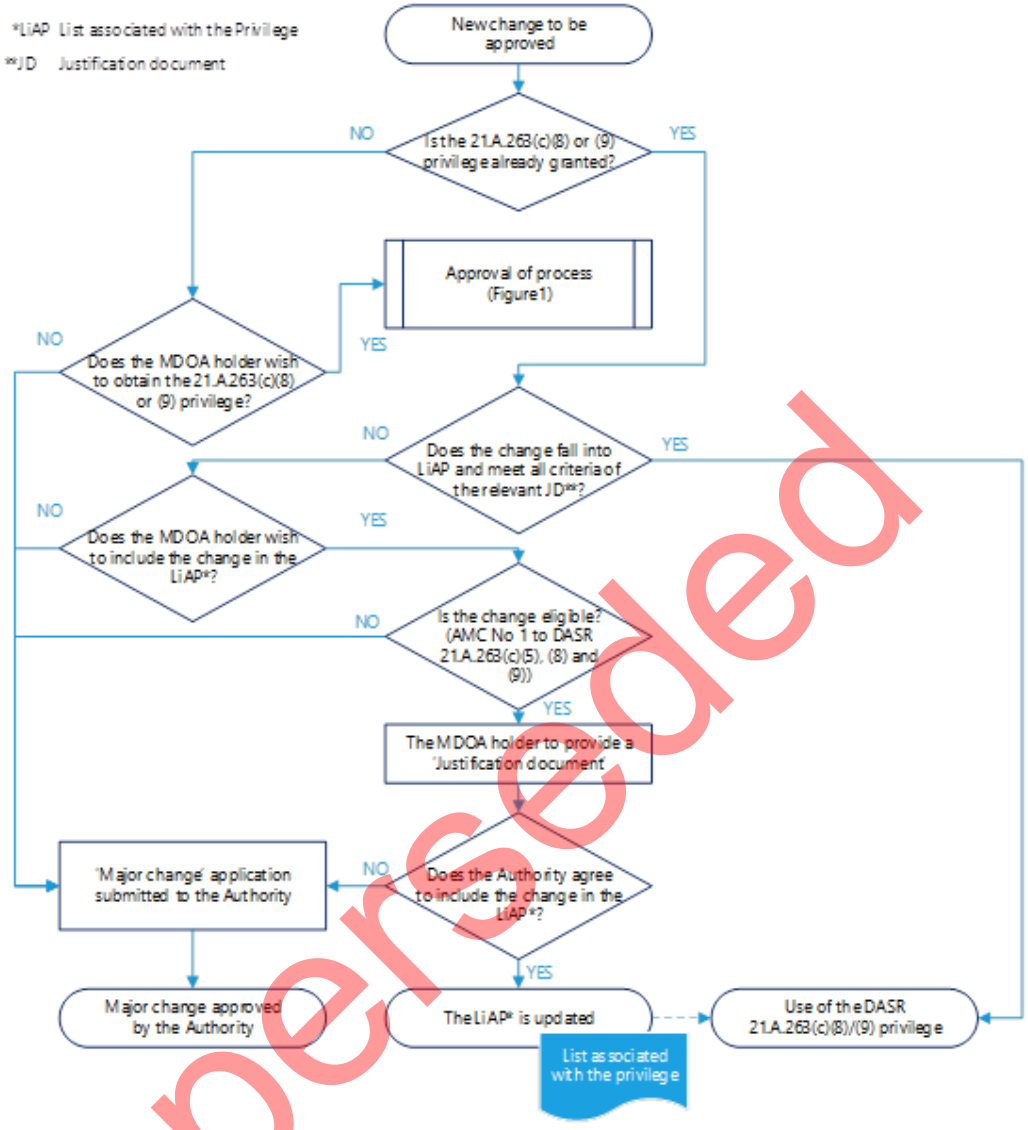


Figure 3

3. TC, STC OR APU AUSMTSOA HOLDER APPROVAL OF A MAJOR REPAIR UNDER A MAJOR REPAIR PRIVILEGE — SPECIFIC CONSIDERATIONS

TC, STC or APU AUSMTSOA MDOA holders that intend to approve a major repair design under the privilege of DASR 21.A.263(c)(5) should ensure that:

(a) the type-certification basis for the product, part or appliance to be repaired is identified, together with all the other relevant requirements;

(b) all the records and substantiation data, including the documents that demonstrate compliance with all the relevant requirements, are provided to the Authority for review; and

(c) for repair designs created for a specific product serial number, an assessment is made as to whether or not the repair design is affected by the presence of any embodied STC, change or repair.

4. MDOA HOLDER'S APPROVAL BASED ON THE PRIVILEGE FOR A MAJOR REPAIR, MAJOR CHANGE OR STC — SPECIFIC CONSIDERATIONS

For the approval of:

– major repairs by MDOA holders that are not the TC, STC or APU AUSMTSO authorisation holders;

– major changes; and

– STCs

by a MDOA holder under the privilege of DASR 21.A.263(c)(5), (8) and (9), the following should be considered.

4.1 Eligibility of the proposed major repair, major change or STC

The MDOA holder should assess the proposed major repair, major change or STC against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' in order to determine whether the criteria of AMC1 DASR 21.A.263(c)(5), (8) and (9) are met.

4.2 Forms for approval certificates

For the issuance of an approval under their privilege the MDOA holder should use forms provided by the Authority.

If such forms are not available or if the MDOA holder chooses to use their own forms, it must be ensured that at least the information as requested by the Authority is presented.

4.3 Approval under the MDOA holder's privilege

When the MDOA holder makes use of the privilege of DASR 21.A.263(c)(5), (8) or (9), they should include the following in the certification data package:

– a record of the assessment as described in 4.1 above;

– the reference to the 'justification document';

– the applicable product configuration;

– the applicable airworthiness requirements or environmental protection requirements and methods of compliance;

– the compliance documents;

– the effects, if any, on limitations and on the approved documentation;

– the evidence of the independent checking of the compliance demonstration;

– the approval document containing the statement of the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9) by an authorised signatory; and

– the date of approval.

In any case, before the major change, STC or major repair is approved under the MDOA privilege, the MDOA holder should ensure that the Part 21 requirements, in particular DASR 21.A.97, 21.A.115 and 21.A.433, are met.

4.4 Authorised signatories

An authorised person that is identified and authorised as described in Section 1(b)(4) above should sign the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9).

4.5 Summary list

The MDOA holder should add to the 'summary list' as described in Section 1(b)(4) above the major change, STC or major repair approved under the privilege of DASR 21.A.263(c)(5), (8) and (9).

AMC1 21.A.263(c)(5), (8) and (9) - Scope and criteria

1. Definition of 'certain major repairs'

'Certain major repairs' for which privileges may be granted as per DASR 21.A.263(c)(5) are:

(a) major repairs to products or auxiliary power units (APUs) for which the military design organisation approval (MDOA) holder holds the type certificate (TC) or the supplemental type certificate (MSTC) or the Australian Military technical standard order authorisation (AUSMTSOA); or

(b) major repairs to products or APUs for which the MDOA holder does not hold the TC or the STC or AUSMTSOA and that meet the criteria of 3(a), (b) and (c) below.

1.1 Criteria for limitations on eligibility

An Authority approval may be required in cases of major repairs proposed by MDOA holders who are the MTC, MSTC or APU AUSMTSOA holders if the major repair is:

(a) related to a new interpretation of any item of the certification basis as used for the type certification (such as the airworthiness requirements, certification review items for special conditions, equivalent safety findings, deviations or 'elect to comply'); and

(b) related to the application of an airworthiness code or standard that is different from the one used for type certification.

Note: This should be established at the time of granting the privilege to the MDOA holder, or later through an Authority-agreed procedure.

2. Definition of 'certain major changes' and 'certain supplemental type certificates'

'Certain major changes' and 'certain supplemental type certificates' for which privileges may be granted as per DASR 21.A.263(c)(8) and (9) are changes similar to those that have been previously approved by the Authority for the same MDOA holder.

The similarity of the changes is to be seen in terms of the design, the installation, and the operational characteristics, whereas their repetitiveness is seen in terms of the applicable requirements and the compliance demonstration.

In this context, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

2.1 Criteria for limitations on eligibility

The following types of changes are not eligible:

(a) changes that require a revision to a type certificate data sheet (TCDS) (e.g. the introduction of a derivative model or variant) or a type certificate data sheet for noise (TCDSN);

(b) changes that require an amendment to the existing certification basis by a special condition, equivalent safety finding, deviation or 'elect to comply';

(c) changes that revise airworthiness limitations or operating limitations, unless otherwise agreed with the Authority;

(d) changes that are intended to be used as alternative method of compliance (AMOC) to an airworthiness directive (AD);

(e) changes that are made mandatory by an AD or that are the terminating action of an AD;

(f) changes that are classified as 'significant' in accordance with DASR 21.A.101;

(g) changes for which, in the affected area and for the operations for which the design is to be certified, more conservative airworthiness requirements are applicable which were not used in the description of the Authority-approved procedure of the MDOA holder, e.g. in the case of a type, model or modification with a later, more stringent certification basis;

(h) changes that affect the noise and/or emissions characteristics of the changed product, unless otherwise agreed with the Authority;

(i) changes that affect a part or system, a single failure of which may have a catastrophic effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity;

(j) changes to engines or propellers, a single failure of which may have a hazardous effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity; and

(k) changes for which a non-compliance has been found in the referenced change during the continued-airworthiness process.

3. Criteria for major repairs, major changes and STCs for which the privileges of DASR 21.A.263(c)(5), (8) and (9) may be granted

The following criteria need to be met:

(a) Similarity

The installation on the product, the design, the operation, and the equipment qualification are basically the same as in projects for which the Authority has already been involved and issued an approval for the same MDOA holder.

(b) Repetitiveness of the certification process

The whole certification process is repetitive, i.e. identical to, or part of, an already approved referenced process. For a change or repair that is a part of the referenced 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates', the certification process is still identical to the one for the affected change. This is the case when each compliance demonstration is performed to the same extent in accordance with the same requirements, GM, and content of the interpretative material, as well as with the same means and method of compliance (not only the same means-of-compliance (MoC) code).

Note: In this AMC, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

(c) Performance and experience in previous projects

To demonstrate 'similarity' and 'repetitiveness, the Authority should have classified the level of performance of the organisation as 'medium' or 'high' during at least the latest project referenced.

In addition, the Authority should have classified the likelihood of an unidentified non-compliance as 'low' or 'very low' for all the included compliance demonstration items (CDIs) identified in at least the latest project referenced, to demonstrate 'similarity' and 'repetitiveness' (applying the criteria for the determination of the Authority's level of involvement (LoI) in product certification, see DASR AMC 21.A.15(b)(6)

The process to obtain and to use the privileges of DASR 21.A.263(c)(5), (8) and (9) is described in AMC2 to DASR 21.A.263(c)(5), (8) and (9).

9. to issue certain supplemental type-certificates under Subpart E and approve certain major changes to those certificates. ▸ **AMC1** ▸ **AMC2**

AMC2 21.A.263(c)(5), (8) and (9) - Procedure for the approval of a major repair, a major change to a type certificate (TC), or a supplemental type certificate (STC) by a military design organisation approval (MDOA) holder under their privileges

This AMC describes the process to be followed in order to obtain and use the privilege to approve 'certain major repairs' and 'certain major changes' to a TC, and 'certain supplemental type certificates' as defined in points 1(b) and 2 of DASR AMC1 21.A.263(c)(5), (8) and (9).

1. PROCESS FOR OBTAINING A PRIVILEGE

A MDOA holder that applies for the privileges referred to in DASR 21.A.263(c)(5), (8) or (9) should do the following:

(a) Submit to the Authority an application for a significant change in the design assurance system (see DASR 21.A.247 and 21.A.253).

(b) Establish internal procedures for the application of the privilege covering the following elements, and add them to the application:

(1) The definition of the 'list associated with the privilege' of certain major repairs/changes/STCs. The 'list associated with the privilege' is a list of all 'certain major changes', 'certain STCs' and 'certain major repairs' (or families thereof) plus the associated 'justification document' references for which the privileges as per DASR 21.A.263(c)(5), (8) and (9) have been granted.

(2) A 'justification document' for a 'certain major repair', 'certain major change' or a 'certain STC', as applicable. The 'justification document' should contain:

(i) The reference(s) to the Authority-approved major change(s), STC(s) and major repair(s), which is (are) used to demonstrate the MDOA holder's experience and performance.

NOTE: The number of already Authority-approved major change(s), STC(s) or major repair(s) used to demonstrate the MDOA holder's experience and performance is based on an assessment of the scope of the 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' which is requested to be added to the 'list associated with the privilege', as well as on the performance of the MDOA holder during previous projects.

(ii) The certification programme(s) of the major change(s), STC(s), or major repair(s), accepted by the Authority, used to demonstrate the applicant's experience and performance.

(iii) The applicable product configuration(s).

The applicant should list the type(s) and model(s) to which the major change(s)/STC(s)/repair(s) applies (apply) or may apply. Exceptionally, this may be done for a dedicated product, system or equipment if the type or model has no technical influence on the major change(s)/STC(s)/repair(s), i.e. when the installation issues are negligible (e.g. the TCAS 7.1 software change for a certain equipment), such a listing is not mandatory, but it needs to be justified.

(iv) The list of 'requirements' for the demonstration of compliance, if not identical to the ones referenced in the certification programme.

(v) The certification process, if not identical to the one referenced in the certification programme.

(vi) A detailed description with all the technical data relevant to the installation of the product, the design, the operation and the qualification which ensures the proper use of the privilege for future major changes, major repairs or STCs. This description should include the criteria defining the conditions that should be met in order to apply the privileges.

(vii) Any other limits on the use of the privilege.

(3) The assessment of the acceptability of using the privilege for major repairs, major changes or STCs against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain STCs'.

(4) The approval process, including the templates to be used, the authorised signatories, records management and the provision of a 'summary list' of major changes, major repairs and STCs approved under the privilege of DASR 21.A.263(c)(5), (8) and (9). This process should clarify that the approval is issued under the MDOA holder's privilege.

The persons authorised under the privilege of DASR 21.A.263(c)(5), (8) and (9) should be identified by their names, signatures and scopes of authority in the appropriate documents and referenced in the procedure.

A 'summary list' of all the major changes, STCs and major repairs approved under a privilege should be provided to the Authority on a regular basis, as agreed with the Authority.

(5) Extension of the 'list associated with the privilege' after the privilege is granted.

After the granting of the privilege, the initial list of 'certain major repairs', 'certain major changes' and 'certain STCs' under the privilege may be further extended by an agreement with the Authority, as shown in Section 2 as well as in Figures 2 and 3 below.

(c) Identify in the 'list associated with the privilege' the eligible major changes, major repairs or STCs proposed for inclusion in the scope of the privilege (see also AMC1 DASR 21.A.263(c)(5), (8) and (9)).

(d) Provide a 'justification document' for each proposed certain major change, certain major repair or certain STC identified under (c) above.

Note: The 'list associated to the privilege' identifying all certain major repairs, certain major changes and certain STCs and the associated 'justification document(s)' are to be referenced in the DOA holder procedure mentioned under (b) above.

The process for obtaining the privilege, referred to in DASR 21.A.263(c)(5), (8) and (9), is summarised in Figure 1 below:

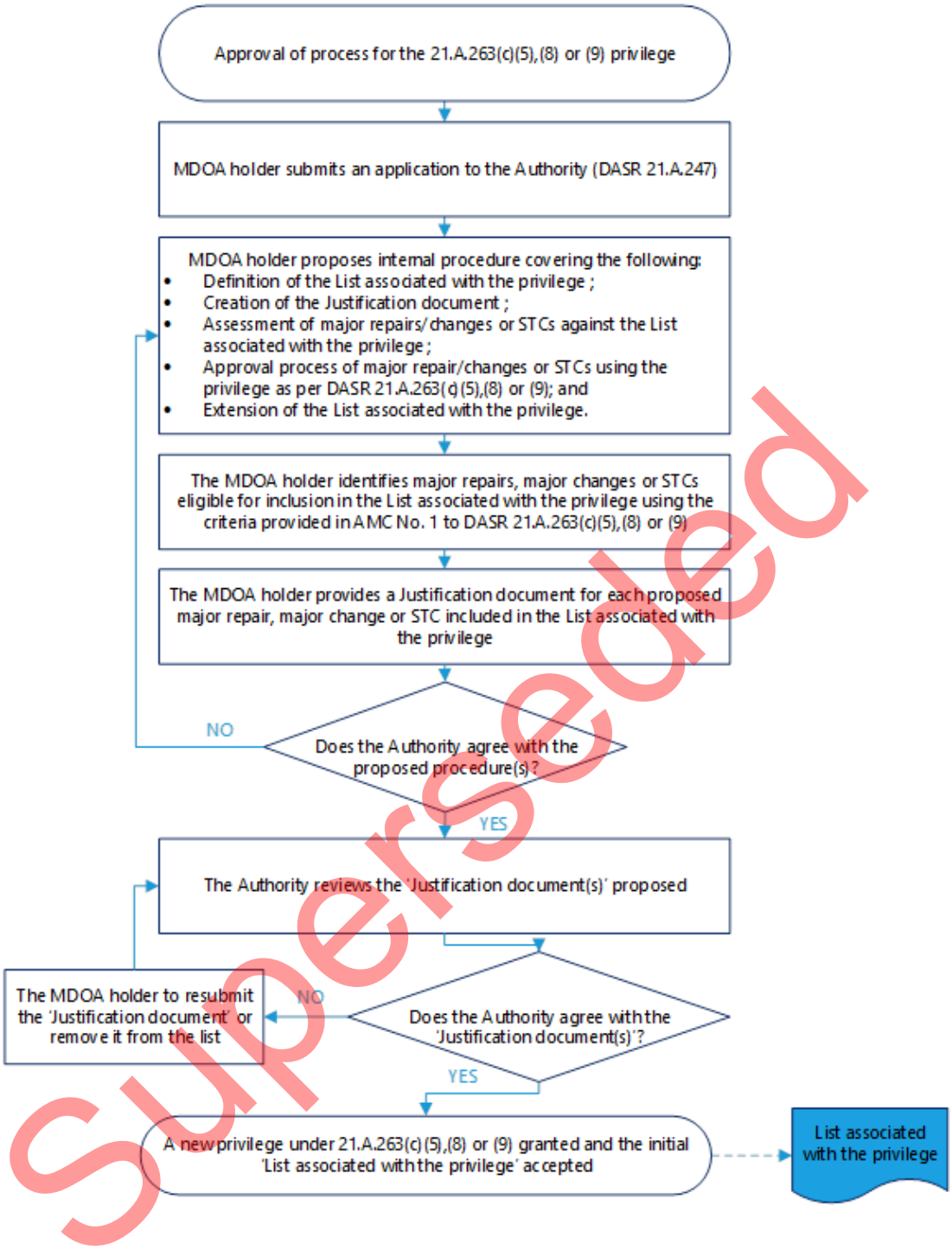


Figure 1

The privilege referred to in DASR 21.A.263(c)(5), (8) and (9) may be used by a MDOA holder for the approval of major repairs, major changes or STCs, as applicable, under the following conditions:

(a) the privilege has already been granted by the Authority;

(b) the major repair/change/STC to be approved falls under the 'List associated with the privilege' agreed by the Authority; and

(c) the criteria established in the relevant 'Justification document' are met and the relevant assessment is recorded.

If all the above conditions are met, the privilege may be used and the approval of major repairs, major changes or STCs, as applicable, can be obtained by the MDOA holder without the Authority's involvement.

2. EXTENSION OF THE 'PRIVILEGE LIST' OF 'CERTAIN MAJOR REPAIRS', 'CERTAIN MAJOR CHANGES' OR 'CERTAIN STCs' AFTER THE PRIVILEGE IS GRANTED

When the MDOA holder intends to update the 'List associated with the privilege', a 'Justification document' needs to be provided to the Authority, as described in Section 1(b)(2) above. After the Authority agrees with the updated 'privilege list' as part of the MDOA holder's procedure, the MDOA holder may proceed as per Section 4 below.

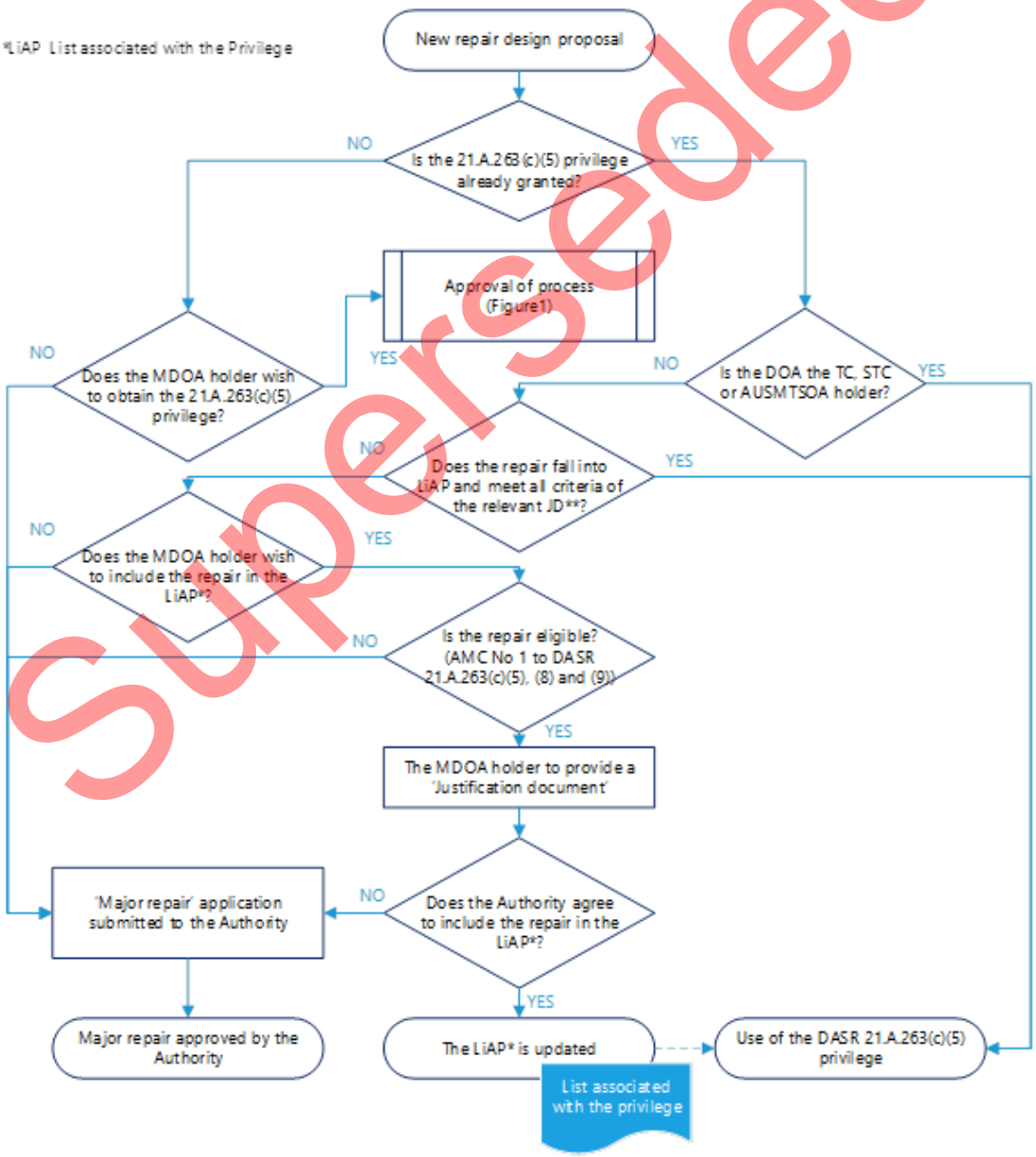


Figure 2

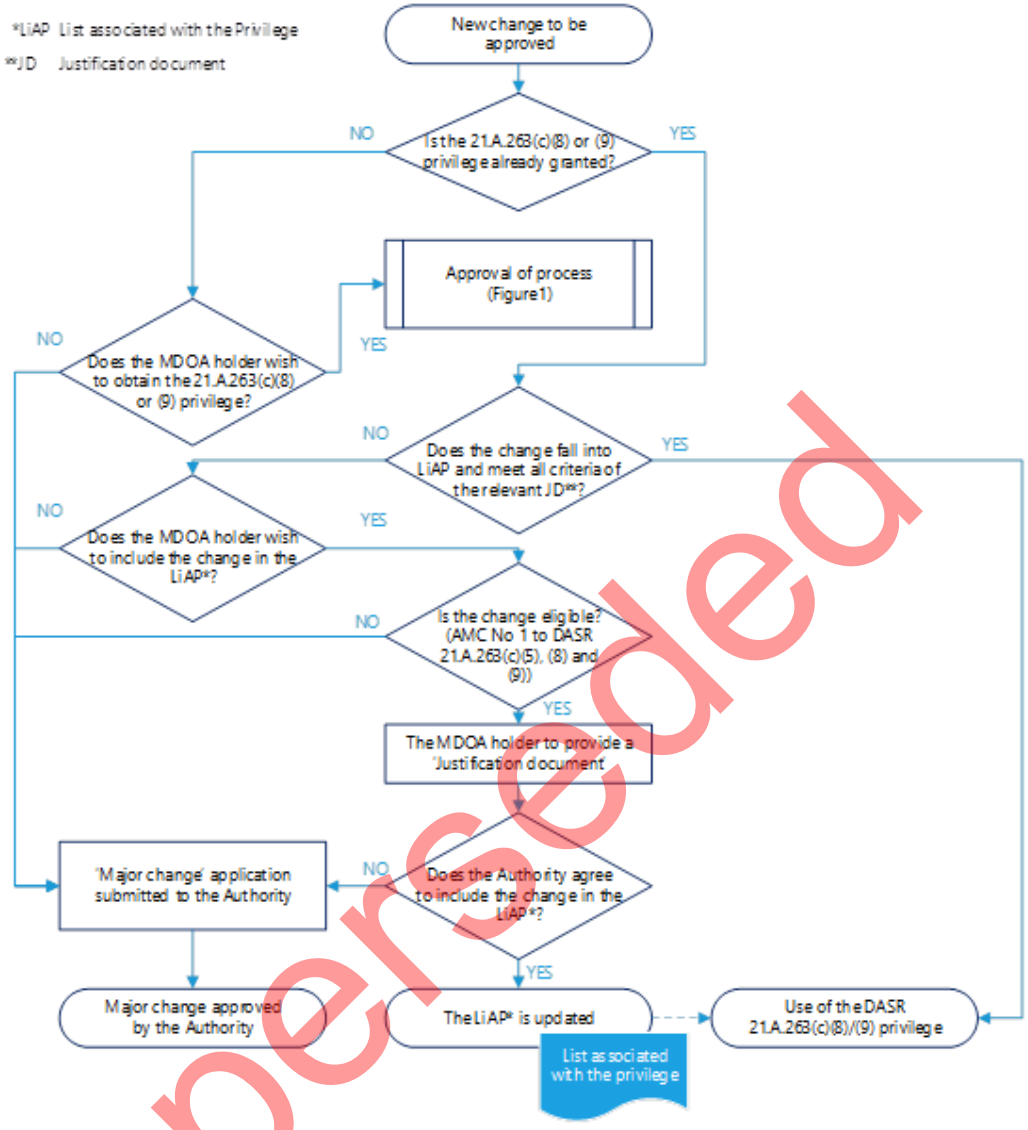


Figure 3

3. TC, STC OR APU AUSMTSOA HOLDER APPROVAL OF A MAJOR REPAIR UNDER A MAJOR REPAIR PRIVILEGE — SPECIFIC CONSIDERATIONS

TC, STC or APU AUSMTSOA MDOA holders that intend to approve a major repair design under the privilege of DASR 21.A.263(c)(5) should ensure that:

(a) the type-certification basis for the product, part or appliance to be repaired is identified, together with all the other relevant requirements;

(b) all the records and substantiation data, including the documents that demonstrate compliance with all the relevant requirements, are provided to the Authority for review; and

(c) for repair designs created for a specific product serial number, an assessment is made as to whether or not the repair design is affected by the presence of any embodied STC, change or repair.

4. MDOA HOLDER'S APPROVAL BASED ON THE PRIVILEGE FOR A MAJOR REPAIR, MAJOR CHANGE OR STC — SPECIFIC CONSIDERATIONS

For the approval of:

– major repairs by MDOA holders that are not the TC, STC or APU AUSMTSO authorisation holders;

– major changes; and

– STCs

by a MDOA holder under the privilege of DASR 21.A.263(c)(5), (8) and (9), the following should be considered.

4.1 Eligibility of the proposed major repair, major change or STC

The MDOA holder should assess the proposed major repair, major change or STC against the 'list associated with the privilege' and the 'justification document' of 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates' in order to determine whether the criteria of AMC1 DASR 21.A.263(c)(5), (8) and (9) are met.

4.2 Forms for approval certificates

For the issuance of an approval under their privilege the MDOA holder should use forms provided by the Authority.

If such forms are not available or if the MDOA holder chooses to use their own forms, it must be ensured that at least the information as requested by the Authority is presented.

4.3 Approval under the MDOA holder's privilege

When the MDOA holder makes use of the privilege of DASR 21.A.263(c)(5), (8) or (9), they should include the following in the certification data package:

– a record of the assessment as described in 4.1 above;

– the reference to the 'justification document';

– the applicable product configuration;

– the applicable airworthiness requirements or environmental protection requirements and methods of compliance;

– the compliance documents;

– the effects, if any, on limitations and on the approved documentation;

– the evidence of the independent checking of the compliance demonstration;

– the approval document containing the statement of the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9) by an authorised signatory; and

– the date of approval.

In any case, before the major change, STC or major repair is approved under the MDOA privilege, the MDOA holder should ensure that the Part 21 requirements, in particular DASR 21.A.97, 21.A.115 and 21.A.433, are met.

4.4 Authorised signatories

An authorised person that is identified and authorised as described in Section 1(b)(4) above should sign the approval under the privilege of DASR 21.A.263(c)(5), (8) and (9).

4.5 Summary list

The MDOA holder should add to the 'summary list' as described in Section 1(b)(4) above the major change, STC or major repair approved under the privilege of DASR 21.A.263(c)(5), (8) and (9).

AMC1 21.A.263(c)(5), (8) and (9) - Scope and criteria

1. Definition of 'certain major repairs'

'Certain major repairs' for which privileges may be granted as per DASR 21.A.263(c)(5) are:

(a) major repairs to products or auxiliary power units (APUs) for which the military design organisation approval (MDOA) holder holds the type certificate (TC) or the supplemental type certificate (MSTC) or the Australian Military technical standard order authorisation (AUSMTSOA); or

(b) major repairs to products or APUs for which the MDOA holder does not hold the TC or the STC or AUSMTSOA and that meet the criteria of 3(a), (b) and (c) below.

1.1 Criteria for limitations on eligibility

An Authority approval may be required in cases of major repairs proposed by MDOA holders who are the MTC, MSTC or APU AUSMTSOA holders if the major repair is:

(a) related to a new interpretation of any item of the certification basis as used for the type certification (such as the airworthiness requirements, certification review items for special conditions, equivalent safety findings, deviations or 'elect to comply'); and

(b) related to the application of an airworthiness code or standard that is different from the one used for type certification.

Note: This should be established at the time of granting the privilege to the MDOA holder, or later through an Authority-agreed procedure.

2. Definition of 'certain major changes' and 'certain supplemental type certificates'

'Certain major changes' and 'certain supplemental type certificates' for which privileges may be granted as per DASR 21.A.263(c)(8) and (9) are changes similar to those that have been previously approved by the Authority for the same MDOA holder.

The similarity of the changes is to be seen in terms of the design, the installation, and the operational characteristics, whereas their repetitiveness is seen in terms of the applicable requirements and the compliance demonstration.

In this context, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

2.1 Criteria for limitations on eligibility

The following types of changes are not eligible:

(a) changes that require a revision to a type certificate data sheet (TCDS) (e.g. the introduction of a derivative model or variant) or a type certificate data sheet for noise (TCDSN);

(b) changes that require an amendment to the existing certification basis by a special condition, equivalent safety finding, deviation or 'elect to comply';

(c) changes that revise airworthiness limitations or operating limitations, unless otherwise agreed with the Authority;

(d) changes that are intended to be used as alternative method of compliance (AMOC) to an airworthiness directive (AD);

(e) changes that are made mandatory by an AD or that are the terminating action of an AD;

(f) changes that are classified as 'significant' in accordance with DASR 21.A.101;

(g) changes for which, in the affected area and for the operations for which the design is to be certified, more conservative airworthiness requirements are applicable which were not used in the description of the Authority-approved procedure of the MDOA holder, e.g. in the case of a type, model or modification with a later, more stringent certification basis;

(h) changes that affect the noise and/or emissions characteristics of the changed product, unless otherwise agreed with the Authority;

(i) changes that affect a part or system, a single failure of which may have a catastrophic effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity;

(j) changes to engines or propellers, a single failure of which may have a hazardous effect upon the product, and for which critical characteristics have been identified, which should be controlled to ensure the required level of integrity; and

(k) changes for which a non-compliance has been found in the referenced change during the continued-airworthiness process.

3. Criteria for major repairs, major changes and STCs for which the privileges of DASR 21.A.263(c)(5), (8) and (9) may be granted

The following criteria need to be met:

(a) Similarity

The installation on the product, the design, the operation, and the equipment qualification are basically the same as in projects for which the Authority has already been involved and issued an approval for the same MDOA holder.

(b) Repetitiveness of the certification process

The whole certification process is repetitive, i.e. identical to, or part of, an already approved referenced process. For a change or repair that is a part of the referenced 'certain major repairs', 'certain major changes' or 'certain supplemental type certificates', the certification process is still identical to the one for the affected change. This is the case when each compliance demonstration is performed to the same extent in accordance with the same requirements, GM, and content of the interpretative material, as well as with the same means and method of compliance (not only the same means-of-compliance (MoC) code).

Note: In this AMC, a 'requirement' means any element of the type-certification basis as specified in DASR 21.A.17A, or the environmental protection requirements (where applicable) as specified in DASR 21.A.18.

(c) Performance and experience in previous projects

To demonstrate 'similarity' and 'repetitiveness, the Authority should have classified the level of performance of the organisation as 'medium' or 'high' during at least the latest project referenced.

In addition, the Authority should have classified the likelihood of an unidentified non-compliance as 'low' or 'very low' for all the included compliance demonstration items (CDIs) identified in at least the latest project referenced, to demonstrate 'similarity' and 'repetitiveness' (applying the criteria for the determination of the Authority's level of involvement (LoI) in product certification, see DASR AMC 21.A.15(b)(6)

The process to obtain and to use the privileges of DASR 21.A.263(c)(5), (8) and (9) is described in AMC2 to DASR 21.A.263(c)(5), (8) and (9).

(d) For a military product derived from a civil type certified product, the holder of a MDOA or holder of a MTC approved organisation shall be entitled, within its terms of approval and under the relevant procedures of the design assurance system:

1. To declare the applicability, through validation of no impact to the military certification basis and the intended use, of the following when it is has already been approved by a recognised civil aviation authority: ▸ **AMC** ▸ **AMC1**

AMC1 21.A.263(d)(1) Declaration of applicability for a holder of a type certificate (AUS)

1. Intent

This acceptable means of compliance provides means for a military type certificate holder to obtain the associated privileges under DASR 21.A.263(d)(1) to declare the applicability of a modification, or of an instruction for continuing airworthiness, or of a modification to the flight manual or of a modification to the maintenance manual, as relevant, when it is already approved by a recognised Civil Aviation Authority (CAA), to a product derivate that is ostensibly equivalent to the civil type certified product.

Note: Ostensibly equivalent relates to having the configuration, role and operating environment predominately the same – where changes between types are:

– few in nature,

– easily identified,

– simple to understand and

– considered to have no appreciable effect on airworthiness

2. Procedure for declaring the applicability

In order to obtain the associated DASR 21.A.263(d)(1) privilege for a scope of derivative product, an applicant should respect the following conditions:

a. Agree with the authority the procedures to assess within the scope of its organisational capability per DASR 21.A.14(c), a modification, or an instruction for continuing airworthiness, or a modification to the flight manual or a modification to the maintenance manual being already approved by a recognised CAA. Such procedures shall include obtaining the ICA and manuals related to the change and addressing any caveats or conditions of the CAA recognition.

b. Develop its own internal procedure addressing the following points as agreed with the Authority:

i. confirm the certification is within the scope, conditions and caveats specific to DASA Recognition of the certifying CAA;

ii. identification of any CRE deltas requiring assessment;

iii. confirm no CRE delta impacts applicability of the CAA approved product;

iv. document to formalize the declaration of applicability and conditions;

v. records.

c. Assessment results should be documented and recorded. These records should be easily accessible to the Authority for sample check.

d. The declaration of applicability should be signed by an appropriate authorised signatory.

AMC 21.A.263(d)(1) - Declaration of applicability

1. **Intent**

This acceptable means of compliance provides means for an MDOA applicant to obtain the associated privileges under DASR 21.A.263(d)(1) to declare the applicability of a modification, or of an instruction for continuing airworthiness, or of a modification to the flight manual or of a modification to the maintenance manual, as relevant, when it is already approved by a recognised civil aviation authority, to a product derivate from a civil type certified product.

2. **Procedure for declaring the applicability**

In order to obtain the associated DASR 21A.263(d)(1) privilege for a scope of derivative product, an MDOA applicant should respect the following conditions:

a) Agree with the authority the procedures to evaluate within the scope of its DASR 21 MDOA a modification, or an instruction for continuing airworthiness, or a modification to the flight manual or a modification to the maintenance manual being already approved by a recognised civil aviation authority. Such procedures shall include necessary arrangements with the civil DOA to ensure access to the data related to the type design.

b) Develop its own internal procedure addressing the following points as agreed with the Authority:

i. Identification of the derivative delta to be assessed:

- type design definition including modifications
- operational characteristics
- performances
- limitation
- certification requirements
- means of demonstration of compliance

ii. Impact assessment

iii. Document to formalise the declaration of applicability and conditions

iv. Records.

c) Assessment results should be documented and recorded. These records should be easily accessible to the Authority for sample check.

d) The declaration of applicability should be signed by an appropriate authorised signatory.
In case further investigation is needed for analysis of impact due to STC or because the specific configuration is not known by the applicant, the applicant will provide the data requested by the Authority for complementary analysis.

i. a modification; or

ii. an instruction for continuing airworthiness; or

iii. revisions to the flight manual; or

iv. revisions to the maintenance manual.

2. To approve the following, when it is has already been approved by a recognised civil aviation authority and when it has been declared to be applicable to the military product: ▸ **AMC** ▸ **AMC1**

AMC 21.A.263(d)(2) - Approval

1. **Intent**

This acceptable means of compliance provides means for an MDOA applicant to obtain the associated privileges under DASR 21.A.263(d)(2) to approve a major modification, or the approved parts of the maintenance manual, or of the flight manual, and their evolutions, when it is already approved by a recognised civil aviation authority and when it has been declared applicable to the product derivate from the civil type certified product.

Applying this privilege implies that no additional work to show compliance to the (military) airworthiness requirements is needed.
In case the applicability to the specific definition of the derivative needs further demonstration of compliance (ie the assessment of "no impact" is not confirmed) the applicant will apply the relevant procedures of its military design assurance system for getting approval of the change.

Approval of minor changes is to be considered under relevant privileges DASR 21.A.263(c)(2).

2. **Procedure for approving**

In order to obtain the associated DASR 21A.263(d)(2) privilege, a MDOA applicant should comply with the following:

a) The conditions related to privileges DASR 21.A263(d)(1)

b) Its own internal approval procedure as agreed by the Authority

In addition, the applicant should:

c) Define how the approval under the MDOA privilege will be formalized and how the link with the civil approval is made visible

d) Provide records and substantiation data including documents showing compliance with the airworthiness requirements required for the civil approval, to the Authority when requested.

e) Maintain a summary list of approvals under this privilege to the Authority on a regular basis as agreed with the Authority.

AMC1 21.A.263(d)(2) Approval for a holder of a type certificate (AUS)

1. Intent

This acceptable means of compliance provides means for a military type certificate holder to obtain the associated privileges under DASR 21.A.263(d)(2) to approve a major modification, or the approved parts of the maintenance manual, or of the flight manual, and their evolutions, when it is already approved by a recognised Civil Aviation Authority (CAA) and when it has been declared applicable to the product derivate that is ostensibly equivalent to the civil type certified product.

Applying this privilege implies that no additional work to show compliance to the (military) airworthiness requirements are needed.

Approval of minor changes is to be considered under relevant privileges DASR 21.A.263(c)(2).

5. Procedure for Approving

In order to obtain the associated DASR 21A.263(d)(2) privilege, an applicant should comply with the following:

a. The conditions related to privileges DASR 21.A263(d)(1)

b. Its own internal approval procedure as agreed by the Authority

In addition, the applicant should:

d. Define how the approval under the organisation privilege will be formalized and how the link with the civil approval and applicability declaration completed under DASR 21.A.263 (d)(1) is made visible

e. Maintain a summary list of approvals under this privilege to the Authority on a regular basis as agreed with the Authority.

i. a major modification; or

ii. revisions to the flight manual; or

iii. revisions to the approved sections of the maintenance manual.

21.A.265 - Obligations of the holder

The holder of a design organisation approval shall, within the scope of its terms of approval, as established by the Authority:

(a) maintain the handbook required under DASR 21.A.243 in conformity with the design assurance system; ▸ **AMC**

AMC 21.A.265(a) - Administration of the Handbook (Military Design Organisation Exposition)

1. The handbook (Military Design Organisation Exposition) of the applicant must be in the language which will permit the best use of it by all personnel charged with the tasks

performed for the purpose of the design organisation. The applicant may be requested to provide an English translation of the handbook and other supporting documents as necessary for the investigation.

2. The handbook should be produced in a concise form with sufficient information to meet DASR 21.A.243 relevant to the scope of approval sought by the applicant. The handbook must include the following:

   a. Organisation name, address, telephone, telex and facsimile numbers.

   b. Document title, and company document reference No (if any).

   c. Amendment or revision standard identification for the document.

   d. Amendment or revision record sheet.

   e. List of effective pages with revision/date/amendment identification for each page.

   f. Contents list or index.

   g. A distribution list for the handbook.

   h. An introduction, or foreword, explaining the purpose of the document for the guidance of the organisation's own personnel. Brief general information concerning the history and development of the organisation and, if appropriate, relationships with other organisations which may form part of a group or consortium, should be included to provide background information for the Authority.

   i. The certificate of approval should be reproduced in the document.

   j. Identification of the department responsible for administration of the handbook.

   NOTE: In the case of an initial or revised approval it is recognised that certificate will be issued after Authority agreement to the handbook content in draft form. Arrangements for formal publication in a timely manner should be agreed before the certificate of approval is issued.

3. An updating system should be clearly laid down for carrying out required amendments and modifications to the handbook.

4. The handbook may be completely or partially integrated into the company organisation manual. In this case, identification of the information required by DASR 21.A.243 should be provided by giving appropriate cross references, and these documents should be made available, on request, to the Authority.

(b) ensure that this handbook or relevant procedures included by cross-reference are used as a basic working document within the organisation; ▸ **GM**

GM 21.A.265(b) - Use of the Handbook (Military Design Organisation Exposition)

1. The handbook should be signed by the Chief Executive and the Head of the design organisation and declared as a binding instruction for all personnel charged with the development and type investigation of products.

2. All procedures referenced in the handbook are considered as parts of the handbook and therefore as basic working documents.

(c) determine that the design of products, or changes or repairs thereof, comply with applicable specifications and requirements and have no unsafe feature;

(d) provide to the Authority statements and associated documentation confirming compliance with paragraph (c), except for approval processes carried out in accordance with DASR 21.A.263(c);

(e) provide to the Authority data and information related to required actions under DASR 21.A.3B;

(f) determine, in accordance with DASR 21.A.263(c)(6), the flight conditions under which a military permit to fly can be issued; and

(g) establish, in accordance with DASR 21.A.263(c)(7), compliance with DASR 21.A.711(b) and DASR 21.A.711(e) before issuing a military permit to fly (DASR Form 20b - Military Permit to Fly (Approved Organisation)), for an aircraft.

(h) designate data and information issued under the authority of the approved design organisation within the scope of its terms of approval as established by the Authority with the following statement: "The technical content of this document is approved under the authority of the MDOA ref. [3-letter designation of country].[Military Authority].21J.[XXXX]". ▸ GM

GM 21.A.265(h) Designation of data and information issued under the authority of a military design organisation approval (MDOA) holder

1. INTENT

This GM provides guidance for complying with the obligation of DASR 21.A.265(h), and addresses the various aspects that the MDOA holder should cover in order to have a comprehensive procedure for the designation of data and information.

2. SCOPE

The term 'data and information' as used in DASR 21.A.265(h) also includes instructions.

Data and information referred to in DASR 21.A.265(h) are issued by a MDOA holder and cover the following:

– embodiment instructions for design changes or repairs (usually in the form of a service bulletin, a modification bulletin, repair instructions or engineering order, etc.);

– manuals required by DASR 21 or the applicable airworthiness codes and standards (such as the aircraft flight manual (AFM), instructions for continued airworthiness (ICAs), etc.);

– (reserved);

– continued-airworthiness instructions (usually in the form of service bulletins) which may be covered by airworthiness directives (ADs);

– additional data to be defined by the MDOA holder (eg alternative maintenance instructions that are not, per se, ICAs).

Note: This data and information may be issued in a digital or paper format.

The obligation does not apply to, and the statement provided with the data and information should not be used on, the following documents:

– certification documents (eg the certification programme, compliance checklist, etc.);

– compliance documents;

– design data transferred to production organisations; and

– production deviations (also referred to as 'unintended deviations' or 'concessions').

3. RATIONALE

The purpose of this obligation is to give certainty to the end users about the approval status of the data and information issued by the MDOA holder.

4. STATEMENT

The statement provided with the data and information should also cover those items prepared by subcontractors or vendors that the MDOA holder has declared as applicable to their products. The technical content of the statement is related to the type certificate data and information.

The approval included in the statement means that:

– the type certificate data has been appropriately approved; and

– the information contains practical and well-defined installation or inspection methods, and, when those methods are implemented, the product is in conformity with the approved type certificate data.

Note: Data and information related to the measures required by DASR 21.A.3B(b) (airworthiness directives (ADs)) are submitted to the Authority to ensure their compatibility with the content of an AD (see DASR 21.A.265(e)), and contain a statement that they are, or will be, subject to an AD issued by the Authority.

SUBPART K - PARTS AND APPLIANCES

21.A.301 - Scope

This Subpart establishes the procedure relating to the approval of parts and appliances. ▸ **GM**

GM 21.A.301 - Scope

Parts and appliances can include Government Furnished Equipment (GFE).

21.A.303 - Compliance with applicable requirements

The showing of compliance of parts and appliances to be installed in a type-certificated product shall be made:

(a) In conjunction with the type-certification procedures of DASR 21 Subpart B, D or E for the product in which it is to be installed; or

(b) Where applicable, under the AUSMTSO authorisation procedures of DASR 21 Subpart O; or

(c) In the case of standard parts, in accordance with officially recognised Standards; or ▸ **AMC** ▸ **GM**

GM 21.A.303(c) - Officially Recognised Standards

In this context 'officially recognised Standards' means:

a. Those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice.

b. The standard used by the manufacturer of the equipment as mentioned in DASR AMC 21.A.303(c).

AMC 21.A.303(c) - Standard Parts

The definition of 'Standard Parts' is included in the Glossary.

Equipment which must be approved in accordance with certification requirements is not considered a standard part.

(d) For specific equipment not subject to recognised airworthiness standards covered by the above and which has been demonstrated to the Authority not to adversely affect the airworthiness of the aircraft, in accordance with integration or installation requirements at aircraft level. ▸ **AMC** ▸ **GM**

GM 21.A.303(d) - Specific Equipment (AUS)

Purpose

The purpose of this sub-clause is to:

a. streamline the integration of certain equipment onto a type-certificated product; and

b. avoid unnecessarily strict requirements being applied to organisations designing, producing and maintaining such equipment.

Criteria

An item may be considered as specific equipment under this sub-clause if it is:

a. Installed in or attached to the aircraft for operation in flight; and

b. Not essential in order for the aircraft to comply with the applicable airworthiness standards; and

c. Not able to control equipment or systems that are essential in order for the aircraft to comply with the applicable airworthiness standards.

Treatment of parts and appliances under DASR 21.A.303(d)

During a change to the type-design an MDO may identify parts or appliances within the type-design that have been previously approved under DASR 21.A.303(a) but for which demonstration of compliance evidence under DASR 21.A.303(d) is suitable. In those cases, that part or appliance may be treated in accordance with DASR 21.A.303(d).

Where an MDO requires clarification in regards to the applicability of airworthiness standards to a part or appliance, the relevant MTC holder should be approached to provide clarification.

AMC 21.A.303(d) - Specific Equipment (AUS)

The integration of specific equipment under this sub-clause should:

a. Occur within an appropriate design process in accordance with DASR 21 Subpart B, D or E where the demonstration 'not to adversely affect the airworthiness of the aircraft' is conducted via development and validation of compliance demonstration evidence against aircraft TCB elements affected by the integration, for example - crashworthiness, EMI / EMC, power draw requirements, mass and balance, and flammability.

b. Include the establishment of configuration management arrangements to ensure:

   i. the MTC holder is aware of any modifications or repairs made to the specific equipment design where those changes may affect the airworthiness of the aircraft, and

   ii. the physical items of the specific equipment are appropriately marked with sufficient information to enable the CAMO to clearly identify items that are approved for installation in the aircraft.

c. Define the document(s) that the CAMO or 145 maintenance organisation may accept as evidence that the equipment is eligible for installation in the aircraft and is serviceable when released from maintenance or production.

21.A.305 - Approval of parts and appliances

In all cases where the approval of a part or appliance is explicitly required by this DASR or Authority procedures, the part or appliance shall comply with the applicable AUSMTSO or with the specifications recognised as equivalent by the Authority in the particular case.

21.A.307 - Release of parts and appliances for installation

▸ **AMC**

AMC 21.A.307 - Release of parts and appliances for installation (AUS)

Controls shall be established to ensure that aviation software is installed in the required configuration and verified to be installed correctly.

A part or appliance shall be eligible for installation in a type certificated product when it is in a condition for safe operation, and it is:

(a) Accompanied by an authorised release certificate (DASR Form 1—Authorised Release Certificate), certifying that the item was manufactured in conformity to approved design data and is marked in accordance with DASR 21 Subpart Q,

(b) A standard part, or

(c) Specific equipment referred to in DASR 21.A.303(d).

SUBPART L - (NOT APPLICABLE)

SUBPART M - REPAIRS

21.A.431A - Scope

▸ **GM**

GM 21.A.431A - Scope

Manuals and other instructions for continuing airworthiness (such as the Manufacturers Structural Repair Manual, Maintenance Manuals and Engine Manuals provided by the holder of the type-certificate, supplemental type-certificate, design approval or Auxiliary Power Unit (APU) AUSMTSO authorisation as applicable) for operators, contain useful information for the development and approval of repairs.

When these data are explicitly identified as approved, they may be used by operators without further approval to cope with anticipated in-service problems arising from normal usage provided that they are used strictly for the purpose for which they have been developed.

Approved data is data which is approved either by the Authority, or by an appropriately approved design organisation.

Repairs approved under the framework of a recognised CAA/MAA may be implemented subject to the conditions in the relevant recognition certificate IAW DASR M.A.304(d) and without further approval under DASR 21 Subpart M.

(a) This Subpart establishes the procedure for the approval of a repair design of a product, part or appliance, and establishes the rights and obligations of the applicants for, and holders of, those approvals.

(b) Reserved.

(c) A 'repair' means elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part or appliance.

(d) The elimination of damage by replacement of parts or appliances without the necessity for design activity shall be considered as a maintenance task and shall therefore require no approval under this DASR.

(e) A repair to an AUSMTSO article other than an Auxiliary Power Unit (APU) shall be treated as a change to the AUSMTSO design and shall be processed in accordance with DASR 21.A.611. ▸ **GM**

GM 21.A.431A(e) - Repairs to Australian military technical standard order (AUSMTSO) articles other than an APU

A repair to an AUSMTSO article, other than an Auxiliary Power Unit (APU), can either be seen:

1. Under DASR 21.A.611, in the context of an AUSMTSO authorisation, i.e., when an article as such is specifically approved under DASR 21 Section A Subpart O, with dedicated rules that give specific rights and obligations to the designer of the article, irrespective of any product type design or change to the type design. For a repair to such an article, irrespective of installation on any aircraft, DASR 21 Section A Subpart O, and DASR 21.A.611 in particular, should be followed; or

2. When a DASR 145 / DASR M organisation is designing a new repair (based on data not published in the MTC holder or Original Equipment Manufacturer documentation) on an article installed on an aircraft, such a repair can be considered as a repair to the product in which the article is installed, not to the article taken in isolation. Therefore DASR 21 Section A Subpart M can be used for the approval of this repair that will be identified as 'repair to product x affecting article y', but not 'repair to article y'.

(f) In this Subpart, the references to type-certificates include type-certificates and restricted type-certificates.

21.A.431B - Standard repairs

(Reserved)

21.A.432A - Eligibility

(a) Any organisation that has demonstrated, or is in the process of demonstrating, its capability according to DASR 21.A.432B shall be eligible as an applicant for a major repair design approval under the conditions laid down in this Subpart.

(b) Any organisation shall be eligible to apply for approval of a minor repair design.

21.A.432B - Demonstration of capability

▸ **GM**

GM 21.A.432B – Alternative procedures

See DASR AMC 21.A.14(b) for the details of alternative procedures.

(a) An applicant for a major repair design approval shall demonstrate its capability by holding a military design organisation approval (MDOA), issued by the Authority in accordance with DASR 21 Subpart J.

(b) By way of exception from paragraph (a), as an alternative procedure to demonstrate its capability, an applicant may seek Authority agreement for the use of procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this Subpart.

(c) By way of exception from paragraph (a) any government organisation applying for a major repair design approval may demonstrate its capability in accordance with DASR 21.A.2 and DASR 21.A.14(c), including demonstration of compliance with DASR 21.A.451.

21.A.432C - Application for a repair design approval

(a) An application for a repair design approval shall be made in a form and manner established by the Authority. ▸ **AMC**

AMC 21.A.432C(a) - Form and manner

Notification of an intended major repair requiring Authority approval can be made using DASR Form 31 – Notification of Major Change/Major Repair. Submission of DASR Form 31 initiates dialogue that enables the Authority to guide the applicant through the major repair approval process. Application for approval of a major repair design should be made using DASR Form 31b.

Showings of compliance may leverage prior certification by a recognised CAA/MAA in accordance with AMC to DASR 21.A.20. The requirement for a detailed CP is determined in consultation with the Authority. In the case of major repairs, if long and complex compliance demonstration activities are deemed to not be required, the CP can be submitted in simplified form as part of the application.

(b) An application for a major repair design approval shall include, or be supplemented after the initial application by, a certification programme containing:

1. a description of the damage and repair design identifying the configuration of the type design upon which the repair is made; ▸ **AMC**

AMC 21.A.432C(b)(1) – Description

The description of the repair should consist of:

– the pre- and post-repair configuration;

– a drawing or outline of the repair;

– a list of the detailed features;

– a description of the type and extent of the inspection; and

– an outline of the damage.

2. an identification of all areas of the type design and the approved manuals that are changed or affected by the repair design;

3. an identification of any reinvestigations necessary to demonstrate compliance of the repair design and areas affected by the repair design with the type-certification basis incorporated by reference in, as applicable, either the type-certificate, the supplemental type-certificate or the APU AUSMTSO authorisation; ▸ **AMC**

AMC 21.A.432C(b)(3) – Identification of reinvestigations

The identification of reinvestigations does not refer to the demonstration of compliance itself, but to the list of the affected airworthiness requirements, together with the means of compliance.

4. any proposed amendments to the type-certification basis incorporated by reference in, as applicable, either the type-certificate, the supplemental type-certificate or the APU AUSMTSO authorisation;

5. a proposal for a breakdown of the certification programme into meaningful groups of compliance demonstration activities and data, including the means and process proposed to be followed to demonstrate compliance with DASR 21.A.433(a)(1) and references to related compliance documents;

6. a proposal for the assessment of the meaningful groups of compliance demonstration activities and data, addressing the likelihood of an unidentified non-compliance with the type-certification basis and the potential impact of that non-compliance on product safety; and ▸ **AMC**

AMC 21.A.432C(b)(6) – Level of involvement (AUS)

The proposed assessment shall take into account at least the following elements:

1. novel or unusual features of the certification project, including operational, organisational and knowledge management aspects;

2. complexity of the design and/or demonstration of compliance;

3. criticality of the design or technology and the related safety and environmental risks, including those identified on similar designs; and

4. performance and experience of the design organisation of the applicant in the domain concerned.

Based on this assessment, the application shall include a proposal for the involvement of the Authority in the verification of the compliance demonstration activities and data.

7. the specification whether the certification data is prepared completely by the applicant or on the basis of an arrangement with the owner of the type-certification data.

21.A.433 - Requirements for a repair design

(a) A repair design shall only be approved: ▸ **AMC**

AMC 21.A.433(a) - Repair design and record keeping

1. Relevant substantiation data associated with a new major repair design and record keeping should include:

   a. the identification of the damage and the reporting source;

   b. the major repair design approval sheet identifying the applicable specifications and references of justifications;

   c. the repair drawing and/or instructions and scheme identifier;

   d. the correspondence with the holder of the military type certificate (MTC), military supplemental type certificate (MSTC), or auxiliary power unit Australian military technical standard order (APU AUSMTSO) authorisation, if its advice on the design has been sought;

   e. the structural justification (static strength, fatigue, damage tolerance, flutter, etc.) or references to this data;

   f. the effect on the aircraft, engines and/or systems (performance, flight handling, etc., as appropriate);

   g. the effect on the maintenance programme;

   h. the effect on airworthiness limitations, the flight manual and the operating manual;

   i. any weight and moment changes; and

   j. special test requirements.

2. Relevant minor repair documentation includes paragraphs 1(a) and (c). Other points of paragraph 1 may be included where necessary. If the repair is outside the approved data, a justification for the classification is required.

3. Special consideration should be given to repairs that impose subsequent limitations on the part, product or appliance (e.g. engine turbine segments that may only be repaired a finite number of times, the number of repaired turbine blades per set, oversizing of fastener holes, etc.).

4. Special consideration should also be given to life-limited parts and critical parts, notably with the involvement of the MTC or MSTC holder, when deemed necessary under 21.A.433(a)(4).

5. Repairs to engine or APU critical parts would normally only be accepted with the involvement of the MTC holder.

1. when it has been demonstrated, following the certification programme referred to in DASR 21.A.432C(b), that the repair design complies with the type-certification basis incorporated by reference in, as applicable, either the type-certificate, the supplemental type-certificate or the APU AUSMTSO authorisation, as well as with any amendments established and notified by the Authority; ▸ **GM**

GM 21.A.433(a)(1) – Notification by the Authority (AUS)

The Authority may designate any amendments to the type-certification basis incorporated by reference in, as applicable, either the type-certificate, the supplemental type-certificate or the APU AUSMTSO authorisation, which the Authority considers necessary for maintaining a level of safety equal to that previously established and notify them to the applicant for a repair design.

2. when compliance with the type-certification basis that applies in accordance with (a)(1) has been declared and the justifications of compliance have been recorded in the compliance documents;

3. when no feature or characteristic has been identified that may make the product unsafe for the uses for which certification is requested; and

4. where the applicant has specified that it provided certification data on the basis of an arrangement with the owner of the type-certification data in accordance with DASR 21.A.432C(b)(7):

   i. when the holder has indicated that it has no technical objection to the information submitted under (a)(2); and

   ii. when the holder has agreed to collaborate with the repair design approval holder to ensure discharge of all obligations for continued airworthiness of the changed product through compliance with DASR 21.A.451.

(b) The applicant shall submit to the Authority the declaration referred to in (a)(2). and, on request by the Authority, all necessary substantiation data.

21.A.435 - Classification and approval of repair designs

(a) A repair design shall be classified as either "major" or "minor" in accordance with the criteria set out in DASR 21.A.91 for a change to the type-certificate. ▸ **GM**

GM 21.A.435(a) - Classification of repairs

1. Clarification of the terms major/minor

In line with the definitions given in DASR 21.A.91, a new repair is classified as 'major' if the result on the approved type design has an appreciable effect on structural performance, weight, balance, systems, operational characteristics or other characteristics affecting the airworthiness of the product, part or appliance. In particular, a repair is classified as major if it needs extensive static, fatigue and damage tolerance strength justification and/or testing in its own right, or if it needs methods, techniques or practices that are unusual, (i.e., unusual material selection, heat treatment, material processes, jigging diagrams, etc).

Repairs that require a re-assessment and re-evaluation of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements, are to be considered as major repairs.

Repairs whose effects are considered minor and require minimal or no assessment of the original certification substantiation data to ensure that the aircraft still complies with all the relevant requirements, are to be considered 'minor'.

It is understood that not all the certification substantiation data will be available to those persons/organisations classifying repairs. A qualitative judgement of the effects of the repair will therefore be acceptable for the initial classification. The subsequent review of the design of the repair may lead to it being re-classified, owing to early judgements being no longer valid.

2. Airworthiness concerns for major/minor classification

The following should be considered for the significance of their effect when classifying repairs. Should the effect be considered to be significant then the repair should be classified 'major'. The repair may be classified as 'minor' where the effect is known to be without appreciable consequence.

(i) Structural performance

Structural performance of the product includes static strength, fatigue, damage tolerance, flutter and stiffness characteristics. Repairs to any element of the structure should be assessed for their effect upon the structural performance.

(ii) Weight and balance

The weight of the repair may have a greater effect upon smaller aircraft as opposed to larger aircraft. The effects to be considered are related to overall aircraft centre of gravity and aircraft load distribution. Control surfaces are particularly sensitive to the changes due to the effect upon the stiffness, mass distribution and surface profile which may have an affect upon flutter characteristics and controllability.

(iii) Systems

Repairs to any elements of a system should be assessed for the effect intended on the operation of the complete system and for the effect on system redundancy. The consequence of a structural repair on an adjacent or remote system should also be considered as above, (for example: airframe repair in area of a static port).

(iv) Operational characteristics

Changes may include:

– stall characteristics;

– handling;

– performance and drag;

– vibration.

(v) Other characteristics

– changes to load path and load sharing;

– Reserved

– fire protection/resistance.

NOTE: Considerations for classifying repairs 'major/minor' should not be limited to those listed above.

3. Examples of major repairs:

(i) A repair that requires a permanent additional inspection to the approved maintenance programme, necessary to ensure the continued airworthiness of the product. Temporary repairs for which specific inspections are required prior to installation of a permanent repair do not necessarily need to be classified as 'major'. Also, inspections and changes to inspection frequencies not required as part of the approval to ensure continued airworthiness do not cause classification as 'major' of the associated repair.

(ii) A repair to life limited or critical parts.

(iii) A repair that introduces a change to the Aircraft Flight Manual.

(b) A repair shall be classified and approved by: ▸ **GM**

GM 21.A.435(b) – Repair design approval

(a) REPAIR DESIGN APPROVAL BY DASA

DASA approval is required in cases of major repair designs proposed by military design organisation approval (MDOA) holders that do not hold the necessary privilege as per DASR 21.A.263(c)(5) to approve certain major repair designs, as well as in cases of minor repair designs proposed organisations that do not hold an MDOA. In response to applications (DASR Form 31B – Application for Approval of Major Repair Design), the Authority shall issue all 'major' repair design approvals to the relevant government MTC holder.

DASA may grant the applicant relief from some or all showings of compliance if the repair design has been previously approved by a recognised CAA / MAA and is suitable for the Defence CRE.

(b) REPAIR DESIGN APPROVAL BY THE MDOA HOLDER

(1) Approval by the MDOA holder

Approval of repairs through the use of procedures agreed with DASA implies that the MDOA holder issues the approval without DASA's involvement. DASA will monitor the application of this procedure within the surveillance plan for the relevant organisation. When the organisation exercises this privilege, the repair release documentation should clearly show that the approval is issued on the basis of its privilege.

(2) Previously approved data for other applications

When it is intended to use previously approved data for other applications, it is expected that an appropriately approved design organisation has checked the applicability and effectiveness of this data. After damage identification, if a repair solution exists in the available approved data, and if the application of this solution to the identified damage remains justified by the previously approved repair design (structural justifications still valid, possible airworthiness limitations unchanged), the solution may be considered to be approved and may be used again.

(3) Temporary repairs

These are life-limited repairs to be removed and replaced by permanent repairs after a limited service period. These repairs should be classified under point 21.A.435, and the service period should be defined when the temporary repair is approved.

(4) Fatigue and damage tolerance

An approved design issued before the fatigue and damage-tolerance evaluation has been completed, should specify the limited service period.

1. the Authority; or

2. an approved design organisation within the scope of its privileges provided for in (1), (2) and (5) of DASR 21.A.263(c), as recorded in the terms of approval.

21.A.439 - Production of repair parts

Parts and appliances to be used for the repair shall be manufactured in accordance with production data based upon all the necessary design data as provided by the repair design approval holder:

(a) under DASR 21 Subpart F; or

(b) by an organisation appropriately approved in accordance with DASR 21 Subpart G; or

(c) by an appropriately approved maintenance organisation.

21.A.441 - Repair embodiment

(a) The embodiment of a repair shall be made in accordance with DASR 145, or by a production organisation appropriately approved in accordance with DASR 21 Subpart G, in accordance with the privilege provided for in DASR 21.A.163(d).

(b) The design organisation shall transmit to the organisation performing the repair all the necessary installation instructions.

21.A.443 - Limitations

A repair design may be approved subject to limitations, in which case the repair design approval shall include all necessary instructions and limitations. These instructions and limitations shall be transmitted by the repair design approval holder to the operator in accordance with a procedure agreed with the Authority.

21.A.445 - Unrepaired damage

▸ AMC ▸ GM

GM 21.A.445 - Unrepaired damage

This is not intended to supersede the normal maintenance practices defined by the type-certificate holder, (e.g., blending out corrosion and re-protection, stop drilling cracks, etc.), but addresses specific cases not covered in the manufacturer's documentation.

AMC 21.A.445 - Unrepaired damage (AUS)

A repair design approval using the provisions of DASR 21.A.445 can be used to establish that the aircraft is in an airworthy condition provided compliance with the applicable Type Certification Basis (TCB) requirements can be demonstrated. Demonstration of compliance can be subject to limitations such as additional inspections or a limit on the duration of the approval.

For damage to aircraft structure that is left unrepaired, and is not covered by previously approved data, the evaluation of the damage should ensure:

a. The full extent of the damage is known (especially important for corrosion damage and composites materials).

b. Compliance with the strength requirements of the TCB.

c. The limitations account for anticipated damage growth and potential for initiation of secondary damage or failures.

(a) When a damaged product, part or appliance, is left unrepaired, and is not covered by previously approved data, the evaluation of the damage for its airworthiness consequences may only be made:

1. by the Authority; or

2. by an appropriately approved design organisation under a procedure agreed with the Authority.

Any necessary limitations shall be processed in accordance with the procedures of DASR 21.A.443.

(b) Where the organisation evaluating the damage under paragraph (a) is neither the Authority nor the type-certificate or supplemental type-certificate or APU MTSO authorisation holder, this organisation shall justify that the information on which the evaluation is based is adequate either from its organisation's own resources or through an arrangement with the type-certificate, supplemental type-certificate or APU MTSO authorisation holder, or manufacturer, as applicable.

21.A.447 - Record keeping

AMC **AMC1**

AMC1 to 21.A.447 - Record keeping (AUS)

Records should be retained for at least two years after the removal of service of the last aircraft of the type certified.

AMC 21.A.447 - Repair design and record keeping

1. Relevant substantiation data associated with a new major repair design and record keeping should include:

   a. the identification of the damage and the reporting source;

   b. the major repair design approval sheet identifying the applicable specifications and references of justifications;

   c. the repair drawing and/or instructions and scheme identifier;

   d. the correspondence with the holder of the military type certificate (MTC), military supplemental type certificate (MSTC), or auxiliary power unit Australian military technical standard order (APU AUSMTSO) authorisation, if its advice on the design has been sought;

   e. the structural justification (static strength, fatigue, damage tolerance, flutter, etc.) or references to this data;

   f. the effect on the aircraft, engines and/or systems (performance, flight handling, etc., as appropriate);

   g. the effect on the maintenance programme;

   h. the effect on airworthiness limitations, the flight manual and the operating manual;

   i. any weight and moment changes; and

j. special test requirements.

2. Relevant minor repair documentation includes paragraphs 1(a) and (c). Other points of paragraph 1 may be included where necessary. If the repair is outside the approved data, a justification for the classification is required.

3. Special consideration should be given to repairs that impose subsequent limitations on the part, product or appliance (e.g. engine turbine segments that may only be repaired a finite number of times, the number of repaired turbine blades per set, oversizing of fastener holes, etc.).

4. Special consideration should also be given to life-limited parts and critical parts, notably with the involvement of the MTC or MSTC holder, when deemed necessary under 21.A.433(a)(4).

5. Repairs to engine or APU critical parts would normally only be accepted with the involvement of the MTC holder.

For each repair, all relevant design information, drawings, test reports, instructions and limitations possibly issued in accordance with DASR 21.A.443, justification for classification and evidence of the repair design approval, shall:

(a) be held by the repair design approval holder at the disposal of the Authority; and

(b) be retained by the repair design approval holder in order to provide the information necessary to ensure the continued airworthiness of the repaired products, parts or appliances.

21.A.449 - Instructions for continuing airworthiness

AMC **GM**

GM 21.A.449 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) details the methods, inspections, processes, and procedures necessary for the air operator to keep aircraft and / or engine, propeller, parts and appliances airworthy during its intended life.

The contents of ICA can be divided into two categories:

a. an approved airworthiness limitations (AwL) section as defined by the applicable airworthiness codes during the certification process, which forms part of the type design / type-certificate (DASR 21.A.31(a)(3) and DASR 21.A.41):

i. any limitations determined through the certification of the product, and instructions on how to determine that these limits have been exceeded.

ii. any inspection, servicing or maintenance actions determined to be necessary by the certification process.

b. sections that do not contain approved data from the certification process and are not considered as part of type design/type-certificate:

i. any inspection or troubleshooting actions determined to be necessary to establish the nature of faults and the necessary remedial actions.

ii. sufficient general information on the operation of the product to enable an understanding of the instructions in paragraphs (a)(i), (a)(ii), and (b)(i) above.

AMC 21.A.449 - Instructions for Continuing Airworthiness (AUS)

Instructions for Continuing Airworthiness (ICA) shall be distributed in accordance with DASR AMC 21.A.57 – Manuals (AUS).

The system for distributing ICA and their amendments to users shall ensure that:

a. details of the authorised distribution of ICA to each user is recorded; and

b. ICA are accessible to organisations and personnel.

(a) The holder of the repair design approval shall furnish at least one complete set of those changes to the instructions for continuing airworthiness which result from the design of the repair, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable requirements, to each operator of aircraft incorporating the repair. The repaired product, part or appliance may be released back into service before the changes to those instructions have been completed, but this shall be for a limited service period, and in agreement with the Authority. Those changes to the instructions shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. The availability of some manual or portion of the changes to the instructions for continuing airworthiness, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but shall be available before any of the products reaches the relevant age or flight — hours/cycles.

(b) If updates to those changes to the instructions for continuing airworthiness are issued by the holder of the repair design approval after the repair has been first approved, these updates shall be furnished to each operator and shall be made available on request to any other person required to comply with any of the terms of those changes to the instructions. A programme showing how updates to the changes to the instructions for continuing airworthiness are distributed shall be submitted to the Authority.

21.A.451 - Obligations and Australian Military Part Approval (MPA) marking

(a) Each holder of a major repair design approval shall:

1. undertake the obligations:

i. laid down in DASR 21.A.3A, DASR 21.A.3B, DASR 21.A.4, DASR 21.A.439, DASR 21.A.441, DASR 21.A.443, DASR 21.A.447 and DASR 21.A.449;

ii. implicit in the collaboration with the type-certificate or supplemental type-certificate and APU AUSMTSO authorisation holder, under DASR 21.A.433(b), as appropriate.

2. specify the marking, including AUSMPA (Australian Military Part Approval) letters, in accordance with DASR 21.A.804(a).

(b) Except for type-certificate holders or APU AUSMTSO authorisation holders for which DASR 21.A.44 applies, the holder of a minor repair design approval shall:

1. undertake the obligations laid down in DASR 21.A.4, DASR 21.A.447 and DASR 21.A.449; and

2. specify the marking, including AUSMPA letters, in accordance with DASR 21.A.804(a).

SUBPART N - (NOT APPLICABLE)

SUBPART O - AUSTRALIAN MILITARY TECHNICAL STANDARD ORDER AUTHORISATIONS

21.A.601 - Scope

This Subpart establishes the procedure for issuing Australian Military Technical Standard Order (AUSMTSO) authorisations and the rules governing the obligations and privileges of applicants for, or holders of, such authorisations. ▸ GM

GM 21.A.601 - Scope

For the purpose of this Subpart:

a. 'Article' means any part and appliance (including Government Furnished Equipment (GFE)) to be used on military aircraft;

b. 'technical standards and airworthiness specifications' referred to should consider published Technical Standard Orders, including TSO standards issued by the FAA or equivalent, that are accepted by the 'Authority' establishing the minimum performance requirements for the specified articles;

c. An article produced under an AUSMTSO authorisation is an approved article for the purpose of Subpart K.

21.A.602A - Eligibility

Any organisation that produces or is preparing to produce an AUSMTSO article, and that has demonstrated, or is in the process of demonstrating, its capability under DASR 21.A.602B shall be eligible as an applicant for an AUSMTSO authorisation.

21.A.602B - Demonstration of capability

Any applicant for an AUSMTSO authorisation shall demonstrate its capability as follows:

(a) For production, by holding a production organisation approval, issued in accordance with DASR 21 Subpart G, or through compliance with DASR 21 Subpart F procedures; and

(b) For design:

1. For an Auxiliary Power Unit, by holding a design organisation approval, issued by the Authority in accordance with DASR 21 Subpart J;

2. For all other articles, by using procedures setting out the specific design practices, resources and sequence of activities necessary to comply with this DASR. ▸ **AMC**

AMC 21.A.602B(b)(2) - Procedures for AUSMTSO authorisations

1. Scope

A manual of procedures should set out specific design practices, resources and sequence of activities relevant for the specific projects, taking account of DASR 21 requirements.

These procedures should be concise and limited to the information needed for quality and proper control of activities by the applicant/holder, and by the Authority.

2. Management of the AUSMTSO authorisation process

A procedure explaining how the application to the Authority certification process to obtain an AUSMTSO authorisation will be made, should be established.

3. Management of design changes

A procedure taking into account DASR 21.A.611, should be established for the classification and approval of design changes on articles under AUSMTSO authorisation.

Repairs and production deviations from the approved design data

Procedure for the classification and approval of repairs and unintentional deviations from the approved design data occurring in production (concessions or non-conformance's) should be established.

4. Obligations addressed in DASR 21.A.609

The applicant should establish the necessary procedures to show to the Authority how it will fulfil the obligations under DASR 21.A.609.

For issue of information and instructions, a procedure following the principles of DASR AMC 21.A.14(b), paragraph 4 should be established.

5. Control of design subcontractors

The applicant should establish the necessary procedures to show to the Authority how it will control design subcontractors.

21.A.603 - Application

(a) An application for an AUSMTSO authorisation shall be made in a form and manner established by the Authority and shall include an outline of the information required by DASR 21.A.605. ▸ **AMC**

AMC 21.A.603(a) - Application - Form and manner (AUS)

DASR Form 34—Application for Australian Technical Standard Order Authorisation, is to be obtained from the Authority, and completed by the Accountable Manager of the organisation.

The completed form, an outline of the design organisation exposition, and details of the proposed terms of approval are to be forwarded to the Authority.

(b) When a series of MINOR changes in accordance with DASR 21.A.611 is anticipated, the applicant shall set forth in its application the basic model number of the article and the associated part numbers with open brackets after it to denote that suffix change letters or numbers (or combinations of them) will be added from time to time.

21.A.604 - AUSMTSO Authorisation for an Auxiliary Power Unit

With regard to AUSMTSO authorisation for an Auxiliary Power Unit (APU):

(a) DASR 21.A.15, DASR 21.A.16B, DASR 21.A.17A, DASR 21.A.20, DASR 21.A.21, DASR 21.A.31, DASR 21.A.33, and DASR 21.A.44 shall apply by way of exception from DASR 21.A.603, DASR 21.A.606(c), DASR 21.A.610 and DASR 21.A.615, except that an AUSMTSO authorisation shall be issued in accordance with DASR 21.A.606 instead of the type-certificate;

(b) Subpart D or Subpart E of this DASR is applicable for the approval of design changes by way of exception from DASR 21.A.611. When Subpart E is used, a separate AUSMTSO authorisation shall be issued instead of a supplemental type-certificate.

(c) Subpart M is applicable to the approval of repair designs.

21.A.605 - Data requirements

The applicant shall submit the following documents, to the Authority:

(a) A statement of compliance certifying that the applicant has met the requirements of this Subpart;

(b) A DASR Form DDP—Declaration of Design and Performance (DDP);

(c) One copy of the technical data required in the applicable technical standards and airworthiness specifications;

(d) The exposition (or a reference to the exposition) referred to in DASR 21.A.143 for the purpose of obtaining an appropriate production organisation approval under DASR 21 Subpart G or the manual (or a reference to the manual) referred to in DASR 21.A.125A(b) for the purpose of manufacturing under DASR 21 Subpart F without production organisation approval;

(e) For an APU, the Design Organisation Exposition (DOE), or a reference to the DOE, referred to in DASR 21.A.243 for the purpose of obtaining an appropriate design organisation approval under DASR 21 Subpart J;

(f) For all other articles, the procedures referred to in DASR 21.A.602B(b)(2).

21.A.606 - Issue of AUSMTSO authorisation

The applicant shall be entitled to have an AUSMTSO authorisation issued by the Authority after:

(a) Demonstrating its capability in accordance with DASR 21.A.602B;

(b) Demonstrating that the article complies with the technical conditions of the technical standards and airworthiness specifications that are acceptable to the Authority, and submitting the corresponding statement of compliance; and

(c) Expressly stating that it is prepared to comply with DASR 21.A.609.

21.A.607 - AUSMTSO authorisation privileges

The holder of an AUSMTSO authorisation is entitled to produce and to mark the article with the appropriate AUSMTSO marking.

21.A.608 - Declaration of Design and Performance

(a) The DASR Form DDP—Declaration of Design and Performance (DDP) shall contain at least the following information: ▸ **AMC**

AMC 21.A.608(a) - Declaration of Design and Performance (AUS)

Compliance demonstration evidence for AUSMTSO Authorisation applications may use prior certification by a CAA / MAA, whose certification is recognised by the Authority, in accordance with the principles of AMC to DASR 21.A.20 – Demonstration of compliance with the type-certification basis and environmental protection requirements (AUS).

1. Information corresponding to DASR 21.A.31(a) and DASR 21.A.31(b), identifying the article and its design and testing standard.

2. The rated performance of the article, where appropriate, either directly or by reference to other supplementary documents.

3. A statement of compliance certifying that the article has met the applicable technical standards and airworthiness specifications.

4. Reference to relevant test reports.

5. Reference to the appropriate Maintenance, Overhaul and Repair Manuals.

6. The levels of compliance, where various levels of compliance are allowed by the applicable technical standards and airworthiness specifications.

7. List of deviations accepted in accordance with DASR 21.A.610.

(b) The DDP shall be endorsed with the date and signature of the holder of the AUSMTSO authorisation, or its authorised representative. ▸ **AMC**

AMC 21.A.608(b) - Declaration of Design and Performance

DASR Form DDP—Declaration of Design and Performance, should be completed by the applicant.

21.A.609 - Obligations of holders of AUSMTSO authorisations

The holder of an AUSMTSO authorisation under this Subpart shall:

(a) Manufacture each article in accordance with DASR 21 Subpart G or Subpart F that ensures that each completed article conforms to its design data and is safe for installation;

(b) Prepare and maintain, for each model of each article for which an AUSMTSO authorisation has been issued, a current file of complete technical data and records in accordance with DASR 21.A.613;

(c) Prepare, maintain and update master copies of all manuals required by the applicable airworthiness specifications for the article;

(d) Make available to users of the article and to the Authority on request those maintenance, overhaul and repair manuals necessary for the usage and maintenance of the article, and changes to those manuals;

(e) Mark each article in accordance with DASR 21.A.807;

(f) Comply with DASR 21.A.3A, DASR 21.A.3B and DASR 21.A.4;

(g) Continue to meet the certification requirements of DASR 21.A.602B.

21.A.610 - Approval for deviation

(a) Each manufacturer who requests approval to deviate from any performance requirements of technical standards and airworthiness specifications shall demonstrate that the standards from which a deviation is requested are compensated for by factors or design features providing an equivalent level of safety.

(b) The request for approval to deviate, together with all pertinent data, shall be submitted to the Authority.

21.A.611 - Design changes

GM

GM 21.A.611 - Design changes

A change to an AUSMTSO article is managed under either of the following two processes:

under DASR 21A.611 in the context of an AUSMTSO authorisation, ie when an article as such is specifically approved under DASR 21 Section A Subpart O, with dedicated rules that give specific rights and obligations to the designer of the article, irrespective of any product type design or change to the type design. For a change to such an article, irrespective of installation on any aircraft, DASR 21 Section A Subpart O, and DASR 21.A.611 in particular, should be followed.

or

when an organisation is designing a change (based on data not published in the MTC holder or Original Equipment Manufacturer (OEM) documentation) on an article installed on an aircraft, such a change can be considered as a change to the product in which the article is installed, not to the article taken in isolation. Therefore, DASR 21 Section A Subpart D can be used for the approval of this change that will be identified as 'change to product x affecting article y', but not 'change to article y'.

(a) The holder of the AUSMTSO authorisation may make minor design changes (any change other than a major change) without further authorisation by the Authority. In this case, the changed article keeps the original model number (part number changes or amendments shall be used to identify minor changes) and the holder shall forward to the Authority any revised data that are necessary for compliance with DASR 21.A.603(b).

(b) Any design change by the holder of the AUSMTSO authorisation that is extensive enough to require a substantially complete investigation to determine compliance with the applicable technical standards and airworthiness specifications is a MAJOR change. Before making such a change, the holder shall assign a new type or model designation to the article and apply for a new authorisation under DASR 21.A.603.

(c) No design change by any organisation, other than the holder of the AUSMTSO authorisation who submitted the statement of compliance for the article, is eligible for approval under this DASR 21 Subpart O unless the organisation seeking the approval applies under DASR 21.A.603 for a separate AUSMTSO authorisation.

21.A.613 - Record keeping

Further to the record keeping requirements appropriate to, or associated with, the quality system, all relevant design information, drawings and test reports, including inspection records for the article tested, shall be held at the disposal of the Authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the article and of the type-certificated product in which it is fitted. **AMC**

AMC 21.A.613 - Record keeping (AUS)

Records should be retained for at least two years after the removal from service of the last aircraft of the type certified.

21.A.615 - Inspection by the Authority

Upon a request of the Authority, each applicant for, or holder of an AUSMTSO authorisation for an article shall allow the Authority to:

(a) Witness any tests;

(b) Inspect the technical data files on that article.

21.A.619 - Duration and continued validity

(a) An AUSMTSO authorisation shall be issued for an unlimited duration. It shall remain valid unless:

1. The conditions required when AUSMTSO authorisation was granted are no longer being observed; or
2. The obligations of the holder specified in DASR 21.A.609 are no longer being discharged; or
3. The article has proved to give rise to unacceptable hazards in service; or
4. The authorisation has been surrendered or revoked under the applicable administrative procedures established by the Authority.

(b) Upon surrender or revocation, the certificate shall be returned to the Authority.

21.A.621 Transferability

Except for a change in ownership of the holder, which shall be regarded as a change of significance, and shall therefore comply with DASR 21.A.147 and DASR 21.A.247 as applicable, an AUSMTSO authorisation issued under this DASR is not transferable.

SUBPART P - MILITARY PERMIT TO FLY

GM to Subpart P

GM to Subpart P

The process allowing a flight under a military permit to fly can be described as follows:

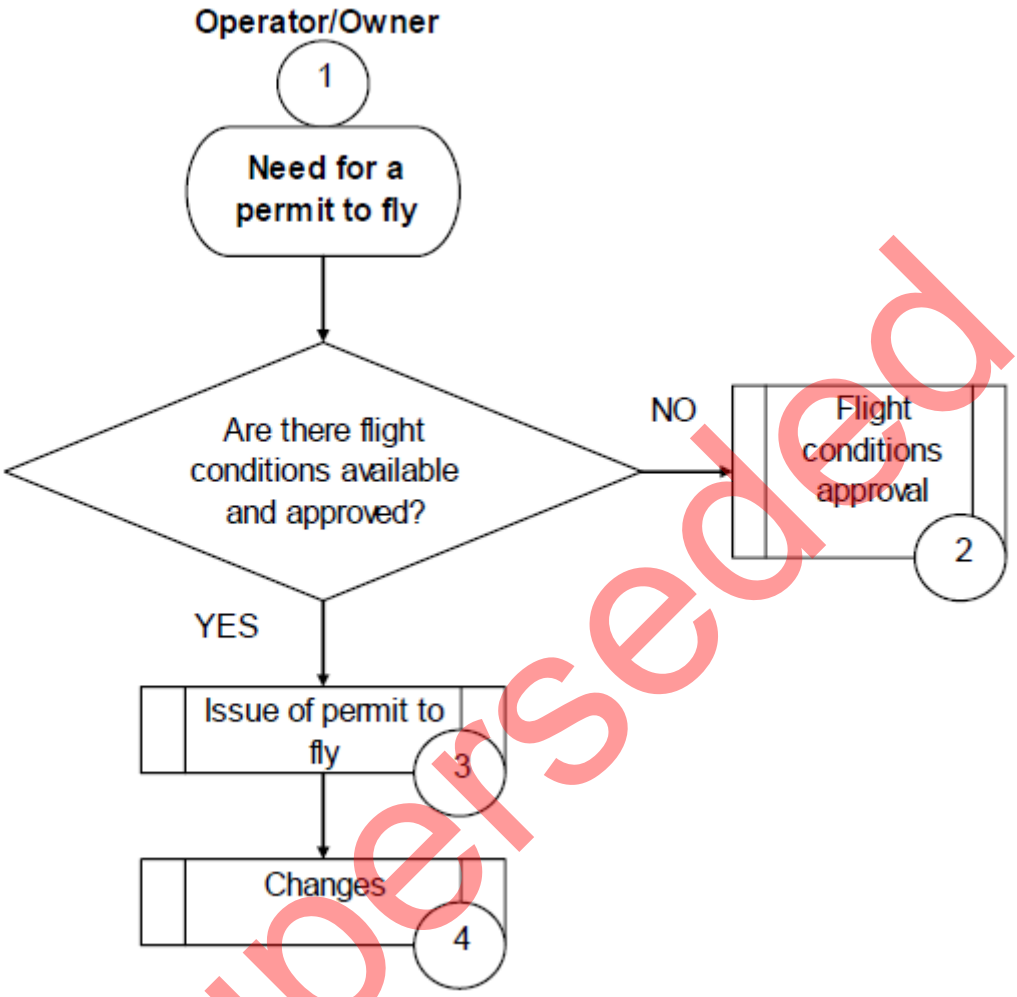
1. Flow-chart 1: Overview;

2. Flow-chart 2: Approval of flight conditions;

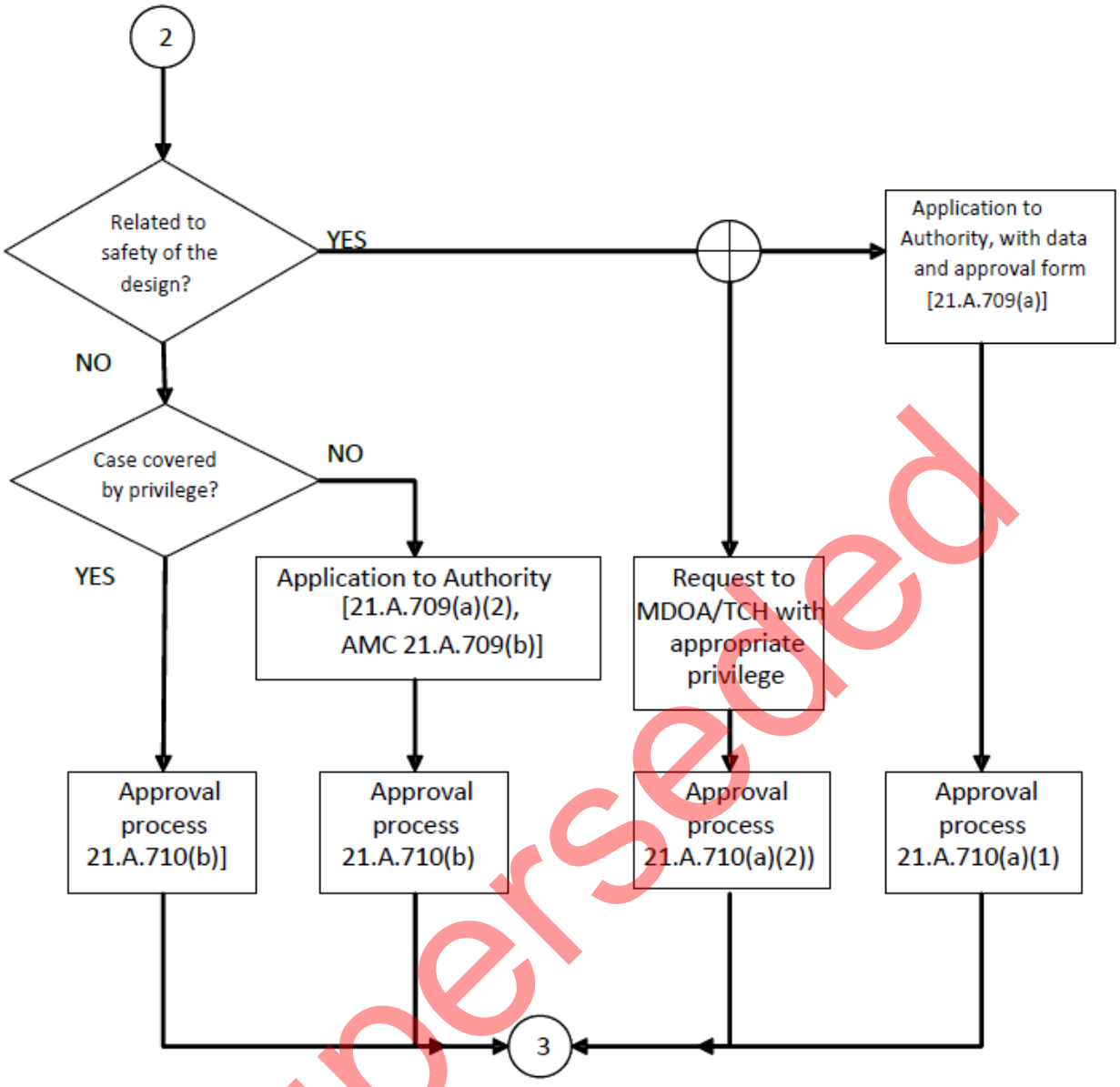
3. Flow-chart 3: Issue of military permit to fly;

4. Flow-chart 4: Changes after first issue of military permit to fly.

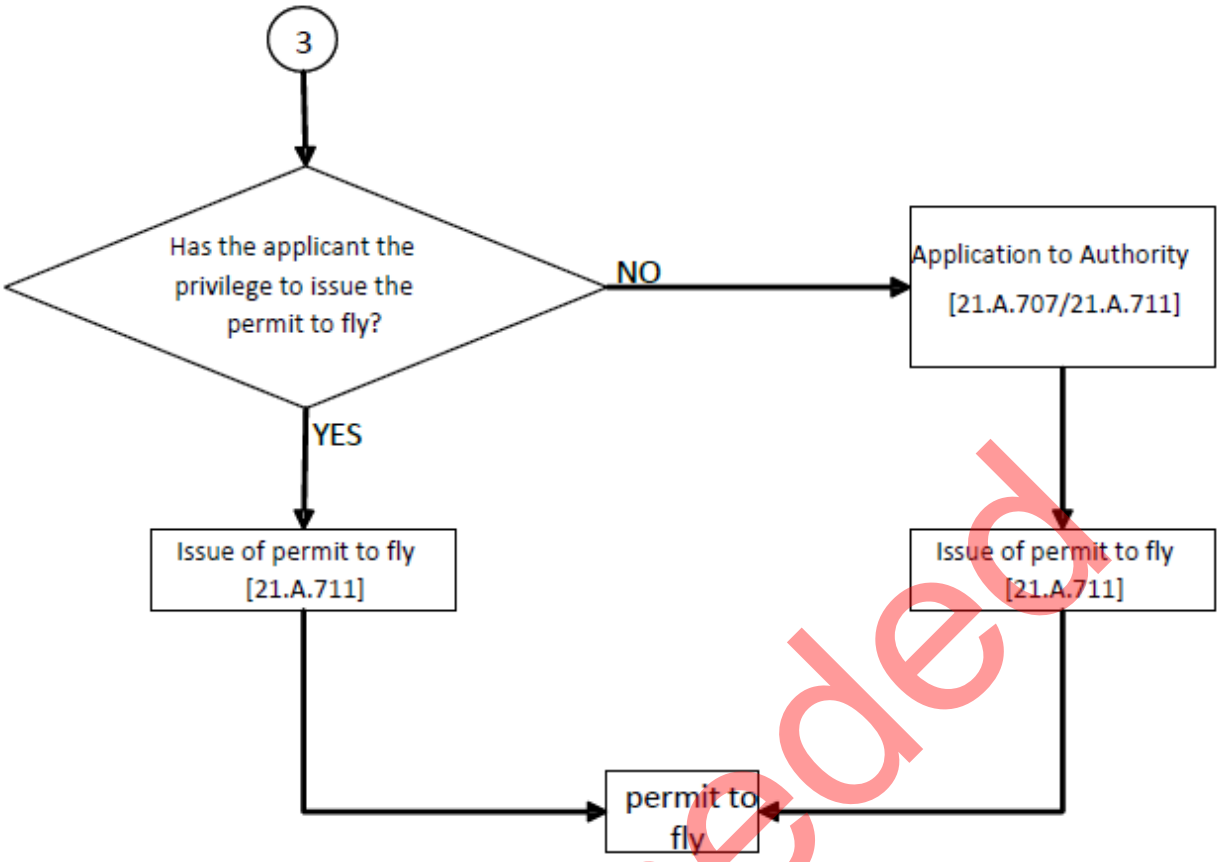
Flow-chart 1: Overview



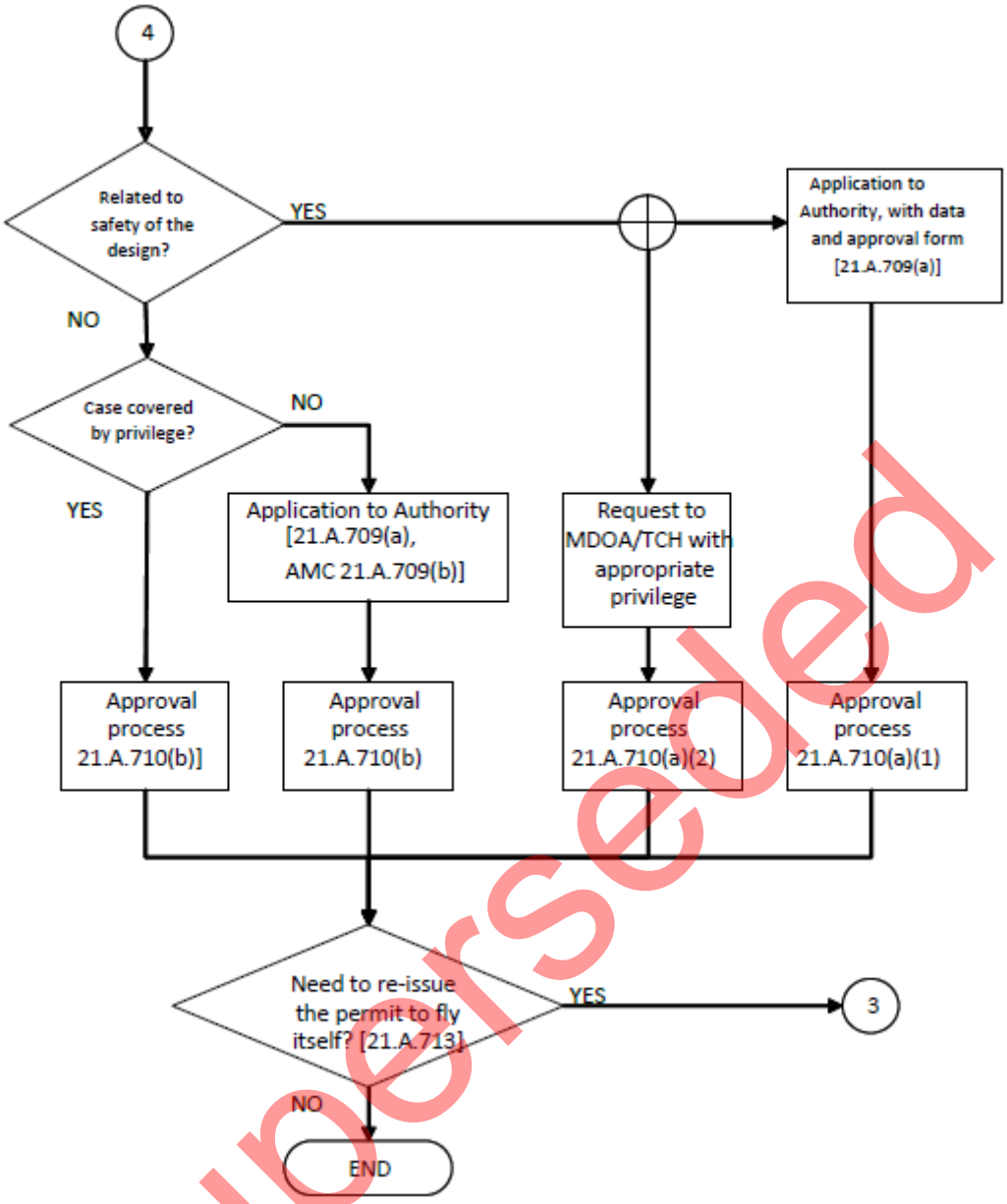
Flow-chart 2: Approval of flight conditions



Flow-chart 3: Issue of military permit to fly



Flow-chart 4: Changes after first issue of military permit to fly



21.A.701 - Scope

GM ▸ GM - MPTF

GM 21.A.701 - Military permit to fly when certificate of airworthiness or restricted certificate of airworthiness is not appropriate

A certificate of airworthiness or restricted category certificate of airworthiness may not be appropriate for an individual aircraft or aircraft type when it is not practicable to comply with the normal continued airworthiness requirements and the aircraft is to a design standard that is demonstrated to be capable of safe flight under defined conditions. DASR 21.A.701 identifies cases where the issuance of a (Restricted) Certificate of Airworthiness may not be possible or appropriate and this paragraph provides further information and typical examples for clarification where appropriate:

NOTE: This list of examples is not exhaustive

a) Development:

i. testing of new aircraft or modifications;

ii. testing of new concepts of airframe, engine propeller and equipment;

iii. testing of new operating techniques.

b) Demonstration of compliance with regulations or certification requirements:

i. certification flight testing for military type-certification, military supplemental type certificates, changes to military type certificates or AUSMTSO authorisation.

c) Design organisations or production organisations crew training:

i. Flights for training of crew that will perform design or production flight testing before the design approval or Certificate of Airworthiness (C of A) can be issued.

d) Production flight testing of new production aircraft:

i. For establishing conformity with the approved design, typically this would be the same programme for a number of similar aircraft.

e) Flying aircraft under production between production facilities:

i. green aircraft ferry for follow on final production.

f) Flying the aircraft for customer acceptance:

i. Before the aircraft is sold and/or registered.

g) Delivering or exporting the aircraft:

i. Before the aircraft is registered in the State where the C of A will be issued.

h) Flying the aircraft for Authority acceptance:

i. In the case of inspection flight test by the Authority before the C of A is issued.

i) Market survey, including customer's crew training:

i. Flights for the purpose of conducting market survey, sales demonstrations and customer crew training with non military type certificated aircraft or aircraft for which conformity has not yet been established or for non-registered a/c and before the C of A is issued.

j) Exhibition and air show:

i. Flying the aircraft to an exhibition or show and participating to the exhibition or show before the design approval is issued or before conformity with the approved design has been shown.

k) Flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage:

i. Ferry flights in cases where maintenance is not performed in accordance with approved programmes, where an Airworthiness Directive (AD) has not been complied with where certain equipment outside the Master Minimum Equipment List (MMEL) is unserviceable or when the aircraft has sustained damage beyond the applicable limits.

l) Flying an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available:

i. Oversees ferry flights with additional fuel capacity.

m) Reserved.

n) Flying aircraft meeting the applicable airworthiness requirements before conformity to the environmental requirements has been found:

i. Flying an aircraft which has been shown to comply with all applicable airworthiness requirements but not with environmental requirements.

o) For individual aircraft or types for which a certificate of airworthiness or restricted certificate of airworthiness is not appropriate:

i. For aircraft which cannot practically meet all applicable airworthiness requirements, such as certain aircraft without MTC holder ('generically termed orphan aircraft') or aircraft which have been under national systems of military permit to fly and have not been demonstrated to meet all applicable requirements. The option of a military permit to fly for such an aircraft should only be used if a certificate of airworthiness or restricted certificate of airworthiness cannot be issued due to conditions which are outside the direct control of the aircraft owner, such as the absence of properly certified spare parts.

p) Operation of new or modified capability, prior to certification, due to capability imperative:

i. For aircraft which have been modified to improve capability or introduce a new capability, where certification activities are unable to be completed prior to a need to operate the aircraft. This may be due to modification of a single aircraft for flight testing purposes, where it is not reasonably practicable to 'de-mod' that aircraft while certification is completed, or due to a need to incorporate a modification across all or part of the fleet for capability reasons in advance of certification being achieved. Note that operation under an MPTF prior to certification should be limited to the minimum practicable duration, since extended operation for convenience under an MPTF may not be defensible. Lack of resourcing is not normally considered a credible and defensible reason to continue operation under an MPTF, and full certification (underpinned by MCRIs as required) should be pursued as soon as possible.

q) Continued operation of aircraft where required maintenance has not been completed, due to a capability imperative:

i. For aircraft where there is a capability imperative to continue operating beyond a required maintenance activity without completion of that maintenance. This includes operation beyond Airworthiness Limitations (AwLs) or directed activities in an Airworthiness Directive (AD) without other DASA approval, and operations outside of ICA (other than AwLs) where it is not reasonably practicable to proceed through other means (for example through seeking amendment of the ICA from the MTC holder, or obtaining an approval to proceed under DASR M or DASR 145).

NOTE: The above listing is of cases when a military permit to fly MAY be issued, in accordance with national regulations; it does not mean that in the described cases a military permit to fly SHOULD be issued. If other legal means are available to allow the intended flight(s) they can also be used.

GM 21.A.701 - Scope

An aircraft registered 'outside the participating Military States (pMS), ie outside of those countries subject to DASA regulations or outside of militaries using EMAR based technical regulations, and used for flight testing by an organisation which has its principle place of business in the pMS, remains under the Authority of its state of registry. The Authority or an appropriately approved design organisation can provide, on request, technical assistance to the state of registry for the issue of a military permit to fly (DASR Form 20b—Military Permit to Fly (Approved Organisation)), under the state of registry applicable regulations.

(a) Military permits to fly shall be issued in accordance with this Subpart to aircraft that do not meet, or have not been shown to meet, applicable airworthiness requirements but are capable of safe flight under defined conditions and for the following purposes: ▸

AMC

Examples of where a military permit to fly may be required are:

AMC 21.A.701(a) - Change of aircraft role and / or environment (AUS)

A military permit to fly may also be used to test a change to an aircraft's role and / or environment. For further information see DASR AMC FT.05.A (Air Operations).

1. Development;
2. Demonstration of compliance with regulations or certification requirements;
3. Design organisations or production organisations crew training;
4. Production flight testing of new production aircraft;
5. Flying aircraft under production between production facilities;
6. Flying the aircraft for customer acceptance;
7. Delivering or exporting the aircraft;
8. Flying the aircraft for Authority acceptance;
9. Market survey, including customer's crew training;
10. Exhibition and air show;

11. Flying the aircraft to a location where maintenance or airworthiness review are to be performed, or to a place of storage;

12. Flying an aircraft at a weight in excess of its maximum certificated takeoff weight for flight beyond the normal range over water, or over land areas where adequate landing facilities or appropriate fuel is not available;

13. (Reserved)

14. Flying aircraft meeting the applicable airworthiness requirements before conformity to the environmental requirements (where applicable) has been found;

15. For individual aircraft or types for which a certificate of airworthiness or restricted certificate of airworthiness is not appropriate;

16. Operation of new or modified capability, prior to certification, due to a capability imperative;

17. Operation of aircraft where a required maintenance activity has not been completed, due to a capability imperative.

(b) This Subpart establishes the procedure for issuing military permits to fly and approving associated flight conditions and establishes the rights and obligations of the applicants for, and holders of, those permits and approvals for flight conditions.

21.A.703 - Eligibility

▸ **GM**

GM 21.A.703 - Applicant for a military permit to fly

The applicant for a military permit to fly may be a person other than the registered owner of the aircraft. As the holder of this permit will be responsible for ensuring that all the conditions and limitations associated with the military permit to fly are continuously satisfied, the applicant for the permit should be a person or organisation suitable for assuming these responsibilities. In particular, the organisations designing, modifying or maintaining the aircraft should normally be the holder of the associated permits to fly.

An appropriately approved design organisation can apply for the approval of the flight conditions when using its privilege in accordance with DASR 21.A.263(b)(1).

(a) At the discretion of the Authority, any organisation shall be eligible as an applicant for a military permit to fly under the conditions laid down in this Subpart. The applicant for a military permit to fly is also eligible for application for the approval of the flight conditions.

(b) Reserved

(c) Reserved

21.A.705 - Authority of the State

The military permit to fly under DASR 21 shall be issued by the approving Authority of the State of registry including cases where the aircraft will fly in another State. The military permit to fly contains all the conditions and restrictions to ensure safe flight but other airspace and operational rules remain the competence of the Authority of the State where the flight will take place. The applicant shall therefore also ensure compliance with the relevant regulations of that State.

21.A.707 - Application for military permit to fly

(a) Pursuant to DASR 21.A.703 and when the applicant has not been granted the privilege to issue a military permit to fly, an application for a military permit to fly shall be made to the Authority in a form and manner established by that Authority.

(b) Each application for a military permit to fly shall include: ▸ **GM**

GM 21.A.707(b) - Application

The military permit to fly application form, DASR Form 21—Application for Part 21 Permit to Fly, is to be obtained from the Authority.

1. The purpose(s) of the flight(s), in accordance with DASR 21.A.701;
2. The ways in which the aircraft does not comply with the applicable airworthiness requirements;
3. The flight conditions approved in accordance with DASR 21.A.710.

(c) Where the flight conditions are not approved at the time of application for a military permit to fly, an application for approval of the flight conditions shall be made in accordance with DASR 21.A.709.

21.A.708 - Flight conditions

Flight conditions include:

(a) The configuration(s) for which the military permit to fly is requested;

(b) Any condition or restriction necessary for safe operation of the aircraft, including: ▸ **GM**

GM 21.A.708(b) - Flight conditions (AUS)

Flight conditions should also include:

a. required qualifications, training and experience of flight test personnel,

b. role(s),

c. environmental aspects,

d. weather limitations,

e. concurrent tasking,

f. other aircraft (air to air refuelling, chase aircraft etc), and

g. ship-borne operation, eg first of class flight trials.

1. The conditions or restrictions put on itineraries or airspace, or both, required for the flight(s);

2. The conditions and restrictions put on the flight crew to fly the aircraft;

3. The restrictions regarding carriage of persons other than flight crew;

4. The operating limitations, specific procedures or technical conditions to be met (which may include the restrictions regarding carriage/release/firing of weapons);

5. The specific flight test programme (if applicable);

6. The specific continuing airworthiness arrangements and the regime under which they will be performed. ▸ **GM**

GM 21.A.708(b)(6) - Continuing airworthiness

In most cases a simple reference to existing maintenance requirements will suffice for aircraft that have a temporarily invalid C of A.

For other aircraft it will have to be proposed by the applicant as part of the flight conditions. For approved organisations they can be included in their procedures.

(c) The substantiation that the aircraft is capable of safe flight under the conditions or restrictions of subparagraph (b); ▸ **GM1** ▸ **GM2**

GM2 to 21.A.708(c) - Substantiations

The substantiations should include analysis, calculations, tests or other means used to determine under which conditions or restrictions the aircraft can perform safely in flight.

For aircraft structure it is important to assess the likelihood that the maximum stress during flight will exceed the allowable value. For example, if the aircraft is overweight or under-strength due to damage, then flight envelope limitations can limit the maximum stress during flight and decrease the likelihood of structural failure. If the non-compliance is an overdue inspection, then the substantiation should quantify the likelihood that any damage present will exceed the residual strength capacity of the structure during continued operations.

GM1 to 21.A.708(c) - Safe flight

Safe flight normally means continued safe flight and landing but in some limited cases, eg higher risk flight testing, it can mean that the aircraft is able to fly in a manner that will primarily ensure the safety of overflown third parties, the flight crew and, if applicable other occupants.

This definition of 'safe flight' should not be interpreted as allowing a test pilot, equipped with a parachute and operating over a sparsely populated area, to set out on a test flight in the full

knowledge that there is a high probability of losing the aircraft. The applicant's determination of safe flight should eliminate safety hazards and risks So Far As is Reasonably Practicable (SFARP), or if it is not reasonably practicable to do so, minimise these hazards and risks SFARP. This can be achieved through application of the risk management requirements outlined in DASR SMS.A.25(b)2.2 to ensure, so far as is reasonably practicable the aircraft will carry out the flight without damage or injury to the aircraft and its occupants or to other property or persons whether in the air or on the ground.

(d) The method used for the control of the aircraft configuration, in order to remain within the established conditions. ▸ **GM**

GM 21.A.708(d) - Control of aircraft configuration

The applicant should establish a method for the control of any change or repair made to the aircraft, for changes and repairs that do not invalidate the conditions established for the military permit to fly.

All other changes should be approved in accordance with DASR 21.A.713 and when necessary a new military permit to fly should be issued in accordance with DASR 21.A.711.

21.A.709 - Application for approval of flight conditions

(a) Pursuant to DASR 21.A.707(c) and when the applicant has not been granted the privilege to approve the flight conditions, an application for approval of the flight conditions shall be made to the Authority in a form and manner established by the Authority. ▸ **AMC**

AMC 21A.709(a) - Application for approval of flight conditions - Form and manner (AUS)

The approval of flight conditions application, DASR Form 18b—Flight Conditions for a Military Permit to Fly – Approval Form (Authority), should be obtained from the Authority.

(b) Each application for approval of the flight conditions shall include: ▸ **AMC**

AMC 21.A.709(b) - Submission of documentation supporting the establishment of flight conditions

Together with the application, the documentation required by DASR 21A.709(b) should be submitted with DASR Form 18b—Flight Conditions for a Military Permit to Fly - Approval Form, (see DASR Forms Document), completed with all relevant information. If the complete set of data is not available at the time of application, the missing elements can be provided later. In such cases, the approval form should be provided only when all data are available, to allow the applicant to make the statement required in Block 9 of DASR Form 18b.

1. The proposed flight conditions;

2. The documentation supporting these conditions; and

3. A declaration that the aircraft is capable of safe flight under the conditions or restrictions of paragraph DASR 21.A.708(b). ▸ **AMC**

AMC 21.A.709(b)(3) - Procedure to obtain Declaration of Safety (AUS)

The applicant must ensure that the documentation to meet DASR 21.A.708 - Flight Conditions, includes both technical and operational input:

a. Technical. Technical substantiation documentation must be obtained from a design or engineering organisation suitably knowledgeable of the certified Type Design and with access to Type Design information sufficient to support the scope of the technical substantiation.

b. Operational. Development of operational flight conditions and endorsement of the combined technical and operational conditions must be provided by a competent staff of a Military Air Operator (MAO) organisation holding suitable knowledge pertaining to operation of the subject aircraft.

Flight conditions developed to support flight test activities, and operational endorsement, must be provided by a competent staff of an MAO as determined by the Authority relevant Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)). MAOs may apply to a DoSA(FT) for a determination of competence of nominated MAO staff.

21.A.710 - Approval of flight conditions

▸ **GM**

GM 21.A.710 - Approval of flight conditions

1. The approval of flight conditions is related to the safety of the design, when:

   a. the aircraft does not conform to an approved design; or

   b. an Airworthiness Limitation, a Certification Maintenance Requirement or an Airworthiness Directive has not been complied with; or

   c. the intended flight(s) are outside the approved envelope.

2. Examples when the approval of flight conditions is not related to the safety of the design are:

   a. production flight testing for the purpose of conformity establishment;

   b. delivery / export flight of a new aircraft the design of which is approved;

   c. demonstrating continuing conformity with the standard previously accepted by the Authority for the aircraft or type of aircraft to qualify or re-qualify for a (restricted -) Certificate of Airworthiness.

(a) When approval of the flight conditions is related to the safety of the design, the flight conditions shall be approved by:

   1. The Authority; or ▸ **AMC**

AMC 21.A.710(a)(1) - Approval of Flight conditions (AUS)

For flight tests categorised as Category 1 or Category 2 in accordance with the ▸ **Categories of Flight Tests**, flight conditions may only be approved by the Delegate of the Safety Authority (DoSA(FT)).

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

2. An appropriately approved design organisation, under the privilege of DASR 21.A.263(c)(6).

(b) When approval of the flight conditions is not related to the safety of the design, the flight conditions shall be approved by the Authority, or the appropriately approved organisation that will also issue the military permit to fly.

(c) Before approving the flight conditions, the Authority or the approved organisation under DASR 21.A.711(b) or DASR 21.A.711(c) must be satisfied that the aircraft is capable of safe flight under the specified conditions and restrictions. The Authority may make or require the applicant to make any necessary inspections or tests for that purpose.

21.A.711 - Issue of a military permit to fly

AMC

AMC 21.A.711 - Issue of a military permit to fly

As an alternative means of compliance to Subpart P requirements the military permit to fly for an aircraft allocated for flight test development should be issued in compliance with the Military Permit to Fly (MPTF) procedure in defining the approval process for the flight test conditions. The MPTF process has been specifically developed for use in the Military Flight Test environment and enables closer cooperation between participating nations to utilise a single MPTF.

(a) The Authority shall issue a military permit to fly: **GM**

GM 21.A.711(a) - Issue of a military permit to fly (AUS)

Approval of Military Permits to Fly is dependent on their Category, as follows: **Categories of Flight Tests**

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

a. Issue of Category 1 and 2 Military Permits to Fly is delegated to a Delegate of the Safety Authority (DoSA) – Flight Test (DoSA(FT)).

b. A Category 3 Military Permit to Fly may be issued by the Authority or an MPOA holder with an appropriate privilege (see DASR GM 21.A.163(e) (AUS)).

c. A Category 4 Military Permit to Fly may be issued by the Authority or an MDOA holder with an appropriate privilege (see DASR GM 21.A.263(c)(7) (AUS)).

1. Upon presentation of the data required by DASR 21.A.707;

2. When the conditions of DASR 21.A.708 have been approved in accordance with DASR 21.A.710; and

3. When the Authority, through its own investigations, which may include inspections, or through procedures agreed with the applicant, is satisfied that the aircraft conforms to the design defined under DASR 21.A.708 before flight.

(b) An appropriately approved design organisation may issue a military permit to fly (DASR Form 20b—Military Permit to Fly - Approved Organisation), under the privilege granted under DASR 21.A.263(c)(7), when the flight conditions referred to in DASR 21.A.708 have been approved in accordance with DASR 21.A.710. ▸ **GM**

GM 21.A.711(b) - Issue of a military permit to fly (AUS)

Under DASR GM 21.A.263(c)(7) (AUS), any privilege granted to MDOA holders will be restricted to approval of a Category 4 flight test. See ▸ **Categories of Flight Tests**

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

(c) An appropriately approved production organisation may issue a military permit to fly (DASR Form 20b) under the privilege granted under DASR 21.A.163(e), when the flight conditions referred to in DASR 21.A.708 have been approved in accordance with DASR 21.A.710. ▸ **GM**

GM 21.A.711(c) - Issue of a military permit to fly (AUS)

Under DASR GM 21.A.163(e) (AUS), any privilege granted to MPOA holders will be restricted to approval of a Category 3 flight test. See ▸ **Categories of Flight Tests**

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

(d) Reserved

(e) The military permit to fly shall specify the purpose(s) and any conditions and restrictions, which have been approved in accordance with DASR 21.A.710. ▸ **GM**

GM 21.A.711(e) - Additional conditions and restrictions

The conditions and restrictions prescribed by the Authority may include airspace restrictions to make the conditions approved under DASR 21.A.710 more concrete, or conditions outside the scope of the ones mentioned in DASR 21.A.708(b) such as a radio station licence.

(f) For permits issued under subparagraph b, c. or d, a copy of the military permit to fly and associated flight conditions shall be submitted to the Authority at the earliest opportunity but not later than three days from the permit being issued.

(g) Upon evidence that any of the conditions specified in DASR 21.A.723(a) are not met for a military permit to fly that an organisation has issued pursuant to subparagraph b, c. or d, that organisation shall revoke that military permit to fly immediately and inform without delay the Authority.

21.A.713 - Changes

▸ **GM**

GM 21.A.713 - Changes

Changes to the conditions or associated substantiation that are approved but do not affect the text on the military permit to fly do not require issuance of a new military permit to fly.

In case a new application is necessary, the substantiation for approval of the flight conditions only needs to address the change.

(a) Any change that invalidates the flight conditions or associated substantiation established for the military permit to fly shall be approved in accordance with DASR 21.A.710. When relevant, an application shall be made in accordance with DASR 21.A.709.

(b) A change affecting the content of the military permit to fly requires the issuance of a new military permit to fly in accordance with DASR 21.A.711.

21.A.715 - Language

The manuals, placards, listings, and instrument markings and other necessary information required by applicable type-certification basis shall be presented in a language acceptable to the Authority.

21.A.719 - Transferability

A military permit to fly is not transferable. ▸ **GM**

GM 21.A.719 - Transfer of a military permit to fly

A military permit to fly is issued based upon the applicant's declaration of many aspects of the proposed flight or flights, some of which are specific to the applicant. Accordingly, the basis upon which a military permit to fly has been issued necessarily is no longer fully in place when the holder of a military permit to fly changes, ownership changes, and/or there is a change of register. Such changes necessitate a new application under DASR 21.A.707.

21.A.721 - Inspections

The holder of, or the applicant for, a military permit to fly shall provide access to the aircraft concerned at the request of the Authority.

21.A.723 - Duration and continued validity

(a) A military permit to fly shall be issued for a stated period of validity and shall remain valid subject to:

1. Compliance with the conditions and restrictions of DASR 21.A.711(e) associated to the military permit to fly;
2. The military permit to fly not being surrendered or revoked; or
3. The aircraft remaining on the same register.

(b) Reserved

(c) Upon surrender or revocation, the military permit to fly shall be returned to the Authority.

21.A.725 - Renewal of military permit to fly

Renewal of the military permit to fly shall be processed as a change in accordance with DASR 21.A.713.

21.A.727 - Obligations of the holder of a military permit to fly

AMC GM

GM 21.A.727 - Concurrent Military Permits to Fly (AUS)

EASA implementation of permits to fly stipulates a single aircraft may only have one valid permit allocated at one time, and that a permit may only be applicable against a single aircraft. In order to accommodate the expected ADF usage, which is focussed on providing in-service flexibility within a military environment, the DASR unique AMC and GM allows for concurrent MPTF being valid against a single aircraft, and for a single MPTF to be valid against more than one aircraft.

DASR AMC 21.A.727 places additional requirements on the holders of DASR MPTF to account for the additional complexities associated with applying flight conditions of more than a single MPTF. Holding organisations procedures must therefore implement these additional requirements.

AMC 21.A.727 - Concurrent Permits to Fly (AUS)

Where one or more valid MPTF apply to an aircraft the holder of the MPTF(s) shall ensure:

a. A MPTF register is maintained that details all MPTF that are valid against aircraft operated by the MAO. The register shall also retain details of historic MPTF.

b. Organisations providing technical and operational substantiation for approval of flight conditions are provided visibility of all current MPTF(s).

c. On a flight-by-flight basis MAO aircrew view and assess the approved flight conditions associated with each valid MPTF.

d. The relevant CAMO and maintenance organisations are aware of all continuing airworthiness conditions and configuration management requirements under DASR 21.A.708 for each valid MPTF.

e. When an aircraft subject to one or more MPTF is transferred for operation under another MAO control, the transfer agreement shall ensure MPTF holder responsibilities will be fulfilled, on behalf of the MPTF holder, by the gaining MAO.

The holder of a military permit to fly shall ensure that all the conditions and restrictions associated with the military permit to fly are satisfied and maintained.

21.A.729 - Record keeping

GM

GM 21.A.729 - Record keeping (AUS)

Records should be retained for at least two years after the removal of service of the last aircraft of the type certified.

(a) All documents produced to establish and justify the flight conditions shall be held by the holder of the approval of the flight conditions at the disposal of the Authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

(b) All documents associated to the issue of permits to fly under the privilege of approved organisations, including inspection records, documents supporting the approval of flight conditions and the military permit to fly itself, shall be held by the related approved organisation at the disposal of the Authority and shall be retained in order to provide the information necessary to ensure the continued airworthiness of the aircraft.

SUBPART Q - IDENTIFICATION OF PRODUCTS, PARTS AND APPLIANCES

21.A.801 - Identification of products

(a) The identification of products shall include the following information:

1. Manufacturer's name;
2. Product designation;
3. Manufacturer's Serial number; and
4. Any other information the Authority finds appropriate.

(b) Any organisation that manufactures an aircraft or engine under DASR 21 Subpart G or Subpart F shall identify that aircraft or engine by means of a fireproof plate that has the information specified in paragraph a, marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

(c) Any organisation that manufactures a propeller, propeller blade, or propeller hub under DASR 21 Subpart G or Subpart F shall identify it by means of a plate, stamping, engraving, etching or other approved method of fireproof identification that is placed on it on a non-critical surface, contains the information specified in paragraph a, and will not likely be defaced or removed during normal service or lost or destroyed in an accident.

(d) Reserved

21.A.803 - Handling of identification data

(a) No person shall remove, change, or place identification information referred to in DASR 21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in DASR 21.A.807(a) on an APU, without the approval of the Authority.

(b) No person shall remove or install any identification plate referred to in DASR 21.A.801, or in DASR 21.A.807 for an APU, without the approval of the Authority.

(c) By way of exception from paragraphs (a) and (b), any organisation performing maintenance work under the applicable associated implementing rules may, in accordance with methods, techniques and practices established by the Authority:

1. Remove, change, or place the identification information referred to in DASR 21.A.801(a) on any aircraft, engine, propeller, propeller blade, or propeller hub, or in DASR 21.A.807(a) on an APU; or

2. Remove an identification plate referred to in DASR 21.A.801, or DASR 21.A.807 for an APU, when necessary during maintenance operations.

(d) No person shall install an identification plate removed in accordance with subparagraph (c)2, on any aircraft, engine, propeller, propeller blade, or propeller hub other than the one from which it was removed.

21.A.804 - Identification of parts and appliances

(a) Each part or appliance shall be marked permanently and legibly with:

1. A name, trademark, or symbol identifying the manufacturer in a manner identified by the applicable design data; and ▸ **GM**

GM 21.A.804(a)(1) - Identification of parts and appliances

It is not the intent of DASR 21.A.804(a)(1) to introduce an obligation for a production organisation (manufacturer) to mark new parts or appliances with information which is not identified by the military design approval holder. Therefore, the physical marking of parts and appliances is only required when established by the military design approval (MTC, MSTC, AUSMTSO, repair, change) holder.

2. The part number, as defined in the applicable design data; and

3. The letters AUSMPA (Australian Military Part Approval) for parts or appliances produced in accordance with approved design data not belonging to the type-certificate holder of the related product, except for AUSMTSO articles. ▸ **AMC** ▸ **GM**

GM 21.A.804(a)(3) - Identification of parts and appliances

Mark 'EPA' (European Part Approval) for parts and appliances produced under EASA approval that can be installed in military aircraft, should be considered as a recognised mark instead of 'AUSMPA' (Australian Military Part Approval) in the same manner as defined on DASR AMC 21.A.804(a)(3) for parts and appliances produced under each nation approval.

AMC 21.A.804(a)(3) - Identification of parts and appliances

Mark 'EMPA' (European Military Part Approval) is a generic designation that is to be adapted by each Nation. Thus, the letter 'E' should be replaced by the ISO 3166–1:2006 (or STANAG 1059 Edition 8)* three letter code in order to distinguish identification of parts and appliances produced under each nation approval. This requirement has been incorporated into DASR by replacing 'EMPA' with AUSMPA (AUS is the NATO trigram for Australia). For information: 'AUT' is the trigram for Austria.

(b) By way of exception from paragraph a, if the Authority agrees that a part or appliance is too small or that it is otherwise impractical to mark a part or appliance with any of the information required by paragraph a, the authorised release document accompanying the part or appliance or its container shall include the information that could not be marked on the part.

21.A.805 - Identification of critical parts

In addition to the requirement of DASR 21.A.804, each manufacturer of a part to be fitted on a type-certificated product which has been identified as a critical part shall permanently and legibly mark that part with a part number and a serial number.

21.A.807 - Identification of AUSMTSO articles

(a) Each holder of an AUSMTSO authorisation under DASR 21 Subpart O shall permanently and legibly mark each article with the following information:

1. The name and address of the manufacturer;
2. The name, type, part number or model designation of the article;
3. The serial number or the date of manufacture of the article or both; and
4. The applicable AUSMTSO number.

(b) By way of exception from paragraph a, if the Authority agrees that a part is too small or that it is otherwise impractical to mark a part with any of the information required by paragraph a, the authorised release document accompanying the part or its container shall include the information that could not be marked on the part.

(c) Each person who manufactures an APU under DASR 21 Subpart G or Subpart F shall identify that APU by means of a fire-proof plate that has the information specified in paragraph a, marked on it by etching, stamping, engraving, or other approved method of fireproof marking. The identification plate shall be secured in such a manner that it is accessible and legible, and will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

DASR 66 - Military Aircraft Maintenance Licensing

SECTION A

66.A.1 - Scope

This section defines the Military Aircraft Maintenance Licence (MAML) and establishes the requirements for application, issue and continuation of its validity.

66.A.3 - MAML categories

▸ GM

GM 66.A.3 MAML categories

Individual Military Aircraft Maintenance Licence (MAML) holders need not be restricted to a single category. Provided that each qualification requirement is satisfied, any combination of categories may be granted.

(a) Military Aircraft Maintenance Licences include the following categories:

- Category A
- Category B1
- Category B2
- Category C

(b) Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston engines. These subcategories are:

- A1 and B1.1 Aeroplanes Turbine
- A2 and B1.2 Aeroplanes Piston
- A3 and B1.3 Helicopters Turbine
- A4 and B1.4 Helicopters Piston

(c) NOT APPLICABLE.

66.A.5 - Aircraft groups

All military aircraft shall be considered as complex motor-powered aircraft.

66.A.10 - Application

▸ AMC

AMC 66.A.10 Application

1. Maintenance experience should be written up in a manner that the reader has a reasonable understanding of where, when and what maintenance constitutes the experience. A task-by-task account is not necessary but at the same time a bland statement "X years maintenance experience completed" is not acceptable. A logbook of maintenance experience is desirable and some MAAs may require such a logbook to be kept. It is acceptable to cross-refer in the DASR Form 19 to other documents containing information on maintenance.

2. Applicants claiming the maximum reduction in DASR 66.A.30(a) total experience based upon successful completion of DASR 147.A.200 approved basic training should include the Certificate of Recognition for approved basic training.
In Australia, an Aeroskills qualification or Statement of Attainment issued by a DASR or CASA-approved Part 147 is the equivalent of a Certificate of Recognition. Where the applicant does not hold an Aeroskills qualification or Statement of Attainment, then the maximum reduction in DASR 66.A.30 experience requirement does not apply.

3. Applicants claiming reduction in DASR 66.A.30(a) total experience based upon successful completion of technical training in an organisation or entity recognised by the MAA as an Approved Maintenance Training Organisation should include the relevant certificate of successful completion of training. Where the technical training was completed in another organisation (for example a CAA or EASA approved Maintenance Training Organisation), then advice should be sought from the MAA to ensure the training received is acceptable to the MAA.
Technical training may have been completed in another organisation acceptable to the MAA, eg CASA Part 147 organisation.Requests for advice should be submitted to the MAA.

(a) An application for a MAML or change to such a licence shall be made on a DASR Form 19 (see Appendix V to DASR 66) in a manner established by the MAA and submitted thereto. ▸ **GM**

GM 66.A.10(a) Application (AUS)

1. Where a contractor is working within an ADF DASR 145 maintenance organisation and requires a licence for that work, the contractor is to submit the completed DASR Form 19 to the ADF DASR 145 Quality Manager, who is to check the application for completeness and accuracy prior to submitting the application to the Authority.

2. Where an individual is seeking a licence, but does not have the DASR 145 maintenance organisations endorsement, ie the DASR 145 maintenance organisation does not intend to employ the individual in a position requiring a licence, the individual may submit the completed DASR Form 19 directley to the Authority.

3. Where the DASR 145 maintenance organisation is seeking a licence for an employee, the completed DASR Form 19 is to be checked for completeness and accuracy by the applicants Quality Manager and submitted to the Authority.
NOTE: DASR Form 19 includes Guidance Material to assist the applicant to complete the DASR Form 19 correctly, details of required supporting documents etc.

(b) NOT APPLICABLE.

(c) In addition to the documents required in DASR 66.A.10(a) the applicant for additional basic categories or subcategories to a MAML shall submit their current MAML to the MAA together with the DASR Form 19. ▸ **GM**

GM 66.A.10(c) Application (AUS)

1. Completed DASR Form 19 is to be checked by the applicant's Quality Manager and submitted to the Authority.

2. DASR Form 19 includes Guidance Material to assist applicants to complete the Form correctly, details of required supporting documents etc.

(d) NOT APPLICABLE.

(e) NOT APPLICABLE.

(f) Each application shall be supported by documentation to demonstrate compliance with the applicable theoretical knowledge, practical training and experience requirements at the time of application. ▸ **GM**

GM 66.A.10(f) Application (AUS)

DASR Form 19 Guidance Material details the required documentation.

Aeroskills qualifications or Statements of Attainment provide the basis for licences, however the MAA may consider a non-Aeroskills qualification or Statement of Attainment.

66.A.15 - Eligibility

▸ **GM**

GM 66.A.15 Eligibility (AUS)

1. Licences are required in order to issue a Certificate of Release to Service (CRS) following any on-aircraft maintenance. Whilst off-aircraft maintenance of components must have a DASR Form 1 – sometimes referred to as a CRS - the individual issuing the component's DASR Form 1 is not required to hold a licence – see DASR 145.A.30(i).

2. Applicants may apply for a licence at 18 years of age. However, in accordance with DASR 145.A.35(m), individuals are not permitted to issue a Certificate of Release to Service for an aircraft until they are 21 years old.

An applicant for a MAML shall be at least 18 years of age.

66.A.20 - Privileges

▸ **GM**

GM 66.A.20 - Privileges (AUS)

1. The requirement for licence holders to issue a Certificate of Release to Service (CRS) applies only when on-aircraft maintenance has occurred. Off-aircraft (component) maintenance does not require the use of a licence holder to sign the DASR Form 1.

2. Terms such as 'exercising certification privileges' in DASR 66.A.20 refer to an authorised licence holder issuing a CRS following on-aircraft maintenance.

(a) The following privileges shall apply: ▸ **GM**

GM 66.A.20(a) Privileges

1. The following definitions apply:
Electrical system means the aircraft electrical power supply source, plus the distribution system to the different components contained in the aircraft and relevant connectors. Lighting systems are also included in this definition. When working on cables and connectors which are part of these electrical systems, the following typical practices are included in the privileges:

– Continuity, insulation and bonding techniques and testing;

– Crimping and testing of crimped joints;

– Connector pin removal and insertion;

– Wiring protection techniques.

Avionics system means an aircraft system that transfers, processes, displays or stores analogue or digital data using data lines, data buses, coaxial cables, wireless or other data transmission medium, and includes the system's components and connectors. Examples of avionics systems include the following:

– Autoflight;

– Communication, Radar and Navigation;

– Instruments (see NOTE below);

– Integrated Modular Avionics (IMA);

– On-Board Maintenance Systems;

– Information Systems;

– Fly-by-Wire Systems (related to S1000D"Flight Controls");

– Fibre Optic Control Systems.

NOTE: Instruments are formally included in the privileges of the B2 MAML holders. However, maintenance on electro-mechanical and pitot-static components may also be released by a B1 MAML holder.

Armament, rescue and escape systems and other military-specific systems means systems associated with the carriage, targeting and release of weapons; reconnaissance and

surveillance equipment; self-protection, electronic warfare and aircrew escape systems. Examples of armament, rescue and escape systems and other military-specific systems include the following:

– weapons;

– weapons release/launch mechanisms;

– Ejection seats.

Simple test means a test described in approved maintenance data and meeting all the following criteria:

– The serviceability of the system can be verified using aircraft controls, switches, Built-in Test Equipment (BITE), Central Maintenance Computer (CMC) or external test equipment not involving special training;

– The outcome of the test is a unique go–no go indication or parameter, which can be a single value or a value within an interval tolerance. No interpretation of the test result or interdependence of different values is allowed;

– The test does not involve more than 10 actions as described in the approved maintenance data (not including those required to configure the aircraft prior to the test, i.e. jacking, flaps down, etc., or to return the aircraft to its initial configuration). Pushing a control, switch or button, and reading the corresponding outcome may be considered as a single step even if the maintenance data shows them separated.

Troubleshooting means the procedures and actions necessary to identify the root cause of a defect or malfunction using approved maintenance data. It may include the use of BITE or external test equipment.

Line maintenance means any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. It may include:

– troubleshooting;

– defect rectification;

– component replacement with the use of external test equipment, if required. Component replacement may include components such as engines and propellers;

– scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in-depth inspection. It may also include internal structure, systems and powerplant items which are visible through quick opening access panels/ doors;

– minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.

Base Maintenance means any task falling outside the criteria that are given above for Line Maintenance.

2. NOT APPLICABLE.

3. The Category C MAML permits certification of scheduled base maintenance by the issue of a single "certificate of release to service for aircraft" after the completion of all such maintenance. The basis for this certification is that the maintenance has been carried out by competent mechanics and Category B1, B2 support staff, as appropriate, who have signed for the maintenance tasks under their respective specialisation. The principal function of the Category C certifying staff is to ensure that all required maintenance has been called up and signed off by the Category B1, B2 support staff, as appropriate, before issue of the "certificate of release to service for aircraft". Only Category C personnel who also hold the appropriate Category B1 or B2 endorsement may perform both roles in base maintenance.

1. A Category A MAML permits the holder to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in DASR 145.A.35. The certification privileges shall be restricted to work that the licence holder has personally performed in the DASR 145 AMO that issued the certification authorisation. ▸ GM1 ▸ GM2

GM2 66.A.20(a)1 - Line maintenance (AUS)

Where Line maintenance involves more than one person, a Category B MAML holder with appropriate privileges shall issue the CRS.

GM1 66.A.20(a)1 - Minor scheduled maintenance (AUS)

For an indicative list of simple minor scheduled Line maintenance and simple defect rectification refer to DASR AMC 145.A.30(g), paragraph 2.

2. A Category B1 MAML shall permit the holder to issue certificates of release to service and to act as B1 support staff for the following:

– maintenance performed on aircraft structure, powerplant, mechanical systems and electrical systems, and

– work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

Category B1 includes the corresponding A subcategory.

3. A Category B2 MAML shall permit the holder:

i. to issue certificates of release to service and to act as B2 support staff for the following:

– maintenance performed on avionic and electrical systems, and

– electrical and avionics tasks within powerplant and mechanical systems, requiring only simple tests to prove their serviceability

ii. to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks

specifically endorsed on the certification authorisation referred to in DASR 145.A.35. This certification privilege shall be restricted to work that the MAML holder has personally performed in the AMO which issued the certification authorisation and limited to the Military Aircraft Type Ratings already endorsed in the B2 MAML. ▸ **GM1**

GM1 66.A.20(a)3(ii) - Certification Privileges (AUS)

DASR AMC 145.A.30(g) paragraph 2 gives an indicative list of simple minor scheduled Line maintenance and simple defect rectifications, which may constitute category A tasking. A B2 MAML holder who has attained an A category, will have the A category privileges and therefore can issue CRS for those tasks they have personally performed.

Category B2 does not include any A subcategory. ▸ **GM2**

GM2 66.A.20(a)3(ii) Certification Privileges (AUS)

Individuals eligible for a Category B2 licence may also be eligible for a Category A licence, providing their training, qualifications and experience satisfy the requirements of DASR 66.A.25 and DASR 66.A.30.

4. NOT APPLICABLE.

5. A Category C MAML shall permit the holder to issue certificates of release to service for aircraft following base maintenance on aircraft. The privileges apply to the aircraft in its entirety.

6. Categories A, B1 and B2 MAMLs can have extensions (DASR 66.A.52) to address one or more of the military-specific topics included in Appendix I to DASR 66 (Modules 50 - 55). These shall permit the holder to issue certificates of release to service and act as support staff appropriate to the basic knowledge gained from all modules and as approved by the MAA for maintenance performed on armament, rescue and escape systems and other military-specific systems.

(b) The holder of a MAML shall not exercise its privileges unless: ▸ **AMC**

AMC 66.A.20(b) - Privileges

The holder of a Category A MAML may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant Category A aircraft task training carried out by an organisation appropriately approved in accordance with DASR 145 or DASR 147. This training shall include practical hands-on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment carried out by the DASR 145 AMO or DASR 147 MTO.

The holder of a Category B2 MAML may only exercise the certification privileges described in DASR 66.A.20(a)(3)(ii) following the satisfactory completion of:

i. the relevant Category A aircraft task training; and

ii. 6 months of documented practical experience covering the scope of the authorisation that will be issued.

The task training shall include practical hands-on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment. Task training and examination / assessment shall be carried out by the DASR 145 AMO issuing the certifying staff authorization or DASR 147 MTO. The practical experience shall be obtained within the same DASR 145 AMO.

1. in compliance with the applicable requirements of DASR M and DASR 145; and

2. in the preceding 2-year period the holder has, either had 6 months of maintenance experience in accordance with the privileges granted by the MAML or, met the provision for the issue of the appropriate privileges; and ▸ **AMC** ▸ **AMC1** ▸ **GM** ▸ **GM1** ▸ **GM2** ▸ **GM3** ▸ **GM4**

GM4 66.A.20(b)2 - Privileges (AUS)

The intent of this clause is to permit certification authorisations experienced personnel such as ADF reserve members or part-time contractors.

GM3 66.A.20(b)2 - Privileges (AUS)

This GM allows QMs to issue certification authorisations to experienced individuals who do not meet the currency requirements but in all other respects are suitable. This clause is for circumstances such as:

a. for the temporary replacement of licence holders within the DASR 145 organisation who have been deployed or temporarily relocated and

b. the temporary vacancy being filled by licence holders currently working in non-maintenance positions such as in CAMOs, tool stores etc but who's licence currency has lapsed.

GM2 66.A.20(b)2 - Privileges (AUS)

Licence holders who work infrequently in DASR 145 organisations include, but are not limited to personnel such as ADF reserve members, contractor personnel with part-time contracts and personnel who work in areas aligned with, but separate from DASR 145 organisations, such as in Maintenance Control Flights or Technical Training Flights.

GM1 66.A.20(b)2 - Privileges (AUS)

1. Individuals who:

   a. have only recently been issued with a licence have met the provision for the issue of the appropriate privileges and do not need to comply with the 6 months of maintenance experience provision; or

   b. have previously been issued with a licence and are returning to a DASR 145 maintenance organisation after an extended period in a non-maintenance environment, eg long service leave, a 'ground job' etc, may be authorised to exercise their licence when DASR 145 maintenance organisation is satisfied that the individual has the competence to properly exercise their licence. There is no minimum 'qualifying' period before the DASR 145 maintenance organisation can issue certification privileges, it depends entirely on how long it takes the

individual to attain or re-gain the knowledge, skills and attitude necessary to exercise the licence.

OR

3. Individuals who:

   a. have previously been issued with a licence and are changing jobs to work on a new aircraft type must undertake appropriate Type course(s) and achieve a Type-rating before the DASR 145 maintenance organisation can authorise the licence holder to exercise their licence privileges.

NOTE: In accordance with the requirements of DASR AMC1 145.A.35(b).

GM 66.A.20(b)2 Privileges

The sentence "met the provision for the issue of the appropriate privileges" included in DASR 66.A.20(b)2 means that during the previous 2 years the person has met all the requirements for the endorsement of the corresponding Military Aircraft Type Rating. This supersedes the need for 6 months of experience for the first 2 years. However, the requirement of 6 months of experience in the preceding 2 years will need to be met after the second year.

AMC1 66.A.20(b)2 - Privileges (AUS)

1. DASR 66.A.20(b) sets out currency requirements for licence holders. The primary purpose of this clause is to ensure that licence holders are up to date in their knowledge of technical data related to the aircraft and supporting systems, processes and procedures.

2. Licence holders who work infrequently in DASR 145 organisations may not be aware of changes made to any of the factors described in the previous para while they are not working within the DASR 145 organisation. (See DASR GM2 66.A.20(b)2). Such personnel, should not normally be issued certification authorisations if they do not meet the currency requirements of DASR 66.A.20(b).

3. QMs may issue certification authorisations to B1, B2 and / or C category licence holders who do not meet the currency requirements of DASR 66.A.20(b) if the QM is otherwise satisfied of the individual's suitability. Such authorisations may only be made when the following conditions are satisfied:

   a. the DASR 145 organisation temporarily loses a licence holder and needs to fill the position for a defined period until either the employee returns to work or recruitment/posting action fills the position; (See DASR GM3 66.A.20(b)2), or

   b. the licence holder is non-permanent staff (See DASR GM4 66.A.20(b)2), and

   c. the licence holder has exercised their licence for a minimum of five years on the aircraft type, and

   d. the QM has assessed and is satisfied that the licence holder is up-to-date in the factors identified in paragraph 1.

4. QMs are to report to DASA each time any such certification authorisation is used. The report is to identify authorised individuals, their DASR 66 licence number, the period for which they are being authorised and the date on which their licences currency lapsed.

5. QMs may issue certification authorisations to personnel who have been employed in non-maintenance positions for a sufficiently long period for their licence currency to lapse, but have then returned to a DASR 145 organisations, once the QM is satisfied such individuals are up-to-date in the factors identified in paragraph 1. QMs can issue the certification authorisations by using the final clause of DASR 66.A.20(b) '… met the provision for the issue of the appropriate privileges'.

AMC 66.A.20(b)2 - Privileges

The 6 months maintenance experience in 2 years should be understood as consisting of two elements: duration and nature of the experience. The minimum to meet the requirements for these elements may vary depending on the size and complexity of the aircraft and type of operation and maintenance. See also DASR 145.A.35(c) regarding experience requirements and DASR AMC 145.A.35(c) regarding military exigencies.

1. Duration:
Within an Approved Maintenance Organisation:

   – 6 months working within the same organisation; or

   – 6 months split up into different blocks, working within the same or in different organisations.

2. Nature of the experience:
Depending on the category of the MAML, the following activities are considered relevant for maintenance experience:

   – Servicing;

   – Inspection;

   – Operational and functional testing;

   – Troubleshooting;

   – Repairing;

   – Modifying;

   – Changing components;

   – Supervising these activities;

   – Releasing aircraft to service.

   For Category A MAML holders, the experience should include exercising the privileges, by means of performing tasks related to the authorisation. This means tasks as mentioned in DASR AMC 145.A.30(g), including servicing, component changes and simple defect rectifications.

For Category B1 and B2, for every Military Aircraft Type Rating included in the authorisation the experience should be on that particular aircraft or on a similar aircraft within the same series. Two aircraft within the same series can be considered as similar when they have similar technology, construction and comparable systems, which means equally equipped, for example, with the following (as applicable to the MAML category):

– Propulsion systems (piston, turboprop, turbofan, turboshaft, jet-engine or pushpropellers); and

– Flight control systems (mechanical controls, hydromechanically powered controls or electromechanically powered controls); and

– Avionic systems (analogue systems or digital systems); and

– Weapon systems (including aircrew assisted escape systems and weapons carried); and

– Structure (manufactured of metal or composite).

For Category C, the experience should cover at least one of the aircraft types endorsed on the MAML.

For a combination of categories, the experience should include some activities of the nature shown in paragraph 2 in each category.

A maximum of 20% of the experience duration required may be replaced by the following relevant activities on an aircraft type of similar technology, construction and with comparable systems:

– Aircraft maintenance related training as an instructor/assessor or as a student;

– Maintenance technical support/engineering;

– Maintenance management/planning.

– The duties undertaken in the positions listed above can vary widely. Depending on the actual duties, the MAA may permit a reduction of the experience duration of more than 20%. Individuals who consider they may be eligible for a reduction of more than 20% should contact the MAA.

The experience should be documented in an individual logbook or in any other recording system approved by the MAA (which may be an automated / computerised one) containing the following data:

– Date;

– Aircraft type;

– Aircraft identification, i.e. registration;

– S1000D Chapter (optional);

– Operation performed e.g. 100 flight hours check, main landing gear wheel change, engine oil check and complement, Service Bulletin (or national equivalent) embodiment, troubleshooting, structural repair, ejection seat change…;

– Type of maintenance, i.e. base, line;

– Type of activity, i.e. perform, supervise, release;

– Category used: A, B1, B2 or C;

– Duration in days or partial-days.

The experience may be recorded in a logbook, an e-RTE, PEX (AATR) or an 'A' Card

3. they have the adequate competence to certify maintenance on the corresponding aircraft; and ▸ **AMC**

AMC 66.A.20(b)3 Privileges

The wording "has the adequate competence to certify maintenance on the corresponding aircraft" means that the MAML holder and, if applicable, the Approved Maintenance Organisation where they are contracted/employed, should ensure that the MAML holder has acquired the appropriate knowledge, skills, attitude and experience to release the aircraft being maintained. This is essential because some systems and technology present in the particular aircraft being maintained may not have been covered by the training/examination/experience required to obtain the MAML and ratings. This is typically the case, among others, in the following situations:

– Work being carried out on a model/variant for which the technical design and maintenance techniques have significantly evolved from the original model used in the Military Aircraft Type Training/On-the-Job Training.

– Specific technology, options and configurations which may not have been covered by the Military Aircraft Type Training/On-the-Job Training.

– Changes in the basic knowledge requirements of Appendix I to DASR 66 not requiring re-examination of existing MAML holders (grandfathered privileges).

– Persons meeting the requirements of 6 months of experience every 2 years only on certain similar aircraft types as allowed by DASR AMC 66.A.20(b)2.

– Persons holding a MAML with limitations obtained through conversion of national qualifications (DASR 66.A.70), where such limitations are going to be lifted after performing the corresponding basic knowledge examinations. In this case, the Military Aircraft Type Ratings endorsed in the MAML may have been obtained in the national system without covering all the aircraft systems (because of the previous limitations) and there will be a need to assess and, if applicable, to train this person on the missing systems.

Additional information is provided in DASR AMC 145.A.35(a).

4. they are able to read, write and communicate to an understandable level in the language(s) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written. ▸ GM

GM 66.A.20(b)4 Privileges

1. Holders of a MAML may only exercise certification privileges when they have a general knowledge of the language used within the maintenance environment including knowledge of common aeronautical terms in the language. The level of knowledge should be such that the MAML holder is able to:

   – read and understand the instructions and technical manuals used for the performance of maintenance;

   – make written technical entries and any maintenance documentation entries, which can be understood by those with whom they are normally required to communicate;

   – read and understand the AMO procedures;

   – communicate at such a level so as to prevent any misunderstanding when exercising certification privileges.

2. In all cases, the level of understanding should be compatible with the level of certification privileges exercised.

66.A.25 - Basic knowledge requirements

▸ AMC

AMC 66.A.25 Basic knowledge requirements

1. For an applicant being a person qualified by holding an academic degree in an aeronautical, mechanical or electronic discipline from a recognised university or other higher educational institute the need for any examination depends upon the course taken in relation to Appendix I to DASR 66.

2. Knowledge gained and examinations passed during previous experiences, for example in civilian aviation and apprenticeships, may be credited where the MAA is satisfied that such knowledge and examinations are equivalent to that required by Appendix I to DASR 66.

(a) An applicant for a MAML, the extension to a MAML or the addition of a category or subcategory to such a MAML, shall demonstrate by examination a level of knowledge in the appropriate subject modules in accordance with Appendix I. The examination shall be conducted either by an MTO appropriately approved in accordance with DASR 147 or by the MAA. ▸ GM

GM 66.A.25(a) Basic knowledge requirements

The levels of knowledge for each MAML (sub)category are directly related to the complexity of the certifications related to the corresponding MAML (sub)category, which means that

Category A should demonstrate a limited but adequate level of knowledge, whereas Category B1 and B2 should demonstrate a complete level of knowledge in the appropriate subject modules.

(b) The training courses and examinations shall be passed within 10 years prior to the application for a MAML, the extension to a MAML or the addition of a category or subcategory to such a MAML. Should this not be the case, examination credits may however be obtained in accordance with point (c).

(c) The applicant may apply to the MAA for full or partial examination credit to the basic knowledge requirements for:

1. basic knowledge examinations that do not meet the requirement described in point (b) above; and

2. any other technical qualification considered by the MAA to be equivalent to the knowledge standard of this DASR. If the applicant holds an EASA Part 66 licence, the MAA may accept the EASA licence as a basis, only requiring additional training to cover the differences between the EASA licence and the MAML requirements. ▸ **AMC**

AMC 66.A.25 (c)2 Qualifications (AUS)

The proviso regarding other technical qualifications also applies to licences issued by other CAAs recognised by the MAA, such as EASA, EMAR signatories and CASA.

Credits shall be granted in accordance with Annex A.

(d) Credits expire 10 years after they were granted to the applicant by the MAA. The applicant may apply for new credits after expiration. ▸ **GM**

GM 66.A.25(d) Basic knowledge requirements

Where the relevant basic knowledge requirements remain unchanged, no additional training is required for credit renewal.

(e) Modules 50-55 shall be used to provide extensions to a MAML for military-specific systems. Module 53 includes sub-modules that can also be used to provide extensions to a MAML for military-specific systems.

66.A.30 - Basic experience requirements

(a) An applicant for a MAML shall have acquired: ▸ **GM**

GM 66.A.30(a) - Basic experience requirements

1. While an applicant for a Category C MAML may be qualified by having 3 years' experience as a Category B1 or B2 certifying staff only in line maintenance, it is however recommended that any applicant for a Category C holding a B1 or B2 MAML demonstrate at least 12 months experience as a B1 or B2 support staff.

2. A 'skilled worker' is a person who has successfully completed training acceptable to the MAA and involving the manufacture, repair, overhaul or inspection of mechanical, electrical, electronic or, where applicable, military-specific equipment. The training would include the use of tools and measuring devices.

3. Maintenance experience on operating military aircraft:

   – Means the experience of being involved in maintenance tasks on aircraft which are being operated by the military and state aircraft;

   – Should cover a wide range of tasks in length, complexity and variety;

   – Aims at gaining sufficient experience in the real environment of military aircraft maintenance as opposed to only the training school environment;

   – May be combined with DASR 147 approved training so that periods of training can be intermixed with periods of experience, similar to an apprenticeship.

4. Within the meaning of DASR AMC 66.A.30(a) paragraph 1, the term "engineering" refers to activities performed within a DASR 145 organisation or within a CAMO that are associated with repairs and modifications (which may or may not need to be further processed for approval) in accordance with the MOE.

5. Where the practical element of the Military Aircraft Type Training is performed concurrently with the OJT element and both are performed on the same military aircraft type and in a real maintenance environment, this can count towards the experience requirements detailed in DASR 66.A.30.

1A. for Category A:

(i) 3 years of practical maintenance experience on operating military aircraft, if the applicant has no previous relevant technical training; or

(ii) 2 years of practical maintenance experience on operating military aircraft and completion of training considered relevant by the MAA as a skilled worker, in a technical trade; or

(iii) 6 months of practical maintenance experience on operating military aircraft and completion of a basic training course providing the minimum practical training (as detailed in Column 4 of Appendix 1 to DASR 147) approved in accordance with DASR 147; or ▸ **GM**

GM 66.A.30(a)1A(iii) Initial training (AUS)

Initial employment training delivered to trainees of all three Services provides the minimum practical training detailed in Appendix I to DASR 66. Therefore, maintenance personnel who have completed their initial employment training are eligible for a category A licence after six months of practical training, following completion of specific aircraft task training in accordance with DASR AMC 66.A.20(b), and have achieved syllabus Module 10 requirements, eg by completion of Trade Supervisors Principles course, CPL Sub 4, LS ATT or completed the Module 10 Make-up Training (PMKeyS Proficiency P124930).

The duration of practical training delivered by other Australian aviation maintenance training providers has not been assessed by the DASA. Applicants trained by other training providers will have to provide evidence of the duration of practical training they completed if a reduction in the 'on operating military aircraft' eligibility criteria is claimed.

(iv) 1 years of practical maintenance experience on operating military aircraft and completion of a basic training course that does not provide the recommended minimum practical training (as defined in Column 4 of Appendix 1 to DASR 147) approved in accordance with DASR 147.

1B. for Subcategories B1.2 and B1.4:

(i) 3 years of practical maintenance experience on operating military aircraft, if the applicant has no previous relevant technical training; or

(ii) 2 years of practical maintenance experience on operating military aircraft and completion of training considered relevant by the MAA as a skilled worker, in a technical trade; or

(iii) 1 year of practical maintenance experience on operating military aircraft and completion of a basic training course providing the minimum practical training (as detailed in Column 4 of DASR 147 Appendix I) approved in accordance with DASR 147; or

(iv) 2 years of practical maintenance experience on operating military aircraft and completion of a basic training course that does not provide the recommended minimum practical training (as defined in Column 4 of Appendix 1 to DASR 147) approved in accordance with DASR 147.

The 2 years of practical maintenance experience can be reduced by the duration of the practical training given during the basic training course with a maximum reduction of 1 year. (**NOTE:** as a reference 20 hours of practical training will be considered as being equivalent to a duration of 1 week.)

2. for Categories B2 and Subcategories B1.1 and B1.3:

(i) 5 years of practical maintenance experience on operating military aircraft if the applicant has no previous relevant technical training; or

(ii) 3 years of practical maintenance experience on operating military aircraft and completion of training considered relevant by the MAA as a skilled worker, in a technical trade; or

(iii) 2 years of practical maintenance experience on operating military aircraft and completion of a basic training course providing the minimum practical training (as detailed in Column 4 of Appendix 1 to DASR 147) approved in accordance with DASR 147; or

(iv) 3 years of practical maintenance experience on operating military aircraft and completion of a basic training course that does not provide the recommended minimum practical training (as defined in Column 4 of Appendix 1 to DASR 147) approved in accordance with DASR 147.

The 3 years of practical maintenance experience can be reduced by the duration of the practical training given during the basic training course with a maximum reduction of 1 year. (**NOTE:** as a reference 20 hours of practical training will be considered as being equivalent to a duration of 1 week.)

3. for Category C:

(i) 3 years of experience exercising Category B1.1, B1.3 or B2 privileges or as support staff according to DASR 145.A.35, or a combination of both; or

(ii) 5 years of experience exercising Category B1.2 or B1.4 privileges or as support staff according to DASR 145.A.35, or a combination of both.

4. NOT APPLICABLE.

5. for Category C obtained through the academic route: an applicant holding an academic degree in a technical discipline, from a university or other higher educational institution, recognised by the MAA, plus: ▸ **AMC**

AMC 66.A.30(a)(5) Qualifications (AUS)

Academic qualifications in relevant disciplines shall be:

1. a four-year Bachelor of Engineering degree under an Australian accredited or recognised programme in Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Software or Electrical Engineering, or

2. a qualification which results in the individual achieving Chartered Professional Engineer (CPEng), Chartered Engineering Technologist (CEngT) or Chartered Engineering Associate (CEngA) status with the Institution of Engineers Australia (IEAust) or an equivalent professional body recognised by the IEAust.

(i) 3 years of experience working in a military aircraft maintenance environment on a representative selection of tasks directly associated with military aircraft maintenance including 6 months of observation of base maintenance tasks; or

(ii) experience as detailed by the MAA but not less than 6 months of observation of base maintenance tasks. ▸ **AMC** ▸ **AMC1** ▸ **GM**

GM 66.A.30(a)(5)(ii) Basic experience requirements (AUS)

Where necessary, the MAA will identify gaps in applicant's knowledge and/or experience and will provide the applicant with advice on how the applicant can resolve such gaps.

AMC1 66.A.30(a)(5)(ii) Basic experience requirements (AUS)

1. Military Tertiary Qualified (TQ) engineers are eligible for a category C licence 12 months after completing the relevant Service's engineering officer initial employment training, completion of Type course(s) relevant to their qualification and category (AERO or ELECTR(E)) and role in the DASR 145 organisation. The phrase '6 months of observation of Base maintenance' means that the TQ engineer is to understudy and be mentored by C category licence holder(s) such that the engineer is competent to exercise the privileges of the C licence holder when they become eligible for it.

2. Contractor TQ engineers are eligible for a category C licence 12 months after completing the company's induction training, completion of Type course(s) relevant to their position and no less that 6 months observation of Base maintenance.

3. Where necessary, the Authority will identify gaps in applicant's knowledge and/or experience and will provide the applicant with advice on how the applicant can resolve such gaps.

AMC 66.A.30(a)(5)(ii) Basic experience requirements

1. For a Category C applicant holding an academic degree the representative selection of tasks should include the observation of hangar maintenance, maintenance planning, quality assurance, record-keeping, approved spare parts control and engineering. Where an MAA requires further experience or a specific training syllabus, this should be clearly detailed.

(b) An applicant for an additional category or subcategory to a MAML shall have a minimum aircraft maintenance experience requirement appropriate to the additional category or subcategory of MAML applied for as defined in Appendix IV to DASR 66.

(c) The experience shall be practical and involve a representative cross section of maintenance tasks on aircraft.

(d) At least 1 year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial MAML is sought. For subsequent category/subcategory additions to an existing MAML, the additional recent maintenance experience required may be less than 1 year, but shall be at least 3 months. The required experience shall be dependent upon the difference between the MAML category/subcategory held and applied for. Such additional experience shall be typical of the new MAML category/subcategory sought. ▸ **AMC**

AMC 66.A.30(d) Basic experience requirements

To be considered as 'recent maintenance experience', at least 50% of the required one year 'recent maintenance experience' should be gained within the 12-month period prior to the date of application for the MAML. The remainder of the 'recent maintenance experience' should have been gained within the 7-year period prior to application. It must be noted that the rest of the basic experience required by DASR 66.A.30 must be obtained within the 10 years prior to the application as required by DASR 66.A.30(f).

(e) Notwithstanding paragraph (a), aircraft maintenance experience gained outside a military aircraft maintenance environment may be accepted when such maintenance is equivalent to that required by this DASR as established by the MAA. Additional experience of military aircraft maintenance shall, however, be required to ensure adequate understanding of the military aircraft maintenance environment. ▸ **AMC**

AMC 66.A.30(e) Basic experience requirements

1. For Category A the additional experience of military aircraft maintenance should be a minimum of 6 months. For Category B1 or B2 the additional experience of military aircraft maintenance should be a minimum of 12 months.

2. Aircraft maintenance experience gained outside a military aircraft maintenance environment may include aircraft maintenance experience gained in the civil environment, other nation's armed forces, coast guards, police, etc., or in aircraft manufacturing.

(f) Experience shall have been acquired within the 10 years preceding the application for a MAML or the addition of a category or subcategory to such a MAML.

66.A.40 - Continued validity of the Military Aircraft Maintenance Licence

▸ **GM**

GM 66.A.40 Continued validity of the Military Aircraft Maintenance Licence

The validity of the MAML is not affected by recency of maintenance experience whereas the validity of the DASR 66.A.20 privileges is affected by maintenance experience as specified in DASR 66.A.20(b).

(a) The MAML shall be issued for an unlimited duration. It shall remain valid subject to the holder remaining in compliance with the requirements in this DASR and the MAML not being suspended, surrendered or revoked.

(b) Upon suspension, surrendering or revocation the MAML shall be returned to the MAA.

(c) Any certification privilege based upon a MAML becomes invalid as soon as the MAML is invalid.

(d) The MAML is only valid:

1. when issued and/or changed by the MAA; and

2. when the holder has signed the document.

(e) If the MAML holder's name, service number or state ID number change, the MAML shall be resubmitted to the MAA within 30 days. ▸ **GM**

GM 66.A.40(e) Personal Identification (AUS)

For Defence members, PMKeyS is the equivalent of service number/state ID number. Contractor staff do not have any equivalent.

66.A.45 - Military Aircraft Type Ratings

▸ **AMC**

AMC 66.A.45 Military Aircraft Type Ratings

The following table summarises the Military Aircraft Type Rating requirements contained in DASR 66.A.45, DASR 66.A.50 and Appendix III to DASR 66.

Note: OJT means "On-the-Job Training" (see Appendix III to DASR 66, Section 6).

Military Aircraft Type Rating requirements		
Aircraft Group	**B1/ B2 MAML**	**C MAML**
All military aircraft are considered to be complex motorpowered aircraft	MILITARY AIRCRAFT TYPE RATING Military Aircraft Type Training: - Theory + examination - Practical + assessment PLUS OJT (for first aircraft in licence subcategory. For subsequent Military Aircraft Type Rating within the same category/sub-category, further OJT only if required by the MAA)	MILITARY AIRCRAFT TYPE RATING Military Aircraft Type Training: - Theory + examination

(a) In order to be entitled to exercise certification privileges on a specific aircraft type, the holder of a MAML shall have their MAML endorsed with the relevant Military Aircraft Type Ratings, following satisfactory completion of the relevant Military Aircraft Type Training within an DASR 147 approved MTO. ▸ **GM**

GM 66.A.45(a) Certification Privileges (AUS)

To clarify, '…entitled to exercise certification privileges on a specific aircraft type..' means entitled to issue a Certificate of Release to Service following on-aircraft maintenance.

For Category A, no Military Aircraft Type Rating is required, subject to compliance with the task training requirements of DASR 145.A.35.

(b) The issuing of a Military Aircraft Type Rating requires the satisfactory completion of the relevant Category B1, B2 or C Military Aircraft Type Training. Where relevant, the MAA may accept an appropriate EASA aircraft type rating as evidence of having undertaken a partial or full equivalent to Military Aircraft Type Training. ▸ **GM**

GM 66.A.45(b) Certification Privileges (AUS)

This proviso may also apply to type ratings issued by other CAAs recognised by the MAA, such as EASA, EMAR signatories and CASA.

(c) In addition to the requirement of point (b), the issuing of the first Military Aircraft Type Rating within a given category/sub-category requires satisfactory completion of the corresponding On the Job Training, as described in Appendix III to DASR 66. Any subsequent Military Aircraft Type Rating within a given category/sub-category may require further On the Job Training as defined by the MAA.

(d) NOT APPLICABLE.

(e) NOT APPLICABLE.

(f) NOT APPLICABLE.

(g) NOT APPLICABLE.

66.A.50 - Limitations

(a) Limitations introduced on a MAML are exclusions from the certification privileges. If a new Military Aircraft Type Rating is gained, the MAML limitation(s) shall continue to apply to the new Military Aircraft Type Rating. ▸ **AMC** ▸ **GM**

GM 66.A.50(a) Limitations (AUS)

To clarify, 'Limitations introduced on a MAML are exclusions from the certification privileges…' means that the licence holder shall not issue a Certificate of Release to Service or act as B1 or B2 support staff if maintenance related to that exclusion has occurred.

AMC 66.A.50(a) Limitations

In case of partial qualification resulting from missing modules, the MAML should incorporate the relevant limitations in accordance with DASR 66.A.50.

(b) NOT APPLICABLE.

(c) Any limitation shall be removed upon satisfactory completion of the relevant requirements of DASR 66 or as defined in the applicable conversion report. ▸ **AMC**

AMC 66.A.50(c) Limitations (AUS)

Conversion reports are to be complied by the MAA and they are to address the following:

1. The conversion report for licences or other qualifications into a MAML shall describe the scope of each type of qualification, including the associated national licence, if any, the associated privileges and include a copy of the relevant national regulations defining these.

2. The conversion report shall show for each type of qualification referred to in point (i):

   a. to which MAML it will be converted; and

   b. which limitations/extensions shall be added; and

   c. the conditions to remove the limitations, specifying the Appendix I module/ subjects on which examination is needed to remove the limitations and obtain a full MAML, or to include an additional (sub-) category. This shall include the modules defined in Appendix III not covered by the national qualification.

66.A.52 - Extensions

▸ **GM**

GM 66.A.52 Extensions (AUS)

1. An individual does not require a licence extension to perform or supervise cross-trade maintenance, but they have to be authorised by the DASR 145 maintenance organisation to perform and supervise that maintenance.

2. An individual issuing an aircraft Certificate of Release to Service (CRS) following cross-trade maintenance shall have a licence with appropriate extension(s) or exclusion(s) removed, if that maintenance is outside the scope of the individuals standard trade training. For example, an experienced ATECH/ECN41/ATA or equivalent will usually have a category B1 licence with electrical system maintenance exclusion. Such an individual would not be able to issue a CRS following line maintenance if that maintenance was on some part of the aircrafts electrical system.

3. Individuals carrying out error capturing activities (independent inspections) do not require a licence however, they have to be authorised by the DASR 145 maintenance organisation to carry out such activities.

Extensions introduced on a MAML may allow additional certification privileges. ▸ **AMC**

AMC 66.A.52 Extensions

In case of extended qualification resulting from additional modules or sub-modules, the MAML should incorporate the relevant extensions.

a. When granting an extension, the MAA shall ensure that the extension on a MAML results in a level of safety equal to that of the full MAML category. In particular, the MAA shall define and document which education and training is required for any extension.

b. On receipt of a satisfactory DASR Form 19 and any supporting documentation, the MAA shall endorse the extension by stamp and signature or reissue the licence.

c. The MAA record system shall be changed accordingly.

66.A.55 - Evidence of qualification

Personnel exercising certification privileges as well as support staff shall produce their MAML, as evidence of qualification, within 72 hours upon request by an official of the MAA.

66.A.70 - Conversion provisions

▸ **GM**

GM 66.A.70 Conversion provisions (AUS)

1. The DASA has mapped licence syllabi requirements to Aeroskills qualifications and to aircraft systems. The Authority has also developed a software program to extract information on qualifications, training, experience and task authorisations (proficiencies) stored in PMKeyS for ADF technicians.

2. The program permits the automatic generation of licences. The DASA will issue licences to eligible ADF technicians.

3. The DASA does not have information on qualifications, training, experience and task authorisations for contractor technicians. Therefore contractor personnel will need to apply for licences using DASR Form 19.

The holder of a licence or other qualification for the maintenance of aircraft gained prior to, or an individual undergoing a process to gain such a licence or other qualification prior to, a date established in national regulation shall follow the procedures for conversion into a MAML as set out in Annex B to DASR 66. ▸ **GM**

GM 66.A.70 Conversion provisions

1. As described in point DASR 66.A.70, the conversion provisions apply to the holder of a valid certifying staff qualification prior to the date of entry into force of DASR 66. This means that the signature of that person was sufficient to declare that the maintenance had been properly performed and the aircraft was ready for service and fit for flight in respect to such maintenance.

2. The conversion applies to "certifying staff qualifications" such as, for example:

   – Holding a pre-existing national licence or equivalent (or completed the process to obtain such a national licence);

   – Having completed a qualification process defined by the MAA to become certifying staff;

   – Having completed the qualification requirements for certifying staff within an AMO, as defined in its procedures.

   This does not mean that in order to be entitled to a conversion process, the applicant has to be exercising certification privileges. A person may hold a "certifying staff qualification" while not having certification privileges (or while exercising very limited certification privileges below their qualification) for different reasons such as, for example, the following:

   – The person is working as "support staff" in the base maintenance environment;

   – The person has been authorised only for a very limited range of tasks (lower than what they would be entitled if their qualification were considered) since the person is working in a line station where the scope of tasks is very limited;

– The person holds a licence or national equivalent with a wider scope than the scope of the organisation where they are employed;

– The person is working outside the military aviation environment or is temporarily on leave due to different reasons (medical, personal, etc.).

These persons are entitled to have the conversion performed in accordance with the full scope of their qualification and the full privileges that they would be entitled to hold on the basis of such qualification.

3. NOT APPLICABLE.

4. Although only those "certifying staff qualifications" gained prior to the introduction of DASR 66 are eligible for conversion, this does not mean that the application for conversion has to be submitted prior to those dates. The applicant is entitled to have the conversion performed irrespective of when they apply for conversion.

5. NOT APPLICABLE.

6. A limitation may be needed where a person holds a pre-existing licence or other qualification for the maintenance of aircraft which covered, to the standard of DASR 66 Appendix I and DASR 66 II, all the modules/subjects corresponding to the B1 MAML except for electrical power systems. This person would receive a DASR 66 MAML in the B1 Category with a limitation (exclusion) on electrical power systems.
For removal of limitations, refer to DASR 66.A.50(c).

(a) NOT APPLICABLE.

(b) NOT APPLICABLE.

(c) NOT APPLICABLE.

(d) NOT APPLICABLE.

DASR 66 Annexes/Appendices

Annex A to DASR 66 - Examination Credit Procedures (AUS)

This Annex provides the procedures for granting examination credits referred to in DASR 66.A.25(c).

1. **General**

a. The MAA may only grant credit on the basis of a credit report prepared in accordance with paragraph 2.

b. The credit report shall be either developed by the MAA or approved by the MAA to ensure compliance with DASR 66.

c. Credit reports together with any change of these shall be dated and kept on record by the MAA.

2. **Examination credit report**

a. The credit report shall include a comparison between:

1. the modules, sub-modules, subjects and knowledge levels contained in Appendix I to DASR 66, as applicable; and

2. the syllabus of the technical qualification concerned relevant to the particular category being sought.

NOTE: This comparison shall state if compliance is demonstrated and contain the justifications for each statement.

b. Credit for examinations, other than basic knowledge examinations carried out in Maintenance Training Organisations approved in accordance with DASR 147, can only be granted by the MAA.

c. No credit can be granted unless there is a statement of compliance against each module and sub-module, stating where, in the technical qualification, the equivalent standard can be found.

d. The MAA shall check on a regular basis if changes to the credit report are required due to changes to the national qualification standard or Appendix I to DASR 66. Such changes shall be documented, dated and recorded.

3. **Examination credit validity**

a. The MAA shall notify the applicant in writing of any credits granted together with the reference to the credit report used.

b. Credits shall expire 10 years after they are granted.

c. Upon expiration of the credits, the applicant may apply for new credits. The MAA shall continue the validity of the credits for an additional period of 10 years without further consideration if basic knowledge requirements defined in Appendix I have not been changed.

Annex B to DASR 66 - Licence Conversion Procedures (AUS)

This Annex provides the procedures for the conversion of military certifying staff qualifications referred to in DASR 66.A.70 into MAMLs.

1. **General**

The MAA may only convert its own national licences or other military qualifications, without prejudice to bilateral agreements, considered valid prior to the entry into national regulation of the applicable requirements of DASR 66.

The MAA may only perform the conversion in accordance with a conversion report established pursuant to this Annex B, paragraph 2 or paragraph 3, as applicable.

Conversion reports shall be either developed by the MAA or approved by the MAA to ensure compliance with DASR 66.

Conversion reports together with any change of these shall be kept on record by the MAA.

2. Conversion report for licences or other qualifications

a. The conversion report for licences or other qualifications into a MAML shall describe the scope of each type of qualification, including the associated national licence, if any, the associated privileges and include a copy of the relevant national regulations defining these.

b. The conversion report shall show for each type of qualification referred to in point (a):

1. to which MAML it will be converted; and
2. which limitations/extensions shall be added; and
3. the conditions to remove the limitations, specifying the DASR 66 Appendix I module/subjects on which examination is needed to remove the limitations and obtain a full MAML, or to include an additional (sub-) category. This shall include the modules defined in Appendix III not covered by the national qualification.

3. **Conversion report for Approved Maintenance Organisations authorisations**

This paragraph applies to the issuance of a MAML to maintenance personnel who hold an AMO authorisation allowing them to certify aircraft work but who do not hold a formal national qualification as described in this Annex B. ▸ **GM**

GM Annex B(3) Certify aircraft work (AUS)

For the avoidance of doubt, in the preceding paragraph, 'certify aircraft work' means signing a Certificate of Release to Service, or an equivalent certification.

(a) For each AMO concerned, the conversion report shall describe the scope of each type of authorisation issued and include a copy of the relevant AMO's procedures for the qualification and the authorisation of certifying staff on which the conversion process is based.

(b) The conversion report shall show for each type of qualification referred to in point (a):

1. to which MAML it will be converted; and
2. which limitations/extensions shall be added; and
3. the conditions to remove the limitations, specifying the Appendix I to DASR 66 module/subjects on which examination is needed to remove the limitations and obtain a full MAML, or to include an additional (sub-) category. This shall include the modules defined in Appendix III to DASR 66 not covered by the national qualification.

Appendix I to DASR 66 - Basic Knowledge Requirements

1. Knowledge levels for Category A, B1, B2 and C Military Aircraft Maintenance Licence
Basic knowledge for Categories A, B1 and B2 are indicated by knowledge levels (1, 2 or 3) against each applicable subject. Except for the Category C obtained by the academic route

(DASR 66.A.30(a)5 refers), Category C applicants shall meet either the Category B1 or the Category B2 basic knowledge levels.

The knowledge level indicators are defined on 3 levels as follows:

- LEVEL 1: A familiarisation with the principal elements of the subject.

Objectives:

a. The applicant should be familiar with the basic elements of the subject.
b. The applicant should be able to give a simple description of the whole subject, using common words and examples.
c. The applicant should be able to use typical terms.

- LEVEL 2: A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.

Objectives:

a. The applicant should be able to understand the theoretical fundamentals of the subject.
b. The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
c. The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.
d. The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
e. The applicant should be able to apply their knowledge in a practical manner using detailed procedures.

- LEVEL 3: A detailed knowledge of the theoretical and practical aspects of the subject and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.

Objectives:

a. The applicant should know the theory of the subject and interrelationships with other subjects.
b. The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.
c. The applicant should understand and be able to use mathematical formulae related to the subject.
d. The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject.
e. The applicant should be able to apply their knowledge in a practical manner using manufacturer’s instructions.
f. The applicant should be able to interpret results from various sources and measurements and apply corrective action where appropriate.

2. Modularisation

Qualification on basic subjects for each MAML category or subcategory should be in accordance with the following matrix, where applicable subjects are indicated by an "X":

Subject module	A or B1 aeroplane with:		A or B1 helicopter with:		B2
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics
1 Mathematics	X	X	X	X	X
2 Physics	X	X	X	X	X
3 Electrical Fundamentals	X	X	X	X	X
4 Electronic Fundamentals	X	X	X	X	X
5 Digital Techniques/ Electronic Instrument Systems	X	X	X	X	X

6 Materials and Hardware	X	X	X	X	X
7 Maintenance Practices	X	X	X	X	X
8 Basic Aerodynamics	X	X	X	X	X
9 Human Factors	X	X	X	X	X
10 Aviation Legislation	X	X	X	X	X
11a Turbine Aeroplane Aerodynamics, Structures and Systems	X				
11b		X			

Piston Aeroplane Aerodynamics, Structures and Systems					
12 Helicopter Aerodynamics, Structures and Systems			X	X	
13 Aircraft Aerodynamics, Structures and Systems					X
14 Propulsion					X
15 Gas Turbine Engine	X		X		
16 Piston Engine		X		X	
17	X	X			

Propeller					
50 Essential Principles of Armament	*	*	*	*	*
51 Weapon Stores System	*	*	*	*	*
52 Operational Attack Systems	*	*	*	*	*
53 Surveillance and Electronic Warfare	*	*	*	*	*
54 Crew Safety	*	*	*	*	*
55 Military Communication Systems					*

* - see DASR 66.A.25(e) for qualification requirements on Modules 50-55 (military-specific systems)

MODULE 1 - MATHEMATICS

	Level		
	A	B1	B2
1.1 Arithmetic Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.	1	2	2
1.2 Algebra (a) Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions;	1	2	2
(b) Linear equations and their solutions; Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second degree equations with one unknown; logarithms.	-	1	1
1.3 Geometry (a) Simple geometrical constructions;	-	1	1
(b) Graphical representation; nature and uses of graphs, graphs of equations/ functions;	2	2	2
(c) Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.	-	2	2

MODULE 2 - PHYSICS

	Level

	A	B1	B2
2.1 Matter Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds; States: solid, liquid and gaseous; Changes between states.	1	1	1
2.2 Mechanics *2.2.1 Statics* Forces, moments and couples, representation as vectors; Centre of gravity; Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid, fluid and gas; Pressure and buoyancy in liquids (barometers).	1	2	1
2.2.2 Kinetics Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/ centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.	1	2	1
2.2.3 Dynamics (a) Mass; Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;	1	2	1
(b) Momentum, conservation of momentum; Impulse; Gyroscopic principles;	1	2	2

Friction: nature and effects, coefficient of friction (rolling resistance).			
2.2.4 Fluid dynamics (a) Specific gravity and density; (b) Viscosity, fluid resistance, effects of streamlining; Effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, Venturi effect.	2 1	2 2	2 1
2.3 Thermodynamics (a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition; (b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	2 -	2 2	2 2
2.4 Optics (Light) Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	-	2	2
2.5 Wave Motion and Sound Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	-	2	2

MODULE 3 - ELECTRICAL FUNDAMENTALS

	Level		
	A	B1	B2
3.1 Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.	1	1	1
3.2 Static Electricity and Conduction Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum.	1	2	2
3.3 Electrical Terminology The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	1	2	2
3.4 Generation of Electricity Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	1	1	1
3.5 DC Sources of Electricity Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, Li-ion cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.	1	2	2
3.6 DC Circuits Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.	1	2	2

3.7 Resistance/Resistor (a) Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge; (b) Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge.	- -	2 1	2 1
3.8 Power Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.	-	2	2
3.9 Capacitance/Capacitor Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.	-	2	2

3.10 Magnetism (a) Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor; b) Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.	- -	2 2	2 2
3.11 Inductance/Inductor Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self-induction; Saturation point; Principle uses of inductors.	-	2	2
3.12 DC Motor/Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator;	-	2	2

Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter Generator construction.			
3.13 AC Theory Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power; Triangular/Square waves; Single/3 phase principles.	1	2	2
3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.	-	2	2
3.15 Transformers Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.	-	2	2
3.16 Filters Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	-	1	1
3.17 AC Generators Rotation of loop in a magnetic field and waveform produced;	-	2	2

Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.			
3.18 AC Motors Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole.	-	2	2

MODULE 4 - ELECTRONIC FUNDAMENTALS

	Level		
	A	B1	B2
4.1 Semiconductors *4.1.1 Diodes* (a) Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes;	-	2	2
(b) Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions; Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation;	-	-	2

Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.			
4.1.2 Transistors (a) Transistor symbols; Component description and orientation; Transistor characteristics and properties; (b) Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors; Basic appreciation of other transistor types and their uses; Application of transistors: classes of amplifier (A, B, C); Simple circuits including: bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits.	- - -	1 - -	2 2
4.1.3 Integrated Circuits (a) Description and operation of logic circuits and linear circuits/operational amplifiers; (b) Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.	- - -	1 - -	- 2
4.2 Printed Circuit Boards Description and use of printed circuit boards.	-	1	2
4.3 Servomechanisms (a) Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers;	-	1	-

Principles of operation and use of the following synchro system components/ features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters; (b) Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, deadband; Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; Servomechanism defects, reversal of synchro leads, hunting.	-	-	2

MODULE 5 - DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS

	Level		
	A	B1	B2
5.1 Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.	1	2	3
5.2 Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	-	1	2
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	-	1	2
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications; Aircraft Network/Ethernet.	-	2	2

5.5 Logic Circuits (a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams; (b) Interpretation of logic diagrams.	- -	2 -	2 2
5.6 Basic Computer Structure (a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems); (b) Computer related terminology; Operation, layout and interface of the major components in a micro-computer including their associated bus systems; Information contained in single and multi-address instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	1 -	2 -	- 2
5.7 Microprocessors Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	-	-	2
5.8 Integrated Circuits Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.	-	-	2
5.9 Multiplexing Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	-	-	2
5.10 Fibre Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms;	-	1	2

Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.			
5.11 Electronic Displays Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	-	2	2
5.12 Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	1	2	2
5.13 Software Management Control Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	-	2	2
5.14 Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection.	-	2	2
5.15 Typical Electronic/Digital Aircraft Systems General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) such as: ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System FBW-Fly-by-Wire FMS-Flight Management System IRS-Inertial Reference System ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System GPS-Global Positioning System TCAS-Traffic Alert Collision Avoidance System	-	2	2

Integrated Modular Avionics Cabin Systems Information Systems.			

MODULE 6 - MATERIALS AND HARDWARE

	Level		
	A	B1	B2
6.1 Aircraft Materials — Ferrous (a) Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels; (b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	1 -	2 1	1 1
6.2 Aircraft Materials — Non-Ferrous (a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials; (b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	1 -	2 1	1 1
6.3 Aircraft Materials — Composite and Non-Metallic *6.3.1 Composite and non-metallic other than wood and fabric* (a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents; (b) The detection of defects/deterioration in composite and non-metallic material; Repair of composite and non-metallic material.	1 1	2 2	2 -
6.3.2 Wooden structures	-	-	-

Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.			
6.3.3 Fabric covering Characteristics, properties and types of fabrics used in aeroplanes; Inspections methods for fabric; Types of defects in fabric; Repair of fabric covering.	-	-	-
6.4 Corrosion (a) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; (b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	1 2	1 3	1 2
6.5 Fasteners *6.5.1 Screw threads* Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads.	2	2	2
6.5.2 Bolts, studs and screws Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self-locking, anchor, standard types; Machine screws: aircraft specifications;	2	2	2

Studs: types and uses, insertion and removal; Self tapping screws, dowels.			
6.5.3 Locking devices Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.	2	2	2
6.5.4 Aircraft rivets Types of solid and blind rivets: specifications and identification, heat treatment.	1	2	1
6.6 Pipes and Unions (a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; (b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2 2	2 2	2 1
6.7 Springs Types of springs, materials, characteristics and applications.	1	2	1
6.8 Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2
6.9 Transmissions Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	1	2	2
6.10 Control Cables Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1

6.11 Electrical Cables and Connectors Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	1	2	2

MODULE 7 - MAINTENANCE PRACTICES

	Level		
	A	B1	B2
7.1 Safety Precautions-Aircraft and Workshop Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals; Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.	3	3	3
7.2 Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	3	3	3
7.3 Tools Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods; Operation, function and use of electrical general test equipment.	3	3	3
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-	2	3

7.5 Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Specification S1000D; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.	1	2	2
7.6 Fits and Clearances Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.	1	2	1
7.7 Electrical Wiring Interconnection System (EWIS) Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Identification of wire types, their inspection criteria and damage tolerance; Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding; EWIS installations, inspection, repair, maintenance and cleanliness standards.	1	3	3
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	2	-

7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	1	2	-
7.10 Springs Inspection and testing of springs.	1	2	-
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	1	2	-
7.12 Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.	1	2	-
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	1	2	-
7.14 Material handling *7.14.1 Sheet Metal* Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	-	2	-
7.14.2 Composite and non-metallic Bonding practices; Environmental conditions; Inspection methods.	-	2	-

7.15 Welding, Brazing, Soldering and Bonding	-	2	2
(a) Soldering methods; inspection of soldered joints;			
(b) Welding and brazing methods;			
Inspection of welded and brazed joints;	-	2	-
Bonding methods and inspection of bonded joints.			
7.16 Aircraft Weight and Balance			
(a) Centre of Gravity/Balance limits calculation: use of relevant documents;	-	2	2
(b) Preparation of aircraft for weighing;			
Aircraft weighing.	-	2	-
7.17 Aircraft Handling and Storage			
Aircraft taxiing/towing and associated safety precautions;			
Aircraft jacking, chocking, securing and associated safety precautions;			
Aircraft storage methods;			
Refuelling/defuelling procedures;	2	2	2
De-icing/anti-icing procedures;			
Electrical, hydraulic and pneumatic ground supplies;			
Effects of environmental conditions on aircraft handling and operation.			
7.18 Disassembly, Inspection, Repair and Assembly Techniques			
(a) Types of defects and visual inspection techniques;	2	3	3
Corrosion removal, assessment and reprotection;			
(b) General repair methods, Structural Repair Manual;			
Ageing, fatigue and corrosion control programmes;	-	2	-
(c) Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods;	-	2	1
(d) Disassembly and re-assembly techniques;	2	2	2
(e) Trouble shooting techniques.	-	2	2

7.19 Abnormal Events (a) Inspections following lightning strikes and HIRF penetration; (b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2 2	2 2	2 -
7.20 Maintenance Procedures Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection/Quality Control/Quality Assurance; Additional maintenance procedures; Control of life limited components.	1	2	2
7.21 Armament Safety Safety principles and elements with armed aircraft, ammunitions; Safety aspects of canopy, ejection seat and other pyrotechnic devices.	2	2	2

MODULE 8 - BASIC AERODYNAMICS

	Level		
	A	B1	B2
8.1 Physics of the Atmosphere International Standard Atmosphere (ISA), application to aerodynamics.	1	2	2
8.2 Aerodynamics Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation;	1	2	2

The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.			
8.3 Theory of Flight Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.	1	2	2
8.4 Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).	1	2	2

MODULE 9 - HUMAN FACTORS

	Level		
	A	B1	B2
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; "Murphy's" law.	1	2	2
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory;	1	2	2

Claustrophobia and physical access.			
9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; "Culture" issues; Team working; Management, supervision and leadership; Military environment and other military factors.	1	1	1
9.4 Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.	2	2	2
9.5 Physical Environment Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Military Working environments.	1	1	1
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1	1	1
9.7 Communication Within and between teams; Work logging and recording;	2	2	2

Keeping up to date, currency; Dissemination of information.			
9.8 Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents); Avoiding and managing errors.	1	2	2
9.9 Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.	2	2	2

MODULE 10 - AVIATION LEGISLATION

	Level		
	A	B1	B2
10.1 Regulatory Framework Military/State Organisation: Role of the Military Aviation Authority; Introduction to the national military airworthiness regulations.	1	1	1
10.2 Certifying Staff – Maintenance Understanding of MAML and Certifying staff regulation.	2	2	2
10.3 Approved Maintenance Organisations Understanding of DASR 145.	2	2	2
10.4 Air operations Operating Authority's responsibilities, in particular regarding continuing airworthiness and maintenance; Aircraft Maintenance Programme; MEL/CDL or National equivalent;	1	2	2

Documents to be carried on board; Aircraft placarding (markings).			
10.5 Certification of aircraft, parts and appliances (a) General; General understanding of DASR 21 and airworthiness codes/criteria; (b) Documents; Military Type-Certificates; Military Restricted Type-Certificates; Military Supplemental Type-Certificates; Military Certificates Of Airworthiness; Military Restricted Certificates Of Airworthiness; Military Permit To Fly; National Certificate of Registration; Weight & Balance; National Noise Certificate if required.	- - -	1 1 1	1 1 1
10.6 Continuing airworthiness Understanding of DASR 21 provisions related to continuing airworthiness; Understanding of DASR M.	1 2	1 2	1 2
10.7 Applicable Requirements a) Maintenance Programmes, Maintenance checks and inspections; Airworthiness Directives; Service Bulletins, manufacturers' service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc ; Master Minimum Equipment Lists, Minimum Equipment List and Dispatch Deviation Lists or National equivalent; (b) Continuing airworthiness; Minimum equipment requirements — Test flights; Maintenance and dispatch requirements.	1 -	2 1	2 1

MODULE 11A - TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level	
	A1	B1.1
11.1 Theory of Flight *11.1.1. Aeroplane Aerodynamics and Flight Controls* Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels; Effects of external stores;	1	2
11.1.2. High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight; Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number; Effects of external stores.	1	2

11.2 Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength/integrity; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision; Aircraft bonding; (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks.	2 1	2 2
11.3 Airframe Structures — Aeroplanes *11.3.1 Fuselage (System 52/53/56)* Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriage attachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation and safety devices; Windows and windscreen construction and mechanisms; Canopy construction and mechanism;	1	2
11.3.2 Wings (System 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments;	1	2

11.3.3 Stabilisers (System 55) Construction; Control surface attachment ;	1	2
11.3.4 Flight Control Surfaces (System 55/57) Construction and attachment; Balancing — mass and aerodynamic;	1	2
11.3.5 Nacelles/Pylons (System 54) Nacelles/Pylons: — Construction, — Firewalls, — Engine mounts.	1	2
11.4 Air Conditioning and Cabin Pressurisation (System 21) *11.4.1 Air supply* Sources of air supply including engine bleed, APU and ground cart;	1	2
11.4.2 Air Conditioning Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems; Flow, temperature and humidity control system;	1	3
11.4.3 Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers; Canopy seal, anti-g system;	1 1	3 2
11.4.4 Safety and warning devices Protection and warning devices.	1	3
11.5 Instruments/Avionic Systems *11.5.1 Instrument Systems (System 31)*	1	2

Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems; Glass cockpit; Other aircraft system indication.		
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (System 22), — Communications (System 23), — Navigation Systems (System 34).	1	1
11.6 Electrical Power (System 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.	1	3
11.7 Equipment and Furnishings (System 25) (a) Emergency equipment requirements; Seats, harnesses and belts; (b) Cabin lay-out; Equipment lay-out; Cabin Furnishing installation; Cargo handling and retention equipment; Airstairs.	2 1	2 1

11.8 Fire Protection (System 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests; (b) Portable fire extinguisher.	 1 1	 3 1
11.9 Flight Controls (System 27) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust lock systems; Balancing and rigging; Stall protection/warning system.	 1	 3
11.10 Fuel Systems (System 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defueling including Air to Air Refueling (AAR); Longitudinal balance fuel systems including during AAR.	 1	 3
11.11 Hydraulic Power (System 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic;	 1	 3

Emergency pressure generation; Filters; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.		
11.12 Ice and Rain Protection (System 30) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic and chemical; Rain repellent; Probe and drain heating; Wiper systems.	1	3
11.13 Landing Gear (System 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing; Drag-chute and Arresting hook/landing assistance equipment.	2 1	3 1
11.14 Lights (System 33) External: navigation, anti collision, landing, taxiing, ice, formation; Internal: cabin, cockpit, cargo, Night Vision Devices; Emergency.	2	3
11.15 Oxygen (System 35) System lay-out: cockpit, cabin;	1	3

Sources, storage, charging and distribution; Supply regulation; Indications and warnings.		
11.16 Pneumatic/Vacuum (System 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3
11.17 Water/Waste (System 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	-	-
11.18 On Board Maintenance Systems (System 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2
11.19 Integrated Modular Avionics (System 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc; Core System; Network Components.	1	2

11.20 Cabin Systems (System 44) The units and components which provide a means of communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, and video transmissions. The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Crew Panels. The Cabin Network Service typically consists of a server, typically interfacing with, among others, the Data/Radio Communication System; The Cabin Network Service may host functions such as access to pre-departure/ departure reports; Cabin Core System; External Communication System; Cabin Monitoring System; Miscellaneous Cabin System.	1	2
11.21 Information Systems (System 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display. Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.	1	2

MODULE 11B - PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level

	A2	B1.2
11.1 Theory of Flight *11.1.1. Aeroplane Aerodynamics and Flight Controls* Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels; Effects of external stores;	1	2
11.1.2. High Speed Flight – N/A	-	-
11.2 Airframe Structures — General Concepts (a) Airworthiness requirements for structural strength/integrity; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision;	2	2

Aircraft bonding; (b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks.	1	2
11.3 Airframe Structures — Aeroplanes *11.3.1 Fuselage (System 52/53/56)* Construction and pressurisation sealing; Wing, tail-plane, pylon and undercarriage attachments; Seat installation; Doors and emergency exits: construction and operation; Windows and windscreen attachment; Canopy construction and mechanism.	1	2
11.3.2 Wings (System 57) Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	2
11.3.3 Stabilisers (System 55) Construction; Control surface attachment.	1	2
11.3.4 Flight Control Surfaces (System 55/57) Construction and attachment; Balancing — mass and aerodynamic;	1	2
11.3.5 Nacelles/Pylons (System 54) Nacelles/Pylons: — Construction, — Firewalls,	1	2

— Engine mounts.		
11.4 Air Conditioning and Cabin Pressurisation (System 21) Pressurisation and air conditioning systems; Cabin pressure controllers, protection and warning devices; Heating systems.	1	3
11.5 Instruments/Avionic Systems *11.5.1 Instrument Systems (System 31)* Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems; Glass cockpit; Other aircraft system indication.	1	2
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (System 22), — Communications (System 23), — Navigation Systems (System 34).	1	1
11.6 Electrical Power (System 24) Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.	1	3
11.7 Equipment and Furnishings (System 25) (a) Emergency equipment requirements; Seats, harnesses and belts;	2	2

(b) Cargo handling and retention equipment; Airstairs.	1	1
11.8 Fire Protection (System 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests; (b) Portable fire extinguisher.	1 1	3 3
11.9 Flight Controls (System 27) Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.	1	3
11.10 Fuel Systems (System 28) System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defueling.	1	3
11.11 Hydraulic Power (System 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Filters; Pressure Control;	1	3

Power distribution; Indication and warning systems.		
11.12 Ice and Rain Protection (System 30) Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.	1	3
11.13 Landing Gear (System 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing.	2	3
11.14 Lights (System 33) External: navigation, anti collision, landing, taxiing, ice, formation; Internal: cabin, cockpit, cargo; Emergency.	2	3
11.15 Oxygen (System 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.	1	3
11.16 Pneumatic/Vacuum (System 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings;	1	3

Interfaces with other systems.		
11.17 Water/Waste (System 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	-	-

MODULE 12 - HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level	
	A3 A4	B1.3 B1.4
12.1 Theory of Flight — Rotary Wing Aerodynamics Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, Blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power settling, overpitching; Auto-rotation; Ground effect.	1	2
12.2 Flight Control Systems Cyclic control; Collective control; Swashplate; Yaw control: Anti-Torque Control, Tail rotor, bleed air; Main Rotor Head: Design and Operation features;	2	3

Blade Dampers: Function and construction; Rotor Blades: Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical and fly-by-wire; Artificial feel; Balancing and rigging.		
12.3 Blade Tracking and Vibration Analysis Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.	1	3
12.4 Transmission Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake; Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers.	1	3
12.5 Airframe Structures (a) Airworthiness requirements for structural strength/integrity; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision;	2	2
(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning and anti-corrosive protection; Pylon, stabiliser and undercarriage attachments; Seat installation;	1	2

Doors: construction, mechanisms, operation and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks.		
12.6 Air Conditioning (System 21) *12.6.1 Air supply* Sources of air supply including engine bleed and ground cart.	1	2
12.6.2 Air conditioning Air conditioning systems; Distribution systems; Flow and temperature control systems; Protection and warning devices.	1	3
12.7 Instruments/Avionic Systems *12.7.1 Instrument Systems (System 31)* Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Vibration indicating systems; HUMS; Glass cockpit; Other aircraft system indication.	1	2
12.7.2 Avionic Systems Fundamentals of system layouts and operation of: Auto Flight (System 22); Communications (System 23);	1	1

Navigation Systems (System 34).		
12.8 Electrical Power (System 24) Batteries Installation and Operation; DC power generation, AC power generation; Emergency power generation; Voltage regulation, Circuit protection; Power distribution; Inverters, transformers, rectifiers; External/Ground power.	1	3
12.9 Equipment and Furnishings (System 25) (a) Emergency equipment requirements; Seats, harnesses and belts; Lifting systems; (b) Emergency flotation systems; Cargo handling and retention equipment.	2 1	2 1
12.10 Fire Protection (System 26) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1	3
12.11 Fuel Systems (System 28) System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.	1	3
12.12 Hydraulic Power (System 29) System lay-out;	1	3

Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Filters; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.		
12.13 Ice and Rain Protection (System 30) Ice formation, classification and detection; Anti-icing and De-icing systems: electrical, hot air and chemical; Rain repellent and removal; Probe and drain heating; Wiper system.	1	3
12.14 Landing Gear (System 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, Tyres, brakes; Steering; Air-ground sensing; Skids, floats.	2	3
12.15 Lights (System 33) External: navigation, landing, taxiing, ice, formation; Internal: cabin, cockpit, cargo, Night Vision Devices' Lighting; Emergency.	2	3
12.16 Pneumatic/Vacuum (System 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply;	1	3

Pressure control; Distribution; Indications and warnings; Interfaces with other systems.		
12.17 Integrated Modular Avionics (System 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc; Core System; Network Components.	1	2
12.18 On Board Maintenance Systems (System 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2
12.19 Information Systems (System 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display. Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.	1	2

MODULE 13 - AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level
	B2
13.1 Theory of Flight (a) Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers, — pitch control: elevators, stabilators, variable incidence stabilisers and canards, — yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices: slots, slats, flaps; Drag inducing devices: spoilers, lift dumpers, speed brakes; Operation and effect of trim tabs, servo tabs, control surface bias; (b) High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight; Mach number, critical Mach number; (c) Rotary Wing Aerodynamics Terminology; Operation and effect of cyclic, collective and anti-torque controls.	1 1 1
13.2 Structures — General Concepts (a) Fundamentals of structural systems; (b) Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.	1 2
13.3 Autoflight (System 22)	3

Fundamentals of automatic flight control including working principles and current terminology; Command signal processing; Modes of operation: roll, pitch and yaw channels; Yaw dampers; Stability Augmentation System in helicopters; Automatic trim control; Autopilot navigation aids interface; Autothrottle systems; Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions.	
13.4 Communication/Navigation (System 23/34) (a) Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; (b) Working principles of following systems: — Very High Frequency (VHF) communication, — High Frequency (HF) communication, — Audio, — Emergency Locator Transmitters (ELT), — Cockpit Voice Recorder (CVR), — Very High Frequency omnidirectional range (VOR), — Tactical air navigation system (TACAN), — Automatic Direction Finding (ADF), — Instrument Landing System (ILS), — Flight Director systems, Distance Measuring Equipment (DME), — Doppler navigation, — Area navigation, RNAV systems, — Flight Management Systems(FMS), — Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS), GNSS Landing System (GLS), Transponder Landing System (TLS), — Inertial Navigation System (INS), — Air Traffic Control transponder, secondary surveillance radar,	3 3

— Traffic Alert and Collision Avoidance System (TCAS), — Weather avoidance radar, — Radio altimeter, — Data-link communication and reporting; — Microwave Landing System (MLS), — Very Low Frequency and hyperbolic navigation (VLF/Omega).	-
13.5 Electrical Power (System 24) Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.	3
13.6 Equipment and Furnishings (System 25) (a) Electronic emergency equipment requirements; (b) Cabin entertainment equipment.	3 -
13.7 Flight Controls (System 27) (a) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks; Stall protection systems;	2

(b) System operation: electrical, fly-by-wire.	3
13.8 Instruments (System 31) Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators; Machmeters; Altitude reporting/alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems; Fuel quantity indicating systems; Gyroscopic principles; Artificial horizons; Slip indicators; Directional gyros; Ground Proximity Warning Systems/Terrain Awareness Warning Systems; Compass systems; Flight Data Recording systems; Electronic Flight Instrument Systems; Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration measurement and indication; Glass cockpit.	3

13.9 Lights (System 33) External: navigation, landing, taxiing, ice, formation; Internal: cabin, cockpit, cargo, Night Vision Devices' Lighting; Emergency.	3
13.10 On Board Maintenance Systems (System 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	3
13.11 Air Conditioning and Cabin Pressurisation (System 21) *13.11.1. Air supply* Sources of air supply including engine bleed, APU and ground cart;	2
13.11.2. Air Conditioning Distribution systems; Air conditioning systems; Air cycle and vapour cycle machines; Flow, temperature and humidity control system;	1 2 3
13.11.3. Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers; Canopy seal and anti-g system;	3 1
13.11.4. Safety and warning devices Protection and warning devices.	3

13.12 Fire Protection (System 26)	
(a) Fire and smoke detection and warning systems;	3
Fire extinguishing systems;	
System tests;	
(b) Portable fire extinguisher.	1
13.13 Fuel Systems (System 28)	
(a) System lay-out;	
Fuel tanks;	1
Supply systems;	
Dumping, venting and draining;	
(b) Cross-feed and transfer;	
Refuelling and defuelling including AAR;	2
(c) Longitudinal balance fuel systems;	
Indications and warnings.	3
13.14 Hydraulic Power (System 29)	
(a) System lay-out;	
Hydraulic fluids;	1
Hydraulic reservoirs and accumulators;	
Filters;	
Power distribution;	
(b) Pressure control;	
Pressure generation: electrical, mechanical, pneumatic;	
Emergency pressure generation;	3
Indication and warning systems;	
Interface with other systems.	
13.15 Ice and Rain Protection (System 30)	
(a) Rain repellent;	1
Wiper Systems;	

(b) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; (c) De-icing systems: electrical, hot air, pneumatic, chemical; Probe and drain heating.	2 3
13.16 Landing Gear (System 32) (a) Construction, shock absorbing; Tyres; (b) Extension and retraction systems: normal and emergency; Indications and warnings; Wheels, brakes, antiskid and autobraking; Steering; Air-ground sensing.	1 3
13.17 Oxygen (System 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.	3
13.18 Pneumatic/Vacuum (System 36) (a) Distribution;	1
(b) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply;	2
(c) Pressure control; Indications and warnings; Interfaces with other systems.	3
13.19 Water/Waste (System 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing.	-

13.20 Integrated Modular Avionics (System 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.; Core System; Network Components.	3
13.21 Cabin Systems (System 44) The units and components which provide a means of communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data transmissions. The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Crew Panels. The Cabin Network Service typically consists of a server, typically interfacing with, among others, the Data/Radio Communication System; The Cabin Network Service may host functions such as access to pre-departure/ departure reports; Cabin Core System; External Communication System; Cabin Monitoring System; Miscellaneous Cabin System.	3
13.22 Information Systems (System 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display. Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information System; Flight Deck Information System; Maintenance Information System;	3

Passenger Cabin Information System; Miscellaneous Information System.	

MODULE 14 - PROPULSION

	Level
	B2
14.1 Turbine Engines (a) Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines; (b) Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC).	1 2
14.2 Engine Indicating Systems Exhaust gas temperature/Interstage turbine temperature systems; Engine speed; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.	2
14.3 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.	2

MODULE 15 - GAS TURBINE ENGINE

	Level	
	A1 A3	B1.1 B1.3
15.1 Fundamentals Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity, acceleration; Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop.	1	2
15.2 Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow; Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.	-	2
15.3 Inlet Compressor inlet ducts; Effects of various inlet configurations; Ice protection.	2	2
15.4 Compressors Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation: Causes and effects of compressor stall and surge; Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; Compressor ratio.	1	2

15.5 Combustion Section Constructional features and principles of operation.	1	2
15.6 Turbine Section Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.	2	2
15.7 Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.	1	2
15.8 Bearings and Seals Constructional features and principles of operation.	1	2
15.9 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2
15.10 Lubrication Systems System operation/lay-out and components.	1	2
15.11 Fuel Systems Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC); Systems lay-out and components.	1	2
15.12 Air Systems Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.	1	2
15.13 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components;	1	2

Maintenance safety requirements.		
15.14 Engine Indication Systems Exhaust Gas Temperature/Interstage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque; Power.	1	2
15.15 Power Augmentation Systems Operation and applications; Water injection, water methanol; Afterburner systems.	1	1
15.16 Turbo-prop Engines Gas coupled/free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.	1	2
15.17 Turbo-shaft Engines Arrangements, drive systems, reduction gearing, couplings, control systems.	1	2
15.18 Auxiliary Power Units (APUs) Purpose, operation, protective systems.	1	2
15.19 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2
15.20 Fire Protection Systems Operation of detection and extinguishing systems.	1	2

15.21 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Trend (including oil analysis, vibration and boroscope) monitoring; Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.	1	3
15.22 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2

MODULE 16 - PISTON ENGINE

	Level	
	A2 A4	B1.2 B1.4
16.1 Fundamentals Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.	1	2
16.2 Engine Performance Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition.	1	2
16.3 Engine Construction Crank case, crank shaft, cam shafts, sumps;	1	2

Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.		
16.4 Engine Fuel Systems *16.4.1 Carburettors* Types, construction and principles of operation; Icing and heating.	1	2
16.4.2 Fuel injection systems Types, construction and principles of operation.	1	2
16.4.3 Electronic engine control Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC); Systems lay-out and components.	1	2
16.5 Starting and Ignition Systems Starting systems, pre-heat systems; Magneto types, construction and principles of operation; Ignition harnesses, spark plugs; Low and high tension systems.	1	2
16.6 Induction, Exhaust and Cooling Systems Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems — air and liquid.	1	2
16.7 Supercharging/Turbocharging Principles and purpose of supercharging and its effects on engine parameters; Construction and operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.	1	2

16.8 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2
16.9 Lubrication Systems System operation/lay-out and components.	1	2
16.10 Engine Indication Systems Engine speed; Cylinder head temperature; Coolant temperature; Oil pressure and temperature; Exhaust Gas Temperature; Fuel pressure and flow; Manifold pressure.	1	2
16.11 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2
16.12 Engine Monitoring and Ground Operation Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.	1	3
16.13 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/systems.	-	2

MODULE 17 - PROPELLER

	Level

	A1 A2	B1.1 B1.2
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.	1	2
17.2 Propeller Construction Construction methods and materials used in propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation.	1	2
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	1	2
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	-	2
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	1	2
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes;	1	3

Propeller engine running.		
17.7 Propeller Storage and Preservation Propeller preservation and depreservation.	1	2

MODULE 50 - PRINCIPLES OF ARMAMENT

	Level		
	A	B1	B2
50.1 Essential principles of Armament (a) Propellants and explosives; Pyrotechnics (including Flares); Stores loading / unloading (to include chaff and flares) including hang-up and misfire; Ammunitions transportation; Air-to-air missile; Air-to-ground missile; Air-to-sea missile; Aerial torpedo; Bombs (freefall and guided);	1	1	1
(b) Missile guidance methods: radar, infrared, electro-optical, passive anti-radiation; Missile warheads and detonation mechanisms; Guided weapon (missiles) aerodynamics and flight controls;	1	1	1
(c) Storage, de-stocking and ammunitions assembly; Documents for storage, release and transportation of explosive items and firearms and explosive regulations.	1	1	1

MODULES 50 – 55: MILITARY-SPECIFIC SYSTEMS

MODULE 51 - WEAPONS SYSTEMS

	Level		
	A	B1	B2
51.1 Weapons stores system (System 94) (a) Weapon and stores release, fire and jettison stores; Weapon suspension system; Interconnecting equipment to transport and release/fire weapons; Gunnery; (b) Weapon control, designating and acquiring a target.	2 1	3 2	3 3

MODULE 52 - OPERATIONAL ATTACK SYSTEMS

	Level		
	A	B1	B2
52.1 Attack System Management (System 39) Architecture, management; Attack system functions; General rules of human-machine communication; Digital Networks, hardware and software, other information networks, network for video signals, network for blanking signals, MIL-STD-1553B (STANAG 3838 and STANAG 3910), MIL-STD-1773; Stores management hardware and software; Attack system resources, contributing resources; Role during mission phases.	-	2	3

52.2 Operational attack functions (System 40) Air-to-air functions: fire control functions, bullet gun firing, short range, medium range or beyond visual range missiles firing, air-to-air management after weapons launch, management of on-board guidance; Air-to-surface functions, Air-to-sea functions; Information exchange and cooperation; Navigational functions, localisation, flight management, approach and landing management; Nap of the earth flight: terrain following and obstacle avoidance management; Self protection: defensive manoeuvers and tactics elaboration against threats; Identification: aerial and surface objects identification based on autonomous and external identification means.	-	2	3
52.3 Cross-technical attack functions (System 42) Tactical situation awareness; Aircraft Mission preparation and restitution, hardware and software; Cautions and warnings management; Mission system control and management; Trajectory management; Attack system compatibilities management, electromagnetic compatibility between all the transmitters and receivers.	-	2	3

MODULE 53 - SURVEILLANCE AND ELECTRONIC WARFARE

	Level		
	A	B1	B2
53.1 Surveillance (System 93) Data processing; Data display; Recording; Identification;	1	2	3

Infra-red and laser sensors; Surveillance radar; Magnetic sensors; Sonar sensors (active and passive).			
53.2 Image recording (System 97) (a) Optical systems; (b) Specificities of aerial photography; Cameras.	1 1	2 1	2 1
53.3 Electronic warfare (System 99) Active electromagnetic; Passive electromagnetic; ELINT; Infrared and Laser systems; Electromagnetic countermeasures.	-	2	3

MODULE 54 - CREW SAFETY

	Level		
	A	B1	B2
54.1 Crew escape and safety (System 95) Ejection seats; Escape hatches/canopy, Miniature Detonating Cord (MDC); Global survival kits; Impact protection.	2	3	2

MODULE 55 - MILITARY COMMUNICATION SYSTEMS

	Level		
	A	B1	B2
55.1 Military communication systems Tactical Data Links: Link 11, Link 16, Link 22; Tactical communications systems.	-	-	3

Appendix II to DASR 66 - Basic Examination Standard

1. General

1.1 All basic examinations shall be carried out using the multi-choice question format and essay questions as specified below. The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers.

1.2 Each multi-choice question shall have at least three alternative answers of which only one shall be the correct answer and the candidate shall be allowed a time per module which is based upon a nominal average of 75 seconds per question.

1.3 Each essay question requires the preparation of a written answer and the candidate shall be allowed 20 minutes to answer each such question.

1.4 Suitable essay questions shall be drafted and evaluated using the knowledge syllabus in Appendix I Modules 7, 9 and 10.

1.5 Each essay question will have a model answer drafted for it, which will also include any known alternative answers that may be relevant for other sub-modules.

1.6 The essay question model answer will also be broken down into a list of the important points known as Key Points.

1.7 The pass mark for each module and sub-module multi-choice part of the examination is 75 %.

1.8 The pass mark for each essay question is 75 % in that the candidates answer shall contain 75 % of the required key points addressed by the question and no significant error related to any required key point.

1.9 If either the multi-choice part only or the essay part only is failed, then it is only necessary to retake the multi- choice or essay part, as appropriate.

1.10 Penalty marking systems shall not be used.

1.11 A failed module may not be retaken for at least 90 days following the date of the failed module examination, except in the case of a maintenance training organisation approved in accordance with DASR 147 which conducts a course of retraining tailored to the failed subjects in the particular module when the failed module may be retaken after 30 days, unless approved otherwise by the MAA.

1.12 The time periods required by DASR 66.A.25 apply to each individual module examination, with the exception of those module examinations which were passed as part of another category licence, where the licence has already been issued.

1.13 The maximum number of consecutive attempts for each module is three. Further sets of three attempts are allowed with a 1 year waiting period between sets, unless approved by the MAA.

The applicant shall confirm in writing to the approved MTO or the MAA to which they apply for an examination, the number and dates of attempts during the last year and the MTO or the MAA where these attempts took place. The MTO or the MAA is responsible for checking the number of attempts within the applicable timeframes.

2. Number of questions per module

MODULE 1 — MATHEMATICS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B2: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

MODULE 2 — PHYSICS

Category A: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

MODULE 3 — ELECTRICAL FUNDAMENTALS

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

MODULE 4 — ELECTRONIC FUNDAMENTALS

Category B1: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2: 40 multi-choice and 0 essay questions. Time allowed 50 minutes.

MODULE 5 — DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

Category B1: 40 multi-choice and 0 essay questions. Time allowed 50 minutes.

Category B2: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

MODULE 6 — MATERIALS AND HARDWARE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B2: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

MODULE 7 — MAINTENANCE PRACTICES

Category A: 72 multi-choice and 2 essay questions. Time allowed 90 minutes plus 40 minutes.

Category B1: 80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes.

Category B2: 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.

MODULE 8 — BASIC AERODYNAMICS

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

MODULE 9 — HUMAN FACTORS

Category A: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

Category B1: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

Category B2: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

MODULE 10 — AVIATION LEGISLATION

Category A: 32 multi-choice and 1 essay question. Time allowed 40 minutes plus 20 minutes.

Category B1: 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.

Category B2: 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.

MODULE 11A — TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 108 multi-choice and 0 essay questions. Time allowed 135 minutes.

Category B1: 140 multi-choice and 0 essay questions. Time allowed 175 minutes.

MODULE 11B — PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

Category B1: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS:

Category A: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

Category B1: 128 multi-choice and 0 essay questions. Time allowed 160 minutes.

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

Category B2: 180 multi-choice and 0 essay questions. Time allowed 225 minutes.

Questions and time allowed may be split into two examinations as appropriate.

MODULE 14 — PROPULSION

Category B2: 24 multi-choice and 0 essay questions. Time allowed 30 minutes.

MODULE 15 — GAS TURBINE ENGINE

Category A: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

Category B1: 92 multi-choice and 0 essay questions. Time allowed 115 minutes.

MODULE 16 — PISTON ENGINE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.

Category B1: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

MODULE 17 — PROPELLER

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

MODULE 50 — PRINCIPLES OF ARMAMENT

Category A: 12 multi-choice and 0 essay question. Time allowed 15 minutes.

Category B1: 12 multi-choice and 0 essay question. Time allowed 15 minutes.

Category B2: 12 multi-choice and 0 essay question. Time allowed 15 minutes.

MODULE 51 — WEAPONS SYSTEMS

Category A: 24 multi-choice and 0 essay question. Time allowed 30 minutes.

Category B1: 28 multi-choice and 0 essay question. Time allowed 35 minutes.

Category B2: 32 multi-choice and 0 essay question. Time allowed 40 minutes.

MODULE 52 — OPERATIONAL ATTACK SYSTEMS

Category B1: 48 multi-choice and 0 essay question. Time allowed 60 minutes.

Category B2: 80 multi-choice and 0 essay question. Time allowed 100 minutes.

MODULE 53 — SURVEILLANCE AND ELECTRONIC WARFARE

Category A: 12 multi-choice and 0 essay question. Time allowed 15 minutes.

Category B1: 32 multi-choice and 0 essay question. Time allowed 40 minutes.

Category B2: 48 multi-choice and 0 essay question. Time allowed 60 minutes.

MODULE 54 — CREW SAFETY

Category A: 16 multi-choice and 0 essay question. Time allowed 20 minutes.

Category B1: 20 multi-choice and 0 essay question. Time allowed 25 minutes.

Category B2: 16 multi-choice and 0 essay question. Time allowed 20 minutes.

MODULE 55 — MILITARY COMMUNICATION SYSTEMS

Category B2: 16 multi-choice and 0 essay question. Time allowed 20 minutes.

AMC

AMC to Appendix II - Practical Experience and On-the-Job Training List of Tasks

Time limits/Maintenance checks

100 hour, "B" or "C" checks or other military equivalent inspection.

Assist carrying out a scheduled maintenance check i.a.w. Aircraft Maintenance Manual.

Review Aircraft maintenance log for correct completion.

Review records for compliance with Airworthiness Directives (or national equivalent).

Review records for compliance with component life limits.

Procedure for inspection following heavy / hard landing.

Procedure for inspection following excessive load factor.

Procedure for inspection following exceeding engine limits.

Procedure for inspection following lightning strike.

Dimensions/Areas

Locate component(s) by zone/station number.

Perform symmetry check.

Lifting and Shoring

Assist in:

Jack aircraft nose or tail wheel.

Jack complete aircraft.

Sling or trestle major component.

Leveling/Weighing

Level aircraft.

Weigh aircraft.

Prepare weight and balance amendment.

Check aircraft against equipment list.

Towing and Taxiing

Prepare for aircraft towing.

Tow aircraft.

Be part of aircraft towing team.

Parking and Mooring

Tie down aircraft.

Park, secure and cover aircraft.

Position aircraft in maintenance dock.

Secure rotor blades.

Placards and Markings

Check aircraft for correct placards.

Check aircraft for correct markings.

Servicing

Refuel aircraft.

Defuel aircraft.

Carry out tank to tank fuel transfer.

Check/adjust tire pressures.

Check/replenish oil level.

Check/replenish hydraulic fluid level.

Check/replenish accumulator pressure.

Charge pneumatic system.

Grease aircraft.

Connect ground power.

Service toilet/potable water system.

Perform pre-flight/daily check.

Vibration and Noise Analysis

Analyse helicopter vibration problem.

Analyse noise spectrum.

Analyse engine vibration.

Air Conditioning

Replace combustion heater.

Replace flow control valve.

Replace outflow valve.

Replace safety valve.

Replace vapour cycle unit.

Replace air cycle unit.

Replace cabin blower.

Replace heat exchanger.

Replace pressurisation controller.

Clean outflow valves.

Deactivate/reactivate cargo isolation valve.

Deactivate/reactivate avionics ventilation components.

Check operation of air conditioning/heating system.

Check operation of pressurisation system.

Troubleshoot faulty system.

Auto flight

Install servos.

Rig bridle cables.

Replace controller.

Replace amplifier.

Replacement of the auto flight system LRUs.

Check operation of auto-pilot.

Check operation of auto-throttle/auto-thrust.

Check operation of yaw damper.

Check and adjust servo clutch.

Perform autopilot gain adjustments.

Perform mach trim functional check.

Troubleshoot faulty system.

Check autoland system.

Check flight management systems.

Check stability augmentation system.

Communications

Replace V/UHF com unit.

Replace HF com unit.

Replace existing antenna.

Check operation of radios.

Perform antenna VSWR check.

Perform Selcal operational check.

Perform operational check of passenger address system.

Functionally check audio integrating system.

Repair co-axial cable.

Troubleshoot faulty system.

Electrical Power

Charge lead/acid battery.

Charge Ni-Cad battery.

Check battery capacity.

Deep-cycle Ni-Cad battery.

Replace integrated drive/generator/alternator.

Replace switches.

Replace circuit breakers.

Adjust voltage regulator.

Change voltage regulator.

Amend electrical load analysis report.

Repair/replace electrical feeder cable.

Troubleshoot faulty system.

Perform functional check of integrated drive/generator/alternator.

Perform functional check of voltage regulator.

Perform functional check of emergency generation system.

Equipment/Furnishings

Replace carpets.

Replace crew seats.

Replace passenger seats.

Check inertia reels.

Check seats/belts for security.

Check emergency equipment.

Check ELT for compliance with regulations.

Repair toilet waste container.

Remove and install ceiling and sidewall panels.

Repair upholstery.

Change cabin / cargo configuration.

Replace cargo loading system actuator.

Test cargo loading system.

Replace escape slides/ropes.

Fire protection

Check fire bottle contents.

Check/test operation of fire/smoke detection and warning system.

Check cabin fire extinguisher contents.

Check smoke detector system.

Check cargo panel sealing.

Install new fire bottle.

Replace fire bottle squib.

Troubleshoot faulty system.

Inspect engine fire wire detection systems.

Flight Controls

Inspect primary flight controls and related components in accordance with AMM.

Extending/retracting flaps & slats.

Replace horizontal stabiliser.

Replace spoiler/lift damper.

Replace elevator.

Deactivation/reactivation of aileron servo control.

Replace aileron.

Replace rudder.

Replace trim tabs.

Install control cable and fittings.

Replace slats.

Replace flaps.

Replace powered flying control unit.

Replace flat actuator.

Rig primary flight controls.

Adjust trim tab.

Adjust control cable tension.

Check control range and direction of movement.

Check for correct assembly and locking.

Troubleshoot faulty system.

Functional test of primary flight controls.

Functional test of flap system.

Operational test of the side stick assembly.

Operational test of the Trimmable Horizontal Stabiliser.

Trimmable Horizontal Stabiliser system wear check.

Fuel

Water drain system (operation).

Replace booster pump.

Replace fuel selector.

Replace fuel tank cells.

Replace/test fuel control valves.

Replace magnetic fuel level indicators.

Replace water drain valve.

Check/calculate fuel contents manually.

Check filters.

Flow check system.

Check calibration of fuel quantity gauges.

Check operation feed/selectors.

Check operation of fuel dump/jettison system.

Fuel transfer between tanks.

Pressure defuel.

Pressure refuel (manual control).

Deactivation/reactivation of the fuel valves (transfer defuel, X-feed, refuel).

Troubleshoot faulty system.

Hydraulics

Replace engine-driven pump.

Check/replace case drain filter.

Replace standby pump.

Replace hydraulic motor pump/generator.

Replace accumulator.

Check operation of shut off valve.

Check filters/clog indicators.

Check indicating systems.

Perform functional checks.

Pressurisation/depressurisation of the hydraulic system.

Power Transfer Unit (PTU) operation.

Replacement of PTU.

Troubleshoot faulty system.

Ice and rain protection

Replace pump.

Replace timer.

Inspect repair propeller deice boot.

Test propeller de-icing system.

Inspect/test wing leading edge de-icer boot.

Replace anti-ice/deice valve.

Install wiper motor.

Check operation of systems.

Operational test of the pitot-probe ice protection.

Operational test of the Total Air Temperature ice protection.

Operational test of the wing ice protection system.

Assistance to the operational test of the engine air-intake ice protection (with engines operating).

Troubleshoot faulty system.

Indicating/recording systems

Replace Flight Data Recorder (FDR).

Replace cockpit voice recorder.

Replace clock.

Replace master caution unit.

Perform FDR data retrieval.

Troubleshoot faulty system.

Implement Electro-Static Discharge and Soldering procedures.

Inspect for High Intensity Radiated Field requirements.

Start/stop Engine Indication System procedure.

Bite test of the Centralized Fault Display Interface Unit.

Ground scanning of the central warning system.

Landing Gear

Build up wheel.

Replace main wheel.

Replace nose wheel.

Replace steering actuator.

Replace truck tilt actuator.

Replace gear retraction actuator.

Replace uplock/downlock assembly.

Replace shimmy damper.

Rig nose wheel steering.

Functional test of the nose wheel steering system.

Replace shock strut seals.

Servicing of shock strut.

Replace brake unit.

Replace brake control valve.

Bleed brakes.

Replace brake fan.

Test anti-skid unit.

Test gear retraction.

Change bungees.

Adjust micro switches/sensors.

Charge struts with oil and air.

Troubleshoot faulty system.

Test auto-brake system.

Replace rotorcraft skids.

Replace rotorcraft skid shoes.

Pack and check floats.

Flotation equipment.

Check/test emergency landing gear extension.

Operational test of the landing gear doors.

Lights

Repair/replace rotating beacon.

Repair/replace landing lights.

Repair/replace navigation lights.

Repair/replace formation lights.

Repair/replace interior lights.

Replace ice inspection lights.

Repair/replace emergency lighting system.

Perform emergency lighting system checks.

Troubleshoot faulty system.

Navigation

Calibrate magnetic direction indicator.

Replace airspeed indicator.

Replace altimeter.

Replace air data computer.

Replace VOR/TACAN unit.

Replace ADI.

Replace HSI.

Check pitot static system for leaks.

Check operation of directional gyro.

Functional check doppler.

Functional check TCAS.

Functional check DME.

Functional check ATC Transponder.

Functional check flight director system.

Functional check inertial navigation system.

Complete quadrantal error correction of ADF system.

Update flight management system database.

Check calibration of pitot static instruments.

Check calibration of pressure altitude reporting system.

Troubleshoot faulty system.

Check marker systems.

Compass replacement direct/indirect.

Check Satcom.

Check GPS.

Oxygen

Inspect on-board oxygen equipment.

Purge and recharge oxygen system.

Replace regulator.

Replace oxygen generator.

Test crew oxygen system.

Perform auto oxygen system deployment check.

Troubleshoot faulty system.

Pneumatic systems

Replace filter.

Replace air shut off valve.

Replace pressure regulating valve.

Replace compressor.

Recharge dessicator.

Adjust regulator.

Check for leaks.

Troubleshoot faulty system.

Vacuum systems

Inspect the vacuum system in accordance with AMM.

Replace vacuum pump.

Check/replace filters.

Adjust regulator.

Troubleshoot faulty system.

Water/Waste

Replace water pump.

Replace tap.

Replace toilet pump.

Perform water heater functional check.

Troubleshoot faulty system.

Inspect waste bin flap closure.

Central Maintenance System

Retrieve data from Central Maintenance Unit (CMU).

Replace CMU.

Perform Bite check.

Troubleshoot faulty system.

Structures

Assessment of damage.

Sheet metal repair.

Composite material repair.

Treat corrosion.

Apply protective treatment.

Replace static wicks

Doors

Inspect passenger door in accordance with AMM.

Rig/adjust locking mechanism.

Adjust air stair system.

Check operation of emergency exits.

Test door warning system.

Troubleshoot faulty system.

Remove and install passenger / cargo / paratroops doors in accordance with AMM.

Remove and install emergency exit in accordance with AMM.

Inspect cargo door in accordance with AMM.

Windows

Replace windshield.

Replace direct vision window.

Replace cabin window.

Repair transparency.

Wings

Skin repair.

Replace tip.

Replace rib.

Replace integral fuel tank panel.

Check incidence/rig.

Propeller

Assemble prop after transportation.

Replace propeller.

Replace governor.

Adjust governor.

Perform static functional checks.

Check operation during ground run.

Check track.

Check setting of micro switches.

Assessment of blade damage in accordance with AMM.

Dynamically balance prop.

Troubleshoot faulty system.

Main Rotors

Install rotor assembly.

Replace blades.

Replace damper assembly.

Check track / tabs.

Check static balance.

Check dynamic balance.

Troubleshoot.

Rotor Drive

Replace mast.

Replace drive coupling.

Replace clutch/freewheel unit.

Replace drive belt.

Install main gearbox.

Overhaul main gearbox.

Check gearbox chip detectors.

Tail Rotors

Install rotor assembly.

Replace blades.

Troubleshoot.

Tail Rotor Drive

Replace bevel gearbox.

Replace universal joints.

Overhaul bevel gearbox.

Install drive assembly.

Check chip detectors.

Check/install bearings and hangers.

Check/service/assemble flexible couplings.

Check alignment of drive shafts.

Install and rig drive shafts.

Rotorcraft flight controls

Install swash plate.

Install mixing box.

Adjust pitch links.

Rig collective system.

Rig cyclic system.

Rig anti-torque system.

Check controls for assembly and locking.

Check controls for operation and sense.

Troubleshoot faulty system.

Power Plant

Replace engine.

Repair cooling baffles.

Repair cowling.

Adjust cowl flaps.

Repair faulty wiring.

Troubleshoot.

Assist in dry motoring check.

Assist in wet motoring check.

Assist in engine start (manual mode).

Piston Engines

Remove/install reduction gear.

Check crankshaft run-out.

Check tappet clearance.

Check compression.

Extract broken stud.

Install helicoil.

Perform ground run.

Establish/check reference RPM.

Troubleshoot.

Turbine Engines

Replace module.

Replace fan blade.

Hot section inspection/boroscope check.

Carry out engine/compressor wash.

Carry out engine dry cycle.

Engine ground run.

Establish reference power.

Trend monitoring/gas path analysis.

Troubleshoot.

Fuel and control, piston

Replace engine driven pump.

Adjust Automatic Mixture Control.

Adjust ABC (Aluminium piston, Brass cylinder, Chrome plated).

Install carburetor/injector.

Adjust carburetor/injector.

Clean injector nozzles.

Replace primer line.

Check carburetor float setting.

Troubleshoot faulty system.

Fuel and control, turbine

Replace FCU.

Replace Engine Electronic Control Unit (FADEC).

Replace Fuel Metering Unit (FADEC).

Replace engine driven pump.

Clean/test fuel nozzles.

Clean/replace filters.

Adjust FCU.

Troubleshoot faulty system.

Functional test of FADEC.

Ignition systems, piston

Change magneto.

Change ignition vibrator.

Change plugs.

Test plugs.

Check High Tension. leads.

Install new leads.

Check timing.

Check system bonding.

Troubleshoot faulty system.

Ignition systems, turbine

Perform functional test of the ignition system.

Check glow plugs/igniters.

Check High Tension leads.

Check ignition unit.

Replace ignition unit.

Troubleshoot faulty system.

Engine Controls

Rig thrust lever

Rig RPM control.

Rig mixture HP cock lever.

Rig power lever.

Check control sync (multi-eng).

Check controls for correct assembly and locking.

Check controls for range and direction of movement.

Adjust pedestal micro-switches.

Troubleshoot faulty system.

Engine Indicating

Replace engine instrument(s).

Replace oil temperature bulb.

Replace thermocouples.

Check calibration.

Troubleshoot faulty system.

Exhaust, piston

Replace exhaust gasket.

Inspect welded repair.

Pressure check cabin heater muff.

Troubleshoot faulty system.

Exhaust, turbine

Change jet pipe.

Change shroud assembly.

Install trimmers.

Inspect/replace thrust reverser.

Inspect/replace variable nozzle section

Replace thrust reverser component.

Deactivate/reactivate thrust reverser.

Operational test of the thrust reverser system.

Oil

Change oil.

Check filter(s).

Adjust pressure relief valve.

Replace oil tank.

Replace oil pump.

Replace oil cooler.

Replace firewall shut off valve.

Perform oil dilution test.

Troubleshoot faulty system.

Starting

Replace starter.

Replace start relay.

Replace start control valve.

Check cranking speed.

Troubleshoot faulty system.

Turbines, piston engines

Replace turbo-blower.

Replace heat shields.

Replace waste gate.

Adjust density controller.

Engine water injection

Replace water/methanol pump.

Flow check water/methanol system.

Adjust water/methanol control unit.

Check fluid for quality.

Troubleshoot faulty system

Accessory gear boxes

Replace gearbox.

Replace drive shaft.

Inspect magnetic chip detector.

APU

Removal/installation of the APU.

Removal/installation of the inlet guide-vane actuator.

Operational test of the APU emergency shut-down test.

Operational test of the APU.

Attack systems

Replace Head Up Display.

Replace Map / Tactical Situation Display.

Replace Multi-function Display.

Replace Weapons Management Display.

Removal/installation/functional check of laser designator systems.

Radar / surveillance

Functional check of air to air radar.

Functional check of air to surface / terrain following / mapping radars.

Functional check of weather radar.

Removal/installation/functional check of FLIR.

Removal/installation/functional check of Electro-Optical cameras.

Weapon systems

Removal/installation of guns/cannons.

Removal/installation of mission specific equipment.

Harmonisation/calibration of weapon aiming devices.

Removal/installation/functional check of interface between mission computer and missiles/ bombs/rockets/pods.

Crew escape

Removal/installation of ejection seats.

Removal/installation of crew survival kits.

Inspection of canopy/window jettison devices.

Reconnaissance

Removal/installation/functional check of cameras / reconnaissance pods.

Electronic warfare

Removal/installation of chaff/flares dispenser.

Removal/installation/functional check of Electronic Counter Measures systems.

Removal/installation/functional check of missile warning systems.

Appendix III to DASR 66 - Military Aircraft Type Training and Examination Standard, and On-the-Job Training (OJT)

GM to Appendix III to DASR 66 - Standard of existing Type Courses (AUS)

History demonstrates that existing Type courses have produced competently trained personnel; indicating that these courses meet the intent of the outcomes of Appendix III to DASR 66; noting that best practice is to provide Type training in accordance with Appendix III. There is a risk that current courses - particularly those which do not have any significant history - may not comply fully with the appendix and could omit important information. The missing information may lead to undertrained personnel who may, as a consequence create a safety hazard to personnel or damage to equipment. While currently approved Type courses will be

grandfathered, over time MTOs should assess those courses against Appendix III and identify any shortfalls. If shortfalls are identified, then a risk assessment of the shortfalls would be appropriate in order to determine what remediation action, if any, is required.

AMC1 to Appendix III to DASR 66 - Evaluation of the competence assessment and assessors (AUS)

Individuals who are Approved Aerospace Assessors (AAA) meet the requirements of 'designated assessors'. 'Designated assessors', however, are not limited to AAA – see the generic, ie non-AUS, AMC for advice on the knowledge skills and attitude of personnel who may be suitable to become designated assessors.

AMC to Appendix III - Evaluation of the competence: assessment and assessors

This Appendix applies to the competence assessment performed by the designated assessors (and their qualifications).

1. What does "competence" mean and areas of focus for assessment?

The assessment should aim at measuring the competence by evaluating three major factors associated to the learning objectives:

- Knowledge;
- Skills;
- Attitude;

Generally, knowledge is evaluated by examination. The purpose of this document is not to describe the examination process: this material mainly addresses the evaluation of "skills" and "attitude" after training containing practical elements. Nevertheless, the trainee needs to demonstrate to have sufficient knowledge to perform the required tasks.

"Attitude" is indivisible from the "skill" as this greatly contributes to the safe performance of the tasks.

The evaluation of the competence should be based on the learning objectives of the training, in particular:

- the (observable) desired performance. This covers what the trainee is expected to be able to do and how the trainee is expected to behave at the end of the training;
- the (measurable) performance standard that must be attained to confirm the trainee's level of competence in the form of tolerances, constraints, limits, performance rates or qualitative statements; and
- the conditions under which the trainee will demonstrate competence. Conditions consist of the training methods, the environmental, situational and regulatory factors.

The assessment should focus on the competencies relevant to the aircraft type and its maintenance such as, but not limited to:

- Environment awareness (act safely, apply safety precautions and prevent dangerous situations);
- Systems integration (demonstrate understanding of aircraft systems interaction – identify, describe, explain, plan, execute);
- Knowledge and understanding of areas requiring special emphasis or of novelty (areas peculiar to the aircraft type, domains not covered by EMAR 66 Appendix I, practical training elements that cannot be imparted through simulation devices, etc.);
- Using reports and indications (the ability to read and interpret);
- Aircraft documentation finding and handling (identify the appropriate aircraft documentation, navigate, execute and obey the prescribed maintenance procedures);
- Perform maintenance actions (demonstrate safe handling of aircraft, engines, components and tools);
- Aircraft final/close-up and report (apply close-up, initiate appropriate actions/follow-up/records of testing, establish and sign maintenance records/logbooks).

2. **How to assess**

As far as feasible, the objectives of the assessment should be associated with the learning objectives and the passing level; it means that observable criteria should be set in order to measure the performance and should remain as objective as possible.

The general characteristics of effective assessment are: objective, flexible, acceptable, comprehensive, constructive, organised and thoughtful. At the conclusion, the trainee should have no doubt about what they did well, what they did poorly and how they can improve.

The following is a non-exhaustive list of questions that may be asked to assist assessment:

- What are the success factors for the job?
- What are typical characteristics of a correct behaviour for the task?
- What criteria should be observed?
- What level of expertise is expected?
- Is there any standard available?
- What is the pass mark? For example:
  - "Go-no go" situation;

- How to allocate points? Minimum amount to succeed;
- "Must know or execute" versus "Good to know or execute" versus "Don't expect the candidate to be an expert".

- Minimum or maximum time to achieve? Use time effectively and efficiently.
- What if the trainee fails? How many times is the trainee allowed to fail?
- When and how should the trainee be prepared for the assessment?
- What proportion of judgment by the instructor out of collaboration with the trainee is needed during the evaluation stage?

The assessment may be:

- diagnostic (prior to a course), formative (re-orientate the course on areas where there is a need to reinforce) or summative (partial or final evaluation);
- performed task-by-task, as a group of tasks or as a final assessment;

One method might be an initial assessment to be performed by the trainee themselves, then discussing areas where the perceptions of the trainee's performance by the assessors differ in order to:

- develop the self-assessment habits;
make the assessment more acceptable and understandable to both parties.

In addition, many other aspects should be appropriately considered during the assessment process such as stress and environmental conditions, difficulty of the test, history of evaluation (such as tangible progresses or sudden and unexpected poor performance made by the trainee), amount of time necessary to build competence, etc.

All these reasons place more emphasis on the competence of the assessor.

3. **Who should assess**

In order to qualify, the assessor should:

- Be proficient and have sufficient experience and knowledge in:
  - human performance and safety culture;
  - the aircraft type;
  - training/coaching/testing skills;
  - instructional tools to use;
- Understand the objective and the content of the practical elements of the training that is being assessed;
- Have interpersonal skills to manage the assessment process (professionalism, sincerity, objectivity and neutrality, analysis skills, sense of judgement, flexibility,

capability of evaluating the supervisor's or instructor's reports, handling of trainee's reactions to failing an assessment taking into account the trainee's cultural environment, being constructive, etc.);

- Be ultimately designated by the organisation to carry out the assessment.

The roles may be combined for:

- the assessor and the instructor for the practical elements of the Military Aircraft Type Rating Training; or
- the assessor and the supervisor for the On-the-Job Training

provided that the objectives associated to each role are clearly understood and that the competence and qualification criteria according to the organisation's procedures are met for both functions. Whenever possible (depending on the size of the organisation), it is recommended to split the roles (two different persons) in order to avoid any conflict of interests.

When the functions are not combined, the role of each function should be clearly understood.

1. **General** ▸ **AMC**

DASR 66 - AMC to Section 1 of Appendix III

Military Aircraft Type Training

1. Military Aircraft Type Training may be sub-divided in airframe and/or powerplant and/ or avionics/electrical systems type training courses.

- Airframe type training course means a type training course including all relevant aircraft structure and electrical and mechanical systems excluding the powerplant.
- Powerplant type training course means a type training course on the bare engine, including the build-up to a quick engine change unit.
- The interface of the engine/airframe systems should be addressed by either airframe or powerplant type training course.
- Avionics/electrical systems type training course means type training on avionics and electrical systems.

Type training for military specific systems (and their interfaces with other aircraft systems) may be included in these sub-divisions as appropriate, or carried out as a separate course.

2. Practical training may be performed either following or integrated with the theoretical elements. However, it should not be performed before theoretical training.

3. The content of the theoretical and practical training should:

- address the different parts of the aircraft which are representative of the structure, the systems/components installed and the cabin; and

- include training on the use of technical manuals, maintenance procedures and the interface with the operation of the aircraft.

Therefore it should be based on the following elements:

- Type design including relevant type design variants, new technology and techniques;
- Feedback from in-service difficulties, occurrence reporting, etc;
- Significant applicable airworthiness directives and service bulletins or national equivalent;
- Known human factor issues associated with the particular aircraft type;
- Use of common and specific documentation, (when applicable, such as MMEL, AMM, MPD, TSM, SRM, WD, AFM, tool handbook), philosophy of the troubleshooting, etc;
- Knowledge of the maintenance on-board reporting systems and ETOPS maintenance conditions where applicable;
- Use of special tooling and test equipment and specific maintenance practises including critical safety items and safety precautions;
- Significant and critical tasks/aspects from the MMEL, CDL, Fuel Tank Safety (FTS), airworthiness limitation items (ALI) including Critical Design Configuration Control Limitations (CDCCL), CMR and all ICA documentation such as MRB, MPD, SRM, AMM, etc., when applicable.
- Maintenance actions and procedures to be followed as a consequence of specific certification requirements, such as, but not limited to, NVIS (Night Vision Imaging Systems);
- Knowledge of relevant inspections and limitations as applicable to the effects of environmental factors or operational procedures such as cold and hot climates, wind, moisture, sand, de-icing / anti-icing, etc.

4. Limited avionic system training should be included in the Category B1 Military Aircraft Type Training as the B1 privileges include work on avionics systems requiring simple tests to prove their serviceability.

5. Electrical systems should be included in both categories of B1 and B2 Military Aircraft Type Training.

6. The theoretical and practical training should be complementary and may be:

- Integrated or split
- Supported by the use of training aids, such as trainers, virtual aircraft, aircraft components, synthetic training devices (STD), computer based training devices (CBT), etc.

Military Aircraft Type Training shall consist of theoretical training and examination, and, except for the Category C ratings, practical training and assessment. Where Military Aircraft Type Training includes military-specific systems, the prerequisite is that the

student shall have gained the relevant 50-series modules (or sub-modules) of DASR 66 Appendix I.

a. Theoretical training and examination shall comply with the following requirements:

i. Shall be conducted by an MTO appropriately approved in accordance with DASR 147 or an organisation recognised by the MAA in accordance with DASA Standing Instructions.

ii. Shall comply with the standard described in paragraph 3.1 and 4 of this Appendix III, except as permitted by the differences training described below.

iii. In the case of a Category C person qualified by holding an academic degree as specified in DASR 66.A.30(a)(5), the first relevant aircraft type theoretical training shall be at the Category B1 or B2 level or at a level recognised by the MAA.

iv. Shall have been started and completed within the 3 years preceding the application for a Military Aircraft Type Rating endorsement.

b. Practical training and assessment shall comply with the following requirements:
▸ **AMC**

AMC to Paragraphs 1(b), 3.2 and 4.2 of Appendix III "Military Aircraft Type Training and Examination Standard, and On-the-Job Training"

Practical Element of the Military Aircraft Type Training

1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.

2. The tasks should be selected because of their frequency, complexity, variety, safety, criticality, novelty, etc. The selected tasks should cover all the chapters described in the table contained in paragraph 3.2 of Appendix III to DASR 66.

3. The duration of the practical training should ensure that the content of training required by paragraph 3.2 of Appendix III to DASR-66 is completed.

4. The organisation providing the practical element of the Military Aircraft Type Training should provide trainees a schedule or plan indicating the list of tasks to be performed under instruction or supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks may be countersigned by the designated assessor. The logbook format and its use should be clearly defined.

5. In paragraph 4.2 of Appendix III to DASR 66, the term "designated assessors appropriately qualified" means that the assessors should demonstrate training and experience on the assessment process being undertaken and be authorised to do so by the organisation.

Further guidance about the assessment and the designated assessors is provided in AMC to Appendix III to AMC to DASR 66.

6. The practical element (for powerplant and avionic systems) of the Military Aircraft Type Rating Training may be subcontracted by the approved DASR 147 organisation under its quality system according to the provisions of DASR 147.A.145(d)3 and the corresponding Guidance Material.

7. The practical element of the Military Aircraft Type Training can be performed concurrently with the OJT element if both are performed on the same military aircraft type and in a real maintenance environment.

i. Shall be conducted by an MTO appropriately approved in accordance with DASR 147 or an organisation recognised by the MAA in accordance with DASA Standing Instructions.

ii. Shall comply with the standard described in paragraph 3.2 and 4 of this Appendix III, except as permitted by the differences training described below.

iii. Shall include a representative cross section of maintenance activities relevant to the aircraft type.

iv. Shall include demonstrations using equipment, components, simulators, other training devices or aircraft.

v. Shall have been started and completed within the 3 years preceding the application for a Military Aircraft Type Rating endorsement.

c. Differences training ▸ **AMC**

AMC to Paragraph 1(c) of Appendix III

Differences Training

Approved difference training is not required for different variants within the same aircraft type rating (as specified by the MAA) for the purpose of Military Aircraft Type Rating endorsement on the MAML.

However, this does not necessarily mean that no training is required before a certifying staff authorisation can be issued by the AMO (see DASR AMC 66.A.20(b)3).

i. Differences training is the training required in order to cover the differences between two different Military Aircraft Type Ratings of the same manufacturer as determined by the MAA.

ii. Differences training has to be defined on a case-by-case basis taking into account the requirements contained in this Appendix III in respect of both theoretical and practical elements of Military Aircraft Type Rating training.

iii. A Military Aircraft Type Rating shall only be endorsed on a MAML after differences training when the applicant also complies with one of the following conditions:

– having already endorsed on the MAML the Military Aircraft Type Rating from which the differences are being identified, or

– having completed the Military Aircraft Type Training requirements for the aircraft from which the differences are being identified.

2. **Military Aircraft Type Training levels**

The three levels listed below define the objectives, the depth of training and the level of knowledge that the training is intended to achieve.

Level 1: A brief overview of the airframe, systems and powerplant as outlined in the Systems Description Section of the Aircraft Maintenance Manual/Instructions for Continuing Airworthiness.

Course objectives: Upon completion of Level 1 training, the student will be able to:

a. provide a simple description of the whole subject, using common words and examples, using typical terms and identify safety precautions related to the airframe, its systems and powerplant;

b. identify aircraft manuals, maintenance practices important to the airframe, its systems and powerplant;

c. define the general layout of the aircraft's major systems;

d. define the general layout and characteristics of the powerplant;

e. identify special tooling and test equipment used with the aircraft.

Level 2: Basic system overview of controls, indicators, principal components, including their location and purpose, servicing and minor troubleshooting. General knowledge of the theoretical and practical aspects of the subject.

Course objectives: In addition to the information contained in the Level 1 training, at the completion of Level 2 training, the student will be able to:

a. understand the theoretical fundamentals; apply knowledge in a practical manner using detailed procedures;

b. recall the safety precautions to be observed when working on or near the aircraft, powerplant, systems and armaments;

c. describe systems and aircraft handling particularly access, power availability and sources;

d. identify the locations of the principal components;

e. explain the normal functioning of each major system, including terminology and nomenclature;

f. perform the procedures for servicing associated on aircraft systems;

g. demonstrate proficiency in interpretation of crew reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the MEL/CDL or National equivalent;

h. demonstrate the use, interpretation and application of appropriate documentation including instructions for continuing airworthiness, maintenance manual, illustrated parts catalogue, etc.

Level 3: Detailed description, operation, component location, removal/installation and BITE and troubleshooting procedures to maintenance manual level.

Course objectives: In addition to the information contained in Level 1 and Level 2 training, at the completion of Level 3 training, the student will be able to:

a. demonstrate a theoretical knowledge of aircraft systems and structures and interrelationships with other systems, provide a detailed description of the subject using theoretical fundamentals and specific examples and to interpret results from various sources and measurements and apply corrective action where appropriate;

b. perform system, powerplant, component and functional checks as specified in the aircraft maintenance manual;

c. demonstrate the use, interpretation and application of appropriate documentation including structural repair manual, troubleshooting manual, etc.;

d. correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level;

e. describe procedures for replacement of components specific to aircraft type.

3. **Military Aircraft Type Training standard**

Although Military Aircraft Type Training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or for a combination of both.

3.1 Theoretical element

a. Objective:
On completion of a theoretical training course the student shall be able to demonstrate, to the levels identified in the DASR 66 Appendix III syllabus, the detailed theoretical knowledge of the aircraft's applicable systems, structure, operations, maintenance, repair, and troubleshooting according to approved maintenance data. The student shall be able to demonstrate the use of manuals and approved procedures, including the knowledge of relevant inspections and limitations.

b. Level of training:
Training levels are those levels defined in point 2 above.

After the first type course for Category C certifying staff, all subsequent courses need only be to level 1.

During a level 3 theoretical training, Level 1 and 2 training material may be used to teach the full scope of the chapter if required. However, during the training the majority of the course material and training time shall be at Level 3.

c. Duration:
NOT APPLICABLE.

d. Justification of course duration: ▸ **AMC**

AMC to Paragraph 3.1(d) - Training Needs Analysis for the Theoretical Element of the Military Aircraft Type Training

1. NOT APPLICABLE.

2. The purpose of the Training Needs Analysis (TNA) is to adapt and justify the duration of the course for a specific aircraft type. This means that the TNA is the main driver for determining the duration of the course.

3. The content and the duration deriving from this TNA may be supported by an analysis from the (Military) Type Certificate holder.

4. NOT APPLICABLE.

5. When developing the TNA the following should be considered:

   a. The TNA should include an analysis identifying all the areas and elements where there is a need for training as well as the associated learning objectives, considering the design philosophy of the aircraft type, the operational environment, the type of operations and the operational experience. This analysis should be written in a manner which provides a reasonable understanding of which areas and elements constitute the course in order to meet the learning objectives.

   b. As a minimum, the Training Need Analysis (TNA) should take into account all the applicable elements contained in paragraph 3.1 of DASR-66 Appendix III and associated AMCs.

   c. The TNA should set-up the course content considering the Appendix III objectives for each level of training and the prescribed topics in the theoretical element table contained in paragraph 3.1 of DASR-66 Appendix III.

   d. For each chapter described in the theoretical element table contained in paragraph 3.1 of DASR 66 Appendix III, the corresponding training time should be recorded.

   e. Typical documents to be used in order to identify the areas and elements where there is a need for training typically include, among others, the Aircraft Maintenance Manual, MRB report, CMRs, airworthiness limitations, Troubleshooting Manual, Structural Repair Manual, Illustrated Parts Catalogue, Airworthiness Directives and Service Bulletins or national equivalent.

f. During the analysis of these documents:

- Consideration should be given to the following typical activities:
  - i. Activation/reactivation;
  - ii. Removal/Installation;
  - iii. Testing;
  - iv. Servicing;
  - v. Inspection, check and repairs;
  - vi. Troubleshooting / diagnosis.
- For the purpose of identifying the specific elements constituting the training course, it is acceptable to use a filtering method based on criteria such as:
  - i. Frequency of the task;
  - ii. Human factor issues associated to the task;
  - iii. Difficulty of the task;
  - iv. Criticality and safety impact of the task;
  - v. In-service experience;
  - vi. Novel or unusual design features (not covered by DASR 66 Appendix I);
  - vii. Similarities with other aircraft types;
  - viii. Special tests and tools/equipment
- It is acceptable to follow an approach based on:
  - i. Tasks or groups of tasks, or
  - ii. Systems or subsystems or components.

a. The TNA should:

- Identify the learning objectives for each task, group of tasks, system, subsystem or component;
- Associate the identified tasks to be trained to the regulatory requirements (table in Paragraph 3.1 of Appendix III to DASR 66);
- Organise the training into modules in a logical sequence (adequate combination of chapters as defined in Appendix III of DASR 66);
- Determine the sequence of learning (within a lesson and for the whole syllabus);

- Identify the scope of information and level of detail with regard to the minimum standard to which the topics of the TNA should be taught according to the set-up objectives.
- Address the following:

  i. Description of each system/component including the structure (where applicable);

  ii. System/component operation taking into account:

  a. Complexity of the system (e.g. the need of further break down into subsystems, etc.);

  b. Design specifics which may require more detailed presentation or may contribute to maintenance errors;

  c. Normal and emergency functioning;

  d. Troubleshooting;

  e. Interpretation of indications and malfunctions;

  f. Use of maintenance publications;

  g. Identification of special tools and equipment required for servicing and maintaining the aircraft;

  h. Maintenance Practices;

  i. Routine inspections, functional or operational tests, rigging/ adjustment, etc.

- Describe the following:

  i. The instructional methods and equipment, teaching methods and blending of the teaching methods in orderto ensure the effectiveness of the training;

  ii. The maintenance training documentation/material to be delivered to the student;

  iii. Facilitated discussions, questioning session, additional practiced-oriented training, etc;

  iv. The homework, if developed;

  v. The training provider's resources available to the learner.

a. It is acceptable to differentiate between issues which have to be led by an instructor and issues which may be delivered through interactive simulation training devices and/or covered by web based elements. Overall time of the course will be allocated accordingly.

b. The minimum participation time for the trainee in order to meet the objectives of the course should not be less than 90% of the tuition hours of the theoretical training course, unless the MAA approves otherwise. Additional training may be provided by the training organisation in order to meet the minimum participation time. If the minimum participation defined for the course is not met, a certificate of recognition should not be issued.

c. The TNA is a living process and should be reviewed/updated based on operational feedback, maintenance occurrences, airworthiness directives or national equivalent , major service bulletins impacting maintenance activities or requiring new competencies for mechanics, alert service bulletins, feedback from trainees or customer satisfaction, evolution of the maintenance documentation such as Maintenance Review Boards, Maintenance Planning Documents, Maintenance Manuals, etc. The frequency at which the TNA should be reviewed/updated is left to the discretion of the organisation conducting the course.

NOTE: The examination is not part of the TNA. However, it should be prepared in accordance with the learning objectives described in the TNA.

Training courses carried out in an MTO shall justify their hour duration and the coverage of the full syllabus by a training needs analysis based on:

- the design of the aircraft type, its maintenance needs and the types of operation,

- detailed analysis of applicable chapters — see contents table in point 3.1(e) below,

- detailed competency analysis showing that the objectives as stated in point 3.1(a) above are fully met.

Course duration shall be approved by the MAA.

Similarly, tuition hours of differences courses or other training course combinations (such as combined B1/B2 courses), and in cases of theoretical Military Aircraft Type Training courses, these shall be justified by the training needs analysis as described above.

In addition, the course documentation must describe and justify the following:

- The minimum attendance required by the student, in order to meet the objectives of the course.

- The maximum number of hours of training per day, taking into account pedagogical and human factors principles.

If the minimum attendance required is not met, the certificate of recognition shall not be issued. Additional training may be provided by the MTO in order to meet the minimum attendance time.

e. Content:

As a minimum, the elements in the Syllabus (see table below) that are specific to the aircraft type shall be covered. Additional elements introduced due to type variations, technological changes, etc. shall also be included

Chapters	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
	B1	C	B1	C	B1	C	B1	C	B2
Introduction module:									
05 Time limits/maintenance checks	1	1	1	1	1	1	1	1	1
06 Dimensions/Areas (MTOM, etc.)	1	1	1	1	1	1	1	1	1
07 Lifting and Shoring	1	1	1	1	1	1	1	1	1
08 Levelling and weighing	1	1	1	1	1	1	1	1	1
09 Towing and taxiing	1	1	1	1	1	1	1	1	1
10 Parking/mooring, Storing and Return to Service	1	1	1	1	1	1	1	1	1
11 Placards and Markings	1	1	1	1	1	1	1	1	1
12 Servicing	1	1	1	1	1	1	1	1	1

14 Product loading and off loading	1	1	1	1	1	1	1	1	1
20 Standard practices including armament safety — only type particular	1	1	1	1	1	1	1	1	1
Helicopters									
18 Vibration and Noise Analysis (Blade tracking)	-	-	-	-	3	1	3	1	-
25 Emergency Flotation Equipment	-	-	-	-	3	1	3	1	1
53 Airframe Structure (Helicopter)	-	-	-	-	3	1	3	1	-
60 Standard Practices Rotor	-	-	-	-	3	1	3	1	-
62 Rotors	-	-	-	-	3	1	3	1	1
62A Rotors — Monitoring and indicating	-	-	-	-	3	1	3	1	3
63 Rotor Drives	-	-	-	-	3	1	3	1	1
63A Rotor Drives — Monitoring and indicating	-	-	-	-	3	1	3	1	3
64 Tail Rotor	-	-	-	-	3	1	3	1	1
64A Tail rotor — Monitoring and indicating	-	-	-	-	3	1	3	1	3

65 Tail Rotor Drive	-	-	-	-	3	1	3	1	1
65A Tail Rotor Drive — Monitoring and indicating	-	-	-	-	3	1	3	1	3
66 Folding Blades/Pylon	-	-	-	-	3	1	3	1	-
67 Rotors Flight Control	-	-	-	-	3	1	3	1	-
Airframe structures									
27A Flight Control Surfaces (All)	3	1	3	1	-	-	-	-	1
51 Standard practices and structures (damage classification, assessment and repair)	3	1	3	1	-	-	-	-	1
52 Doors	3	1	3	1	-	-	-	-	1
53 Fuselage	3	1	3	1	-	-	-	-	1
54 Nacelles/Pylons	3	1	3	1	-	-	-	-	1
55 Stabilisers	3	1	3	1	-	-	-	-	1
56 Windows and canopies	3	1	3	1	-	-	-	-	1
57 Wings	3	1	3	1	-	-	-	-	1

06 Zonal and Station Identification Systems.	1	1	1	1	1	1	1	1	1
Airframe systems:									
21 Air Conditioning	3	1	3	1	3	1	3	1	3
21A Air Supply	3	1	3	1	3	1	3	1	2
21B Pressurisation	3	1	3	1	3	1	3	1	3
21C Safety and Warning Devices	3	1	3	1	3	1	3	1	3
22 Autoflight	2	1	2	1	2	1	2	1	3
23 Communications	2	1	2	1	2	1	2	1	3
24 Electrical Power	3	1	3	1	3	1	3	1	3
25 Equipment and Furnishings	3	1	3	1	3	1	3	1	1
25A Electronic Equipment including emergency equipment	1	1	1	1	1	1	1	1	3
26 Fire Protection	3	1	3	1	3	1	3	1	3

27 Flight Controls	3	1	3	1	3	1	3	1	2
27A Sys. Operation: Electrical/Fly-by-Wire	3	1	-	-	-	-	-	-	3
28 Fuel Systems	3	1	3	1	3	1	3	1	2
28A Fuel Systems — Monitoring and indicating	3	1	3	1	3	1	3	1	3
29 Hydraulic Power	3	1	3	1	3	1	3	1	2
29A Hydraulic Power — Monitoring and indicating	3	1	3	1	3	1	3	1	3
30 Ice and Rain Protection	3	1	3	1	3	1	3	1	3
31 Indicating/Recording Systems	3	1	3	1	3	1	3	1	3
31A Instrument Systems	3	1	3	1	3	1	3	1	3
32 Landing Gear	3	1	3	1	3	1	3	1	2
32A Landing Gear — Monitoring and indicating	3	1	3	1	3	1	3	1	3
33 Lights	3	1	3	1	3	1	3	1	3
34 Navigation	2	1	2	1	2	1	2	1	3

35 Oxygen	3	1	3	1	-	-	-	-	2
36 Pneumatic	3	1	3	1	3	1	3	1	2
36A Pneumatic — Monitoring and indicating	3	1	3	1	3	1	3	1	3
37 Vacuum	3	1	3	1	3	1	3	1	2
38 Water/Waste	3	1	3	1	-	-	-	-	2
40 Operational attack functions	2	1	2	1	2	1	-	-	3
42 Integrated modular avionics	2	1	2	1	2	1	2	1	3
42A Cross-technical attack functions	2	1	2	1	2	1	-	-	3
44 Cabin Systems	2	1	2	1	2	1	2	1	3
45 On-Board Maintenance System (or covered in 31)	3	1	3	1	3	1	-	-	3
46 Information Systems	2	1	2	1	2	1	2	1	3
48 In-Flight refueling tanker	3	1	-	-	3	1	-	-	2
48A In-Flight refueling tanker – Monitoring and Indicating	3	1	-	-	3	1	-	-	3

50 Cargo and Accessory Compartments	3	1	3	1	3	1	3	1	1
Turbine Engine									
70 Standard Practices – Engines	3	1	-	-	3	1	-	-	1
70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems).	3	1	-	-	3	1	-	-	1
70B Engine Performance	3	1	-	-	3	1	-	-	1
71 Powerplant	3	1	-	-	3	1	-	-	1
72 Engine Turbine/Turbo Prop/ Ducted Fan/Unducted fan	3	1	-	-	3	1	-	-	1
73 Engine Fuel and Control	3	1	-	-	3	1	-	-	1
73A Full Authority Digital Engine Control (FADEC)	3	1	-	-	3	1	-	-	3
74 Ignition	3	1	-	-	3	1	-	-	3
75 Air	3	1	-	-	3	1	-	-	1
76 Engine controls	3	1	-	-	3	1	-	-	1

77 Engine Indicating Systems	3	1	-	-	3	1	-	-	3
78 Exhaust	3	1	-	-	3	1	-	-	1
79 Oil	3	1	-	-	3	1	-	-	1
80 Starting	3	1	-	-	3	1	-	-	1
82 Water Injections	3	1	-	-	3	1	-	-	1
83 Accessory Gear Boxes	3	1	-	-	3	1	-	-	1
84 Propulsion Augmentation	3	1	-	-	3	1	-	-	1
Auxiliary Power Units (APUs)									
49 Auxiliary Power Units (APUs)	3	1	-	-	3	1	-	-	2
Piston Engine									
70 Standard Practices — Engines	-	-	3	1	-	-	3	1	1
70A Constructional arrangement and operation (Installation, Carburettors, Fuel injection systems, Induction, Exhaust and Cooling Systems, Supercharging/ Turbocharging, Lubrication Systems).	-	-	3	1	-	-	3	1	1

70B Engine Performance	-	-	3	1	-	-	3	1	1
71 Powerplant	-	-	3	1	-	-	3	1	1
73 Engine Fuel and control	-	-	3	1	-	-	3	1	1
73A FADEC	-	-	3	1	-	-	3	1	3
74 Ignition	-	-	3	1	-	-	3	1	3
76 Engine Control	-	-	3	1	-	-	3	1	1
77 Engine Indication Systems	-	-	3	1	-	-	3	1	3
79 Oil	-	-	3	1	-	-	3	1	1
80 Starting	-	-	3	1	-	-	3	1	1
81 Turbines	-	-	3	1	-	-	3	1	1
82 Water Injection	-	-	3	1	-	-	3	1	1
83 Accessory Gear boxes	-	-	3	1	-	-	3	1	1
84 Propulsion Augmentation	-	-	3	1	-	-	3	1	1

Propellers									
60A Standard Practices — Propeller	3	1	3	1	-	-	-	-	1
61 Propellers/Propulsion	3	1	3	1	-	-	-	-	1
61A Propeller Construction	3	1	3	1	-	-	-	-	-
61B Propeller Pitch Control	3	1	3	1	-	-	-	-	-
61C Propeller Synchronising	3	1	3	1	-	-	-	-	1
61D Propeller Electronic control	3	1	3	1	-	-	-	-	3
61E Propeller Ice Protection	3	1	3	1	-	-	-	-	-
61F Propeller Maintenance	3	1	3	1	-	-	-	-	1
Military-Specific Systems									
92 Radar	2	1	2	1	2	1	-	-	3
93 Surveillance	2	1	2	1	2	1	-	-	3
94 Weapon System	2	1	2	1	2	1	-	-	3

95 Crew Escape and Safety (partially covered by 25 for Helicopters)	3	1	3	1	3	1	3	1	2
97 Image Recording	2	1	2	1	2	1	-	-	2
99 Electronic Warfare	2	1	2	1	2	1	-	-	3

f. Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training element either in the classroom or in a virtual controlled environment subject to the acceptance of the MAA approving the training course.

3.2 Practical element ▸ AMC

AMC to Paragraphs 1(b), 3.2 and 4.2 of Appendix III "Military Aircraft Type Training and Examination Standard, and On-the-Job Training"

Practical Element of the Military Aircraft Type Training

1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.

2. The tasks should be selected because of their frequency, complexity, variety, safety, criticality, novelty, etc. The selected tasks should cover all the chapters described in the table contained in paragraph 3.2 of Appendix III to DASR 66.

3. The duration of the practical training should ensure that the content of training required by paragraph 3.2 of Appendix III to DASR-66 is completed.

4. The organisation providing the practical element of the Military Aircraft Type Training should provide trainees a schedule or plan indicating the list of tasks to be performed under instruction or supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks may be countersigned by the designated assessor. The logbook format and its use should be clearly defined.

5. In paragraph 4.2 of Appendix III to DASR 66, the term "designated assessors appropriately qualified" means that the assessors should demonstrate training and experience on the assessment process being undertaken and be authorised to do so by the organisation.

   Further guidance about the assessment and the designated assessors is provided in AMC to Appendix III to AMC to DASR 66.

6. The practical element (for powerplant and avionic systems) of the Military Aircraft Type Rating Training may be subcontracted by the approved DASR 147 organisation under its

quality system according to the provisions of DASR 147.A.145(d)3 and the corresponding Guidance Material.

7. The practical element of the Military Aircraft Type Training can be performed concurrently with the OJT element if both are performed on the same military aircraft type and in a real maintenance environment.

g. Objective:

The objective of practical training is to gain the required competence in performing safe maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example troubleshooting, repairs, adjustments, replacements, rigging and functional checks. It includes the awareness of the use of all technical literature and documentation for the aircraft, the use of specialist/special tooling and test equipment for performing removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

Content:

At least 50% of the crossed items in the table below, which are relevant to the particular aircraft type, shall be completed as part of the practical training.

Tasks crossed represent subjects that are important for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks is adequately addressed; particularly where these cannot be fully explained by theoretical training alone. Although the list details the minimum practical training subjects, other items may be added where applicable to the particular aircraft type.

Tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Glossary of the table: LOC: Location; FOT: Functional/Operational Test; SGH: Service and Ground Handling; R/I: Removal/Installation; MEL: Minimum Equipment List; TS: TroubleShooting.

Chapters	B1/ B2	B1					B2				
	LOC	FOT	SGH	R/ I	MEL	TS	FOT	SGH	R/ I	MEL	TS

Introduction module:											
05 Time limits/ maintenance checks	X/X	-	-	-	-	-	-	-	-	-	-
06 Dimensions/Areas (MTOM, etc.)	X/X	-	-	-	-	-	-	-	-	-	-
07 Lifting and Shoring	X/X	-	-	-	-	-	-	-	-	-	-
08 Levelling and weighing	X/X	-	X	-	-	-	-	X	-	-	-
09 Towing and taxiing	X/X	-	X	-	-	-	-	X	-	-	-
10 Parking/mooring, Storing and Return to Service	X/X	-	X	-	-	-	-	X	-	-	-
11 Placards and Markings	X/X	-	-	-	-	-	-	-	-	-	-
12 Servicing	X/X	-	X	-	-	-	-	X	-	-	-
14 Product loading and off loading	X/X	-	X	-	-	-	-	X	-	-	-
20 Standard practices including armament safety — only type particular	X/X	-	X	-	-	-	-	X	-	-	-
Helicopters:											

18 Vibration and Noise Analysis (Blade tracking)	X/-	-	-	-	-	X	-	-	-	-	-
25 Emergency Flotation Equipment	X/X	X	X	X	X	X	X	X	-	-	-
53 Airframe Structure (Helicopter) Note: covered under Airframe structures											
60 Standard Practices Rotor — only type specific	X/X	-	X	-	-	-	-	X	-	-	-
62 Rotors	X/-	-	X	X	-	X	-	-	-	-	-
62A Rotors — Monitoring and indicating	X/X	X	X	X	X	X	-	-	X	-	X
63 Rotor Drives	X/-	X	-	-	-	X	-	-	-	-	-
63A Rotor Drives — Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	X
64 Tail Rotor	X/-	-	X	-	-	X	-	-	-	-	-
64A Tail rotor -Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	X
65 Tail Rotor Drive	X/-	X	-	-	-	X	-	-	-	-	-
65A Tail Rotor Drive — Monitoring and indicating	X/X	X	-	X	X	X	-	-	X	-	X

66 Folding Blades/ Pylon	X/-	X	X	-	-	X	-	-	-	-	-
67 Rotors Flight Control	X/-	X	X	-	X	X	-	-	-	-	-
Airframe structures:											
27A Flight Control Surfaces	X/-	-	-	-	-	X	-	-	-	-	-
51 Standard Practices and Structures (damage classification, assessment and repair)											
52 Doors	X/X	X	X	-	-	-	-	X	-	-	-
53 Fuselage	X/-	-	-	-	-	X	-	-	-	-	-
54 Nacelles/Pylons	X/-	-	-	-	-	-	-	-	-	-	-
55 Stabilisers	X/-	-	-	-	-	-	-	-	-	-	-
56 Windows and canopies	X/-	-	-	-	-	X	-	-	-	-	-
57 Wings	X/-	-	-	-	-	-	-	-	-	-	-
Airframe systems:											

21 Air Conditioning	X/X	X	X	-	X	X	X	X	-	X	X
21A Air Supply	X/X	X	-	-	-	-	X	-	-	-	-
21B Pressurisation	X/X	X	-	-	X	X	X	-	-	X	X
21C Safety and warning Devices	X/X	-	X	-	-	-	-	X	-	-	-
22 Autoflight	X/X	-	-	-	X	-	X	X	X	X	X
23 Communications	X/X	-	X	-	X	-	X	X	X	X	X
24 Electrical Power	X/X	X	X	X	X	X	X	X	X	X	X
25 Equipment and Furnishings	X/X	X	X	X	-	-	X	X	X	-	-
25A Electronic Equipment including emergency equipment	X/X	X	X	X	-	-	X	X	X	-	-
26 Fire Protection	X/X	X	X	X	X	X	X	X	X	X	X
27 Flight Controls	X/X	X	X	X	X	X	X	-	-	-	-
27A Sys. Operation: Electrical/Fly-by-Wire	X/X	X	X	X	X	-	X	-	X	-	X
28 Fuel Systems	X/X	X	X	X	X	X	X	X	-	X	-

28A Fuel Systems — Monitoring and indicating	X/X	X	-	-	-	-	X	-	X	-	X
29 Hydraulic Power	X/X	X	X	X	X	X	X	X	-	X	-
29A Hydraulic Power — Monitoring and indicating	X/X	X	-	X	X	X	X	-	X	X	X
30 Ice and Rain Protection	X/X	X	X	-	X	X	X	X	-	X	X
31 Indicating/ Recording Systems	X/X	X	X	X	X	X	X	X	X	X	X
31A Instrument Systems	X/X	X	X	X	X	X	X	X	X	X	X
32 Landing Gear	X/X	X	X	X	X	X	X	X	X	X	-
32A Landing Gear — Monitoring and indicating	X/X	X	-	X	X	X	X	-	X	X	X
33 Lights	X/X	X	X	-	X	-	X	X	X	X	-
34 Navigation	X/X	-	X	-	X	-	X	X	X	X	X
35 Oxygen	X/-	X	X	X	-	-	X	X	-	-	-
36 Pneumatic	X/-	X	-	X	X	X	X	-	X	X	X

36A Pneumatic — Monitoring and indicating	X/X	X	X	X	X	X	X	X	X	X	X
37 Vacuum	X/-	X	-	X	X	X	-	-	-	-	-
38 Water/Waste	X/-	X	X	-	-	-	X	X	-	-	-
40 Operational attack functions	X/X	-	-	-	-	-	X	X	X	X	X
42 Integrated modular avionics	X/X	-	-	-	-	-	X	X	X	X	X
42A Cross-technical attack functions	X/X	X	-	-	-	-	X	X	X	X	X
44 Cabin Systems	X/X	X	-	-	-	-	X	X	X	X	X
45 On-Board Maintenance System (or covered in 31)	X/X	X	X	X	X	X	X	X	X	X	X
46 Information Systems	X/X	-	-	-	-	-	X	-	X	X	X
48 In-Flight refueling tanker	X/X	X	X	X	X	X	X	X	-	X	-
48A In-Flight refueling tanker – Monitoring and Indicating	X/X	X	X	X	X	X	X	X	X	X	X
50 Cargo and Accessory Compartments	X/X	-	X	-	-	-	-	-	-	-	-

Turbine Engines:											
70 Standard Practices — Engines — only type particular	-	-	X	-	-	-	-	X	-	-	-
70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems	X/X	-	-	-	-	-	-	-	-	-	-
70B Engine Performance	-	-	-	-	-	X	-	-	-	-	-
71 Power Plant	X/-	X	X	-	-	-	-	X	-	-	-
72 Engine Turbine/ Turbo Prop/Ducted Fan/ Unducted fan	X/-	-	-	-	-	-	-	-	-	-	-
73 Engine Fuel and Control	X/X	X	-	-	-	-	-	-	-	-	-
73A FADEC Systems	X/X	X	-	X	X	X	X	-	X	X	X
74 Ignition	X/X	X	-	-	-	-	X	-	-	-	-
75 Air	X/-	-	-	X	-	X	-	-	-	-	-
76 Engine Controls	X/-	X	-	-	-	X	-	-	-	-	-

77 Engine Indicating	X/X	X	-	-	X	X	X	-	-	X	X
78 Exhaust	X/-	X	-	-	X	-	-	-	-	-	-
79 Oil	X/-	-	X	X	-	-	-	-	-	-	-
80 Starting	X/-	X	-	-	X	X	-	-	-	-	-
82 Water Injection	X/-	X	-	-	-	-	-	-	-	-	-
83 Accessory Gearboxes	X/-	-	X	-	-	-	-	-	-	-	-
84 Propulsion Augmentation	X/-	X	-	-	-	-	-	-	-	-	-
Auxiliary Power Units (APUs):											
49 Auxiliary Power Units (APUs)	X/-	X	X	-	-	X	-	-	-	-	-
Piston Engines:											
70 Standard Practices — Engines — only type particular	-	-	X	-	-	-	-	X	-	-	-
70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section,	X/X	-	-	-	-	-	-	-	-	-	-

Bearings and Seals, Lubrication Systems											
70B Engine Performance	-	-	-	-	-	X	-	-	-	-	-
71 Power Plant	X/-	X	X	-	-	-	-	X	-	-	-
73 Engine Fuel and Control	X/X	X	-	-	-	-	-	-	-	-	-
73A FADEC Systems	X/X	X	-	X	X	X	X	-	X	X	X
74 Ignition	X/X	X	-	-	-	-	X	-	-	-	-
76 Engine Controls	X/-	X	-	-	-	X	-	-	-	-	-
77 Engine Indicating	X/X	X	-	-	X	X	X	-	-	X	X
78 Exhaust	X/-	X	-	-	X	X	-	-	-	-	-
79 Oil	X/-	-	X	X	-	-	-	-	-	-	-
80 Starting	X/-	X	-	-	X	X	-	-	-	-	-
81 Turbines	X/-	X	X	X	-	X	-	-	-	-	-
82 Water Injection	X/-	X	-	-	-	-	-	-	-	-	-

83 Accessory Gearboxes	X/-	-	X	X	-	-	-	-	-	-	-
84 Propulsion Augmentation	X/-	X	-	-	-	-	-	-	-	-	-
Propellers:											
60A Standard Practices — Propeller	-	-	-	X	-	-	-	-	-	-	-
61 Propellers/ Propulsion	X/X	X	X	-	X	X	-	-	-	-	-
61A Propeller Construction	X/X	-	X	-	-	-	-	-	-	-	-
61B Propeller Pitch Control	X/-	X	-	X	X	X	-	-	-	-	-
61C Propeller Synchronising	X/-	X	-	-	-	X	-	-	-	X	-
61D Propeller Electronic control	X/X	X	X	X	X	X	X	X	X	X	X
61E Propeller Ice Protection	X/-	X	-	X	X	X	-	-	-	-	-
61F Propeller Maintenance	X/X	X	X	X	X	X	X	X	X	X	X
Military-Specific Systems											
92 Radar	X/X	X	X	X	X	-	X	X	X	X	X

93 Surveillance	X/X	X	X	X	X	-	X	X	X	X	X
94 Weapon system	X/X	X	X	X	X	-	X	X	X	X	X
95 Crew escape and Safety	X/X	X	X	X	X	X	X	X	X	X	-
97 Image recording	X/X	X	X	X	X	-	X	X	X	X	X
99 Electronic Warfare	X/X	X	X	X	X	-	X	X	X	X	X

4. **Military Aircraft Type Training examination and assessment standard**

4.1 Theoretical element examination standard

After the theoretical portion of the Military Aircraft Type Training has been completed, a written examination shall be performed, which shall comply with the following:

a. Format of the examination is of the multi-choice type. Each multi-choice question shall have at least 3 alternative answers of which only one shall be the correct answer. The total time is based on the total number of questions and the time for answering is based upon a nominal average of 90 seconds per question.

b. The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.

c. In numerical questions, the incorrect answers shall correspond to procedural errors such as the use of incorrect sense (+ versus -) or incorrect measurement units. They shall not be mere random numbers.

d. The level of examination for each chapter (*) shall be the one defined in point 2 "Military Aircraft Type Training levels". However, the use of a limited number of questions at a lower level is acceptable.

e. The examination shall be of the closed book type. No reference material is permitted. An exception will be made for the case of examining a B1 or B2 candidate’s ability to interpret technical documents.

f. The number of questions shall be at least 1 question per hour of instruction. The number of questions for each chapter and level shall be proportionate to:

   i. the effective training hours spent teaching at that chapter and level,

   ii. the learning objectives as given by the training needs analysis.

The MAA will assess the number and the level of the questions when approving the course.

g. The minimum examination pass mark is 75 %. When the Military Aircraft Type Training examination is split in several examinations, each examination shall be passed with at least a 75 % mark. In order to be possible to achieve exactly a 75 % pass mark, the number of questions in the examination shall be a multiple of 4.

h. Penalty marking (negative points for failed questions) is not to be used.

i. End of module phase examinations cannot be used as part of the final examination unless they contain the correct number and level of questions required.

(*) For the purpose of this point 4, a "chapter" means each one of the rows preceded by a number in the table contained in point 3.1(e).

4.2 Practical element assessment standard ▸ **AMC**

AMC to Paragraphs 1(b), 3.2 and 4.2 of Appendix III "Military Aircraft Type Training and Examination Standard, and On-the-Job Training"

Practical Element of the Military Aircraft Type Training

1. The practical training may include instruction in a classroom or in simulators but part of the practical training should be conducted in a real maintenance or manufacturer environment.

2. The tasks should be selected because of their frequency, complexity, variety, safety, criticality, novelty, etc. The selected tasks should cover all the chapters described in the table contained in paragraph 3.2 of Appendix III to DASR 66.

3. The duration of the practical training should ensure that the content of training required by paragraph 3.2 of Appendix III to DASR-66 is completed.

4. The organisation providing the practical element of the Military Aircraft Type Training should provide trainees a schedule or plan indicating the list of tasks to be performed under instruction or supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks may be countersigned by the designated assessor. The logbook format and its use should be clearly defined.

5. In paragraph 4.2 of Appendix III to DASR 66, the term "designated assessors appropriately qualified" means that the assessors should demonstrate training and experience on the assessment process being undertaken and be authorised to do so by the organisation.

   Further guidance about the assessment and the designated assessors is provided in AMC to Appendix III to AMC to DASR 66.

6. The practical element (for powerplant and avionic systems) of the Military Aircraft Type Rating Training may be subcontracted by the approved DASR 147 organisation under its

quality system according to the provisions of DASR 147.A.145(d)3 and the corresponding Guidance Material.

7. The practical element of the Military Aircraft Type Training can be performed concurrently with the OJT element if both are performed on the same military aircraft type and in a real maintenance environment.

After the practical element of the Military Aircraft Type Training has been completed, an assessment must be performed, which must comply with the following:

a. The assessment shall be performed by designated assessors appropriately qualified.

b. The assessment shall evaluate the knowledge and skills of the trainee.

5. **Type examination standard**

NOT APPLICABLE.

6. **On the Job Training** ▸ **AMC**

AMC to Section 6 - On-the-Job Training (OJT)

1. "A maintenance organisation appropriately approved for the maintenance of the particular aircraft type" means a DASR 145 AMO holding an A rating for such aircraft.

2. The OJT should include a number of tasks that are carried out under 'one to one' supervision (ie one supervisor dedicated to one trainee) and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.

3. The use of simulators for OJT should not be allowed.

NOTE: It is acceptable to use simulators for OJT if the simulators have been designed specifically for maintenance training.

4. Appendix II to AMC to DASR 66 contains a list of tasks, from which a representative sample appropriate to the type and licence (sub-) category applied for, should be extracted and approved by the MAA. The OJT should cover at least 50% of this approved extracted list. Some tasks should be selected from each paragraph of the approved extracted list. Other tasks than those in the Appendix II may be considered as a replacement when they are relevant. Typically, in addition to the variety and the complexity, the OJT tasks should be selected because of their frequency, safety, novelty, etc.

5. Up to 50% of the required OJT may be undertaken before the aircraft theoretical Military Aircraft Type Training starts.

6. The organisation providing the OJT training should provide trainees a schedule or plan indicating the list of tasks to be performed under supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks is countersigned by the corresponding supervisor. The logbook format and its use should be clearly defined.

7. Regarding the day-to-day supervision of the OJT programme in the DASR 145 AMO and the role of the supervisor(s), the following should be considered:

- It is sufficient that the completion of individual OJT tasks is confirmed by the direct supervisor(s), without being necessarily a direct evaluation by the assessor.
- During the day-to-day OJT performance, the supervision aims at overseeing the complete process, including task completion, use of manuals and procedures, observance of safety measures, warnings and recommendations and appropriate behaviour in the maintenance environment.
- The supervisor(s) should personally observe the work being performed to ensure safe completion and should be readily available for consultation, if needed during the OJT performance.
- The supervisor(s) should countersign the tasks and release the maintenance tasks as the trainee is not yet qualified to do so.
- The supervisor(s) should therefore:
  - i. have certifying staff or support staff privileges relevant to the OJT tasks;
  - ii. be competent for the selected tasks;
  - iii. be safety-orientated;
  - iv. be capable to coach (setting objectives, giving training, performing supervision, evaluating, handling trainee's reactions and cultural issues, managing objectively and positively debriefing sessions, determining the need for extra training or reorientate the training, reporting, etc.);
  - v. be designated by the DASR 145 AMO to carry out the supervision.

8. Regarding the assessor, the following should be considered:

- The function of the assessor, as described in Section 6 of Appendix III to DASR 66, is to conduct the final assessment of the completed OJT. This assessment should include confirmation of the completion of the required diversity and quantity of OJT and should be based on the supervisor(s) reports and feedback.
- In Section 6 of Appendix III to DASR 66, the term "designated assessor appropriately qualified" means that the assessor should demonstrate training on and experience of the assessment process being undertaken and should be authorised to do so by the DASR 145 AMO.

  Further guidance about the assessment and the designated assessors is provided in Appendix III to AMC to DASR 66.

9. The procedures for OJT should be included in the MOE of the DASR 145 AMO (a new chapter 3.15 must be included in the MOE for this purpose).

On the Job Training (OJT) shall be approved by the MAA who has issued the MAML.

It shall be conducted at and under the control of a maintenance organisation appropriately approved for the maintenance of the particular aircraft type and shall be assessed by designated assessors appropriately qualified.

It shall have been started and completed within the 3 years preceding the application for a Military Aircraft Type Rating endorsement.

a. Objective:

The objective of OJT is to gain the required competence and experience in performing safe maintenance.

b. Content:

OJT shall cover a cross section of tasks acceptable to the MAA. The OJT tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Each task shall be signed off by the student and countersigned by a designated supervisor. The tasks listed shall refer to an actual job card/work sheet, etc.

The final assessment of the completed OJT is mandatory and shall be performed by a designated assessor, appropriately qualified.

The following data shall be addressed on the OJT worksheets/logbook:

1. Name of Trainee;

2. Date of Birth;

3. Service Number or Employee Number

4. Approved Maintenance Organisation;

5. Location;

6. Name of supervisor(s) and assessor, (including MAML number if applicable);

7. Date of task completion;

8. Description of task and job card/work order/tech log, etc.;

9. Aircraft type and aircraft registration;

10. Military Aircraft Type Rating applied for.

In order to facilitate the verification by the MAA, demonstration of the OJT shall consist of:

(i) detailed worksheets/logbook and

(ii) a compliance report demonstrating how the OJT meets the requirement of DASR 66.

Appendix IV to DASR 66 - Experience requirements for an addition to a DASR 66 Military Aircraft Maintenance Licence

The table below shows the experience requirements for adding a new category or subcategory to an existing DASR 66 MAML including military-specific modules.

The experience shall be practical maintenance experience on operating aircraft in the subcategory relevant to the application.

The experience requirement will be reduced by 50% if the applicant has completed an approved DASR 147 course relevant to the subcategory.

To From	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2
A1	—	6 months	6 months	6 months	2 years	6 months	2 years	1 year	2 years
A2	6 months	—	6 months	6 months	2 years	6 months	2 years	1 year	2 years
A3	6 months	6 months	—	6 months	2 years	1 year	2 years	6 months	2 years
A4	6 months	6 months	6 months	—	2 years	1 year	2 years	6 months	2 years
B1.1	None	6 months	6 months	6 months	—	6 months	6 months	6 months	1 year
B1.2	6 months	None	6 months	6 months	2 years	—	2 years	6 months	2 years
B1.3	6 months	6 months	None	6 months	6 months	6 months	—	6 months	1 year
B1.4	6 months	6 months	6 months	None	2 years	6 months	2 years	—	2 years
B2	6 months	6 months	6 months	6 months	1 year	1 year	1 year	1 year	—

Appendix V to DASR 66 – Application Form – DASR Form 19

DASR Form 19 is contained in the DASR Forms document.

Appendix VI to DASR 66 – Military Aircraft Maintenance Licence (MAML) – DASR Form 26

DASR Form 26 is contained in the DASR Forms document.

DASR 139 - Aerodromes

139.10 - General (AUS)

▸ GM

GM 139.10 - General (AUS)

1. **Purpose.** The purpose of this regulation is to articulate the Authority's requirements for the regulatory oversight of Defence certified Aerodromes and Aerodrome Operators. The Defence Aviation Authority or delegate will determine those aerodromes requiring certification. There is no requirement under these regulations to be an Authority-approved Aerodrome Operator when operating a non-certified aerodrome.

2. DASR.139 articulates the requirements for the operator approval, certification, and management of Defence Certified Aerodromes. These regulations seek to align with the requirements of CASR Part 139 and ICAO Annex 14. Military specific tailoring for the Defence context is included within these DASR.139 regulations and the aerodrome design requirements contained in the Defence Aviation Safety Design Requirements Manual (DASDRM).

3. The Military Air Operator (MAO) is ultimately accountable for safe flight operations of aircraft. The MAO is approved to operate at certified aerodromes, non-certified aerodromes and any other non-defined areas where it is safe to do so, in accordance with DASR.ORO.05.

Scope. For these aerodrome regulations, the terms airport, airfield, airbase, land based or shipborne heliports are all considered appropriate when referring to an aerodrome.

(a) Defence Aerodromes must be classified as Certified or Non-certified as determined by the Authority.

(b) To operate a Certified Aerodrome, you must be an Aerodrome Operator (AD OPR) approved by the Authority.

139.20 - Organisational Approval (AUS)

▸ GM

GM 139.20 - Organisational Approval (AUS)

1. **Purpose.** The purpose of this regulation is to require that the Aerodrome Operator operates to approved standards and procedures as defined by the level and scope of the approval.

2. The Aerodrome Operator through their roles and responsibilities are to ensure that their certified aerodrome(s) will be maintained and operated to approved standards and procedures. This includes any limitations where applicable, by competent and authorised individuals acting as members of an approved organisation.

3. The intent of approving Aerodrome Operators is to provide assurance that an organisation will provide the effective management and accountability of aerodrome design and orders, instructions and publications (OIP), and personnel competencies in order to support safe flight operations.

4. Aerodrome Operators should manage hazards which directly impact aviation safety and personnel health and safety, where applicable in order to:

   a. eliminate risks so far as is reasonably practicable, and

   b. If it is not reasonably practicable to eliminate risks, to minimise those risks so far as is reasonably practicable.

5. Aerodrome Operators should consider adopting any formal agreements or arrangements to have specific tasks or activities at individual aerodromes completed by suitably qualified individuals or organisations to aid in achieving regulatory compliance. As the Aerodrome Operator retains overall responsibility, these tasks and activities should be routinely overseen by the Aerodrome Operator to assist with compliance to DASR.139 to support safe flight operations.

(a) Certified aerodromes must only be operated by an approved Aerodrome Operator to approved standards and procedures as defined by the level and scope of the approval issued by the Authority.

139.30 - Requirements for Approval (AUS)

AMC GM

GM 139.30 - Requirements for Approval (AUS)

1. **Purpose.** The purpose of this regulation is to ensure the applicant completes a Compliance Statement to achieve Organisational Approval in order to be appointed as an Aerodrome Operator. The Aerodrome Operator has overall accountability for operational procedures for both military and civil aircraft at the specific aerodrome/s.

2. The Authority will issue an AD OPR Certificate (AD OPRC) when satisfied that the organisation complies with the requirements of DASR 139. The AD OPRC contains the following:

   a. Aerodrome Operator name

   b. Aerodrome Operator location

   c. Reference to Operations Specification including the words ‘authorised to operate Defence aerodromes as per the Aerodrome Operator Specification’.

   d. Authority signature and date of issue.

3. **AD OPRC Operations Specification.** Each AD OPR certificate has attached OpSpec which details:

   a. Accountable Manager

b. Hazard Tracking Authority and other key personnel appointments

c. List of aerodromes the AD OPR is authorised to operate

d. Operating provisions

e. Limitations and Conditions (if required). Limitations and Conditions are prescribed by the Authority, and will typically include reference to a plan and timeline to remove upon Authority review.

f. Authority signature

g. Annexes for each aerodrome, including details of:

i. Aerodrome certification status, including reference to the certification basis and any limitations or conditions

ii. Aerodrome key personnel aerodrome appointments

iii. Reference to the Statement of Operating Intent and Usage (SOIU), if applicable

iv. Reference to the Aerodrome Manual

v. Aerodrome Reference Code.

4. **Application for variation of an AD OPRC and/or OpSpec.** The AD OPR Accountable Manager is to amend the extant Compliance Statement and submit this to the Authority, highlighting those OpSpec items being varied. The Authority, when satisfied, will issue an updated OpSpec for the AD OPR. Application for variation to OpSpec is required, at a minimum, when there is:

a. change or withdrawal of a condition or limitation

b. addition or withdrawal of an aerodrome by the AD OPR.

5. **Addition of a Certified Aerodrome to the AD OPRC OpSpec.** Once the Authority issues an Aerodrome Certificate, the AD OPR may submit an application to update the AD OPRC OpSpec to include the Certified Aerodrome. On determining that the Certified Aerodrome operations meet all DASR 139 requirements, DASA will amend the AD OPRC OpSpec, thereby approving the AD OPR to operate the DASR 139 Certified Aerodrome.

AMC 139.30 - Requirements for Approval (AUS)

1. The applicant organisation seeking to be an approved Aerodrome Operator is to submit a Compliance Statement describing the operating intent, approved OIP, personnel competencies and organisation implemented to meet DASR.139 requirements.

PREPARATION OF A COMPLIANCE STATEMENT

2. The Compliance Statement to be provided to the Authority must include the following information:

a. Aerodrome Operator Organisational name,

b. Aerodrome Operator location,

c. Evidence of the certification status of the aerodrome/s and any imposed limitations and / or conditions,

d. Relevant Hazard Tracking Authority (HTA) within the Aerodrome Operator Organisation,

e. Key aerodrome(s) base, safety or manager appointments,

f. Complete and valid aerodrome manual/s,

g. Outline of relevant aerodrome management arrangements,

h. Evidence of a suitable aerodrome Safety Management System (SMS),

i. Evidence of a suitable aerodrome Quality Management System (QMS), and

j. A statement that operations are to be conducted in accordance with the applicable aerodrome manual(s) and supporting OIP.

3. An applicant may propose operational limitations be imposed in addition to those resulting from the Certification program, in order to support safe flight operations. Examples of operational limitations could include: varied lighting configurations, multiple arrest limits, visual approach slope indicators and any specific or potential hazards being identified.

4. The Compliance Statement should be subject to ongoing review by the Aerodrome Operator.

ACCOUNTABLE MANAGER ATTESTATION AND SIGNATURE

5. The Accountable Manager must make the following attestations and sign the Compliance Statement:

a. I am accountable for [insert Aerodrome Operator organisation name] compliance with DASR.

b. This Compliance Statement for Aerodrome Operator Certification and Operations Specification is complete and correct.

c. I am satisfied that appropriate arrangements are in place to meet the regulations and support the scope of operations contained in the Operations Specification.

(a) The applicant organisation seeking to achieve Aerodrome Operator approval must submit a Compliance Statement to the Authority.

139.40 - Organisational Structure (AUS)

(a) An Aerodrome Operator must define its organisational structure. ▸ **AMC** ▸ **GM**

GM 139.40 - Organisational Structure (AUS)

1. **Purpose.** The purpose of this regulation is to require that an appropriate organisational structure is present to support the Aerodrome Operator organisation.

2. An Aerodrome Operator is an organisation consisting of operational, maintenance and engineering personnel, that form part of a Force Element Group (FEG) or equivalent force structure that has:

   a. an appointed Accountable Manager, usually at FEGCDR level or equivalent,

   b. an appropriate chain of command including an Aerodrome Manager,

   c. appropriately qualified personnel,

   d. a Hazard Tracking Authority (HTA),

   e. key personnel with appropriate aerodrome management and airside experience including aerodrome operations and maintenance roles,

   f. facilities which are sufficient and suitable for the type of services provided,

   g. an effective aerodrome manual and supporting documented processes, procedures and practices,

   h. an effective safety management system (SMS), and

   i. an effective quality management system (QMS).

AMC 139.40 - Organisational Structure (AUS)

1. Aerodrome Operators should ensure their organisational structure includes:

   a. the authority, duties and responsibilities of the management personnel in charge of safety- and quality-related functions, and

   b. Applicable relationships and reporting lines between these personnel and other parts of the organisation.

2. Aerodrome Operators should establish formal relationships where possible, and include any applicable agreements, with participating agencies that may directly influence the safety of aerodromes under their control.

139.50 - Aerodrome Manual (AUS)

(a) The Aerodrome Operator of a certified aerodrome must have an aerodrome manual that describes all relevant information and procedures that underpin the safe and effective use of the aerodrome. ▸ **AMC** ▸ **GM**

GM 139.50 - Aerodrome Manual (AUS)

1. **Purpose.** The purpose of this regulation is to require that all relevant information and procedures that underpin the safe and effective use of an aerodrome be documented within an aerodrome manual that aligns with CASA's Manual of Standards – Part 139

Aerodromes (MOS 139) and caters for a unique military context. The MOS 139 sets out the standards and operating procedures of civilian certified aerodromes and other aerodromes used in air transport operations.

2. The aerodrome manual provides a means to establish data integrity compliance so that other products that would draw from the manual's information, such as those used by flight crew for planning purposes, have correct information.

3. The aerodrome manual is the authoritative source for aerodrome information published for public use, and provides supporting information toward the issue of aerodrome certification by the Authority, in accordance with DASR.139.80.

AMC 139.50 - Aerodrome Manual (AUS)

1. An Aerodrome Manual is an integral part of the Aerodrome Operator approval and aerodrome certification process. The development of the Aerodrome manual should provide sufficient coverage of procedures, plans and essential information for the military context in addition to the CASA Manual of Standards – Part 139 Aerodromes (MOS 139) Aerodrome Manual content. The following paragraphs integrate MOS 139 and Defence-specific manual content. Where the content may not be applicable, eg some land-based or shipborne heliports, the Aerodrome Operator should provide the position as to why the content is not relevant.

AERODROME MANUAL CONTENT

2. Organisation and management structure that applies to the aerodrome, including any civil use agreements. Should a civil organisation require access to a Defence aerodrome for the conduct of civil aviation operations, or as a Joint User under differing lease arrangements, a shared civil / military aerodrome manual may be published.

3. Aerodrome master contact list of relevant aerodrome management positions responsible for the operation and maintenance of the aerodrome, including the Aerodrome Operator.

4. The aerodrome certification basis and any non-compliances or limitations with the aerodrome certification basis and / or design standards

5. Reference to the Airfield Pavement Strength Evaluation Manual

6. Public information requirements such as:

    a. General, including the:

        i. Aerodrome name,

        ii. Aerodrome category,

        iii. ICAO Identifier Code,

        iv. Location,

        v. Aerodrome reference point, and

        vi. Elevation (based on the Australian height datum).

b. Runway and taxiway information, including pavement classification number (PCN) data and runway distance supplement (RDS),

c. Runway information including magnetic bearing, number, dimensions, capability information, obstacle chart information,

d. Visual aid systems information, such as runway lighting, approach lighting, apron floodlighting, type of circling guidance lighting, standby power aspects, visual slope indicator system, night vision capabilities, and any visual docking system used for apron management,

e. Aerodrome hours of operation,

f. Prior Permission Requirements (PPR),

g. Available support services, such as refuelling, dangerous good handling, noise abatement procedures, aircraft engine run locations and procedures,

h. Radio system information, such as Air Traffic Control (ATC) frequencies, Common Traffic Advisory Frequency (CTAF), Pilot Activated Lighting (PAL) and Aerodrome Frequency Response Unit (AFRU),

i. Details of navigation aids associated with the aerodrome, and

j. Flying procedures provided for public use that are not suitable to hold within non-Defence Aeronautical Information Publication (AIP) data sources.

7. Aerodrome Rescue and Fire Fighting (ARFF) requirements:

a. Documented procedures in place as per MOS 139 Part H and ICAO Annex 14 and description of the ARFF services, category protection and support levels available for the preservation of life and materiel in the event of an aircraft accident or incident,

b. Operating constraints – on or off site,

c. Emergency access routes and optimum time frames for response, and

d. Compliance to operating and technical standards.

8. Aerodrome Emergency Plans (AEP):

a. The AEP is a critical document that outlines key requirements to support the safe management of aircraft emergencies and / or accidents at the certified aerodrome. The DASM provides for AEP requirements.

9. Wildlife Hazard Management Plan (WHMP):

a. The development, implementation and documenting of a WHMP by the Aerodrome Operator and the identified service provider into the aerodrome manual, ensures a plan is in place to address the presence of wildlife in the vicinity of the aerodrome, so they do not pose a threat to aircraft operational safety.

10. Low Visibility Procedures (LVP):

a. LVP are required when the visual meteorological condition (VMC) has degraded to a distance that aerodrome surface movement safety may be compromised. The extent of degradation may vary by aerodrome; however, if runway visual range (RVR) is 800 metres or less, or cloud ceiling is of 200 feet or less, or the visibility on any part of the aerodrome is unsuitable to afford safe aircraft movements then LVP of a suitable movement rate(s) should be implemented.

11. Obstacle Data Coverage:

a. Obstacle master database for the aerodrome should be documented, retained and reviewed regularly to ensure safe operations,

b. An obstacle is defined as any fixed or mobile (whether temporary or permanent) objects that may:

i. be located on an area intended for the surface movement of aircraft, or

ii. extend above a defined surface intended to protect aircraft in flight, or

iii. Stand outside those defined surfaces and have been assessed as being a hazard to air navigation.

12. Foreign Object Debris (FOD) prevention program:

13. Aerodrome Serviceability and Technical Inspection requirements:

a. Aerodrome Serviceability Inspection requirements should be carried out to align with MOS 139 Chapter 12 where practical, and should always be conducted if any of the following circumstances arise:

i. After a severe weather, wind or adverse storm event, or

ii. If a hazard to aircraft becomes present on the manoeuvring area.

b. An Aerodrome Serviceability Inspection should be conducted before the first daily aircraft movement to determine any foreign object debris (FOD), issues with visual aids and to identify any hazards. If the first aircraft movement is to occur before first light; as a minimum the key safety critical elements of the inspection should occur. The remainder of the inspection should be carried out as sufficient daylight then becomes available.

c. Other periods when Aerodrome Serviceability Inspections may be carried out include:

i. Immediately before last light (if night flying),

ii. Periodically to review all aerodrome support structure for integrity issues and visibility status of markings,

iii. Other times to ensure that the aerodrome manual provides the correct information for aviation purposes. For example, a runway extension will impact obstacle data requirements. A review after the work is completed should ensure correct data has been obtained and

incorporated into the aerodrome manual, thereby allowing for any national database system or aeronautical information updates, or

iv. When directed to do so by the Authority.

d. Aerodrome Technical Inspections (ATI) content and periodicity:

i. For Defence Aerodromes that have a volume of at least 10 000 civilian passenger movements, and / or at least 20 000 aircraft movements (combined military and civilian), Aerodrome Technical Inspections should be established and implemented in accordance with the Manual of Standards – Part 139 Aerodromes Chapter 12 Division 2; or

ii. For other Defence Certified Aerodromes, an Aerodrome Operator may propose to the Authority a periodicity of ATI that takes into account the risk to safe operations and unique military context (example context may include solely helicopter operations, light aircraft only operations, possible impact due to significant weather events or poor initial construction); or

iii. When directed to do so by the Authority.

e. Personnel competencies for the conduct of Aerodrome Serviceability Inspections and Aerodrome Technical Inspections (ATI)

i. The Aerodrome Operator is to ensure that a person or persons with the relevant technical qualifications and experience, or a demonstrable level of relevant technical experience conduct Aerodrome Serviceability Inspections and ATI.

14. Description of aerodrome areas that may include:

a. Potential or known hazards,

b. Movement areas,

c. Visual approach slope indicators (if installed),

d. Aerodrome Boundaries,

e. Taxiway restrictions,

f. Engine run-up positions,

g. Ordnance loading areas.

h. Alert aprons,

i. Compass swing areas, and

j. Parking restrictions.

15. Aerodrome Security requirements:

a. Documentation of potential security threats and their impact to Aerodrome safety and the Aerodrome Operators' measures to:

b. ensure the security of equipment, systems and installation so as to prevent any unlawful interference impacting on the provision of services,

c. understand how security deficiencies and breaches interfering with a service can contribute to aviation safety hazards, and

d. effectively manage any security related aviation safety hazards.

16. Changes to Defence AIP information:

a. Appointments that should be identified in the aerodrome manual as authorised to submit Defence AIP changes include:

i. The Senior Air Traffic Control Officer (SATCO),

ii. Aerodrome Executive / Operations Officer,

iii. Base Airfield Engineer Officer,

iv. Base Aviation Safety Officer (BASO),

v. If a civil access agreement exists, liaison should be carried out with:

a) The civil airport Operations Manager, and

b) The civil airport operators Senior Safety Officer.

17. Aerodrome Works Safety:

a. The aerodrome manual should contain the procedures for planning, and safely carrying out, aerodrome works for:

i. Preparation of a method of working plan, including particular procedures to ensure safety standards are met,

ii. Notifying aircraft operators and other aerodrome users of the method of working plan,

iii. Communicating with ATC (if applicable) and aircraft while works are being carried out,

iv. Carrying out time-limited or emergency works and notifying aircraft operators of works, and

v. Carrying out works when the aerodrome is closed to aircraft operations.

18. Any deviation from the aerodrome manual must be approved by the Aerodrome Operator, recorded and readily available to the Authority on request.

ANNUAL REVIEW

19. The aerodrome manual should be reviewed annually as it provides essential day to day aerodrome operations information. Unless a substantial change occurs to initiate changes to the aerodrome manual, there is no need to request a review by the Authority due to the change. An example of substantial change would be for an

increased civil access to the aerodrome, introduction of a new NAVAID, removal of an existing NAVAID or a change to the aerodrome hours of availability or operation.

20. Should substantial change occur, the Authority review process of an aerodrome manual provides assurance that the Aerodrome Operator is involved in the process and will endorse (or not) the aerodrome manual change. This will ensure that the Aerodrome Operator continues to provide the required oversight so that Defence aviation is receiving the expected aerodrome service.

139.60 - Safety Management System (AUS)

(a) The Aerodrome Operator must establish and maintain a Safety Management System (SMS), for the operation of a Certified Aerodrome, in accordance with DASR.SMS. ▸ **AMC** ▸ **GM**

GM 139.60 - Safety Management System (AUS)

1. **Purpose.** The purpose of this regulation is to require the Aerodrome Operator to have an appropriate Safety Management System (SMS) to support the conduct of safe flight operations, facilities management, rescue firefighting and maintenance aspects of the aerodrome. SMS implementation may be scalable to address the unique hazard and risk requirements associated with the type and scope of operations pertaining to the aerodrome.

2. Further guidance as to the promulgation of an aerodrome manual to support the aerodrome SMS is provided in DASR.139.50.

AMC 139.60 - Safety Management System (AUS)

1. The SMS should incorporate hazard management plans such as Wildlife Hazard Management Plans (WHMP), Low Visibility Procedures (LVP), Aerodrome Emergency Plans (AEP), and Aerodrome Recue and Fire Fighting (ARFF) systems for certified aerodromes, including the provision of any assistance to local authorities.

139.70 - Quality Management System (AUS)

(a) An Aerodrome Operator must have and maintain a Quality Management System. ▸ **AMC** ▸ **GM**

GM 139.70 - Quality Management System (AUS)

1. **Purpose.** The purpose of this regulation is to require that the responsible Aerodrome Operator has an appropriate Quality Management System (QMS) to manage the conduct of safe flight operations, facilities management and maintenance aspects of the Aerodrome.

2. Whilst the Authority does not require the QMS to be externally accredited, utilisation of ISO:9001 methodologies may assist with enhancing the robustness of the QMS.

AMC 139.70 - Quality Management System (AUS)

1. Aerodrome Operators should ensure a Quality Management System (QMS) is managed by qualified and authorised personnel, to achieve the necessary inspection requirements and alignment of aerodrome practises for the following outcomes:

   a. **Quality planning:** defines the quality policy and approach so as to meet the needs of different users of the aerodrome,

   b. **Quality assurance:** establishes a quality assurance program that contain and verifies that all activities are being conducted in accordance with DASR.139, approved procedures within the aerodrome manual and the aerodrome certification basis,

   c. **Quality control:** appoints management representatives to monitor conformance with, and adequacy of procedures to ensure safe and efficient flight operations, and

   d. **Quality improvement:** performs internal review and takes action as appropriate to maintain aerodrome certification.

2. Aerodrome Operators should integrate, where possible; FOD prevention programs, movement area inspections including airside access, emergency response, hazard identification and security management systems as appropriate examples into their overall QMS.

3. Principles, such as those detailed below are considered to be of an appropriate level and scope to aid in achieving compliance with DASR.139.70:

   a. **Customer focus** – Organisations should understand current and future customer needs in order to meet customer requirements whilst striving to exceed customer expectations,

   b. **Leadership** – Leaders establish unity of purpose and direction of the organisation to create and maintain an environment in which people can become fully involved in achieving the organisations objectives,

   c. **Engagement of people** – People of all levels of the organisation should be encouraged to exhibit their abilities for the organisations benefit,

   d. **Process approach** – A desired result is achieved more efficiently when related resources and activities are managed as a process,

   e. **Improvement** – Continual improvement should be a permanent objective of the organisation,

   f. **Evidence based decision making** – Effective decisions are based on the analysis of accurate data and information, and

   g. **Relationship management** – Operators and suppliers may be interdependent to provide a mutually beneficial relationship to create value.

139.80 - Aerodrome Certification (AUS)

▸ GM

GM 139.80 - Aerodrome Certification (AUS)

1. **Purpose.** The purpose of these regulations are to define the actions required by an applicant to attain aerodrome certification by the Authority.

2. Each certified aerodrome requires an individual aerodrome certificate.

3. Certified aerodromes can vary significantly in their design, maintenance and flight operations. Consequently, certification within DASR.139 is aligned with the overall complexity of the aerodrome. The aerodrome complexity is reflected within the approved aerodrome certification basis, which is similar to the civilian approach in CASA MOS 139 Section 2.06, Non-application of the Standards.

4. This regulation does not apply to non-certified aerodromes. The underlying principles in this regulation; however, may guide a Commander responsible for a non-certified aerodrome as to ensuring the aerodrome equipment, systems and installations support the safe and effective provision of service to aircraft using the aerodrome.

5. An Applicant is defined under DASR.139.80 as any organisation or operator or its representative which applies for a Defence aerodrome certificate.

AERODROME INITIAL CERTIFICATION

(a) To be issued an aerodrome certificate by the Authority, the applicant must:

1. Define the Authority-agreed certification basis for the aerodrome, ▸ AMC ▸ GM

GM 139.80.A(1) - Define the Authority-agreed certification basis (AUS)

1. **Purpose.** The purpose of this regulation is to require the applicant to define a certification basis for the aerodrome and gain the Authority's agreement of the certification basis.

2. The certification basis for an aerodrome is the complete set of design requirements against which an aerodrome is certified by the Authority.

3. The certification basis scope is limited to those systems and functions that are necessary to achieve safe aircraft operations at an aerodrome. These are captured in Section 6 of the DASDRM and will include, amongst other things, the following items:

   a. the physical characteristics of the movement area,

   b. obstacle restrictions and limitations,

   c. visual aids for the movement area and other areas,

   d. wind direction indicators,

   e. visual approach slope indicator systems,

   f. lighting systems,

g. reference code systems,

h. access to an aerodrome, including requirements relating to fencing,

i. design requirements to avoid the creation of hazards from aircraft propulsion systems,

j. requirements for facilities to conduct Aerodrome Rescue and Fire Fighting (ARFF),

k. radio communication facilities, and

l. aircraft arresting systems.

4. While Defence may elect to specify additional aerodrome design requirements to support capability outcomes, these are not part of the aerodrome certification basis.

5. The Authority prescribes design requirements for certified aerodromes in Section 6 of the DASDRM. Design requirements are separately prescribed for land aerodromes, land based heliports and shipborne heliports.

6. The Authority's expectation is that the certification basis for an aerodrome will include each relevant design requirement in the DASDRM. However, the Authority may approve a change to a design requirement for a particular aerodrome if:

a. the applicant presents a safety argument showing an alternate design requirement achieves an equivalent level of safety, or

b. the applicant contends that compliance with a particular design requirement would adversely affect Defence capability, and agreement is reached with aircraft operators that risks to aviation safety can be eliminated or otherwise minimised SFARP through alternate means. As the Aerodrome Operator and MAO(s) are shared duty holders, both are required to agree on risk treatments and retain residual risks.

AMC 139.80.A(1) - Define the Authority-agreed certification basis (AUS)

1. The certification basis for an aerodrome is proposed by the applicant and approved by the Authority.

2. The certification basis for an aerodrome comprises of:

a. the applicable design requirements prescribed in Section 6 of the DASDRM that are effective on the date of application for that certificate (unless otherwise specified by the Authority),

b. any special detailed technical requirements that are needed to address unique issues beyond the scope of design requirements in Section 6 of the DASDRM; and

c. any tailoring to the above design requirements, approved on the basis that:

i. a safety argument demonstrates an equivalent level of safety that can be achieved through a tailored design requirement, or

ii. compliance with the design requirement would adversely affect Defence capability, and risks to aviation safety can be eliminated or otherwise minimised SFARP through alternate means.

3. Proposals for tailoring to the certification basis per paragraph 2c(ii) are to be supported by documented rationale that includes:

a. confirmation that Defence has a well-defined capability imperative, and that meeting the prescribed design requirements would impede achievement of that capability imperative,

b. a description of the proposed tailoring, including any additional operational procedures that will be employed to eliminate or otherwise minimise risk,

c. confirmation that appropriate consultation, cooperation and coordination has been conducted between all persons with a shared duty to ensure health and safety for aerodrome users,

d. confirmation that the applicant, with assistance from aerodrome users, has clearly characterised the risk due to the tailored design requirements, and

e. confirmation that the relevant aircraft Military Air Operator(s) has agreed that risks have been eliminated or otherwise minimised SFARP, and both the Aerodrome Operator and MAO(s) have agreed to retain any residual risk.

4. The aerodrome certification basis, including any agreed tailoring, is to be recorded in the applicable aerodrome manual.

2. demonstrate that the aerodrome design and construction complies with the agreed certification basis, ▸ **AMC** ▸ **GM**

GM 139.80.A(2) - Demonstration that the aerodrome design and construction complies with the agreed certification basis (AUS)

1. **Purpose.** The purpose of this regulation is for the applicant to demonstrate sufficient evidence that the aerodrome design and construction meets the requirements in the certification basis.

AMC 139.80.A(2) - Demonstration that the aerodrome design and construction complies with the agreed certification basis (AUS)

1. The applicant is responsible for demonstrating, through the production of evidence, that the design and construction of the aerodrome meets the certification basis. This evidence may consist of reports, drawings, specifications, calculations, analysis etc.

2. Partial compliance with the certification basis is not permitted. Where the applicant cannot justify meeting a design requirement in the certification basis, the applicant should pursue approval for tailoring of the certification basis as provided in DASR AMC 139.80.A(1).

3. The compliance demonstration evidence should be made available to the Authority who may inspect the evidence on a non-exhaustive basis.

3. Declare that the aerodrome design and construction complies with the agreed certification basis, ▸ **AMC** ▸ **GM**

GM 139.80.A(3) - Declare the aerodrome design and construction complies with the agreed certification basis (AUS)

1. **Purpose.** The purpose of this regulation is to require a formal declaration by the applicant that the design and construction of the aerodrome fully meets the requirements of the certification basis.

AMC 139.80.A(3) - Declare the aerodrome design and construction complies with the agreed certification basis (AUS)

1. To enable the Authority to issue an Aerodrome Certificate, the applicant is to:
   a. Compile a list of evidence that has been produced to demonstrate compliance against each line item of the certification basis, and
   b. Provide a formal declaration that the design and construction of the aerodrome entirely meets the requirements of the certification basis.
2. All compliance demonstrations are to be completed before the final declaration of compliance can be provided.

4. Implement arrangements to support continued aerodrome compliance with the agreed certification basis, ▸ **AMC** ▸ **GM** and

GM 139.80.A(4) - Implement arrangements to support continued aerodrome compliance with the agreed certification basis (AUS)

1. **Purpose.** The purpose of this regulation is to require an applicant to implement arrangements to support continued aerodrome compliance with the certification basis.
2. Aerodromes can have a long service life, and changes are often made to the aerodrome design, construction and operation during that service life. Furthermore, it is possible that the original design and/or construction of the aerodrome may include latent defects.

AMC 139.80.A(4) - Implement arrangements to support continued aerodrome compliance with the agreed certification basis (AUS)

1. For the Authority to be assured the safe design of the aerodrome will be retained throughout the service life of the aerodrome, systems and procedures should be implemented to:
   a. retain all relevant design information, drawings and test reports; including inspection records for the aerodrome in order to provide the information necessary to ensure the continued compliance to the aerodrome certification basis, and conditions for safe operation of the aerodrome.
   b. manage the configuration of the aerodrome design, and

c. collect, investigate and analyse reports of and information related to failures, malfunctions, defects or other occurrences which might adversely affect safe operation of the aerodrome, to implement corrective action if warranted.

2. For the purposes of initial aerodrome certification, the applicant is expected to establish these systems and procedures. Continued implementation and monitoring of these systems and procedures is the responsibility of the Aerodrome Operator.

5. Provide design information to support continuing safe operation of the aerodrome. ▸ **AMC** ▸ **GM**

GM 139.80.A(5) – Provide design information to support continuing safe operation of the aerodrome (AUS)

1. **Purpose.** The purpose of this regulation is to require an applicant to produce key information and procedures, related to the design and/or construction of the aerodrome that will enable the Aerodrome Operator to ensure that the aerodrome is kept in a condition for safe flight operation.

2. The Aerodrome Operator is responsible for ensuring that the aerodrome, at any time in its operating life, is in a condition for safe flight operation. However, for the Aerodrome Operator to execute this responsibility, it should be reliant upon information and procedures that are the domain of the aerodrome designer.

AMC 139.80.A(5) – Provide design information to support continuing safe operation of the aerodrome (AUS)

1. The applicant at a minimum is to provide the Aerodrome Operator:

   a. a document which describes the specific scheduled maintenance tasks and their frequency of completion, and

   b. descriptive data and accomplishment instructions that enable inspections, processes, and procedures necessary to keep the aerodrome in a condition for safe flight operation.

CHANGES TO AERODROME CERTIFICATION

(b) Changes to the design or construction of a certified aerodrome must be presented to the Authority for certification, except where those changes have no appreciable effect on the safety of flight operations. ▸ **AMC** ▸ **GM**

GM 139.80.B - Changes to Aerodrome Certification (AUS)

1. **Purpose.** The purpose of this regulation is to require that future changes to the design or construction of an aerodrome are subject to appropriate engineering rigour, so that the aerodrome remains in a condition for safe flight operation.

2. The Authority's certification for an aerodrome is relevant only to the configuration presented for initial certification. Subsequent changes to the configuration may invalidate the aerodrome certification, necessitating re-certification by the Authority.

3. The Authority does not expect the Aerodrome Operator to approach the Authority for re-certification whenever a minor design or construction change is incorporated, provided that the change does not have an appreciable effect on the safety of flight operations.

4. Aerodrome Operators are expected to use professional judgement in determining whether a design change has an 'appreciable' effect on safety, and when in doubt should consult the Authority.

AMC 139.80.B - Changes to Aerodrome Certification (AUS)

1. Where a proposed design or construction change to an aerodrome may have an appreciable effect on the safety of flight operations, re-certification of the aerodrome by the Authority is to be pursued. In such circumstances, the applicant is to propose to the Authority how compliance with regulations DASR 139.80.A1, 139.80.A2, 139.80.A3, 139.80.A4 and 139.80.A5 will be achieved to the extent required as a result of the change.

139.90 - Maintenance of Aerodromes (AUS)

(a) The Aerodrome Operator must develop, document and undertake an aerodrome maintenance program to ensure the aerodrome remains in a condition to support safe flight operations. ▸ **AMC** ▸ **GM**

GM 139.90 – Maintenance of Aerodromes (AUS)

1. **Purpose.** The purpose of this regulation is to establish measures to ensure that an aerodrome is sufficiently maintained, as to not compromise safe flight operations.

2. The Authority may withdraw Aerodrome Operator approval and / or aerodrome certification in circumstances where a shortfall in maintenance aspects of the aerodrome adversely affects safe flight operations.

AMC 139.90 – Maintenance of Aerodromes

1. The aerodrome maintenance program should include, as a minimum:

   a. Maintenance schedule and routines to ensure the aerodrome continues to meet the design requirements.

   b. Technical inspections that confirm facilities are fit for their intended purpose and acceptable for use.

   c. The engagement of suitably qualified personnel to conduct maintenance.

139.100 - Personnel Competency (AUS)

(a) Aerodrome Operators must ensure that personnel responsible for the conduct of activities in support of individual aerodromes are competent, qualified and authorised to undertake their duties. ▸ **AMC** ▸ **GM**

GM 139.100 - Personnel Competency (AUS)

1. **Purpose.** The purpose of this regulation is to require that personnel employed to undertake a role in support of a Defence aerodrome, including any airside awareness, ARFF, operations, engineering, and maintenance roles, are adequately trained and authorised to provide that particular service.

2. For all personnel involved in the provision of a service, Aerodrome Operators or their delegates are responsible for ensuring appropriate competencies for the different types of supporting roles are adequate and remain current for the duration of the task.

3. There may be differing levels of competency required amongst support personnel depending on what aspects are applicable to the overall safety and support service of the aerodrome. The Aerodrome Operator, by the nature of the varied equipment and systems in use; has the responsibility to select, monitor or reject those level of competencies considered appropriate or inappropriate to carry out support arrangements.

4. The Authority does not prescribe any single competency/licensing framework for these competency requirements.

AMC 139.100 - Personnel Competency (AUS)

1. In order to ensure personnel obtain, complete and maintain effective competency, Aerodrome Operators should:

   a. ensure aviation safety support activities are undertaken only by suitably competent and authorised personnel, including when engaging contractors,

   b. maintain adequate numbers of personnel to provide the service consistent with the defined and reasonable level of overall demand, and

   c. maintain training, competency assessment and regular evaluation of these programs for participating personnel where applicable.

DASR 145 - Requirements for Maintenance Organisations

SECTION A

145.A.10 - Scope

This Section establishes the requirements to be met by a maintenance organisation to qualify for the issue or continuation of an approval for the maintenance of aircraft and components. ▸ **AMC**

AMC 145.A.10 - Scope (AUS)

1. Line maintenance should be understood as any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight.

   a. Line maintenance may include:

      – Trouble shooting.

      – Defect rectification.

      – Component replacement with use of external test equipment if required. Component replacement may include components such as engines and propellers.

      – Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in depth inspection.

      – It may also include internal structure, systems and power plant items which are visible through quick opening access panels/doors.

      – Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.

   b. For temporary or occasional cases (AD's, SB's) the Quality Manager may accept base maintenance tasks to be performed by a line maintenance organisation provided all requirements are fulfilled as defined by the MAA.

   c. Maintenance tasks falling outside these criteria are considered to be base maintenance.

   d. Aircraft maintained in accordance with "progressive" type programmes should be individually assessed in relation to this paragraph. In principle, the decision to allow some "progressive" checks to be carried out should be determined by the assessment that all tasks within the particular check can be carried out safely to the required standards at the designated line maintenance station.

145.A.15 - Application

An application for the issue or change of an approval shall be made to the Military Aviation Authority (MAA) in a form and manner established by such authority. ▸ **AMC**

AMC 145.A.15 - Application

In a form and manner established by the MAA means that the application should be made by using a DASR Form 2.

145.A.20 - Terms of approval

The maintenance organisation shall specify the scope of work deemed to constitute approval in its Maintenance Organisation Exposition (MOE)(▸ **Appendix** II to this DASR contains a table of all classes and ratings). ▸ **AMC**

AMC 145.A.20 - Terms of approval

Table 1 in Appendix II of DASR 145 identifies the S1000D Chapter Reference for the Category C component rating. If the maintenance manual (or equivalent document) does not follow the S1000D Chapter reference, the corresponding subjects still apply to the applicable C rating.

Appendix II Class and Rating System to be used for the Approval of Maintenance Organisations

1. Table 1 outlines the full extent of approval possible under DASR 145 in a standardised form. A maintenance organisation must be granted an approval ranging from a single class and rating with limitations to all classes and ratings with limitations.

2. In addition to Table 1 the maintenance organisation is required by DASR 145.A.20 to indicate its scope of work in the MOE. See also paragraph 11.

3. Within the approval class(es) and rating(s) granted by the MAA, the scope of work specified in the MOE defines the exact limits of approval. It is therefore essential that the approval class(es) and rating(s) and the maintenance organisation's scope of work are matching.

4. A Category A class rating means that the AMO may carry out maintenance on the aircraft and any component (including engines/APUs), in accordance with aircraft maintenance data or, if agreed by the MAA, in accordance with component maintenance data, only whilst such components are fitted to the aircraft. Nevertheless, such A-rated AMO may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not covered under the provisions of this paragraph. This shall be subject to a control procedure in the MOE to be approved by the MAA. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval.

5. A Category B class rating means that the AMO may carry out maintenance on the uninstalled engine and/or APU ('Auxiliary Power Unit') and engine and/or APU components, in accordance with engine and/or APU maintenance data or, if agreed by

the MAA, in accordance with component maintenance data only whilst such components are fitted to the engine and/or APU. Nevertheless, such B-rated AMO may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not covered under the provisions of this paragraph. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval. An AMO with a Category B class rating may also carry out maintenance on an installed engine during 'base' and 'line' maintenance subject to a control procedure in the MOE to be approved by the MAA. The MOE scope of work shall reflect such activity where permitted by the MAA.

6. A Category C class rating means that the AMO may carry out maintenance on uninstalled components (excluding engines and APUs) intended for fitment to the aircraft or engine/APU. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval. An AMO with a Category C class rating may also carry out maintenance on an installed component during base and line maintenance or at an engine/APU maintenance facility subject to a control procedure in the MOE to be approved by the MAA. The MOE scope of work shall reflect such activity where permitted by the MAA.

7. A Category D class rating is a self-contained class rating not necessarily related to a specific aircraft, engine or other component. The D1 — Non-Destructive Testing (NDT) rating is only necessary for an AMO that carries out NDT as a particular task for another maintenance organisation. An AMO with a class rating in A or B or C Category may carry out NDT on products it is maintaining subject to the MOE containing NDT procedures, without the need for a D1 class rating.

8. Category A class ratings are subdivided into 'base' or 'line' maintenance. A maintenance organisation may be approved for either 'base' or 'line' maintenance or both. It should be noted that a 'line' facility located at a main base facility requires a 'line' maintenance approval.

(i) The 'limitation' section is intended to give the MAA the flexibility to customise the approval to a particular maintenance organisation. Ratings shall be mentioned on the approval only when appropriately limited. Table 1 specifies the types of limitation possible (an example could be avionic systems installations and related maintenance). Whilst maintenance is listed last in each class rating it is acceptable to stress the maintenance task rather than the aircraft or engine type or manufacturer, if this is more appropriate to the maintenance organisation (an example could be avionic systems installations and maintenance). Such mention in the limitation section indicates that the maintenance organisation is approved to carry out maintenance up to and including this particular type/task.

10. Table 1 makes reference to series, type and group in the limitation section of class A and B. Series means a specific type series such as Tiger series or Tornado series or Rafale series or Super Puma series or AB 212 series or Gripen series or C 101 series or C 235 series etc. Type means a specific type or model such as C 130 H type or C 130 J type, Tiger HAP type or Tiger HAD type etc. Any number of series or types may be quoted. Group means for example: "Rolls Royce T-56 Turbo prop engines" or "Fokker twin turbo prop aircraft".

11. When a lengthy capability list is used which could be subject to frequent amendment, then such amendment shall be in accordance with a procedure acceptable to the MAA and included in the MOE. The procedure shall address the issues of who is responsible for capability list amendment control and the actions that need to be taken for amendment. Such actions include ensuring compliance with DASR 145 for products or services added to the list.

12. NOT APPLICABLE

Table 1

CLASS	*RATING*	*LIMITATION*	*BASE*	*LINE*
AIRCRAFT	A1 Aeroplanes/ above 5 700 kg	[State aeroplane manufacturer or group or series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
	A2 Aeroplanes/ 5 700 kg and below	[State aeroplane manufacturer or group or series or type and/or the maintenance tasks]	*[YES/ NO]**	*[YES/ NO]**
	A3 Helicopters	[State helicopter manufacturer or group or series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
	A4 Aircraft other than A1, A2 and A3	[State aircraft series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
ENGINES/APU	B1 Turbine	[State engine series or type and/or the maintenance task(s)]		
	B2 Piston	[State engine manufacturer or group or series or type and/or the maintenance task(s)]		
	B3 APU	[State engine manufacturer or series or type and/or the maintenance task(s)]		
COMPONENTS other than complete engines or APU's		*S1000D CHAPTER REFERENCE* [1]	*LIMITATIONS (aircraft type, component, manufacturer)*	

C1 Air Condition and Pressure	21	
C2 Auto Flight	*22*	
C3 Communications and Navigation	*23-34-43*	
C4 Doors — Hatches	*52*	
C5 Electrical Power and Lights	*24-33-91*	
C6 Equipment	*25-38-45-50*	
C7 Engine — APU	*49-71-72-73-74-75-76-77-78-79-80-81-82-83-86*	
C8 Flight Controls	*27-55-57.40-57.50-57.60-57.70*	
C9 Fuel — Airframe	*28-48*	
C10 Helicopter — Rotors	*62-64-66-67*	
C11 Helicopter — Transmission	*63-65*	
C12 Hydraulic Power	*29*	
C13 Indicating — Recording system	*31-46*	
C14 Landing Gear	*32-90*	
C15 Oxygen	*35-47*	
C16 Propellers	*61*	
C17 Pneumatic and Vacuum	*36-37*	

	C18 Protection ice/ rain/ fire	*26-30*	
	C19 Windows	*56*	
	C 20 Structural	*53-54-57.10-57.20-57.30*	
	C 21 Water Ballast	*41*	
	C 22 Propulsion Augmentation	*84*	
	C 51 Attack systems	*39-40-42*	
	C 52 Radar/ Surveillance	*92-93*	
	C 53 Weapons systems	*94*	
	C 54 Crew escape and Safety	*95*	
	C 55 Drones/ Telemetry	*96-00, 96-30, 96-40*	
	C 56 Reconnaissance	*97-98*	
	C 57 Electronic warfare	*99*	
SPECIALISED SERVICES	D1 Non-Destructive Testing	[State particular NDT method(s)]	
	D5 Arms, Munitions and Pyrotechnic Systems Specific	[State arms type and maintained pyrotechnic systems]	

[1] S1000D Chapter Reference : in conformity with "S1000D Main System Breakdown"

145.A.25 - Facility requirements

The maintenance organisation shall ensure that:

(a) Facilities are provided appropriate for all planned work, ensuring in particular, protection from the weather elements. Specialised workshops and bays are segregated as appropriate, to ensure that environmental and work area contamination is unlikely to occur. ▸ **AMC**

AMC 145.A.25(a) - Facility requirements

1. Where the hangar is not owned by the maintenance organisation, it may be necessary to establish proof of tenancy. In addition, sufficiency of hangar space to carry out planned base maintenance should be demonstrated by the preparation of a projected aircraft hangar visit plan relative to the maintenance programme. The aircraft hangar visit plan should be updated on a regular basis.

2. Protection from the weather elements relates to the normal prevailing local weather elements that are expected throughout any twelve month period. Aircraft hangar and component workshop structures should prevent the ingress of rain, hail, ice, snow, wind and dust etc. as far as is militarily practicable. Aircraft hangar and component workshop floors should be sealed to minimise dust generation.

3. For line maintenance of aircraft, hangars are not essential but it is recommended that access to hangar accommodation be demonstrated for usage during inclement weather for minor scheduled work and lengthy defect rectification.

4. Aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

    1. For base maintenance of aircraft, aircraft hangars are both available and large enough to accommodate aircraft on planned base maintenance;

    2. For component maintenance, component workshops are large enough to accommodate the components on planned maintenance.

(b) Office accommodation is provided for the management of the planned work referred to in paragraph (a), and certifying staff so that they can carry out their designated tasks in a manner that contributes to good aircraft maintenance standards. ▸ **AMC**

AMC 145.A.25(b) - Facility requirements

It is acceptable to combine any or all of the office accommodation requirements into one office subject to the staff having sufficient room to carry out the assigned tasks.

In addition, as part of the office accommodation, aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

(c) The working environment including aircraft hangars, component workshops and office accommodation is appropriate for the task carried out and in particular special requirements observed. Unless otherwise dictated by the particular task environment,

the working environment shall be such that the effectiveness of personnel is not impaired: ▸ **AMC**

AMC 145.A.25(c) - Facility requirements

Military operational needs should be taken into account when establishing a suitable working environment. However, as far as is practicable, the requirements should be adhered to.

1. Temperatures shall be maintained such that personnel can carry out required tasks without undue discomfort.

2. Dust and any other airborne contamination shall be kept to a minimum and not be permitted to reach a level in the work task area where visible aircraft/ component surface contamination is evident. Where dust/other airborne contamination results in visible surface contamination, all susceptible systems are sealed until acceptable conditions are re-established.

3. Lighting shall be such as to ensure each inspection and maintenance task can be carried out in an effective manner.

4. Noise shall not distract personnel from carrying out inspection tasks. Where it is impractical to control the noise source, such personnel are provided with the necessary personal equipment to stop excessive noise causing distraction during inspection tasks.

5. Where a particular maintenance task requires the application of specific environmental conditions different to the foregoing, then such conditions shall be observed. Specific conditions are identified in the maintenance data.

6. The working environment for line maintenance shall be such that the particular maintenance or inspection task can be carried out without undue distraction. Therefore where the working environment deteriorates to an unacceptable level in respect of temperature, moisture, hail, ice, snow, wind, light, dust/other airborne contamination, the particular maintenance or inspection tasks must be suspended until satisfactory conditions are re-established.

(d) Secure storage facilities shall be provided for components, equipment, tools and material. Storage conditions ensure segregation of serviceable components and material from unserviceable aircraft components, material, equipment and tools. The conditions of storage shall be in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items. Access to storage facilities is restricted to authorised personnel. ▸ **AMC**

AMC 145.A.25(d) - Facility requirements

1. Storage facilities for serviceable aircraft components should be clean, well ventilated and maintained at a constant dry temperature to minimise the effects of condensation. Manufacturer’s storage recommendations should be followed for those aircraft components identified in such published recommendations. With regards to deployed military operations these requirements should be met as far as practicable.

2. Storage racks should be strong enough to hold aircraft components and provide sufficient support for large aircraft components such that the component is not distorted during storage.

3. All aircraft components, wherever practicable, should remain packaged in protective material to minimise damage and corrosion during storage.

145.A.30 - Personnel requirements

▸ **AMC**

AMC 145.A.30 - Management Personnel (AUS)

Management Personnel are classified as follows:

The ACCOUNTABLE MANAGER (AM) (**DASR 145.A.30(a)**) is the person with the corporate authority to ensure that all maintenance required can be financed and carried out to the standard required by DASR 145.

The Nominated Personnel (DASR 145.A.30(b) and DASR 145.A.30(c))* shall be the group of personnel (or person) responsible for ensuring that the maintenance organisation complies with DASR 145. In any case these personnel should report to the Accountable Manager. This (ese) manager(s) may assign DASR 145 functions to other manager(s) working directly under their respective responsibility. In this case the nominated personnel (person) remains responsible for compliance with DASR 145.

The Deputy Nominated Personnel (DASR 145.A.30(b)(4) shall be the group of personnel (or persons) who are nominated via DASR Form 4 to deputise any particular nominated personnel in case of lengthy absence of the said person. The deputy nominated person is responsible for compliance with DASR 145 upon formal notification from the nominated person for the duration of the nominated persons absence.

Other Manager(s) (DASR AMC 145.A.30(b)(8) Depending either on the size of the maintenance organisation or on the decision of the Accountable Manager, the maintenance organisation may appoint additional managers for any DASR 145 function(s). This (ese) manager(s) shall report ultimately to the nominated personnel identified to be responsible for the related DASR 145 function(s) and therefore by definition are not to be considered themselves as nominated personnel. As a consequence a manager can be only assigned duties (not responsibilities) of the nominated personnel to whom they report.

The Responsible NDT Level III shall be the person designated by the maintenance organisation to ensure that personnel who carry out and/or control a continued airworthiness non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by DASA.

Management personnel requiring a DASR Form 4. Based on the above definitions of management personnel, the following table summarises when a DASR Form 4 is required in order for the management personnel to be acceptable to DASA.

MANAGEMENT PERSONNEL	DASR Form 4 Required	DASR Form 4 Not Required
Accountable Manager (DASR 145.A.30(a))		X
Nominated Personnel (Responsible and Quality Manager) (DASR 145.A.30(b) and DASR 145.A.30(c))*	X	
Safety Manager (DASR 145.A.65 and **DASR SMS**)		X
NDT Responsible Level III	X*	
Other Managers (DASR AMC 145.A.30(b)(8))		X
Deputy Nominated Personnel (DASR 145.A.30(b)(4))	X**	

* Form 4 not required when a member of the MAA.

** The MOE procedure shall make clear who deputises for any particular nominated personnel in the case of lengthy absence of the said person. In any case it is the responsibility of the maintenance organisation to ensure that deputy personnel are nominated and approved by the MAA via a DASR Form 4 prior to assuming the role of the nominated person.

(a) The maintenance organisation shall appoint an Accountable Manager who has corporate authority for ensuring that all maintenance can be carried out to the standard required by DASR 145. The Accountable Manager shall: ▸ **AMC**

AMC 145.A.30(a) - Personnel requirements

With regard to the Accountable Manager, it is normally intended to mean the Chief Executive Officer or senior military commander of the maintenance organisation, who by virtue of position has overall (including in particular resource allocation) responsibility for running the maintenance organisation. The Accountable Manager may be the Accountable Manager for more than one organisation and is not required to be necessarily knowledgeable on technical matters as the Maintenance Organisation Exposition (MOE) defines the maintenance standards. When the Accountable Manager is not the Chief Executive Officer or senior military commander, the MAA will need to be assured that such an Accountable Manager has direct access to the Chief Executive Officer or senior military commander and has a sufficiency of 'maintenance resources' allocation.

1. Ensure that all necessary resources are available to accomplish maintenance in accordance with DASR 145.A.65(b) to support the maintenance organisation approval.

2. Establish and promote the safety and quality policy specified in DASR 145.A.65(a).

3. Demonstrate a basic understanding of this DASR.

(b) The maintenance organisation shall nominate a person or group of persons, whose responsibilities include ensuring that the maintenance organisation complies with this DASR. Such person(s) shall ultimately be responsible to the Accountable Manager. ▸ **AMC**

AMC 145.A.30(b) - Personnel requirements

1. Dependent upon the size of the maintenance organisation, the DASR 145 functions may be subdivided under individual managers or combined in any number of ways. Where an AMO elects to have multiple Responsible Managers within their organisational structure, each managers responsibilities should be clearly defined with reference to the appropriate regulation to ensure there is no overlapping of responsibilities and that there is no dilution of responsibility or accountability by the number of Responsible Managers.

2. The maintenance organisation should have, dependent upon the extent of approval, a base maintenance manager, a line maintenance manager, a workshop manager and a quality manager, all of whom should report to the Accountable Manager.

3. The base maintenance manager is responsible for ensuring that all required base maintenance, plus any defect rectification carried out during base maintenance, is carried out to the design and quality standards specified in DASR 145.A.65b). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of DASR 145.A.65(c).

4. The line maintenance manager is responsible for ensuring that all maintenance required to be carried out including line defect rectification is carried out to the standards specified in DASR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of DASR 145.A.65(c).

5. The workshop manager is responsible for ensuring that all work on aircraft components is carried out to the standards specified in DASR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of DASR 145.A.65(c).

6. The quality manager's responsibility is specified in DASR 145.A.30(c).

7. Notwithstanding the example subparagraphs 2 – 6 titles, the maintenance organisation may adopt any title for the foregoing managerial positions but should identify to the MAA the titles and persons chosen to carry out these functions.

8. Where a maintenance organisation chooses to appoint managers for all or any combination of the identified DASR 145 functions because of the size of the undertaking, it is necessary that these managers report ultimately through either the base maintenance manager or line maintenance manager or workshop manager or quality manager, as appropriate, to the Accountable Manager.

Note: Certifying staff may report to any of the managers specified depending upon which type of control the maintenance organisation uses (for example licensed engineers/independent inspection/dual function supervisors etc.) as long as the quality compliance monitoring staff specified in DASR 145.A.65(c)(1) remain independent.

1. The person or persons nominated shall represent the maintenance management structure of the maintenance organisation and be responsible for all functions specified in this DASR.

2. The person or persons nominated shall be identified and their credentials submitted in a form and manner established by the MAA.

3. The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of this DASR.

AMC

AMC 145.A.30(b)(3) - Personnel requirements (AUS)

ACCOUNTABLE MANAGER

Qualifications:

No specific requirements

Experience:

No specific requirements

RESPONSIBLE MANAGER (RM)*

Qualifications:

a. A four-year Bachelor of Engineering degree under an Australian accredited or recognised program in Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Software or Electrical Engineering, or

b. Diploma level, or equivalent, (as demonstrated by attaining chartered status) qualification in appropriately related aviation field such as, Mechanical, Mechatronics, Aerospace, Aeronautical, Electronics, Electrical Engineering or Maintenance Management.

Experience:

At least five years of aviation experience including:

a. Chartered Professional Engineer (CPEng), Chartered Engineering Technologist (CEngT) or Chartered Engineering Associate (CEngA) status with the Institute of Engineers Australia (IEAust) or an equivalent professional body recognised by the IEAust; and

b. Two years experience as staff of DASA or an organisation holding an Organisational Approval (excluding 147), under DASR, CASA, EMAR, EASA or other acceptable to the MAA.

QUALITY MANAGER (QM)*

The Quality Manager requires formal acceptance by the MAA which is granted through the corresponding DASR Form 4.

Qualifications:

Diploma level, or equivalent, qualification in Quality Auditing issued by an Australian registered training organisation (RTO) or other comparable qualification acceptable to the MAA.

Experience:

At least five years of Aviation experience including:

a. Two years experience as staff of DASA or an organisation holding an Organisational Approval (excluding 147), under DASR, CASA, EMAR, EASA or other acceptable to the MAA, and

b. Three years experience in aviation quality management.

* Note: RM and QM qualification and experience requirements for small enterprise workshops will be considered by the MAA on a case by case basis. 'Small enterprise' workshops will normally need to satisfy both of the following criteria: off aircraft and component maintenance.

4. Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.

(c) The Accountable Manager under paragraph (a) shall appoint a person with responsibility for monitoring the quality system, including the associated feedback system as required by DASR 145.A.65(c). The appointed person shall have direct access to the Accountable Manager to ensure that the Accountable Manager is kept properly informed on quality and compliance matters. ▸ **AMC**

AMC 145.A.30(c) - Personnel requirements

Monitoring the quality system includes requesting remedial action as necessary by the Accountable Manager and the nominated persons referred to in DASR 145.A.30(b).

(d) The maintenance organisation shall have a maintenance person-hour plan showing that the maintenance organisation has sufficient competent staff to plan, perform, supervise, inspect and quality monitor the maintenance organisation in accordance with the approval. In addition the maintenance organisation shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period. ▸ **AMC**

AMC 145.A.30(d) - Personnel requirements

1. 'Sufficient' means that the maintenance organisation employs or contracts/tasks competent staff, as detailed in the person-hour plan, of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organisational stability. For the purpose of meeting a specific operational necessity, a temporary increase of the proportion of contracted staff may be permitted to the maintenance organisation by the MAA, in accordance with an approved procedure which should describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability. For the purpose of this subparagraph, employed means the person is directly employed as an individual by the maintenance organisation whereas contracted/tasked means the person is employed by another organisation or military unit and contracted/tasked by that organisation to the maintenance organisation. In the case of Defence/Industrial partnered support

arrangements, the Defence element of the maintenance organisation should be considered, for the purpose of this clause, as part of the industry workforce.

2. The maintenance person-hour plan should take into account all activities carried out outside the scope of the DASR 145 approval.
The planned absence (for training, vacations, etc.) should be considered when developing the person-hour plan.

3. The maintenance person-hour plan should relate to the anticipated maintenance work load except that when the maintenance organisation cannot predict such workload, due to the short term nature of its contracts/tasking or unpredictable variations in operational military tasking, then such a plan should be based upon the minimum maintenance workload needed for organisational viability. Maintenance work load includes all necessary work such as, but not limited to, planning, maintenance record checks, production of worksheets/cards in paper or electronic form, accomplishment of maintenance, inspection and the completion of maintenance records.

4. In the case of aircraft base maintenance, the maintenance person-hour plan should relate to the aircraft hangar visit plan as specified in DASR AMC 145.A.25(a).

5. In the case of aircraft component maintenance, the maintenance person-hour plan should relate to the aircraft component planned maintenance as specified in DASR 145.A.25(a)(2).

6. The quality monitoring compliance function person-hours should be sufficient to meet the requirement of DASR 145.A.65(c) which means taking into account AMC DASR 145.A.65(c). Where quality monitoring staff perform other functions, the time allocated to such functions needs to be taken into account in determining quality monitoring staff numbers.

7. The maintenance person-hour plan should be reviewed at least every three months and updated when necessary.

8. Significant deviation from the maintenance person-hour plan should be reported through the appropriate manager to the quality manager and the Accountable Manager for review. Significant deviation means more than a 25% shortfall in available person-hours during a calendar month for any one of the functions specified in DASR 145.A.30(d), or an inability to achieve military tasking due to personnel shortfalls.

(e) The maintenance organisation shall establish and control the competence of personnel involved in any maintenance, management and/or quality audits in accordance with a procedure and to a standard defined through the MOE and approved by the MAA. In addition to the necessary expertise related to the job function, competence shall include an understanding of the application of human factors and human performance issues appropriate to that person's function in the maintenance organisation. ▸ **AMC1** ▸ **AMC2** ▸ **AMC3** ▸ **AMC4** ▸ **GM1** ▸ **GM2** ▸ **GM3**

GM3 145.A.30(e) Template for recording experience/training

The following template may be used to record the professional experience gained in an maintenance organisation and the training received and be considered during the competence assessment of the individual in another maintenance organisation.

Aviation Maintenance personnel experience credential

Name Given name

Address

Telephone E-mail

Independent worker ☐

Trade Group: airframe ☐ engine ☐ electric ☐avionics ☐ other (specify) ☐.....

Employer's details (when applicable)

Name

Address

Telephone

Maintenance organisation details

Name

Address

Telephone

Approval Number

Period of employment From: To:

Domain of employment

☐ Planning	☐ Engineering	☐ Technical records
☐ Store department	☐ Purchasing	

Mechanics/Technician

☐ Line Maintenance	☐ Base Maintenance	☐ Component Maintenance
☐ Servicing	☐ Removal/Installation	☐ Testing/inspection
☐ Scheduled Maintenance	☐ Inspection	☐ Repair
☐ Trouble-shooting	☐ Trouble-shooting	☐ Overhaul
	☐ Repair	☐ Re-treatment
		☐ Reassembly
A/C type	A/C type	Component type

Certifying Staff and support staff

☐ Cat. A	☐ Cat. B1	☐ Cat. B2	☐ Cat. C	☐ Component Type	☐ Other (e.g. NDT)
A/C Type	A/C Type	A/C Type	A/C Type	Component Type	Specify

Certification Privileges: Yes ☐ / No ☐

☐ Specialised Services Speciality *(NDT, composites, welding, etc.)*:

☐ Skilled personnel Speciality *(sheet metal, structures, wireman, upholstery, etc.)*:

☐ Ground equipment operation

☐ Quality control ☐ Quality assurance ☐ Training

Total number of check boxes ticked:

Details of employment

Training received from the contracting organisation

Date Nature of training

Certified by:

Name: Date:

Position: Signature:

Contact details:

GM2 145.A.30(e) - Competence assessment procedure

The maintenance organisation should develop a procedure describing the process of competence assessment of personnel. The procedure should specify:

– persons responsible for this process,

– when the assessment should take place,

– credits from previous assessments,

– validation of qualification records,

– means and methods for the initial assessment,

– means and methods for the continuous control of competence including feedback on personnel performance,

– competences to be observed during the assessment in relation with each job function,

– actions to be taken when assessment is not satisfactory,

– recording of assessment results.

For example, according to the job functions and the scope, size and complexity of the maintenance organisation, the assessment may consider the following (the table is not exhaustive):

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Quality audit staff
Knowledge of applicable officially recognised standards						X	X
Knowledge of auditing techniques: planning, conducting and reporting							X
Knowledge of human factors, human performance and limitations	X	X	X	X	X	X	X
Knowledge of logistics processes	X	X	X				
Knowledge of maintenance organisation capabilities, privileges and limitations	X	X	X	X		X	X
Knowledge of DASR M, DASR 145 and any other relevant regulations	X	X	X	X			X
Knowledge of relevant parts of the MOE and procedures	X	X	X	X	X	X	X
Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects		X	X	X	X	X	
Knowledge of safety risks linked to the working environment	X	X	X	X	X	X	X
Knowledge on CDCCL when relevant	X	X	X	X	X	X	X
Knowledge on EWIS when relevant	X	X	X	X	X	X	X
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X
Understanding of conditions for ensuring continuing airworthiness of aircraft and components				X			X
Understanding of his/her own human performance and limitations	X	X	X	X	X	X	X
Understanding of personnel authorisations and limitations	X	X	X	X	X	X	X
Understanding critical task		X	X	X	X		X
Ability to compile and control completed work cards		X	X	X			
Ability to consider human performance and limitations.	X	X	X	X			X
Ability to determine required qualifications for task performance		X	X	X			
Ability to identify and rectify existing and potential unsafe conditions			X	X	X	X	X
Ability to manage third parties involved in maintenance activity		X	X				
Ability to confirm proper accomplishment of maintenance tasks			X	X	X	X	
Ability to identify and properly plan performance of critical task		X	X	X			
Ability to prioritise tasks and report discrepancies		X	X	X	X		
Ability to process the work requested by the operator		X	X	X			
Ability to promote the safety and quality policy	X		X				
Ability to properly process removed, uninstalled and rejected parts			X	X	X	X	
Ability to properly record and sign for work accomplished			X	X	X	X	
Ability to recognise the acceptability of parts to be installed prior to fitment				X	X		
Ability to split complex maintenance tasks into clear stages		X					
Ability to understand work orders, work cards and refer to and use applicable maintenance data		X	X	X	X	X	X
Ability to use information systems	X	X	X	X	X	X	X
Ability to use, control and be familiar with required tooling and/or equipment			X	X	X	X	
Adequate communication and literacy skills	X	X	X	X	X	X	X
Analytical and proven auditing skills (for example, objectivity, fairness, open- mindedness, determination, …)							X
Maintenance error investigation skills							X
Resources management and production planning skills	X	X	X				
Teamwork, decision-making and leadership skills	X		X				

GM1 145.A.30(e) - Personnel requirements (training syllabus for initial human factors training)

The training syllabus below identifies the topics and subtopics to be addressed during the human factors training.

The maintenance organisation may combine, divide, change the order of any subject of the syllabus to suit its own needs, as long as all subjects are covered to a level of detail appropriate to the maintenance organisation and its personnel.

Some of the topics may be covered in separate training (health and safety, management, supervisory skills, etc.) in which case duplication of training is not necessary.

Where possible, practical illustrations and examples should be used, especially accident and incident reports.

Topics should be related to existing legislation, where relevant. Topics should be related to existing guidance/advisory material, where relevant (eg ICAO Human Factors (HF) Digests and Training Manual and appropriate military training).

Topics should be related to maintenance engineering where possible; too much unrelated theory should be avoided.

1. General/Introduction to human factors

    1.1 The need to take human factors into account;

    1.2 Statistics;

    1.3 Incidents attributable to human factors/human error;

    1.4 “Murphy’s Law”.

2. Safety Culture/Organisational factors

    2.1 “Culture” issues.

3. Human errors

    3.1 Error models and theories;

    3.2 Types of errors in maintenance tasks;

    3.3 Violations;

    3.4 Implications of errors (i.e. accidents);

    3.5 Avoiding and managing errors;

    3.6 Human reliability.

4. Human performance & limitations

    4.1 Vision;

    4.2 Hearing;

4.3 Information-processing;

4.4 Attention and perception;

4.5 Situational awareness;

4.6 Memory;

4.7 Claustrophobia and physical access;

4.8 Motivation and de-motivation;

4.9 Fitness/Health;

4.10 Stress: domestic and work related;

4.11 Workload management (overload and underload);

4.12 Sleep and fatigue;

4.13 Alcohol, medication, drug abuse;

4.14 Physical work;

4.15 Repetitive tasks/complacency.

5. Environment

5.1 Peer pressure;

5.2 Stressors;

5.3 Time pressure and deadlines;

5.4 Workload;

5.5 Shift Work;

5.6 Noise and fumes;

5.7 Illumination;

5.8 Climate and temperature;

5.9 Motion and vibration;

5.10 Complex systems;

5.11 Hazards in the workplace, recognising and avoiding hazards, dealing with emergencies;

5.12 Lack of human resources;

5.13 Distractions and interruptions;

5.14 Military environment and other military factors/Operational pressures.

6. Procedures, information, tools and practices

6.1 Visual Inspection;

6.2 Work logging and recording;

6.3 Procedure — practice/mismatch/norms;

6.4 Technical documentation — access and quality.

7. Communication

7.1 Shift/Task handover;

7.2 Dissemination of information;

7.3 Cultural differences;

7.4 Within and between teams.

8. Teamwork

8.1 Responsibility: individual and group;

8.2 Management, supervision and leadership;

8.3 Decision making.

9. Professionalism and integrity

9.1 Keeping up to date; currency;

9.2 Error provoking behaviour;

9.3 Assertiveness.

10. Maintenance organisation's HF program

10.1 Reporting errors;

10.2 Disciplinary policy;

10.3 Error investigation;

10.4 Action to address problems;

10.5 Feedback.

AMC4 145.A.30(e) - Personnel requirements

Competence assessment should include the verification for the need of additional EWIS training when relevant.

(Note: EASA guidance for an EWIS training programme to maintenance organisation personnel can be found in EASA AMC 20-22.)

AMC3 145.A.30(e) - Personnel requirements

Additional training in fuel tank safety as well as associated inspection standards and maintenance procedures should be required for maintenance organisations' technical personnel, especially technical personnel involved in the compliance of Critical Design Configuration Control Limitations (CDCCL) tasks (if applicable).

Guidance is provided for training to maintenance organisation personnel in Appendix IV to AMC3 DASR 145.A.30(e).

AMC2 145.A.30(e) - Personnel requirements

In respect to the understanding of the application of human factors and human performance issues, all maintenance organisation personnel should have received an initial and continuation human factors training. This should concern to a minimum:

- Nominated persons, managers, supervisors;
- Certifying staff, support staff and mechanics;
- Technical support personnel such as planners, engineers, technical record staff;
- Quality control/assurance staff;
- Specialised services staff;
- Human factors staff/ human factors trainers;
- Store department staff, purchasing department staff;
- Ground equipment operators;
- Contracted/tasked staff in the above categories.

1. Initial human factors training should cover all the topics of the training syllabus specified in GM DASR 145.A.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the maintenance organisation. The syllabus may also be adjusted to meet the particular nature of work for each function within the maintenance organisation. For example:

   - small maintenance organisations not working in shifts may cover in less depth subjects related to teamwork and communication;
   - planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.

   All personnel, including personnel being recruited from any other organisation should receive initial human factors training compliant with the maintenance organisation's training standards prior to commencing actual job function, unless their competence assessment justifies that there is no need for such training. Newly directly employed personnel working under direct supervision may receive training within 6 months after joining the maintenance organisation.

2. The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary.

   Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information on human errors in maintenance available to the maintenance organisation.

3. Human factors training may be conducted by the maintenance organisation itself, or independent trainers, or any training organisations acceptable to the MAA.

4. The human factors training procedures should be specified in the MOE.

AMC1 145.A.30(e) - Personnel requirements

Competence should be defined as a measurable skill or standard of performance, knowledge and understanding, taking into consideration attitude and behaviour.

The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors, certifying staff and support staff, whether employed or contracted, are assessed for competence before unsupervised work commences and competence is controlled on a continuous basis.

Competence should be assessed by evaluation of:

- on-the-job performance and/or testing of knowledge by appropriately qualified personnel; and
- records for basic, organisational, and/or product type and differences training; and
- experience records.

  Validation of the above could include a confirmation check with the organisation(s) that issued such document(s). For that purpose, experience/ training may be recorded in a document such as a log book or based on the suggested template in GM3 to DASR 145.A.30(e).

  As a result of this assessment, an individual's qualification should determine

- which level of ongoing supervision would be required or whether unsupervised work could be permitted.
- whether there is a need for additional training.

  A record of the qualification and competence assessment should be kept.

  This should include copies of all documents that attest to qualification, such as the MAML and/or any authorisation held, as applicable.

For a proper competence assessment of its personnel, the maintenance organisation should consider that:

1. In accordance with the job function, adequate initial and recurrent training should be provided and recorded to ensure continued competence so that it is maintained throughout the duration of employment/contract.

2. All staff should be able to demonstrate knowledge of and compliance with the maintenance organisation's procedures, as applicable to their duties.

3. All staff should be able to demonstrate an understanding of human factors and human performance issues in relation with their job function and be trained as per AMC2 to DASR 145.A.30(e).

4. To assist in the assessment of competence and to establish the training needs analysis, job descriptions are recommended for each job function in the maintenance organisation. Job descriptions should contain sufficient criteria to enable the required competence assessment.

5. Criteria should allow the assessment to establish that, among others (titles might be different in each organisation):

   – Managers are able to properly manage the work output, processes, resources and priorities described in their assigned duties and responsibilities in a safe compliant manner in accordance with requirements and maintenance organisation procedures.

   – Planners are able to interpret maintenance requirements into maintenance tasks, and have an understanding that they have no authority to deviate from the maintenance data.

   – Supervisors are able to ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the approved maintenance data, then such problems should be reported to the DASR 145.A.30(c) person for appropriate action. In addition, for those supervisors, who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.

   – Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and should notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.

   – Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data. They should be able to communicate with supervisors and report accurately when necessary.

   – Support staff are able to determine that relevant maintenance tasks have been carried out to the required standard.

– Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.

– Quality audit staff are able to monitor compliance with DASR 145 identifying non-compliance in an effective and timely manner so that the Approved Maintenance Organisation (AMO) may remain in compliance with DASR 145.

Competence assessment should be based upon the procedure specified in DASR GM2 to 145.A.30(e).

'Human factors' means principles which apply to aeronautical design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance.

'Human performance' means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

(f) The maintenance organisation shall ensure that personnel who carry out and/or control a non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by the MAA. Personnel who carry out any other specialised task shall be appropriately qualified in accordance with officially recognised Standards. ▸ **AMC** ▸ **AMC1** ▸ **AMC2** ▸ **GM**

GM 145.A.30(f) - Personnel requirements

Particular non-destructive test means any one or more of the following; Penetrant Testing (PT), Magnetic Testing (MT), Eddy current Testing (ET), Ultrasonic Testing (UT), Radiographic Testing (RT), Thermographic Testing (TT) and Shearographic Testing (ST) methods.

Competency based training programs for non-destructive testing personnel may be approved by the Authority (DAVENG-DASA) in lieu of the minimum training and experience hour requirements stipulated in EN4179 section 6.

AS3669:2006 is not considered an acceptable national equivalent qualification to EN4179 by the MAA.

AMC2 145.A.30(f) - Personnel requirements (AUS)

For the performance of aircraft manual welding repairs, a CASA welding authority granted in accordance with CAAP 33-1(1) is an appropriate qualification.

AMC1 145.A.30(f) - Personnel requirements (AUS)

For the performance of composite repairs, SAE AIR4938 is an accepted standard for qualifying personnel to carry out repairs.

AMC 145.A.30(f) - Personnel requirements

1. NOT APPLICABLE.

2. Appropriately qualified means to levels of qualification and certification as defined by the European Standard EN 4179 (or national equivalent qualification) dependent upon the non-destructive testing function to be carried out.

NOTE: Although EN4179 is the primary standard referenced for NDT qualification and certification, NAS410 is also an accepted standard for the performance of NDT activities.

4. Notwithstanding the fact that Level 3 personnel (or national equivalent qualification) may be qualified via EN 4179 to establish and authorise methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the (Military) Type Certificate Holder/manufacturer or MAA in the form of continued airworthiness data, such as in non-destructive test manuals or Service Bulletins, unless the manual or Service Bulletin expressly permits such deviation.

5. Notwithstanding the general references in EN 4179 to a national aerospace non-destructive testing (NDT) board, all examinations should be conducted by personnel or organisations under the general control of such a board or as specified by the MAA. In the absence of a national aerospace NDT board, the aerospace NDT board of another pMS should be used, as defined by the MAA.

   a. By way of exception to paragraph 4, the conduct and/or oversight of NDT examinations can be performed by an Authority approved (DASR Form 4) NDT Responsible Level 3 appointment holder, without being under the general control of a national aerospace NDT board.

6. Moved to DASR GM 145.A.30(f).

7. It should be noted that new methods are being and will be developed, which are not specifically addressed by EN 4179. Until the time this agreed standard is established, such methods should be carried out in accordance with the particular equipment manufacturer's recommendations including any training and examination process to ensure competence of the personnel in the process.

8. Any maintenance organisation that carries out NDT should establish NDT specialist qualification procedures detailed in the MOE and accepted by the MAA.

9. Boroscoping and other techniques such as manual tap testing are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organisation should establish a MOE procedure accepted by the MAA to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by DASR 145 are not listed in DASR 145 Appendix II under class rating D1.

10. The referenced standards, methods, training and procedures should be specified in the MOE.

11. Any such personnel who intend to carry out and/or control a non-destructive test for which they were not qualified prior to the effective date of DASR 145 should qualify for such non-destructive test in accordance with EN 4179 (or national equivalent qualification).

12. In this context officially recognised standard means those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the MAA.

13. Colour contrast dye penetrant inspections / visible dye penetrant inspections are only to be used when the specific procedure has been approved by the Authority.

1. By way of exception to paragraph (f), a maintenance organisation may authorise those personnel specified in paragraphs (g) and (h)(1), qualified in Category B1 in accordance with DASR 66, to carry out and/or control colour contrast dye penetrant inspections/visible dye penetrant inspections which are to be detailed in the MOE.

(g) Any maintenance organisation maintaining aircraft, except where stated otherwise in paragraph (j), shall in the case of aircraft line maintenance, have appropriate Military Aircraft Type Rated certifying staff, qualified as category B1, B2 in accordance with DASR 66 and DASR 145.A.35. ▸ **AMC**

AMC 145.A.30(g) - Personnel requirements

1. For the purposes of DASR 66.A.20(a)(1) and DASR 66.A.20(a)(3)(ii) personnel, minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the Aircraft Maintenance Programme (AMP). For AMPs that do not specify a weekly check, the MAA should determine the most significant check that is considered equivalent to a weekly check.

2. Typical tasks permitted after appropriate task training to be carried out by the DASR 66.A.20(a)1) and the DASR 66.A.20(a)(3)(ii) personnel for the purpose of these personnel issuing an aircraft Certificate of Release to Service (CRS) as specified in DASR 145.A.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:

a. Replacement of wheel assemblies.

b. Replacement of wheel brake units.

c. Replacement of emergency equipment.

d. Replacement of ovens, boilers and beverage makers.

e. Replacement of internal and external lights, filaments and flash tubes.

f. Replacement of windscreen wiper blades.

g. Replacement of passenger and cabin crew seats, seat belts and harnesses.

h. Closing of cowlings and refitment of quick access inspection panels.

i. Replacement of toilet system components but excluding gate valves.

j. Simple repairs and replacement of internal compartment doors and placards but excluding doors forming part of a pressure structure.

k. Simple repairs and replacement of overhead storage compartment doors and cabin furnishing items.

l. Replacement of static wicks.

m. Replacement of aircraft main and APU aircraft batteries.

n. NOT APPLICABLE.

o. Routine lubrication and replenishment of all system fluids and gases.

p. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's Minimum Equipment List (MEL) where relevant or national equivalent procedure, where such de-activation is agreed by the MAA as a simple task.

q. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers or the use of special tools.

r. Removal and installation of simple internal medical equipment.

s. Any other task agreed by the MAA as a simple task for a particular aircraft type. This may include defect deferment when all the following conditions are met:

- There is no need for troubleshooting; and
- The task is in the MEL; and
- The maintenance action required by the MEL is agreed by the MAA to be simple.

In the particular case of helicopters, and in addition to the items above, the following:

t. Removal and installation of external cargo provisions, ie external hook, mirrors, other than the hoist.

u. Removal and installation of quick release external cameras and search lights.

v. Removal and installation of emergency float bags, not including the bottles.

w. Removal and installation of external doors fitted with quick release attachments.

x. Removal and installation of snow pads/skid wear shoes/slump protection pads.

Any task on a military specific system agreed by the MAA as a simple task for a particular aircraft type.

No task which requires troubleshooting should be part of the authorised maintenance actions. Release to service after rectification of deferred defects should be permitted as long as the task is listed above.

3. The requirement of having appropriate aircraft rated certifying staff qualified as Category B1 or B2 as appropriate, in the case of aircraft line maintenance does not imply that the maintenance organisation must have B1 or B2 personnel at every line

station. The MOE should have a procedure on how to deal with defects requiring B1 or B2 certifying staff.

4. The MAA may accept that in the case of aircraft line maintenance a maintenance organisation has only B1 or B2 certifying staff, as appropriate, provided that the MAA is satisfied that the scope of work, as defined in the MOE, does not need the availability of all B1 or B2 certifying staff. Special attention should be taken to clearly limit the scope of scheduled and non-scheduled line maintenance (defect rectification) to only those tasks that can be certified by the available certifying staff Category.

In addition such maintenance organisations may also use appropriately task trained certifying staff holding the privileges described in DASR 66.A.20(a)(1) or DASR 66.A.20(a)3(ii) and qualified in accordance with DASR 66 and DASR 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such certifying staff shall not replace the need for Category B1, B2 certifying staff as appropriate.

(h) Any maintenance organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall: ▸ **AMC**

AMC 145.A.30(h) - Personnel requirements

In accordance with DASR 145.A.30(h) and DASR 145.A.35, the qualification requirements (MAML, Military Aircraft Type Ratings, recent experience and continuation training) are identical for certifying staff and for support staff. The only difference is that support staff cannot hold certification privileges when performing this role since during base maintenance the release to service will be issued by Category C certifying staff. Nevertheless, the maintenance organisation may use as support staff (for base maintenance) persons who already hold certification privileges for line maintenance.

1. In the case of base maintenance of aircraft, have appropriate Military Aircraft Type Rated certifying staff qualified as Category C in accordance with DASR 66 and DASR 145.A.35. In addition the maintenance organisation shall have sufficient Military Aircraft Type Rated staff qualified as Category B1 or B2 as appropriate in accordance with DASR 66 and DASR 145.A.35 to support the category C staff.

   i. Category B1 and B2 support staff shall ensure that all relevant maintenance tasks have been carried out to the required standard before the Category C certifying staff issues the Certificate of Release to Service (CRS) for aircraft.

   ii. The maintenance organisation shall maintain a register of any such B1 and B2 support staff.

   iii. The Category C certifying staff shall ensure that compliance with paragraph (i) has been met and that all work has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to

either requiring its accomplishment or agreeing with the appropriate Continuing Airworthiness Management Organisation (CAMO) to defer such work to another specified check or time limit.

2. NOT APPLICABLE

(i) Component certifying staff shall be authorised by the maintenance organisation on the basis of appropriate competence, training and experience in accordance with a procedure(s) contained in the MOE.

(j) By way of exception to paragraphs (g) and (h), in relation to the obligation to comply with DASR 66 the maintenance organisation may use certifying staff qualified in accordance with the following provisions:

1. NOT APPLICABLE

2. NOT APPLICABLE

3. For a repetitive pre-flight Airworthiness Directive (AD) which specifically states that the flight crew may carry out such AD, the maintenance organisation may issue a limited certification authorisation to the aircraft commander and/or the flight engineer on the basis of the flight crew licence or national equivalent qualification held. However, the maintenance organisation shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander and/or flight engineer can accomplish the AD to the required standard.

4. In the case of aircraft operating away from a supported location the maintenance organisation may issue a limited certification authorisation to the aircraft commander and/or the flight engineer on the basis of the flight crew licence or national equivalent qualification held subject to being satisfied that sufficient practical training has been carried out to ensure that the aircraft commander and/or flight engineer can accomplish the specified task to the required standard. The provisions of this paragraph shall be detailed in a MOE procedure. ▸ **AMC** ▸ **GM**

GM 145.A.30(j)(4) - Personnel requirements (Flight crew)

For military aircrew, the theoretical knowledge is covered throughout flying training and, for specific aircraft types, during operational conversion training for the relevant aircraft type. Thereafter, the individual's level of knowledge is monitored by the aircrew standards organisation for that specific type.

AMC 145.A.30(j)(4) - Personnel requirements

1. For the issue of a limited certification authorisation the aircraft commander or flight engineer should hold either a valid pilot or flight engineer licence/national military qualification (or civilian equivalent) acceptable to the MAA on the aircraft type. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of DASR 145.A.30(e) and associated AMC and GM. Such procedures should include as a minimum:

a. Completion of adequate national military airworthiness regulations training; and

b. Completion of adequate task training for the specific task on the aircraft. The task training should be of sufficient duration to ensure that the individual has a thorough understanding of the task to be completed and should involve training in the use of associated maintenance data; and

c. Completion of the procedural training as specified in DASR 145.
The above procedures should be specified in the MOE and be accepted by the MAA.

2. (i) Typical tasks that may be certified and/or carried out by the aircraft commander holding a valid licence/national military pilot qualification (or civilian equivalent) acceptable to the MAA on the aircraft type are minor maintenance or simple checks included in the following list:

a. Replacement of internal lights, filaments and flash tubes.

b. Closing of cowlings and refitment of quick access inspection panels.

c. Simple configuration changes (e.g. stretcher fit, FLIR, doors, photographic equipment etc.)

d. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers that are easily accessible but not requiring the use of special tools.

e. Any check/replacement involving simple techniques consistent with this AMC and as agreed by the MAA.

2. (ii) Holders of a valid national military flight engineer licence/qualification, or equivalent, acceptable to the MAA, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.

In addition to paragraph 2(i)(a) to (e), other typical minor maintenance or simple defect rectification tasks that may be carried out are included in the following list:

a. Replacement of wheel assemblies.

b. Replacement of simple emergency equipment that is easily accessible.

c. Replacement of ovens, boilers and beverage makers.

d. Replacement of external lights.

e. Replacement of passenger and cabin crew seats, seat belts and harnesses.

f. Simple replacement of overhead storage compartment doors and cabin furnishing items.

g. Replacement of static wicks.

h. Replacement of aircraft main and APU aircraft batteries.

i. NOT APPLICABLE.

j. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's MEL where relevant or a national equivalent procedure, where such de-activation is agreed by the MAA as a simple task.

k. Re-setting of tripped circuit breakers under the guidance of maintenance control.

l. Any other task agreed by the MAA as a simple task for a particular aircraft type.

3. The authorisation should have a finite life of twelve months subject to satisfactory re-current training on the applicable aircraft type.

5. In unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff are available, the maintenance organisation may issue a one-off certification authorisation: ▸ **AMC**

AMC 145.A.30(j)(5) - Personnel requirements

1. For the purposes of this subparagraph "unforeseen" means that the aircraft grounding could not reasonably have been predicted by the Operating Organisation because the defect was unexpected due to being part of a hitherto reliable system.

2. A one-off authorisation should only be considered for issue by the maintenance organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The maintenance organisation should assess each situation individually prior to the issuance of a one-off authorisation. The maintenance organisation that issues this one-off authorisation retains responsibility for all work performed.

3. A one-off authorisation should not be issued where the level of certification required could exceed the knowledge and experience level of the person it is issued to. In all cases, due consideration should be given to the complexity of the work involved and the availability of required tooling and/or test equipment needed to complete the work.

i. to one of its employees holding equivalent authorisations on other aircraft types of similar technology, construction and systems; or ▸ **AMC**

AMC 145.A.30(j)(5)(i) - Personnel requirements

In those situations where the requirement for a one-off authorisation to issue a CRS for a task on an aircraft type for which certifying staff does not hold a type-rated authorisation has been identified, the following procedure is recommended:

1. Flight crew should communicate full details of the defect to their maintenance organisation. If necessary, the maintenance organisation should consider the issue of a one-off authorisation.

2. When issuing a one-off authorisation, the maintenance organisation should verify that:

a. Full technical details relating to the work required to be carried out have been established and passed on to the certifying staff; and

b. The maintenance organisation has an approved procedure in place for coordinating and controlling the total maintenance activity undertaken at the location under the authority of the one-off authorisation; and

c. The person to whom a one-off authorisation is issued has been provided with all the necessary information and guidance relating to maintenance data and any special technical instructions associated with the specific task undertaken. A detailed step by step worksheet has been defined by the maintenance organisation, communicated to the one-off authorisation holder; and

d. The person holds authorisations of equivalent level and scope on other aircraft type of similar technology, construction and systems.

3. The one-off authorisation holder should sign off the detailed step by step worksheet when completing the work steps. The completed tasks should be verified by visual examination and/or normal system operation upon return to an appropriately approved DASR 145 maintenance facility.

ii. to any person with not less than five years maintenance experience and holding a valid Military Aircraft Maintenance Licence (MAML) rated for the aircraft, provided there is no maintenance organisation appropriately approved under DASR 145 at that location and the supporting maintenance organisation obtains and holds on file evidence of the experience and the MAML of that person. ▸ **AMC**

AMC 145.A.30(j)(5)(ii) - Personnel requirements

This paragraph addresses staff not employed by the maintenance organisation who meet the requirements of DASR 145.A.30(j)(5). In addition to the items listed in AMC DASR 145.A.30(j)(5)(i), paragraph 1, 2(a), (b) and (c) and 3 the maintenance organisation may issue such a one-off authorisation subject to full qualification details relating to the proposed certifying personnel being verified by the maintenance organisation and made available at the location.

All such cases as specified in this subparagraph shall be reported to the MAA within seven days of the issuance of such certification authorisation. The maintenance organisation issuing the one-off authorisation shall ensure that any such maintenance that could affect flight safety is re-checked by an appropriately approved maintenance organisation.

(k) To certify on-aircraft maintenance performed on armament, rescue and escape systems and other military-specific systems, any maintenance organisation maintaining aircraft shall have sufficient staff possessing the Category A, B1 or B2 MAML with the appropriate extensions.

145.A.35 - Certifying staff and support staff

(a) In addition to the appropriate requirements of DASR 145.A.30(g) and (h), the maintenance organisation shall ensure that certifying and support staff have an

adequate understanding of the relevant aircraft and/or components to be maintained together with the associated maintenance organisation procedures. In the case of certifying staff, this shall be accomplished before the issue or re-issue of the certification authorisation. ▸ **AMC**

AMC 145.A.35(a) - Certifying staff and support staff

1. Holding a MAML with the relevant Military Aircraft Type/Group Rating, or a national qualification in the case of components, does not mean by itself that the holder is qualified to be authorised as certifying staff and/or support staff. The maintenance organisation is responsible to assess the competence of the holder for the scope of maintenance to be authorised.

2. The sentence "the maintenance organisation shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated maintenance organisation procedures" means that the person has received training and has been successfully assessed on:

   - the type of aircraft or component;
   - the differences on:
     - the particular model/variant;
     - the particular configuration.

   The maintenance organisation should specifically ensure that the individual competencies have been established with regard to:

   • relevant knowledge, skills and experience in the product type and configuration to be maintained, taking into account the differences between the generic Military Aircraft Type Rating training that the person received and the specific configuration of the aircraft to be maintained;

   • appropriate attitude towards safety and observance of procedures;

   • knowledge of the associated maintenance organisation and Operating Organisation procedures (i.e. handling and identification of components, MEL use, Aircraft Technical Log use, independent checks, etc.).

3. Some special maintenance tasks may require additional specific training and experience, including but not limited to:

   • in-depth troubleshooting;

   • very specific adjustment or test procedures;

   • rigging;

   • engine run-up, starting and operating the engines, checking engine performance characteristics, normal and emergency engine operation, associated safety precautions and procedures;

   • extensive structural/system inspection and repair;

- other specialised maintenance required by the AMP.

For engine run-up training, simulators and/or real aircraft should be used.

4. The satisfactory assessment of the competence should be conducted in accordance with a procedure approved by the MAA (item 3.4 of the MOE, as described in AMC DASR 145.A.70(a)).

5. The maintenance organisation should hold copies of all documents that attest the competence and recent experience for the period described in DASR 145.A.35(j).

Additional information is provided in AMC DASR 66.A.20(b)3.

i. 'Support staff' means those staff holding a DASR 66 MAML in Category B1 and/or B2 with the appropriate extensions and Military Aircraft Type Ratings, working in a base maintenance environment while not necessarily holding certification privileges.

ii. 'Relevant aircraft and/or components', means those aircraft or components specified in the particular certification authorisation.

iii. 'Certification authorisation' means the authorisation issued to certifying staff by the Approved Maintenance Organisation (AMO) and which specifies the fact that they may sign CRSs within the limitations stated in such authorisation on behalf of the AMO.

(b) Excepting those cases listed in DASR 145.A.30(j) and DASR 66.A.20(a)3(ii) the maintenance organisation may only issue a certification authorisation to certifying staff in relation to the basic categories or subcategories and any Military Aircraft Type Rating endorsed on the MAML, subject to the MAML remaining valid throughout the validity period of the authorisation and the certifying staff remaining in compliance with DASR 66. ▸ **AMC** ▸ **AMC1**

AMC1 to 145.A.35(b) - Certifying staff and support staff (AUS)

A Maintenance Organisation, approved in accordance with DASR 145, may temporarily amend authorisations of certifying or support staff providing:

– A DASR Form 19 or DASR Form 19a, seeking an amendment to an existing licence, has been submitted to DASA (e.g. a new licence category, a new type rating, or a licence exclusion to be removed/licence extension to be added); and

– The Maintenance Organisation reports the temporary certifying or support staff authorisation changes to their relevant DASA desk officer within two working days.

Temporary amendment of authorisations is not to occur prior to the initial issue of a licence by DASA.

AMC 145.A.35(b) - Certifying staff and support staff

Moved to DASR 145.A.35(b).

The maintenance organisation issues the certification authorisation when satisfied that compliance has been established with the appropriate paragraphs of DASR 145 and DASR 66. In granting the certification authorisation the maintenance organisation needs to be satisfied that the person holds a valid and applicable DASR 66 MAML and shall confirm such fact with their MAA.

(c) The maintenance organisation shall ensure that all certifying staff and support staff are involved in at least six months of actual relevant aircraft or component maintenance experience in any consecutive two year period. ▸ **AMC1** ▸ **AMC2**

AMC2 145.A.35(c) - Certifying staff and support staff

Where unpredictable variations in operational military tasking require the use of personnel not meeting the six-month experience requirement, this should be approved by the Accountable Manager on a temporary basis only with the necessary precaution/mitigation put in place and both the Operating Organisation/CAMO for which work is being conducted and the MAA should be informed.

AMC1 145.A.35(c) - Certifying staff and support staff

For the interpretation of "6 months of actual relevant aircraft maintenance experience in any consecutive 2-year period", the provisions of AMC DASR 66.A.20(b)2 are applicable.

For the purpose of this paragraph 'involved in actual relevant aircraft or component maintenance' means that the person has worked in an aircraft or component maintenance environment and has either exercised the privileges of the certification authorisation and/or has actually carried out maintenance on at least some of the aircraft type or aircraft group systems specified in the particular certification authorisation.

(d) The maintenance organisation shall ensure that all certifying staff and support staff receive sufficient continuation training in each two year period to ensure that such staff have up-to-date knowledge of relevant technology, maintenance organisation procedures and human factor issues. ▸ **AMC**

AMC 145.A.35(d) - Certifying staff and support staff

1. Continuation training is a two way process to ensure that certifying staff and support staff remain current in terms of procedures, human factors and technical knowledge and that the maintenance organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, the maintenance organisation should consider the involvement of the quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.

2. Continuation training should cover changes in relevant requirements such as DASR 145, changes in maintenance organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training should reinforce the need to follow procedures

and ensure that incomplete or incorrect procedures are identified to the maintenance organisation in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.

3. Continuation training should be of sufficient duration in each 2 year period to meet the intent of DASR 145.A.35(d) and may be split into a number of separate elements. DASR 145.A.35(d) requires such training to keep certifying staff and support staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring quality. Therefore sufficient duration should be related to relevant quality audit findings and other internal/external sources of information available to the maintenance organisation on human errors in maintenance. This means that in the case of a maintenance organisation that maintains aircraft with few relevant quality audit findings, continuation training could be limited to days rather than weeks, whereas a similar maintenance organisation with a number of relevant quality audit findings, such training may take several weeks. For an maintenance organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engines may require a few days of such training. The content of continuation training should be related to relevant quality audit findings and it is recommended that such training is reviewed at least once in every 24 month period.

4. The method of training is intended to be a flexible process and could, for example, include a DASR 147 continuation training course, aeronautical college courses, internal short duration courses, seminars, etc. The elements, general content and length of such training should be specified in the MOE unless such training is undertaken by a DASR 147 Maintenance Training Organisation (MTO) when such details may be specified under the approval and cross referenced in the MOE.

(e) The maintenance organisation shall establish a programme for continuation training for certifying staff and support staff, including a procedure to ensure compliance with the relevant paragraphs of DASR 145.A.35 as the basis for issuing certification authorisations under this DASR to certifying staff, and a procedure to ensure compliance with DASR 66. ▸ **AMC**

AMC 145.A.35(e) - Certifying staff and support staff

The programme for continuation training should list all certifying staff and support staff and when training will take place, the elements of such training and an indication that it was carried out reasonably on time as planned. Such information should subsequently be transferred to the certifying staff and support staff record as required by DASR 145.A.35(j).

(f) Except where any of the unforeseen cases of DASR 145.A.30(j)(5) apply, the maintenance organisation shall assess all prospective certifying staff for their competence, qualification and capability to carry out their intended certifying duties in accordance with a procedure as specified in the MOE prior to the issue or re-issue of a certification authorisation under this DASR. ▸ **AMC**

AMC 145.A.35(f) - Certifying staff and support staff

As stated in DASR 145.A.35(f), except where any of the unforeseen cases of DASR 145.A.30(j)(5) applies, all prospective certifying staff and support staff should be assessed for competence related to their intended duties in accordance with AMCs 1, 2, 3 and 4 to DASR 145.A.30(e), as applicable.

(g) When the conditions of paragraphs (a), (b), (d), (f) and, where applicable, paragraph (c) have been fulfilled by the certifying staff, the maintenance organisation shall issue a certification authorisation that clearly specifies the scope and limits of such authorisation. Continued validity of the certification authorisation is dependent upon continued compliance with paragraphs (a), (b), (d), and where applicable, paragraph (c).

(h) The certification authorisation shall be in a style that makes its scope clear to the certifying staff and any authorised person who may require to examine the authorisation. Where codes are used to define scope, the maintenance organisation shall make a code translation readily available.

'Authorised person' means the officials of the MAA.

(i) The maintenance organisation shall nominate an individual who shall remain responsible on behalf of the maintenance organisation for issuing certification authorisations to certifying staff. Such person may nominate other persons to actually issue or revoke the certification authorisations in accordance with a procedure as specified in the MOE.

(j) The maintenance organisation shall maintain a record of all certifying staff and support staff which shall contain: ▸ **AMC**

AMC 145.A.35(j) - Certifying staff and support staff

1. The following minimum information as applicable should be kept on record in respect of each certifying staff and support staff:

   a. Name

   b. Rank/Grade and Service Number (if applicable)

   c. Date of Birth

   d. Basic Training

   e. Military Aircraft Type Training/Task Training

   f. Continuation Training

   g. Experience

   h. Qualifications relevant to the authorisation

   i. Scope of the authorisation

   j. Date of first issue of the authorisation

   k. If appropriate – expiry date of the authorisation

l. Identification Number of the authorisation

m. Security clearance (where applicable).

2. The record may be kept in any format and should be controlled by the maintenance organisation.

3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.

4. The MAA or qualified entity acting on behalf of the MAA is to be considered as an 'authorised person' when investigating the records system for initial and continued approval or when the MAA has cause to doubt the competence of a particular person.

1. Details of any MAML held under DASR 66; and

2. All relevant training completed; and

3. The scope of the certification authorisations issued, where relevant; and

4. Particulars of staff with limited or one-off certification authorisations.

The maintenance organisation shall retain the record for at least three years after the certifying staff or support staff have ceased employment with the maintenance organisation or as soon as the authorisation has been withdrawn. In addition, upon request, the maintenance organisation shall furnish certifying staff and support staff with a copy of their record on leaving the maintenance organisation. ▸ **GM**

GM 145.A.35(j) - Certifying staff and support staff (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

The certifying staff and support staff shall be given access on request to their personal records as detailed above.

(k) The maintenance organisation shall provide certifying staff with a copy of their certification authorisation in either a documented or electronic format.

(l) Certifying staff shall produce their certification authorisation to any authorised person within 72 hours.

(m) The minimum age for certifying staff and support staff shall be 21 years.

(n) The holder of a Category A MAML may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant Category A aircraft task training carried out by an organisation appropriately approved in accordance with DASR 145 or DASR 147. This training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment carried out by the AMO or DASR 147 MTO. ▸ **AMC**

AMC 145.A.35(n) - Certifying staff and support staff

1. It is the responsibility of the AMO issuing the Category A certifying staff authorisation to ensure that the task training received by this person covers all the tasks to be authorised. This is particularly important in those cases where the task training has been provided by a DASR 147 MTO or by an AMO different from the one issuing the authorisation.

2. "Appropriately approved in accordance with DASR 147" means an MTO holding an approval to provide Category A task training for the corresponding aircraft type.

3. "Appropriately approved in accordance with DASR 145" means an AMO holding a maintenance organisation approval for the corresponding aircraft type.

(o) The holder of a Category B2 MAML may only exercise the certification privileges described in DASR 66.A.20(a)(3)(ii) following the satisfactory completion of: ▸ **AMC** ▸ **GM**

GM 145.A.35(o) - Certifying staff and support staff

'Unless approved otherwise by the MAA' in this context means that the requirement can be waived by the MAA in the case of military personnel that already hold this privilege when they are posted from one AMO to another.

AMC 145.A.35(o) - Certifying and support staff

1. The privilege for a Category B2 MAML holder to release minor scheduled line maintenance and simple defect rectification in accordance with DASR 66.A.20(a)(3)(ii) can only be granted by the AMO where the MAML holder is employed/contracted after meeting all the requirements specified in DASR 145.A.35(o). This privilege cannot be transferred to another maintenance organisation.

2. When a Category B2 MAML holder already holds a certifying staff authorisation containing minor scheduled line maintenance and simple defect rectification for a particular aircraft type, new tasks relevant to Category A can be added to that type without requiring another 6 months of experience. However, task training (theoretical plus practical hands-on) and examination/assessment for these additional tasks is still required.

3. When the certifying staff authorisation intends to cover several aircraft types, the experience may be combined within a single 6-month period.
For the addition of new aircraft types to the certifying staff authorisation, another 6 months should be required unless the aircraft is considered similar per AMC DASR 66.A.20(b)2 to the one already held.

4. The term "6 months of experience" can include either full-time employment or part-time employment. The important aspect is that the person has been involved in those tasks which are going to be part of the authorisation.

i. the relevant Category A aircraft task training; and

ii. 6 months of documented practical experience covering the scope of the authorisation that will be issued.

The task training shall include practical hands on training and theoretical training as appropriate for each task authorised. Satisfactory completion of training shall be demonstrated by an examination or by workplace assessment. Task training and examination/assessment shall be carried out by the AMO issuing the certifying staff authorisation. The practical experience shall be also obtained within the same AMO unless approved otherwise by the MAA.

145.A.40 - Equipment, tools and material

(a) The maintenance organisation shall have available and use the necessary equipment, tools and material to perform the approved scope of work. ▸ **AMC**

AMC 145.A.40(a) - Equipment, tools and material

Once the applicant for approval has determined the intended scope of approval for consideration by the MAA, it should be necessary to show that all tools and equipment as specified in the maintenance data can be made available when needed. All such tools and equipment that require to be controlled in terms of servicing or calibration by virtue of being necessary to measure specified dimensions and torque figures etc, should be clearly identified and listed in a control register including any personal tools and equipment that the maintenance organisation agrees can be used.

1. Where the manufacturer specifies a particular tool or equipment, the maintenance organisation shall use that tool or equipment, unless the use of alternative tooling or equipment is agreed by the MAA via procedures specified in the MOE. ▸ **GM**

GM 145.A.40(a)(1) - Equipment, tools and material (AUS)

The agreement by the MAA for the use of alternative tooling by the Approved Maintenance Organisation should be formalised through the approval of a procedure in the Maintenance Organisation Exposition. This GM provides guidelines on information that could be included in the procedure:

– Demonstration of equivalence between alternate tools and the tools recommended in the maintenance data of the manufacturer.

– Demonstrate that the alternate tools will be clearly and uniquely identified.

– In-house identification rules for alternate tools (manufacturers reference number and serial number).

– Alternate tools validation process.

– Register of alternate tools / tagging / relation between the references of original tools and alternate tools.

– Treatment of possible changes of maintenance data according to the new references of alternative tooling (modifications limited to the references of the tooling to be used

and/or adaptation of maintenance data regarding alternative tooling). Refer to **DASR AMC 145.A.45(d)** paragraph 1(c).

– Use/storage/maintenance manuals according to the need.

– In-house approval of each alternate tooling before servicing.

– Storage of the records of alternative tooling.

2. Equipment and tools must be permanently available, except in the case of any tool or equipment that is so infrequently used that its permanent availability is not necessary. Such cases shall be detailed in the MOE.

3. A maintenance organisation approved for base maintenance shall have sufficient aircraft access equipment and inspection platforms/docking such that the aircraft can be properly inspected.

(b) The maintenance organisation shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognised standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the maintenance organisation ▸ **AMC**

AMC 145.A.40(b) Equipment, tools and material

1. The control of these tools and equipment requires that the maintenance organisation has a procedure to inspect/service and, where appropriate, calibrate such items on a regular basis and indicate to users that the item is within any inspection or service or calibration time-limit. A clear system of labelling all tooling, equipment and test equipment is therefore necessary giving information on when the next inspection or service or calibration is due and if the item is unserviceable for any other reason where it may not be obvious. A register should be maintained for all precision tooling and equipment together with a record of calibrations and standards used.

2. Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions unless approved otherwise by the MAA.

3. In this context officially recognised standard means those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the MAA

145.A.42 - Acceptance of components

(a) All components shall be classified and appropriately segregated into the following categories: ▸ **AMC**

AMC 145.A.42(a) - Acceptance of components

1. A document equivalent to a DASR Form 1 may be:

   a. NOT APPLICABLE.

b. NOT APPLICABLE.

c. NOT APPLICABLE.

d. NOT APPLICABLE.

e. NOT APPLICABLE.

f. A Form 1 or similar acceptable through Recognition (refer DASA Recognition web page).

g. A national equivalent document recognised by the MAA as declaring an item's serviceability and airworthiness.

h. A release document issued by an organisation accepted by the MAA.

2. See AMC DASR 145.A.42(a)4 and AMC DASR 145.A.42(a)5.

1. Components which are in a satisfactory condition, released on a DASR Form 1 or equivalent and marked in accordance with DASR 21 Section A Subpart Q.

2. Unserviceable components which shall be maintained in accordance with this section. A component shall be considered unserviceable in any one of the following circumstances: ▸ **AMC**

AMC 145.A.42(a)(2) - Acceptance of components

The maintenance organisation performing maintenance should ensure proper identification of any unserviceable components.

The unserviceable status of the component should be clearly declared on a tag or other suitable means together with the component identification data and any information useful to define actions necessary to be taken. Such information should state, as applicable, in-service times, maintenance status, preservation status, failures, defects or malfunctions reported or detected, exposure to adverse environmental conditions or if the component has been involved in or affected by an accident/incident. Means should be provided to prevent unwanted separation of this tag from the component.

Procedures shall be defined by the organisation describing the decision process for the status of unserviceable components. This procedure shall identify at least the following:

a. role and responsibilities of the persons managing the decision process;

b. description of the decision process to choose between maintaining, storing or mutilating a component;

c. traceability of decision.

i. expiry of the service life limit as defined in the Aircraft Maintenance Programme (AMP);

ii. non-compliance with the applicable ADs and other continued or continuing airworthiness requirement mandated by the MAA;

iii. absence of the necessary information to determine the airworthiness status or eligibility for installation;

iv. evidence of defects or malfunctions;

v. involvement in an incident or accident likely to affect its serviceability.

Unserviceable components shall be identified and stored in a secure location under the control of a maintenance organisation until a decision is made on the future status of such component.

3. Unsalvageable components which are classified in accordance with DASR 145.A.42(d). A maintenance organisation in consultation with the CAMO/ Operating Organisation shall, in the case of unsalvageable components: ▸ **AMC**

AMC 145.A.42(a)(3) - Acceptance of components

A maintenance organisation may choose, in consultation with the CAMO/Operating Organisation, to release an unsalvageable component for legitimate non-flight uses, such as for training and education, research and development. In such instances, mutilation may not be appropriate. The following methods should be used to prevent the component re-entering the aviation supply system:

a. permanently marking or stamping the component, as "NOT SERVICEABLE." (ink stamping is not an acceptable method);

b. removing original part number identification;

c. removing data plate identification;

d. maintaining a tracking or accountability system, by serial number or other individualised data, to record transferred unsalvageable aircraft component;

e. including written procedures concerning disposal of such components in any agreement or contract transferring such components.

NOTE: Unsalvageable components should not be released to any person or organisation that is known to return unsalvageable components back into the aviation supply system, due to the potential safety threat. Information about such organisations can be found, for example, in FAA Unapproved Parts Notifications, FAA Special Airworthiness Bulletins or EASA Safety Information Bulletins.

i. retain such components in a secure location under the control of the maintenance organisation until a decision is made on the future status of such component; or ▸ **AMC**

AMC 145.A.42(a)(3)(i) - Acceptance of components (AUS)

Once components or materials have been identified as unsalvageable, the organisation should establish secure areas in which to segregate such items and to prevent unauthorised access. Unsalvageable components should be managed through a procedure to ensure that these components receive the appropriate final disposal. The person responsible for the implementation of this procedure should be identified.

ii. arrange for the components to be mutilated in a manner that ensures they are beyond economic salvage or repair before relinquishing responsibility for such components. By way of exception, a CAMO/ Operating Organisation may transfer responsibility of components classified as unsalvageable to an organisation for training or research without mutilation. ▸ **AMC**

AMC 145.A.42(a)(3)(ii) - Acceptance of components

1. Mutilation should be accomplished in such a manner that the components become permanently unusable for their original intended use. Mutilated components should not be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and re-threading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

2. Mutilation may be accomplished by one or a combination of the following procedures:

   a. grinding,

   b. burning,

   c. removal of a major lug or other integral feature,

   d. permanent distortion of parts,

   e. cutting a hole with a cutting torch or saw,

   f. melting,

   g. sawing into many small pieces,

   h. any other method accepted by the MAA on a case by case basis

3. The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:

   a. stamping or vibro-etching,

   b. spraying with paint,

   c. small distortions, incisions or hammer marks,

   d. identification by tag or markings,

   e. drilling small holes,

   f. sawing in two pieces only.

4. Since manufacturers producing approved aircraft components should maintain records of serial numbers for ‘retired’ certified life-limited or other critical components, the organisation that mutilates a component should inform the original manufacturer unless directed otherwise by the MAA.

4. Standard parts used on an aircraft, engine, propeller or other aircraft component when specified in the manufacturer's illustrated parts catalogue and/or the maintenance data. These parts shall be accompanied by a

manufacturer's declaration of conformity traceable to the applicable standard.
▸ **AMC**

AMC 145.A.42(a)(4) - Acceptance of components

STANDARD PARTS

1. For a definition of 'Standard Parts' see DASR Glossary.

2. Documentation accompanying standard parts should clearly relate to the particular parts and contain a conformity statement plus both the manufacturing and supplier source (a Certificate of Conformity is sufficient). Some material is subject to special conditions such as storage condition or life limitation, etc. and this should be included on the documentation and/or material packaging.

3. A DASR Form 1 or equivalent is not normally issued and therefore none should be expected.

5. Material both raw and consumable used in the course of maintenance when the maintenance organisation is satisfied that the material meets the required specification and has appropriate traceability. All material shall be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source. ▸ **AMC**

AMC 145.A.42(a)(5) - Acceptance of components

a. Consumable material is any material which is only used once, such as lubricants, cements, compounds, paints, chemicals, dyes, and sealants, etc.

b. Raw material is any material that requires further work to make it into a component part of the aircraft such as metals, plastics, fabric, etc. Material, both raw and consumable, should only be accepted when satisfied that it is to the required specification.

c. To be satisfied, the material and/or its packaging should be marked with the specification and, where appropriate, the batch number.

d. Documentation accompanying all material should clearly relate to the particular material and contain a conformity statement plus both the manufacturing and supplier source. Some material is subject to special conditions such as storage condition, or life limitation, etc., and this should be included on the documentation and/or material packaging.

e. The material specification is normally identified in the M(S)TC holder's data except in the case where the MAA has agreed otherwise. A DASR Form 1 or equivalent should not be issued for such material, and, therefore, none should be expected.

f. Items purchased in batches (fasteners, etc.) should be supplied in a package. The packaging should state the applicable specification/standard, P/N, batch number, and the quantity of the items. The documentation accompanying the material should contain the applicable specification/standard, P/N, batch number, supplied quantity,

and the manufacturing sources. If the material is acquired from different batches, acceptance documentation for each batch should be supplied.

6. NOT APPLICABLE.

(b) Prior to installation of a component, the maintenance organisation shall ensure that the particular component is eligible to be fitted when different modification and/or AD standards may be applicable. ▸ **AMC**

AMC 145.A.42(b) - Acceptance of components

a. The DASR Form 1 (or other equivalent forms detailed at AMC DASR 145.A.42(a)) identifies the status of an aircraft component. Block 12 'Remarks' on the DASR Form 1 in some cases contains vital airworthiness related information which may need appropriate and necessary actions. The receiving maintenance organisation should be satisfied that the component in question is in satisfactory condition and has been appropriately released to service. In addition, the maintenance organisation should ensure that the component meets the approved data/standard, such as the required design and modification standard. This may be accomplished by reference to the manufacturer's parts catalogue or other approved data (i.e. Service Bulletin). Care should also be taken in ensuring compliance with applicable ADs, the status of any life-limited parts fitted to the aircraft component as well as CDCCLs (if applicable).

b. To ensure a component is in a satisfactory condition, the maintenance organisation should perform checks and verifications.

c. Performance of the above checks and verifications should take place before the component is installed on the aircraft.

d. The following list, though not exhaustive, contains typical checks to be performed:

i. verify the general condition of components and their packaging in relation to damages that could affect the integrity of the components;

ii. verify that the shelf life of the component has not expired;

iii. verify that items are received in the appropriate package in respect of the type of component: e.g. correct ATA 300 or electrostatic sensitive devices packaging, when necessary;

iv. verify that the component has all plugs and caps appropriately installed in accordance with approved data to prevent damage or internal contamination.

(c) The maintenance organisation may fabricate a restricted range of parts to be used in the course of undergoing work within its own facilities, or other facilities if this is approved by the MAA, provided procedures are identified in the MOE. ▸ **AMC**

AMC 145.A.42(c) - Acceptance of components

1. The agreement by the MAA for the fabrication of parts by the maintenance organisation should be formalised through the approval of a detailed procedure in the MOE. This AMC contains principles and conditions to be taken into account for the preparation of an acceptable procedure.

2. Fabrication, inspection, assembly and test should be clearly within the technical and procedural capability of the maintenance organisation.

3. All necessary data to fabricate the part should be approved either by the MAA or the (Military) Type Certificate (TC) holder or DASR 21 Design Organisation Approval holder, or (Military) Supplemental Type Certificate (STC) holder.

4. Items fabricated by a maintenance organisation may only be used by that maintenance organisation in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The fabrication of parts for other facilities may only take place if approved by the MAA. The permission to fabricate does not constitute approval for manufacture and the parts do not qualify for certification on DASR Form 1. This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification. Fabricated parts are to be clearly labelled in a manner identified by the MAA.

5. Fabrication of parts, modification kits etc for onward supply may not be conducted by a maintenance organisation, unless otherwise approved by the MAA.

6. The data specified in paragraph 3 may include repair procedures involving the fabrication of parts. Where the data on such parts is sufficient to facilitate fabrication, the parts may be fabricated by a maintenance organisation. Care should be taken to ensure that the data includes details of part numbering, dimensions, materials, processes, and any special manufacturing techniques, special raw material specification or/and incoming inspection requirement and that the maintenance organisation has the necessary capability. That capability should be defined by way of MOE content. Where special processes or inspection procedures are defined in the approved data which are not available at the maintenance organisation, the maintenance organisation cannot fabricate the part unless the (Military) TC/STC-holder or DASR 21 Design Organisation Approval holder gives an approved alternative.

7. Examples of fabrication under the scope of a DASR 145 approval can include but are not limited to the following:

   a) Fabrication of bushes, sleeves and shims.

   b) Fabrication of secondary structural elements and skin panels.

   c) Fabrication of control cables.

   d) Fabrication of flexible and rigid pipes.

   e) Fabrication of electrical cable looms and assemblies.

   f) Formed or machined sheet metal panels for repairs.

   All the above fabricated parts, should be in accordance with data provided in overhaul or repair manuals, modification schemes and service bulletins, drawings or otherwise approved by the MAA.

Note: It is not acceptable to fabricate any item to pattern unless an engineering drawing of the item is produced which includes any necessary fabrication processes and which is acceptable to the MAA.

8. Where a (Military)TC/STC holder or a DASR 21 Approved Production Organisation is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the MAA in accordance with a procedure specified in the MOE.

9. Inspection and Identification.

Any locally fabricated part should be subjected to an inspection stage before, separately, and preferably independently from, any inspection of its installation. The inspection should establish full compliance with the relevant manufacturing data, and the part should be unambiguously identified as fit for use by stating conformity to the approved data. Adequate records should be maintained of all such fabrication processes including heat treatment and the final inspections. Fabricated parts are to be clearly labelled in a manner identified by the MAA. All parts, except those having not enough space, should carry a part number which clearly relates it to the manufacturing/inspection data. Additional to the part-number the maintenance organisation's identity should be marked on the part for traceability purposes.

(d) Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system unless certified life limits have been extended or a repair solution has been approved according to DASR 21. ▸ **AMC** ▸ **GM**

GM 145.A.42(d) - Acceptance of components

It is common practice for possessors of aircraft components to dispose of unsalvageable components by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale and in the active parts inventories of the aviation community. Misrepresentation of the status of components and the practice of making such items appear serviceable have resulted in the use of unsalvageable non-conforming components. Therefore organisations disposing of unsalvageable aircraft components should consider the possibility of such components later being misrepresented and sold as serviceable components.

AMC 145.A.42(d) - Acceptance of components

1. The following types of components should typically be classified as unsalvageable:

a. Components with non-repairable defects, whether visible or not to the naked eye;

b. Components that do not meet design specifications, and cannot be brought into conformity with such specifications;

c. Components subjected to unacceptable modification, repair or rework that is irreversible;

d. Certified life-limited parts that have reached or exceeded their certified life limits, or have missing or incomplete records;

e. Components that cannot be returned to an airworthy condition due to exposure to extreme forces, heat or adverse environment;

f. Components for which conformity with an applicable AD cannot be accomplished;

g. Components for which maintenance records and/or traceability to the manufacturer/maintenance organisation cannot be retrieved.

2. Caution should be exercised to ensure that unsalvageable components are disposed of in a manner that does not allow them to be returned to service.

(e) NOT APPLICABLE.

145.A.45 - Maintenance data

(a) The maintenance organisation shall have access to and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. 'Applicable' means relevant to any aircraft, component or process specified in the Maintenance Organisation Approval Schedule and in any associated capability list.

In the case of maintenance data provided by a CAMO/Operating Organisation, the maintenance organisation shall have access to such data when the work is in progress, with the exception of the need to comply with DASR 145.A.55(c).

(b) For the purposes of DASR 145, applicable maintenance data shall be any of the following: ▸ **AMC**

AMC 145.A.45(b) - Maintenance data

1. Except as specified in subparagraph 5, each AMO should have access to and use the following minimum maintenance data relevant to the AMO's approval class rating: all maintenance related requirements and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by a MAA requirement, procedure or directive and all applicable ADs as well as CDCCLs (if applicable).

2. In addition to subparagraph 1, an AMO with an approval class rating in Category A – Aircraft, should have access to and use the following maintenance data where published: the appropriate sections of the Aircraft Maintenance Programme, Aircraft Maintenance Manual, repair manual, supplementary structural inspection document, corrosion control document, Service Bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, (Military) TC data sheet and any other specific document issued by the (Military) TC/STC holder or MAA as maintenance data.

3. In addition to subparagraph 1, an AMO with an approval class rating in Category B — Engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the engine/APU maintenance and repair manual,

Service Bulletins, service letters, modification leaflets, non-destructive testing (NDT) manual, parts catalogue, (Military) Type Certificate data sheet and any other specific document issued by the (Military) TC/STC holder or MAA as maintenance data.

4. In addition to subparagraph 1, an AMO with an approval class rating in Category C – Components other than complete engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the component maintenance and repair manual, Service Bulletins and service letters plus any document issued by the (Military) TC/STC holder or MAA as maintenance data on whose product the component may be fitted when applicable.

5. Appropriate sections of the subparagraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have access to almost complete set(s) of the maintenance data whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.

6. An AMO only approved in class rating Category D – Specialised services, should hold and use all applicable specialised service(s) process specifications.

1. Any applicable requirement, procedure, operational directive or information issued by or provided by the MAA;

2. Any applicable AD issued by the MAA;

3. Instructions for Continuing Airworthiness, issued by (Military) Type Certificate (MTC) holders, (Military) Supplementary Type Certificate (MSTC) holders, any other organisation required to publish such data by DASR 21 and in the case of aircraft or components from third countries the airworthiness data mandated by the Authority responsible for the oversight of the aircraft or component and accepted by the MAA;

4. Any applicable standard, such as but not limited to, maintenance standard practices recognised by the MAA as a good standard for maintenance;

5. Any applicable data issued in accordance with paragraph (d).

(c) The maintenance organisation shall establish procedures to ensure that if found, any inaccurate, incomplete or ambiguous procedure, practice, information or maintenance instruction contained in the maintenance data used by maintenance personnel is recorded and notified to the author of the maintenance data. ▸ **AMC**

AMC 145.A.45(c) - Maintenance data

1. The referenced procedure should ensure that when maintenance personnel discover inaccurate, incomplete or ambiguous information in the maintenance data they should record the details. The procedure should then ensure that the maintenance organisation notifies the problem to the author of the maintenance data in a timely manner. A record of such communications to the author of the maintenance data should be retained by the maintenance organisation until such time as the (Military) TC/STC holder, DASR 21 Design Organisation Approval holder or MAA has clarified the issue by e.g. amending the maintenance data.

2. The referenced procedure should be specified in the MOE.

(d) The maintenance organisation may only modify maintenance instructions in accordance with a procedure specified in the MOE. With respect to those changes, the maintenance organisation shall demonstrate that they result in equivalent or improved maintenance standards and shall inform the MTC holder/MSTC holder of such changes. Maintenance instructions for the purposes of this paragraph means instructions on how to carry out the particular maintenance task: they exclude the engineering design of repairs and modifications. ▸ **AMC**

AMC 145.A.45(d) - Maintenance data

1. The referenced procedure should address the need for a practical demonstration by the maintenance personnel to the quality personnel of the proposed modified maintenance instruction. When satisfied the quality personnel should approve the modified maintenance instruction and ensure that the (Military) TC/STC holder, DASR 21 Design Organisation Approval holder or MAA and CAMO is informed of the modified maintenance instruction. The procedure should include a paper/electronic traceability of the complete process from start to finish and ensure that the relevant maintenance instruction clearly identifies the modification. Modified maintenance instructions should only be used in the following circumstances:

   a. Where the (Military) TC/STC holder, DASR 21 Design Organisation Approval holder or MAA's original intent can be carried out in a more practical or more efficient manner.

   b. Where the (Military) TC/STC holder, DASR 21 Design Organisation Approval holder or MAA's original intent cannot be achieved by following the maintenance instructions. For example, where a component cannot be replaced following the original maintenance instructions.

   c. For the use of alternative tools/equipment.

Important Note: CDCCLs are airworthiness limitations. Any modification of the maintenance instructions linked to CDCCLs constitutes an aircraft modification that should be approved in accordance with DASR 21.

(e) The maintenance organisation shall provide a common work card or worksheet system to be used throughout relevant parts of the maintenance organisation. In addition, the maintenance organisation shall either transcribe accurately the maintenance data contained in paragraphs (b) and (d) onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data. Work cards and worksheets may be computer generated and held on an electronic database subject to both adequate safeguards against unauthorised alteration and a back-up electronic database which shall be updated within 24 hours of any entry made to the main electronic database. Complex maintenance tasks shall be transcribed onto the work cards or worksheets and subdivided into clear stages to ensure a record of the accomplishment of the complete maintenance task. ▸ **AMC** ▸ **GM**

GM 145.A.45(e) - Maintenance data

'Complex maintenance tasks' are neither minor scheduled line maintenance tasks nor simple defect rectification tasks. They therefore cannot be certified by a Category A MAML holder.

AMC 145.A.45(e) - Maintenance data

1. The maintenance organisation should:

   a. Transcribe accurately the maintenance data onto such work cards or worksheets, or

   b. Make precise reference to the particular maintenance task(s) contained in such maintenance data, which already identifies the task as a CDCCL where applicable.

2. Relevant parts of the maintenance organisation means with regard to aircraft base maintenance, aircraft line maintenance, engine workshops, mechanical workshops and avionic workshops. Therefore, engine workshops for example should have a common system throughout such engine workshops that may be different to that in the aircraft base maintenance.

3. The workcards should differentiate and specify, when relevant, disassembly, accomplishment of task, reassembly and testing. In the case of a lengthy maintenance task involving a succession of personnel to complete such a task, it may be necessary to use supplementary workcards or worksheets to indicate what was actually accomplished by each individual person.

Where the maintenance organisation provides a maintenance service to an Operating Organisation/CAMO who requires their work card or worksheet system to be used then such work card or worksheet system may be used. In this case, the maintenance organisation shall establish a procedure to ensure correct completion of the Operating Organisation's/CAMO's work cards or worksheets.

(f) The maintenance organisation shall ensure that all applicable maintenance data is readily available for use when required by maintenance personnel. ▸ **AMC**

AMC 145.A.45(f) - Maintenance data

1. Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors, mechanics, certifying and support staff to study.

2. Where computer systems are used, the number of computer terminals or maintenance data access points should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.

(g) The maintenance organisation shall establish a procedure to ensure that maintenance data it controls is kept up to date. In the case of maintenance data controlled and provided by the Operating Organisation/CAMO, the maintenance organisation shall be able to show that either it has written confirmation from the Operating Organisation/ CAMO that all such maintenance data is up to date or it has work orders specifying the

amendment status of the maintenance data to be used or it can show that it is on the Operating Organisation's/CAMO's maintenance data amendment list. ▸ **AMC**

AMC 145.A.45(f) - Maintenance data

1. To keep data up-to-date, a procedure should be set up to monitor the amendment status of all data and maintain a check that all amendments are being received by being a subscriber to any document amendment scheme. Special attention should be given to (military) TC/STC related data such as certification life-limited parts, airworthiness limitations and Airworthiness Limitation Items (ALI), etc.

2. If paper copies are printed from computer systems, a procedure should be in place to ensure the control or destruction of such copies after use.

145.A.47 - Maintenance planning

(a) The maintenance organisation shall have a system appropriate to the amount and complexity of work to plan the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities in order to ensure the safe completion of the maintenance work. ▸ **AMC**

AMC 145.A.47(a) - Maintenance planning

1. Depending on the amount and complexity of work generally performed by the maintenance organisation, the planning system may range from a very simple procedure to a complex organisational set-up including a dedicated planning function in support of the maintenance function.

2. For the purpose of DASR 145, the maintenance planning function should include two complementary elements:

   – scheduling the maintenance work ahead, to ensure that it will not adversely interfere with other work as regards the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities.

   – during maintenance work, organising maintenance teams and shifts and provide all necessary support to ensure the completion of maintenance without undue time pressure.

3. When establishing the maintenance planning procedure, consideration should be given to the following

   – logistics,

   – inventory control,

   – square meters of accommodation,

   – person-hours estimation,

   – person-hours availability,

   – preparation of work,

– hangar availability,

– environmental conditions (access, lighting standards and cleanliness),

– co-ordination with contracted/tasked maintenance organisations, internal and external suppliers, etc.

– scheduling of safety-critical tasks during periods when staff are likely to be most alert,

– military operational commitments,

– location, (eg Main Operating Base, Deployed Operating Base).

(b) The planning of maintenance tasks, and the organising of shifts, shall take into account human performance limitations. ▸ **AMC**

AMC 145.A.47(b) - Maintenance planning

Limitations of human performance, in the context of planning safety related tasks, refers to the upper and lower limits, and variations, of certain aspects of human performance (Circadian rhythm / 24 hours body cycle) which personnel should be aware of when planning work and shifts.

(c) When it is required to hand over the continuation or completion of maintenance tasks for reasons of a shift or personnel changeover, relevant information shall be adequately communicated between outgoing and incoming personnel. ▸ **AMC**

AMC 145.A.47(c) - Maintenance planning

The primary objective of the changeover / handover information is to ensure effective communication at the point of handing over the continuation or completion of maintenance actions. Effective task and shift handover depends on three basic elements:

a. The outgoing person's ability to understand and communicate the important elements of the job or task being passed over to the incoming person.

b. The incoming person's ability to understand and assimilate the information being provided by the outgoing person.

c. A formalised process for exchanging information between outgoing and incoming persons and a planned shift overlap and a place for such exchanges to take place.

145.A.48 - Performance of maintenance

(a) All maintenance shall be performed by qualified personnel, following the methods, techniques, standards, and instructions specified in the DASR 145.A.45 maintenance data.

(b) An independent inspection shall be carried out after any flight safety sensitive maintenance task unless otherwise specified in this DASR or agreed by the MAA. ▸ **AMC**

AMC 145.A.48(b) - Performance of maintenance

a. The manufacturer's Instructions for Continuing Airworthiness should be followed when determining the need for an independent inspection.

b. In the absence of maintenance and inspection standards published by the organisation responsible for the type design, maintenance tasks that involve the assembly or any disturbance of a control system and that, if errors occurred, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft should be considered as flight safety sensitive maintenance tasks needing an independent inspection. A control system is an aircraft system by which the flight path, attitude, or propulsive force of the aircraft is changed, including the flight, engine and propeller controls (but not limited to these systems), the related system controls and the associated operating mechanisms. Maintenance tasks associated with the crew escape and safety systems should also be considered as flight safety sensitive maintenance tasks.

c. A maintenance task requiring an independent inspection consists of an authorised person signing the maintenance task/release, who assumes full responsibility for the satisfactory completion of the work, before being subsequently inspected by an independent competent and authorised person who attests to the satisfactory completion of the work recorded and that no deficiencies have been found.

1. A maintenance task requiring an independent inspection should therefore involve at least two persons, to ensure correct assembly, locking and sense of operation. A technical record of the inspection should contain the signatures of both persons before the relevant certificate of release to service is issued.

2. The independent competent and authorised person is not issuing a maintenance release, therefore, is not required to hold certification privileges. However, they should be suitably qualified to carry out the inspection and must not have been involved in the work.

d. The maintenance organisation should have procedures to demonstrate that independent signatories have been trained, and have gained experience on the specific systems being inspected.

e. The following maintenance tasks should primarily be considered when inspecting aircraft control and crew escape and safety systems that have been disturbed:

1. installation, rigging, and adjustment of flight controls;

2. installation of aircraft engines, propellers; and rotors; and

3. overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes; and
installation and maintenance carried out on ejection seats.

Consideration should also be given to:

1. previous experience of maintenance errors, depending on the consequences of the failure; and

2. information arising from an 'occurrence reporting system'; and

3. information arising from the Operating Organisation/CAMO.

f. When inspecting control systems and crew escape and safety systems that have undergone maintenance, the person signing the maintenance release and the person performing the independent inspection should consider the following points independently:

1. all those parts of the system that have actually been disconnected or disturbed, should be inspected for correct assembly and locking;

2. the system as a whole should be inspected for full and free movement over the complete range;

3. cables should be tensioned correctly with adequate clearance at secondary stops;

4. the operation of the system as a whole should be observed to ensure that the controls are operating in the correct sense;

5. if the system is duplicated to provide redundancy, each system should be inspected separately; and

6. if different systems are interconnected so that they affect each other, all interactions should be inspected through the full range of the applicable controls.

(c) Only the authorised certifying staff according to DASR 145.A.35 and in consultation with the CAMO as necessary, can decide, using DASR 145.A.45 maintenance data, whether an aircraft defect hazards seriously the flight safety and therefore decide when and which rectification action shall be taken before further flight and which defect rectification can be deferred. However, this does not apply when: ▸ **AMC**

AMC 145.A.48(c) - Performance of maintenance

An assessment of both the cause and any potentially hazardous effect of any defect or combination of defects that could affect flight safety should be made in order to initiate any necessary further investigation and analysis necessary to identify the root cause of the defect and reported to the CAMO/Operating Organisation.

1. the approved Minimum Equipment List as mandated by the MAA is used; or

2. aircraft defects are defined as being acceptable by the MAA.

(d) After completion of all maintenance, a general verification shall be carried out to ensure the aircraft or component is clear of all tools, equipment, and any other extraneous parts and material, and that all access panels removed have been refitted.

145.A.50 - Certification of maintenance

(a) A CRS for aircraft and a CRS for components shall be issued by appropriately authorised certifying staff on behalf of the AMO when it has been verified that all maintenance ordered/tasked has been properly carried out in accordance with the procedures specified in DASR 145.A.70, taking into account the availability and use of the maintenance data specified in DASR 145.A.45 and that there are no non-compliances which are known to endanger flight safety. ▸ **AMC**

AMC 145.A.50(a) - Certification of maintenance

'Endanger flight safety' means any instance where safe operation could not be assured or which could lead to an unsafe condition. It typically includes, but is not limited to, significant cracking, deformation, corrosion or failure of primary structure, any evidence of burning (including overheating), electrical arcing, significant hydraulic fluid or fuel leakage and any emergency system or total system failure. An AD overdue for compliance is also considered a hazard to flight safety.

(b) A CRS for aircraft shall be issued before flight at the completion of any maintenance. ▸ **AMC**

AMC 145.A.50(b) - Certification of maintenance

1. The CRS for aircraft should contain the following statement:

   'Certifies that the work specified, except as otherwise specified, was carried out in accordance with DASR 145 and in respect to that work the aircraft/aircraft component is considered ready for release to service'.

   Reference should also be made to the DASR 145 approval number.

2. It is acceptable to use an alternate abbreviated CRS for aircraft consisting of the following statement 'DASR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated CRS is used, the introductory section of the aircraft technical log should include an example of the full certification statement from paragraph 1.

3. The CRS should relate to the task specified in the (Military) TC/STC holder's or Operating Organisation's/CAMO's instructions or the Aircraft Maintenance Programme which itself may cross-refer to maintenance data.

4. The date such maintenance was carried out should include when the maintenance took place relative to any life or overhaul limitation in terms of date/flying hours/cycles/ landings etc., as appropriate.

5. When extensive maintenance has been carried out, it is acceptable for the CRS to summarise the maintenance as long as there is a unique cross-reference to the work package containing full details of maintenance carried out. Dimensional information should be retained in the approved maintenance record keeping system.

(c) New defects or incomplete maintenance work orders identified during the above maintenance shall be brought to the attention of the Operating Organisation/CAMO for the specific purpose of obtaining agreement to rectify such defects or completing the

missing elements of the maintenance work order. In the case where the Operating Organisation/CAMO declines to have such maintenance carried out under this paragraph, paragraph (e) is applicable.

(d) A CRS for components shall be issued at the completion of any maintenance on a component whilst off the aircraft. The authorised release certificate or airworthiness approval tag identified as DASR Form 1 constitutes the component CRS. When an AMO maintains a component for its own use, a DASR Form 1 may not be necessary depending upon the AMO's internal release procedures defined in the MOE. ▸ **AMC1** ▸ **AMC2**

AMC2 145.A.50(d) - Certification of maintenance

1. A component which has been maintained off the aircraft needs the issuance of a CRS for such maintenance and another CRS in regard to being installed properly on the aircraft when such action occurs.

2. NOT APPLICABLE

AMC1 145.A.50(d) - Certification of maintenance

1. The purpose of the CRS is to release assemblies/items/components/parts (hereafter referred to as 'item(s)') after maintenance and to release maintenance work carried out on such items under the approval of a MAA and to allow items removed from one aircraft/aircraft component to be fitted to another aircraft/aircraft component.

2. The CRS is to be used for export/import purposes, the transfer of items between authorities as well as for domestic purposes, and serves as an official certificate for items from the manufacturer/AMO to users.

3. It can only be issued by AMOs within the scope of their approval.

4. NOT APPLICABLE

5. A CRS should not be issued for any item when it is known that the item is unserviceable except in the case of an item undergoing a series of maintenance processes at several AMOs and the item needs a certificate for the previous maintenance process carried out for the next AMO to accept the item for subsequent maintenance processes. In such a case, a clear statement of limitation should be endorsed in Block 12 of DASR Form 1—Authorised Release Certificate, (or equivalent).

(e) By way of exception to paragraph (a), when the AMO is unable to complete all maintenance ordered/tasked, it may issue a CRS within the approved aircraft limitations. The AMO shall enter such fact in the aircraft CRS before the issue of such certificate. Details of any deferred maintenance are to be entered in the aircraft technical log by appropriately approved certifying staff. ▸ **AMC**

AMC 145.A.50(e) - Certification of maintenance

1. Being unable to establish full compliance with sub-paragraph DASR 145.A.50(a) means that the maintenance required by the CAMO could not be completed due either to running out of available aircraft maintenance downtime for the scheduled check or by virtue of the condition of the aircraft requiring additional maintenance downtime.

2. The CAMO is responsible for ensuring that all required maintenance has been carried out before flight and therefore DASR 145.A.50(e) requires the CAMO to be informed in the case where full compliance with DASR 145.A.50(a) cannot be achieved. If the CAMO agrees to the deferment of full compliance, then the 'CRS for aircraft' may be issued subject to details of the deferment, including the CAMO's authority, being endorsed on the certificate.

NOTE: Whether or not the CAMO does have the authority to defer maintenance is an issue between the CAMO and the MAA. In case of doubt concerning such a decision of the CAMO, the AMO should inform its MAA on such doubt, before issuing the CRS. This should allow the MAA to investigate the matter as appropriate.

3. The procedure should draw attention to the fact that DASR 145.A.50(a) does not normally permit the issue of a 'CRS for aircraft' in the case of non-compliance and should state what action the mechanic, supervisor and certifying staff should take to bring the matter to the attention of the relevant department or person responsible for technical co-ordination with the CAMO so that the issue may be discussed and resolved. In addition, the appropriate person(s) as specified in DASR 145.A.30(b) should be kept informed in writing of such possible non-compliance situations and this should be included in the procedure.

(f) By way of exception to paragraphs (a) and DASR 145.A.42 when an aircraft is grounded at a location other than the Main Operation Base (MOB) due to the non-availability of a component with an appropriate release certificate, it is permissible to temporarily fit a component with another release certificate, subject to CAMO approval, which is in compliance with all the applicable technical and operational requirements. The fitment of such components shall be noted in the aircraft documentation, with a provision for the component to be removed at a time specified by the CAMO, unless an appropriate release certificate has been obtained in the meantime under paragraph (a) and DASR 145.A.42. ▸ **AMC**

AMC 145.A.50(f) - Certification of maintenance

1. 'Appropriate release certificate' means a certificate which clearly states that the aircraft component is serviceable and clearly specifies the AMO releasing this component together with details of the authority under whose approval the AMO works including the approval or authorisation reference.

2. 'Compliance with all other technical and operational requirements' means making an appropriate entry in the aircraft technical log, checking for compliance with type design standards, modifications, repairs, ADs, life limitations and condition of the aircraft component plus information on where, when and why the aircraft was grounded.

145.A.55 - Maintenance records

(a) The maintenance organisation shall record all details of maintenance work carried out. As a minimum, the AMO shall retain records necessary to prove that all requirements have been met for issuance of the CRS, including all release documents. ▸ **GM**

GM 145.A.55(a) - Maintenance records

1. Properly executed and retained records provide CAMOs and maintenance personnel with information essential in controlling unscheduled and scheduled maintenance, and trouble-shooting to eliminate the need for re-inspection and rework to establish airworthiness.

   The prime objective is to have secure and easily retrievable records with comprehensive and legible contents. The aircraft record should contain basic details of all serialised aircraft components and all other significant aircraft components installed, to ensure traceability to such installed aircraft component documentation and associated maintenance data as specified in DASR 145.A.45.

2. Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When CAMOs wish to take advantage of the modular design, then total time in service and maintenance records for each module are to be maintained. The maintenance records as specified are to be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

3. Reconstruction of lost or destroyed records can be done by reference to other records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics etc. When these things have been done and the record is still incomplete, the CAMO may make a statement in the new record describing the loss and establishing the time in service based on the research and the best estimate of time in service. The reconstructed records should be submitted to the MAA for acceptance.

   NOTE: Additional maintenance may be required.

4. The maintenance record can be either a paper or computer system or any combination of both.

5. Paper systems should use robust material which can withstand normal handling and filing. The record should remain legible throughout the required retention period.

6. Computer systems may be used to control maintenance and/or record details of maintenance work carried out. Computer systems used for maintenance should have at least one backup system which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorised personnel to alter the database.

   NOTE: An AMO's responsibility for recording all details of the maintenance work carried out ends with the completion of the CRS. It is the CAMO's responsibility to enter the information given in the CRS into the aircraft continuing airworthiness record system.

(b) The AMO shall provide a copy of each CRS to the CAMO, together with a copy of any specific repair/modification data used for repairs/modifications carried out.

(c) The AMO shall retain a copy of all detailed maintenance records and any associated maintenance data for three years from the date the aircraft or component to which the work relates was released from the AMO. ▸ **AMC** ▸ **GM**

GM 145.A.55(c) - Maintenance records (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

AMC 145.A.55(c) - Maintenance records

Associated maintenance data is specific information such as repair and modification data. This does not necessarily require the retention of all Aircraft Maintenance Manual, Component Maintenance Manual, Illustrated Parts Catalogue etc. issued by the (Military) TC/ STC holder. Maintenance records should refer to the revision status of the data used.

1. Records under this paragraph shall be stored in a manner that ensures protection from damage, alteration and theft. The records shall remain readable and accessible for the duration of the storage period. ▸ **GM**

GM1 to 145.A.55(c)(1) - Maintenance records (AUS)

1. The record keeping system should ensure that all records are accessible whenever needed within a reasonable time. These records should be organised in a way that ensures traceability and retrievability throughout the required retention period.

2. Records should be kept in paper form, or in electronic format, or a combination of both. Records stored on microfilm or optical disc format are also acceptable. The records should remain legible throughout the required retention period. The retention period starts when the record has been created or last amended.

3. Paper systems should use robust material which can withstand normal handling and filing.

4. Systems used for maintenance should have at least one backup system which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorised personnel to alter the database. DASR 145.A.55.

5. The prime objective is to have secure and easily retrievable records with comprehensive and legible contents. The aircraft record should contain basic details of all serialised aircraft components and all other significant aircraft components installed, to ensure traceability to such installed aircraft component documentation and associated maintenance data as specified in DASR 145.A.45.

6. Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition. When hardware or software changes take place, special care should be taken that all necessary data continues to be accessible at least through the required retention period. DASR 145.A.55.

7. The system of certification should provide an effective trail of accountability to show which employee carried out maintenance, who issued maintenance certifications and

CRS, including the authorisation identification numbers of the employees involved; the date of the accomplishments and the maintenance data used.

8. **Authentication**: the means by which a system validates the identity of an authorised user. This may include a password, a personal identification number (PIN), a cryptographic key, a badge, or a stamp. Authenticate means to validate or establish to be genuine such that the matter being authenticated will have legal force or be legally binding.

9. **Electronic Signature**: any signature made using an electronic communication. Where an electronic signature is used to satisfy a requirement under Commonwealth law, the method used must be as reliable as is appropriate for the circumstances of the information communicated and complies with the relevant Government agency's requirements for applying that method. An electronic signature can combine cryptographic functions of digital signatures with the image of a person's handwritten signature or some other form of visible mark that would be considered acceptable in the circumstances.

10. **Integrity** - The information contained in the communication must retain its integrity. This means the information must remain complete and unaltered (apart from the addition of an endorsement, or any immaterial change arising in the normal course of communication, storage or display). This may include, for example, information added to the communication that is necessary to identify the message for storage purposes.

11. There is a reliable means of assuring the maintenance of the integrity of the information. This could be accomplished by having a record of transactions including records of entries and alterations of entries which identifies the person by name, date and identifiable number who makes the entry and any alteration. Corrected errors are alterations to the record that need to be identified as and include the reason for the correction.

12. There is a mechanism for version control to ensure that, where a document is changed, those changes can be tracked and all users can access the current version.

13. To guarantee the authenticity of records, the system must be capable of establishing if the records have been altered by any person or process; establishing the reliability of software applications used to create records; displaying the time and date records were created or altered; demonstrating the name and identity of any person who created, accessed or altered them; and displaying an altered record prior to and after its alteration.

14. An electronic signature should not be capable of being affixed to a record where the person's qualification and authorisation are not appropriate to the record.

15. Before DASA can accept an electronic signature for certification purposes, the method used must be able to reliably identify the signatory in a way that is difficult for an unauthorised person to duplicate. This can be done by using an authentication procedure that validates the identity of the signatory. For example, an individual using an electronic signature should be required to identify themselves and the system that produces the electronic signature should then authenticate that identification. The

signature must also include the licence or certificate number issued by DASA or, where the person is exercising an authorisation issued by an organisation, that identification.

16. The scope of information attested by an electronic signature must be understood by the signatory and be apparent to subsequent readers of the record, record entry, or document. While handwritten documents use the physical proximity of the signature to the information in order to identify those items attested to by a signature, electronic documents may not use the position of a signature in the same way. It is therefore important to clearly delineate the specific sections of a record or document that are affected by a signature from those sections that are not affected. Acceptable methods of delineation of the affected areas include, but are not limited to: highlighting, contrast inversion or the use of borders or flashing characters. In addition, the system should notify the signatory that the signature has been affixed.

17. The security of an individual's handwritten signature is maintained by ensuring it is difficult for another person to duplicate or alter it. An electronic signature should maintain an equivalent level of security. Due to the reproduction capability inherent in an electronic system, an electronic system used to produce a signature should restrict the ability of any person to cause another individual's signature to be affixed to record, record entry, or document. Such a system enhances safety by precluding an unauthorised person from certifying required documents, such as a maintenance release. The signatory must also know who else holds the privilege for access to the electronic authentication key.

18. An electronic signature should prevent a signatory from denying that they affixed a signature to a specific record, record entry, or document. The more difficult it is to duplicate a signature, the greater the likelihood that a signature was created by the signatory. Those security features of an electronic system that make it difficult for another person to duplicate a signature or alter a signed document tend to ensure that a signature was indeed made by the signatory.

19. Organisations intending to use electronic signatures should consult with DASA before implementing an electronic signature system of certification. A written description of how electronic signatures will be used in maintenance or other activities should be submitted along with draft copies of the applicable regulatory required manuals. DASA will review the electronic signature methods proposed.

20. **Acceptance of Systems:** The prior acceptance of a system of electronic recordkeeping system or a system using electronic signatures by an aircraft designer/manufacturer/ AMO does not mean an automatic acceptance by DASA for use of the product by your organisation. Whilst the software and hardware may be the same, the assessment will be carried out based on how you will use the system (as described in your exposition/ procedures manual) and what you propose to do with that system. A statement of conformity of your system (by the software vendor) that the system is being used by an organisation equivalent to your own may assist in the approval process. The organisation must provide a copy of the procedures to be used for implementing an electronic record keeping system, for approval, to DASA with oversight jurisdiction.

21. **Security**. The security mechanisms provided for an electronically formatted certification, record or management system requires the following attributes: The electronic system must maintain information confidentially. The system must ensure

that there cannot be unauthorised alterations to the record. A corresponding policy and management structure must support the hardware and software that delivers the information. Before introducing an electronic system, the organisation's exposition/ procedures must include the following: a mechanism for version control; an audit procedure that can ensure the integrity of each computerised workstation and verify whether records have been accessed improperly; a procedure for conducting a review of the use of any personal identification codes by the system to ensure that it will not permit password duplication; a procedure that establishes an audit of the computer system at a frequency sufficient to ensure the integrity of the system eg by demonstrating that access to records is restricted to authorised persons or applications; a procedure that describes how it will ensure that the computerised records will be transmitted to other organisations in a format acceptable to them; a procedure for making required records available to DASA personnel, eg by providing access to the system via a logon portal, so that they can make paper copies of viewed information; guidelines for the use of electronic signatures for contractors; and a description of the training procedure and requirements to authorise access to the system.

2. Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition.

3. Where an AMO terminates its operation, all retained maintenance records covering the last three years shall be distributed to the CAMO responsible for the respective aircraft or component or shall be stored as specified by the MAA. ▸ **GM**

GM 145.A.55(c)(3) - Maintenance records (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

145.A.60 - Occurrence reporting

(a) The maintenance organisation shall report to the MAA and all further addressees as required by national regulations any condition of the aircraft or component identified by the maintenance organisation that has resulted or may result in an unsafe condition that hazards seriously the flight safety. ▸ **GM**

GM 145.A.60(a) - Occurrence reporting (AUS)

Occurrences are likely to be identified as failures, malfunctions or defect identified during the operation of the aircraft or performance of maintenance.

Occurrences also include human factors that may result in an unsafe condition that are identified during maintenance or maintenance management.

A list of occurrences to be reported are detailed in the AMC GR.40 - Occurrence Reporting. This is not a comprehensive list and an additional requirement may need to be considered dependent on the scope of the organisations operations.

The following Sections are the most relevant to DASR 145 organisations:

SECTION II: AIRCRAFT TECHNICAL

SECTION III: AIRCRAFT MAINTENANCE AND REPAIR

SECTION V: IMMEDIATE NOTIFICATION OF ACCIDENTS AND SERIOUS INCIDENTS

NOTE: Relevant occurrences may occur in other Sections in AMC GR.40 - Occurrence Reporting, eg Section I and Section IV, that require reporting by the DASR 145 organisation.

(b) The maintenance organisation shall establish an internal occurrence reporting system as detailed in the MOE to enable the collection and evaluation of such reports, including the assessment and extraction of those occurrences to be reported under paragraph (a). This procedure shall identify adverse trends, corrective actions taken or to be taken by the maintenance organisation to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary. ▸ **AMC**

AMC 145.A.60(b) - Occurrence reporting

1. The aim of occurrence reporting is to identify the factors contributing to incidents and to make the system resistant to similar errors.

2. An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This should be facilitated by the establishment of a “just culture”. A maintenance organisation should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.

3. The internal reporting process should be closed-loop, ensuring that actions are taken internally to address safety hazards.

4. Feedback to reportees, both on an individual and more general basis, is important to ensure their continued support for the scheme.

(c) The maintenance organisation shall make such reports in a form and manner established by the MAA, and ensure that they contain all pertinent information about the condition and evaluation results known to the maintenance organisation. ▸ **GM**

GM 145.A.60(c) - Occurrence reporting

Each report should contain at least the following information:

i. Maintenance organisation name and approval reference.

ii. Information necessary to identify the subject aircraft and/ or component.

iii. Date and time relative to any life or overhaul limitation in terms of flying hours/ cycles/ landings etc. as appropriate.

iv. Details of the condition as required by DASR 145.A.60(b).

v. Any other relevant information found during the evaluation or rectification of the condition.

The preferred formats are DASR Form 44 - Occurrence Report; or an alternate reporting system as defined in the MOE.

Urgent unsafe conditions should be reported verbally, i.e. via telephone in the first instance. All reporting should be followed by a written report, as time permits.

(d) The maintenance organisation shall report to the CAMO/Operating Organisation any such condition affecting the aircraft or component.

(e) The maintenance organisation shall produce and submit such reports within predefined MAA timeframes, but in any case within 72 hours of the maintenance organisation identifying the condition to which the report relates.

145.A.65 - Safety and quality policy, maintenance procedures, quality system and safety management system

(a) The maintenance organisation shall establish a safety and quality policy for the organisation to be included in the MOE under DASR 145.A.70. ▸ **AMC**

AMC 145.A.65(a) - Safety and quality policy, maintenance procedures, quality system and safety management system

The safety and quality policy should as a minimum include a statement committing the maintenance organisation to:

- Recognise safety as a prime consideration at all times;
- Apply Human factors principles;
- Encourage personnel to report maintenance related errors/incidents;
- Recognise that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel;
- Recognise the need for all personnel to cooperate with the quality auditors;
- Ensure that safety standards are not reduced by commercial / operational imperatives;
- Train all maintenance organisation staff to be aware of human factors and set a continuous training programme in this field.

(b) The maintenance organisation shall establish procedures agreed by the MAA taking into account human factors and human performance to ensure good maintenance practices and compliance with DASR 145 which shall include a clear work order or contract such that aircraft and components may be released to service in accordance with DASR 145.A.50. ▸ **AMC**

AMC 145.A.65(b) - Safety and quality policy, maintenance procedures, quality system and safety mangement system

1. Maintenance procedures should be held current such that they reflect best practice within the maintenance organisation. It is the responsibility of all the maintenance organisation's personnel to report any differences via their maintenance organisation's internal occurrence reporting mechanisms.

2. All procedures, and changes to those procedures, should be verified and validated before use where practicable.

3. All technical procedures should be designed and presented in accordance with good human factors principles.

1. The maintenance procedures under this paragraph apply to DASR 145.A.25 to DASR 145.A.95.

2. The maintenance procedures established or to be established by the maintenance organisation under this paragraph shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialised services and lay down the standards to which the maintenance organisation intends to work. ▸ **AMC**

AMC 145.A.65(b)(2) - Safety and quality policy, maintenance procedures, quality system and safety mangement system

Specialised services include any specialised activity, such as but not limited to non-destructive testing requiring particular skills and/or qualification. DASR 145.A.30(f) covers the qualification of personnel but, in addition, maintenance procedures should be established that cover the control of any specialised process.

3. With regard to aircraft line and base maintenance, the maintenance organisation shall establish procedures to minimise the risk of multiple errors and capture errors on critical systems, and to ensure that no person is required to carry out and inspect in relation to a maintenance task involving some element of disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check. However, when only one person is available to carry out these tasks then the maintenance organisation's work card or worksheet shall include an additional stage for re-inspection of the work by this person after completion of all the same tasks. ▸ **AMC** ▸ **GM**

GM 145.A.65(b)(3) - Safety and quality policy, maintenance procedures, quality system and safety management system

1. Critical Tasks might not jeopardise safety on their own, but there could be a cumulative effect if the same maintainer reproduces the same error when they do the same tasks on several systems. The purpose of this procedure is therefore to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines. Another example is the case of removal and

refitment of multiple oil filler caps on one aircraft/engine or component, which could require a re-inspection of all oil filler caps on that particular aircraft/engine or component after the last oil filler cap has supposedly been refitted.

2. The maintenance of ignition prevention features is necessary for the inherent safety and reliability of an aircraft's fuel tank system. The aircraft cannot be operated indefinitely with the failure of an ignition prevention feature. The failure will have a direct adverse effect on operational safety. It could prevent the continued safe flight and landing of the aircraft or cause serious or fatal injury to the occupants. The fuel system review required will identify ignition prevention features of the design. The failure of any of these features may not immediately result in an unsafe condition, but it may warrant certain maintenance to support continued airworthiness.

AMC 145.A.65(b)(3) - Safety and quality policy, maintenance procedures, quality system and safety management system

1. See DASR GM 145.A.65(b)(3)

2. Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly ('Safety-Critical' tasks). These procedures should identify the method for capturing errors, and the maintenance tasks or processes concerned. In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety:

   – Installation, rigging and adjustments of flight controls;

   – Installation of aircraft engines, propellers and rotors;

   – Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes;

   – Installation and maintenance carried out on ejection seats

   but additional information should also be processed, such as:

   – Previous experiences of maintenance errors, depending on the consequence of the failure;

   – Information arising from the 'occurrence reporting system' required by DASR 145.A.60;

   – MAA requirements for error capturing, if applicable.

3. In order to prevent omissions, every maintenance task or group of tasks should be signed-off. To ensure the task or group of tasks is completed, it should only be signed-off after completion. Work by unauthorised personnel (i.e. temporary staff, trainee,..) should be checked by authorised personnel before they sign-off. The grouping of tasks for the purpose of signing-off should allow critical steps to be clearly identified.

   Note: A "sign-off" is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different to the release

to service of the aircraft. “Authorised personnel” means personnel formally authorised by the maintenance organisation to sign-off tasks. “Authorised personnel” are not necessarily “certifying staff”.

4. The maintenance organisation should ensure that when carrying out a modification, repair or maintenance, CDCCL (if applicable) are not compromised; this should require the development of appropriate procedures where necessary by the maintenance organisation. The maintenance organisation should pay particular attention to possible adverse effects of any wiring change to the aircraft, even a change not specifically associated with the fuel tank system. For example, it should be common practice to identify segregation of fuel gauging system wiring as a CDCCL (if applicable).

Maintenance organisations can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to prevent indiscriminate routing and splicing of wires and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a CDCCL (if applicable). AMC is provided for training to maintenance organisation personnel in Appendix IV to AMC DASR 145.A.30(e).

4. Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data specified in DASR M.A304.

(c) The maintenance organisation shall establish a quality system that includes the following:

1. Independent audits in order to monitor compliance with required aircraft/ aircraft component standards and adequacy of the procedures to ensure that such procedures invoke good maintenance practices and airworthy aircraft/ aircraft components; and ▸ **AMC** ▸ **GM**

GM 145.A.65(c)(1) - Safety and quality policy, maintenance procedures, quality system and safety management system

1. The purpose of this GM is to give guidance on just one acceptable working audit plan to meet part of the needs of DASR 145.A.65(c)1. There is any number of other acceptable working audit plans.

2. The proposed plan lists the subject matter that should be covered by the audit and attempts to indicate applicability in the various types of workshops and aircraft facilities. The list should therefore be tailored for the particular situation and more than one list may be necessary. Each list should be shown against a timetable to indicate when the particular item is scheduled for audit and when the audit was completed.

PARA	Comment	HANGAR	ENGINE Workshop	MECH Workshop	AVIONICS Workshop
145.A.25		Yes	Yes	Yes	Yes

145.A.30		Yes	Yes	Yes	Yes
145.A.35		Yes	Yes	Yes	Yes
145.A.40		Yes	Yes	Yes	Yes
145.A.42		Yes	Yes	Yes	Yes
145.A.45		Yes	Yes	Yes	Yes
145.A.47		Yes	Yes	Yes	Yes
145.A.48		Yes	Yes	Yes	Yes
145.A.50		Yes	Yes	Yes	Yes
145.A.55		Yes	Yes	Yes	Yes
145.A.60		Yes	Yes	Yes	Yes
145.A.65		Yes	Yes	Yes	Yes
2.1	MOE	Yes	Yes	Yes	Yes
2.2	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.4	MOE	Yes	Yes	Yes	Yes
2.5	MOE	Yes	Yes	Yes	Yes
2.6	MOE	Yes	Yes	Yes	Yes
2.7	MOE	Yes	Yes	Yes	Yes
2.8	MOE	Yes	Yes	Yes	Yes
2.9	MOE	Yes	Yes	Yes	Yes
2.10	MOE	Yes	No	No	No
2.11	MOE	Yes	Yes	Yes	Yes

2.12	MOE	Yes	Yes	Yes	Yes
2.13	MOE	Yes	Yes	Yes	Yes
2.14	MOE	Yes	Yes	Yes	Yes
2.15	MOE	Yes	No	No	No
2.16	MOE	Yes	Yes	Yes	Yes
2.17	MOE	If applicable	If applicable	If applicable	If applicable
2.18	MOE	Yes	Yes	Yes	Yes
2.19	MOE	Yes	Yes	Yes	Yes
2.20	MOE	Yes	Yes	Yes	Yes
2.21	MOE	If applicable	If applicable	If applicable	If applicable
2.22	MOE	Yes	Yes	No	No
2.23	MOE	Yes	No	No	No
2.24	MOE	Yes	Yes	Yes	Yes
2.25	MOE	Yes	Yes	Yes	Yes
2.26	MOE	Yes	Yes	Yes	Yes
2.27	MOE	Yes	Yes	Yes	Yes
2.28	MOE	Yes	Yes	Yes	Yes
L2.1	MOE	If applicable	No	No	No
L2.2	MOE	If applicable	No	No	No
L2.3	MOE	If applicable	No	No	No
L2.4	MOE	If applicable	No	No	No
L2.5	MOE	If applicable	No	No	No

L2.6	MOE	If applicable	No	No	No
L2.7	MOE	If applicable	No	No	No
3.9	MOE	If applicable	If applicable	If applicable	If applicable
3.10	MOE	If applicable	If applicable	If applicable	If applicable
3.11	MOE	If applicable	If applicable	If applicable	If applicable
3.12	MOE	Yes	Yes	No	No
3.13	MOE	Yes	Yes	Yes	Yes
3.14	MOE	Yes	Yes	Yes	Yes
3.15	MOE	Yes	Yes	Yes	Yes
3.16	MOE	Yes	Yes	Yes	Yes
145.A.70		Yes	Yes	Yes	Yes
145.A.75		Yes	Yes	Yes	Yes
145.A.80		Yes	Yes	Yes	Yes
145.A.85		Yes	Yes	Yes	Yes
145.A.95		If applicable	If applicable	If applicable	If applicable

Note 1: 'If applicable' means if applicable or relevant.

Note 2: In the line station case all line stations should be audited at the frequency agreed with the MAA within the limits of DASR AMC 145.A.65(c)(1).

AMC 145.A.65(c)(1) - Safety and quality policy, maintenance procedures, quality system and safety management system

1. The primary objectives of the quality system are to enable the maintenance organisation to ensure that it can deliver a safe product and that the maintenance organisation remains in compliance with the requirements.

2. An essential element of the quality system is the independent audit.

3. The independent audit is an objective process of routine sample checks of all aspects of the maintenance organisation's ability to carry out all maintenance to the required standards and includes some product sampling as this is the end result of the

maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the DASR 145.A.50(a) requirement for certifying staff to be satisfied that all required maintenance has been properly carried out before issue of the CRS for aircraft and components. Independent audits should include a percentage of random audits carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those maintenance organisations that work at night, and some audits while in an operational environment (if appropriate).

4. Except as specified in sub-paragraph 9, the independent audit should ensure that all aspects of DASR 145 compliance are checked every 12 months and may be carried out as a complete single exercise or subdivided over the 12 month period in accordance with a scheduled plan. The independent audit does not require each procedure to be checked against each product line when it can be shown that the particular procedure is common to more than one product line and the procedure has been checked every 12 months without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other product lines until the findings have been rectified after which the independent audit procedure may revert back to 12 monthly for the particular procedure.

5. The independent audit should sample check one product on each product line every 12 months as a demonstration of the effectiveness of maintenance procedures compliance. It is recommended that procedures and product audits be combined by selecting a specific product example, such as an aircraft or engine or instrument and sample checking all the procedures and requirements associated with the specific product example to ensure that the end result should be an airworthy product.

   a. For the purpose of the independent audit, a product line includes any product under a DASR 145 Appendix II approval class rating as specified in the approval schedule issued to the particular AMO.

   b. It therefore follows for example that a maintenance organisation approved under DASR 145 with a capability to maintain aircraft, repair engines, brakes and autopilots would need to carry out four complete audit sample checks each year except as specified otherwise in subparagraphs 5 or 9.

6. The sample check of a product means to witness any relevant testing and visually inspect the product and associated documentation. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action.

7. NOT APPLICABLE

8. Except as specified otherwise in subparagraph 9, where the maintenance organisation has line stations (such as but not limited to “out of area” locations, embarked operations if appropriate) listed as per DASR 145.A.75(d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight and maintenance activity at the particular line station. Except as specified otherwise in subparagraph 9 the maximum period between audits of a particular line station should not exceed 24 months.

9. Except as specified otherwise in sub-paragraph 5, the MAA may agree to increase any of the audit time periods specified in DASR AMC 145.A.65(c)(1) by up to 100% provided that there are no safety related findings and subject to being satisfied that the maintenance organisation has a good record of rectifying findings in a timely manner.

10. A report should be raised each time an audit is carried out describing what was checked and the resulting findings against applicable requirements, procedures and products.

11. The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked.

It therefore follows that a large maintenance organisation, being a maintenance organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified.

For the medium sized maintenance organisation, being a maintenance organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the maintenance function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager.

Maintenance organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract or delegate the independent audit element of the quality system to another organisation or a qualified and competent person, in both cases approved by the MAA.

2. A quality feedback reporting system to the person or group of persons specified in DASR 145.A.30(b) and ultimately to the Accountable Manager that ensures proper and timely corrective action is taken in response to reports resulting from the independent audits established to meet paragraph (1). ▸ **AMC**

AMC 145.A.65(c)(2) - Safety and quality policy, maintenance procedures, quality system and safety management system

1. An essential element of the quality system is the quality feedback system.

2. The quality feedback system should not be contracted to outside persons. The principal function of the quality feedback system is to ensure that all findings resulting from the independent quality audits of the maintenance organisation are properly investigated and corrected in a timely manner and to enable the Accountable Manager to be kept informed of any safety issues and the extent of compliance with DASR 145.

3. The independent quality audit reports referenced in DASR AMC 145.A.65(c)(1) subparagraph 10 should be sent to the relevant department(s) for rectification action giving target rectification dates. Rectification dates should be discussed with such department(s) before the quality department or nominated quality auditor confirms such dates in the report. The relevant department(s) are required by DASR 145.A.65(c)(2) to rectify findings and inform the quality department or nominated quality auditor of such rectification.

4. The Accountable Manager should hold regular meetings with staff to check progress on rectification except that in the large maintenance organisations such meetings may be delegated on a day to day basis to the quality manager subject to the Accountable Manager meeting at least twice per year with the senior staff involved to review the overall performance and receiving at least a half yearly summary report on findings of noncompliance.

5. All records pertaining to the independent quality audit and the quality feedback system should be retained for at least two years after the date of clearance of the finding(s) to which they refer or for such periods as to support changes to the DASR AMC 145.A.65(c)(1) sub-paragraph 9 audit time periods, whichever is the longer.

(d) The maintenance organisation shall ensure that its personnel have access to quality system documentation and are knowledgeable of procedures relevant to their function.

(e) Where an organisation has several DASR approvals, the quality systems may be combined.

(f) The organisation shall establish and maintain a Safety Management System (SMS), in accordance with DASR SMS.

145.A.70 - Maintenance Organisation Exposition (MOE)

(a) 'Maintenance Organisation Exposition' means the document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the maintenance organisation intends to comply with DASR 145. The maintenance organisation shall provide the MAA with a MOE containing the following information: ▸ **AMC** ▸ **GM**

GM 145.A.70(a) Maintenance Organisation Exposition

1. The purpose of the Maintenance Organisation Exposition (MOE) is to detail the procedures, means and methods of the organisation.

2. Compliance with its contents will assure compliance with the requirements of DASR 145, which is a prerequisite to obtaining and retaining a maintenance organisation approval certificate.

3. DASR 145.A.70(a)(1) to DASR 145.A.70(a)(11) constitutes the 'management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under DASR 145.A.30(b) who should be reasonably familiar with its contents. DASR 145.A.70(a)(6) list of certifying staff and B1, B2 support staff may be produced as a separate document.

4. DASR 145.A.70(a)(12) constitutes the working procedures of the organisation and therefore as stated in the requirement may be produced as any number of separate procedures manuals. It should be remembered that these documents should be cross-referenced from the management MOE.

5. Personnel are expected to be familiar with those parts of the manuals that are relevant to the maintenance work they carry out.

6. The organisation should specify in the MOE who should amend the manual particularly in the case where there are several parts.

7. The quality manager should be responsible for monitoring the amendment of the MOE, unless otherwise agreed by the MAA, including associated procedures manuals and submission of the proposed amendments to the MAA. However, the MAA may agree via a procedure stated in the amendment section of the MOE that some defined class of amendments may be incorporated without prior approval by the MAA.

8. The MOE should cover four main parts:

   a. The management MOE covering the parts specified earlier.

   b. The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft will be maintained to the required standard.

   c. The quality system procedures including the methods of qualifying mechanics, inspection, certifying staff and quality audit personnel.

   d. Contracting procedures and paperwork.

9. The Accountable Manager's exposition statement as specified under DASR 145.A.70(a)(1) should embrace the intent of the following paragraph and this statement may be used without amendment. Any modification to the statement should not alter the intent.

   "I, the Accountable Manager have the corporate authority to ensure that all maintenance services required by the customer can be financed and provided to the standard required and that all necessary resources are available to ensure compliance with this exposition.

   I will establish and promote policies for safety management and quality systems for this AMO and its employees in accordance with this exposition.

   This exposition defines the procedures upon which the DASR 145 approval of [organisation name] as an AMO is based as required by DASR 145.A.70—Maintenance Organisation Exposition.

   The exposition, along with the procedures contained in it, are approved by the MAA and must be complied with as applicable, in order to ensure that all the activities involving the provision of maintenance services including maintenance of aircraft and components is provided to the standard required by the MAA.

   The procedures included or referred to in this exposition do not override the necessity of complying with any new or amended regulations published by the MAA from time to time where these new or amended regulations are in conflict with these procedures.

   The AMO approval will continue whilst the MAA is satisfied that these procedures are being followed. The MAA reserves the right to suspend, vary or cancel the AMO approval of the organisation, as applicable, if the the MAA has evidence that the procedures are not being followed and the standards are not being upheld."

Signed .....

Dated .....

Accountable Manager and ..... (quote position) .....

For and on behalf of ..... (quote organisation's name) .....

Whenever the Accountable Manager changes, it is important to ensure that the new Accountable Manager signs the paragraph 9 statement at the earliest opportunity.

Failure to carry out this action could invalidate the DASR 145 approval.

10. When an organisation is approved against any other DASR (or by a recognised Aviation Authority, see DASA Recognition web page) containing a requirement for an Exposition, a DASR 145 Exposition covering the differences will suffice to meet the requirements except that the DASR 145 Exposition should reference where those parts missing from this Exposition are covered.

AMC 145.A.70(a) - Maintenance Organisation Exposition

1. The information specified in DASR 145.A.70(a) subparagraphs (6) and (12) to (16) inclusive, whilst a part of the MOE, may be kept as separate documents or on separate electronic data files subject to the management part of this MOE containing a clear cross-reference to such documents or electronic data files

2. The MOE should contain the information, as applicable, specified in this AMC and in the Appendix V to AMC 145.A.70(a). The information may be presented in any subject order as long as all applicable subjects are covered. The MOE should contain a cross-reference list with an explanation as to where each DASR 145 Section A requirement is addressed in the MOE.

3. The MOE should contain information, as applicable, on how the maintenance organisation complies with CDCCL instructions (if applicable).

4. NOT APPLICABLE.

5. The maintenance organisation may use electronic data processing (EDP) for publication of the MOE. The MOE should be made available to the approving MAA in a form acceptable to the MAA. Attention should be paid to the compatibility of EDP publication systems with the necessary dissemination of the MOE, both internally and externally.

6. The following information should be included in the MOE:

PART 0 GENERAL ORGANISATION

0.1 List of effective pages

0.2 List of issues / amendments / record of revisions

0.3 Distribution list

0.4 DASR 145 requirements cross-reference list

0.5 General information

PART 1 MANAGEMENT

1.1 Corporate commitment by the Accountable Manager

1.2 Safety and quality policy

1.3 Management personnel

1.4 Duties and responsibilities of management personnel

1.5 Management Organisational chart

1.6 List of certifying staff and support staff

1.7 Manpower resources

1.8 General description of the facilities at each address intended to be approved

1.9 Organisations intended scope of work

1.10 Notification procedure to the MAA regarding changes to the maintenance organisations activities / approvals / locations / personnel

1.11 MOE amendment procedures including, if applicable, delegated procedures

PART 2 MAINTENANCE PROCEDURES

2.1 Supplier evaluation and contract tasking / control procedure

2.2 Acceptance / inspection of aircraft components and material

2.3 Storage, tagging and release of aircraft components and material to aircraft maintenance

2.4 Acceptance of tools and equipment

2.5 Calibration of tools and equipment

2.6 Use of tooling and equipment by staff (including alternative tools)

2.7 Cleanliness standards of maintenance facilities

2.8 Maintenance instructions and relationship to aircraft / aircraft component manufacturers' instructions including updating and availability to staff

2.9 Repair procedures

2.10 Aircraft maintenance programme compliance

2.11 Airworthiness directives procedure

2.12 Optional modification procedure

2.13 Maintenance documentation in use and completion of same

2.14 Technical records control

2.15 Rectification of defects arising during base maintenance

2.16 Release to Service procedure

2.17 Records for the CAMO

2.18 Reporting of defects

2.19 Return of defective aircraft components to store

2.20 Management of defective components with outside contractors / organisations

2.21 Control of computer maintenance records system

2.22 Control of person-hour planning versus scheduled maintenance work

2.23 Control of critical maintence tasks

2.24 Reference to specific maintenance procedures

2.25 Procedures to detect and rectify maintenance errors

2.26 Shift / task handover procedures

2.27 Procedures for notification of maintenance data inaccuracies and ambiguities, to the author of the maintenance data

2.28 Maintenance planning procedures

PART L2 ADDITIONAL LINE MAINTENANCE PROCEDURES

L2.1 Line maintenance control of aircraft components, tools, equipment, etc.

L2.2 Line maintenance procedures related to servicing / fuelling / de-icing including inspection for / removal of de-icing / anti-icing fluid residues, etc.

L2.3 Line maintenance control of defects and repetitive defects

L2.4 Line procedure for completion of technical log

L2.5 Line procedure for pooled parts and loan parts

L2.6 Line procedure for return of defective parts removed from aircraft

L2.7 Line procedure control of critical maintenance tasks

PART 3 QUALITY SYSTEM PROCEDURES

3.A Safety Management Systems (SMS) (AUS)

3.1 Quality audit of maintenance organisation procedures

3.2 Quality audit of aircraft and / or components

3.3 Quality audit remedial action procedure

3.4 Certifying staff and support staff - qualification and training

3.5 Certifying staff and support staff records

3.6 Procedures for qualifying of quality audit personnel

3.7 Procedures for qualifying of inspectors

3.8 Procedures for qualifying of maintenance personnel

3.9 Aircraft or aircraft component maintenance tasks deviation process control

3.10 Concession control for deviation from the maintenance organisations' procedures

3.11 Qualification procedure for specialised activities such as NDT, welding, etc

3.12 Control of manufacturers' and other maintenance working teams

3.13 Human factors training procedure

3.14 Competence assessment of personnel

3.15 Training procedures for On-the-Job Training as per Section 6 of Appendix III to DASR 66

3.16 Procedure for the issue of a recommendation to the MAA for the issue of a DASR 66 licence.

PART 4

This section is reserved for describing the procedures, paperwork and records associated with the CAMOs that place tasks on the maintenance organisation.

4.1 Contracting / tasking CAMO

4.2 CAMO procedures and paperwork

4.3 CAMO record completion

PART 5

5.A Compliance Matrix (AUS)

5.1 Sample of documents

5.2 List of contractors / tasked maintenance organisations as per DASR 145.A.75(b)

5.3 List of Line maintenance locations as per DASR 145.A.75(d)

5.4 List of contracted / tasked maintenance organisations as per DASR 145.A.70(a)(16)

PART 6 OPERATING ORGANISATION'S MAINTENANCE PROCEDURES

This section is reserved for those maintenance organisations who are also part of Operating Organisations.

1. A statement signed by the Accountable Manager confirming that the MOE and any referenced associated manuals define the maintenance organisation's compliance with DASR 145 and shall be complied with at all times. When the Accountable Manager is neither the Chief Executive Officer nor senior military commander of the maintenance organisation then one of the latter shall countersign the statement; and

2. The maintenance organisation's safety and quality policy as specified by DASR 145.A.65; and

3. The title(s) and name(s) of the persons nominated under DASR 145.A.30(b); **GM** and

GM 145.A.70(a)(3) - Maintenance Organisation Exposition (AUS)

The names of personnel satisfying this regulation can be located in a database or document separate to the MOE providing the database or document is referenced in the MOE and the MAA is notified of any changes to the person(s) in these positions.

4. The duties and responsibilities of the persons nominated under DASR 145.A.30(b), including matters on which they may deal directly with the MAA on behalf of the maintenance organisation; and

5. An organisation chart showing associated chains of responsibility between the persons nominated under DASR 145.A.30(b); and

6. A list of certifying staff and support staff; and

7. A general description of human resources; and

8. A general description of the facilities located at each address specified in the maintenance organisation's approval certificate; and

9. A specification of the maintenance organisation's scope of work relevant to the extent of approval; and

10. The notification procedure of DASR 145.A.85 for organisation changes; and

11. The MOE amendment procedure; and

12. The procedures and quality system established by the maintenance organisation under DASR 145.A.25 to DASR 145.A.90; and

13. A list of Operating Organisations and CAMOs to which the maintenance organisation provides an aircraft maintenance service; and

14. A list of contracted/tasked organisations, where applicable, as specified in DASR 145.A.75(b); and

15. A list of line stations, where applicable, as specified in DASR 145.A.75(d); and

16. A list of contracted/tasked organisations operating under their own DASR approval, where applicable.

(b) The MOE shall be amended as necessary to remain an up-to-date description of the maintenance organisation. The MOE and any subsequent amendment shall be approved by MAA.

(c) Notwithstanding paragraph (b) minor amendments to the MOE may be approved through a MOE procedure (hereinafter called indirect approval).

(d) Where a maintenance organisation has an extant EASA Part 145 approval, those parts of the organisation's EASA Part 145 exposition that are equally applicable to satisfy the DASR 145 requirements shall generally be accepted by the MAA as equivalent in respect of the DASR 145 MOE. In this case it is permissible that only those requirements that are military specific need be addressed in the DASR 145 MOE; those requirements covered by read-across of the sections of the EASA exposition document shall be identified and the EASA document clause reference quoted. ▸ **GM**

GM 145.A.70(d) - Maintenance Organisation Exposition (AUS)

For the purposes of DASR 145.A.70(d) the term 'extant EASA Part 145 approval' can also include any Part 145 organisational approvals issued by other National or Military Airworthiness Authorities recognised by the MAA.

See DASR M.A.201(g) associated AMC for further guidance.

(e) Paragraph moved to DASR 145.A.65(d).

145.A.75 - Privileges of the AMO

In accordance with the MOE, the AMO shall be entitled to carry out the following tasks:

(a) Maintain any aircraft and/or component listed on its approval certificate at the locations identified in the approval certificate and in the MOE;

(b) Arrange for the maintenance of any aircraft or component, listed on its approval certificate, to be carried out by another maintenance organisation that is working under the quality system of the AMO. This refers to work being carried out by a maintenance organisation not itself appropriately approved to carry out such maintenance under this DASR and is limited to the work scope permitted under DASR 145.A.65(b) procedures. This work scope shall not include a base maintenance check of an aircraft or a complete workshop maintenance check or overhaul of an engine or engine module. The AMO that contracts/tasks such work retains responsibility for all these maintenance activities irrespective of who is undertaking them. All such maintenance organisations shall be listed in the MOE; ▸ **AMC**

AMC 145.A.75(b) - Privileges of the AMO

1. Working under the quality system of the AMO refers to the case of one maintenance organisation, not itself appropriately approved to DASR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a contractor/tasked maintenance organisation for a maintenance organisation appropriately approved under DASR 145. To be appropriately approved to contract/task with a non-approved maintenance

organisation, the AMO should have a procedure for the control of such contractors/ tasked maintenance organisations as described below.

2. Maintenance of engines or engine modules other than a complete workshop maintenance check or overhaul is intended to mean any maintenance that can be carried out without disassembly of the core engine or, in the case of modular engines, without disassembly of any core module.

3. Fundamentals of contracting/tasking a non-approved maintenance organisation under DASR 145.

3.1 The fundamental reasons for allowing an AMO to contract/task a non-approved maintenance organisation certain maintenance tasks are:

a. To permit the acceptance of specialised maintenance services, such as, but not limited to, plating, heat treatment, plasma spray, fabrication of specified parts for minor repairs / modifications, etc., without the need for direct approval by the MAA in such cases.

b. To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in DASR 145.A.75(b) by maintenance organisations not appropriately approved under DASR 145 when it is unrealistic to expect direct approval by the MAA. The MAA should determine when it is unrealistic but in general it is considered unrealistic if only one or two AMOs intend to use the contracted/tasked maintenance organisation.

c. To permit the acceptance of component maintenance.

d. To permit the acceptance of engine maintenance up to but not including a workshop maintenance check or overhaul of an engine or engine module as specified in DASR 145.A.75(b) by maintenance organisations not appropriately approved under DASR 145 when it is unrealistic to expect direct approval by the MAA. The determination of unrealistic is as per sub-paragraph (b).

3.2 When maintenance is carried out under the 'contract/task with a non-approved maintenance organisation' control system it means that for the duration of such maintenance, the DASR 145 approval has been temporarily extended to include the non-approved contractor/tasked maintenance organisation. Consequently those parts of the non-approved contractor`s/tasked maintenance organisation's facilities, personnel and procedures involved with the AMO's products undergoing maintenance should meet DASR 145 requirements for the duration of that maintenance and it remains the AMO's responsibility to ensure such requirements are satisfied.

3.3 For the criteria specified in subparagraph 3.1, the AMO is not required to have complete facilities for maintenance that it needs to contract/task. Nevertheless, it should have its own expertise to determine that the non-approved contractor/tasked maintenance organisation meets the necessary standards. However, a maintenance organisation cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.

3.4 The AMO may find it necessary to include several specialist non-approved contractors/tasked maintenance organisations to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting etc. To authorise the use of such non-approved contractors/tasked maintenance organisations, the MAA should be satisfied that the AMO has the necessary expertise and procedures to control such non-approved contractors/tasked maintenance organisations.

3.5 An AMO working outside the scope of its approval schedule is deemed to be not approved for this work. Such an AMO should in this circumstance operate only under the contracted/tasked control of another AMO.

3.6 Authorisation to contract/task non-approved maintenance organisations is indicated by the MAA accepting the MOE containing a specific procedure on the control of non-approved contractors/tasked maintenance organisations.

4. Principal DASR 145 procedures for the control of contractors/tasked maintenance organisations not approved under DASR 145.

4.1 A pre-audit procedure should be established whereby the AMO's 'contract/task a non-approved maintenance organisation' control section, which may also be the DASR 145.A.65(c) quality system independent audit section, should audit a prospective non-approved contractor/tasked maintenance organisation to determine whether those services of the non-approved contractor/tasked maintenance organisation that it wishes to use meet the intent of DASR 145.

4.2 The AMO should assess to what extent it will use the non-approved contractor`s/ tasked maintenance organisation's facilities. As a general rule the AMO should require its own paperwork, approved data and material/spare parts to be used, but it could permit the use of tools, equipment and personnel from the non-approved contractor/ tasked maintenance organisation as long as such tools, equipment and personnel meet the requirements of DASR 145. In the case of non-approved contractors/tasked maintenance organisations who provide specialised services it may, for practical reasons, be necessary to use their specialised services personnel, approved data and material subject to acceptance by the AMO.

4.3 Unless the contracted/tasked maintenance work can be fully inspected on receipt by the AMO, the AMO should supervise the inspection and release from the non-approved contractor/tasked maintenance organisation. Such activities should be fully described in the MOE. The AMO should consider whether to use its own staff or authorise the non-approved contractor's/tasked maintenance organisation's staff.

4.4 The CRS for components may be issued either at the non-approved contractor/ tasked maintenance organisation or at the AMO facility by staff holding a certification authorisation in accordance with DASR 145.A.30, as appropriate. Such staff would normally come from the AMO but may otherwise be a person from the non-approved contractor/tasked maintenance organisation who meets the AMO certifying staff standard which itself is approved by the MAA via the MOE. The CRS for components and/or the DASR Form 1 should always be issued under the AMO approval reference.

4.5 The ‘contract/task a non-approved maintenance organisation’ control procedure should record audits of the non-approved contractor/tasked maintenance organisation, to have a corrective action follow-up plan and to know when non-approved contractors/tasked maintenance organisations are being used. The procedure should include a clear revocation process for non-approved contractors/tasked maintenance organisations who do not meet the AMO’s requirements.

4.6 The AMO's quality audit staff should audit the ‘non-approved maintenance organisation contract/tasking control section’ and sample audit non-approved contractors/tasked maintenance organisations unless this task is already carried out by the quality audit staff as stated in subparagraph 4.1.

4.7 The contract between the AMO and the non-approved contractor/tasked maintenance organisation should contain a provision for the MAA or a qualified entity acting on behalf of the MAA to have right of access to the non-approved contractor/ tasked maintenance organisation.

(c) Maintain any aircraft or any component listed on its approval certificate at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the MOE;

(d) Maintain any aircraft and/or component listed on its approval certificate at a location identified as a line maintenance location capable of supporting minor maintenance and only if the MOE both permits such activity and lists such locations;

(e) Issue CRSs in respect of completion of maintenance in accordance with DASR 145.A.50.

145.A.80 - Limitations on the AMO

(a) The AMO shall only maintain an aircraft or component for which it is approved when all the necessary facilities, equipment, tooling, material, maintenance data and certifying staff are available. ▸ **AMC**

AMC 145.A.80 - Limitations on the AMO

This paragraph is intended to cover the situation where an AMO may temporarily not hold all the necessary tools, equipment etc., for an aircraft type or variant specified in the AMO’s approval. This paragraph means that the MAA need not amend the approval to delete the aircraft type or variants on the basis that it is a temporary situation and there is a commitment from the AMO to re-acquire tools, equipment etc. before maintenance on the type may recommence.

145.A.85 - Changes to the AMO

(a) The AMO shall notify the MAA of any proposal to carry out any of the following changes before such changes take place to enable the MAA to determine continued compliance with DASR 145 and to amend, if necessary, the approval certificate, except that in the

case of proposed changes in personnel not known to the management beforehand, these changes shall be notified at the earliest opportunity. ▸ **AMC**

AMC 145.A.85(a) - Changes to the AMO (AUS)

The AMO should notify the MAA of any changes using DASR Form 2.

1. The name of the AMO;
2. The main location of the AMO;
3. Additional locations of the AMO;
4. The Accountable Manager and all appointed deputies;
5. Any of the persons nominated under DASR 145.A.30(b) and their appointed deputies;
6. The facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval;
7. The ownership of the AMO or its parent company.

145.A.90 - Continued validity of approval

(a) An approval shall be issued for an unlimited duration. It shall remain valid subject to:

1. The AMO remaining in compliance with this DASR, in accordance with the provisions related to the handling of findings; and ▸ **GM**

GM 145.A.90(a)(1) - Continued validity of approval (AUS)

1. When during audits or by other means evidence is found showing non-compliance with the requirements of DASR 145, the MAA shall take the following actions:
   a. For level 1 findings, immediate action shall be taken by the MAA to revoke, limit or suspend in whole or in part, depending upon the extent of the level 1 finding, the maintenance organisational approval, until successful corrective action has been taken by the organisation.
   b. For level 2 findings, the corrective action period granted by the MAA must be appropriate to the nature of the finding but in any case initially must not be more than three months. In certain circumstances and subject to the nature of the finding the MAA may extend the three month period subject to a satisfactory corrective action plan agreed by the MAA.
   c. Observations will not require immediate action by the holder of the DASR 145 AMO approval. If appropriate, the MAA will specify a compliance time.
2. Action shall be taken by the MAA to suspend, in whole or part, the approval in case of failure to comply within the timescale granted by the MAA.

2. The MAA being granted access to the AMO to determine continued compliance with this DASR; and

3. The certificate not being surrendered or revoked.

(b) Upon surrender or revocation, the approval shall be returned to the MAA.

145.A.95 - AMO Findings by the MAA

GM

GM 145.A.95 - AMO Findings by the MAA (AUS)

Information in regards to actions in regards to AMO Findings by the MAA are detailed in DASR GM M.A.716.

(a) After receipt of notification of findings the AMO shall:

1. Identify the root cause of the non-compliance; and

2. Define a corrective action plan; **AMC** and

AMC 145.A.95(a)(2) - AMO Findings by the MAA (AUS)

Information in regards to a corrective action plan is detailed in DASR AMC M.A.716(a)(2).

3. Demonstrate corrective action implementation to the satisfaction of the MAA within a period required by the MAA.

(b) A level 1 finding is any significant non-compliance with DASR 145 requirements which lowers the safety standard and hazards seriously the flight safety. Depending upon the extent of the level 1 finding, it leads to an immediate full or partial revocation, limitation or suspension of the approval by the MAA until successful corrective action has been taken by the AMO.

(c) A level 2 finding is any non-compliance with the DASR 145 requirements which could lower the safety standard and possibly hazards the flight safety.

(d) An AMO's non-compliance with the actions identified in DASR 145.A.95(a) leads to a full or partial suspension of the approval by the MAA.

DASR 145 Appendixes

Appendix II

Appendix II to DASR 145.A.20 - Class and Rating System to be used for the Approval of Maintenance Organisations

Appendix II to DASR 145.A.20 - Class and Rating System to be used for the Approval of Maintenance Organisations

1. Table 1 outlines the full extent of approval possible under DASR 145 in a standardised form. A maintenance organisation must be granted an approval ranging from a single class and rating with limitations to all classes and ratings with limitations.

2. In addition to Table 1 the maintenance organisation is required by DASR 145.A.20 to indicate its scope of work in the MOE. See also paragraph 11.

3. Within the approval class(es) and rating(s) granted by the MAA, the scope of work specified in the MOE defines the exact limits of approval. It is therefore essential that the approval class(es) and rating(s) and the maintenance organisation's scope of work are matching.

4. A Category A class rating means that the AMO may carry out maintenance on the aircraft and any component (including engines/APUs), in accordance with aircraft maintenance data or, if agreed by the MAA, in accordance with component maintenance data, only whilst such components are fitted to the aircraft. Nevertheless, such A-rated AMO may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not covered under the provisions of this paragraph. This shall be subject to a control procedure in the MOE to be approved by the MAA. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval.

5. A Category B class rating means that the AMO may carry out maintenance on the uninstalled engine and/or APU ('Auxiliary Power Unit') and engine and/or APU components, in accordance with engine and/or APU maintenance data or, if agreed by the MAA, in accordance with component maintenance data only whilst such components are fitted to the engine and/or APU. Nevertheless, such B-rated AMO may temporarily remove a component for maintenance, in order to improve access to that component, except when such removal generates the need for additional maintenance not covered under the provisions of this paragraph. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval. An AMO with a Category B class rating may also carry out maintenance on an installed engine during 'base' and 'line' maintenance subject to a control procedure in the MOE to be approved by the MAA. The MOE scope of work shall reflect such activity where permitted by the MAA.

6. A Category C class rating means that the AMO may carry out maintenance on uninstalled components (excluding engines and APUs) intended for fitment to the aircraft or engine/APU. The limitation section shall specify the scope of such maintenance thereby indicating the extent of approval. An AMO with a Category C class rating may also carry out maintenance on an installed component during base and line maintenance or at an engine/APU maintenance facility subject to a control procedure in the MOE to be approved by the MAA. The MOE scope of work shall reflect such activity where permitted by the MAA.

7. A Category D class rating is a self-contained class rating not necessarily related to a specific aircraft, engine or other component. The D1 — Non-Destructive Testing (NDT) rating is only necessary for an AMO that carries out NDT as a particular task for another maintenance organisation. An AMO with a class rating in A or B or C Category may carry out NDT on products it is maintaining subject to the MOE containing NDT procedures, without the need for a D1 class rating.

8. Category A class ratings are subdivided into 'base' or 'line' maintenance. A maintenance organisation may be approved for either 'base' or 'line' maintenance or both. It should

be noted that a 'line' facility located at a main base facility requires a 'line' maintenance approval.

9. The 'limitation' section is intended to give the MAA the flexibility to customise the approval to a particular maintenance organisation. Ratings shall be mentioned on the approval only when appropriately limited. Table 1 specifies the types of limitation possible (an example could be avionic systems installations and related maintenance). Whilst maintenance is listed last in each class rating it is acceptable to stress the maintenance task rather than the aircraft or engine type or manufacturer, if this is more appropriate to the maintenance organisation (an example could be avionic systems installations and maintenance). Such mention in the limitation section indicates that the maintenance organisation is approved to carry out maintenance up to and including this particular type/task.

10. Table 1 makes reference to series, type and group in the limitation section of class A and B. Series means a specific type series such as Tiger series or Tornado series or Rafale series or Super Puma series or AB 212 series or Gripen series or C 101 series or C 235 series etc. Type means a specific type or model such as C 130 H type or C 130 J type, Tiger HAP type or Tiger HAD type etc. Any number of series or types may be quoted. Group means for example: "Rolls Royce T-56 Turbo prop engines" or "Fokker twin turbo prop aircraft".

11. When a lengthy capability list is used which could be subject to frequent amendment, then such amendment shall be in accordance with a procedure acceptable to the MAA and included in the MOE. The procedure shall address the issues of who is responsible for capability list amendment control and the actions that need to be taken for amendment. Such actions include ensuring compliance with DASR 145 for products or services added to the list.

12. NOT APPLICABLE

Table 1

CLASS	*RATING*	*LIMITATION*	*BASE*	*LINE*
AIRCRAFT	A1 Aeroplanes/ above 5 700 kg	[State aeroplane manufacturer or group or series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
	A2 Aeroplanes/ 5 700 kg and below	[State aeroplane manufacturer or group or series or type and/or the maintenance tasks]	*[YES/ NO]**	*[YES/ NO]**
	A3 Helicopters	[State helicopter manufacturer or group or series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
	A4 Aircraft other than A1, A2 and A3	[State aircraft series or type and/or the maintenance task(s)]	*[YES/ NO]**	*[YES/ NO]**
ENGINES/APU	B1 Turbine	[State engine series or type and/or the maintenance task(s)]		
	B2 Piston	[State engine manufacturer or group or series or type and/or the maintenance task(s)]		
	B3 APU	[State engine manufacturer or series or type and/or the maintenance task(s)]		
COMPONENTS other than complete engines or APU's		*S1000D CHAPTER REFERENCE* [1]	*LIMITATIONS (aircraft type, component, manufacturer)*	
	C1 Air Cond & Press	21		
	C2 Auto Flight	*22*		
	C3 Comms and Nav	*23-34-43*		
	C4 Doors — Hatches	*52*		
	C5 Electrical Power & Lights	*24-33-91*		
	C6 Equipment	*25-38-45-50*		
	C7 Engine — APU	*49-71-72-73-74-75-76-77-78-79-80-81-82-83-86*		
	C8 Flight Controls	*27-55-57.40-57.50-57.60-57.70*		
	C9 Fuel — Airframe	*28-48*		
	C10 Helicopter — Rotors	*62-64-66-67*		
	C11 Helicopter — Trans	*63-65*		
	C12 Hydraulic Power	*29*		
	C13 Indicating - recording system	*31-46*		
	C14 Landing Gear	*32-90*		
	C15 Oxygen	*35-47*		
	C16 Propellers	*61*		
	C17 Pneumatic & Vacuum	*36-37*		
	C18 Protection ice/ rain/fire	*26-30*		
	C19 Windows	*56*		
	C 20 Structural	*53-54-57.10-57.20-57.30*		
	C 21 Water Ballast	*41*		
	C 22 Propulsion Augmentation	*84*		
	C 51 Attack systems	*39-40-42*		
	C 52 Radar/ Surveillance	*92-93*		
	C 53 Weapons systems	*94*		
	C 54 Crew escape &Safety	*95*		
	C 55 Drones/Telemetry	*96-00, 96-30, 96-40*		
	C 56 Reconnaissance	*97-98*		
	C 57 Electronic warfare	*99*		
SPECIALISED SERVICES	D1 Non-Destructive Testing	[State particular NDT method(s)]		
	D5 Arms, Munitions and Pyrotechnic Systems Specific	[State arms type and maintained pyrotechnic systems]		

1 S1000D Chapter Reference : in conformity with "S1000D Main System Breakdown"

Appendix IV

Appendix IV to DASR AMC3 145.A.30(e)

Appendix IV to DASR AMC3 145.A.30(e)

FUEL TANK SAFETY TRAINING

This Appendix includes general instructions for providing training on Fuel Tank Safety (FTS) issues.

a. **Applicability:**

As nationally defined by the MAA.

b. **Affected organisations:**

DASR 145 Approved Maintenance Organisations involved in the maintenance of aircraft specified in paragraph a. and fuel system components installed on such aircraft when the maintenance data are affected by CDCCL (if applicable).

c. Persons from affected organisations who should receive training:

Phase 1 only:

The group of persons representing the maintenance management structure of the organisation, the quality manager and the staff required to quality monitor the organisation.

Phase 1 + Phase 2 + Continuation training:

Personnel of the DASR 145 Approved Maintenance Organisation required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components specified in paragraph a.

d. General requirements of the training courses

Phase 1 – Awareness

The training should be carried out before the person starts to work without supervision but not later than 6 months after joining the organisation.

Type: Should be an awareness course with the principal elements of the subject. It may take the form of a training bulletin, or other self-study or informative session. Signature of the reader is required to ensure that the person has passed the training.

Level: It should be a course at the level of familiarisation with the principal elements of the subject.

Objectives:

The trainee should, after the completion of the training:

1. Be familiar with the basic elements of the fuel tank safety issues.

2. Be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non-conformities.

3. Be able to use typical terms.

Content: The course should include:

- a short background showing examples of FTS accidents or incidents,
- the description of concept of fuel tank safety (and CDCCL if applicable),
- some examples of manufacturers documents showing CDCCL items (if applicable),
- typical examples of FTS defects,
- some examples of (military) TC/STC holders repair data,
- some examples of maintenance instructions for inspection.

Phase 2 – Detailed training

Type: Should be a more in-depth internal or external course. It should not take the form of a training bulletin, or other self-study. An examination should be required at the end, which should be in the form of a multi choice questionnaire, and the pass mark of the examination should be 75%.

Level: It should be a detailed course on the theoretical and practical elements of the subject.

The training may be made either:

- in appropriate facilities containing examples of components, systems and parts affected by FTS issues. The use of films, pictures and practical examples on FTS is recommended; or
- by attending a distance course (e-learning or computer based training) including a film when such film meets the intent of the objectives and content here below. An e-learning or computer based training should meet the following criteria:
- A continuous evaluation process should ensure the effectiveness of the training and its relevance;
- Some questions at intermediate steps of the training should be proposed to ensure that the trainee is authorized to move to the next step;
- The content and results of examinations should be recorded;
- Access to an instructor in person or at distance should be possible in case support is needed.
- A duration of 8 hours for phase 2 is an acceptable compliance.

When the course is provided in a classroom, the instructor should be very familiar with the data in Objectives and Guidelines. To be familiar, an instructor should have attended a similar course in a classroom and made additionally some lecture of related subjects.

Objectives:

The attendant should, after the completion of the training:

- have knowledge of the history of events related to fuel tank safety issues and the theoretical and practical elements of the subject, have an overview of all relevant requirements and/or regulations, as defined by the MAA, be able to give a detailed description of the concept of fuel tank system Airworthiness Limitation Instructions (ALI) (including CDCCL if applicable), and using theoretical fundamentals and specific examples;
- have the capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner;
- have knowledge on how the above items affect the aircraft;
- be able to identify the components or parts or the aircraft subject to FTS from the manufacturer's documentation,
- be able to plan the action or apply a Service Bulletin, an Airworthiness Directive or national equivalent.

Content: Following the guidelines described in paragraph e.

Continuation training

The organisation should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the Maintenance Organisation Exposition (MOE) should include the additional syllabus for this continuation training.

The continuation training may be combined with the phase 2 training in a classroom or at distance.

The continuing training should be updated when new instructions are issued which are related to the material, tools, documentation and manufacturer's or MAA's directives.

e. Guidelines for preparing the content of Phase 2 courses.

The following guidelines should be taken into consideration when the phase 2 training programme is being established:

a. understanding of the background and the concept of FTS,

b. how the mechanics can recognise, interpret and handle the improvements in the instruction for continuing airworthiness that have been made or are being made regarding the fuel tank system maintenance,

c. awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System using nitrogen is installed.

Paragraphs a. b. and c. above should be introduced in the training programme addressing the following issues:

i. The theoretical background behind the risk of FTS: the explosions of mixtures of fuel and air, the behaviour of those mixtures in an aviation environment, the effects of temperature and pressure, energy needed for ignition etc, the 'fire triangle'.

Explain 2 concepts to prevent explosions:

1. ignition source prevention and
2. flammability reduction,

ii. The major accidents related to fuel tank systems, the accident investigations and their conclusions,

iii. ignition prevention program initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance,

iv. Explain briefly the concepts that are being used: the results of Special Federal Aviation Regulation 88 (SFAR 88) of the Federal Aviation Administration (FAA), Joint Aviation Authorities Temporary Guidance Leaflet 47(JAA TGL 47), Joint Aviation Authorities Interim Policy Letter 25/12 (JAA INT/POL 25/12) and any other unique MAA initiatives: modifications, airworthiness limitations items and CDCCL (if applicable),

v. Where relevant information can be found and how to use and interpret this information in the instructions for continuing airworthiness (aircraft maintenance manuals, component maintenance manuals, Service Bulletins…),

vi. FTS during maintenance: fuel tank entry and exit procedures, clean working environment, what is meant by configuration control, wire separation, bonding of components etc,

vii. Flammability Reduction Systems (FRS) when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS,

viii. Recording maintenance actions, recording measures and results of inspections.

The training should include a representative number of examples of defects and the associated repairs as required by the (military) TC/(military) STC holder's maintenance data.

f. Approval of training

For DASR 145 approved organisations, the approval of the initial and continuation training programme and the content of the examination can be achieved through the MOE exposition.

Appendix V

Appendix V to DASR AMC 145.A.70 - Maintenance Organisation Exposition

Appendix V to AMC 145.A.70(a)

DASR 147 - Aircraft Maintenance Training Organisations

SECTION A

SUBPART A - GENERAL

147.A.05 - Scope

This section establishes the requirements to be met by an Organisation seeking approval as a Maintenance Training Organisation (MTO) to conduct training and examination as specified in DASR 66.

147.A.10 - General

An MTO shall be a legal entity, a part of a legal entity or part of a military organisation. ▸ **GM**

GM 147.A.10 - General

Such an MTO may conduct its activity from more than one address.

147.A.15 - Application

▸ **AMC**

AMC 147.A.15 - Application

The application form should contain the information required in the DASR Form 12.

(a) An application for an approval or for the amendment of an existing approval shall be made to the Defence Aviation Safety Authority (DASA) in an agreed form and manner.

(b) An application for or for the change to an approval shall include the following information:

1. The registered name and address of the applicant;
2. The address of the MTO requiring the approval or change to the approval;
3. The intended scope of approval or change to the scope of approval;
4. The name and signature of the Accountable Manager;
5. The date of application.

SUBPART B - ORGANISATIONAL REQUIREMENTS

147.A.100 - Facility requirements

(a) The size and structure of facilities shall ensure protection from the prevailing weather elements and proper operation of all planned training and examination.

(b) Fully enclosed appropriate accommodation shall be provided for the instruction of theory and the conduct of knowledge examinations. ▸ AMC ▸ AMC1

AMC1 to 147.A.100(b) - Facility Requirements (AUS)

The course design process or a Training Needs Analysis (TNA) may show that a larger number of students can be trained. Where the design process or the TNA shows that outcome, then the maximum number of students resulting from the analysis acceptable to the Authority.

AMC 147.A.100(b) - Facility requirements

1. The maximum number of students undergoing knowledge training during any training session should not normally exceed 28. In cases where it is necessary to exceed this number, the DASA is to be informed and the MTO should submit evidence of how an 'effective learning environment' is being maintained with this larger number of students.

1. The maximum number of students undergoing knowledge training during any training session shall not exceed a level conducive to an effective learning environment.

2. The size of accommodation for examination purposes shall be such that no student can read the paperwork or computer screen of any other student from their position during examinations.

(c) The paragraph (b) accommodation environment shall be maintained such that students are able to concentrate on their studies or examination as appropriate, without undue distraction or discomfort.

(d) In the case of a basic training course, basic training workshops and/or maintenance facilities separate from training classrooms shall be provided for practical instruction appropriate to the planned training course. If, however, the MTO is unable to provide such facilities, arrangements may be made with another organisation to provide such workshops and/or maintenance facilities, in which case a written agreement shall be made with such organisation specifying the conditions of access and use thereof. The DASA shall require access to any such organisation and the written agreement shall specify this access. ▸ AMC

AMC 147.A.100(d) - Facility requirements

1. In the context of this paragraph, 'another organisation' means any other organisation with which the MTO has a formal agreement for the provision of practical training facilities. This organisation's details should be included in Section 2.8 of the MTOE.

(e) In the case of a Military Aircraft Type/Task Training course, access shall be provided to appropriate facilities containing examples of aircraft type as specified in DASR 147.A.115(d).

(f) The maximum number of students undergoing practical training during any training session shall not exceed 15 per supervisor or assessor. ▸ **AMC**

AMC 147.A.100(f) - Number of Students (AUS)

The course design process or a Training Needs Analysis (TNA) may show that a larger number of students can be trained. Where the design process or the TNA shows that outcome, then the maximum number of students resulting from the analysis acceptable to the Authority.

(g) Office accommodation shall be provided for instructors, knowledge examiners and practical assessors of a standard to ensure that they can prepare for their duties without undue distraction or discomfort.

(h) Secure storage facilities shall be provided for examination papers and training records. The storage environment shall be such that documents remain in good condition for the retention period as specified in DASR 147.A.125. The storage facilities and office accommodation may be combined, subject to adequate security. The requirements of this paragraph are equally applicable to other storage media, eg electronic etc.

(i) A library shall be provided containing all technical material appropriate to the scope and level of training undertaken. ▸ **AMC** ▸ **GM**

GM 147.A.100(i) - Facility requirements

Where the organisation has an existing library of regulations, manuals and documentation required by another DASR, it is not necessary to duplicate such a facility subject to student access being under controlled supervision.

AMC 147.A.100(i) - Facility requirements

1. For approved basic maintenance training courses this means holding and ensuring reasonable access to copies of all national military aviation legislation, examples of typical aircraft maintenance manuals and service bulletins and Airworthiness Directives (or their national equivalents), aircraft and component records, release documentation, procedures manuals and aircraft maintenance programmes.

2. Except for the national military aviation regulations, the remainder of the documentation should represent typical examples of military aircraft and cover both aeroplanes and helicopters as appropriate for the nation. Avionic and armaments documentation should cover a representative range of available equipment that will be encountered. All documentation should be reviewed and updated on a regular basis.

147.A.105 - Personnel requirements

(a) The MTO shall appoint an Accountable Manager who has corporate authority for ensuring that all training commitments can be carried out to the standard required by DASR 147. The Accountable Manager shall: ▸ **AMC**

AMC 147.A.105(a) - Personnel requirements

1. The larger MTO (an organisation with the capacity to provide training for 50 students or more) should appoint a training manager with the responsibility of managing the MTO on a day-to-day basis. Such person could also be the Accountable Manager. In addition, the MTO should appoint a quality manager with the responsibility of managing the quality system as specified in DASR 147.A.130(b) and an examination manager with the responsibility of managing the relevant DASR 147 Subpart C or Subpart D examination system. Such person(s) may also be an instructor and/or examiner.

2. The smaller MTO (an organisation with the capacity to provide training for less than 50 students) may combine any or all of the subparagraph (1) positions subject to the DASA verifying and being satisfied that all functions can be properly carried out in combination.

3. When the organisation is also approved against other DASR which contain some similar functions, then such functions may be combined.

1. Ensure that all necessary resources are available to accomplish training commitments in accordance with DASR 147.A.130(a) to support the organisation approval.

2. Establish and promote the quality policy specified in DASR 147.A.130(b).

3. Demonstrate a basic understanding of this DASR.

(b) A person or group of persons, whose responsibilities include ensuring that the MTO is in compliance with the requirements of this DASR, shall be nominated. Such person(s) shall be responsible to the Accountable Manager. The senior person or one person from the group of persons may also be the Accountable Manager subject to meeting the requirements for the Accountable Manager as defined in paragraph (a). ▸ **AMC** ▸ **GM**

GM 147.A.105(b) - Personnel requirements (AUS)

Form 4 applicants should have the following, or similar, qualifications and experience.

1. Training Manager (TM)

a. Qualifications:

(i) Recommended:

- Certificate IV in Training and Assessment or equivalent qualification in Training or other comparable qualification acceptable to DASA

(ii) Desirable:

- Tertiary qualifications in management, or
- Graduate Diploma in Adult and Vocational Education and Training, or
- Graduate Diploma of Adult Language, Literacy and Numeracy, or

- Bachelor or Masters degree in education with an adult education focus, or
- Certificate IV or Diploma of Aeroskills, or
- DASA/CASA B or C category licence.

b. Experience:

- At least three years of Aviation experience including:
  - Two years experience as staff of DASA or an organisation holding an Organisational Approval, under DASR, CASA or other comparable experience acceptable to DASA, and
  - One year experience in aviation training.

2. Quality Manager (QM)

a. Qualifications:

(i) Recommended:

- Diploma level, or equivalent qualification in Quality Management or other comparable qualification acceptable to DASA.

(ii) Desirable:

- Diploma level, or equivalent, qualification in Quality Auditing issued by an Australian registered training organisation (RTO) or other comparable qualification acceptable to DASA

b. Experience:

- At least five years of Aviation experience including:
  - Two years experience as staff of DASA or an organisation holding an Organisational Approval, under DASR, CASA or other comparable experience acceptable to DASA, and
  - Three years experience in aviation quality management.

3. Examination Manager (EM)

a. Qualifications:

(i) Recommended:

- Certificate IV in Training and Assessment or equivalent qualification in Training or other comparable qualification acceptable to DASA

(ii) Desirable:

- Tertiary qualifications in management, or

- Graduate Diploma in Adult and Vocational Education and Training, or
- Graduate Diploma of Adult Language, Literacy and Numeracy, or
- Bachelor or Masters degree in education with an adult education focus, or
- Certificate IV or Diploma of Aeroskills, or
- DASA/CASA B or C category licence.

b. Experience:

- At least three years of Aviation experience including:
  - Two years experience as staff of DASA or an organisation holding an Organisational Approval, under DASR, CASA or other comparable experience acceptable to DASA, and
  - One year experience in aviation training.

AMC 147.A.105(b) - Personnel requirements

With the exception of the Accountable Manager, a DASR Form 4 should be completed for each person nominated to hold a position required by DASR 147.A.105(b).

(c) The MTO shall contract/appoint sufficient staff to plan/perform knowledge and practical training, conduct knowledge examinations and practical assessments in accordance with the approval. ▸ **AMC**

AMC 147.A.105(c) - Personnel requirements

The MTO should have a core of permanently employed staff to undertake the minimum amount of maintenance training proposed but may contract, on a part-time basis, instructors for subjects which are only taught on an occasional basis.

(d) By way of exception to paragraph (c), when another organisation is used to provide practical training and assessments, such other organisation's staff may be nominated to carry out practical training and assessments.

(e) Any person may carry out any combination of the roles of instructor, knowledge examiner and practical assessor, subject to compliance with paragraph (f).

(f) The experience and qualifications of instructors, knowledge examiners and practical assessors shall be established in accordance with criteria published by the DASA or in accordance with a procedure and to a standard agreed by the DASA. ▸ **AMC** ▸ **AMC1** ▸ **GM**

GM 147.A.105(f) - Personnel requirements

It is recommended that potential instructors be trained in instructional techniques.

AMC1 to 147.A.105(f) - Experience and Qualifications (AUS)

1. **Instructors.** The qualifications for instructors depends on the type of training they are delivering:

   a. those who are delivering training that leads to the award of a Statement of Attainment or a qualification which contains national units of competence. Qualifications for these instructors are either:

      i. a Cert IV in TAE (or higher qualification), plus an Aeroskills Cert IV (or higher qualification) in the trade related to the subjects in which the individual is instructing or a DASR / CASA 66 B1 / B2 licence; or

      ii. a TAE 'Enterprise Trainer' skill sets (Mentoring or Presenting) if the individual works under the supervision of a trainer who holds the Cert IV in TAE; plus an Aeroskills Cert IV (or higher qualification) in the trade related to the subjects in which the individual is instructing or a DASR / CASA 66 B1 / B2 licence.

   b. those who are delivering training which is not related to Statements of Attainment or qualifications containing national units of competence. Qualifications for these instructors are either:

      i. **Military instructors.** The Services have policies which define the qualifications for ground training instructors and assessors. These policies, eg AC SI (PERS) 33-40, are an acceptable means of complying with the requirements of this clause.

      ii. **Contractor instructors.** Instructors at contractor MTOs are to have a TAE 'Enterprise Trainer' skill set (Mentoring or Presenting) or equivalent qualification plus an Aeroskills Cert IV (or higher qualification) in the trade related to the subjects in which the individual is instructing or a DASR / CASA 66 B1 / B2 licence.

2. **Assessors.** There are two classes of assessors:

   a. **Those who are conducting assessments of units of competence.** Required qualifications are the TAE Assessor Skill Set or higher TAE qualification that contains the TAE Assessor Skill Set, plus Registered Workplace Assessor or Aeroskills Approved Assessor.

   b. **Those who are assessing whether trainees' performance following training which is not directly related to units of competence.** Such assessors are to hold an Aeroskills Cert IV (or higher qualification) in the trade related to the subjects in which the individual is instructing or a DASR / CASA 66 B1 / B2 licence. A TAE Assessor Skill Set, plus Registered Workplace Assessor or Aeroskills Approved Assessor is not mandatory, but is recommended.

AMC 147.A.105(f) - Personnel requirements

1. Any person currently accepted by the DASA in accordance with the national military aviation regulations in force prior to a date established in national regulation for the

implementation of the requirements of DASR 147 may continue to be accepted in accordance with DASR 147.A.105(f).

2. Paragraph 3 of AMC to Appendix III to DASR 66 provides criteria to establish the qualification of assessors.

3. Examiners should demonstrate a clear understanding of the examination standard required by DASR 66 and have a responsible attitude to the conduct of examinations such that the highest integrity is ensured.

(g) The instructors, knowledge examiners and practical assessors shall be specified in the MTO Exposition (MTOE) for the acceptance of such staff.

(h) Instructors and knowledge examiners shall undergo updating training at least every 24 months relevant to current technology, practical skills, human factors and the latest training techniques appropriate to the knowledge being trained or examined. ▸ AMC ▸ GM

GM 147.A.105(h) - Personnel requirements

The updating training may be subdivided during the 24 months into more than one element and may include such activities as attendance at relevant lectures and symposiums.

AMC 147.A.105(h) - Personnel requirements

1. Updating training should normally be of 35 hours duration but may be adjusted to the scope of training of the MTO and particular instructor/examiner.

2. Records should show for each instructor/knowledge examiner when the updating training was scheduled and when it took place.

147.A.110 - Records of instructors, examiners and assessors

▸ AMC ▸ GM

GM 147.A.110 - Records of instructors, examiners and assessors

Instructors, knowledge examiners and practical assessors should be provided with a copy of their terms of reference.

AMC 147.A.110 - Records of instructors, examiners and assessors

1. The following minimum information relevant to the scope of activity should be kept on record in respect of each instructor, knowledge examiner and practical assessor:

   a. Full Name;

   b. Rank/Grade (if applicable);

   c. Date of birth;

   d. Service/Personnel number;

   e. Experience;

f. Qualifications;

g. Training history (before entry);

h. Subsequent training;

i. Scope of activity;

j. Starting date of employment/contract/posting into MTO;

k. If appropriate – ending date of employment/contract/posting out of MTO;

l. Security clearance (where appropriate).

2. The record may be kept in any format but should be under the control of the MTO's quality system.

3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.

4. The DASA, or qualified entity acting on behalf of the DASA, is to be considered as an 'authorised person' when investigating the records system for initial and continued approval or when the DASA has cause to doubt the competence of a particular person.

(a) The MTO shall maintain a record of all instructors, knowledge examiners and practical assessors for a minimum period of 5 years after termination of their employment or assignment within the MTO. These records shall reflect the experience and qualification, training history and any subsequent training undertaken. ▸ **AMC** ▸ **GM**

GM 147.A.110(a) - Records of instructors, examiners and assessors (AUS)

Records must comply with, and be retained in accordance with the requirements of the Australian Government Archive Act (1983).

AMC 147.A.110(a) - Personnel Records (AUS)

PMKeyS contains the information required by DASR 147.A.110(a) and this database satisfies the requirements of this clause if an MTO uses PMKeyS.

(b) Terms of reference shall be drawn up for all instructors, knowledge examiners and practical assessors. ▸ **AMC**

AMC 147.A.110(b) - Duty Statements (AUS)

Duty Statements (or equivalent documents) satisfy the requirements of this clause.

147.A.115 - Instructional equipment

(a) Each classroom shall have appropriate presentation equipment of a standard that ensures students can easily read presentation text/drawings/diagrams and figures from any position in the classroom. Presentation equipment may include representative

synthetic training devices to assist students in their understanding of the particular subject matter where such devices are considered beneficial for such purposes. ▸ **GM**

GM 147.A.115(a) - Instructional equipment

Synthetic training devices are working models of a particular system or component and include computer simulations.

(b) The basic training workshops and/or maintenance facilities as specified in DASR 147.A.100(d) shall have all tools and equipment necessary to perform the approved scope of training.

(c) The basic training workshops and/or maintenance facilities as specified in DASR 147.A.100(d) shall have an appropriate selection of aircraft, engines, aircraft parts, avionic equipment, armaments, escape systems and other relevant military-specific systems. ▸ **AMC**

AMC 147.A.115(c) - Instructional equipment

1. An appropriate selection of aircraft parts means appropriate in relation to the particular subject module or submodule of DASR 66 being instructed. For example, the turbine engine module should require the provision of sufficient parts from different types of turbine engine to show what such parts look like, what the critical areas are from a maintenance viewpoint and to enable disassembly/assembly exercises to be completed.

2. 'Appropriate aircraft, engines, aircraft parts, avionic equipment, armaments, escape systems and other relevant military-specific systems' means appropriate in relation to the particular subject module or submodule of DASR 66 being instructed. For example, Category B2 or avionics trade initial employment training should require, amongst other equipment, access to different navigation systems such that maintenance and system functioning can be observed and therefore more fully understood by the student in the working environment.

3. NOT APPLICABLE.

(d) The Military Aircraft Type Training organisation as specified in DASR 147.A.100(e) shall have access to the appropriate aircraft type. Synthetic training devices may be used when such synthetic training devices ensure adequate training standards. ▸ **AMC**

AMC 147.A.115(d) - Instructional equipment

"Access" should be interpreted to mean, in conjunction with the facilities requirement of DASR 147.A.100(d), that there may be an agreement with a DASR 145 Approved Maintenance Organisation to access the aircraft type, related parts, etc.

147.A.120 - Maintenance training material

(a) Maintenance training course material shall be provided to the student and cover as applicable: ▸ **AMC** ▸ **AMC1** ▸ **AMC2**

AMC2 147.A.120(a) - Maintenance training material (AUS)

1. Maintenance training material shall be provided to each student in accordance with the course plan and which covers:

   a. the required subject modules and, where applicable the required units of competency for the course

   b. the knowledge elements of the curriculum.

2. The course plan shall include:

   a. the course content,

   b. any prerequisites for the course,

   c. details of course assessments, and

   d. where applicable, details of how Recognition of Previous Learning will be assessed.

AMC1 147.A.120(a) - Maintenance Training Material (AUS)

Training Management Packages, Learning Management Packages and equivalent training materials which comply with the standards set in the Defence Learning Manual (DLM) and Systems Approach to Defence Learning Practitioners Guides meet the requirements of this clause.

AMC 147.A.120(a) - Maintenance training material

Training course notes, diagrams and any other instructional material should be accurate. Where an amendment service is not provided, a written warning to this effect should be given.

1. The basic knowledge syllabus specified in DASR 66 for the relevant Military Aircraft Maintenance Licence (MAML) category or subcategory; and

2. The type course content required by DASR 66 for the relevant aircraft type and MAML category or subcategory.

(b) Students shall have access to examples of maintenance documentation and technical information in the library as specified in DASR 147.A.100(i).

147.A.125 - Records of students

The MTO shall keep all student training, examination and assessment records for at least twenty years following completion of the particular student's course. ▸ **AMC** ▸ **GM**

GM 147.A.125 - Records of Students (AUS)

Records must comply with, and be retained in accordance with the requirements of the Australian Government Archive Act (1983).

AMC 147.A.125 - Records of students

In addition to each student's training, examination and assessment records, the content of the course(s) undertaken by each student, eg syllabus or curriculum, together with the amendment state of the course content as detailed in the MTOE Item 4.2, should also be retained.

147.A.130 - Training procedures and quality system

▸ **AMC**

AMC 147.A.130 - Training Procedures and Quality System (AUS)

The Australian Skills Quality Authority's Standards for Registered Training Organisations (RTO) requires RTOs to have a quality system. Consequently, there is an overlap between those Standards and this regulation. If the MTO is already an RTO it is acceptable for the DASR 147 Exposition to cross refer to their RTO documents where elements of the two quality systems are the same.

(a) The MTO shall establish procedures acceptable to the DASA to ensure proper training standards and compliance with all relevant requirements in this DASR.

(b) The MTO shall establish a quality system including: ▸ **AMC** ▸ **GM**

GM 147.A.130(b) - Training procedures and quality system

1. The primary objective of the quality system is to enable the MTO to satisfy itself that it can deliver properly trained students and that the MTO remains in compliance with DASR 147.

2. The independent audit is a process of routine sample checks of all aspects of the MTO's ability to carry out all training and examinations to the required standards. It represents an overview of the complete training system and does not replace the need for instructors to ensure that they carry out training to the required standard.

3. A report should be raised each time an audit is carried out describing what was checked and any resulting findings. The report should be sent to the affected department(s) for rectification action giving target rectification dates. Possible rectification dates may be discussed with the affected department(s) before the quality department confirms such dates on the report. The affected department(s) should rectify any findings and inform the quality department of such rectification.

4. A large MTO (an organisation with the capacity to provide training for 50 students or more) should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow-up to ensure that findings are being rectified. For the small MTO (an organisation with the capacity to provide training for less than 50 students) it is acceptable to use competent personnel from one section/department not responsible for the function or procedure to check the section/department that is responsible, subject to the overall planning and implementation being under the control of the quality manager.

5. The management control and follow-up system should not be contracted to outside persons. The principal function is to ensure that all findings resulting from the independent audit are corrected in a timely manner and to enable the Accountable Manager to remain properly informed of the state of compliance. Apart from rectification of findings, the Accountable Manager should hold routine meetings to check progress on rectification, except that in the large MTO such meetings may be delegated on a day-to-day basis to the quality manager as long as the Accountable Manager meets at least once per year with the senior staff involved to review the overall performance.

AMC 147.A.130(b) - Training procedures and quality system

1. The independent audit procedure should ensure that all aspects of DASR 147 compliance should be checked at least once in every 12 months and may be carried out as one complete single exercise or subdivided over a 12-month period in accordance with a scheduled plan.

2. In a small MTO (an organisation with the capacity to provide training for less than 50 students) the independent audit function may be contracted to another MTO approved under DASR 147 by an arrangement acceptable to the DASA, or to a competent person acceptable to the DASA. Where the small MTO chooses to contract the audit function, the DASA should specify the audit periodicity.

3. Where the MTO is part of an organisation that is also approved to another DASR requiring a quality system, then such quality systems may be combined.

4. When training or examination is carried out under the 'subcontract control system' (see DASR 147.A.145):

   i. a pre-audit procedure should be established whereby the DASR 147 MTO should audit a prospective subcontractor to determine whether the services of the subcontractor meet the intent of DASR 147. The pre-audit procedure should focus on establishing compliance with the training and examination standards set out in DASR 147 and DASR 66.

   ii. a renewal audit of the subcontractor should be performed at least once every 12 months to ensure continuous compliance with the DASR 147 standard.

   iii. the subcontract control procedure should record audits of the subcontractor and have a corrective action follow-up plan.

5. The independence of the audit system should be established by always ensuring that audits are carried out by personnel not responsible for the function or procedure being checked.

1. An independent audit function to monitor training standards, the integrity of knowledge examinations and practical assessments, compliance with and adequacy of the procedures; and

2. A feedback system of audit findings to the person(s) and ultimately to the Accountable Manager referred to in DASR 147.A.105(a) to ensure, as necessary, preventive and corrective actions.

147.A.135 - Examinations

(a) The examination staff shall ensure the security of all questions. ▸ **AMC**

AMC 147.A.135(a) - Examinations

1. Examinations may be computer- or hard-copy-based or a combination of both.

2. The actual questions to be used in a particular examination should be determined by the examiners.

(b) Any student found during a knowledge examination to be cheating or in possession of material pertaining to the examination subject other than the examination papers and associated authorised documentation shall be disqualified from taking the examination. In such a case the student shall not take any examination for at least 12 months after the date of the incident unless the DASA approves otherwise. The DASA shall be informed of any such incident together with the details of any enquiry within one calendar month. ▸ **AMC** ▸ **AMC1**

AMC1 147.A.135(b) - Examinations (AUS)

ADF or APS students meeting the criteria of DASR 147.A.135(b) are to be managed in accordance with single Service suspension policies, or the APS Code of Conduct, respectively.

AMC 147.A.135(b) - Examinations

If the DASA approves a period of less than 12 months, this approval should be provided in writing to the MTO and kept within the student's records as detailed in DASR 147.A.125.

(c) Any examiner found during a knowledge examination to be providing question answers to any student being examined shall be disqualified from acting as an examiner and the examination declared void. The DASA (DCA) shall be informed of any such occurrence within one calendar month. ▸ **AMC** ▸ **GM**

GM 147.A.135(c) - Examinations

The DASA will determine when or if the disqualified examiner may be reinstated.

AMC 147.A.135(c) - Examiners (AUS)

ADF or APS instructors meeting the criteria of DASR 147.A.135(c) are to be managed in accordance with single Service suspension policies, or the APS Code of Conduct, respectively. Contractor instructors meeting the criteria of DASR 147.A.135(c) are to be dealt with in accordance with the contract, if any; otherwise in accordance with this DASR.

147.A.140 - Maintenance Training Organisation Exposition

▸ **AMC** ▸ **AMC1**

AMC1 147.A.140 - Registered Training Organisations (AUS)

Registered Training Organisations (RTO) must document how they comply with Australian Skills Quality Authority's Standards for RTOs. Some of that documentation will satisfy elements of the MTOE. Where this is the case, it is acceptable for the MTOE to cross-refer to RTO document(s).

AMC 147.A.140 - Maintenance Training Organisation Exposition

1. The information detailed in Annex A to AMC 147.A.140 should be included in the MTOE.

2. When the MTO, or organisation it is part of, is approved in accordance with any other EMAR or CASA / EASA approval which also requires an exposition, the exposition required by the other EMAR or CASA / EASA approval may form the basis of the MTOE in a combined document, as long as the other exposition contains the information required by DASR 147.A.140 and a cross-reference index is included based upon Annex A.

3. When training or examination is carried out under the 'subcontract control system' (see DASR 147.A.145), the MTOE should contain a specific procedure on the control of subcontractor(s) under Annex A Item 2.18, plus a list of subcontractor(s) as required by DASR 147.A.140(a)12 and detailed in Annex A Item 1.7.

4. NOT APPLICABLE.

(a) The MTO shall provide an exposition for use by the MTO describing the organisation and its procedures and containing the following information:

1. A statement signed by the Accountable Manager confirming that the MTOE and any associated manuals define the MTO's compliance with this DASR and shall be complied with at all times. Where the Accountable Manager is not the Chief Executive Officer or the senior military commander of the organisation, the Chief Executive Officer or the senior military commander of the organisation shall countersign that statement.

2. The title(s) and name(s) of the person(s) nominated in accordance with DASR 147.A.105(b).

3. The duties and responsibilities of the person(s) specified in subparagraph (a)2, including matters on which they may deal directly with the DASA on behalf of the MTO.

4. A MTO chart showing associated lines of responsibility of the person(s) specified in subparagraph (a)2.

5. A list of the instructors, knowledge examiners and practical assessors.

6. A general description of the training and examination facilities located at each address specified in the MTO's approval certificate, and if appropriate any other location, as required by DASR 147.A.145(b).

7. A list and details of the maintenance training courses which form the extent of the approval. ▸ **GM**

GM 147.A.140(a)(7) - Maintenance Training Organisation Exposition (AUS)

Details of approved Military Aircraft Type Ratings should include how the course content maintains alignment with changes to the relevant aircraft type design.

8. The MTO's exposition amendment procedure.

9. The MTO's procedures, as required by DASR 147.A.130(a).

10. The MTO's control procedure, as required by DASR 147.A.145(c), when authorised to conduct training, examination and assessments in locations different from those specified in DASR 147.A.145(b).

11. A list of the locations pursuant to DASR 147.A.145(b).

12. A list of organisations, if appropriate, as specified in DASR 147.A.145(d).

(b) The MTO's exposition and any subsequent amendments shall be approved by the DASA.

(c) Notwithstanding paragraph (b) minor amendments to the exposition may be approved through an exposition procedure (also called indirect approval). ▸ GM ▸ GM1

GM1 147.A.140(c) - Maintenance Training Organisation Exposition (AUS)

The classes of amendments which may be acceptable to DASA without prior approval by the Authority are those which have no material effect on safety, the quality of training or the knowledge, skills and attitudes of course graduates.

With reference to Annex A to AMC 147.A.140, the procedure could include, but is not limited to changes to the following elements of the Exposition:

a. 1.5 - List of instructional and examination staff. Changes to the list of instructors, examiners and assessors can be made, provided that the new employees have the appropriate qualifications.

b. 1.8 - General description of facilities. The general description of facilities may be changed.

c. Part 2 – any element may be changed, provided any such change has no material effect on safety, the quality of training or the knowledge, skills and attitudes of course graduates.

d. All elements – grammatical and typographic changes.

DASR 147 organisations may propose other elements to be included in the procedure for the DASA's consideration.

GM 147.A.140(c) - Maintenance Training Organisation Exposition

The quality manager should be responsible for monitoring the amendment of the MTOE, unless otherwise agreed by the DASA, including associated procedures manuals and submission of the proposed amendments to the DASA. However, the DASA may agree via a procedure stated in the amendment section of the MTOE that some defined class of amendments may be incorporated without prior approval by the DASA.

(d) Where an MTO has an extant EMAR / CASA/ EASA Part 147 approval, those parts of the organisation's EMAR / CASA/ EASA Part 147 exposition that are equally applicable to satisfy the DASR 147 requirements will generally be accepted by the DASA as equivalent in respect of the DASR 147 exposition. In this case it is permissible that only those regulations that are military specific need be addressed in the DASR 147 exposition; those regulations covered by read-across of the sections of the EMAR/ CASA/EASA exposition document shall be identified and the EMAR / CASA/ EASA document clause reference quoted.

147.A.145 - Privileges of the Maintenance Training Organisation

(a) The MTO may carry out the following as permitted by and in accordance with the MTOE:

1. Basic training courses to the DASR 66 syllabus, or part thereof. Show ▸ **AMC**

AMC 147.A.145(a)1 - Basic Training (AUS)

Australian aircraft maintenance training is generally aligned with traditional aviation trades (aircraft, avionics, structures etc.) That training does not meet the full requirements of the DASR 66 basic course syllabus. It is acceptable to deliver basic training which provides the underpinning skills and knowledge from the Aeroskills Training Package for the relevant trade (or Cert II level for Category A licences), at Cert IV level, provided the pass mark for theory examinations is no less than 75 per cent (%).

2. Aircraft type/task training courses in accordance with DASR 66, or part thereof.

3. The examinations on behalf of the DASA, including the examination of students who did not attend the basic or Military Aircraft Type Training course at the MTO. (The procedures for examinations are detailed in DASR 66 Appendix II or Appendix III).

4. the issue of certificates in accordance with Appendix III following successful completion of the approved basic or Military Aircraft Type Training courses and examinations specified in subparagraphs (a)(1), (a)(2) and (a)(3), as applicable. ▸ **AMC**

AMC 147.A.145(a)4 - Issue of Certificates (AUS)

Organisations which deliver aviation training generally issue course completion certificates. Those organisations may continue to issue such certificates in lieu of the certificate format of Appendix III, provided they provide the same information as required by this regulation (or are amended to provide that information).

(b) Training, knowledge examinations and practical assessments may only be carried out at the locations identified in the approval certificate and/or at any location specified in the MTOE.

(c) By way of exception to paragraph (b), the MTO may only conduct training, knowledge examinations and practical assessments in locations different from the paragraph (b)

locations in accordance with a control procedure specified in the MTOE. Such locations need not be listed in the MTOE.

(d)

1. The MTO may subcontract the conduct of basic theoretical training, Military Aircraft Type Training and related examinations to a non MTO only when under the control of the MTO quality system.

2. The subcontracting of basic theoretical training and examination is limited to DASR 66 Appendix I Modules 01 to 06, and 08 to 10. ▸ **AMC** ▸ **GM** ▸ **GM1**

GM1 147.A.145(d)2 - Contracting (AUS)

Initial trade training at RAAFSTT is not subcontracted; it is contracted in its entirety. Some post-graduate courses at RAAFSTT are sub-contracted to DATA, however DASR 147 clauses relating to sub-contract are not relevant to those courses.

GM 147.A.145(d)2 - Privileges of the Maintenance Training Organisation

1. See AMC 147.A.130(b)

2. The fundamental reason for allowing an MTO approved under DASR 147 to subcontract certain basic theoretical training courses is to permit the approval of MTOs which may not have the capacity to conduct training courses on all DASR 66 modules.

3. The reason for allowing the subcontracting of only training modules 1 to 6 and 8 to 10 of Appendix I to DASR 66 is that most of the related subjects can generally also be taught by training organisations not specialised in aircraft maintenance and the practical training element as specified in DASR 147.A.200 does not apply to them. However, training modules 7, 11 to 17 and 50 to 55 of Appendix I to DASR 66 are specific to aircraft maintenance and include the practical training element as specified in DASR 147.A.200. The intent of the "limited subcontracting" option as specified in DASR 147.A.145 is to grant DASR 147 approvals only to those organisations having themselves at least the capacity to teach on-aircraft maintenance specific matters.

AMC 147.A.145(d)2 - Privileges of the Maintenance Training Organisation

1. When training or examination is carried out under the ‘subcontract control system’, it means that for the duration of such training or examination, the DASR 147 approval has been temporarily extended to include the subcontractor. It therefore follows that those parts of the subcontractor’s facilities, personnel and procedures involved with the DASR 147 MTO’s students should meet the requirements of DASR 147 for the duration of that training or examination and it remains the DASR 147 MTO’s responsibility to ensure such requirements are satisfied.

2. The MTO approved under DASR 147 is not required to have complete facilities and personnel for training that it needs to subcontract but it should have its own expertise to determine that the subcontractor meets the DASR 147 standards. Particular attention should be given to ensuring that the training that is delivered also meets the requirements of DASR 66 and that the aircraft technologies are appropriate.

3. The contract between the MTO approved under DASR 147 and the subcontractor should contain:

– a provision for the MAA to have right of access to the subcontractor;

– a provision that the subcontractor must inform the DASR 147 approved MTO of any change that may affect its DASR 147 approval, before any such change takes place.

3. The subcontracting of Military Aircraft Type Training and examination is limited to powerplant, avionic systems, armaments, escape systems and other relevant military-specific systems. ▸ **GM**

GM 147.A.145(d)3 - Privileges of the Maintenance Training Organisation

In the case of Military Aircraft Type Training and examination, the reason for restricting subcontracting to powerplant, avionic systems, armaments, escape systems and other relevant military-specific systems is that the related subjects can generally also be imparted by certain organisations specialised in these domains such as the (Military) Type Certificate holder of the powerplant or the OEMs of these avionic systems, armaments, escape systems and other relevant military-specific systems. In such a case, the Military Aircraft Type Training course should make clear how the interfaces with the aircraft are addressed and by whom (the subcontracted organisation or the DASR 147 MTO itself).

(e) An organisation shall not be approved to conduct examinations unless approved to conduct the corresponding training.

147.A.150 - Changes to the Maintenance Training Organisation

(a) The MTO shall notify the DASA of any proposed changes to the organisation that affect the approval before any such change takes place, in order to enable the DASA to determine continued compliance with this DASR and to amend if necessary the MTO approval certificate.

(b) The DASA may prescribe the conditions under which the MTO may operate during such changes unless the DASA determines that the MTO approval must be suspended.

(c) Failure to inform the DASA of such changes may result in suspension or revocation of the MTO approval certificate backdated to the actual date of the changes.

147.A.155 - Continued validity of approval

(a) An approval shall be issued for an unlimited duration. It shall remain valid subject to:

1. The MTO remaining in compliance with this DASR, in accordance with the provisions related to the handling of findings as specified under DASA(SI) ▸ **AMC**; and

AMC 147.A.155(a)1 - Continued validity of approval (AUS)

If a DASR 147 MTO is also a Registered Training Organisation or has a CASR Pt 147 organisational approval and the accreditation or approval is suspended or revoked, the DASA is to be advised within five working days. The advice is to include the reason(s) why the accreditation / approval has been suspended or revoked. If the accreditation / approval has been suspended for a set period, the advice is to state the period of suspension.

DASA will determine whether suspension or revocation of the DASR 147 approval is warranted and advise the MTO.

2. The DASA being granted access to the MTO to determine continued compliance with this DASR; and ▸ **AMC**

AMC 147.A.155(a)2 - Continued validity of approval

In addition to being granted access to the MTO to determine continued compliance, the DASA should also be granted access to any organisation carrying out training (and, if applicable, examination) on behalf of the MTO under the 'subcontract control system' as specified at DASR AMC 147.A.145(d).

3. The certificate not being surrendered or revoked.

(b) Upon surrender or revocation, the approval shall be returned to the DASA.

147.A.160 - Findings of non-compliance

(a) A level 1 finding is one or more of the following:

1. Any significant non-compliance with the examination process which would invalidate the examination(s),
2. Failure to give the DASA access to the MTO's facilities during normal operating hours after two written requests,
3. The lack of an Accountable Manager,
4. A significant non-compliance with the training process.

(b) A level 2 finding is any non-compliance with the training process other than level 1 finding.

(c) After receipt of notification of findings, the holder of the MTO approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the DASA within a period agreed with this authority.

SUBPART C - APPROVED BASIC TRAINING COURSE

▸ **AMC to Subpart C**

AMC to Subpart C (AUS)

Australian aircraft maintenance training is generally aligned with traditional aviation trades (aircraft, avionics, structures etc.) That training does not meet the full requirements of the DASR 66 basic course syllabus. It is acceptable to deliver basic training which provides the underpinning skills and knowledge from the Aeroskills Training Package for the relevant trade (or Cert II level for Category A licences), at Cert IV level, provided the pass mark for theory examinations is no less than 75 per cent (%).

147.A.200 - The approved basic training course

(a) The approved basic training course shall consist of knowledge training, knowledge examination, practical training and a practical assessment.

(b) The knowledge training element shall cover all subjects of the relevant MAML category as specified in DASR 66. ▸ **AMC** ▸ **AMC1**

AMC1 147.A.200(b) - Basic Training (AUS)

Australian aircraft maintenance training is generally aligned with traditional aviation trades (aircraft, avionics, structures etc.) That training does not meet the full requirements of the DASR 66 basic course syllabus. It is acceptable to deliver basic training which provides the underpinning skills and knowledge from the Aeroskills Training Package for the relevant trade (or Cert II level for Category A licences), at Cert IV level, provided the pass mark for theory examinations is no less than 75 per cent (%).

AMC 147.A.200(b) - The approved basic training course

Each MAML category or subcategory basic training course may be subdivided into modules or submodules of knowledge and may be intermixed with the practical training elements subject to the required time elements of DASR 147.A.200(f) and DASR 147.A.200(g) being satisfied.

(c) The knowledge examination element shall cover a representative cross section of all subjects from the paragraph (b) training element.

(d) The practical training element shall cover the practical use of common tooling/ equipment, the disassembly/assembly of a representative selection of aircraft parts and the participation in representative maintenance activities being carried out relevant to the particular DASR 66 complete module. ▸ **AMC**

AMC 147.A.200(d) - The approved basic training course

At least 30 per cent (%) of the practical training element should be carried out in a realistic maintenance working environment.

(e) The practical assessment element shall cover the practical training and determine whether the student is competent at using tools and equipment and working in accordance with maintenance manuals.

(f) The duration and minimum number of practical training hours to be completed on basic training courses shall be in accordance with Annex A to AMC 147.A.140. ▸ **AMC** ▸ **AMC1**

AMC1 147.A.200(f) - Initial Employment Training (AUS)

Initial employment training at RAAFSTT shall be delivered in accordance with the contract between the Commonwealth of Australia and the training provider. This contract does not specify student's participation time; rather, it requires the training provider to implement each Service's suspension management policy and to take action in accordance with such policy if students cannot achieve the course learning outcomes.

AMC 147.A.200(f) - The approved basic training course

1. In order to follow pedagogical and human factors principles, the maximum number of training hours per day for the theoretical training should not be more than 6 hours. A training hour means 60 minutes of tuition excluding any breaks, examination, revision, preparation and aircraft visits. The DASA may allow deviation from this standard when it is properly justified or where existing courses have demonstrated incorporation of pedagogical and human factors principles as evidenced by acceptance to the Training Package by the ADF Training Approval Authority. These principles are especially important in those cases where:

   Theoretical and practical training are performed at the same time;

   Training and normal maintenance duty/apprenticeship are performed at the same time.

2. The minimum participation time for the student to meet the objectives of the course should not be less than 90 per cent (%) of the tuition hours. Additional training may be provided by the MTO in order to meet the minimum participation time. If the minimum participation defined for the course is not met, a certificate of recognition (see example at DASR 147 Appendix III) should not be issued.

(g) The duration of conversion courses between (sub)categories shall be determined by the MTO through an assessment of the basic training syllabus and the related practical training needs.

147.A.205 - Basic knowledge examinations

Basic knowledge examinations shall: ▸ **AMC** ▸ **AMC1**

AMC1 147.A.205 - Basic Training (AUS)

Australian aircraft maintenance training is generally aligned with traditional aviation trades (aircraft, avionics, structures etc.) That training does not meet the full requirements of the DASR 66 basic course syllabus. It is acceptable to deliver basic training which provides the underpinning skills and knowledge from the Aeroskills Training Package for the relevant trade (or Cert II level for Category A licences), at Cert IV level, provided the pass mark for theory examinations is no less than 75 per cent (%).

AMC 147.A.205 - Basic knowledge examinations

The DASA may accept that the MTO approved under DASR 147 can conduct examination of students who did not attend an approved basic course at that MTO.

(a) Be in accordance with the standard defined in DASR 66.

(b) Be conducted without the use of training notes.

(c) Cover a representative cross section of subjects from the particular module of training completed in accordance with DASR 66.

147.A.210 - Basic practical assessment

(a) Basic practical assessments shall be carried out during the basic maintenance training course by the nominated practical assessors at the completion of each visit period to the practical workshops/maintenance facility.

(b) The student shall achieve an assessed pass with respect to DASR 147.A.200(e). ▸ **AMC**

AMC 147.A.210(b) - Basic practical assessment

An assessed pass for each student should be granted when the practical assessor is satisfied that the student meets the criteria of DASR 147.A.200(e). This means that the student has demonstrated the capability to use relevant tools/equipment/test equipment as specified by the tool/equipment/test equipment manufacturer and the use of maintenance manuals, and the student can carry out the required inspection/testing without missing any defects, can readily identify the location of components and is capable of correct removal/fitment/adjustment of such components. The student is only required to carry out enough inspection/testing and component removal/fitment/adjustments to prove capability. The student should also show an appreciation of the need to ensure clean working conditions and the observance of safety precautions for the student and the product. In addition, the student should demonstrate a responsible attitude in respect to flight safety and the airworthiness of the aircraft.

AMC to Appendix III to DASR 66 provides criteria for the competence assessment performed by the designated assessors (and their qualifications).

SUBPART D - AIRCRAFT TYPE/TASK TRAINING

147.A.300 - Aircraft type/task training

An MTO shall be approved to carry out DASR 66 aircraft type and/or task training or part thereof, subject to compliance with the standard specified in DASR 66.A.45. ▸ **AMC**

AMC 147.A.300 - Military Aircraft Type/Task Training

Military Aircraft Type Training may be subdivided into airframe and/or powerplant and/or avionics/electrical systems and/or armaments/escape systems/other relevant military-specific systems type training courses. An MTO approved under DASR 147 may be approved to conduct airframe type training only, powerplant type training only, avionics/electrical systems type

training only, armaments/escape systems/other relevant military-specific systems type training only or any combination thereof.

1. Airframe type training course means a type training course including all relevant aircraft structure and electrical and mechanical systems excluding the powerplant.

2. Powerplant type training course means a type training course on the bare engine, including the build-up to an engine change unit.

3. The interface of the engine/airframe systems should be addressed by either airframe or powerplant type training course.

4. Avionics/electrical systems type training course means type training on avionics and electrical systems as determined by the DASA.

5. Armaments/escape systems/other relevant military-specific systems type training means type training on all other military-specific systems not covered in sub-paragraphs 1 to 4 above, as determined by the DASA.

147.A.305 - Aircraft type examinations and task assessments

An MTO approved in accordance with DASR 147.A.300 to conduct Military Aircraft Type Training or part thereof, shall conduct the related aircraft type examinations or aircraft task assessments specified in DASR 66 subject to compliance with the aircraft type and/or task standard specified in DASR 66.A.45.

Annexes/Appendixes

Annex A to AMC 147.A.140 - Maintenance Training Organisation Exposition

MAINTENANCE TRAINING ORGANISATION EXPOSITION CONTENT

1. The following subject headings form the basis of the MTOE required by DASR 147.A.140.

2. For standardisation purposes and to facilitate the production of the MTOE by the DASR 147 Maintenance Training Organisation (MTO) DASA recommends adoption of the following format for the MTOE. It is not mandatory to assemble the MTOE in this manner as long as a cross-reference index is included in the MTOE as an Appendix and the Part 1 items remain in Part 1. The MTO should customise the document to suit their organisation and may add pages / paragraphs as necessary.

3. Part 2, 3 and 4 material may be produced as separate detailed manuals subject to the main MTOE containing the Part 2, 3 and 4 fundamental principles and policy on each item. It is then permitted to delegate the approval of these separate manuals to the senior person but this fact and the procedure for doing so should be specified in paragraph 1.10.

4. Where an MTO is approved in accordance with any other DASR which require an exposition, it is acceptable to combine the exposition requirements by merging the Part

1 items and adding the Parts 2, 3 and 4. When this method is used, it is essential to include the cross-reference index of Part 4 item 4.3.

TABLE OF CONTENT

2.1. Organisation of courses

2.2. Preparation of course material

2.3. Preparation of classrooms and equipment

2.4. Preparation of workshops / maintenance facilities and equipment

2.5. Conduct of theoretical training and practical training (during basic knowledge training and aircraft type / task training)

2.6. Records of training carried out

2.7. Storage of training records

2.8. Training at locations not listed in paragraph 1.6

2.9. Organisation of examinations

2.10. Security and preparation of examination material

2.11. Preparation of examination rooms

2.12. Conduct of examinations (basic knowledge examinations, aircraft type / task training examinations)

2.13. Conduct of practical assessments (during basic knowledge training and aircraft type / task training)

2.14. Marking and record of examinations

2.15. Storage of examination records

2.16. Examinations at locations not listed in paragraph 1.6

2.17. Preparation, control and issue of basic / type training course certificates

2.18 Control of contracted / tasked organisations

PART 3 – TRAINING SYSTEM QUALITY PROCEDURES

3.1. Audit of training

3.2. Audit of examinations

3.3. Analysis of examination results

3.4. Audit and analysis remedial action

3.5. Accountable Manager annual review

3.6. Qualifying the instructors

3.7. Qualifying the examiners and the practical assessors

3.8. Records of qualified instructors, examiners and practical assessors

PART 4 – APPENDICES

4.1. Example of documents and forms used

4.2. Syllabus and Training Needs Analysis (TNA) of each training course

4.3. Cross-reference index

NOTE: Where a Part is not used it should be shown in the MTOE as **NOT APPLICABLE**.

PART 0 – GENERAL ORGANISATION

0.1 – List of effective pages

Example:

Page	Revision
1	Original
2	Original

Page	Revision
3	Original
4	Original

Page	Revision
5	Original
.....	.....

0.2 – List of issues / amendments / record of revisions

Example:

Issue number	Revision number	Date	Reason for change
1	0	19/12/06	N/A
2	0	01/01/12	Extension of the TB1.3 scope of approval
	1	01/01/14	New procedure for the records of students

0.3 – Distribution list

The document should include a distribution list to ensure proper distribution of the MTOE and to demonstrate to the DASA that all personnel involved in the maintenance training have access to the relevant information. This does not mean that all personnel have to be in receipt of a MTOE but that a reasonable number of copies are distributed within the organisation(s) so that all personnel may have quick and easy access to it. Reference should also be made to the location of any e-copies of the MTOE.

Accordingly, the MTOE should be distributed to:

- the Operating Organisation's management personnel (if the MTO is part of an operating Organisation),
- any relevant maintenance organisation, eg when MTO contract / task the practical type training,… or MTO,
- the MTO management personnel and any person at a lower level as necessary; and
- the DASA.

0.4 – DASR 147 requirements cross-reference list

The MTOE should contain a cross-reference list with an explanation as to where each DASR 147 Section A requirement is addressed in the MTOE.

0.5 – General information

This chapter should describe broadly how the whole organisation is organised under the management of the Accountable Manager.

PART 1 – MANAGEMENT

1.1 – Corporate commitment by the Accountable Manager

The Accountable Manager's MTOE statement should embrace the intent of the following paragraph and this statement may be used without amendment. Any modification to the statement should not alter the intent.

This MTOE defines the organisation and procedures upon which the DASR 147 MTO approval is based.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the DASA from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the DASA will approve this MTO whilst the DASA is satisfied that the procedures and work standards are being followed. It is understood that the DASA reserves the right to suspend, vary or revoke the DASR 147 MTO approval, as applicable, if the DASA has evidence that the procedures are not followed and the standards not upheld.

These procedures are approved by the undersigned and must be complied with, as applicable, whenever knowledge or practical training is being progressed under the terms of the DASR 147 approval.

The undersigned fully accepts the duties and responsibilities of Accountable Manager as defined in paragraph 1.3.1 of this MTOE.

Signed .....

Dated .....

Accountable Manger and .....(quote position).....

For and behalf of .....(quote MTO name).....

1.2 – Management personnel

Accountable Manager .....

Training Manager .....

Quality Manager .....

Examination Manager .....

Other (as required) .....

The Managers specified above are identified and their credentials apart from the Accountable Manager have been submitted on DASR Form 4 to the DASA.

Any changes to the above personnel shall be advised to the DASA. Failure to do so may affect the status of the DASR 147 approval.

1.3 - Duties and responsibilities of management personnel, instructors, knowledge examiners and practical assessors

1.3.1 - Accountable Manager

The Accountable Manager is responsible for:

Ensuring that all instruction and examinations carried out by the MTO meet the standards required by the DASA.

Ensuring that the necessary finance, human resources and facilities are available to enable the MTO to perform the knowledge and / or practical instruction and examinations to which it is committed under the requirements of DASR 147.

Chairing the annual meeting of senior staff to review the overall performance of the MTO.

Ensuring that during periods of absence, control will be maintained for administration purposes by (Insert name / position in MTO), who will accept full responsibility for all training issues and related decisions.

The operation of (insert name of MTO) is efficiently managed and conforms to the requirements of DASR 147 as stipulated by the DASA.

NOTES: (not for inclusion in the MTOE)

Any additional duties and responsibilities within the MTO may be added or delegated provided they do not conflict with those above, which constitute the Accountable Manager's responsibilities under DASR 147.

The MTO should decide who will be responsible for liaison with the DASA and show this in their terms of reference. If more than one person is nominated it must be clearly shown what each person is responsible for with, as a general rule, no overlapping of responsibility

1.3.2 - Training Manager

The Training Manager will undertake:

- The responsibilities of the nominated person at (insert name of DASR 147 MTO).
- The duties and responsibilities of the DASR 147 approved examiner during the absence of any nominated approved examiner(s).

The Training Manager will ensure that:

- The Accountable Manager is kept informed as to the state of compliance of the MTO with DASR 147.
- The operation of (insert name of MTO) is efficiently managed and conforms to the requirements of DASR 147 as stipulated by the DASA.
- Sufficient staff with appropriate qualifications are selected, trained and developed, to plan, perform, supervise, examine and assess students as required.
- All necessary Airworthiness data published by the DASA and Aircraft manufacturers as appropriate, is made available.
- All changes to the MTOE and associated manuals are notified immediately to the DASA.
- The MTOE and associated manuals are amended as required.
- Knowledge examiners, instructors and practical assessors are fully trained and assessed regularly for competence and that all records pertaining to these personnel are kept up to date.
- Contracted / tasked staff including any part time staff conform to the requirements of DASR 147 and the training procedures.
- Office accommodation and facilities are available appropriate to the management of the planned training and for the use of training staff.
- Staff development and update training is undertaken and recorded.
- That all approved courses and examinations are delivered to the standard and content at the required level of knowledge, as specified in DASR 147.
- A working environment is provided appropriate to the tasks being undertaken.
- There are sufficient storage facilities, tools, equipment, materials and publications available to perform the planned practical tasks.
- Secure facilities are available for the storage of examination papers prior to the examination and for the storage of completed students answer papers.

- The interviewing of students prior to, during and on completion of the course is effective and without bias.
- Student and staff records are produced and stored in secure conditions.
- Any person to whom any of these responsibilities may be delegated is aware of current regulations.
- Corrective action is carried out for the findings of quality audits.
- The follow up and rectification of findings required to re-establish the required standards of training, examination or maintenance standards.
- That sufficient questions are available to produce the examination papers required to cover the syllabus in accordance with DASR 66 Appendix II and III. If questions are utilised for progress tests they should not be used in the final examination.
- The security and validity of all examinations are in accordance with the requirements of DASR 66 and DASR 147.
- All examinations and assessment timetables are coordinated.
- Compliance with the examination question review procedures is as required by DASR 66 and / or DASR 147.

NOTES:

This paragraph should emphasise that the nominated post holder for training is responsible to ensure that all training is carried out to an approved standard and describes the extent of their authority as regards their DASR 147 responsibility.

These duties may be adjusted to suit the requirements of the DASR 147 Approved MTO but should not detract from the particular requirements of DASR 147 or DASR 66

1.3.3 - Quality Manager

The Quality Manager has direct access to the Accountable Manager in the event of any reported discrepancy not being adequately attended to by the relevant person, or in respect of any disagreement over the nature of the discrepancy.

The Quality Manager is responsible for:

- Establishing an independent quality system to monitor compliance with DASR 147 requirements.
- Assessing non-approved contracted/tasked MTOs working under the MTO quality system.
- Implementing a quality audit programme in which compliance with all training procedures is reviewed at regular intervals, and any observed non-compliances or poor standards are brought to the attention of the person concerned via their Manager.

- Proposing all corrective action necessary for eliminating non-compliance and ensuring that these corrective actions are initiated and when completed are efficient and meet their intended purpose.
- Requiring remedial action, as necessary, by the Training Manager or the Accountable Manager.
- The MTOE and associated manuals are amended as required.

NOTES:

These duties may be adjusted to suit the requirements of the DASR 147 approved MTO but should not detract from the particular requirements of DASR 147 or DASR 66.

It must be remembered that the quality audit system is required to be independent and where possible the Quality Manager and quality audit personnel should not be directly involved in the training process. Where for reasons of expediency it is necessary to utilise training staff, it would then become necessary for a second member of staff to be nominated to audit those functions performed by the Quality Manager.

Alternatively / additionally an external auditor acceptable to the DASA may be contracted / tasked in order to ensure the required independence.

1.3.4 - Examiner

The examiner is a nominated person who will determine the level of theoretical knowledge of the trainees on a particular module, element, or part thereof. The function may include the drafting and/ or the selection of questions (MCQs and Essays), the performance of the examination exercise itself for essay questions, the evaluation of the correctness of answers (except when correct answers are pre-determined) and the final judgment regarding the level of knowledge demonstrated by the trainee.

NOTE: Persons solely supervising an exam session consisting of pre-selected MCQ questions are not considered as examiners but are considered as support staffs (invigilators) and are therefore not subject to the knowledge and experience requirements but need to be trained to the examination procedure described in the MTOE.

The invigilation of examinations shall ensure that the conditions for examination comply with DASR 66 Appendix II (for basic training) or Appendix III, paragraph 3 (for type training)

1.3.5 - Instructor

The instructor is a nominated person who will carry out instructional duties for which they are qualified (type / basic training).

Additionally, the instructor can:

- Draft questions for examination banks for courses they are authorised;
- Undertake duties of invigilator where they are not involved in the instruction of that particular phase examination.

NOTE: The instructor is not necessarily the person involved into the drafting of the course material (content, duration etc…), however they must be involved at some point into the organisation of the lessons themselves (creation of the instructor notes, slides, sequencing etc…).

1.3.6 - Practical assessor

The practical assessor is a nominated person who will determine the level of practical knowledge/ practical skills of the trainees on a particular module, element, or part thereof. The function may include the drafting and / or the selection of practical tasks and shall include the performance of the practical assessment itself, and the evaluation of the practical abilities on the tasks covered by the assessment.

1.4 - Management personnel organisation chart

A flow chart should provide a comprehensive understanding of the whole MTO. It should give further details on the management system and should clearly show the independence of the quality monitoring system, including the links between the Quality Assurance department and the other departments. This flow chart may be combined or subdivided as necessary, depending on the size and the complexity of the MTO.

NOTE: The MTOE must also define who deputises for any senior person in case of lengthy absenceList of Instructional and Examination staff

1.5 - List of Instructional and Examination staff

This paragraph should give broad figures to show that the number of people dedicated to the performance of the approved training activity is adequate. It is not necessary to give the detailed number of employees of the whole MTO but only the number of those involved in training.

This could be presented as follows:

APPOINTMENT:	**NAME:**	**COMPETENCIES:**
Training Manager Deputy Training Manager Quality Manager Examiner Examiner / Instructor Instructor Instructor Instructor Instructor / Invigilator		enter here those areas each person is qualified to instruct using DASR 66 module / sub-modules OR type of aircraft and the specific areas they are

Invigilator Practical Assessor		qualified to instruct, ie Airframe, Engine, Electrical Instrument, Auto flight, Radio or Radar.

NOTES:

According to the size and complexity of the MTO, this table may be further developed.

The DASR 147 examiners are the only persons allowed to produce / select examination papers. They may nominate other persons to mark completed examinations. The examiners and these persons should be other than the knowledge instructors involved in the instruction of that particular module/sub-module.

1.6 - List of approved addresses

This paragraph should list those address(es) at which instruction and/or practical training are to be carried out for the duration of the DASR 147 course.

The names, address(es) and approval numbers of any proposed DASR 145 AMO at which it is proposed to carry out student practical training in order to fulfil the requirements of DASR 147 may be kept in another document or procedure and cross referenced here.

1.7 - List of contracted / tasked organisations as per DASR 147.A.145(d)

This paragraph should list those address(s) at which training beyond the capacity of the DASR 147 MTO may be carried out. DASR 66 Modules 1 to 6 inclusive and 8 to 10 inclusive may be contracted/tasked to organisations not specialised in aircraft maintenance and where the DASR 147.A.200 practical training element does not apply.

1.8 - General description of facilities at paragraph 1.6 addresses

Include here the facilities such as desks, chairs, lockers, overhead projectors, other teaching aids, etc for each of the offices, classrooms, practical training workshops and examination rooms provided.

1.9 - Specific list of courses and aircraft type examinations approved by the DASA

This paragraph must contain a list of the DASR 147 course(s) for which approval is held. This should also include 'Differences' courses.

For example: Airbus A319/320/321 (CFM 56) B1 - differences to A319/320/321 (V2500) B1.

1.10 - Notification procedures regarding changes to the MTO

Include here any cross references to the intended procedures for continued validity of the approval in compliance with the requirements of DASR 147.A.155.

The MTOs 'nominated person' is responsible for informing the DASA of any proposed changes. (Refer Part 1 - Management, paragraph 1.3.2 of the MTOE as an example)

1.11 - MTOE and associated manuals amendment procedure

Detail here or cross refer to the procedures to be followed for the amendment of the MTOE and any associated procedures and or documents.

PART 2 - TRAINING AND EXAMINATION PROCEDURES

2.1 - Organisation of courses

In this paragraph, the MTO should detail the procedures in place in order to organise the courses and to ensure that all necessary means are available to deliver in good conditions and by appropriately qualified staff all the course elements as required by the DASR 66 syllabus. Such procedures may include a formalised review of the availability of required appropriate training rooms, materials, STDs, specialists… and resulting in training programme.

2.2 - Preparation of course material

Training material should meet the requirements of DASR 66. It should also state how the approved MTO produces a course for a new aircraft type (new approval scope). This would typically include the production of the Training Needs Analysis and eventually a training programme for the new aircraft that has to list what is being taught, to what level and for how long. Once completed, this should be sent to the DASA for review and approval of the course. This list must be given a unique reference number and revision status. In order to get the course approved a set of multi-choice questions and a copy of the course notes used by the student must also be submitted.

The course notes must reflect the training programme and be given the same reference number and revision status. This may cross refer to a separate procedure in which details of how the standard course lecture notes are produced which would include content, indexing, chapter and page numbering, font, etc, in the 'House Style'.

This same procedure should also be utilised to list the responsibilities by DASR 66 module / submodule for the production, review and amendment of lecture notes.

Include cross references to any procedures used for the inclusion of other course material, eg Aircraft Manuals, and/or Standard Text Books used for note preparation and available to students as reference material

2.3 - Preparation of classrooms and equipment

Cross reference to any procedures for the preparation of classrooms and reporting of faults to any classroom equipment, general maintenance procedures and the control of the teaching environment.

2.4 - Preparation of workshop / maintenance facilities and equipment

Cross reference to any procedures for the reporting of faults to any workshop equipment, general maintenance procedures and the control of the teaching environment.

Cross reference to procedures for the ordering and storage of aircraft materials used in the production of practical tasks, and for the ordering and acquisition of any new equipment required to complete the tasks.

Cross reference to the procedures for ensuring that all test equipment and/or tooling requiring calibration are correctly forecast and expedited.

2.5 - Conduct of theoretical training and practical training (during basic knowledge training and type / task training)

Describe the method utilised in teaching the Basic / Type knowledge and practical training courses for which the MTO is approved.

Cross refer to the low level document referred to in paragraph 2.1 above.

2.6 - Records of training carried out

Cross refer to procedures for the production, maintenance and security of student files.

These should include details of all student attendance's, final knowledge examinations, practical assessments and any re-examination carried out and their results by DASR 66 complete module/sub-module for basic training courses and for type training, information of those courses completed, their content and at which levels they were instructed and examined.

There should also be reference to the basic work experience' records required to be kept by the student whilst they are undergoing their live operating aircraft experience.

The use of an "Aircraft Maintenance Engineers Log Book" is a good example.

2.7 - Storage of training Records

Cross refer to procedures for the storage of staff and student's records.

As a minimum, the procedures shall describe which are the documents that are recorded, the means that are used for recording and how long the records will be kept. These may be electronically based provided that adequate safeguards are in place to prevent unauthorised access and alteration.

2.8 - Training at locations not listed in paragraph 1.6

Should the Management wish to contract/task part of the practical training, control procedures must be in place. These procedures should effectively reflect those of the DASA in auditing the DASR 147 MTO.

Any training carried out at address not listed at 1.6 above must be approved by the DASA and control procedures must be in place to ensure that the proposed contracted/tasked organisation is in compliance with the requirements of DASR 66 and DASR 147.

A contract must be in place with the proposed organisation in which it is agreed that access is granted to the DASA for the purpose of audit.

NOTE:

The "APPLICATION TO CONDUCT TRAINING / EXAMINATIONS* AT A LOCATION REMOTE FROM THE DASR 147 APPROVED SITE" Form should be annexed to the MTOE.

DASR 147 MAINTENANCE TRAINING ORGANISATION

Ref:
APPLICATION TO CONDUCT TRAINING/EXAMINATIONS* AT A LOCATION REMOTE FROM THE DASR 147 APPROVED SITE

Type of Training/Examinations:* _____

Date of Training/Examinations:* _____

Proposed Location: _____

Reason for Application: _____

I confirm that the essential requirements of DASR 147.A.100 to DASR 147.A.135 as appropriate, will be met.

Quality Representative: Name: _____

Signature: _____

Date: _____

Ref: DASR 147.A.100 to DASR 147.A.135

* DELETE AS REQUIRED

For DASA Use:

Application approved:

Application not approved:

Reason:

DASA Representative: Name: _____

Signature: _____

Date: _____

2.9 - Organisation of examinations

For Military Aircraft Maintenance Licence (MAML) course a high-level document detailing the course examinations, when each DASR 66 module / sub-module is to be examined and to what DASR 66 level. This should include the knowledge, practical training elements and how the number of hours of each comply with the percentage requirements of DASR AMC 147A.200.

For aircraft type training, the course syllabus should be used to prepare an examination schedule. The examination schedule should detail the examinations to be set at the end of each major phase within the syllabus. A final examination should be conducted at the end of the type

training course. The final examination should be recorded. Refer to DASR 66 Appendix III, paragraphs 4.1.

2.10 - Security and preparation of examination material

For MAML courses detail the preparation and security of Examination papers. Number of Questions and Timing must be in accordance with DASR 66 Appendix II.

Cross reference to procedures for the production of examination questions, their validation and security of the data bank.

For type training it is sufficient to detail the preparation and security procedures in place for the production and storage of examination papers.

2.11 - Preparation of examination rooms

Cross refer to procedure to be followed by the examiner and Invigilator in preparing the examination room for examinations.

An invigilator's ready reference sheet for briefing the candidates prior to the examination should be available in procedures and cross referenced here.

2.12 - Conduct of examinations (basic knowledge examinations, aircraft type / task training examinations)

A procedure should be in place to define how the MTO manage the conduction of examinations in respect of the DASR 147.A.135. The procedure should define responsibilities for the conduct and monitoring of the examination, and the instruction for the performance of the examination such as:

- information about the examination type (number of questions, type of questions, topics, maximum duration, ...)
- information about the conduct of the examination (format of the responses, distribution and collating of copies, login if electronic systems,...)
- information about rules to be respected (communication, utilisation of documents / means / personal objects,...) and measures to be taken in case of someone found cheating.

The minimum conditions to be authorised to monitor an examination should also be described.

It is recommended that examination papers of candidates should be identified through an anonymous system, eg numbering system,…), to be described in the MTOE.

A procedure should be in place for checking that all the pages of each examination paper are complete at examination completion and that all examination papers are accounted for.

Both the written element and the multi-choice question elements should be marked to 75% with no penalty marking. Refer DASR 66 Appendix II.

Nothing other than the actual examination / answer paper is permitted to be on the candidate's desk.

All wall charts and/or other visual teaching aids should be removed from the examination room.

2.13 - Conduct of practical assessments (during basic knowledge training and aircraft type / task training)

Cross refer to procedures used for assessment of student hand skills, and the standard tasks set throughout the course. A set number of mandatory tasks should be assessed to have been completed to a satisfactory standard.

2.14 - Marking and record of examinations

A procedure should define how and by whom an examination is corrected, how and by whom is the examination result validated, how the examination result is transmitted to the student and under which format the examination is recorded.

Cross refer to procedures for the marking of completed examination papers and the recording of results.

Cross refer to a procedure for practical assessments and recording of results.

2.15 - Storage of examination records

A procedure should define as a minimum which are the documents that are recorded, the means / systems / storage locations that are used to ensure a retention period of 20 years.

Electronic means of storage may be utilised as required, provided the appropriate computer security systems are in place.

2.16 - Examinations at locations not listed in paragraph 1.6

Cross refer to the control procedure in common with part 2.8 above. This location must comply with the requirements of 2.10, 2.11, 2.12, 2.13, 2.14 and 2.15 above.

Consideration is needed for the security / control of examinations and their completed examination papers and/or practical assessment results.

2.17 - Preparation, control and issue of Basic / Type training course certificates

The procedure for issuing training certificates should define the responsibility for verifying the data, the procedures for issuing and archiving the certificates and the authorised signatories.

The certificates should be prepared to reflect that illustrated in DASR 147 Appendix III and tightly controlled prior to issue, with a system in place to ensure that each copy is numbered as part of a sequence and recorded as issued to a candidate by name.

2.18 - Control of contracted / tasked organisations

When contracted / tasked organisations are defined in paragraph 1.7, it is necessary to define how and how often these contracted / tasked organisations are controlled in terms of training and examination / evaluation and means in place.

Cross refer to procedures for the control of contracted / tasked organisations as appropriate.

PART 3 - TRAINING SYSTEM QUALITY PROCEDURES

3.1 - Audit of training

The approved MTO should develop a form / audit checklist to be used by the auditor that would demonstrate that all the requirements of DASR 147 have been reviewed during the audit process. The audit plan should indicate applicability of the various activities to be monitored and more than one list may be necessary (rolling audit). Each list should be shown against a timetable to indicate when the particular item is scheduled for audit and when the audit was completed. A complete audit of the DASR 147 MTO must be completed every 12 months.

For courses and depending on the approval scope (Basic and / or Type) at least one basic and/or type, theoretical and practical course should be audited each year.

Cross refer to the various procedures required for quality auditing, reporting findings and levels with any corrective actions required.

A management control and follow up system must also be in place and may not be contracted out.

Cross reference to any quality procedures manual if available is permitted, but this system must relate to and make reference to the relevant DASR 147 requirements.

3.2 - Audit of examinations

Must be audited annually but may be part of the rolling audit procedure.

3.3 - Analysis of examination results

Examination results should be analysed on completion of each examination and any questions amended as necessary. Cross refer to procedures detailing responsibilities.

3.4 - Audit and analysis remedial action

Cross refer to procedures for the reporting of findings and for corrective actions.

3.5 - Accountable Manager annual review

At least once a year a review of the activities must be made by the Accountable Manager. Points discussed on a set date should include:

- Projects requiring financial support.
- Sufficient staff employed to meet foreseen training program.
- DASR 147 MTO review.
- Examinations and assessments.
- Student achievements.
- Student support.
- Quality Assurance review.

- Continuous improvement opportunities.

3.6 - Qualifying the instructors

List of acceptable staff qualifications:

- Include procedures for the induction of inexperienced instructors as required.
- Where relevant include procedures for the employment of part time or contract instructors. All staff should have an appreciation of the contents of DASR 66 and DASR 147.
- Cross refer to the list of present staff / qualification.

NOTE: staff employed prior to DASR 147 application who's qualifications were previously acceptable, will continue to be accepted.

- Cross refer to procedures for staff development.

3.7 - Qualifying the examiners and the practical assessors

Examiners should have a full understanding of all the requirements of DASR 66 and DASR 147. Cross refer to procedures for staff development.

Cross refer to the list of staff / qualifications.

Practical work assessors should be assessed as being competent in accordance with an approved process.

3.8 - Records of qualified instructors, examiners and practical assessors

The MTO must maintain a record of all training staff which must include details of the scope of their authorisation.

Training staff must be provided with evidence of the scope of their authorisation.

The following minimum information should be kept on record in respect of each instructor, examiner and practical assessor:

- Name
- Date of Birth
- Personnel Number
- Experience
- Qualifications relevant to the approval scope
- Training History (before entry)
- Training (basic training, type training, continuation training)
- Scope of activity
- Date of first issue of the authorisation

- If appropriate – expiry date of the authorisation
- Starting date of employment

The records may be kept in any format (hard copy or computer based) subject to the appropriate security requirements.

Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.

The training staff should be given reasonable access on request to their own records.

The authorisation document should be in a style that makes its scope clear to training staff and any authorised person that may be required to review the document. Where codes are used to define scope, an interpretation document should be readily available.

Training staff are not required to carry the authorisation document at all times but should produce it within a reasonable time of a request from an authorised person. Authorised persons, apart from the MTO's quality department must include DASA.

Any member of the DASA is classed as an authorised person when investigating the records system for initial and continued approval or when the DASA has cause to doubt the competence of a particular training staff

PART 4 - APPENDICES

4.1 - Examples of documents and forms used

This section should include examples of all documents and forms used by the MTO in the conduct of its DASR 147 function.

Some examples are listed below:

- Student attendance record
- Course certificate(s)
- Certificate(s) of training
- Classroom plan (exam purposes)
- Course critique
- Course results
- Course design / change plan
- Exam answer sheet
- Exam results
- Internal audit procedure
- Internal audit schedule

- Internal audit report
- Application to conduct courses / examinations at a remote location
- Interview report form
- MTOE amendment request
- MTOE amendment request log
- Staff training record (to include qualifications, history and subjects taught)
- Staff terms of reference
- Student training / examination and assessment form
- Training course review
- Quality system
- Aircraft visit form

4.2 - Syllabus and Training Needs Analysis (TNA) of each training course

This section should contain the syllabus for each DASA approved course and should also contain the associated Training Needs and Analysis.

4.3 - Cross-reference Index

If applicable - self-explanatory

Appendix I - Basic Training Course Duration and Minimum Practical Training Hours

1. The duration and minimum number of practical training hours to be completed on a basic training course shall be as follows:

Basic Course (See Note 3)	Duration (Theory) (See Note 1)	Duration (Practical) (See Note 1)	Minimum Practical Training Hours for maximum reduction in experience requirements (See Note 2)
A1	-	-	520

A2	-	-	420
A3	-	-	520
A4	-	-	520
B1.1	-	-	960
B1.2	-	-	800
B1.3	-	-	960
B1.4	-	-	960
B2	-	-	960
A (Module 50-55 Extensions)	-	-	(See Note 1)
B1 (Module 50-55 Extensions)	-	-	(See Note 1)
B2	-	-	(See Note 1)

(Module 50-55 Extensions)			

NOTES:

1. To be specified by the DASA (if req'd).

2. These are the minimum practical training hours required for an individual to be able to claim reductions in the experience requirements as detailed in DASR 66.A.30(a)1(iii) and DASR 66.A.30(a)2(iii).

3. The duration of initial training (theory and practical) is determined during the training development process and it relates to trade training, not training for licences.

Appendix II - Reserved

Appendix III - Examples of Training Certificates

1. Basic Training/Examination ▸ **AMC**

AMC to Appendix III to 'DASR 147 Example of Training Certificates'

A Certificate of Recognition for a DASR 147 Basic Training Course or Basic Examination should be issued after completion of either basic training, basic examination or both basic training and basic examination.

Some examples of cases where a Certificate of Recognition should be issued are the following:

After successful completion of a full basic course in one MAML (sub) category including successful completion of the examinations of all the corresponding modules.

After successful completion of a full basic course in one MAML (sub) category without performing examinations. The examinations may be performed at a different DASR 147 MTO (this MTO will issue the corresponding Certificate of Recognition for those examinations) or at the MAA.

After successful completion of all module examinations corresponding to a MAML (sub) category.

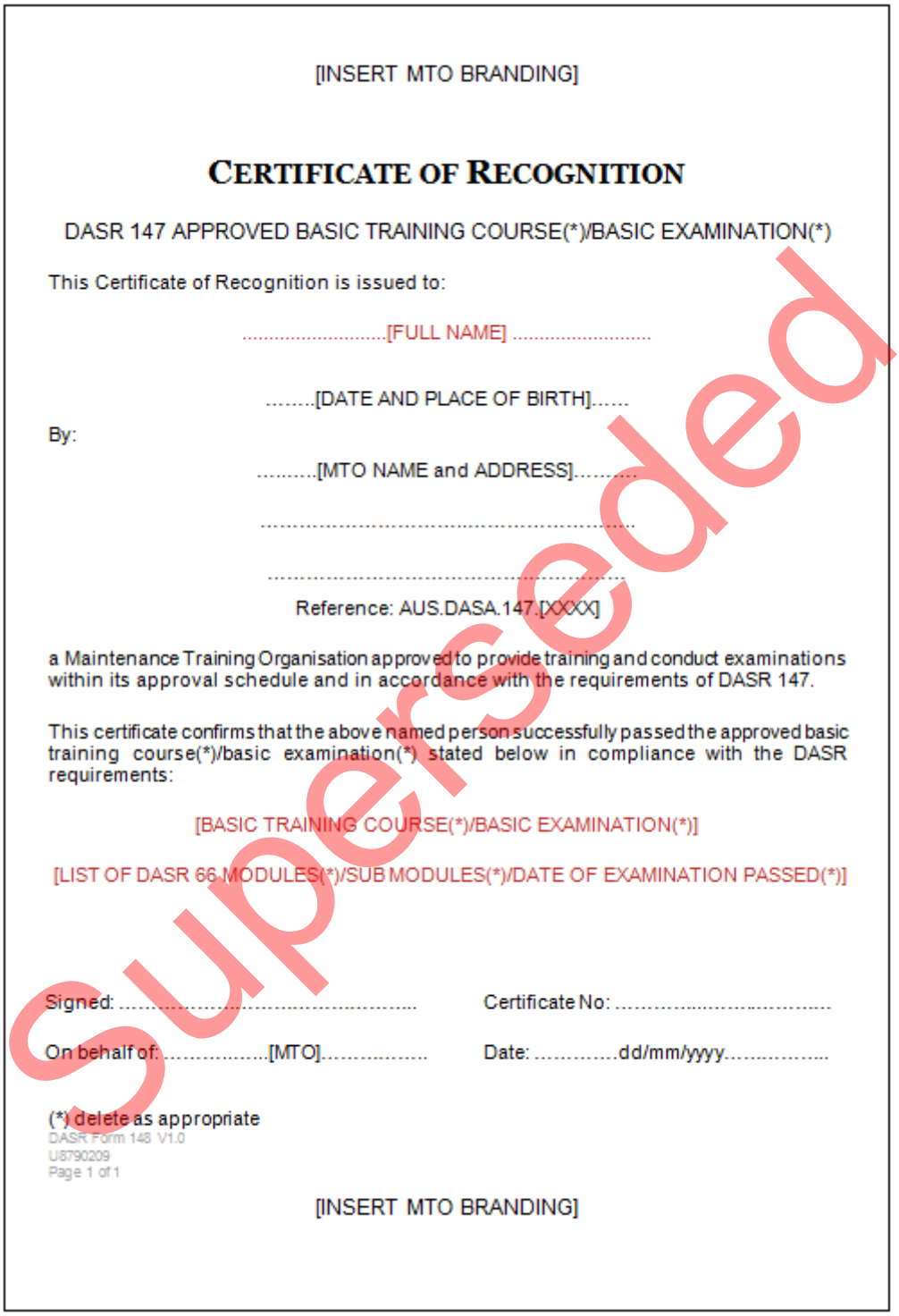
After successful completion of certain modules/sub-modules/subjects.

It must be noted that 'successful completion of a course' (without the module examinations) means successful completion of the theoretical and practical training including the corresponding practical assessment.

The information contained within the example of a basic training certificate detailed below is to be used for recognition of completion of either the basic training, the basic examination or both the basic training and basic training examinations.

A training certificate shall clearly identify each individual module or sub-module examination by date passed together with the corresponding version of Appendix I to DASR 66.

DASR Form 148 - DASR 147 Approved Basic Training Course/ Examination Certificate



[INSERT MTO BRANDING]

CERTIFICATE OF RECOGNITION

DASR 147 APPROVED BASIC TRAINING COURSE(*)/BASIC EXAMINATION(*)

This Certificate of Recognition is issued to:

.....[FULL NAME] .....

.....[DATE AND PLACE OF BIRTH].....

By:

.....[MTO NAME and ADDRESS].....

.....

.....

Reference: AUS.DASA.147.[XXXX]

a Maintenance Training Organisation approved to provide training and conduct examinations within its approval schedule and in accordance with the requirements of DASR 147.

This certificate confirms that the above named person successfully passed the approved basic training course(*)/basic examination(*) stated below in compliance with the DASR requirements:

[BASIC TRAINING COURSE(*)/BASIC EXAMINATION(*)]

[LIST OF DASR 66 MODULES(*)/SUB MODULES(*)/DATE OF EXAMINATION PASSED(*)]

Signed: ..... Certificate No: .....

On behalf of: .....[MTO]..... Date: .....dd/mm/yyyy.....

(*) delete as appropriate

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U8790209
Page 1 of 1

[INSERT MTO BRANDING]

2. Military Aircraft Type Training

The information contained within the example of a Military Aircraft Type Training certificate as detailed below is to be used for recognition of completion of either the theoretical elements, the practical elements or both the theoretical and practical elements of the Military Aircraft Type Rating training course.

The appropriate references should be deleted as applicable and the course type box shall detail whether only the theoretical elements or the practical elements were covered or whether theoretical and practical elements were covered.

The training certificate shall clearly identify if the course is a complete course or a partial course (such as an airframe or powerplant or avionic/electrical or military specific systems only) or a difference course based upon the applicant's previous experience, eg A400M course for C295M technicians. If the course is not a complete one, the certificate shall identify whether the interface areas have been covered or not.

DASR Form 149 - DASR 147 Approved Military Aircraft Type Training Course Certificate

[INSERT MTO BRANDING]

CERTIFICATE OF RECOGNITION

DASR 147 APPROVED MILITARY AIRCRAFT TYPE TRAINING COURSE

This Certificate of Recognition is issued to:

.....[FULL NAME].....

.....[DATE AND PLACE OF BIRTH].....

By:

.....[MTO NAME and ADDRESS].....

.....

.....

Reference: AUS.DASA.147.[XXXX]

a Maintenance Training Organisation approved to provide training and conduct examinations within its approval schedule and in accordance with the requirements of DASR 147.

This certificate confirms that the above named person successfully passed the theoretical(*)/ practical elements (*) of the approved Military Aircraft Type Training course stated below and the related examinations in compliance with the DASR requirements:

[MILITARY AIRCRAFT TYPE TRAINING COURSE(*)]

[START AND END DATES(*)]

[SPECIFY THEORETICAL ELEMENTS(*)/PRACTICAL ELEMENTS(*)]

Signed: ..... Certificate No: .....

On behalf of: .....[MTO]..... Date: .....dd/mm/yyyy.....

(*) delete as appropriate

[INSERT MTO BRANDING]

DASR ABM - Air Battle Management

ABM.10 - ORGANISATIONAL APPROVAL (AUS)

▸ **GM**

GM ABM.10 – ABM organisational approval (AUS)

Purpose. (Context) Air Battle Management (ABM) is the control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter-air, strategic attack, close air support and other warfighting or supporting air activities. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

(a) An Air Battle Management Operator (ABMO) must operate only to the extent approved in the ABMO Certificate (ABMOC) issued by DASA.

(b) As an exception from:

1. DASR ABM.10(a), a MAO that conducts ABM does not require a separate ABMO or OpSpec

2. DASR ABM does not apply to Joint Terminal Attack Controllers (JTACs).

ABM.20 - ABMO CERTIFICATE (AUS)

(a) An ABMO applicant organisation must utilise a Compliance Statement (CS) to apply to DASA for: ▸ **GM** ▸ **AMC**

AMC ABM.20(a) – Preparation of a Compliance Statement (CS) (AUS)

a. The ABMO CS should include the following information for the ABMO Certificate:

i. **ABMO name.** The Force Element Group (FEG) or equivalent.

ii. **ABMO location.** Location of the ABMO headquarters.

iii. **Declaration.** A statement that ABMO operations will be in accordance with the attached Operations Specification (OpSpec).

b. The ABMO CS should include the following information:

i. the Accountable Manager (AM) listed by command or management position, eg 'CDR SRG'

ii. Hazard Tracking Authority (HTA) within the ABMO

iii. the safety manager within the ABMO (per DASR SMS)

iv. the scope of ABMOps provided.

c. The CS should demonstrate how the ABMO will safely conduct Air Battle Management Operations (ABMOps) and meet:

i. DASR ABM

ii. DASR Aircrew

iii. DASR MED

iv. DASR AVFM

v. DASR AO.GEN.05.

d. **Operational limitations.** DASA prescribes operational limitations on the OpSpec to assure safe operations for a particular ABM operation within the ability or maturity of the ABMO. An operational limitation will typically include reference to a plan and timeline to remove the limitation. An ABMO may apply to DASA to remove, or impose, an operational limitation on the OpSpec via the submission of a CS.

e. **Accountable Manager attestation and signature.** The AM should make the following attestations and sign the CS:

I am accountable for [insert organisation] compliance with the Defence Aviation Safety Regulation.

This Compliance Statement for an Air Battle Manager Operations Certificate and Operations Specification is complete and correct.

I am satisfied that appropriatep arrangements are in place to meet with the Defence Aviation Safety Regulation and support the scope of operations contained in the Operations Secification.

f. **Application for variation of an ABMOC OpSpec.** The ABMO AM should amend the extant CS and submit this to DASA, highlighting those OpSpec items being varied. DASA, when satisfied, will issue an updated OpSpec to the ABMO. Application for variation to an OpSpec is required, at a minimum, when there is:

i. an addition, removal of, or change to ABMOps

ii. a request to impose or remove operational limitations.

GM ABM.20(a) – ABMO Certificate (AUS)

a. **Purpose. (Context)** Air Battle Management (ABM) is the control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter-air, strategic attack, close air support and other warfighting or supporting air activities. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

b. **Provision of evidence.** Organisations should make use of existing data and documents to satisfy DASR ABM.20(a), rather than creating unique documents with no enduring

value once the ABMOC is issued.

1. issue of an ABMOC, or attached Operations Specification (OpSpec) ▸ **GM**

GM ABM.20(a)1 – ABMO Certificate content (AUS)

a. The issue of an ABMOC supplies the basis for the judgement of suitability of an ABMO, in that Air Battle Management Operations (ABMOps) will be provided and maintained to approved standards and limitations, by competent and authorised individuals, who are acting as members of an approved organisation.

b. DASA will issue an ABMOC when satisfied that the applicant organisation can satisfy the requirements of DASR ABM.20. The ABMOC authorises the provision of ABMOps. The ABMOC contains:

i. the ABMO name

ii. the location of the ABMO headquarters

iii. reference to the Operations Specification (OpSpec), including the words 'ABMOps will be conducted in accordance with the attached Operations Specification'

iv. period of validity or expiry date.

c. **ABMOC OpSpec.** Each ABMOC has an attached OpSpec that details the:

i. Accountable Manager (AM)

ii. Hazard Tracking Authority appointments within the ABMO

iii. scope of ABMOps provided

iv. contracts, agreements or other arrangements between the ABMO and supporting third parties

v. operational limitations as prescribed by DASA (typically an operational limitation will include reference to a plan and timeline to remove the limitation)

vi. DASA signature, endorsing the OpSpec.

d. **Initial issue of an ABMOC and attached OpSpec.** DASA will issue an ABMOC and OpSpec when satisfied all requirements have been met.

2. reissue of, or variation to an ABMOC, or attached OpSpec. ▸ **GM**

GM ABM.20(a)2 – Variation to an ABMOC or attached OpSpec (AUS)

a. **Application for reissue or variation to an ABMOC or OpSpec.** DASA will issue a new ABMOC or OpSpec when satisfied all requirements have been met.

b. **Addition of an operation to an ABMOC OpSpec.** The CS for the addition of an operation to an ABMOC OpSpec addresses whether the ABMO can safely operate and maintain their systems, as applicable. The statement does not need to address, but may reference, any acquisition documentation to demonstrate how new capabilities will be

transitioned safely into service.

(b) As an exception from DASR ABM.20(a), a MAO that conducts ABM does not require a separate ABMOC or OpSpec. However, the MAO OpSpec and CS must reflect the scope of ABM operations provided IAW DASR ABM. ▸ **AMC**

AMC ABM.20(b) – OpSpec and CS requirements for MAOs conducting ABM (AUS)

a. The MAO's Quality Management System (QMS) and Safety Management System (SMS) must incorporate the requirements of DASR ABM.40 and DASR ABM.50.

b. The MAO must comply with DASR ABM.60 and DASR ABM.70.

ABM.30 - ORGANISATIONAL STRUCTURE (AUS)

(a) An ABMO must define its organisational structure to include: ▸ **GM** ▸ **AMC**

AMC ABM.30(a) – Organisational structure (AUS)

a. The ABMO organisational structure must include:

i. an AM, usually a FEG CDR or equivalent

ii. an appropriate chain of command or management

iii. appropriately qualified personnel

iv. Key Staff with appropriate experience

b. The ABMO organisational structure should account for:

i. fixed or mobile facilities that are sufficient and suitable for the type of ABMOps provided

ii. suitable, documented processes and procedures

iii. a SMS IAW DASR ABM.40

iv. a QMS IAW DASR ABM.50.

GM ABM.30(a) – Organisational structure (AUS)

a. **Purpose. (Context)** Air Battle Management (ABM) is the control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter- air, strategic attack, close air support and other warfighting or supporting air activities. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

b. An ABMO is an organisation that can consist of operational, maintenance, logistics and engineering personnel, usually as part of a FEG or equivalent force structure, which provides ABMOps to a defined scope.

c. **Key Staff.** An ABMO should list Key Staff (including engineering and maintenance appointments that contribute to the safe operation of an Aviation System) in their organisational structure. Where those Key Staff that form the core of the ABMO are employed in organisations external to a military unit or the contractor or tasked organisation, then the ABMO must also define the formal relationships with those organisations in which the Key Staff are employed (ie other contributors to the service provision that may directly influence the safety of ABMOps).

1. the authority, duties and responsibilities of all personnel performing ABMO functions, including the management personnel responsible for safety and quality management functions

2. the relationship and reporting lines between the personnel performing ABMO functions and other parts of the organisation

3. formal relationships with all other contributors to the ABMO that may directly influence the safety of their operations. ▸ **GM**

GM ABM.30(a)3 – Formal relationships with all other contributors to ABMOps (AUS)

The ABMO should define formal relationships with all contributors to ABMOps. This is to define the external inputs to the ABMO that can influence the safety of ABMOps. The ABMO CS should refer to any formal agreements in place.

ABM.40 - SAFETY MANAGEMENT SYSTEM (SMS) (AUS)

(a) An ABMO must utilise an SMS in accordance with DASR SMS. ▸ **GM**

GM ABM.40(a) – Safety Management Systems (AUS)

Purpose. (Context) Air Battle Management (ABM) is the control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter-air, strategic attack, close air support and other warfighting or supporting air activities. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

ABM.50 - QUALITY MANAGEMENT SYSTEM (QMS) (AUS)

(a) An ABMO must utilise a QMS to achieve consistency, continuity and compliance of safe operations—through quality planning, quality assurance, quality control and quality improvement. ▸ **GM** ▸ **AMC**

AMC ABM.50(a) – QMS (AUS)

a. The ABMO should have a QMS that achieves the following purposes:

i. **Quality planning.** Quality planning defines the quality policy and approach so as to meet the safety needs of the friendly participants and neutral aircraft in the ABMOps.

ii. **Quality assurance.** Quality assurance, provided through a quality assurance program, contains procedures to verify all activities are being conducted in accordance with applicable safety requirements.

iii. **Quality control.** Quality control is managed by appointed representatives to monitor conformance with, and adequacy of procedures and services, to ensure safe operations.

iv. **Quality improvement.** Quality improvement consists of reviews and remedial action as appropriate, for the continuous improvement of the safety of ABMOps.

GM ABM.50(a) – Quality Management Systems (QMS) (AUS)

a. **Purpose. (Context)** Defence is required to conduct ABMOps involving friendly participants; and neutral and non-friendly aircraft. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

b. An ABMO may integrate their QMS with their other management systems (eg SMS) into a single management system, commensurate with the size and scope of the organisation. However, integrated systems must remain compliant with all relevant DASR.

ABM.60 - ORDERS, INSTRUCTIONS AND PUBLICATIONS (OIP) (AUS)

(a) An ABMO must utilise authorised ABM OIP. ABM OIP must contain the information required for the safe conduct of ABMOps. ▸ **GM** ▸ **AMC**

AMC ABM.60(a) – Orders, Instructions and Publications (AUS)

a. MAOs conducting ABM and ABMOs should maintain ABM OIP that:

i. contains the information required by personnel to perform their Air Battle Management Operations (ABMOps) duties

ii. ensures personnel are expeditiously informed of amendments

iii. ensures personnel perform their duties in accordance with authorised OIP

iv. are harmonised with Five Eyes Nations and NATO practices as far as practicable

v. should detail as a minimum:

(a) the identification of appointments, requirements, roles, responsibilities for ABMOps

(b) planning and briefing requirements

(c) handover requirements between the ABMO and other agencies

(d) record retention requirements

(e) tactics, techniques and procedures

(f) ABMOps limitations

(g) the management of ABM equipment, including:

(i) instructions for compliance with OEM design specifications

(ii) operating and installations instructions

(iii) ongoing maintenance requirements and instructions

(iv) for the introduction of new equipment, processes for managing the risk of interference or ineffective interoperability with:

(A) other ABMO equipment

(B) aircraft, ships, Tactical Air Control Parties, Integrated Air and Missile Defence elements, and the AOC

(v) ongoing software safety assurance in accordance with authorised standards

(vi) defect and unserviceability reporting.

(h) emergency procedures.

GM ABM.60(a) – Orders, Instructions and Publications (OIP) (AUS)

Purpose. (Context) Air Battle Management (ABM) is the control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter-air, strategic attack, close air support and other warfighting or supporting air activities. **(Hazard)** Ineffective ABM provision can compromise Suitability for Flight. **(Defence)** This regulation requires MAOs conducting ABM and Air Battle Management Operators (ABMOs), to ensure Air Battle Management Operations (ABMOps) are conducted safely by an approved organisation.

(b) ABM OIP must be easily accessible by relevant personnel.

ABM.70 - EQUIPMENT, SYSTEMS AND INSTALLATIONS (AUS)

DASR ABM.70 - Reserved.

ABM.80 - COMPETENCY MANAGEMENT (AUS)

(a) An ABMO must ensure personnel are competent and authorised to undertake their assigned ABM duties. ▸ **GM** ▸ **AMC**

AMC ABM.80(a) – Competency management

a. To ensure effective personnel competency, the Air Battle Management Operator (ABMO) should:

i. ensure tasks are undertaken by suitably competent and authorised operators and maintainers, including contractors

ii. maintain adequate numbers of operators and maintainers, to conduct the operation, consistent with a defined and reasonable level of overall demand

iii. maintain training, Competency assessment and checking programs for operators and maintainers.

b. ABMO and instructor Competency management must be defined in:

i. a Learning Management Package (LMP) that considers:

(a) education and training needs

(b) education and training Competency and proficiency standards

(c) education and training instructor standards.

ii. approved OIP, including:

(a) categorisation of skills or Competencies

(b) Currency and recency requirements, including:

1. minimum criteria
2. methods of maintaining and regaining currency
3. identification of circumstances and authority for extensions.

c. The ABMO should ensure a method of recording Competency and Currency. The recording system should include:

i. secure and accessible record storage by users

ii. recording methods and formats which are enduring

iii. provision for no unauthorised record modifications

iv. validation of Competency and Currency criteria listed in the recording system against requirements

v. record preservation IAW the *Records Management Policy Manual*.

GM ABM.80(a) – Competency management (AUS)

a. **Purpose. (Context)** The safe delivery of ABM is supported by knowledge, skills and behaviours benchmarked against contemporary training and learning standards. **(Hazard)** Undesired ABM knowledge, skills and behaviours can affect the safe delivery of ABM. **(Defence)** This regulation requires the ABMO to establish a Defence ABM qualification and training system to:

i. provide the requisite knowledge and skills to support the desired behaviours for safe ABMOps.

ii. actively monitor and correct knowledge, skills and behaviours, to ensure that the required standards are maintained.

b. **Scope.** The scope of DASR ABM.80(a) is constrained to apply only to operators and maintainers (including contractor personnel performing operator and maintainer roles).

c. **Competency.** The ABMO is responsible for ensuring personnel hold appropriate Competencies for the different types of ABM roles and functions and for assessing Competencies of personnel involved in the provision of ABM. Different Competencies will apply to ABMO operators and maintainers, depending on what role they fulfil in ensuring the safety of the overall operation. DASA does not prescribe any single Competency or framework. The ABMO has the flexibility to document these Competencies in approved OIP.

d. Note, this regulation is a competency and currency management system. It is not a licensing system.

e. **Aircrew.** Aircrew are subject to DASR Aircrew.10. For a MAO conducting ABM, compliance with DASR Aircrew.10 regarding Aircrew achieves the effect of a competency management system.

DASR ACD - Air Cargo Delivery

ACD.10 - ORGANISATIONAL APPROVAL (AUS)

GM1 GM2 GM3

GM3 ACD.10 - Contractor/tasked organisations (AUS)

An ACDSP can be a contractor/tasked organisation. In this case, the requirements of DASPMAN Vol 1 Chap 3, paragraphs 12-14 are germane. A contractor/tasked organisation ACDSP may have a limited scope, for example a contractor/tasked organisation providing terminal services.

GM2 ACD.10 - Aircrew applicability (AUS)

Anywhere the phrase 'MAOs conducting ACD' or 'MAO' is used in this regulation indicates applicability to Aircrew. Many of the regulatory controls in DASR ACD aimed at non Aircrew personnel for competency and fatigue management are achieved for Aircrew through DASR Aircrew, DASR ARO, DASR AVFM and DASR ORO.

GM1 ACD.10 - ACD organisational approval (AUS)

Purpose. (Context) Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

(a) An ACD Service Provider (ACDSP) must operate only to the extent approved in the ACDSP Certificate (ACDSPC) issued by DASA. GM

GM ACD.10(a) - ACDSP arrangements when force assigned (AUS)

In cases where an ALT or MALT is force assigned, ACD operations may occur under the parent unit's ACDSPC or under an ACDSPC issued to the relevant JTF HQ. The determination as to the appropriate ACDSPC holder will be dependent on the command and control arrangements, length of deployments, deployment preparation period and efficiency of service provision oversight. The determination as to the appropriate ACDSPC holder is a command decision.

ACD.20 - ACDSP CERTIFICATE (AUS)

GM

GM ACD.20 - ACD ACDSP Certificate (AUS)

Purpose. (Context) Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo.

(Defence) This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

(a) An ACDSP applicant organisation must utilise a Compliance Statement (CS) to apply to DASA for: ▸ **GM1** ▸ **GM2** ▸ **AMC1** ▸ **AMC2**

AMC2 ACD.20(a) - ACD services contracted/tasked to an external organisation supporting an ACDSP (AUS)

a. In accordance with the CS, the ACDSP may arrange for the provision of any ACD service listed on its OpSpec, to be carried out by an external organisation that is working under the quality system of the ACDSP. This refers to work being carried out by an external organisation not itself appropriately approved to carry out tasked/ contracted services under DASR ACD.10 and is limited to the work scope permitted under DASR ACD.60 procedures. The ACDSP that contracts/tasks such work retains responsibility for all these tasked/contracted services irrespective of who is undertaking them. The ACDSP must list all such external organisations in the CS.

b. The ACDSP should document management controls associated with contracted/tasked services in the associated written contract/tasking and be in accordance with the ACDSP's policy and procedures defined in their CS. When such tasks are contracted/ tasked the ACDSP's management system is considered to be extended to the contracted/tasked organisation.

c. Contracts/tasking should normally be limited to one organisation per ACDSPC. Where arrangements are made with more than one organisation the ACDSP should demonstrate that adequate co-ordination controls are in place and that the individual responsibilities are clearly defined in related contracts/tasking.

d. Contracts/taskings should not authorise the contracted/tasked organisation to further contract/task to other organisations elements of the ACD tasks.

e. The ACDSP should ensure that any findings arising from DASA monitoring of the contracted/tasked services will be closed to the satisfaction of DASA. This provision should be included in the contract/tasking.

f. The contracted/tasked organisation should agree to notify the ACDSP of any changes affecting the contract/tasking as soon as practicable. The ACDSP should then inform DASA. Failure to do so may invalidate DASA acceptance of the ACD elements of the contract.

AMC1 ACD.20(a) - Preparation of a Compliance Statement (CS) (AUS)

a. **ACDSP CS.** The ACDSP CS should include the following information for the ACDSP certificate:

i. **ACDSP name.** The FEG or equivalent.

ii. **ACDSP location.** Location of the headquarters and all permanent locations where ACD services will be provided.

iii. A statement that ACDSP operations will be in accordance with the attached OpSpec.

b. The ACDSP CS should include the following information for the ACDSPC OpSpec:

i. the Accountable Manager (AM), listed by command or management position, eg 'CDR CSG'

ii. Hazard Tracking Authority (HTA) within the ACDSP

iii. safety manager within the ACDSP (per DASR SMS)

iv. ACD services provided.

c. **Operational limitations**. DASA prescribes operational limitations on the OpSpec to assure safe operations for a particular ACD service within the ability or maturity of the ACDSP. An operational limitation typically will include reference to a plan and timeline to remove the limitation upon DASA review. An ACDSP may apply to DASA to remove or impose an operational limitation on the OpSpec via the submission of a CS.

d. **Service provision.** The CS should demonstrate how the ACDSP will meet DASR ACD and safely conduct ACD operations.

e. **Accountable Manager attestation and signature.** The AM should make the following attestations and sign the CS:

I am accountable for [insert organisation] compliance with DASR. This Compliance Statement for ACDSP certification and Operations Specification is complete and correct.
I am satisfied that appropriate arrangements are in place to meet DASR and support the scope of operations contained in the Operations Specification.

f. **Application for variation of an ACDSPC OpSpec.** The ACDSP AM should amend the extant CS and submit this to DASA, highlighting those OpSpec items being varied. DASA, when satisfied, will issue an updated OpSpec to the ACDSP. Application for variation to an OpSpec is required, at a minimum, when there is:

i. an addition, removal of, or change to an ACD service

ii. a request to impose or remove operational limitations.

GM2 ACD.20(a) - ACD services (AUS)

The scope of ACD services may include services associated with the loading (including the preparation, composition, configuration, placement and restraint) of air cargo, whatever it may be (including Passengers, freight, paratroopers, animals and EO materials) and the subsequent unloading of that air cargo. ACD services may also include (where an ACDSPC is approved to do so) the design, development and approval of procedures for loading and unloading cargo. Figure GM2 ACD.20(a)-1, below, depicts the Defence ACD environment, in which ACD services may be provided—showing that ACD services may be in support of Passengers or Internal or External loads of General (Standard) Cargo or Non– Standard Cargo via Airland, Airdrop, or External Lift.

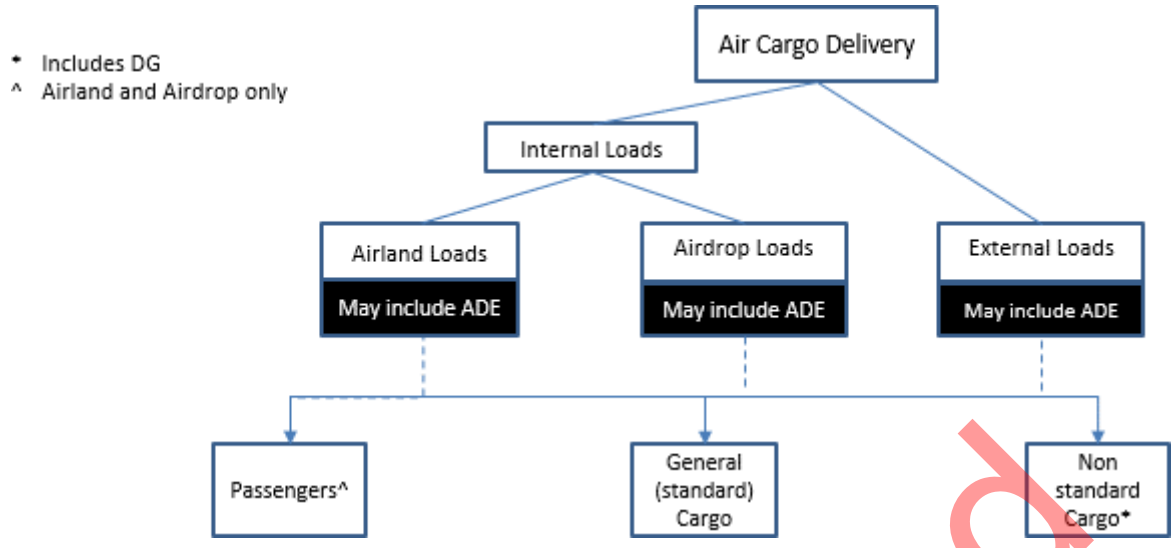

Figure GM2 ACD.20(a)-1 – Defence ACD environment

GM1 ACD.20(a) - Provision of evidence for CS (AUS)

Provision of evidence. Organisations should make use of existing data and documents to satisfy DASR ACD.20(a), rather than creating unique documents with no enduring value once the certificate is issued.

1. issue of an ACDSPC, or attached OpSpec ▸ GM

GM ACD.20(a)1 - ACDSPC content (AUS)

a. The issue of an ACDSPC supplies the basis for the judgement of suitability of an ACD service, in that it will be provided and maintained to approved standards and limitations, by competent and authorised individuals, who are acting as members of an approved organisation.

b. DASA will issue an ACDSPC when satisfied that the applicant organisation can satisfy the requirements of DASR ACD.20. The ACDSPC authorises the provision of the ACD service. The ACDSPC contains:

   i. ACDSP name

   ii. ACDSP permanent locations

   iii. reference to the OpSpec, including the words 'ACD operations will be conducted in accordance with the attached Operations Specification'

   iv. period of validity or expiry date.

c. **ACDSPC OpSpec.** Each ACDSPC has an attached OpSpec that details the:

   i. Accountable Manager (AM)

   ii. Hazard Tracking Authority appointments within the ACDSP

iii. ACD services provided (including ACD service capacity, which baselines the service, capacity, and usage of the ACDSP)

iv. contracts, agreements or other arrangements for ACD service provision between the ACDSP and supporting third parties

v. operational limitations as prescribed by DASA (typically an operational limitation will include reference to a plan and timeline to remove the limitation upon DASA review).

vi. DASA signature, endorsing the OpSpec.

d. **Initial issue of an ACDSPC and attached OpSpec.** DASA will issue an ACDSPC and OpSpec when satisfied all requirements have been met.

2. reissue of, or variation to, an ACDSPC, or attached OpSpec. ▸ **GM**

GM ACD.20(a)2 - Variation to an ACDSPC or attached OpSpec (AUS)

a. **Application for reissue or variation to an ACDSPC or OpSpec.** DASA will issue a new ACDSPC or OpSpec as required when satisfied all requirements have been met.

b. **Addition of a service to ACDSPC OpSpec.** The Compliance Statement (CS) for the addition of a service to an ACDSPC OpSpec addresses whether the ACDSP can safely operate and maintain their systems and services, as applicable. The statement does not address, but may reference, any acquisition documentation to demonstrate how new capabilities will be transitioned safely into service. Refer to the Defence Aviation Safety Program Manual Volume 3 for further guidance.

(b) As an exception from DASR ACD.10(a) and DASR ACD.20(a), a MAO that conducts ACD does not require a separate ACDSPC or OpSpec. However, the MAO Operations Specification (OpSpec) and CS must reflect the scope of ACD services provided IAW DASR ACD. ▸ **GM** ▸ **AMC**

AMC ACD.20(b) - OpSpec and CS requirements for MAOs conducting ACD (AUS)

a. The MAO's QMS and SMS must incorporate the requirements of DASR ACD.40 and DASR ACD.50.

b. The MAO must comply with DASR ACD.60 and DASR ACD.70.

GM ACD.20(b) - MAOs conducting ACD (AUS)

A MAO conducting ACD using resources within their flying units does not require a separate ACDSP Certificate (ACDSPC) or Compliance Statement (CS). However, a unit that has the primary purpose to provide ACD functions must operate under an ACDSPC with a supporting CS. For example, AMG does not require an ACDSP and CS to govern the circumstance where a 35 SQN Loadmaster is preparing, composing, configuring, loading, placing, restraining or unloading loads without the support of an air load team. However, AMTDU must operate under an ACDSPC and supporting CS—where CDR AMG may be the AM. Similarly, Air Movements Sections within CSG must operate under CSG's ACDSP certificate and supporting CS.

ACD.30 - ORGANISATIONAL STRUCTURE (AUS)

(a) An ACDSP must define its organisational structure to include: ▸ **GM1** ▸ **GM2** ▸ **AMC**

AMC ACD.30(a) - Organisational structure (AUS)

a. ACDSPs should ensure their organisational structure includes:

i. an AM, usually a FEGCDR or equivalent

ii. an appropriate chain of command or management

iii. appropriately qualified personnel

iv. Key Staff with appropriate experience

v. facilities that are sufficient and suitable for the type of ACD services provided

vi. suitable, documented processes and procedures

vii. a Safety Management System (SMS) IAW DASR ACD.40

viii. a Quality Management System (QMS) IAW DASR ACD.50.

GM2 ACD.30(a) - Key Staff (AUS)

a. An ACDSP should list Key Staff (including engineering and maintenance appointments that contribute to the safe operation of an aviation system) in their organisational structure. Where those Key Staff are employed in organisations external to the military unit, or contractor/tasked organisation, which form the core of the ACDSP, then the ACDSP must also define the formal relationships with those organisations in which the Key Staff are employed (other contributors to the service provision that may directly influence the safety of ACD services).

b. ACD.30(a)3 requires ACDSP organisations to define all formal relationships with all contributors to the service provision. This is to define the external inputs to their ACD service provision that can influence the quality of the services provided. The ACDSP CS should refer to MOUs or other formal agreements in place.

GM1 ACD.30(a) - Organisational structure (AUS)

a. **Purpose. (Context)** Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

b. An ACDSP is an organisation that can consist of operational, maintenance, logistics and engineering personnel, usually as part of a Force Element Group (FEG) or equivalent force structure, which provides ACD services to a defined scope.

1. the authority, duties and responsibilities of all personnel performing ACDSP functions, including the management personnel responsible for safety and quality management functions

2. the relationship and reporting lines between these personnel and other parts of the organisation

3. formal relationships with all other contributors to the service provision that may directly influence the safety of their services.

ACD.40 - SAFETY MANAGEMENT SYSTEM (SMS) (AUS)

(a) An ACDSP must utilise an SMS in accordance with DASR SMS. ▸ **GM**

GM ACD.40(a) - Safety Management System (AUS)

Purpose. (Context) Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

ACD.50 - QUALITY MANAGEMENT SYSTEM (QMS) (AUS)

(a) An ACDSP must utilise a QMS to achieve consistency, continuity and compliance of safe service provision through quality planning, assurance, control and improvement. ▸ **GM1** ▸ **GM2** ▸ **AMC1** ▸ **AMC2**

AMC2 ACD.50(a) - ACD services contracted/tasked to an external organisation supporting an ACDSP (AUS)

a. AMC2 ACD.20(a) contains provisions to contract/task an organisation to perform ACD services on behalf of the ACDSP. The contracted/tasked organisation is considered to perform the contracted/tasked service as an integral part of the ACDSP's system hence is required to work under the quality system of the ACDSP. The contracting/tasking ACDSP retains the responsibility for all contracted/tasked services irrespective of who is undertaking them. The ACDSP-AM is ultimately responsible and therefore accountable for ensuring ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight. To exercise this responsibility the ACDSP-AM should be satisfied that the actions taken by contracted/tasked organisations meet the standards required by DASR ACD. The ACDSP should therefore manage such activities by:

   i. active control through direct involvement

   ii. endorsing the recommendations made by the contracted/tasked organisation

   iii. ensuring the contract/task documentation includes an obligation on the external organisation to upon request, make all documentation supporting the

contracted/tasked organisation's provision of contracted/tasked services available to Defence, including:

(a) records (which may include any contracts, inspection documents, and accident reporting and incident reporting requirements)

(b) documentation which may include documents provided to the recognised CAA or MAA, operations manuals, maintenance records, individual competency and currency records, safety occurrence reports and investigation reports.

AMC1 ACD.50(a) - Quality Management System (QMS) (AUS)

a. ACDSPs should have a QMS that achieves the following purposes:

i. **Quality planning.** Quality planning defines the quality policy and approach so as to meet the safety needs of different users of the ACD service.

ii. **Quality assurance.** Quality assurance, provided through a quality assurance program, contains procedures to verify all activities are being conducted in accordance with applicable safety requirements.

iii. **Quality control.** Quality control is managed by appointed representatives to monitor conformance with and adequacy of procedures and services, to ensure safe operations.

iv. **Quality improvement.** Quality improvement consists of reviews and remedial action as appropriate, for the continuous improvement of the safety of the services provided.

GM2 ACD.50(a) - Quality improvement (AUS)

a. Quality improvement in ACD service provision will involve consultation and standardisation of services, including the review of:

i. Aviation Safety Reports

ii. Aviation Safety Investigation Reports

iii. relevant Aviation Hazard Review Board Minutes

iv. other Occurrence Reporting

v. DG incident reports

vi. feedback collected between ACD service providers and MAOs.

GM1 ACD.50(a) - Quality Management System (QMS) (AUS)

a. **Purpose. (Context**) Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations

are conducted as an approved organisation and managed to ensure Suitability For Flight.

b. The ACDSP may use ISO9001 or any other internationally-accepted quality management standard.

ACD.60 - ACD OPERATIONS MANUALS (AUS)

▸ **GM**

GM ACD.60 - ACD operations manuals (AUS)

Purpose. (Context) Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

(a) MAOs conducting ACD and ACDSPs must utilise authorised ACD operations manuals. ACD operations manuals must contain the instructions, procedures and information required for safe payload preparation, composition, configuration, loading, placement, restraint and unloading of the following ACD load types on Defence Aircraft: ▸ **GM1** ▸ **GM2** ▸ **GM3** ▸ **AMC1** ▸ **AMC2**

AMC2 ACD.60(a) - Contemporary crash protection requirements for cargo when carried in the same Aircraft as Passengers (AUS)

When determining 'permitted configurations', ACDSPs and MAOs conducting ACD (cognisant of contemporary crash protection requirements), must eliminate or otherwise minimise risk SFARP when carrying Passengers and Cargo in the same Aircraft. When determining permitted configurations, ACDSPs and MAOs must consider the operational context. ACDSPs and MAOs conducting ACD must document risk assessments associated with the carriage of Passengers and Cargo in the same Aircraft.

AMC1 ACD.60(a) - ACD operations manuals (AUS)

a. MAOs conducting ACD and ACDSPs should maintain ACD operations manuals:

i. ensuring the following documents are the basis for the instructions, procedures and information for payload preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo:

(a) the Air Force Air Movements Manual (AFAMMAN)

(b) the Air Force Air Movements Dangerous Good Manual (AFAMDGMAN).

ii. ensuring that any load clearances contained in the ACD operations manual are issued by an ACDSP approved to issue load clearances

iii. updated as a result of changes to:

(a) load clearances issued by an ACDSP approved to issue load clearances

(b) the AFAMMAN or AFAMDGMAN, or policy called out by the AFAMMAN or AFAMDGMAN

iv. containing the instructions, procedures and information required by personnel to perform their ACD service provision duties

v. ensuring personnel are expeditiously informed of amendments

vi. ensuring personnel perform their duties in accordance with those manuals

vii. harmonised with AFIC practices as far as practicable, or with ICAO and national civil practice as far as practicable where harmonisation with AFIC practices is not possible.

b. Where the ACDSP is approved to issue load clearances, that ACDSP must inform those ACDSPs and MAOs conducting ACD (applicable to the relevant load clearance) of any changes or updates to load clearances.

c. ACD operations manuals should detail, as a minimum:

i. the identification of appointments and responsibilities for the payload preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo

ii. Passenger, General Cargo and Non-Standard Cargo:

(a) loading supervision requirements

(b) loading independent inspection requirements

(c) documentation and approval requirements

iii. hand over requirements between Aircrew and ACDSPs, including the conduct of Suitability For Flight (as relevant to the ACD load) assessments

iv. on-board carriage of records and record retention requirements

v. loading (including preparation, composition, configuration, placement and restraint) and unloading procedures

vi. procedures to determine the weight and balance of Passengers, General Cargo and Non-Standard Cargo

vii. limitations

viii. permitted configurations of Passengers, General Cargo and Non- Standard Cargo that eliminates and otherwise minimises crash protection risk SFARP when carrying Passengers and General Cargo or Non-Standard Cargo in the same Aircraft

ix. the management of ACD Equipment, including:

(a) instructions for compliance with OEM design specifications, unless more restrictive limits and specifications are provided out of the activity defined in AMC ACD.70(a).b

(b) operating and installation instructions

(c) ongoing maintenance requirements and instructions

(d) obligations and instructions for seeking the relevant Aircraft Type MTC Holder advice before first use of each ACD Equipment item type that interfaces with an Aircraft Type IAW AMC ACD.70(a)b

(e) defect and unserviceability reporting.

x. contingency plans to allow timely and effective response to those emergencies and abnormal events that may detract from Suitability For Flight. (**Note:** The Aircraft Captain retains responsibility for Suitability For Flight for their Aircraft. So, there is a requirement for ACDSP personnel to ensure the Aircraft Captain is informed of any abnormal or emergency situation — to enable the Aircraft Captain to make sound Suitability For Flight decisions. ACDSP and MAOs conducting ACD must explicitly include this obligation (in ACD operations manuals) on all personnel to inform the Aircraft Captain of abnormal and emergency situations.)

GM3 ACD.60(a) - MAO and ACDSP Accountabilities (AUS)

Figure GM3 ACD.60(a) - 1 describes MAO and ACDSP individual and mutual ACD service provision accountabilities. (Note 'O&E' refers to 'Oversight and Enforcement')

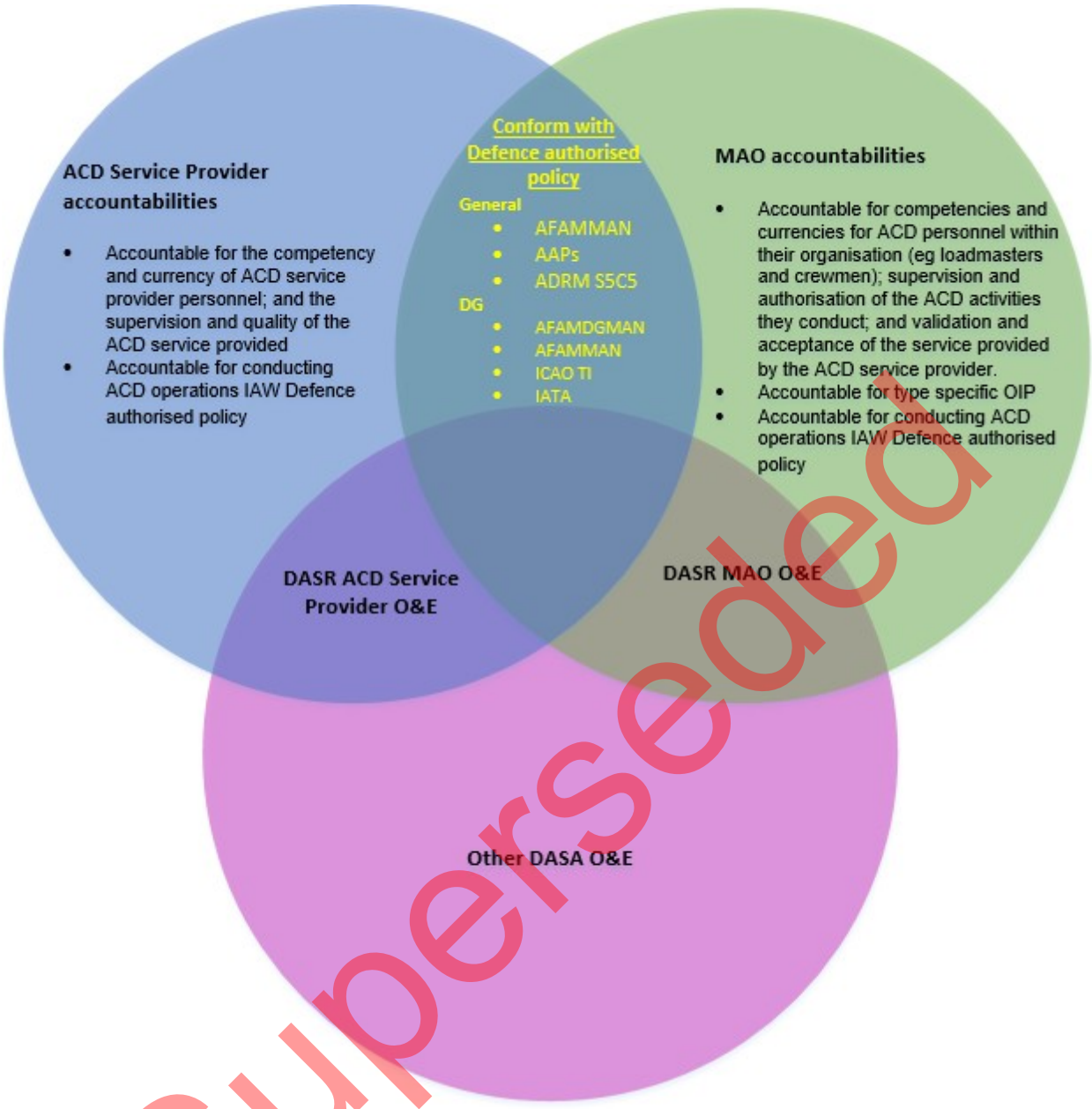

Figure GM3 ACD.60(a) - 1 - MAO and ACDSP accountabilities

GM2 ACD.60(a) - Contemporary crash protection requirements for cargo when carried in the same Aircraft compartment as Passengers (AUS)

Defence OIP pertaining to cargo restraint might only consider load restraint to prevent load-shifting in flight due to normal aerodynamic forces. Contemporary crash protection requirements will often exceed restraint requirements to prevent load-shifting.

GM1 ACD.60(a) - ACD operations manuals (AUS)

Operations manuals is a generic term for the collection of ACDSP Orders, Instructions and Publications, that covers all aspects of the ACD services provided, including operations, engineering, maintenance, supply and support, and logistics.

1. Passengers ▸ **GM**

GM ACD.60(a)1 – Passenger restraint (AUS)

DASR ORO.70 defines passenger restraint requirements on MAOs.

2. General (standard) Cargo

3. Non-Standard Cargo. ▸ **GM** ▸ **AMC1** ▸ **AMC2**

AMC2 ACD.60(a)3 - Non-Standard Cargo with no approved procedures (AUS)

a. Where no specifically approved OIP exists for Non-Standard Cargo payload preparation, composition, configuration, placement and restraint, MAOs conducting ACD and ACDSPs should ensure that such items have approved payload preparation, composition, configuration, placement (including loading and unloading instructions) and restraint solutions developed:

i. under an assurance system that:

(a) utilises qualified, competent and authorised personnel

(b) complies with the Defence Aviation Safety Design Requirements Manual (DASDRM)

(c) includes control and supervision of solution design development and changes to existing solutions

(d) includes independent verification by a person not involved in creating the solution

(e) includes independent monitoring of the compliance with, and adequacy of, the documented procedures of the system – this monitoring must include a feed-back system to a person or a group of persons having the responsibility to ensure corrective actions

(f) requires the relevant design supervisor, or an authorised representative, to sign an attestation of compliance (with the DASDRM, relevant equipment specification requirements, and any relevant standards), conformance (with the operations manual), and Suitability For Flight.

ii. using load clearances issued by an ACDSP acting within an approved scope, that:

(a) uses approved procedures, data, standards and limitations

(b) that consider Aircraft stability margins for external lift load clearances so far as reasonably practicable, such that they remain within acceptable margins of safety for the applicable Flight envelope

iii. in consultation with the Type Certificate holder as required.

GM ACD.60(a)3 – Relevant design supervisor

The 'relevant design supervisor' is the senior technically qualified person with competency in design sufficient to ensure the design is conformant and supports Suitability For Flight. The 'relevant design supervisor' in AMTDU is typically the Chief Engineer.

AMC1 ACD.60(a)3 – Dangerous Goods (DG) (AUS)

a. The MAO conducting ACD and ACDSPs should ensure that:

iv. DG is only carried if it has been inspected IAW AFAMDGMAN. However, this does not apply to ALSE for the Crew of the Aircraft and for Aircraft Stores fitted to the Aircraft

v. DG anomalies and incidents are reported via an aviation safety report

vi. a DG inspection system is utilised to ensure Passengers and consigners of DG comply with the requirements of the AFAMDGMAN

vii. consignors of Non-Standard Cargo are provided with information to support the identification and correct packing and labelling of DG

viii. Passengers are informed of DG that is restricted from being taken on board the Aircraft

ix. Passengers make a declaration that they have no restricted DG on their person and that they will not take any on board the Aircraft.

(b) ACD operations manuals must detail procedures to ensure Suitability For Flight (as relevant to the ACD load) for Defence Aircraft and must be easily accessible by relevant personnel. ▸ **AMC**

AMC ACD.60(b) – Procedures to ensure Suitability For Flight (as relevant to the ACD load) (AUS).

a. Procedures to ensure Suitability For Flight (as relevant to the ACD load) include:

i. confirming:

(a) Aircraft weight and balance is within limits defined in approved OIP

(b) the weight and balance limits will remain acceptable throughout the Flight

(c) General Cargo and Non-Standard Cargo is configured, placed, restrained and rigged in accordance with approved OIP

(d) Aircraft equipment is stowed in approved positions and secured

(e) Passengers are seated in approved seating and configuration

(f) any consignment of Non-Standard Cargo classed as DG has been managed in accordance with approved OIP

(g) independent checks of payload preparation, composition, configuration, loading, placement and restraint have been conducted against the requirements of DASR ACD

ii. a Suitability For Flight assessment, confirming that the procedures detailed at AMC ACD.60(b)a.i have been completed, prior to acceptance of the ACD load by the Aircrew.

(c) An ACDSP must utilise a personnel fatigue management strategy. ▸ **AMC**

AMC ACD.60(c) – Personnel fatigue management strategy (AUS)

a. The ACDSP fatigue management strategy should consider:

i. personnel duty limitations

ii. maximum allowable hours worked over specified periods and minimum rest time between duty periods

iii. Navy, Army or Air Force WHS fatigue management policy requirements as applicable.

(d) MAOs or Sponsors must utilise on board emergency procedures when carrying the ACD load types listed at ACD 60(a). ▸ **GM**

GM ACD.60(d) - On-board emergency procedures

The regulation requires MAOs and Sponsors to access and utilise on-board emergency procedures applicable to the ACD load types defined at ACD.60(a).

ACD.70 - ACD EQUIPMENT, SYSTEMS AND INSTALLATIONS (AUS)

(a) MAOs conducting ACD and ACDSPs must ensure that ACD Equipment, systems and installations meet, and are maintained to, authorised standards; and support the safe provision of services. ▸ **GM** ▸ **AMC**

AMC ACD.70(a) - ACD Equipment, systems and installations

a. MAOs conducting ACD and ACDSPs should manage ACD Equipment, systems and installations in compliance with:

i. the OEMs' design specifications, unless more restrictive limits and specifications are provided out of the activity defined in AMC ACD.70(a)b

ii. operating and installation instructions

iii. ongoing maintenance requirements and instructions.

b. MAOs conducting ACD and ACDSPs should ensure (in consultation with the relevant Aircraft Type MTC Holder) that new items of ACD Equipment meet the applicable standards prescribed in the DASDRM before first use of each ACD Equipment item type that interfaces with an Aircraft Type.

c. MAOs conducting ACD and ACDSPs should perform defect and unserviceability reporting of equipment, systems and installations.

GM ACD.70 - ACD Equipment, systems and installations (AUS)

a. **Purpose. (Context)** Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of

Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

b. **Applicability.** This regulation applies to equipment and systems not permanently fitted to the Aircraft. DASR 21 requirements apply to any equipment or system permanently fitted to the Aircraft.

c. ACD Equipment consist of more than just Aerial Delivery Equipment (ADE). ACD Equipment includes materiel used anywhere in the ACD process. ACD Equipment could therefore include items of GSE that support the provision of ACD services (eg PFA 50).

ACD.80 - ACD COMPETENCY MANAGEMENT (AUS)

(a) The ACDSP must ensure personnel are competent and authorised to undertake their ACD duties. ▸ **GM** ▸ **AMC**

AMC ACD.80(a) - ACD Competency management system (AUS)

a. To ensure effective personnel Competency, the ACDSP should:

i. ensure tasks are undertaken by suitably competent and authorised personnel, including contractors

ii. maintain adequate numbers of personnel to provide the service, consistent with a defined and reasonable level of overall demand

iii. maintain training, Competency assessment and checking programs for personnel.

b. ACD service provision and instructor Competency management must be defined for all ACD load types defined at DASR ACD.60(a), in:

i. a Learning Management Package (LMP) that considers:

(a) education and training needs

(b) education and training Competency and proficiency standards

(c) education and training instructor standards.

ii. approved OIP including:

(a) categorisation of skills or Competencies

(b) Currency requirements.

c. ACDSPs should ensure a method of recording Competency and Currency. The recording system should include:

i. secure and accessible record storage by users

ii. recording methods and formats which are enduring

iii. provision for no unauthorised record modifications

iv. validation of Competency and Currency criteria listed in the recording system against requirements

v. record preservation IAW the *Records Management Policy Manual*

GM ACD.80(a) - ACD Competency management system (AUS)

a. **Purpose. (Context)** Defence Aircraft are required to carry and deliver Passengers; and General Cargo and Non-Standard Cargo either internally or externally. **(Hazard)** Suitability For Flight can be compromised by ineffective management of the preparation, composition, configuration, loading, placement and restraint of Passengers, General Cargo and Non-Standard Cargo. **(Defence)** This regulation requires MAOs conducting ACD and ACD Service Providers (ACDSPs) to ensure ACD operations are conducted as an approved organisation and managed to ensure Suitability For Flight.

b. ACDSPs are responsible for ensuring personnel hold appropriate Competencies for the different types of ACD roles and functions, and for assessing Competencies of personnel involved in the provision of ACD services.

c. Different Competencies will apply to ACDSP personnel, depending on what role they fulfil in ensuring the safety of the overall service. DASA does not prescribe any single Competency or framework. The ACDSP has flexibility to select Competencies which are appropriate for the different ACD roles and functions.

d. Managing ACD personnel Competencies may include using relevant AFIC, CASA, EASA and ICAO standards.

e. **Recency.** Recency describes the period of time from the present, back to when the individual last performed a certain activity or skill. If the individual's Recency is outside a Currency requirement (ie an individual has not performed task 'A' for 14 months, and task 'A' has a Currency requirement of 12 months) then the Currency management system must impose an additional control, such as a re-Currency activity, before allowing that individual to perform that task without extraordinary supervision. However, a supervisor should consider an individual's Recency, even if the Currency requirement has been met. In the previous example, if the individual had performed Task 'A' 11 months ago instead, the supervisor may impose additional hazard controls (in comparison to the controls imposed on a more recent individual) to eliminate or otherwise minimise risk SFARP. Additional controls could include additional briefing requirements, environmental limitations, or composing the air load team with more recent individuals to offset the lack of Recency of the individual in question.

f. **Note:** all of these aspects of AMC ACD.80(a)b are not required to be captured in a single LMP. The requirement is that each of the aspects is captured in an LMP. The distribution of aspects may be across a number of LMP.

AIRCREW.10 - DEFENCE AIRCREW QUALIFICATIONS AND TRAINING

(a) The MAO must ensure an aircrew training system is established that supports raise, train, sustain requirements and includes the following elements: ▸ **GM**

GM AIRCREW.10.A - Operational Standards

1. **Purpose. (Context)** The safe delivery of aircraft capabilities is supported by aircrew knowledge, skills, and behaviours benchmarked against contemporary training and learning standards. **(Hazard)** Undesired aircrew knowledge, skills and behaviours can affect safe delivery of that capability. **(Defence)** This regulation requires the MAO to establish a Defence Aircrew qualification and training system to:

   a. provide aircrew the requisite knowledge and skills to support the desired behaviours to affect safe aircraft operation

   b. actively monitor and correct aircrew knowledge, skills, or behaviours, to ensure that the required standards are maintained.

2. **Applicability 1.** This regulation may apply to foreign military personnel employed as aircrew on Defence aircraft.

3. **Applicability 2.** Members undergoing initial aircrew training are considered to be aircrew for the purposes of this guidance.

4. **Applicability 3.** Air Force MAO compliance with this regulation is bounded by AC SI(OPS) 02-01 as part of Air Command's assurance of standardisation.

Training and Development

5. AFTG is the RAAF Centre of Excellence for aviation training needs and development criteria and may provide advice to support regulatory outcomes.

6. AAvnTC is the Army Centre of Excellence for aviation training needs and development criteria and may provide advice to support regulatory outcomes.

7. HQ FAA is the Navy Centre of Excellence for aviation training needs and development criteria and may provide advice to support regulatory outcomes.

8. The Defence Learning Manual (DLM) provides policy direction on learning and development activities or programs that are managed, sponsored or funded by any Defence authority. The DLM ensures that such policies are consistent and align with Defence capability priorities whilst ensuring efficient and effective use of resources.

1. Categorisation system, defining: ▸ **AMC** ▸ **GM**

GM AIRCREW.10.A(1) – Categorisation (AUS)

1. The award of a category, ie as described in AMC AIRCREW.10.A(1)), also confers the award of a DASA License to operate an aircraft to the extent permitted by the awarded category under the MAO-AM's aircrew categorisation systems. The MAO-AM is

appointed as a Delegate of the Safety Authority for licensing of aircrew through the relevant categorisation system.

AMC AIRCREW.10.A(1) - Categorisation (AUS)

1. Categorisation of aircrew describes the level of proficiency in a role.

2. Aircrew categories may include:

   a. **Category A – Select.** Category A aircrew have:

      i. a consistent standard of excellence and effectiveness of the highest levels practicable within a particular role (with the aircraft and equipment in use) and, in particular, have displayed outstanding command, leadership and tactical or instructional ability where relevant to the role

      ii. comprehensive and extensive professional knowledge in the role

      iii. extensive experience in the role.

   b. **Category B – Highly Proficient.** Category B aircrew have:

      i. a consistently high-level of effectiveness, particularly in respect of leadership and tactical or instructional ability where relevant to the role

      ii. comprehensive professional knowledge within the role

      iii. substantial experience in the role.

   c. **Category C – Proficient.** Category C aircrew have:

      i. achieved an intermediate level of effectiveness

      ii. an intermediate level of professional knowledge within the role

      iii. sufficient experience to function competently in all aspects of the role.

   d. **Category D – Qualified.** Category D aircrew have:

      i. achieved a Type Rating

      ii. a base-line level of professional knowledge within the role

      iii. a base-line level of experience to function competently in the role.

   e. **Category E or U – Uncategorised.** Category E or U aircrew are:

      i. undergoing Type Rating conversion, refresher or other training for the award of qualification or category

      ii. aircrew whose category has lapsed

      iii. aircrew whose category is no longer valid.

      iv. Other categories as nominated by Command.

3. **Category Validity.** Aircrew categories should be defined in Command OIP and address currency and recency requirements. Aircrew categories should remain valid for a 12 month period, unless a longer period is authorised.

a) level of proficiency in a role

b) Aircrew categories

c) currency and recency requirements.

2. Basic Qualifications ▸ **AMC**

AMC AIRCREW.10.A(2) - Basic aircrew qualifications (AUS)

1. Basic Aircrew Qualifications should be defined in Command OIP and may include:

a. **Flight Crew.** The flight crew basic qualifications include:

i. Aircraft Captain

ii. Co–Pilot

iii. Flight Engineer.

b. **Mission Crew.** The mission crew basic qualifications include:

i. Airborne Electronics Analyst

ii. Weapon Systems Officer

iii. Maritime Patrol and Response Officer

iv. Air Battle Manager

v. Aircrewman

vi. Aircrewman Technician

vii. Air Refuelling Operator

viii. Crew Attendant

ix. Flight Test Engineer

x. Loadmaster

xi. Aviation Warfare Officer

xii. Other aircrew nominated by the Command.

3. Additional qualifications ▸ **AMC**

AMC AIRCREW.10.A(3) - Additional Aircrew Qualifications (AUS)

1. Additional Aircrew Qualifications may include:

a. Aircrew Instructor

b. Assessor

c. **Flight Test.** Flight Test aircrew may include:

i. Flight Test Pilot

ii. Flight Test System Specialist.

d. Unit Maintenance Test Pilot

e. Other qualifications as nominated by the Command.

4. Airborne emergency training: ▸ **AMC**

AMC AIRCREW.10.A(4) - Airborne Emergency Training (AUS)

1. All aircrew are required to operate aircraft proficiently in accordance with normal and emergency procedures prescribed in the aircraft flight manual. To gain proficiency in performing emergency procedures, aircrew require training and practice in emergency situations.

2. To the maximum extent practicable, emergency training should be conducted in a simulator. Where this is not possible due to the lack of a suitable simulator, or because of simulator limitations or inadequacies, airborne emergency training may be conducted in aircraft to the extent approved by the OIP.

3. Practice emergencies should be limited to simulating those events described in the aircraft flight manual (AFM) and conducted in accordance with the emergency procedures promulgated in the AFM. Practice emergency sequences designed to simulate emergencies not described in the AFM should be reviewed and approved in OIP prior to being conducted.

4. **Practice engine failures – General.** Training involving an actual engine shutdown should only occur during use of a FSTD. Airborne engine failures may be simulated during actual flight by retarding the throttle or power control lever to idle, or to a setting which simulates engine shutdown. Some engine emergency scenarios may involve an intermediate setting to simulate a limited power or power restriction scenario. OIP should document the procedures and limitations for the simulation of an engine failure and for subsequent actions, including engine operating limitations, committal and overshoot heights, and engine restart and warm-up procedures.

5. **Practice engine failures – Single–engine aircraft.** The deliberate airborne shutdown or stopping of an engine in single-engine aircraft during emergency training may not occur unless specifically authorised by COMAUSFLT / COMD AVNCOMD / ACAUST.

6. **Practice engine failures – Multi–engine aircraft.** A suitable education program that covers multi-engine theory, such as asymmetric aerodynamics, should be implemented to prevent serious incidents (See B-707 BOI recommendation). Procedures and limitations for asymmetric training in all multi-engine aircraft types under command should include:

a. methods to be employed for the simulation of engine failure(s)

b. procedures and limitations for asymmetric flying training, including double asymmetric training (if permitted)

c. aircraft type limitations for asymmetric training operations including minimum:

i. heights

ii. speeds

iii. weather criteria.

7. **Multiple emergency training.** The reliability of modern aircraft systems are such that the simultaneous failure of critical, independent systems should be rare. Accordingly, airborne emergency training involving multiple emergencies should not be required. A system failure that would normally lead to an associated failure and that cannot be safely practised should be described and discussed as part of emergency training.

8. **Authorisation.** Aircrew should not be permitted to perform unsupervised airborne emergency training without specific authorisation.

9. **Weather.** To the maximum extent possible, airborne emergency training should be conducted in VMC. In the case of emergency training involving failure of the pilot's primary attitude reference, flight in IMC is prohibited unless a qualified and current safety pilot is crew assigned to monitor full panel instruments and will occupy a control seat with fully-functioning dual controls.

10. Airborne emergency training should be conducted under the supervision of an Aircraft Captain with appropriate experience. In all practice scenarios, the crew should be briefed and familiar with appropriate emergency procedures prior to airborne emergency training being conducted.

a) is only to be conducted in aircraft to the extent defined in OIP

b) is to be conducted in a simulator to the maximum extent practicable.

5. Currency and recency requirements, which include: ▸ **AMC**

AMC AIRCREW.10.A(5) - Currency and recency requirements (AUS)

1. Currency requirements should be defined in OIP and may vary depending on the category scheme used.

2. Recency requirements, if applicable, should be defined in OIP and may vary depending on the category scheme used.

3. Currency and recency requirements should include:

a. minimum currency criteria

b. methods of maintaining and regaining currency

c. identification of circumstances and authority for extension.

a) minimum currency criteria

b) methods of maintaining and regaining currency

c) identification of circumstances and authority for extension.

6. Method of recording competency and currency, which must: ▸ **AMC**

AMC AIRCREW.10.A(6) - Method of recording qualification, competency and currency

1. The authority to award aircrew qualifications should be listed in the approved Command OIP.

2. All aircrew qualification awards should be recorded in accordance with DASR AIRCREW.80.

3. The recording method may be flying logbooks, electronic (soft copy) based solutions, or any other format that is determined to be enduring.

4. The competency management system should not be contained within operational documents.

5. The records of competency and recency are deemed OIP. As such, the provisions of DASR.AO.GEN apply.

a) list in the approved OIP the authority(ies)

b) utilise a recording method in a format determined to be enduring.

7. Aircrew Instructor training and standards requirements, which include: ▸ **AMC**

AMC AIRCREW.10.A(7) - Air Instructor training and standrds requirements

1. Defence flying training systems rely on the quality and integrity of aircrew instructors to implement authorised standards and procedures and achieve consistent and effective results. Aircrew instructors include airborne and non-airborne instructors associated with an airborne aviation system.

2. The maintenance of aircrew instructor standards is vital for the maintenance of both Defence air capabilities and aviation safety. By ensuring both the competency and standardisation of aircrew instructors, Defence can reduce variance in flying performance between individuals, and consistently deliver standardised flying training.

3. RAAF CFS is the Defence Centre of Excellence for airborne instructional techniques affording tri-Service standardisation of flying instruction techniques. CFS is also responsible for the competency assessment and standardisation of airborne instruction within Defence. CFS does not assess standards for tactical employment of service aircraft. This remains the responsibility of the appropriate MAO for particular aircraft types.

4. **Aircrew Instructor.** Certification as an Aircrew Instructor allows Defence employment in aircrew instruction and assessment. Aircrew Instructors should be subject to routine instructor competency assessments. Aircrew Instructors may include:

a. Flying Instructor

b. Flight Engineer Instructor

c. Mission Instructors

d. Simulator Instructor.

5. Assessor. An assessor may include:

a. Senior Instrument Rating Examiner (SIRE)

b. Instrument Rating Examiner (IRE)

c. Check Captain

d. Category Assessor.

6. Aircrew Instructors should be qualified using a Defence-recognised course.

7. Aircrew Instructors should be subject to routine instructor competency assessment.

8. Categories of Aircrew Instructor roles may be developed by the Command as part of the applicable service-based aircrew training system.

9. Non-Defence Aircrew Instructors deemed to meet equivalent Defence standards may be employed.

a) qualifications through Defence-recognised courses

b) routine instructor competency assessments.

8. Training and standards requirements, which: ▸ **AMC**

AMC AIRCREW.10.A(8) - Training and standards requirements

1. Training and standards requirements should reference the applicable Learning Management Plan.

2. Aircrew competency requirements should include:

a. competency for all aircraft roles and operations

b. training and assessment requirements for initial award and maintenance of competency

c. criteria that define a lapse in competency, including the requirements for requalification.

3. **Pilot Instrument Rating.** For a pilot to be operationally competent, the pilot is required to safely operate the aircraft by sole reference to the aircraft's flight instruments. Therefore, a Pilot Instrument Rating Scheme (PIRS) should be established to support safe aircraft operation during IMC. PIRS controls should include:

a. Command responsibility to determine the conduct of an Instrument Rating Test (IRT), including consultation with CFS SME.

b. Experience, currency and recency and renewal requirements.

c. Flexible use of command to ensure that those pilots who, for various reasons, are not entitled to an Instrument Rating, may still fly under restricted conditions.

d. Employment strategy of relevant Assessors.

e. Flexibility provisions that can be authorised by the command chain.

f. A system to ensure complete documentation of all testing and qualification awards.

a) reference the applicable Learning Management Plan

b) for aircrew competency include:

(i) competency for all aircraft roles and operations

(ii) training and assessment requirements for initial award and maintenance of competency

(iii) criteria that define a lapse in competency, including the requirements for requalification.

c) include the establisment of a Pilot Instrument Rating Scheme (PIRS) to support safe aircraft operation during IMC. PIRS controls must include:

(i) command responsibility to determine the conduct of an Instrument Rating Test (IRT), including consultation with CFS SME
(ii) experience, currency and recency, and renewal requirements
(iii) flexible use of command to ensure that those pilots who, for various reasons, are not entitled to an Instrument Rating, may still fly under restricted conditions
(iv) employment strategy of relevant Assessors
(v) flexibility provisions that can be authorised by the command chain
(vi) a system to ensure complete documentation of all testing and qualification awards.

AIRCREW.60 - AVIATION SAFETY TRAINING

(a) The MAO must ensure that aviation safety training is conducted in accordance with approved OIP that includes: ▸ **AMC** ▸ **GM**

GM AIRCREW.60.A - Aviation Safety Training (AUS)

Purpose. (Context) The safe delivery of aircraft capabilities is supported by aircrew knowledge, skills, and behaviours related to a contemporary understanding of aviation safety. **(Hazard)** Undesired aviation safety-related knowledge, skills and behaviours can affect the safe delivery of that capability. **(Defence)** This regulation requires MAOs to establish and maintain Aviation safety related training for Aircrew to provide the necessary Aviation safety-related knowledge and skills; and enable the desired behaviours, in the delivery of capability, to support health and safety.

AMC AIRCREW.60.A - Aviation Safety Training (AUS)

1. The Defence Aviation Safety Manual provides the corporate solution for Aviation Safety Training.

    1. aviation safety training objectives and assessment criteria

    2. requirements for currency and re-qualification.

AIRCREW.65 - RISK MANAGEMENT (RM)

(a) The MAO must ensure that Risk Management training is conducted in accordance with approved OIP. ▸ **AMC**

AMC AIRCREW.65.A - Risk Management Training (AUS)

1. The Defence Aviation Safety Manual provides the corporate solution for Risk Management Training.

AIRCREW.80 - LOGBOOKS

(a) All aircrew must maintain a Defence flying logbook. ▸ **GM**

GM AIRCREW.80.A - Aircrew Logbooks (AUS)

1. The flying logbook or an approved electronic equivalent provides a detailed record of an aircrew member's flying experience. As the only record of its type, it is an important document, which should be maintained accurately by all individual Defence aircrew members. A Defence Flying Log Book is an official document and is the property of the Commonwealth of Australia.

2. Defence aircrew are required to maintain flying logbooks or an approved electronic equivalent in accordance with OIP issued by the member's applicable single-Service.

(b) OIP issued under this regulation shall specify a method to: ▸ **GM** ▸ **AMC**

AMC AIRCREW.80.B - Logbook Entries (AUS)

1. When an aircrew member completes a conversion or an aircrew training course, the CO of the unit should annotate the appropriate section of the flying logbook.

2. When an aircrew member completes an approved aviation medicine training course, the medical officer conducting the course or delegate, should record the details in the appropriate section of the flying logbook.

3. Where Defence-approved electronic means have replaced paper-based flying logbooks and the electronic logbook employs a system to ensure that logbook entries are certified by an authorised person, there is no requirement for monthly certifications of logbooks nor completion of annual flying hour returns unless dictated by single-Service Instructions.

Monthly logbook certification

4. At the beginning of each month, an aircrew member is to summarise the total flying time for the previous month and record the hours by aircraft type in each column of the logbook.

5. All FSTD time should be totalled separately, in accordance with the applicable flying organisation's Standing Instructions. The CO of a flying unit, nominated flight commander or, in the case of the CO the officer's Deputy, should view and certify entries in aircrew flying logbooks as an accurate record of each aircrew member's flying experience (this may include non-unit aircrew who have flown in unit aircraft).

End of tour and annual aircrew reporting

6. Aircrew should complete annual returns of flying hours, annual proficiency reporting and end of tour reports of flying hours and proficiency in accordance with single-Service instructions.

Protection of logbooks

7. To protect the record of a member's flying experience, the aircrew flying logbook should not be carried in an aircraft in which the aircrew member is flying as a crew member.

Disposal of logbooks

8. When a member is discharged or appointed to non-flying duties, the member's logbook normally becomes the member's personal property.

GM AIRCREW.80.B - Aircrew Logbooks (AUS)

1. Every qualified aircrew member, and every member undergoing flying training, should keep in an approved flying logbook:

   a. a complete record of all Defence flights undertaken by the member as crew in a Defence registered or non-Defence registered aircraft; and

   b. all practice in any FSTDs qualified in accordance with DASR FSTD.

   1. record the member's endorsed qualifications

   2. record all flight time undertaken as authorised crew or flight crew of a military aircraft, a civil aircraft under hire or lease to Defence, or a civil aircraft provided for any other military purpose

   3. record flight time in approved FSTDs

   4. ensure the logbook of an authorised crew or flight crew member is not carried on an aircraft when the member is flying on that aircraft.

(c) In the event of an accident or incident, the operating unit commander must provide all involved aircrew logbooks to an authorised person upon request. ▸ **GM**

GM AIRCREW.80.C - Aircrew Logbooks (AUS)

1. In circumstances where an aircrew member is killed on active operations, is missing in action, is taken prisoner of war, or is involved in a flying accident resulting in fatalities, the CO of the unit involved is to arrange to secure and protect the member's logbook in accordance with single-Service instructions.

DASR ANSP – Air Navigation Service Providers

ANSP.10 – Organisational Approval (AUS)

(a) An Air Navigation Service Provider must operate only to the extent approved in the ANSP certificate issued by the authority. ▸ **GM**

GM ANSP.10.A – Organisational approval (AUS)

1. **Purpose.** The purpose of this regulation is to assure an ANSP operates only to the extent of its approval.

2. The issue of an ANSP certificate supplies the basis for the judgement of suitability of an Air Navigation Service in that it will be maintained and operated to approved standards and limitations, by competent and authorised individuals who are acting as members of an approved organisation.

ANSP.20 – ANSP Certificate (AUS)

(a) An Air Navigation Service Provider applicant organisation must apply to the Authority for: ▸ **GM** ▸ **AMC**

AMC ANSP.20.A – Preparation of a Compliance Statement (AUS)

1. The Compliance Statement should include the following information for the ANSP Certificate:

   a. **ANSP name**. FEG or equivalent.

   b. **ANSP location**. Location of the headquarters.

   c. A statement that operations will be in accordance with the attached Service Provision Conditions (SPC).

   d. The Compliance Statement should include the following information for the ANSP SPC:

      i. Accountable Manager. Listed by command position, eg 'CDR SRG'.

      ii. Hazard Tracking Authority (HTA) within the ANSP.

      iii. Safety Manager (per DASR SMS)

      iv. Air Navigation Services provided

      v. Specific approvals. Specific approvals may be requested for particular service type(s), or for all services operated by the ANSP. (e.g. Upgrade of communications).

2. Operational limitations may be requested for a particular service or for all services conducted by the ANSP to assure safe operations of a system or sub-system within the ability / maturity of the ANSP. An ANSP may still have operational limitations imposed,

particularly during introduction to service. Operations, operator experience or training, Synthetic Training Device establishment, or capability trials may limit the role or environment in which the ANSP may safely conduct operations until further review of the SPC. Examples of operational limitations could include: non-deployability of tactical equipment, or synthetic training device usage for licence endorsement.

Service Provision

3. The Compliance Statement should demonstrate how the ANSP will meet these regulations and safely conduct Operations.

Accountable Manager attestation and signature

4. The Accountable Manager should make the following attestations and sign the Compliance Statement:

   a. I am accountable for [insert organisation] compliance with DASR.

   b. This Compliance Statement for ANSP Certification and Service Provision Conditions is complete and correct.

   c. I am satisfied that appropriate arrangements are in place to meet the regulations and support the scope of operations contained in the Service Provision Conditions.

GM ANSP.20.A – ANSP Certificate (AUS)

1. **Purpose.** The purpose of this regulation is to assure sufficient information for the Authority to issue or vary an Air Navigation Service Provider Certificate and/or Service Provision Conditions (SPC).

2. The Authority will issue an ANSP certificate when satisfied that the applicant organisation can satisfy the requirements of DASR ANSP 20. The ANSP certificate authorises the provision of the service. The ANSP certificate contains:

   a. **ANSP name:**

   b. **ANSP location:**

   c. Reference to Service Provision Conditions including the words ‘operations will be conducted in accordance with the attached Service Provision Conditions.

   d. Period of validity (or expiry date).

3. **ANSP Service Provision Conditions (SPC)**. Each ANSP certificate has attached SPC which details:

   a. Accountable Manager

   b. Hazard tracking Authority appointments within the ANSP

   c. Services provided

   d. Operating system utilised by the service

e. Contracts, agreements or other arrangements between the ANSP and a supporting third party

f. Operational limitations (if required). Operational limitations are prescribed by the Authority for a system or sub-system within the ability or maturity of the ANSP. Typically an operational limitation will include reference to a plan and timeline to remove the limitation upon Authority review.

g. Signature by the Authority endorsing the SPC.

4. In the ADF, ANSP certificates are only required for Air Traffic Management (ATM) services, including Air Traffic Services (ATS); Communication, Navigation and Surveillance (CNS) services; Meteorological Services (MET) and Aeronautical Information Services (AIS).

5. **Initial Issue of an ANSP Certificate and attached SPC.** The applicant organisation is to submit a Compliance Statement. The Authority, when satisfied all the requirements have been met, will issue an ANSP Certificate and SPC.

6. **Application for reissue or variation to an ANSP Certificate.** The ANSP Accountable Manager is to amend the extant Compliance Statement and submit this to the Authority, highlighting those ANSP items being varied. The Authority, when satisfied, will issue a new ANSP certificate.

7. **Application for variation of ANSP Certificate SPC.** The ANSP Accountable Manager is to amend the extant Compliance Statement and submit this to the Authority, highlighting those Service Provision Conditions items being varied. The Authority, when satisfied, will issue updated SPC for the ANSP. Application for variation to an SPC is required, at a minimum, when there is:

a. Addition, removal of, or change to an Air Navigation Service (ANS)

b. request to impose / remove specific approvals

c. request to impose / remove operational limitations.

8. **Addition of a service to ANSP Certificate SPC.** The compliance statement for the addition of a service to an ANSP Certificate SPC addresses whether the ANSP can safely operate and maintain their systems and services. The statement does not address, but may reference any acquisition documentation to demonstrate how the new capability will be transitioned safely into service. Refer to the DASA Manual for further guidance.

9. **Authority oversight and audit.** The Authority may use an independent board of review to assess an ANSP including to:

a. provide recommendation on the issue of, or major variation to, an ANSP certificate or associated SPC

b. specifically review the proposed addition of a new service, system or sub-system to an SPC

c. specifically review major modification of a service, system or sub-system listed on an SPC

d. review on-going safe provision of service.

10. **Provision of evidence.** Organisations should make full use of existing data and documents rather than creating unique documents with no enduring value once the certificate is issued. Advice should be sought from the DASA on how to package an initial application for a certificate.

1. issue of an Air Navigation Service Provider Certificate, or attached Service Provision Conditions, or

2. variation to an Air Navigation Service Provider Certificate, or attached Service Provision Conditions.

ANSP.30 – Organisational Structure (AUS)

(a) An Air Navigation Service Provider must define its organisational structure. ▸ **GM** ▸ **AMC**

AMC ANSP.30.A – Organisational Structure (AUS)

1. ANSPs should ensure their organisational structure includes:

   a. the authority, duties and responsibilities of the management personnel in charge of safety and quality-related functions; and

   b. the relationship and reporting lines between these personnel and other parts of the organisation.

2. ANSPs should establish formal relationships with all other contributors to the service provision which may directly influence the safety of their services.

GM ANSP.30.A – Organisational Structure (AUS)

1. **Purpose.** The purpose of this regulation is to assure an appropriate organisational structure that supports an Air Navigation Service Provider (ANSP).

2. An ANSP is an organisation consisting of operational, maintenance and engineering personnel, usually a part of a Force Element Group (FEG) or equivalent force structure, that:

   a. has an Accountable Manager, usually FEGCDR or equivalent;

   b. has an appropriate chain of command;

   c. has appropriately qualified personnel;

   d. has key personnel with appropriate experience

   e. has facilities which are sufficient and suitable for the type of services provided;

   f. has suitable, documented processes, procedures and practices;

   g. has a suitable quality management system

h. has a suitable safety management system.

ANSP.40 – Safety Management Systems (AUS)

(a) An Air Navigation Service Provider must establish and maintain a Safety Management System (SMS), in accordance with DASR.SMS.

ANSP.50 – Quality Management Systems (AUS)

(a) An Air Navigation Service Provider must have a Quality Management System to achieve consistency, continuity and compliance of service provision through quality planning, assurance, control and improvement. ▸ **GM**

GM ANSP.50.A – Quality Management System (AUS)

1. **Purpose.** The purpose of this regulation is to assure that an ANSP has an appropriate Quality Management System for managing the outcomes of their service provision, and that covers the operations, engineering and maintenance aspects of its service.

2. ANSPs should have a quality management system which achieves the following purpose:

   a. **Quality planning:** defines the quality policy and approach so as to meet the needs of different users of the Air Navigation Service;

   b. **Quality assurance:** establishes a quality assurance program that contains procedures to verify all activities are being conducted in accordance with applicable requirements;

   c. **Quality control:** appoints management representatives to monitor conformance with, and adequacy of, procedures to ensure safe and efficient operations; and

   d. **Quality improvement:** performs reviews and takes remedial actions as appropriate.

3. **Flexibility Provision.** ANSPs may use ISO9001 or equivalent certificates by an appropriately accredited organisation covering the appropriate scope of service provision as evidence of a QMS when making a Compliance Statement; however, there is no specific requirement by the Authority for the QMS to be externally accredited.

4. ANSPs may integrate, as examples, safety and security management systems into their overall quality management system.

ANSP.60 – Operations Manuals (AUS)

(a) An Air Navigation Service Provider must provide Operations Manuals that are easily accessible by and contain the instructions and information required for personnel to perform their duties. ▸ **GM**

GM ANSP.60.A – Operations Manuals (AUS)

1. **Purpose.** The purpose of the regulation is to assure personnel have access to the information they require in order to perform their duties.

2. Operations Manuals is the generic term for the collection of the ANSPs Orders, Instructions and Procedures and covers all aspects of the Air Navigation Service (including operations, engineering, maintenance, supply and support).

3. ANSPs should keep up-to-date manuals. They should ensure:

   a. manuals contain the procedures required by personnel to perform their duties;

   b. manuals are accessible to the personnel who need them;

   c. personnel are expeditiously informed of amendments;

   d. personnel perform their duties in accordance with those manuals; and

   e. manuals include contingency plans to allow timely and effective response to those emergencies and abnormal events which may significantly degrade or interrupt the provision of their services.

(b) An Air Navigation Service Provider must provide ATC document(s) that: ▸ **GM**

GM ANSP.60.B – ATC documents (AUS)

1. **Purpose.** The purpose of this regulation is to assure the appropriate separation standards are applied to aircraft.

2. In July 2000, Defence made formal commitment to CASA that Defence will apply CASA/ ICAO ATC standards to civil aircraft. This regulation allows for assurance, and continuing visibility of, this commitment to CASA or any other non-Defence agency.(Insert foot note/hyperlink of CAF Minute 2000 9743 Pt 1(25)/ CAF 634 100 of 31 Jul 2000 (R9693328))

   a. In the interest of harmonisation, a shared civil–military document with the civil ATS provider may be published.

3. **Flexibility Provision.** Operational considerations may require a reduction of ICAO separation standards between Defence aircraft. For example, a wake turbulence standard reduction to gain an operational efficiency; or maritime operations may necessitate a reduction in surveillance standards.

   a. The application of a reduced air traffic separation standard should only be authorised by the Command authority (COMAUSFLT/ COMD AVNCOMD/ ACAUST) responsible for the aircraft to which the reduced standard will be applied. For example, an Army aircraft would require COMD AVNCOMD authorisation prior to being used by ATC.

   b. Reductions from ICAO specified separation standards should be published in the Defence AIP, which will then support changes to ATC documents.

c. There is no restriction on who may propose a change to separation standards, but in any case the initial research should closely involve the Defence ANSP to ensure any such change will not compromise safety of other flight operations

4. The following may be used as the basis for ATC Documents:

a. ICAO Annex 11 – Air Traffic Services

b. Australian Airspace Regulations 2007

c. CASR part 172 – Air Traffic Services

d. NATO Standard MPP-02 Helicopter Operations from Ships other than Aircraft Carriers (HOSTAC)

e. Naval aircraft control procedures in ABR 5273 Australian Navy Action Information Organisation User Instructions

1. Details ATS procedures and ATC separation standards

2. Is harmonised with ICAO and national civil practice.

(c) An Air Navigation Service Provider that provides an Aeronautical Information Service (AIS) must provide documents that detail Aeronautical Information (AI) product development and AI delivery procedures. ▸ **GM**

GM ANSP.60.C – Aeronautical Information Service (AUS)

1. **Purpose.** The purpose of this regulation is to assure that required AIP available for Defence use is produced and delivered at a standard acceptable to the Authority.

2. Aeronautical information published is to include, but is not limited to:

a. Publications that advise those flight procedures and airspace requirements used to plan and conduct flight nationally and internationally

b. Aeronautical data in support of mission planning tools

c. Enroute charts, both national and international as required

d. Visual charts used for navigation and planning purposes

e. Terminal charts containing information on departure and approach procedure for each:

i. Certified aerodrome

ii. Operationally relevant overseas aerodrome (as determined by ACAUST)

3. The following may be used as the basis for AIS documents:

a. ICAO Annex 2 – Rules of the Air

b. ICAO Annex 4 - Aeronautical Charts

c. ICAO Annex 11 – ATS

d. The Airspace Act 2007

e. ICAO Annex 15 – Aeronautical Information Services

f. Air Services Australia Act

g. CASR part 173 - Instrument flight procedure design.

(d) An Air Navigation Service provider that provides a Meteorological service must provide documents that details Defence-generated MET product development and MET product delivery procedures. ▸ **GM**

GM ANSP.60.D - Meteorological service

1. MET regulation applies only to Defence-produced MET product. MET product provided under contract by the Bureau of Meteorology (BOM) is not regulated under DASR, however as the National Meteorological Authority for Australia, the BOM aviation product complies with ICAO Annex 3 – Meteorological Service for International Air Navigation.

2. The following may be used as the basis for operational MET documents:

   a. ICAO Annex 3 – Meteorological Service for International Air Navigation.

ANSP.70 – Equipment, Systems and Installations (AUS)

(a) An Air Navigation Service Provider must ensure that equipment, systems and installations meet agreed standards and support the safe and effective provision of service. ▸ **GM** ▸ **AMC**

AMC ANSP.70.A - Equipment, Systems and installations (AUS)

1. **General.** Equipment, systems and installations should be designed, manufactured, installed, calibrated, commissioned and modified to ensure they:

   a. support the provision of services in a safe, efficient, continuous and sustainable manner consistent with any foreseen level of overall demand;

   b. are fit for their intended purpose;

   c. meet the required operational performance and safety targets for any foreseeable operating conditions and for their whole operational life;

   d. meet applicable safety requirements;

   e. meet technical standards determined appropriate by the Authority such that an inverse relationship exists between the probability that any failure can result in a total functional failure and the severity of its effect on air navigation services;

   f. account for limitations related to human capabilities and performance; and

   g. are protected from external threats that may be harmful to their operation.

2. **Software.** ANSPs should implement software safety assurance that meets standards acceptable to the Authority.

3. **Distribution of information.** Where air navigation services providers distribute information to users, they should:

   a. confirm the accuracy, sufficiency, completeness and currency of the distributed information, including the source of such information, before such information is distributed;

   b. distribute the information in a suitable format for users;

   c. ensure that information is distributed and updated in a timely manner; and

   d. use reliable means of communication protected from interference and corruption.

4. **Contracted activities.** An ANSP should ensure through oversight that when contracting or purchasing any part of its activities to/from external organisations, the contracted or purchased activity, functional system or constituent addresses all aspects of DASR AMC ANSP.70.A.

5. **Performance monitoring.** An ANSP should monitor and at least annually report the performance of its equipment, systems and installations to users of the service. Where underperformance is identified, the Air Navigation Service Provider should establish its causes and eliminate them, or after having determined the implication of the underperformance, mitigate its effects.

6. **Changes to Equipment, Systems and Installations.** An ANSP should have procedures for managing safety when introducing new or changing existing equipment, systems and installations; and their support arrangements. They should also provide evidence showing the risks to health and safety, and to workers and other persons, have been eliminated so far as is reasonably practicable, and if it is not reasonably practicable to eliminate these risks, to show those risks have been minimised so far as is reasonably practicable.

GM ANSP.70.A - Equipment, systems and installations (AUS)

1. **Purpose.** The purpose of this regulation is to control the technical impact on service provision safety through outlining requirements related to equipment, systems and installations and their management.

2. **Reasonable level of demand.** A reasonable level of demand would include increases in demand caused by credible scenarios such as power outages and storms. The intent is to ensure the ANSP considers these events in the safety analysis and develops the system architecture to provide sufficient capacity and redundancy to ensure continuity of service in these scenarios.

3. **Information for distribution.** Information distributed may include voice communications, controller-pilot data link communications, approach plates, radar data to other ANSPs etc.

4. Technical Standards and Interoperability.

a. **Prescription of technical standards.** The Authority will prescribe and interpret appropriate technical standards. In practice this may be achieved via a Delegate of the Safety Authority (DoSA) with scope to prescribe and interpret technical standards for equipment, systems and installations

b. **Software safety assurance.** Organisations introducing a new system, or updating a current system, should propose to the Authority: the software safety assurance standard(s) it intends to apply, and the associated process for establishing agreement with the Authority. The proposal may take the form of the submission of a plan detailing the software assurance standards and proposed means of compliance. For example a Plan for Software Aspects of Approval or equivalent document would be suitable. In cases where the safety impact is limited, the proposed standard recognised by other Authorities and the means of compliance is straight forward, then a letter submission may be suitable. The proposal should happen as early as possible in a project's lifecycle to reduce the risk of the proposed standard(s) not being acceptable to the Authority.

c. **Safe interoperability.** The Chicago Convention, including associated amending protocols, is set out in the Schedules to the Air Navigation Act 1920 (Cth), and further implemented through the Civil Aviation Act 1988 (Cth) (the Act). Civil aircraft operate in Defence controlled airspace, and Defence aircraft operate in civil controlled airspace, so Defence services provided to civil aircraft should comply with the convention's requirements to achieve safe interoperability. The Civil Aviation Safety Authority (CASA) is the agency responsible for implementing the CARs and CASRs authorised by the Civil Aviation Act 1988 and other Acts. ICAO implements the convention's requirements by distributing ICAO SARPS. ICAO publishes Annexes to the Convention that contain SARPS and Procedures for Air Navigation Services (PANS) documents that guide and inform the uniform application of the SARPS. ICAO Annexes have a higher status than PANS documents, therefore DASR will normally only make mention of ICAO Annexes. As States may also exempt themselves from ICAO SARPS, any significant differences to ICAO SARPS should be documented as an exemption as identified in ICAO Annex 15, Appendix 1 section GEN 1.7.

d. **Interfaces with other providers.** ANSPs should establish defined interfaces and performance agreements with all other equipment, systems and installations contributors to the service provision which may influence directly the safety of their services.

5. **Contracted activities.** Contracted activities include all the activities within the scope of the service provider's operations, in accordance with the terms of the certificate, that are performed by other organisations either themselves certified to carry out such activity or if not certified, working under the service provider's oversight.

6. ANSPs are unlikely to perform in-house design and maintenance, but would have design and maintenance support arrangements with other Defence organisations or contractors. The ANSP needs to be satisfied about the quality of the work being provided to them by these organisations. Confidence can be acquired through the ANSP's quality system engaging with, and monitoring, the quality systems of the other organisations. Confidence may also come from relevant CASG organisations or project

offices attesting ANS systems meet the applicable requirements. Further confidence can be gained from understanding whether equipment is already in service, and extant with other regulators, such as CASA.

7. **Security Threat Impact to Safety.** The impact of security threats to safety is an important consideration for ANSPs. ANSPs should take measures to:

   a. ensure the security of equipment, systems and installation so as to prevent unlawful interference impacting on the provision of services

   b. understand how security deficiencies and breaches that may interfere with a service can become causal factors of aviation safety hazards; and

   c. effectively manage these security-related aviation safety hazards.

ANSP.80 – Personnel competency and Licensing (AUS)

(a) Air Navigation Service Providers must ensure that personnel are competent and authorised to undertake their duties. ▸ **GM** ▸ **AMC**

AMC ANSP.80.A - Personnel competency and Licensing (AUS)

1. In order to ensure effective personnel competency, ANSPs should:

   a. ensure tasks are undertaken by suitably competent and authorised personnel, including contractors;

   b. maintain adequate numbers of personnel to provide the service consistent with the defined and reasonable level of overall demand; and

   c. maintain training, competency assessment and checking programs for these personnel.

GM ANSP.80.A - Personnel competency and Licensing (AUS)

1. **Purpose.** The purpose of this regulation is to assure that personnel employed to undertake an Air Navigation Service, including operations, engineering and maintenance, are adequately trained and authorised to provide that particular service.

2. For all personnel involved in the provision of the service, ANSPs are responsible for ensuring appropriate competencies for the different types of roles and for assessing competencies.

3. There will be differing competencies among technical personnel depending on what aspects of the equipment / systems they are working on and the role these play in the safety of the overall service. Thus, the authority doesn't prescribe any single competency/licensing framework for these roles. The ANSP, by the varying nature of the equipment and systems they use / support, has flexibility to select competencies which are appropriate to the differing roles.

4. The relevant CASA, EASA and ICAO standards for technical personnel competency would be one possible means of managing competencies for relevant technical tasks which have significant safety implications. However, these are a small sub-set of the tasks

technical personnel may be employed in, and thus lesser requirements for competency may be suitable for roles without significant safety implications.

(b) An Air Navigation Service Provider must only provide an ATC service by Licensed Air Traffic Controllers. ▸ **GM** ▸ **AMC**

AMC ANSP.80.B - Air Traffic Controller Licensing (AUS)

1. ICAO Annex 1 – Personnel Licensing

2. (AUS)CASR Part 65 – Personnel Licensing (if applicable)

GM ANSP.80.B - Air Traffic Controller Licensing (AUS)

1. ATC is the only Air Traffic Service that is responsible for separation service provision for civil and military aircraft by issuing pilots with ATC instructions and clearances that ensure separation is maintained.

2. The ATC licence issued to a qualified individual by the Authority will clearly state that ICAO compliance has been achieved. CDR SRG, as the ANSP-AM for ATS, is appointed as a Delegate of the Safety Authority for licensing of Air Traffic Controllers through the relevant Licensing system.

3. In the interest of harmonisation, CASR Part 65 – ATS Licensing may be considered.

DASR AO.Gen - Air Operations General

AO.GEN.00 - REGULATION RULES OF INTERPRETATION

▸ GM

GM AO.GEN.00 – Regulation Rules of Interpretation (AUS)

1. Within DASR Air Operations and DASR Operations Personnel, unless the context states otherwise:
   a. words importing the singular include the plural
   b. words importing the plural include the singular
   c. words importing the masculine gender include the feminine
2. Within these regulations the words:
   a. 'must' is used in the imperative sense
   b. 'may' is used in the permissive sense to state authority or permission to do the act prescribed, and the words 'no person may' or 'a person may not' mean that no person is required, authorised or permitted to do the act described
   c. 'includes' means 'includes but is not limited to'
   d. 'should' is used to imply an act or process identified for inclusion in a desired outcome is complied with unless sound reasoning may determine otherwise.
3. In these regulations the terms:
   a. GM is used to provide non-binding explanatory and interpretation material on how to achieve the requirements contained in the regulation. It contains information, including examples, to assist the user in the interpretation and application of the regulation.
   b. AMC is used to provided a non-binding compliance method that can serve as a means by which the requirements contained in the regulation can be met.
   c. Regulated organisations and Accountable Managers may elect to show compliance with the regulation using an alternative to an existing AMC. Should an alternative means of compliance be used, notification to the Authority will afford appropriate oversight of regulatory outcomes and also assist continuous improvements of the relevant regulations.
4. Force Element Group (FEG) is used within these regulations to universally include Fleet Air Arm, AAvnTC and 16 Avn Bde.

AO.GEN.05 - MANAGEMENT OF OIP

(a) The Orders, Instructions and Publications (OIP) Management System must ensure that all air operational OIP are: ▸ **GM**

GM AO.GEN.05.A – OIP Documents (AUS)

1. Air operational OIP includes:

   a. Aircrew manuals (including the aircraft flight manual) specific to the aircraft type.

   b. General aircrew publications.

   c. Defence Instructions.

   d. Standing Instructions.

   e. Flying Orders, Special Flying Instructions and Standard Operating Procedures.

   f. Flight Information Documents (FID) published as part of the Defence Aeronautical Information Package (AIP).

2. Aircraft Flight Manual (AFM) is a document regulated by DASR 21J. AFM is a manual, associated with Military Type Certificate (MTC), containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

3. The MAO has publication responsibilities of the Aircraft Flight Manual (AFM) under an OIP Management System. The individual obligations of the MTC holder and the MAO under the DASR are differentiated as follows:

   a. The MTC holder has obligations under DASR 21.A.57 to produce, maintain and update the technical data and instructions of the master copy AFM defined by the type certification basis of the platform.

   b. The MAO has obligations under DASR AO.GEN.05.A to maintain accuracy, applicability and approval of the AFM through a management system of their Orders, Instructions and Publications (OIP). This gives publication responsibility, but does not give the MAO an authority to amend. Additionally, the MAO, as part of their OIP Management System is required to form a documented agreement with the MTC holder under DASR AO.GEN.05.C.

1. applicable, accurate and approved

2. maintained in good and legible order

3. accessible to personnel in a format and medium appropriate to the operational environment

4. applicable to the scope and level of the operation being conducted

5. supported by a master document or record allowing the amendment status and document completeness to be ascertained.

(b) The OIP Management System must ensure that each Defence produced document contains or displays:

1. authority for use
2. document name
3. document number
4. date of issue and currency (amendment status)
5. sponsor details.

(c) For OIP specific to aircraft type, the OIP Management System must ensure that:

1. OIP sponsors are appointed to ensure all OIP are applicable and authorised.
2. There are documented agreements established with the relevant Military Type Certificate (MTC) holder, or MTC holder delegate to ensure that any amendments to the aircraft flight manual, or OIP that affect operating instructions, aircrew and/or limitations, are approved by the Authority or the MTC holder or MTC holder delegate.
3. Foreign Source Data (FSD), other than that incorporated into the authorised publication management systems (AAP, NAP or DAP), are approved by the MAO, or relevant MTC holder or MTC holder delegate prior to use.

(d) OIP issued under this regulation must ensure that: ▸ **GM** ▸ **AMC**

AMC AO.GEN.05.D – OIP Sponsorship Responsibilities (AUS)

1. Responsibilities of the OIP sponsor include:

   a. maintaining a relationship with relevant MTC holders and holders of a Military Design Organisation Approval (MDOA) to ensure that there is appropriate review and approval of information that affects airworthiness and safety of flight. This may require the development of processes and procedures for:

      i. determination of which types of information require review and approval by the MTC holder, MTC holder delegate or MDOA holder, and

      ii. the development, review and approval of OIP and the determination of which OIP requires review and approval by the MTC holder, MTC holder delegate or MDOA holder.

   b. conducting an annual review of all assigned air operational publications;

   c. timely coordination of amendment action

   d. obtaining engineering endorsement for applicable amendments

   e. advising units on operation of the Defence Aviation Publication System

   f. reviewing aircraft accident and incident reports and ASORs relevant to their operations to ascertain if deficiencies exist in extant air operational publications

g. facilitate compliance with specifications and standards relating to air operational publications.

OIP DEVELOPMENT AND PROMULGATION

2. Air operational publications should be developed and promulgated in accordance with AAP Policy.

DEVIATING FROM OIP STANDARDS

3. If the format of a publication requires deviating from the approved standards, the Sponsor should formally request a waiver of the standards from the appropriate standards authority in accordance with AAP Policy. The request for a waiver should include a statement of:

   a. reasons for deviating from the standard

   b. details of the document properties or information being varied

   c. the extent to which the publication is to be varied from the standard

   d. the anticipated duration of the change (temporary, permanent or until a particular event)

   e. the known costs necessary to implement the change.

4. Where the appropriate standards authority approves a deviation from the applicable standard, that approval document should be retained by the sponsor on the applicable publication's administration file and Aviation Publications Management Authority advised.

5. Further information and guidance on the management of OIP should be obtained from DASA staff in the first instance. Specialist advice about the production, control and management of aviation publications should be sought from Air Training and Aviation Commons System Program Office (ATACSPO).

GM AO.GEN.05.D – OIP Sponsorship Responsibilities (AUS)

1. **Purpose.** The Defence Aviation Safety Regulation requires that Aviation Systems be operated to approved standards and limitations. OIP establish an organisation's means of compliance with those standards and limitations by defining boundaries for the conduct of aviation operations.

2. This regulation is applicable to all aviation OIP used at the Group, Wing and Unit levels as part of the FMS supporting safe Flight Operations.

3. AAP Policy documents both a method of Publication Management and Publication Specifications. This series:

   a. recommends a sponsor's responsibilities

   b. provides guidance about the responsibilities of a Publication Sponsor in the management of Defence aviation publications

c. recommends a system for management and review of OIP and data used in the operation of Defence registered aircraft.

1. OIP management appointments are identified, including their responsibility and authority.
2. A list of OIP sponsors and approval authorities is maintained.
3. A list of COMAUSFLT / COMD AVNCOMD / ACAUST approved sources of FID is maintained.
4. Periodic review criteria are defined (Defence AIP will follow the 28 day AIRAC cycle).
5. Publication management records are accurately maintained, controlled and made accessible to applicable personnel and organisations.
6. OIP distribution requirements are defined.

DASR ARO - Authority Requirements for Air Operations

ARO.40 - Aircraft Crash Protection (DAAD 002/16)

▸ GM

GM ARO.40 - Aircraft Crash Protection

1. **Purpose.** The purpose of the Aircraft Crash Protection (ACP) Regulation is to assure that all Defence aircraft, and aircraft which are contracted to carry Defence personnel are operated in a manner which eliminates or otherwise minimises the Crash Protection (CP) risks to personnel so far as is reasonably practicable (SFARP).

2. **Background.** The Authority has determined that the Contemporary Crash Protection Design Requirements (CCPDR) are defined by the most demanding of requirements between the FAR/CSs for civil CCPDR, and relevant military standards for CCPDR. Ideally, Defence aircraft and contracted aircraft which carry Defence personnel should meet CCPDR as prescribed within the Defence Aviation Safety Design Requirements Manual (DASDRM). However, it is not always feasible to select the most CCPDR compliant platform because acquisition/contracting decisions are based on a much wider range of considerations.

3. **Applicability.** If the aircraft type cannot meet all elements of CCPDR:

   a. DASR ARO.40.A is applicable to assure that a system is established to eliminate or minimise CP risks to personnel SFARP.

   b. DASR ARO.40.B is applicable to assure that CP risks are periodically re-evaluated in service when changes are proposed to the aircraft's Configuration, Role or Environment.

4. If the aircraft type fully meets all elements of CCPDR, only DASR ARO.40.B is applicable to assure that CP risks are periodically re-evaluated in service, or when changes are proposed to the aircraft's Configuration, Role or Environment.

5. The ACP Regulation does not apply to the following Defence aircraft where compliance with the ADF CCPDR will not result in a measurable improvement in safety:

   a. Non–Defence Registered aircraft (NDRA) operated by or on behalf of Defence that do not carry Defence personnel. This Regulation does not apply to occupants who are operating a non–Defence registered aircraft operated by or on behalf of Defence who are not Defence personnel. CASA remains the regulatory authority for such aircraft. The safety of civilian aircrew in these circumstances is regulated by the CASA and the Defence ACPP is not applied where it does not directly and substantially benefit Defence personnel.

   b. NDRA carrying Defence personnel that are predicted to expose Defence personnel for less than 200 hours per year are unlikely to yield an appreciable safety benefit. This 200 hour per annum threshold is based on the previous CP assessments which indicated that the cost of assessing an aircraft and implementing even minor CP improvements (< $1M) would grossly exceed the

potential benefit to Defence personnel, unless the aircraft flew a minimum of approximately 200 hours per annum over a 20 year in-service life.

c. Aircraft with historical value, for example museum aircraft. Whilst many Warbird, Historic and Replica (WHR) aircraft will not be compliant to CCPDR, modifications to treat CP shortfalls will likely invalidate the historical significance of these aircraft. Additionally, these aircraft generally operate with a reduced rate of effort compared to operational Defence aircraft and the exposure levels of occupants are limited. Furthermore, these aircraft are flown on a voluntary basis and are permitted to fly under the auspices of the CASA. Therefore, Defence is not imposing any additional risk upon the operators of these aircraft than that deemed acceptable by the CASA and it is considered that the risks to WHR aircraft occupants in the event of a survivable crash/accident are minimised SFARP.

d. **Aircraft fitted with ejection seats.** The ability of an occupant to eject from an aircraft prior to a severe crash reduces the benefit which might be obtainable by improving the CP attributes of these aircraft. Previous CP assessments of ejection seat aircraft did not recommend reasonably practicable treatments to reduce the risks of survivable crashes to occupants, when there is the ability to eject from the aircraft in most crash scenarios (refer to DASDRM for further information). It is therefore highly likely, if not certain, that for any ejection seat aircraft there will be no reasonably practicable treatments for CP shortfalls and thus the risk is considered to be minimised SFARP.

(a) The MAO must maintain a system to eliminate or otherwise minimise risk So Far As is Reasonably Practicable (SFARP) to personnel on aircraft that do not meet CCPDR. ▸ **GM** ▸ **AMC**

AMC ARO.40.A - Maintaining a system to treat CP risk to personnel

1. To optimise occupant protection, a systems approach to Crash Protection (CP) is necessary, encompassing the following key initial airworthiness and flight operations CP principles. The key to an optimised CP system for a particular aircraft is balance between the principles such that any one factor is not significantly degraded.

2. Initial airworthiness CP principles include:

a. **Aircraft crash resistance.** The ability of the aircraft structure to provide a protective shell for occupants in the event of a survivable crash is a key factor for occupant survival. The structure and equipment should be designed to allow deformation in a controlled, predictable manner so that forces imposed upon the occupants will be tolerable while still maintaining a protective shell. This aspect also relates to the restraint of concentrated (or high) mass items, to prevent parts of the aircraft becoming projectiles within the cabin during a crash creating crushing or blunt trauma hazards (eg engines/transmission/ blades coming through the roof, internally mounted items dislodging, and so on).

b. **Occupant retention.** Protection should be afforded to occupants by the aircraft's retention system, which comprises the seat, seat retention and occupant restraint system assembly. The retention system plays a major role for

all aircraft types in preventing occupant contact injuries associated with body parts flailing into aircraft structures. For helicopters the retention system also plays a predominant role in energy absorption.

c. **Cargo and equipment retention.** Restraint systems should be designed to control cargo and ancillary equipment displacements that are hazardous to occupants during a survivable crash.

d. **Post-crash emergency escape provisions.** Occupants should retain the ability to rapidly evacuate the aircraft during non-crash ground emergencies, and after survivable crash conditions. The ability to escape is impacted by aircraft deformation, lighting, escape hatches, and so on.

e. **Post-crash injury prevention.** The crash protection system should be designed to prevent post-crash environmental hazards that could seriously injure occupants. For hazards which cannot be prevented, the crash protection system should protect occupants from exposure to the hazards. Potential post-crash environmental hazards include fire, toxic fumes and submersion. This principle can be extended to include equipment that can improve post-crash survivability after the crash sequence. Such equipment includes first aid kits, survival kits and emergency locator transmitters.

3. Flight Operations CP considerations include:

a. **Cargo and equipment configuration.** Cargo (including role equipment) configuration in an aircraft can have significant implications on CP and post-crash egress. Consideration must be applied to the way in which this cargo is arranged (its orientation, presence of sharp edges etc) and where that cargo is restrained in the aircraft. Specific examples include operating with life rafts in helicopter cabins or specialist medical equipment on AME fixed wing aircraft.

b. **Secondary seating.** There are operational circumstances where MEP cannot be seated in crashworthy seats during flight and must utilise non-standard restraints and/or seating, eg Special Operations contingency loading. The CP risks for these circumstances should be routinely assessed and treated in accordance with DASR ORO.70.B – Non-standard aircraft restraint and seating.

c. **Carriage of personal equipment.** Equipment carried on the individual, eg ALSE, load carriage equipment, body armour, should be risk assessed and treated in the context of CP and DASR ORO.70 – Carriage of Personnel on Defence Aircraft. Routinely reassessing the CP risks associated with the carriage of personal equipment is especially pertinent as there are many different forms and versions of ADF combat ensemble.

d. **Egress procedures.** Risks to egress in post-crash circumstances should be considered and treated as part of CP risk assessments. This should include consideration of cockpit/cabin configurations which can block egress routes or cargo/equipment which could make egress hazardous in a post-crash situation.

4. **CP Risk Management Framework.** CP risk assessments should involve a number of stakeholder agencies and organisations and are fundamental to achieving compliance to the Regulation. A system must be in place to treat the outstanding risks identified

through the risk assessment process. General guidance on Risk Management is contained within the DASR.SMS, with this Regulation providing additional CP-specific context and guidance. CP risk assessment and treatment processes should be informed by reference to both these sources. The framework introduces common descriptors for consequence and likelihood, and a common safety risk matrix across the aviation safety and WHS domains. It also introduces likelihood definitions for system level and activity level contexts, which enables risk assessments to be translated across safety management systems. This process involves establishing the risk assessment context, conducting a CP evaluation, establishing the pre-treatment risk level, identifying and prioritising risk treatments, establishing the post-treatment risk level and communicating the outcomes to the appropriate authority to inform risk treatment decisions.

5. **Establish the CP Context.** The context of the risk analysis for CP is that the risks to occupants for design related shortfalls are only realised in the event of a 'survivable' crash. Although CP risks are usually related to aircraft designs which are not fully compliant to the CCPDR, risk treatments will eliminate or otherwise minimise the risk SFARP through either operational or design controls, eg cease or minimise flight over water if there is insufficient life rafts/life raft capacity in accordance with the CCPDR. Design related controls aim to improve aircraft crash performance by following principles contained in the Defence Aviation Safety Design Requirements Manual (DASDRM).

   a. The CP evaluation is to be conducted by the relevant CASG PO or SPO for acquisition and in-service aircraft types and Service Chiefs for potential new aerospace capability options. This is conducted in accordance with DASR Part 21 and the Authority prescribed CCPDR in the DASDRM. The result will be an overall level of CP provided to occupants in the event of a survivable crash, expressed in terms of the CP risk level definitions in Table 1.

Table 1 – CP Shortfalls Definitions

Level of CP Provided to	Description
Good	The level of CP provided to occupants largely meets the CCPDR.
Moderate	The level of CP provided to occupants exhibits some shortfalls against CCPDR. The envelope for 'potentially survivable crashes' is therefore reduced.
Poor	The level of CP provided to occupants exhibits significant shortfalls against CCPDR. The envelope for 'potentially survivable crashes' is therefore markedly reduced.

   b. Where there are shortfalls against the CP design requirements, the risks associated with those shortfalls need to be identified, analysed and evaluated

to inform risk treatment decisions. The risks associated with CP shortfalls will be at their most extreme in a worst case survivable crash and it is these risks that should be considered in the risk assessment.

6. **Pre-treatment Risk Assessment**. The level of risk associated with CP shortfalls, based on the existing CP attributes of the design for the current ADF CRE must be established to inform risk treatment decisions. The risk context includes the aircraft CP design and operating context as defined in the Statement of Operating Intent and Usage (SOIU) and supporting operational instructions that may include roles, missions/profiles, operating environment, annual rate of effort and passenger carriage requirements. This risk analysis must be conducted collaboratively by the relevant CASG PO or SPO for airworthiness aspects and MAO representatives for operational aspects. The key activities to be completed include:

   a. Identification of the worst case survivable crash scenario within the ADF CRE. This activity is largely subjective as it is based on the ADF operating context (roles, missions/profiles, etc).

   b. **Establishing Consequence.** The evaluation of the CP design against the CCPDR (Good, Moderate or Poor) is used to inform the pre-treatment consequence in the event of a survivable crash. The Guidance column in Table 2, together with informed judgement of the operating context by technical and operational representatives, should be used to establish the consequence level.

Table 2 – Safety Consequence and CP Guidance Descriptors		
Consequence Label	**Safety Matrix Definition**	**Guidance in CP Context – in the event of a survivable crash**
(E) Catastrophic	• Multiple fatalities **OR** 10 or more injuries/illnesses categorised as **'Critical'**	CP Level of Poor – the envelope is significantly reduced. Where there are multiple occupants on-board (typically crew and passengers in vicinity of >10 occupants), it would be expected that there would be multiple fatalities and serious injuries
(D) Critical	• Single fatality and/or permanent disability **OR** 10 or more injuries/illnesses categorised as **'Major'**	CP Level of Poor – the envelope is significantly reduced. Where there are few occupants on-board (typically crew only), it would be expected that there would be at least one fatality and serious injury
(C) Major	• Serious injury or illness requiring immediate admission to hospital as an in-patient and/or permanent partial disability **OR** 10 or more injuries/illnesses categorised as **'Moderate'**	CP Level of Moderate – the envelope is reduced; however, there is a moderate amount of crash protection. Fatalities are not expected to occur, but could occur
(B) Moderate	• Injury or illness causing no permanent disability, which requires non-emergency medical attention by a registered health practitioner **OR** 10 or more injuries/illnesses categorised as **'Minor'**	CP Level of Good – shortfalls are not significant, so the envelope is only marginally reduced. Occupants are not likely to sustain serious injuries, but if occurring it is likely that the injuries are somewhere between serious and minor
(A) Minor	• Minor injury or illness that is treatable in the workplace (first aid) or by a registered health practitioner, with no follow up treatment required	CP Level of Good – while this is potentially a CP context consequence, it is only likely in the 'best case' survivable crashes and would therefore not normally be applicable

c. **Establishing Likelihood.** Likelihood for the CP risk analysis is the likelihood given for the probability of a survivable crash occurring on a per annum basis. This likelihood will be based on a combination of available data inputs including the worst case survivable crash scenario, accident rates (where available for the aircraft being assessed or similar aircraft types), fleet ROE, System Safety Program data (where available and appropriate for use in determining a crash rate) and ADF operating context as defined in the SOIU. Note that an indicative quantitative value for likelihood can be expressed in terms of the percentage likelihood of a survivable crash occurring on a per annum basis, based on the aircraft ROE and the predicted survivable crash rate. Refer toTable 3.

Table 3 – Safety Likelihood and CP Guidance Descriptors			
Likelihood (p.a.) = Predicted Future Crash Rate (crashes/hour x Annual Rates of Effort (ROE) (hours/year) **Likelihood Label** (per year)	**Safety Matrix Definition for *System Context***	***Qualitative Guidance* on the likelihood of a survivable crash**	***Qualitative Guidance* on the likelihood of a survivable crash occurring during fleet operations on a per annum basis**
(5) Almost Certain	• Expected to occur several times a year or often during the system life cycle • Is known to occur frequently in similar systems being used in the same role and operating environment	• Aircraft with known poor safety records and significant safety deficiencies in the ADF CRE context • Aircraft that fly all their operations in the 'challenging environment'	Greater than 20% chance per annum
(4) Probable	• Expected to occur one or more times per year or several times in the system life cycle • Is known to have occurred, but is not certain to occur	• Aircraft that fly high risk flight profiles for most of their operations and/or experiencing high rates of effort are likely to fall under this definition of likelihood • Aircraft that fly the majority of their operations in the 'challenging environment'	Greater than 10% but less than 20% chance per annum
(3) Occasional	• Expected to occur less than once per year or infrequently during the system life cycle	• Aircraft that fly high risk profiles for a substantial part of their operational life	Greater than 5% but less than 10% chance per annum
(2) Improbable	• Not expected to occur, but possible to experience one or more events during the system life cycle	• Aircraft that usually fly low risk flight profiles in a 'benign environment', however sometimes fly high risk profiles as required	Greater than 3% but less than 5% chance per annum
(1) Rare	• Only expected to occur in rare or exceptional circumstances or no more than once during the system life cycle	• Aircraft that fly a majority of their operations in the 'benign environment' • Aircraft that almost always fly low risk profiles and operate similar to RPT aircraft	Less than 3% chance per annum

e. **Establishing Likelihood.** Likelihood for the CP risk analysis is the likelihood given for the probability of a survivable crash occurring on a per annum basis. This likelihood will be based on a combination of available data inputs including the worst case survivable crash scenario, accident rates (where available for the aircraft being assessed or similar aircraft types), fleet ROE, System Safety Program data (where available and appropriate for use in determining a crash rate) and ADF operating context as defined in the SOIU. Note that an indicative quantitative value for likelihood can be expressed in terms of the percentage likelihood of a survivable crash occurring on a per annum basis, based on the aircraft ROE and the predicted survivable crash rate. Refer to Table 3.

Table 3 – Safety Likelihood and CP Guidance Descriptors			
Likelihood (p.a.) = Predicted Future Crash Rate (crashes/hour x Annual Rates of Effort (ROE) (hours/year) **Likelihood Label** (per year)	**Safety Matrix Definition for *System Context***	***Qualitative Guidance* on the likelihood of a survivable crash**	***Qualitative Guidance* on the likelihood of a survivable crash occurring during fleet operations on a per annum basis**
(5) Almost Certain	• Expected to occur several times a year or often during the system life cycle • Is known to occur frequently in similar systems being used in the same role and operating environment	• Aircraft with known poor safety records and significant safety deficiencies in the ADF CRE context • Aircraft that fly all their operations in the 'challenging environment'	Greater than 20% chance per annum
(4) Probable	• Expected to occur one or more times per year or several times in the system life cycle • Is known to have occurred, but is not certain to occur	• Aircraft that fly high risk flight profiles for most of their operations and/or experiencing high rates of effort are likely to fall under this definition of likelihood • Aircraft that fly the majority of their operations in the 'challenging environment'	Greater than 10% but less than 20% chance per annum
(3) Occasional	• Expected to occur less than once per year or infrequently during the system life cycle	• Aircraft that fly high risk profiles for a substantial part of their operational life	Greater than 5% but less than 10% chance per annum
(2) Improbable	• Not expected to occur, but possible to experience one or more events during the system life cycle	• Aircraft that usually fly low risk flight profiles in a 'benign environment', however sometimes fly high risk profiles as required	Greater than 3% but less than 5% chance per annum
(1) Rare	• Only expected to occur in rare or exceptional circumstances or no more than once during the system life cycle	• Aircraft that fly a majority of their operations in the 'benign environment' • Aircraft that almost always fly low risk profiles and operate similar to RPT aircraft	Less than 3% chance per annum

g. **Establishing Likelihood** - Example. If the survivable crash rate for an aircraft type is determined as 8.5 x 10-6 survivable crashes per flight hour and the fleet annual ROE is 6 500 hours, then the likelihood of a survivable crash occurring on a per annum basis is expressed as: Likelihood = (8.5 x 10-6) x (6 500) = 0.051 = 5.1%. Based on the quantitative guidance, the likelihood is evaluated as OCCASIONAL (between 5% and 10%). The qualitative guidance, in conjunction with operational and technical staff judgements, should be used to validate the evaluation, especially when the calculated value is on the margins of likelihood levels, like the above example calculation. Further analysis of the aircraft type and its CRE may determine that the value calculated is not representative of the actual likelihood. Where appropriate justification is provided, the likelihood level should be adjusted to reflect the level judged to be more appropriate. For

example, based on a qualitative analysis, IMPROBABLE may more accurately describe the likelihood for the example case.

h. **Guidance on determining relevant survivable crashes for CP risk analysis.** Many of the issues encountered with the results of risk analysis from implementation of the previous CP policies have been due to poor quantitative evaluation of the risks to occupants in the event of a survivable crash, based on a limited analysis of the survivable crashes for the given aircraft type. In many cases the derived likelihood of a survivable crash occurring has not been representative of future crash rates. Usually, simple extrapolation of the historical accident rates is not indicative of future crash rates of an aircraft. A critical analysis of the accident data can dramatically improve the accuracy of predicted survivable crashes. There will always be uncertainty in predicting future events and a sound analysis of the likelihood should clearly identify and communicate any uncertainty in the predicted crash rate. Poor examples are seen where the crash rate utilised for CP risk analysis is the raw number of accidents experienced divided by the total operational hours flown. This approach can be very misleading, as it usually takes into account accidents that occurred many years into the past which are likely not relevant to the current and future airworthiness framework or the aircraft's current CRE.

i. A survivable crash is difficult to define and it is almost impossible, in most cases, to obtain detailed crash data to determine which crashes were survivable or not. Therefore, it is very difficult to establish an accurate prediction of future survivable crash rates. As a minimum, the preferred approach is to apply a 'reasonable estimate' of the survivable crash rates. However, if this cannot be established then the analysis may assume that most crashes or serious accidents and incidents included in data sets are survivable in order to determine the most applicable likelihood from one of the five definitions in Table 3. That is, an estimation of the accident rate of the aircraft is the 'best guess' for the CP risk analysis. Careful assessment and judgement is required to filter applicable data, when considering aspects such as the nature of the crash, deaths versus injuries, world-wide versus single operator data and categories of aircraft damage.

j. The crash rate should be expressed as a likelihood of a survivable crash occurring on a per annum basis. This is important because the exposure of the risk to occupants is directly related to the rate of effort of the aircraft. The more hours the aircraft operates, the greater the exposure and the greater the likelihood of an accident occurring per year. The converse applies.

k. Both the qualitative and quantitative guidance in the Guidance columns in Table 3 should be considered by the technical and operational representatives, together with their informed knowledge of the operating context, to determine the likelihood level. The qualitative guidance should be used to assist the evaluation of the likelihood in conjunction with the predicted future crash rate to provide an outcome that suitably reflects the risk level to occupants in the event of a survivable crash.

l. **Establish the CP risk level.** Apply the established likelihood and consequence determinations to the Defence Harmonised Risk Matrix contained in the DASR.SMS to establish the pre-treatment CP risk level (Very Low, Low, Medium, High, Very High).

7. **CP Risk Treatment.** Assess the availability and suitability of risk reduction options (controls) according to the standard risk management hierarchy of controls, for each shortfall identified against the CCPDR. The assessment is to consider the controls in order of most to least effective, per the standard hierarchy of controls described in DASR.SMS. The end-state for this step is an approved list of additional controls to be implemented for the aircraft system. The key activities to be completed include:

   a. Perform a joint airworthiness and operational assessment to review all design based controls, review the current operational controls, and identify possible new controls as per the hierarchy of control options, including any known 'good practice'.

   b. Assess the implementation cost (financial, capability, etc) for each proposed control.

   c. Determine the treatments to be implemented in order to reduce the pre-treatment CP risk level SFARP. In determining the practicability of implementing a control, the applicable Capability Manager should be consulted to ensure there is no unacceptable degradation in the aircraft's operational performance/ capability, and a Cost Benefit Analysis (CBA) should be produced to support the decision process. A CBA may be as simple as a basic cost versus benefit statement, through to a comprehensive and detailed analysis. This could include consideration of factors such as capability impact, effect on crew training/ workload, etc.

8. The focus of the CP risk assessment to this point has been in the 'safety' dimension using the Defence Harmonised Risk Matrix. The other dimensions of the risk management framework (Mission, Capability, Reputation, Financial and Environment) should also be reviewed to assess the wider implications of the controls being applied for CP. Changes to the risk profile in other risk management dimensions may drive changes to the proposed controls for the safety risk. Accordingly, there will be an iterative approach to the assessment to ensure an appropriate balance between safety and mission, capability, reputation, financial and environment as deemed appropriate by Commanders, Managers and the Authority. Risk Registers, which are currently managed for each aircraft type, should be reviewed for possible flow-on changes to other risks being managed. Where necessary, risks should be updated to consider flow-on impacts to other risk management dimensions, ie the controls to be implemented for CP may impact other aspects of the aviation system, and flow-on impacts managed under DASR.SMS.

9. **Treatment Decision.** Decide, at the appropriate management levels, on the controls to be applied, the priority, and the organisation to implement each control. In making this determination, the decision process for the CP risk analysis and evaluation is to be documented, including the reasons for accepting or rejecting the assessed treatment options, and presented to management to inform risk treatment decisions.

10. **Post-treatment Risk Assessment.** Similar to the pre-treatment risk assessment, the key activities are re-establishment of the overall CP level (Table 1), re-establishment of the consequence (Table 2) and likelihood (Table 3) levels, and finally, determination of the post-treatment CP risk level using the Defence Harmonised Risk Matrix.

11. **Risk Management Decision**. Risk management authorities (RMA) reside within the Chain of Command. Unless the relevant Service Chief directs otherwise, based on the final (post-treatment) CP risk level, the CP risk should be processed and retained as per the Risk Retention Thresholds' table within the DASR.SMS. This is to include the proposed controls (Treatment Plan), action agencies, and timeframes for implementation (priority). Additionally, updates to other risk dimension risks should also be presented to the appropriate Risk Management Authority (RMA).

12. **Risk documentation.** In accordance with DASR.SMS Regulation, CP risk treatment documentation should be produced, reviewed and stored by the responsible organisation as part of their SMS structure.

13. **Changes to aircraft CRE.** Proposed changes to the CRE of an aircraft have the potential to affect the CP attributes of an aircraft from both an airworthiness and flight operations perspective. For example, a modification that adds significant weight to a helicopter may change the crash impact attenuation properties of the undercarriage. A change in aircraft operating environment may alter the prevalent crash types for which the aircraft was designed. Changes to an aircraft's CRE must be carefully assessed to ensure the level of CP inherent in the original design and its operation are not compromised, and any impacts on extant CP attributes are evaluated to identify treatment options and confirm that associated risks are reduced SFARP.

14. **Contracted, leased and civil certified aircraft.** Where aircraft are contracted/leased by Defence to carry Defence personnel and the CRE is the same as, or substantially similar to civilian Regular Public Transport (RPT) or Charter, the risks being retained by the relevant RMA would be the same or very similar (assuming the same CRE) as for civilian use under the instrument issued by the relevant Civil Aviation Authority (CAA). Therefore, the risks associated with the aircraft's CP attributes and approval by the relevant CAA provides a basis for an assessment of the risks by the relevant authority. Any identified shortfalls must also be analysed to ensure the risk posed does not warrant treatment to support the determination that the CP risks are minimised SFARP.

15. **Planned Withdrawal Date.** Aircraft close to the Planned Withdrawal Date (PWD) are subject to the requirements of this Regulation. The risks associated with CP shortfalls of Defence aircraft close to PWD must be assessed to ensure the risks in the event of a survivable crash are minimised SFARP. However, due to the expected significantly lower operating hours in the remaining life of an aircraft close to the PWD, the likelihood of a survivable crash occurring is significantly reduced and therefore any benefits gained through treating shortfalls to CCPDR are likely to be significantly reduced. Consequently, treatments are less likely to be reasonably practicable, with the exception of those which are relatively low cost and can be implemented in a short timeframe. The above needs to be considered when involving conducting an assessment and retaining any residual risk, for an aircraft that has been identified for withdrawal from service.

16. **Limited Configuration Control.** Defence may pursue support arrangements involving Limited Configuration Control (LCC) to maintain configuration parity with other

operators to minimise in-service support costs and avoid an 'orphan' or unique fleet. Regardless, aircraft with LCC are subject to the requirements of this Regulation.

GM ARO.40.A - Maintaining a system to treat CP risk to personnel

1. **Purpose.** The purpose of this regulation is to provide assurance that risks to personnel on Defence aircraft are appropriately characterised and treated, where compliance with CCPDR cannot be achieved for the aircraft type.

2. **Applicability.** This Regulation only applies to aircraft which cannot satisfactorily comply with all elements of CCPDR.

3. The core working components of this Regulation support a risk based approach, where risk is identified, analysed, evaluated, communicated and managed by the appropriate entity. The CP risk management framework and the associated risk assessment process described here should be considered in conjunction with DASR.SMS The framework can then be used to define the means to assess risk, identify treatments, assess the benefit of operational or technical treatments, make a judgement of whether any residual risk has been minimised SFARP and define the appropriate Risk Management Authority (RMA) who is responsible for retaining any residual CP risk.

4. **Mission specific CP considerations.** 'Standing' risk assessments should be based on standard/routine aircraft CRE and any risks identified would be eliminated or otherwise minimised SFARP via Orders, Instructions, Procedures (OIP). Hence, it is assumed that any key risks will be identified and managed. Mission specific risks refers to risks that would arise from non-standard or operational contingency tasks where additional consideration should be given to any impacts on survivability in the event of a survivable crash. Assessment of mission specific risks can be an ongoing process and captured under Core Risk Profiles (CRP), Mission Risk Profiles (MRP) or Risk Management Plans (RMP) through the Risk Management process. A balanced approach to treating risks is required, in order to achieve the mission. This may include assessing the benefits of exposing Defence personnel to any risks, for example, whether the need to carry passengers outweighs any risks associated with a contingency scenario, or the carriage of specific Dangerous Goods (DG).

(b) The MAO must evaluate Defence aircraft against CCPDR periodically while in service and when significant changes are proposed to Defence aircraft Configuration, Role and operating Environment (CRE) at intervals not exceeding five years, or as specified by the Authority. ▸ **GM** ▸ **AMC**

AMC ARO.40.B – Periodic review of risk assessments

1. The requirement to review CCPDR assessments more frequently may utilise a risk based approach. Therefore, aircraft which represent a high risk, or the level of risk is not well understood, should be subject to more frequent scrutiny. Conversely, infrequent scrutiny may be more appropriate for low risk aircraft, such as those which afford a high level of CP.

GM ARO.40.B – Periodic review of risk assessments

1. **Purpose.** The purpose of this Regulation is to assure that the CP risk treatments remain applicable to changes in CCPDR and/or CRE.

2. **Applicability.** This Regulation applies to all Defence aircraft, regardless of whether or not they initially met CCPDR.

3. CCPDR are not fixed in time, are subject to change and are prescribed by the Authority. In-service management is essential to ensure that CP risks are continually assessed and treated by platform. Furthermore, aircraft CRE can change due to a variety of factors and external pressures. Hence CP risk treatments must be routinely reviewed to ensure their currency.

ARO.50 - Statement of Operating Intent and Usage

(a) A Statement of Operating Intent and Usage must be issued for all Defence registered aircraft types. ▸ **GM** ▸ **AMC**

AMC ARO.50.A – Statement of Operating Intent and Usage (AUS)

Statement of Operating Intent and Usage Approval

1. The Statement of Operating Intent and Usage (SOIU) should have a two stage approval process to ensure it satisfies an acceptable input to type certification and the operational commander's requirements. The approval process should include:

   a. The Authority – (DASA) will endorse and confirm that the SOIU provides sufficient data for a comprehensive aircraft TCB (airworthiness) to be derived.

   b. COMAUSFLT / COMD AVNCOMD / ACAUST will then approve the SOIU as being an accurate reflection of the roles and operational environments that the aircraft will be used in.

SOIU Updates

2. Proposed changes to the role, operating environment and usage defined in the SOIU should be endorsed by the Authority (DASA) to ensure they are compatible with the certified design prior to COMAUSFLT / COMD AVNCOMD / ACAUST approval.

SOIU Content

3. The SOIU provides a description of the roles and operating environment of a Defence aircraft type. The SOIU includes the aircraft's roles as related to its intended operational effect and the physical operating environment within which the aircraft must operate. The SOIU should include the following:

   a. **Role.** Peacetime and warfighting functions / missions.

   b. Physical environment.

   c. Functional environment.

GM ARO.50.A – SOIU (AUS)

1. **Purpose.** The purpose of this regulation is to assure that a SOIU is developed to inform decisions on whether an aircraft design remains safe for operations in the defined roles and operating environments.

2. **Overview.** The SOIU forms a cornerstone of the aircraft Type Certification process. The SOIU contains all the roles and environments in which the aircraft type is intended to operate and the intended usage spectrum used to determine the aircraft and engine structural certification requirements. The SOIU is typically derived during the Defence requirements analysis and/or acquisition phase of aircraft introduction into Defence service. The DASA can assist with a standard template for SOIU. Further detail on SOIU is contained in the DASA Manual.

3. The DASP Glossary definition for the SOIU explains that it is a key document for aviation commanders. It ensures that Flying Management System controls are suitable and sufficient to manage the risk of operating an aircraft that may not have completed full or supplemental Type Certification.

4. The Flying Management System provides the necessary framework of controls and learned culture for an aviation commander to operate a Defence aircraft temporarily outside the approved Configuration, Role and Environment (CRE), and limitations and conditions, to fulfil a non-discretionary activity. These activities are often at an elevated level of risk to aircrew, passengers and the general public. The FMS ensures that risks are eliminated So Far As is Reasonably Practicable (SFARP), and if not possible to do so, minimised SFARP in accordance with the obligations within the Work Health and Safety Act (Cth) 2011.

ARO.55 - Cessation of Flight Operations

(a) The MAO, or operational commander must cease Flight Operations under their command or management where an emergent risk compromises Aviation Safety. ▸ **GM** ▸ **AMC**

AMC ARO.55.A - Cessation of Flight Operations (AUS)

1. Commanders should cease flight operations of a fleet or sub-fleet of an aircraft type when:

   a. continuing airworthiness cannot be assured in accordance with DASR M.A.201(a) and the DASR SPA.10 flexibility provisions are not warranted.

   b. when management arrangements supporting safe flight operation cannot be assured, or

   c. when any other factor essential to safe operation cannot be assured.

2. Commanders should cease flight operations by any, or a combination of, the following:

   a. directing a stop to applicable flight authorisation.

   b. quarantining individual aircraft paperwork, preventing aircraft release from maintenance.

   c. revoking the applicable Military Airworthiness Review Certificate(s) in accordance with DASR M.A.902(a).

Reporting Requirements

3. Cessation of flight operations of a fleet or sub-fleet of an aircraft type should be notified:

   a. to the DASA (which, if applicable to continuing airworthiness, is in accordance with DASR M.A.202);

   b. to other MAO where an aircraft type is operated under multiple MAOCs, and the hazard might reasonably compromise continuing airworthiness or safe flight operations by other MAO; and

   c. at the next independent board of review.

Resumption of Flight Operations.

4. Flight operations may be resumed when:

   a. the continuing airworthiness of the aircraft has been established and the Military Airworthiness Review Certificate(s) has been approved/released; or

   b. the hazard causing the cessation of flight operations has been assessed as eliminated or minimised SFARP by the appropriate risk management authority; and

   c. any residual risk retained by the appropriate level of command.

5. Resumption of flight operations of a fleet or sub-fleet of an aircraft type should be notified to the DASA.

GM ARO.55.A – Cessation of Flight Operations (AUS)

1. Purpose. The purpose of this regulation is to provide a mechanism, and appropriate oversight, for command to cease flight operations to allow time to eliminate, or otherwise minimise, emergent risk so far as is reasonably practical.

2. This regulation is not intended as a method for the DASA to suspended flight operations. The DASA has other mechanisms, under DASR 21, DASR M and DASR ARO, to limit, suspend or revoke aircraft instruments or Air Operator permissions.

ARO.60 - Defence Register

(a) An aircraft operated by or on behalf of Defence must be considered for Defence registration when: ▸ **GM**

GM ARO.60.A – 'Defence Register' (AUS)

1. **Purpose.** The purpose of this regulation is to allow capability managers to best determine whether an aircraft should be on the Defence register. There may be occasions when it is in Defence's interest for aircraft to remain on another register.

2. DASA is the custodian of the Defence Register and is responsible to ensure its validity. Information pertaining to the management of the Defence register, including addition and removal of aircraft is detailed in the Defence Aviation Safety Assurance Manual, Section 3 Chapter 2.

1. The aircraft is predominantly operated in a military configuration, role or environment by Defence or non-Defence personnel.

2. The aircraft is owned by Defence.

3. The aircraft is predominantly operated by members of Defence in the course of their duties.

ARO.100 - Military Air Operator Certificate (MAOC)

▸ **GM**

GM ARO.100 – Military Air Operator Certificate (MAOC)

1. **Purpose. (Context)** An independent Organisational Approval of organisations that conduct Defence air operations provides assurance that aviation safety will be maintained. **(Hazard)** Compromised management of aviation quality and safety management systems adversely affects the safe delivery of capability. **(Defence)** This regulation requires the MAO to implement controls to ensure the Suitability for Flight, including that an airworthy Aircraft will be maintained and operated to approved standards and limitations, by competent and authorised individuals, who are acting as a member of an approved organisation.

(a) Operation of all Defence registered aircraft must be conducted under the authority of a Military Air Operator Certificate (MAOC), issued by the Authority. ▸ **GM**

GM ARO.100(a) – Defence registered Aircraft MAOC

a. A Military Air Operator (MAO) is an organisation, usually a Force Element Group (FEG) or equivalent force structure, that:

i. is suitable to ensure that Flight Operations can be conducted safely, in accordance with the aircraft Statement of Operating Intent and Usage (SOIU)

ii. is capable of complying with DASR

iii. has an appropriate chain of command

iv. has appropriately qualified personnel

v. has key personnel with appropriate experience to conduct Flight Operations

vi. has facilities which are sufficient and suitable for the type of operations conducted

vii. has suitable, documented processes, procedures and practices

viii. has a suitable SMS

ix. has a suitable QMS

x. has an associated CAMO in accordance with DASR M.

b. The MAO will have an AM, usually FEGCDR or equivalent. Limitations may be placed on the AM in their command directive.

c. **Continuing airworthiness.** Continuing airworthiness, including DASR.M compliance, is met by the CAMO, including but not limited to: aircraft maintenance programming; military airworthiness review certificates (assurance of the validity of CoA for individual aircraft); maintenance facilities; Ground Support Equipment (GSE); tools and spares; maintenance data; recordkeeping; maintenance scheduling; and performance and certification of maintenance.

d. The CAM is the Responsible Manager for the CAMO. The CAM is nominated by the Defence chain of command and authorised under DASR M.

e. **Certificate.** The MAOC is a single page certificate to authorise Flight Operations. The MAOC will be issued when the Authority is satisfied that the MAO can safely conduct Flight Operations. The MAOC contains:

i. The MAO organisation name

ii. MAO location

iii. Reference to OpSpec, including the words 'operations will be conducted in accordance with the attached Operations Specification'

iv. MAOC expiry date

v. Authority signature and date.

f. **MAOC OpSpec.** Every MAOC has attached OpSpec which details:

i. Accountable Manager (AM). (The command position, eg 'Commander ACG')

ii. Continuing Airworthiness Manager (CAM)

iii. Hazard Tracking Authorities (HTA) appointments within MAO

iv. reserved

v. Aircraft Type(s) operated, including UAS

vi. Aircraft Roles in accordance with SOIU CRE

vii. Specific approvals, such as RNP or RNAV specifications (if required)

viii. **Operational limitations (if required).** Operational limitations are prescribed by the Authority to assure safe operations of a particular aircraft type within the ability and maturity of the MAO. Operational limitations are not designed to replicate airworthiness limitations contained in airworthiness instruments or documents such as the MRTC, or AFM. Typically, an operational limitation will include reference to a plan and timeline to remove the limitation upon Authority review

ix. Signature by the Authority endorsing the OpSpec.

g. **Compliance Statement.** Readiness to conduct Flight Operations in accordance with the requirements of a MAOC shall be demonstrated by an Operations Compliance Statement (OCS), submitted in accordance with DASR ARO.100(c).

h. **Authority oversight and audit.** The Authority may use an independent board of review to assess a MAOC, including to:

i. provide recommendation on the issue of, or major variation to, a MAOC or associated OpSpec

ii. specifically review the proposed addition of an aircraft type to an OpSpec

iii. specifically review major modification or STC of an aircraft type listed on an OpSpec

iv. review on-going safe operation of aircraft by a MAO.

(b) Operation of civil registered aircraft by a MAO must be conducted under the authority of a MAOC, issued by the Authority. ▸ **GM**

GM ARO.100(b) - Civil registered Aircraft (AUS)

a. **Civil Regulator.** Civil registered aircraft are to be operated in accordance with the civil regulations of their State of registration. This may only be varied where there is an agreement in place between the Civil Aviation Authority (CAA) and the Authority.

b. Civil registered aircraft operated by the MAO on an on-going basis should be included on the MAOC OpSpec. The Military Air Operator's FMS, OIP, training and qualification, facilities, SMS, continuing airworthiness management, and operational limitations must be adequate to ensure Suitability For Flight of civil registered aircraft. The safety controls and risk management processes should provide an equivalent level of safety to Defence and civil registered aircraft operated by the MAO.

c. Civil registered aircraft are likely to be under a civil Air Operator Certificate (AOC), in addition to being included on the MAOC OpSpec.

d. **Supplemental Authority oversight.** Where compelling reasons exist, the Authority may impose additional requirements to supplement existing CAA regulation and oversight.

e. **Exception.** The regulation is not intended to restrict the operation of non-Defence registered Aircraft under DASR NDR where that regulation is more appropriate. By way of exception to ARO.100(c), civil registered aircraft subject to short term Defence lease, charter or hire may be managed under DASR NDR.

(c) The applicant organisation must apply to the Authority for issue of, or a variation to, a MAOC or attached Operations Specification (OpSpec) by submitting a Military Air Operator's Operations Compliance Statement (OCS). The OCS must: ▸ **GM** ▸ **AMC**

AMC ARO.100(c) – Preparation of an Operations Compliance Statement (OCS)

a. The OCS should include the following information for the MAOC:

i. **MAO organisation name.** FEG or equivalent

ii. **MAO location.** Location of the headquarters

iii. a statement that operations will be in accordance with the attached OpSpec.

b. The OCS should include the following information for the MAOC OpSpec:

i. the Accountable Manager (AM), listed by command position, eg 'CDR ACG'

ii. Continuing Airworthiness Manager (CAM)

iii. Hazard Tracking Authority (HTA) within the MAO

iv. safety manager within the MAO (per DASA SMS)

v. Aircraft type(s), as follows:

(a) Defence registered Aircraft listed by type, eg A-38 ARH Tiger. Each Aircraft type is considered as a fleet. Aircraft types further divided into sub-fleets with different CRE, should be listed separately

(b) Civil registered Aircraft as required by DASR ARO.100(b). Where the Aircraft or fleet is primarily operated by Defence, it should be listed on the OpSpec. Aircraft operated under DASR NDR are not contained in the OpSpec or regulated under DASR ARO.100

(c) UAS including Defence registered and non-Defence registered. For non-Defence registered UAS, there should be reference to a UASOP, or register for Specific Type B and Open category

vi. Aircraft roles in accordance with SOIU CRE

vii. specific approvals requested for particular Aircraft type(s), or for all types operated by the MAO (eg RNAV or RVSM).

Flight Operations

c. The OCS should demonstrate that the MAO can safely conduct Flight Operations, including the following aspects:

i. **SOIU.** Identify reference to an approved SOIU for each Aircraft type operated

ii. **Flying Management System.** Provide a summary of the status of each element of the flying management system required by DASR ORO.10 - Flying Management System

iii. **Orders, Instructions and Publications.** Identify the availability and method of document control for MAO OIP and single Service OIP, eg Air Command SIs, necessary to safely conduct Flight Operations

iv. **Training and qualification requirements.** Identify the approval status of training and qualification requirements necessary for personnel to support Flight Operations in the required CRE

v. **Flight Simulation Training Device.** Identify the approval status of FSTD requirements necessary to support Flight Operations in the required CRE

vi. **Personnel.** Confirm suitable and competent personnel to support Flight Operations

vii. **Operations facilities.** Confirm suitable operations facilities and buildings (**NOTE:** maintenance facilities and hangars are included under DASR M or DASR 145 compliance)

Continuing Airworthiness

d. The submission for a MAOC should identify that the MAO can satisfactorily maintain the airworthiness of the Aircraft types listed on the certificate through a CAMO. The CAMO will utilise and oversee services of authorised DASR 21 and DASR 145 organisations, and will:

i. engage Military Design Organisation Approval (MDOA) holders under DASR 21 Subpart J for design services as required

ii. engage the Military Type Certificate holder for any matters that impact the Aircraft's type design and type certification under MTC, MRTC or an individual Aircraft's Certificate of Airworthiness (CoA)

iii. task Approved Maintenance Organisations (AMO) under DASR 145 to maintain products (Aircraft, engines and propellers), parts and appliances

iv. provide regulatory governance and oversight to organisations performing DASR M functions on its behalf.

e. Certified CAMOs will already have submitted an exposition and be authorised by the Authority. The OCS need only refer to that authorisation and the appointed CAM.

Compliance with DASR

f. The OCS should demonstrate how the MAO will meet DASR in accordance with:

i. DASR GR.15

ii. DASR GR.20

iii. DASR GR.25

iv. DASR GR.30

v. DASR SMS.

g. **Accountable Manager attestation and signature.** The AM should make the following attestations and sign the OCS:

I am accountable for [insert organisation] compliance with the Defence Aviation

Safety Regulation.

This Operations Compliance Statement for a Military Air Operator Certificate and Operations Specification is complete and correct.

I am satisfied that appropriate arrangements are in place to meet the Defence Aviation Safety Regulation and support the scope of Flight Operations contained in the Operations Specification.

GM ARO.100(c) - MAOC

a. Readiness to conduct Flight Operations in accordance with the requirements of a MAOC is demonstrated by an Operations Compliance Statement (OCS). The Authority will issue a MAOC when satisfied that the applicant organisation can meet the requirements of DASR ARO.100(a) and DASR ARO.100(b).

b. **Initial Issue of MAOC and attached OpSpec.** The applicant organisation is to submit an OCS. The Authority, when satisfied that all the requirements have been met, will issue a MAOC and OpSpec.

c. **Application for reissue of or variation to a MAOC.** The MAO is to amend the extant OCS and submit this to the Authority, highlighting those MAOC items being varied. The Authority, when satisfied, will issue a new MAOC.

d. **Application for variation of MAOC OpSpec.** The MAO is to amend the extant OCS and submit this to the Authority, highlighting those OpSpec items being varied. The Authority, when satisfied, will issue an updated OpSpec for the MAOC. Application for variation to an OpSpec is required, at a minimum, when there is:

   i. addition or removal of an Aircraft type

   ii. change to Aircraft airworthiness instrument, eg transition from SFP to MRTC

   iii. change to Aircraft Role as specified in SOIU CRE

   iv. request to impose or remove specific approvals

   v. request to impose or remove operational limitations.

e. **Addition of an Aircraft Type to MAOC OpSpec.** The OCS for the addition of an Aircraft type to an MAOC OpSpec addresses whether the MAO can safely operate the Aircraft within its SOIU and maintain them in airworthy condition. The statement does not need to address, but may reference, the attached MTC, MRTC, MPTF, and Aviation Safety Acquisition Management Plan (ASAMP) to demonstrate how the new capability will be transitioned safely into service.

f. **MTC, MRTC and MSTC.** Major changes to Type Design and issue of MSTCs are regulated under DASR 21. However, where the MSTC significantly alters the role or operation of an Aircraft type, the MAO should submit an OCS addressing that change. The Authority should always be consulted to determine what review requirements the Authority has for such changes to the Aircraft's design or role. The acquisition agency should appoint a coordinator to liaise with, and obtain the necessary inputs from: the Authority, acquisition agencies, foreign MAAs, other

agencies, and MAO staff. The acquisition agency should regularly liaise with the Authority, and MAO staff for guidance and clarification on meeting their requirements, including the evidence required for submission.

1. include the following information:
   i. the MAO organisation name
   ii. the location of the MAO headquarters
   iii. a statement that operations will be in accordance with the attached OpSpec
   iv. Accountable Manager (AM)
   v. Continuing Airworthiness Manager (CAM)
   vi. Hazard Tracking Authority (HTA)
   vii. all Aircraft types operated by the MAO
   viii. Aircraft roles in accordance with SOIU CRE
   ix. specific approvals requested for Aircraft operated by the MAO.
2. identify reference to an approved SOIU for each Aircraft type operated
3. provide a summary of the status of each element of the Flying Management System required by DASR ORO.10
4. identify the availability and method of document control for MAO OIP and single Service OIP, necessary to safely conduct Flight Operations
5. identify the approval status of training and qualification requirements necessary for personnel to support Flight Operations in the required CRE
6. identify the approval status of FSTD requirements necessary to support flying operations in the required CRE
7. confirm suitable and competent personnel to support Flight Operations
8. confirm suitable operations facilities and buildings are available for use
9. utilise a Quality Management System (QMS) to achieve consistency, continuity and compliance of safe operations—through quality planning, quality assurance, quality control and quality improvement ▸ **GM** ▸ **AMC**

AMC ARO.100(c)9 – Quality Management System (QMS)

a. The MAO should have a QMS that achieves the following purposes:
   i. **Quality planning.** Quality planning defines the quality policy and approach so as to meet the safety needs of the MAO.
   ii. **Quality assurance.** Quality assurance, provided through a quality assurance program, contains procedures to verify all activities are being conducted in accordance with applicable safety requirements.

iii. **Quality control**. Quality control is managed by appointed representatives to monitor conformance with, and adequacy of procedures and services, to ensure safe operations.

iv. **Quality improvement.** Quality improvement consists of reviews and remedial action as appropriate, for the continuous improvement of the safety of operations.

GM ARO.100(c)9 – Quality Management System (QMS) (AUS)

a. **Purpose. (Context)** A MAO-AM is required to deliver a military aviation capability. **(Hazard)** Ineffective management of the consistency and continuity of the military aviation capability adversely affects Aviation Safety. **(Defence)** This regulation requires MAOs to implement controls to ensure Flight Operations are conducted as an approved organisation and managed to ensure Aviation Safety.

b. The MAO may integrate their QMS with their other management systems (eg SMS, DASR M) into a single management system, commensurate with the size and scope of the organisation. However, integrated systems must remain compliant with all relevant DASR.

10. identify that the MAO can satisfactorily maintain the Airworthiness of Aircraft types listed on the certificate through a Continuing Airworthiness Management Organisation (CAMO)

11. demonstrate how the MAO will comply with DASR relevant to the operation

12. include an attestation by the AM that:

    i. the AM is accountable for the organisation's compliance with DASR

    ii. the OCS is complete and correct

    iii. appropriate arrangements are in place to support the scope of Flight Operations contained in the OpSpec.

(d) An air operator must establish and maintain a Safety Management System (SMS), in accordance with DASR SMS.

DASR AVFM - Aviation Fatigue Management

AVFM.10 - SCOPE

(a) This regulation applies to organisations operating with approvals granted under DASR.ARO.100 or DASR.ANSP, or DASR ABM.

(b) Where organisations are subject to AVFM.10.A, the regulation must apply to: ▸ **GM**

GM AVFM.10.B – Personnel to whom DASR.AVFM applies (AUS)

1. **Purpose.** (Context) Under the WHS Act Accountable Managers are accountable for the fatigue management of all staff at all levels of the command chain within their scope of control, including unit-level commands. (Hazard) Personnel who are identified as safety critical positions, are required to perform under higher levels of stress and work periods without the ability to rest are subject to fatigue induced human factor errors that may compromise suitability for flight. (Defence) Regulating fatigue management practices for specific employment groups can provide independent assurance of controls that are designed to minimise fatigue related human factor errors in Defence aviation.

2. A Commander may choose to apply this regulation to a non-regulated service such as ground based Air Battle Management or UAS operators supporting UAS other than prescribed at AVFM.10.B(3).

3. There may be scenarios where a mission essential passenger will be conducting aircraft essential duties, such as maintenance activities, upon arrival at an intended location. While maintenance staff are not presently regulated under DASR.AVFM, commanders should consider fatigue impacts from travel conditions with the anticipated duties post flight.

1. personnel who meet the definition of DASR Glossary – Aircrew
2. personnel who provide an Air Traffic Control (ATC) service as defined in DASR Glossary – Air Traffic Control
3. personnel who provide an Air Battle Management (ABM) operation as defined in DASR Glossary – Air Battle Management
4. personnel who meet the definition of DASR Glossary – Crew and operate UAS IAW DASR.UAS 20.A Certified Category UAS or DASR.UAS.30.A(1) Specific Type A Category UAS where the Authority has identified a need to comply with DASR.AVFM.

AVFM.20 - AVIATION FATIGUE MANAGEMENT

(a) The Accountable Manager (AM) must utilise defined management controls that eliminate or otherwise minimise organisational aviation fatigue risks SFARP IAW DASR.SMS. ▸ **GM**

GM AVFM.20.A - Defence aviation fatigue management construct (AUS)

1. Purpose. (Context) The safe and successful delivery of aviation system capabilities are supported by effective fatigue management policy. (Hazard) If not properly managed, fatigue can introduce human factor errors that may compromise suitability for flight. (Defence) The barriers and controls that form effective fatigue management policy can ensure that risks to operations due fatigue aspects are minimised SFARP.

2. This regulation requires defined organisations to implement aviation fatigue management for aviation system and tasks within the scope of Accountable Manager responsibility, such that:

   a. potential fatigue-related conditions or effects that could affect health and safety, are identified and controlled before aviation system are operated or related tasks are commenced

   b. such conditions are actively monitored and corrected during aviation system operation or task conduct, to ensure fatigue management requirements are maintained.

3. The most effective aviation fatigue management solutions involve multiple hazard context considerations and the application of industry standards and risk controls, leading to defensible duty limits and rostering practices managed as part of an active SMS and its continuous improvement practices. Guidance on applicable industry standards is available in the DAVFMG.

(b) The AM's management of aviation fatigue must:

   1. define duty limitations in accordance with AVFM.30

   2. be integrated with the organisation's DASR.SMS solution ▸ **GM** ▸ **AMC**

AMC AVFM.20.B(2) – SMS integration (AUS)

1. Approved organisations should integrate to their SMS to assist with the development of their unique contextualised fatigue management solution and documentation, including:

   a. Fatigue Safety Policy and Objectives

   b. Fatigue Safety Risk Management

   c. Fatigue Safety Oversight and Improvement

   d. Fatigue Safety Promotion.

GM AVFM.20.B(2) – SMS integration (AUS)

1. **Purpose.** (Context) How personnel are employed should always be weighed against their ability to perform without error over the required time periods. (Hazard) If employment tasks and time periods are not effectively assessed, there is potential for fatigue to create human errors that may compromise suitability for flight. (Defence) Two globally-accepted, significant aviation fatigue management controls are the imposition of duty limitations and rostering practices. However, these two controls

alone may not eliminate or minimise SFARP aviation fatigue risk. The integration of fatigue management and SMS ensures the further identification and continuous improvement of all controls to minimise aviation fatigue risk.

3. be contextualised to the scope of organisational activities performed and aviation systems operated by employment groups identified in AVFM.10.B ▸ **GM**

GM AVFM.20.B(3) – Contextualisation (AUS)

1. **Purpose.** (Context) Fatigue effects on aviation safety are contextual, based on task, people, processes applicable and aviation system in use. (Hazard) Without addressing unique workplace context factors, aviation fatigue management may be inadequate. (Defence) Consideration of the unique context of each workplace during development of duty limitations, rostering practices and SMS integration solutions can ensure effective fatigue controls.

2. For example, one aircraft type could be operated by multiple MAOs, but still necessitate differing fatigue management solutions due to different CRE. Therefore, common fatigue management solutions are unlikely to minimise all risks SFARP.

4. be defined using benchmark information acceptable to the Authority ▸ **GM** ▸ **AMC**

AMC AVFM.20.B(4) - Use of benchmark information (AUS)

1. The DAVFMG is not considered AMC. However, the DAVFMG is structured to assist ADF aviation Commanders and managers to develop compliance solutions for this regulation.

GM AVFM.20.B(4) - Use of benchmark information (AUS)

1. **Purpose.** (Context) A broad range of national and international fatigue management research, regulations and guidance exist, both for civil and military aviation, with some better than others. (Hazard) Not considering this benchmark information may result in deficient aviation fatigue policy that could compromise suitability for flight. (Defence) Fatigue management solution suitability is partially based on access to defensible benchmark information that can assist with development of local, contextualised solutions. While benchmark information from any DASA-recognised MAAs and CAAs can be used to assist with the development of a DASR-compliant AVFM solution, the Defence Aviation Fatigue Management Guidebook (DAVFMG) has been developed for ADF aviation Commanders and managers, summarising relevant global benchmark information. The DAVFMG also aligns with ICAO's fatigue-management Standards and Recommended Practices (SARPS) and reflects Defence's unique aviation fatigue context.

5. be integrated with the organisation's DASR.ARO.100 or DASR.ANSP.50 quality management solutions, as applicable ▸ **GM**

GM AVFM.20.B(5) – QMS support

1. **Purpose.** (Context) Fatigue management is expected to be exercised by a broad range of staff in multiple, differing contexts using documented, approved processes. (Hazard) Invalid or outdated processes can result in the inadequate management of fatigue, leading to unsafe conditions. (Defence) Quality Management provides a globally-

accepted defensible systemic control that ensures the right processes continue to be available to the right staff at the right time, to produce repeatable and effective outcomes for aviation safety. Assigning these processes to domain-skilled sponsors to be kept valid through continuous feedback and improvement ensures defensible and repeatable outcomes.

6. record aviation fatigue management training competency and currency. ▸ **AMC**

AMC AVFM.20.B(6) – Aviation Fatigue Management Training Competency and Currency (AUS)

1. Aviation Fatigue Management competency and currency should be implemented for aircrew IAW DASR AIRCREW.10.A(6) and for ATC IAW DASR ANSP.80.A.

2. **Exemption:** Pending development of formal AVFM training, units need not track training competency and currency of informal training if units identify a person in the AM's AVFM policy document who is responsible for the management and oversight of AVFM policy.

AVFM.30 - DUTY LIMITATIONS

(a) The AM must use fatigue-related principles, operational knowledge and experience to: ▸ **GM**

GM AVFM.30.A – Best practice, operational knowledge and experience

1. **Purpose.** (Context) Global benchmarks show that aviation fatigue can be effectively managed with the inclusion of supported, contextualised duty limitations and rostering practices. (Hazard) Duty limitations and rostering practices not supported by best practices are unlikely to eliminate or minimise aviation fatigue SFARP, which could compromise suitability for flight. (Defence) To gain and maintain context, the application of best practice fatigue management principles ensures continuous consideration of new local operational knowledge and experience.

2. Four globally accepted fatigue management principles are:

   a. The human body's need for sleep

   b. Sleep loss and recovery requirements

   c. Circadian effects on sleep and performance

   d. The direct and cumulative influence of workload on fatigue.

3. Guidance on acceptable resources is available on request from DFSB (in relation to Fatigue Management Systems) and IAM (in relation to physiology). Please note, this guidance is limited to providing advice on resources known to DFSB or IAM. DFSB and IAM are not resourced to validate studies presented to them. DASA recommend the use of existing industry standards and guidance, along with the DAVFMG. Should an AM choose to initiate a field study or similar using Defence personnel, they should be aware of the need to meet Defence ethics requirements and to consult with IAM.

1. define normal and extended duty time limitations ▸ **GM1** ▸ **GM2**

GM2 AVFM.30.A(1) – Defining rostering practices

1. Where practicable, MAOs should define rostering practices. Rostering practices will vary based upon CRE. However, each organisation should strive to identify those common areas that will improve rostering applications through standardisation where possible.

GM1 AVFM.30.A(1) – Defining normal and extended duty limitations

1. Normal duty limitations are a set of conservative work/rest margins that under normal circumstances can support enduring and sustainable operations at a level of risk minimised SFARP. Operation within normal duty limitations should require only limited review of other fatigue factors that may invalidate the basis of the normal duty limitations.

2. Extended duty limitations are an expansion of the normal duty limitations that will involve additional risk management (additional risk controls and a specific 'approval to proceed'). Operations to extended duty limits should only be for defined periods, and with commensurate additional oversight of operations.

3. The AM should use industry standards, operational knowledge and experience to define a contextualised set of fatigue management limitations that address:

   a. Providing adequate sleep opportunities prior to duty periods and accounting for the likelihood that individuals will attain adequate sleep.

   b. Limiting the duration of work periods and identifying minima for non-work periods to allow for adequate recovery.

   c. Limiting consecutive and total work periods over defined periods of time, in order to prevent cumulative fatigue.

   d. Considering the impact of commencing duty at different times of the day.

   e. Considering the number and direction of time zone changes experienced.

   f. Considering the impact of undertaking duties within a window of the circadian low (WOCL).

   g. Considering whether the duty is being undertaken by a single person or a team.

   h. Considering the additional impact of workload during the work period.

(b) The AM must establish methods to:

1. define how:

   a) fatigue hazard identification and controls will be applied prior to task commencement

   b) to re-assess the task environment on the day

   c) to assess the suitability of normal and extended duty limitations to provide aviation fatigue risk control SFARP. ▸ **GM**

GM AVFM.30.B(1)(c) – Re-assessment of fatigue safety risk prior to task

1. **Purpose.** (Context) Duty limitations and rostering practices are established through best practice, knowledge and experience. (Hazard) As generic controls duty limitations and rostering practices may not be sufficient in all task circumstances to eliminate or minimise fatigue risk SFARP. (Defence) The assessment of task context and task environment prior to executing the task will support the identification of additional controls required to minimise fatigue risk SFARP.

2. provide aviation fatigue risk control SFARP that define how fatigue hazard identification and controls will be applied:

   a) after task commencement

   b) when circumstances arise that could place staff beyond defined duty time limitations before task completion. ▸ **GM**

GM AVFM.30.B(2)(b) – Unexpectedly exceeding duty limitations

1. **Purpose.** (Context) Operations within defined normal and extended duty limitation requirements ensures that aviation fatigue risk is eliminated or minimised SFARP. (Hazard) Once on task, exceeding defined duty limitations in unforeseen circumstances may result in an increase in risk. However, this may be required on occasion. (Defence) In such an event, relying upon self-assessment of suitability for continued operations has been shown to be unreliable. Context and controls permitted for eliminating or minimising aviation fatigue risk SFARP should be defined for circumstances where it becomes clear that limitations will be exceeded whilst on task.

3. periodically validate duty limitations against the requirements of DASR.AVFM. ▸ **GM** ▸ **AMC**

AMC AVFM.30.B(3) – Continuous improvement of duty limitations and rostering practices

1. DASR.SMS and the DAVFMG should be used to inform the development of a continuous improvement processes for duty limitations and rostering practices (where a MAO has defined rostering practices IAW GM2 AVFM.30.A(1)).

GM AVFM.30.B(3) – Continuous improvement of duty limitations and rostering practices

1. **Purpose.** (Context) Duty limitations and rostering practices are defined based on the industry standards, operational knowledge and experience of the day. (Hazard) Over time, operational contexts may change, or additional evidence is collected that confirms previous duty limitations and rostering practices may not eliminate or minimise aviation fatigue risk SFARP. (Defence) Verification and validation provides a continuous improvement basis to improve and monitor duty limitations and rostering practices.

DASR FSTD - Flight Simulation Training Devices

FSTD.05 - FLIGHT SIMULATION TRAINING DEVICE MANAGEMENT

(a) COMAUSFLT / COMD AVNCOMD / ACAUST must approve a Flight Simulation Training Device Installation Operating Permit prior to use of the Flight Simulation Training Device in support of flight crew training, qualification or currency. ▸ **GM** ▸ **AMC**

AMC FSTD.05.A – FSTD Installation Operating Permit (AUS)

1. The FSTD Installation Operating Permit (IOP) is not intended to be a complex document; rather the IOP should identify minimal content as required to underpin the authority to use the FSTD for training. IOP details should include:
   a. Name and location of the FSTD.
   b. Parent aircraft platform.
   c. FSTD category.
   d. FSTD Qualification standard, as applicable.
   e. FSTD Qualification renewal interval, as applicable.
   f. Reference to relevant Orders, Instructions and Publications (OIP) management framework.
   g. Limitations or restrictions, if applicable.
   h. IOP review period.
2. **IOP template.** A FSTD IOP template is available on the DASA Key Documents webpage (DASR Templates).
3. **Non-Defence FSTD.** Where the FSTD is operated not solely for use by Defence, the MAO may seek appropriate documentation from the training provider, who should have equivalent documents that may show evidence of compliance, or equivalent documents from an approved CAA/MAA, that can support issue of an IOP.
4. **Equivalent documents.** It is not the intention of this regulation to re-certify and re-document FSTD criteria where such oversight has already been achieved by a Defence AA recognised CAA/MAA.
5. Where the FSTD is not operated solely for Defence use, the MAO may seek an FSTD Certificate or equivalent documentation from the training provider vice conducting a Defence assessment of fidelity.
6. **Legacy systems.** Existing FSTD IOP may meet the requirements of DASR FSTD.05

IOP application process

7. Application for an IOP may consist of an accomplishment summary (AS) that provides assurances to the approval authority that all required FSTD outcomes have been achieved and that use of the IOP will not compromise suitability for flight.

8. IOP approval considerations, as supported by the FSTD management system outcomes may include:

   a. Assessment of the status of technical, logistics and infrastructure support availability.

   b. Support staff training has been achieved and can be maintained.

   c. Qualification results.

   d. Other relevant information.

GM FSTD.05.A – Flight Simulation Training Device Management (AUS)

1. **Purpose.** The purpose of this regulation is to assure aviation operations augmented by a Flight Simulation Training Device (FSTD) will be adequately controlled and managed.

2. **Non-FSTD application.** The regulation is focused on training that directly impacts the control of the aircraft in flight. Specifically, the FSTD used to train personnel who interact with aircraft flight controls or power plant controls to manoeuvre the aircraft in flight. COMAUSFLT/COMD AVNCOMD/ACAUST may determine if FSTD regulation should apply to Mission Simulators or Weapon Tactical Trainers.

3. An FSTD Installation Operating Permit (IOP) is a control that authorises FSTD use supported by the overall FSTD management system outcomes.

4. The issue of a FSTD IOP is the end result of the process that formally examines and documents compliance of a product against predefined FSTD management system requirements to the satisfaction of the issuing authority.

5. The IOP assures that the FSTD:

   a. can be maintained and operated for its intended purpose

   b. fidelity meets the required FSTD Qualification, as applicable

   c. negative training is eliminated or mitigated

   d. restrictions / limitations, if required, are identified.

6. An FSTD IOP is required for:

   a. Defence owned FSTD.

   b. Non-Defence-owned FSTD operated by or on behalf of Defence.

7. An FSTD system includes:

   a. hardware components

b. software

c. operating personnel, excluding the trainee and training instructor using the FSTD for training purposes.

d. maintenance personnel.

(b) The MAO must ensure a Flight Simulation Training Device Management System is established that details the implementation and ongoing in service management of the Flight Simulation Training Device. ▸ **GM** ▸ **AMC**

AMC FSTD.05.B – FSTD Management Plan (AUS)

1. Flight Simulation Training Device (FSTD) Management Plan (MP) explains the strategy and scope of activities that will achieve the desired outcomes prior to use and during life of type. By establishing baselines and clearly identifying expectations, the MP will support IOP determinations in a flexible and resource minded manner.

2. The FSTD MP controls should include:

a. A description of the FSTD purpose, including the expected qualification category.

b. The Parent Platform(s) and reference to the Parent Platform(s) SOIU. There maybe cases where the FSTD does not have a Parent Platform, the FSTD is more generic in nature and the tasks trained are across multiple platforms. In this case, state the multiple platforms that it is intended for. This ensures that the MAO maintains the FSTD relevance across those platforms in case of CRE changes across the nominated platforms.

c. **Technical training requirements.** Reference to a training plan for the maintenance and functional operation of the FSTD.

d. **Flight crew operational training requirements.** Reference to a detailed curriculum / training management plan. (See paragraph 8)

e. A reference to any operational certification requirements such as the FSTD Evaluation Program. Test and Evaluation (T&E) planning details should be broadly provided or a reference provided for the location of the T&E plan to be utilised..

f. Logistics, technical and operational activities undertaken in support of the FSTD.

g. A schedule of the milestones for providing the key documentation and plans.

h. The FSTD organisational responsibilities and any delegations. For example a FSTD Manager if deemed necessary.

i. The responsible organisations for compliance with regulatory oversight of the FSTD.

3. **The FSTD MP controls may include:**

a. An outline of the scope of the acquisition activity to introduce an FSTD, or to make a Substantial Change to an existing FSTD. The outline is intended to provide basic awareness of the overall process to be followed. It should only make reference to any complex documents or processes, vice including any substantial detail in the MP.

- A system to ensure that changes in the Parent Platform are evaluated with respect to the relevance to the FSTD. Use of a register noting CRE changes/ modification and the details of any necessary changes to the FSTD may assist this outcome.

FSTD Categorisation

4. FSTD are categorised according to their level of simulated realism and whether training time accrued in the FSTD may be credited toward flight crew qualification or currency. The MAO should categorise FSTD in accordance with Table 1. Categorisation is required to determine the requirement for FSTD Qualification and the CAA standard that may apply.

Table 1—FSTD Category

FSTD Category (FAA uses the term STD)	Control layout / systems interconnectivity	Aircraft aerodynamic behaviour model	Aircrew qualifications / currency validity
Full Flight Simulator (FFS) OR Full Flight Mission Simulator (FFMS)	Full replica of specific aircraft type	Fully modelled	YES – may be up to zero flight time aircrew qualification
Flight Training Device (FTD)	Partial or full replica of specific aircraft type	Generic aircraft modelling	Partial – procedural training only
Basic Flight Trainer (BFT)	Generic aircraft layout	Basic, generic pitch, roll, yaw	NO
Basic Instrument Flight Trainer (BIFT)	Generic aircraft layout	Basic, generic pitch, roll, yaw	NO

FSTD Qualification

FSTD are qualified against recognised CAA standards, by a Qualification organisation approved by the Authority. FSTD Qualification comprises an Initial Evaluation, which produces a Master Qualification Test Guide (MQTG) that documents the results of all the qualification tests. All CAA Qualification standards contain mandatory FSTD reassessment periods against its MQTG.

5. **Full Flight Simulators (FFS) Qualification.** The MAO should ensure that all FFS are Qualified so that FFS initial and continuing fidelities are quantified. The CAA standard and level of FSTD Qualification should be such that the fidelity of the simulation meets the training requirements of the flight crew. FSTD Qualification ensures that:

a. FSTD fidelity is maintained through mandatory, periodic reassessment against the MQTG.

b. The fidelity of the simulated aerodynamic flight model, visuals and motion cues is documented and can be compared against the actual aircraft to identify discrepancies and potential negative training.

6. Qualification Standard Equivalency. Only Defence AA recognised CAA/MAA qualification standards may be used in support of qualification determinations. ICAO, EASA, FAA and CASA Qualification Standards are based on similar levels of fidelity, but are not interchangeable. Qualification under one standard does not automatically meet the fidelity requirements of another. To ensure the simulation fidelity can achieve the intended level of training and that the FSTD meets that standard is a determination requirement at the earliest stage of the qualification process.

7. Where the FSTD is not operated solely for Defence use, the authority may seek appropriate documentation from the training provider to support the FSTD and /or conduct an independent assessment of the FSTD.

Operational Training Curriculum

8. The FSTD management system controls that may provide detailed oversight of the operational aircrew training conducted within the FSTD include:

a. Prevention SFARP of negative training that teaches or reinforces technique that is different to operation of the actual aircraft. Full flight simulator (FFS) training should be a realistic replication of the parent platform and conducted in a manner that copies operation of the aircraft type.

b. Negative training identification and mitigation. For example, mitigation may include remedial training in the actual parent aircraft platform.

c. An approved curriculum that states all training conducted in the FSTD. The curriculum contained within a learning management package (LMP) / training management package (TMP) should contain the learning modules, learning outcomes and assessment criteria.

d. An auditing program to ensure that training sequences are conducted in accordance with an approved curriculum and that FSTD personnel are appropriately trained. In the event that the FSTD is run by a civilian organisation, potentially overseas, the MAO should obtain a copy of the organisation's certification of training.

e. A process for maintaining alignment of the FSTD to the parent platform SOIU / CRE.

f. The impact on overall aircrew training if the FSTD is Unavailable / Unserviceable.

GM FSTD.05.B – FSTD Management System (AUS)

1. **Purpose.** The purpose of this regulation is to assure that the overall implementation and ongoing management of the FSTD is appropriately established before FSTD use and that the required training outcomes are achieved and can be maintained.

2. The FSTD management system should minimise negative training of flight crew and thus not compromise safe operation of the parent platform.

3. This regulation does not provide management controls regarding the potential to use/ swap parts between the FSTD and parent platform. In such cases, compliance with the parent platform processes is required and advice should be sought from the relevant Continuing Airworthiness Management Organisation (CAMO) for the parent platform.

DASR FT - Flight Tests

FT.05 - FLIGHT TESTS (AUS)

(a) A Military Air Operator (MAO) conducting flight test activities shall only conduct a flight test activity of Category 1 to Category 4 as defined in DASR 21 Subpart P - Military Permit to Fly, if an appropriate privilege has been granted in the MAOC OpSpec. ▸ **AMC** ▸ **GM**

GM FT.05.A – Flight Tests (AUS)

Purpose. The purpose of this regulation is to ensure that a Military Air Operator (MAO) only undertakes flight test it is capable of safely conducting.

Flight test is a subset of Defence Test and Evaluation (T&E) activities that encompass a broad scope, from very simple to immensely complex, across the entire lifecycle of a capability. Not all flight test activities require regulation under DASR.

▸ **Categories of Flight Tests,** as defined and introduced by the European Aviation Safety Authority (EASA) in June 2015, address a scope of flight test activity that involves, to varying extents, the operation of an aircraft other than within its currently established type certification basis. A MAO requires a specific privilege to be able to conduct flight test activities of this nature. Organisational privileges are granted following a review of the MAO's organisation, people, processes and resources by the relevant Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)), and appending the relevant MAO Certificate OpSpec.

Categories of Flight Tests (AUS)

A. GENERAL

This topic establishes the approval arrangements for Military Permits to Fly (MPTF) associated with flight tests according to category.

B. CATEGORIES OF FLIGHT TESTS

Category ONE (1):

a. Initial flight(s) of a new type of aircraft or of an aircraft of which flight or handling characteristics may have been significantly modified.

b. Flights during which it can be envisaged to potentially encounter flight characteristics significantly different from those already known.

c. Flights to investigate novel or unusual aircraft design features or techniques.

d. Flights to determine or expand the flight envelope.

e. Flights to determine the regulatory performances, flight characteristics and handling qualities when flight envelope limits are approached.

f. Flight test training for Category 1 flight tests.

Category TWO (2):

a. Flights not classified as Category 1 on an aircraft whose type is not yet certified.

b. Flights not classified Category 1 on an aircraft of an already certified type, after embodiment of a not yet approved modification or substantial change to role or environment and which:

i. require an assessment of the general behaviour of the aircraft;

ii. require an assessment of 'basic crew procedures*', when a new or modified system is operating or is needed; or

iii. are required to intentionally fly outside of the limitations of the currently approved operational envelope, but within the investigated flight envelope.

c. Flight test training for Category 2 flight tests.

***NOTE:** Reference to 'basic crew procedures' refers to fundamental crew procedures for operating the aircraft, as opposed to simple/benign/low-risk crew procedures.

Category THREE (3):

Flights performed for the issuance of statement of conformity for a new-built aircraft which do not require flying outside of the limitations of the type certificate or the aircraft flight manual.

Category FOUR (4):

Flights not classified as Category 1 or Category 2 on an aircraft of an already certified type, in case of an embodiment of a not yet approved design change*.

***NOTE:** For this purpose, a not yet approved design change is a design for which it is necessary to fly an aircraft in order to fully verify compliance with design requirements.

C. COMPETENCE AND EXPERIENCE OF PILOTS AND FLIGHT TEST ENGINEERS

Competence and experience of pilots, flight test engineers and flight test systems specialists shall be as specified in the approved flight conditions for the flight test activity.

Unless limited by direction or instruction from higher Command, a MAO may conduct flight test activities outside of Category 1 to Category 4 without any specific privilege or approval from the Authority; noting that statutory WHS obligations remain for all risks to be eliminated or minimised so far as reasonably practicable during flight test activities. The use of flight test conditions and restrictions, competent staff and appropriate test plans, schedules and procedures are common risk management controls for flight test activities.

AMC FT.05.A – Flight Test for role and/or environment changes (AUS)

The need to conduct flight test may arise from not only aircraft configuration changes, but also role and/or environment changes. Changes to role and/or environment may arise from configuration upgrades, other Test and Evaluation (T&E) activities, expansion of operational requirement, or through the evolution of tactics. Some changes to role and/or environment may impact the safe operation of the aircraft and hence are subject to DASR. To determine

whether the role and/or environment change falls within categories 1 to 4 of flight test, the effect of the change needs to be assessed.

The flight test category of a role and/or environment change that results from a configuration change should be determined by the nature of the design change itself, ie in accordance with DASR GM FT.05A–Categories of Flight Tests. Role and/or environmental changes that are not accompanied by a design change shall be classified as per the following definitions:

a. **Substantial change.** A substantial change is one that has an appreciable affect on one or more of the following aspects:

   i. Introduction of a new intended role and/or operating environment for an aircraft type.

   ii. Significant alteration to aircrew training and qualification requirements.

   iii. Significant additions or changes to the competency management system utilised for the aircraft type.

   iv. An increase in aircrew cockpit workload.

   v. Significant alteration to the human-machine-interface.

   vi. Additional or unusual considerations for flight authorisation.

   vii. Any other operational impact where the extent is difficult to determine.

b. **Non-substantial change.** A non-substantial change is any change that has not been classified as substantial in accordance with the above criteria. A non-substantial change to role and/or environment falls outside of Category 1 to Category 4 of flight test.

Since a substantial change to role and / or environment does not automatically translate to any particular category of flight test, users should seek the advice of the relevant Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)).

(b) Flight test activity meeting the criteria of Category 1 to 4 as defined in DASR 21 Subpart P must be conducted under the authority of a Military Permit to Fly (MPTF). ▸ **AMC** ▸ **GM**

GM FT.05.B – Military Permit to Fly (AUS)

Purpose. The purpose of this regulation is to ensure that flight test is conducted under appropriate airworthiness controls.

Flight test is a subset of Defence Test and Evaluation (T&E) activities that encompass a broad scope, from very simple to immensely complex. Not all flight test activities require regulation under DASR.

Categories of Flight Tests, as defined and introduced by the European Aviation Safety Authority (EASA) in June 2015, address a scope of flight test activity that involves, to varying extents, the operation of an aircraft other than within its currently established type certification basis. An MPTF is the airworthiness instrument that authorises the operation of an aircraft in some

manner that is outside the scope of that covered by the applicable Military Type Certificate (MTC) or Military Restricted Type Certificate (MRTC).

AMC FT.05.B – Military Permit to Fly (AUS)

Authority for issue. As per DASR 21 Subpart P, a Miliary Permit to Fly (MPTF) may be issued by:

a. For all categories: The Authority,

b. For all categories: an appropriate Delegate of the Safety Authority (DoSA),

c. For Category 3: an appropriately privileged Military Production Organisation Approval (MPOA) holder (see DASR 21.A.163(e)), or

d. For Category 4: an appropriately privileged Military Design Organisation Approval (MDOA) holder (see DASR 21.A.263(c)(6) and (7)).

Approval of Flight Conditions. Flight conditions associated with an MPTF are approved separately and prior to the issue of the MPTF. With respect to paragraphs c. and d. above, where flight test is to be conducted by an organisation outside of the organisation approving the MPTF, flight conditions (see DASR 21.A.708 to DASR 21.A.710) may only be approved after operational endorsement by competent staff of a Military Air Operator (MAO) as determined by the relevant Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)). Flight conditions are approved using either DASR Form 18a (for organisations) or DASR Form 18b (by the Authority and DoSA(FT)).

MPTF content. MPTF for flight test should only be issued following approval of flight conditions, using either DASR Form 20a (by the authority and DoSA(FT)) or DASR Form 20b (for organisations using a privilege), and should include:

a. flight test category.

b. flight test scope.

c. identification of a suitable, qualified organisation to conduct the test.

d. reference to the design acceptable certification, if applicable.

e. any residual airworthiness risk.

Flight test plan. The flight test should be conducted in accordance with a flight test plan that includes:

a. Test scope and objectives.

b. Location of flight test activity.

c. Pre-cursor airworthiness instruments or clearances required prior to testing.

d. Required qualification, training and experience of the flight test personnel.

e. Flight test procedures to be conducted.

f. Data collection requirements.

g. Configuration and environmental limitations imposed on the flight test.

h. Operational limitations for each test configuration.

i. Operations, maintenance and support arrangements.

j. An aircraft stores clearance or aerial delivery clearance, if required.

k. Results of previous tests, if applicable.

l. Search and Rescue (SAR) requirements.

m. Reference to documented risk assessment and treatment, including any residual risk posed by the flight test.

(c) The MAO must seek advice from the Authority if there is any doubt with respect to the category of flight test. ▸ **AMC**

AMC FT.05.C - Category of Flight Test (AUS)

Military Air Operators should consult an appropriate Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)), as follows:

a. Director Test and Evaluation, Air Warfare Centre (AWC) for Air Force and Army aircraft,

b. Commanding Officer Aircraft Maintenance and Flight Trials Unit (AMAFTU) for Navy aircraft

c. Delegates appointed in the DASA DoSA Appointment Register with the approval of 'Flight Test' as amended from time to time

(d) The MAO must demonstrate that it has the organisation, personnel and processes to safely conduct flight test to the satisfaction of the Authority and within the scope of privileges for flight test as listed in the Military Air Operator Certificate OpSpec. ▸ **AMC** ▸ **GM**

GM FT.05.D – Flight Test Qualifications (AUS)

Purpose. The purpose of this regulation is to ensure the Military Air Operator (MAO) has suitable personnel, processes and data to undertake flight test.

A Delegate of the Safety Authority - Flight Test (DoSA(FT)), will act as a subject matter expert to assess the MAO's capability to conduct flight test and will assure that the MAO applies the appropriate minimum standards/qualifications.

AMC FT.05.D - Flight Test Qualifications (AUS)

Flight Test Operations Manual. A flight test operations manual should be maintained by the organisation conducting flight test in accordance with DASR 21.A.143(a)(13) and DASR 21.A.243(a)(1)). The organisation is not required to produce a specific flight test operations manual, providing that Orders, Instructions and Publications (OIP) issued covers the flight test operation manual elements, which are:

a. a description of the organisation's processes for flight test, including the flight test organisation involvement into the Military Permit to Fly issuance process (see DASR 21 Subpart P – Military Permit to Fly);

b. crewing policy, including composition, competency, currency and flight time limitations;

c. procedures for the carriage of persons other than crew members and for flight test training, when applicable;

d. a policy for risk and safety management and associated methodologies;

e. procedures to identify the instruments and equipment to be carried; and

f. a list of documents that need to be produced for flight test.

Flight test personnel qualifications, training and experience. Requirements for the qualifications, training and experience of flight test personnel are specific to each flight test activity and are documented within the approval of flight conditions (see DASR 21.A.708—Flight conditions) prior to issue of an MPTF. Flight conditions are approved by the Authority, or a Delegate of the Safety Authority (DoSA) - Flight Test (DoSA(FT)). (see DASR AMC 21.A.708 (AUS)).

The MAO must ensure that personnel conducting flight test hold the applicable qualifications, training and experience as specified in the approved flight conditions for each MPTF.

(e) The MAO must provide the Authority with appropriate data and access to its organisation, when required. ▸ **GM**

GM FT.05.E - Flight Test Data (AUS)

Purpose. The purpose of this regulation is to ensure that flight test activity is subject to appropriate oversight.

The Delegate of the Safety Authority - Flight Test (DoSA(FT)), will assess the Military Air Operator (MAO) for its ability to safety conduct flight test, and provide ongoing oversight of its ability. To facilitate this assessment and oversight, the MAO must provide the delegate with all requested data and appropriate access to its organisation.

DASR M - Continuing Airworthiness Management

SECTION A

SUBPART A - GENERAL

M.A.101 - Scope

This Section establishes the measures to be taken to ensure that airworthiness is maintained. It also specifies the conditions to be met by organisations involved in such continuing airworthiness management.

SUBPART B - ACCOUNTABILITY

M.A.201 - Responsibilities

(a) The Operating Organisation is accountable for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless: ▸ GM1 ▸ GM2 ▸ GM3

GM3 M.A. 201(a) - Responsibilities

Where an Operating Organisation has responsibility for the Continuing Airworthiness of military aircraft that have been issued with a Military Permit to Fly, the national decrees/ laws/ regulations applicable to these aircraft are to be followed, supplemented by the conditions identified in DASR 21 Subpart P.

NOTE: If the requirements of DASR M.A.201(a) cannot be achieved, flights may still take place under DASR SPA.10 - Command Clearance arrangements.

GM2 M.A. 201(a) - Responsibilities

'Accountability' as used in DASR M.A.201 stresses that this responsibility cannot be delegated.

GM1 M.A. 201(a) - Responsibilities

1. Within the context of DASR M, a military Operating Organisation is to be understood as a force structure that operates military aircraft and is responsible for their Continuing Airworthiness.

2. The force structure may be a Flight, Squadron, Wing, Command or other organisation as determined by the pMS.

1. the aircraft is maintained in an airworthy condition; and

2. any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable;

3. the Military Certificate of Airworthiness and the Military Airworthiness Review Certificate (MARC) remain valid; and

4. the maintenance of the aircraft is performed in accordance with the Aircraft Maintenance Programme (AMP) as specified in DASR M.A.302.

NOTE: For individual aircraft or types for which a Military Certificate of Airworthiness or Military Restricted Certificate of Airworthiness is not appropriate, a Military Permit to Fly may be issued in accordance with national regulations.

(b) NOT APPLICABLE.

(c) Any organisation performing maintenance shall be responsible for the tasks performed.

(d) The Operating Organisation shall be responsible for the satisfactory accomplishment of the pre-flight inspection. This inspection must be carried out by a qualified person but need not be carried out by a DASR 145 Approved Maintenance Organisation (AMO). ▸ **AMC**

AMC M.A.201(d) - Responsibilities

'Qualified person' in this context means an individual who has received appropriate training for the relevant pre-flight inspection tasks to a standard as described in DASR AMC M.A.301(a)(1) subparagraph 3.

(e) NOT APPLICABLE.

(f) NOT APPLICABLE.

(g) Maintenance of military aircraft, and components thereof shall be carried out by a DASR 145 AMO, or another maintenance organisation accepted by DASA. ▸ **AMC**

AMC M.A.201(g) - Responsibilities (AUS)

1. A maintenance organisation is accepted by DASA if:

   a. the organisation is oversighted by a recognised aviation authority; and

   b. prior to accessing the services of an organisation through Recognition, the consumer ensures the organisation's suitability in accordance with the scope, conditions and caveats set out in the applicable Recognition certificate (see DASA Recognition web page).

2. In cases where a maintenance organisation is unable to provide the recognised equivalent artefact to an ADF consumer under existing oversight arrangements, DASA may agree that the CAMO can consume an alternate artefact where the CAMO can demonstrate to the satisfaction of DASA that:

   a. it is not feasible for the maintenance organisation to become a DASR 145 maintenance organisation

   b. the maintenance organisation is unable to carry out maintenance under an existing DASR 145 organisation approval using the sub-contractor provisions of DASR 145.A.75—Privileges of the organisation

c. the maintenance is carried out, and the alternate artefact is issued, through the same processes by which the organisation provides a similar service under the oversight of a recognised aviation authority

d. the organisation is a suitable provider of the required service, and

e. appropriate controls are in place to ensure safety.

(h) The Operating Organisation is responsible for the continuing airworthiness of the aircraft it operates and shall: ▸ **AMC**

AMC M.A.201(h) - Responsibilities

1. Reference to aircraft includes the components fitted to or intended to be fitted to the aircraft.

2. The performance of ground de-icing and anti-icing activities does not require a maintenance organisation approval. Nevertheless, inspections required to detect, and when necessary eliminate de-icing and/or anti-icing fluid residues are considered maintenance. Such inspections should only be carried out by suitably authorised personnel.

3. The requirement means that the CAMO is responsible for determining what maintenance is required, when it has to be performed and by whom and to what standard, in order to ensure the continuing airworthiness of the aircraft being operated.

4. The CAMO should therefore have adequate knowledge of the design status (type design data, Airworthiness Directives (AD), airworthiness limitations from the certification programme, fuel tank system airworthiness limitations including Critical Design Configuration Control Limitations (CDCCL), modifications, repairs, operational equipment and, required and performed maintenance).

5. The CAMO should ensure adequate co-ordination between flight operations and maintenance to ensure that both will receive all information on the condition of the aircraft necessary to enable both to perform their tasks.

6. The requirement does not mean that an Operating Organisation itself performs the maintenance (this is to be done by an DASR 145 Approved Maintenance Organisation (AMO)) but that the Operating Organisation carries the responsibility for the airworthy condition of aircraft it operates and thus should be satisfied before the intended flight that all required maintenance has been properly carried out.

7. When an Operating Organisation is not appropriately approved in accordance with DASR 145, the CAMO should provide a clear work order to the DASR 145 AMO. The fact that an Operating Organisation has contracted / tasked an DASR 145 AMO should not prevent it (or the organisation it contracts / tasks to manage the continuing airworthiness of the aircraft it operates) from checking at the maintenance facilities on any aspect of the tasked work if it wishes to do so to satisfy its responsibility for the airworthiness of the aircraft.

1. be appropriately approved, in accordance with DASR M Subpart G, the management of the continuing airworthiness of the aircraft it operates; and ▸ **AMC**

AMC M.A.201(h)(1) - Responsibilities

1. NOT APPLICABLE.

2. When the Operating Organisation itself is approved in accordance with DASR M.A. Subpart G, the approval does not prevent the Operating Organisation contracting/ tasking certain continuing airworthiness management tasks to competent organisations. This activity is considered as an integral element of the Operating Organisation's DASR M.A. Subpart G approval. The regulatory monitoring is exercised through the Operating Organisation's DASR M.A. Subpart G approval. The continuing airworthiness elements of the contracts/tasking documents should be acceptable to the Military Aviation Authority (MAA).

3. The accomplishment of continuing airworthiness activities forms an important part of the Operating Organisation's responsibility with the Operating Organisation remaining accountable for satisfactory completion irrespective of any contract/tasking that may be established.

4. NOT APPLICABLE.

5. The Operating Organisation is ultimately responsible and therefore accountable for the airworthiness of its aircraft. To exercise this responsibility the Operating Organisation should be satisfied that the actions taken by contracted/tasked organisations meet the standards required by DASR M.A. Subpart G. The Operating Organisation's management of such activities should therefore be accomplished by:
active control through direct involvement; and/or
endorsing the recommendations made by the contracted/tasked organisation.

6. In order for the Operating Organisation to retain ultimate responsibility, the CAMO should limit contracted/tasked activities to those specified below:

   a. Airworthiness Directive analysis and planning;

   b. Service Bulletin analysis;

   c. planning of maintenance;

   d. reliability monitoring, engine health monitoring and other forms of health monitoring as agreed by the MAA;

   e. AMP development and amendments;
   any other activities which do not limit the Operating Organisation's responsibilities as agreed by the MAA.

7. The Operating Organisation's management controls associated with contracted/tasked continuing airworthiness management activities should be reflected in the associated written contract/tasking and be in accordance with the Operating Organisation's policy and procedures defined in their Continuing Airworthiness Management Exposition (CAME). When such tasks are contracted/tasked the Operating Organisation's

continuing airworthiness management system is considered to be extended to the contracted/tasked organisation.

8. With the exception of engines and auxiliary power units, contracts/tasking should normally be limited to one organisation per aircraft type for any combination of the activities described in Appendix II to DASR AMC M.A.201(h)1. Where arrangements are made with more than one organisation the Operating Organisation should demonstrate that adequate co-ordination controls are in place and that the individual responsibilities are clearly defined in related contracts/tasking.

9. Contracts/taskings should not authorise the contracted/tasked organisation to further contract/task to other organisations elements of the continuing airworthiness management tasks.

10. The CAMO should ensure that any findings arising from the MAA monitoring of the contracted/tasked continuing airworthiness management activities will be closed to the satisfaction of the MAA. This provision should be included in the contract/tasking.

11. The contracted/tasked organisation should agree to notify the CAMO of any changes affecting the contract/tasking as soon as practicable. The CAMO should then inform the MAA. Failure to do so may invalidate the MAA acceptance of the continuing airworthiness management elements of the contract.

12. Appendix II to DASR AMC M.A.201(h)1 provides information on the contracting/tasking of continuing airworthiness management activities.

13. The CAMO should only contract to organisations which are specified by the MAA on the DASR Form 14 or detailed in the CAME and approved by the MAA.

2. be approved in accordance with DASR145 or contract/task directly (or through a Continuing Airworthiness Management Organisation (CAMO)) such organisations; and ▸ **GM**

GM M.A.201(h)(2) - Responsibilities

1. The requirement is intended to provide for the possibility of the following three alternative options:

   a. an Operating Organisation to be approved in accordance with DASR 145 to carry out all maintenance of its aircraft and components;

   b. an Operating Organisation to be approved in accordance with DASR 145 to carry out some of the maintenance of its aircraft and components. This, at minimum, could be limited to line maintenance but may be considerably more but still short of option (a);

   c. An Operating Organisation not approved in accordance with DASR 145 to carry out any maintenance.

2. An Operating Organisation may apply for any one of these options but it will be for the MAA to determine which option may be accepted in each particular case.

   2.1. N/A.

2.2. N/A.

2.3. N/A.

2.4. N/A.

3. ensure that paragraph (a) is satisfied.

(i) NOT APPLICABLE

(j) The Operating Organisation is responsible for granting the Military Aviation Authority (MAA) access to the organisation/aircraft to determine continued compliance with this DASR.

(k) By way of exception to paragraph (h)1, an Operating Organisation may contract/task an organisation approved in accordance with DASR M.A. Subpart G, for the management of the continuing airworthiness of the aircraft it operates. In this case, a written contract/ arrangement shall be made and the CAMO assumes responsibility for the proper accomplishment of these tasks. ▸ **AMC**

AMC M.A.201(k) - Responsibilities

1. When an Operating Organisation contracts/tasks an DASR M.A. Subpart G CAMO in accordance with DASR M.A.201(k) to carry out continuing airworthiness management tasks, a copy of the arrangement should be sent by the Operating Organisation to the MAA once it has been signed by both parties. The contracted/tasked organisation is considered to perform the continuing airworthiness management tasks as an integral part of the Operating Organisation's continuing airworthiness system.

2. The arrangement should be developed taking into account the requirements of DASR M and should define the obligations of the signatories in relation to the management of the continuing airworthiness of the aircraft.

3. The arrangement should contain as a minimum the:

– aircraft registration(s); and

– aircraft type/model/series; and

– aircraft serial number(s); and

– aircraft Operating Organisation including the address; and

– DASR M.A. Subpart G CAMO details including the address.

4. The arrangement should state the following:

'The Operating Organisation entrusts to the CAMO the management of the continuing airworthiness of the aircraft, the development of an Aircraft Maintenance Programme that shall be approved by the MAA (if applicable), and the organisation of the maintenance of the aircraft according to the Aircraft Maintenance Programme in an DASR 145 Approved Maintenance Organisation.

According to the present arrangement, both signatories undertake to follow the respective obligations of this arrangement.

The Operating Organisation certifies, to the best of their belief that all the information given to the CAMO concerning the continuing airworthiness of the aircraft is and will be accurate and that the aircraft will not be altered without prior approval of the CAMO.

In case of any non-conformity with this arrangement, by either of the signatories, it will become invalid. In such a case, the Operating Organisation will retain full responsibility for every task linked to the continuing airworthiness of the aircraft and the Operating Organisation shall inform the MAA 'as soon as possible'.

5. When an Operating Organisation contracts a CAMO in accordance with DASR M.A.201(k) the minimum obligations of each party should be shared as follows:

5.1 Obligations of the CAMO:

1. have the aircraft type(s) in the scope of its approval;

2. respect the conditions to maintain the continuing airworthiness of the aircraft in accordance with DASR M.A.708;

3. NOT APPLICABLE;

4. NOT APPLICABLE;

5. inform the MAA whenever the aircraft is not presented to the DASR 145 AMO(s) by the Operating Organisation as requested by the CAMO;

6. inform the MAA whenever the present arrangement has not been respected;

7. if applicable, carry out the airworthiness review of the aircraft when necessary and issue the Military Airworthiness Review Certificate (MARC) or the recommendation to the MAA;

8. send within 10 days a copy of any MARC issued or extended, to the MAA;

9. carry out all applicable mandated occurrence reporting;

10. inform the MAA whenever the present arrangement is terminated by either party.

5.2. Obligations of the Operating Organisation:

1. have a general understanding of the approved maintenance programme;

2. have a general understanding of this DASR M;

3. present the aircraft to the DASR 145 AMO agreed with the CAMO at the due time designated by the CAMO’s request;

4. not modify the aircraft without first consulting the CAMO;

5. inform the CAMO of all maintenance exceptionally carried out without the knowledge and control of the CAMO;

6. report to the CAMO through the aircraft technical log all defects found during operations;

7. inform the MAA whenever the present arrangement is denounced by either party;

8. inform the MAA and the CAMO whenever the aircraft is no longer operated by the Operating Organisation;

9. carry out all applicable mandated occurrence reporting;

10. inform on a regular basis the CAMO about the aircraft flying hours and any other utilisation data, as agreed with the CAMO;

11. NOT APPLICABLE;

12. NOT APPLICABLE.

6. The contracted / tasked CAMO should be approved in accordance with DASR M.A. Subpart G. However, this approval does not prevent the CAMO contracting / tasking certain continuing airworthiness management tasks to other competent organisations. This activity is considered as an integral element of the CAMO's DASR M.A. Subpart G approval. The regulatory monitoring is exercised through the CAMO's DASR M.A. Subpart G approval. The contracts / tasks should be acceptable to the MAA. Contracts / taskings should not authorise the contracted/tasked organisation to further contract / task to other organisations elements of the continuing airworthiness management tasks. Appendix II to DASR AMC M.A.201(h)1 provides information on the contracting / tasking of continuing airworthiness management.

M.A.202 - Occurrence reporting

(a) Any Operating Organisation accountable in accordance with DASR M.A.201, shall report to the MAA, and all further addressees as required by national regulations, any identified condition of an aircraft or component which endangers flight safety. ▸ **AMC** ▸ **GM**

GM M.A.202(a) - Occurrence reporting (AUS)

CAMOs are required to report any condition or occurrence that may result in an unsafe condition.

Typically CAMOs will be made aware of occurrences by DASR 145 AMOs fulfilling their reporting requirements. CAMOs are to independently report on the occurrences to the MAA, with focus on fleet implications and ability to continue complying with the certified type design.

Occurrences are likely to be identified as failures, malfunctions or defect identified during the operation of the aircraft or performance of maintenance.

Occurrences also include human factors that may result in unsafe conditions that are identified during maintenance or maintenance management.

Reportable occurrences can be identified through trending and fleet management activities. These instances may not have a corresponding DASR 145 Occurrence Report.

A list of occurrences to be reported are detailed in AMC GR.40 - Occurrence Reporting. This is not a comprehensive list and an additional requirement may need to be considered dependent on the scope of the organisation's operations.

The following sections are the most relevant to CAMOs:

SECTION I: AIRCRAFT FLIGHT OPERATIONS

SECTION II: AIRCRAFT TECHNICAL

SECTION III: AIRCRAFT MAINTENANCE AND REPAIR

SECTION V: IMMEDIATE NOTIFICATION OF ACCIDENTS AND SERIOUS INCIDENTS

NOTE: Relevant occurrences may occur in other Sections in AMC GR.40 - Occurrence Reporting, eg Section IV, that require reporting by the CAMO.

AMC M.A.202(a) - Occurrence reporting

Operating Organisations should ensure that the (Military) Type Certificate ((M)TC) holder and any relevant design approval holder receives adequate reports of occurrences for that aircraft type, to enable the M(TC) holder to fulfil its DASR 21 obligations.

Liaison with the (M)TC holder should be established to determine whether published or proposed service information will resolve the problem or to obtain a solution to a particular problem.

An approved CAMO should assign responsibility for co-ordinating action on airworthiness occurrences and for initiating any necessary further investigation and follow-up activity to a qualified person with clearly defined authority and status.

'Qualified person' in this context means an individual who has received appropriate training and has relevant experience in the management of airworthiness occurrences detailed in DASR M.A.202. In the case of a contracted/tasked CAMO, close coordination between the CAMO and the Operating Organisation is needed to define the appropriate training and relevant experience and to ensure that such person is officially on record at the CAMO.

'Endanger flight safety' means any instance where safe operation could not be assured or which could lead to an unsafe condition. It typically includes, but is not limited to, significant cracking, deformation, corrosion or failure of primary structure, any evidence of burning (including overheating), electrical arcing, significant hydraulic fluid or fuel leakage and any emergency system or total system failure. An Airworthiness Directive overdue for compliance is also considered a hazard to flight safety.

(b) The Operating Organisation shall establish an occurrence reporting system to enable the collection and evaluation of such reports, including the assessment and extraction of those occurrences to be reported under paragraph (a). This procedure shall identify

adverse trends, corrective actions taken or to be taken by the Operating Organisation to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary. ▸ **AMC**

AMC M.A.202(b) - Occurrence reporting

1. The aim of occurrence reporting is to identify the factors contributing to incidents and to make the system resistant to similar errors.

2. An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This should be facilitated by the establishment of a "just culture". A CAMO should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.

3. The internal reporting process should be closed-loop, ensuring that actions are taken internally to address safety hazards.

4. Feedback to reportees, both on an individual and more general basis, is important to ensure their continued support for the scheme.

(c) Reports shall be made in a form and manner established by the MAA and contain all pertinent information about the condition known to the Operating Organisation. ▸ **AMC** ▸ **GM**

GM M.A.202(c) - Occurrence reporting

Each report should contain at least the following information:

(a) CAMO name and approval reference; and

(b) Information necessary to identify the subject aircraft and / or component; and

(c) Date and time relative to any life or overhaul limitation in terms of flying hours/cycles/ landings etc. as appropriate; and

(d) Details of the condition as required by DASR M.A.202(c); and

(e) Any other relevant information found during the evaluation or rectification of the condition; and

(f) Fleet implications or ability to continue to conform with the type design.

AMC M.A.202(c) - Occurrence reporting

Occurrence reporting should be in a form and manner as defined by the MAA, taking into account any confidential/classified information as defined in the CAME.

The reports may be transmitted by any method, ie electronically, by post or by facsimile. Urgent unsafe conditions should be reported verbally, i.e. via telephone in the first instance, all reporting should be followed by a written report, as time permits.

The following formats are preferred:

Form 44 – Technical Occurrence Report, as established by the MAA, or

other reporting systems as defined in the DASR M CAME.

(d) NOT APPLICABLE.

(e) Reports shall be made as soon as practicable, but in any case within 72 hours of the organisation identifying the condition to which the report relates.

SUBPART C - CONTINUING AIRWORTHINESS

M.A.301 - Continuing airworthiness tasks

(a) The continuing airworthiness of the aircraft shall be ensured by:

1. the accomplishment of pre-flight inspections; ▸ **AMC**

AMC M.A.301(a)(1) - Continuing airworthiness tasks

1. With regard to the pre-flight inspection it is intended to mean all of the actions necessary to ensure that the aircraft is fit to make the intended flight. These should typically include but are not necessarily limited to:

   a. a walk-around type inspection of the aircraft, its emergency equipment and any stores/weapons carried for condition including, in particular, any obvious signs of wear, damage or leakage. In addition, the presence of all required equipment, including emergency equipment, should be established and the security of attachment of any stores/weapons carried should be checked;

   b. an inspection of the aircraft continuing airworthiness record system or the aircraft technical log as applicable to ensure that the intended flight is not adversely affected by any outstanding deferred defects and that no required maintenance action shown in the maintenance statement is overdue or will become due during the flight;

   c. a control that consumable fluids, gases etc. uplifted prior to flight are of the correct specification, free from contamination, and correctly recorded;

   d. a control that all doors are securely fastened;

   e. a control that control surface and landing gear locks, pitot/static covers, restraint devices and

   f. engine/aperture blanks have been removed;

   g. a control that all the aircraft's external surfaces and engines are free from ice, snow, sand, dust etc. and an assessment to confirm that, as the result of meteorological conditions and de-icing/anti-icing fluids having been previously applied on it, there are no fluid residues that could endanger flight safety. Alternatively to this pre-flight assessment, when the type of aircraft and nature of operations allow for it, the build-up of residues may be controlled through scheduled maintenance inspections/cleanings identified in the AMP; removal of safety/arming pins if applicable.

2. Tasks such as oil and hydraulic fluid uplift and tyre inflation may be considered as part of the pre-flight inspection. The related pre-flight inspection instructions should address the procedures to be taken to determine whether the necessary fluid uplift or tyre inflation results from an abnormal consumption/excessive leakage, thereby possibly requiring additional maintenance action by the AMO or certifying staff as appropriate.

3. Operating Organisations should publish guidance to maintenance, flight and any other personnel performing pre-flight inspection tasks, as appropriate, defining their responsibilities for these actions. It should be demonstrated to the MAA that pre-flight inspection personnel have received appropriate training for the relevant pre-flight inspection tasks. If a component of the pre-flight inspection is accomplished by the DASR 145 AMO, it should be incorporated into the AMP. The training standard for personnel performing the pre-flight inspection should be described in the CAME.

2. the rectification in accordance with the data specified in DASR M.A.304 of any defect and damage affecting safe operation, taking into account the Minimum Equipment List (MEL) and Configuration Deviation List (CDL) as applicable to the aircraft type; ▸ **AMC** ▸ **GM**

GM M.A.301(a)(2) - Continuing airworthiness tasks (AUS)

1. **Management of Deferred Defects**. To meet the demands of operational availability, where it is not reasonably practicable to rectify the defects, provide life extensions or obtain approved repairs, deferred defects may be considered. In these cases, it may be appropriate for the CAMO to defer defects subject to a deferment period using credible data. However, the Military Air Operator – Accountable Manager (MAO-AM) remains responsible for ensuring that hazards are eliminated so far as is reasonably practicable (SFARP) and where this is not reasonably practicable, that hazards are minimised SFARP.

2. **Credible data (see DASR AMC M.A.301(a)(2) paragraph 1)**. Credible data is considered to be any instructions or information resources defined by the CAMO in the MAA approved CAME that is required to retain the aircraft and/or related equipment in a condition for safe flight. The CAMO should articulate in the CAME who can use credible data. Credible data may include:

   - Minimum Equipment List (MEL) / Configuration Deviation List (CDL)

   - Maintenance Data as defined by DASR 145.A.45(b)

   - OEM publications

   - Type certification data

   - Approved designs or advice from the relevant design approval holder

   - Field Service Representative data

   - Flight operations advice where the defect relates to systems or equipment that can be safely disabled or not used for mission within the period of deferment

3. **Deferment Options**. If the defect does not affect the safe operation of the aircraft, the CAMO can choose to defer the defect in accordance with a procedure approved in the

CAME. If the defect does affect the safe operation of the aircraft the CAMO has the following options:

a. **Military Permit to Fly.** MPTF in accordance with DASR 21.A.701.

b. **Command Clearance**. If it is not reasonably practicable to seek a MPTF, Command Clearance in accordance with DASR SPA.10.

4. The CAMO must ensure that deferred defects are documented in the continuing airworthiness record system, including the deferment period and any associated limitations/restrictions.

AMC M.A.301(a)(2) - Continuing airworthiness tasks

1. The CAMO should have a system to ensure that all defects affecting the safe operation of the aircraft are rectified within the limits prescribed by credible data as described at DASR GM M.A.301(a)(2) and includes the approved Minimum Equipment List (MEL) or Configuration Deviation List (CDL) or national equivalents. Such defect rectification cannot be postponed / deferred unless agreed by the CAMO and in accordance with a procedure approved by the MAA.

2. A system of assessment should be established to support the continuing airworthiness of the aircraft and to provide a continuous analysis of the effectiveness of the CAMO's defect control system in use.

3. The system should provide for:

a. **significant incidents and defects**: monitor incidents and defects that have occurred in flight and defects found during maintenance, highlighting any that appear significant in their own right.

b. **repetitive incidents and defects**: monitor on a continuous basis defects occurring in flight and defects found during maintenance, highlighting any that are repetitive.

c. **deferred defects**: Monitor on a continuous basis deferred defects, including defects deferred by a Command Clearance. Deferred defects are defined as those defects reported in operational service or arising during maintenance which are deferred for rectification at a later maintenance input.

d. **unscheduled removals and system performance**: analyse unscheduled component removals and the performance of aircraft systems for use as part of the AMP efficiency.

4. When deferring a defect the cumulative effect of a number of deferred defects occurring on the same aircraft and any restrictions contained in the credible data as described at DASR GM M.A.301(a)(2), including MEL / CDL or national equivalents, should be considered. Deferred defects should be made known to the pilot / flight crew prior to their pre-flight inspection of the aircraft.

3. the accomplishment of all maintenance, in accordance with the DASR M.A.302 approved Aircraft Maintenance Programme (AMP); ▸ **AMC** ▸ **GM**

GM M.A.301(a)(3) - Continuing airworthiness tasks (AUS)

1. The situation may arise where a contracted/tasked maintenance organisation advises the CAMO that the contracted/tasked maintenance cannot be carried out by the required contracted/tasked timeframe and seeks a one-off extension of the promulgated maintenance interval. In processing the request for a maintenance interval extension the CAMO has the following options available:

   a. where the packaged/promulgated interval is less than the engineering justified interval, extend the interval up to a maximum of the engineering interval;

   b. extend the task interval using the CAMO's indirect approval procedure, if suitably privileged, either once-off or permanently,

   c. request DASR 21J design support for the requested interval extension; or

   d. utilise the Command Clearance process to operate the aircraft IAW DASR M.A.301(a)(2) .

2. **Extending the Packaged Interval**. Interval flexibility may exist between a maintenance task's packaged/promulgated interval and its engineering/design interval in the AMP. The task may be packaged at a lesser interval maintenance efficiency due to tasks required in the same area or aligning maintenance to be conducted in blocks. If this is the case, and provided the CAMO has the underlying analysis that identifies the engineering interval and the reasons why the task was packaged at a lesser interval, the CAMO may authorise an extension to the packaged interval up to a maximum of the recorded engineering interval.

3. **Extend the AMP Task Interval**. If the AMP task interval has been reached, the CAMO may have sufficient data to extend the AMP task interval either once off, for a defined period, or permanently. To amend the AMP the CAMO must have the privilege from the MAA and sufficient scope as agreed in the indirect approval procedure. Note: where a task's interval has been extended permanently, the task may still be packaged as desired (not exceeding the extended interval).

4. **Request DASR 21J Design Support.** If the two options at para 1a and b above are not applicable, the CAMO may request DASR 21J design support to either extend the interval once off, for a defined period, or permanently.

5. **Utilise the Command Clearance process**. DASR M.A.301(a)(2).contains provisions for the Operating Organisation to deviate from the Initial/Continued/Continuing regulations.

6. For servicings with multiple tasks, the decision on extending the interval and the method used will be dependent on the individual circumstances of each task within the servicing. A combination of para 1a to d may be necessary.

7. It is important to note that extending a maintenance task beyond its promulgated interval may reduce the preventive effect of the task by increasing the risk of exposure to the failure consequences of the failure mode being addressed. In certain situations extension of maintenance could adversely affect the operational capability and/or safety of the aircraft. Also, the percentage by which the interval is extended does not universally reflect the increase in risk in exposure to the failure consequences of the

failure mode(s) the task is addressing. The increase in risk with the extension of a task's interval needs to be assessed individually based on the underlying Reliability Centred Maintenance (RCM) analysis that justified the existing interval and the context in which the interval extension is being asked.

AMC M.A.301(a)(3) - Continuing airworthiness tasks

The CAMO should have a system to ensure that all aircraft maintenance checks are performed within the limits prescribed by the AMP and that, whenever a maintenance check cannot be performed within the required time limit, its postponement is allowed in accordance with a procedure agreed by the MAA.

4. the analysis of the effectiveness of the DASR M.A.302 AMP; ▸ **AMC**

AMC M.A.301(a)(4) - Continuing airworthiness tasks

The CAMO should have a system to analyse the effectiveness of the AMP, with regard to spares, established defects, malfunctions and damage, and to amend the AMP accordingly.

5. the accomplishment of any applicable: ▸ **AMC**

AMC M.A.301(a)5 - Continuing airworthiness tasks

Operational directives with a continuing airworthiness impact include operating rules such as Extended Twin-engine Operations (ETOPS)/Long Range Operations (LROPS), Reduced Vertical Separation Minima (RVSM), Minimum Navigation Performance Specification (MNPS), All Weather Operations (AWOPS), Area Navigation (RNAV), etc.

Any other continued airworthiness requirement made mandatory by the MAA includes (M)TC related requirements such as: Certification Maintenance Requirements (CMR), certification life limited parts, airworthiness limitations from the aircraft type-certification basis, fuel tank system airworthiness limitations including Critical Design Configuration Control Limitations (CDCCL), etc.

i. Airworthiness Directive;

ii. operational directive with a continuing airworthiness impact;

iii. continued or continuing airworthiness requirements mandated by the MAA;

iv. measures mandated by the MAA in immediate reaction to a safety problem.

6. the accomplishment of modifications and repairs in accordance with DASR M.A.304;

7. for non-mandatory modifications and/or inspections, the establishment of an embodiment policy; ▸ **AMC**

AMC M.A.301(a)(7) - Continuing airworthiness tasks

A CAMO managing the continuing airworthiness of the aircraft should establish and work according to a policy, which assesses non-mandatory information related to the airworthiness of the aircraft. Non-mandatory information includes Service Bulletins (or national equivalent),

service letters and other information that is produced for the aircraft and its components by a design organisation accepted by the MAA, or the manufacturer or the MAA.

8. maintenance check flights when necessary. ▸ **GM**

GM M.A.301(a)8 - Continuing airworthiness tasks (AUS)

Conducting 'maintenance check flights when necessary' means conducting maintenance check flights when required by Instructions for Continuing Airworthiness (ICA), however ICA may use different terminology. Note, there may be other check flights conducted in service that are not required by ICA; these flights are not a regulatory requirement. Maintenance check flight is not to be confused with flight test which is covered under DASR 21.

(b) An aircraft shall not fly if:

1. the continuing airworthiness of the aircraft or any component fitted to the aircraft does not meet the requirements of DASR M; or

2. the aircraft does not remain in conformity with the type design approved by the MAA; or

3. the aircraft has been operated beyond the limitations of the flight manual or the Military Certificate of Airworthiness, without appropriate action being taken; or

4. the aircraft has been involved in an accident or incident that affects the airworthiness of the aircraft, without subsequent appropriate action to restore airworthiness; or

5. a modification or repair is not in compliance with DASR M.A.304.

M.A.302 - Aircraft Maintenance Programme (AMP)

▸ **AMC**

AMC M.A.302 - Aircraft Maintenance Programme (*) (AMP)

1. The term 'Aircraft Maintenance Programme (AMP)' is intended to include scheduled maintenance tasks, their associated maintenance procedures and standard maintenance practices. The term "maintenance schedule" is intended to embrace the scheduled maintenance tasks alone.

2. The aircraft should only be maintained to one approved AMP at a given point in time. Where an Operating Organisation wishes to change from one AMP to another, a transfer check or inspection may need to be performed in order to implement the change.

3. The AMP details should be reviewed at least annually. As a minimum, revisions of documents affecting the AMP basis need to be considered for inclusion in the AMP during the annual review. Applicable mandatory requirements for compliance with DASR 21 should be incorporated into the AMP as soon as possible.

4. The AMP should contain a preface which will define the AMP contents, the inspection standards to be applied, permitted variations to task frequencies and, where applicable, any procedure to manage the evolution of established check or inspection intervals.

   Appendix I to DASR AMC M.A.302 provides detailed information on the contents of an AMP.

5. Repetitive maintenance tasks derived from modifications and repairs should be incorporated into the AMP.

   * see Appendix I to DASR AMC M.A.302

(a) Maintenance of each aircraft shall be organised in accordance with an AMP. ▸ **GM**

GM M.A.302(a) - Aircraft Maintenance Programme

An AMP may indicate that it applies to several aircraft registration numbers as long as the AMP clearly identifies the effectivity of the tasks and procedures that are not applicable to all of the listed registration numbers.

(b) An organisation responsible for producing and amending an AMP in accordance with DASR M.A. 302 shall also be responsible for sending the AMP to the MAA. The AMP and any subsequent amendments shall be approved by the MAA.

(c) NOT APPLICABLE.

(d) The AMP shall establish compliance with: ▸ **AMC**

AMC M.A.302(d) - Aircraft Maintenance Programme

1. An Operating Organisation's AMP should normally be based upon the Maintenance Review Board (MRB) report or equivalent report where applicable, the Maintenance Planning Document (MPD), the relevant chapters of the maintenance manual or any other maintenance data containing information on scheduling. Furthermore, an Operating Organisation's AMP should also take into account any maintenance data containing information on scheduling for components.

2. Instructions issued by the MAA can encompass all types of instructions from a specific task for a particular aircraft to complete recommended maintenance schedules for certain aircraft types that can be used by the CAMO directly. These instructions may be issued by the MAA in the following cases:

   – in the absence of specific recommendations of the (Military) Type Certificate Holder;

   – to provide alternative instructions to those described in the subparagraph 1 above, with the objective of providing flexibility to the Operating Organisation.

3. Where an aircraft type has been subjected to the MRB report process, the initial AMP should normally be based upon the MRB report.

4. Where an aircraft is maintained in accordance with an AMP based upon the MRB report process, any associated programme for the continuous surveillance of the reliability, or health monitoring of the aircraft should be considered as part of the AMP.

5. AMPs for aircraft types subjected to the MRB report process should contain identification cross reference to the MRB report tasks such that it is always possible to relate such tasks to the current AMP. This does not prevent the AMP from being developed in the light of service experience to beyond the MRB report recommendations but will show the relationship to such recommendations.

6. Some AMPs, not developed from the MRB process, utilise reliability programmes. Such reliability programmes should be considered as a part of the AMP.

7. Alternative and/or additional instructions to those defined in DASR M.A.302(d)1 and (2), proposed by the Operating Organisation, may include but are not limited to the following:

   – Extension of the interval for certain tasks based on reliability data or other supporting information. Appendix I recommends that the AMP contains the corresponding extension procedures. The extension in periodicity of these tasks is directly approved by the MAA, including ALIs (Airworthiness Limitation Items).

   – Reduced intervals from those proposed by the (M)TC holder as a result of the reliability data or because of a more stringent operational environment.

   – Additional tasks at the discretion of the Operating Organisation.

   – The Aircraft Structural Integrity Program (ASIP) and Propulsion System Integrity Program (PSIP) can provide the supporting information for the Operating Organisation to propose alternative and/or additional instructions. For aircraft structures and propulsion systems the ALIs will be cited in the Structural/System Integrity Management Plan (SIMP) and TCDS and should only be altered based on approved information from the (M)TC holder.

8. 'Field Evaluation' data from other military Operating Organisations using the same aircraft type in a similar manner may have been used to develop an initial Aircraft Maintenance Programme. However, where an aircraft has been procured from a foreign nation, security constraints or other nationally imposed limitations may result in a lack of complete data being available to support the AMP. In these cases, the Operating Organisation should evaluate the available data and confirm that appropriate controls exist, or identify additional data that implements necessary controls, so that associated risks are either eliminated or minimised So Far As is Reasonably Practicable (SFARP).

1. instructions issued by the MAA;

2. instructions for continuing airworthiness issued by any organisation recognised by the MAA.

3. additional or alternative instructions, once approved in accordance with paragraph (b), proposed by the CAMO, except for intervals of safety related tasks referred in paragraph (e), which may be extended, subject to sufficient

reviews carried out in accordance with paragraph g, and only when subject to direct approval in accordance with paragraph (b). ▸ **AMC**

AMC M.A.302(d)(3) - Aircraft Maintenance Programme (AUS)

1. Any additional instructions that identify critical maintenance tasks and the associated error capture methods to be applied should be included by the CAMO in the Aircraft Maintenance Programme (AMP). The Military Type-certificate holder through the relevant OEM may be able to provide the CAMO a list of critical maintenance tasks (in the context of error capture methods determination). If the Military Type-certificate holder is unable to provide this list, a suitable methodology for the CAMO to develop this list of critical maintenance tasks is contained within Appendix XIV to AMC M.A.302(d)(3).

2. In the context of Error Capture Methods determination, a "Critical Maintenance Task" means a maintenance task that involves the assembly or any disturbance of a system or any part on an aircraft, engine or propeller that, if an error occurred during its performance, could directly endanger the flight safety.

3. Systematically applied, procedures to capture errors on critical maintenance tasks act as barriers which prevent or detect a committed maintenance error that would conceivably result in functional loss or damage that could directly endanger flight safety. The CAMO is responsible to identify the required error capture method(s) to be applied for each critical maintenance task regardless of whether the maintenance task is performed by trained, competent and authorised maintenance personnel.

4. The CAMO should ensure that instructions supporting the conduct of error capturing methods are provided to the required DASR 145 organisations. DASR 145.A.48(b) and associated AMC detail how to conduct error capture methods.

5. The absence of CAMO published error capturing methods inspection requirements does not negate the requirement or ability for maintenance organisations to specify additional procedures. Should any of these additional procedures involve the assembly or any disturbance of a system or any part on an aircraft, engine or propeller that, if errors occurred, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft, they should be considered as critical maintenance tasks and the CAMO notified to initiate error capture methods determination.

6. Where such requirements do not meet the strict criteria as described in Appendix XIV to AMC M.A. 302(d)(3), the maintenance organisation can implement additional training and/or supervision instead.

7. Appendix XIV to AMC M.A.302(d)(3) outlines the basic requirements of an error capture methods determination process. 7001.038 provides additional detail on the error capture methods determination process. Note, the manufacturer's instructions for continuing airworthiness should be followed when determining the need for procedures to capture errors on critical maintenance tasks.

(e) The AMP shall contain details, including frequency, of all maintenance to be carried out, including any specific tasks linked to the type and the specificity of operations.

(f) The AMP shall include a reliability programme, unless otherwise specified by the MAA. ▸ **GM**

GM M.A.302(f) - Aircraft Maintenance Program

1. NOT APPLICABLE.

2. NOT APPLICABLE.

3. The purpose of a reliability programme is to ensure that the AMP tasks are effective and their periodicity is adequate.

4. The reliability programme may result in the extension or reduction of a maintenance task interval, as well as the deletion or addition of a maintenance task.

5. A reliability programme provides an appropriate means of monitoring the effectiveness of the AMP.

6. Appendix I to AMC M.A.302 gives further guidance.

(g) The AMP shall be subject to periodic reviews and amended accordingly when necessary. These reviews shall ensure that the AMP continues to be valid in light of the operating experience and instructions from the MAA, whilst taking into account new and / or modified maintenance instructions promulgated by the (Military) Type Certificate (MTC) and (Military) Supplementary Type Certificate (MSTC) holders and any other organisation that publishes such data in accordance with DASR 21.

M.A.303 - Airworthiness Directives

Any applicable Airworthiness Directive must be carried out within the requirements of that Airworthiness Directive, unless otherwise specified by the MAA. ▸ **AMC** ▸ **GM**

GM M.A.303 - Airworthiness Directives (AUS)

As detailed in DASR 21.A.3B—Airworthiness Directives, and DASR AMC 21.A.3B 'applicable Airworthiness Directives (AD)' are those issued or adopted by the Authority, Authority delegate or applicable through Recognition. DASR GM 21.A.3B provides further clarification on equivalent mechanisms/instruments when recognised MAA do not use the term AD.

AMC M.A.303 - Airworthiness Directives (AUS)

Should there be a discrepancy or difficulty in carrying out an Airworthiness Directive (AD) on a Defence aircraft, eg if the Defence aircraft is of a different configuration in the area affected by an AD applicable through Recognition, the CAMO should seek the advice of the AD delegate or relevant MDOA performing MTC holder obligations. The outcome of such advice should establish whether the AD remains applicable; requires amendment or supplementation to incorporate on Defence aircraft; or requires conversion into a Defence specific AD.

M.A.304 - Data for modifications and repairs

Damage shall be assessed and modifications and repairs carried out using as appropriate: ▸ **AMC**

AMC M.A.304 - Data for modifications and repairs

A DASR 145 AMO repairing an aircraft or component should assess the damage against published approved repair data and the action to be taken if the damage is beyond the limits or outside the scope of such data. This action could involve any one or more of the following options:

· the repair by replacement of the damaged parts;

· requesting technical support from the (M)TC holder or a design organisation approved or accepted by the MAA;

· MAA approval of the particular repair data.

(a) data approved by the MAA; or

(b) data approved by a DASR 21 Design Organisation; or

(c) NOT APPLICABLE;

(d) data produced by an organisation accepted by the MAA. ▸ **AMC** ▸ **GM**

GM M.A.304(d) - Data for modifications and repair (AUS)

The purpose of DASR M.A.304(d) is to allow the CAMO to consume data for repairs and 'minor' modifications through recognition. This provision enables access to data packaged in a variety of different ways originating from within civil and military airworthiness systems around the world. The complexity of the CAMO's procedures for consuming such data will be determined by the types of modifications and repairs to be consumed, their source and the associated support constructs.

Alternate instruments (see DASR AMC M.A.304(d) will only be acceptable from organisations outside Australia.

Figure 1 below outlines the provisions of DASR M.A.304(d).

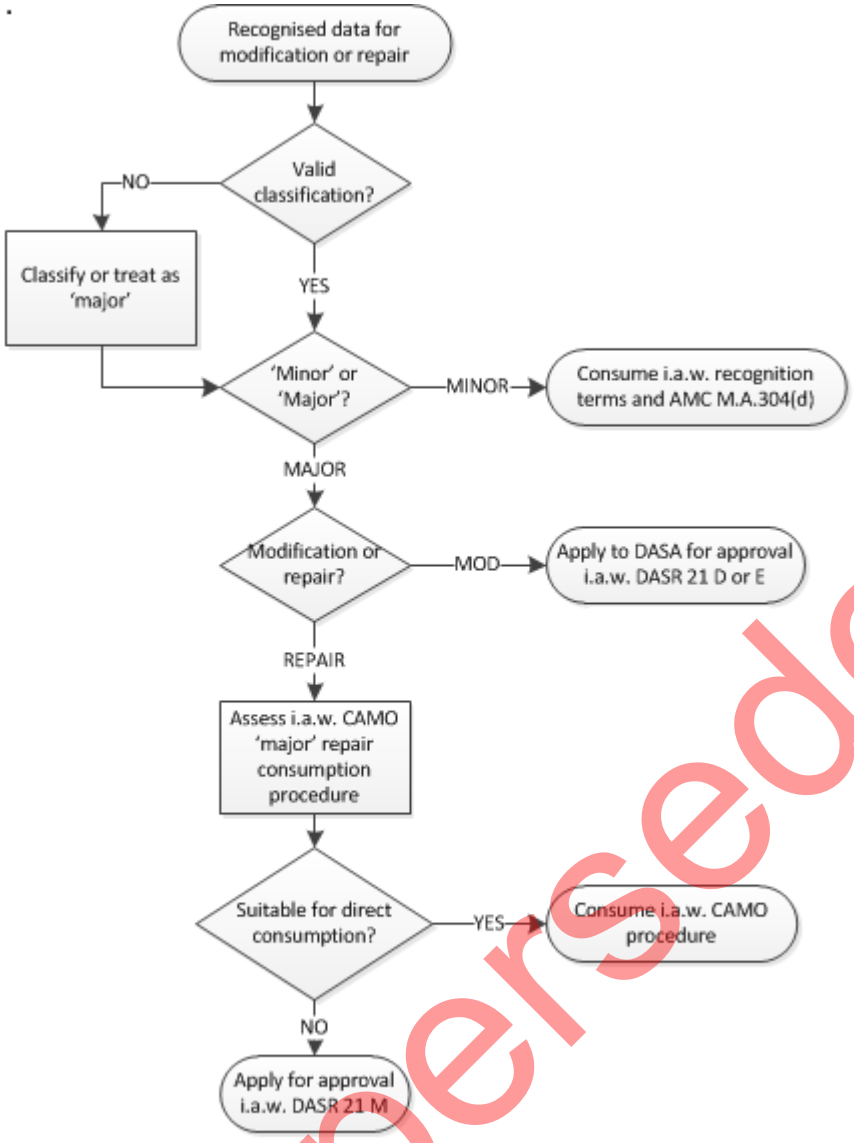

Figure 1 - Applying the provisions of DASR M.A.304(d)

AMC M.A.304(d) - Data for modifications and repairs (AUS)

Scope

1. Data may be consumed under this sub-clause if it is accessed through recognition (see recognition web-page) and processed in accordance with this AMC.

2. Only the following may be consumed under DASR M.A.304(d):

   a. data for repairs, including 'MAJOR' repairs in some circumstances; and

   b. data for modifications classified as 'minor'.

Procedures

3. The CAMO shall establish procedures to assess and process data intended for consumption under DASR M.A.304(d). The procedures shall identify how data accessed

through recognition can be assessed as suitable in accordance with the recognition certificate caveats and consumed. As described below, the data will in some circumstances require additional processing prior to consumption, such as:

a. identifying the classification of the modification or repair as ‘MAJOR’ or ‘minor’,

b. assessing ‘MAJOR’ repair data as suitable for consumption,

c. assessing alternate instruments as suitable for consumption, and

d. assessing technical information and instructions as acceptable for consumption.

Classification

4. The existing classification of modifications and repairs originating from some recognised airworthiness systems is valid within the DASA system because the ‘MAJOR’ / ’minor’ definition is aligned to DASR 21.A.91 - Classification of changes in type design. The relevant recognition certificate will identify where this is the case.

5. Where the recognition certificate indicates that use of the data is subject to further classification, the CAMO must ensure that the modification or repair is appropriately classified as ‘MAJOR’ or ‘minor’ in accordance with DASR 21.A.91 Classification of changes in type design. Classification may be done by:

a. the CAMO, through a procedure issued by DASA;

b. a DASR 21J MDO with the appropriate scope and privilege;

c. the MTC holder in accordance with the TCAE, where a DASR 21J MDO is not available for the relevant aircraft type; or

d. DASA.

CAMO classification of an approved design product

6. This provision, referenced at paragraph 5a, enables the CAMO to identify modifications and repairs that are clearly ‘minor’. All other designs should then either be treated as ‘major’ or classified by another organisation listed at paragraph 5.

7. Classification by the CAMO shall be done in accordance with a procedure developed by the CAMO and issued by DASA. Such a procedure shall, as a minimum:

a. result in a ‘minor’ determination only where clearly supported by the characteristics of the data, ie theassessment is not complex or uncertain; and

b. identify the specific CAMO personnel authorised to conduct or approve the classification, including their qualifications, knowledge and experience relevant to making such determinations.

Consumption of MAJOR repairs

8. A recognition certificate may enable the consumption of data for ‘MAJOR’ repairs without further approval of the data. The circumstances under which direct consumption may occur will be influenced by the specific support arrangements in place for each platform; such as the design organisations developing the repair, the

type, scope, or location of repairs, and other relevant factors. The CAME shall document the procedures to assess 'major' repair data for consumption on a platform-by-platform basis.

9. Where the CAMO assessment of a MAJOR repair identifies that the data is not acceptable for direct consumption, that data may be passed to an appropriate design organisation for processing of approval in accordance with DASR 21 Subpart M Repairs and subsequent consumption via DASR M.A.304(a) or M.A.304(b).

Alternate instruments

10. Each recognition certificate lists the 'native' instruments issued within the corresponding airworthiness system. Cases may arise where a design organisation could normally issue a native instrument but is restricted from doing so, for reasons such as:

    a. legal restrictions prohibiting the organisation from issuing an approval to a military customer or against a DASA type certificate; or

    b. the approval not being subject to the oversight of the parent aviation authority because it is for a military customer, against a DASA type certificate or slightly outside the organisation's scope.

    c. in such cases, DASA may agree the data may be consumed as an 'alternate' instrument where the CAMO can demonstrate to DASA's satisfaction that:

    d. it is not feasible for the design organisation to attain a DASR 21 Subpart J design organisation approval or provide the data under subcontract to such an organisation;

    e. the organisation is a suitable provider of the required data, i.e. the work is within the scope of the organisation's approval (or similar) or so closely aligned that no hazards to airworthiness are introduced;

    f. the design data is developed, and the alternate instrument is issued, using the same personnel and processes by which the organisation provides a similar product acceptable through recognition;

    g. the caveats set out in the relevant recognition certificate are applied to the greatest practicable extent; and

    h. any other controls necessary to ensure safety are in place.

Technical information and instructions, eg Service Bulletins

11. The airworthiness instruments named in the recognition certificate annexes are generally the instruments issued by the recognised authority, or by a design organisation, to approve a modification or repair. Rather than these instruments, Defence organisations will often receive technical information or instructions describing the embodiment of the corresponding modification or repair, eg a Service Bulletin.

12. In such cases, and where eligible, the technical information or instructions should be treated in accordance with the corresponding recognition scope, conditions and caveats as if it were the underlying airworthiness instrument. For example:

a. A service bulletin describing the embodiment of a minor modification should be treated like an approval of minor change to type design or its equivalent in the recognised system.

b. A technical instruction describing the embodiment of a major repair should be treated like an approval of major repair design or its equivalent in the recognised system.

13. **Eligibility**. To be eligible for treatment under this subclause, technical information or instructions describing the embodiment of a modification or repair must be:

a. issued by a type of organisation acceptable through recognition to issue any type of airworthiness instrument, such as an approval of minor change to type design; and

b. issued in accordance with a procedure agreed by the recognised aviation authority, eg under the privilege of a design organisation approval.

14. **Classification.** The technical information or instructions may clearly indicate that the modification or repair is classified as 'minor' or 'major' in the recognised system. Where this is not the case, or where the relevant recognition annex identifies that instruments issued within that system require classification, the data should first be treated in accordance with the 'Classification' section above.

15. **Status**. Eligible technical information or instructions are not an 'alternate' instrument described above because they are issued with the agreement of the recognised authority.

M.A.305 - Aircraft continuing airworthiness record system

(a) At the completion of any maintenance, the Certificate of Release to Service required by DASR 145.A.50 shall be entered in the aircraft continuing airworthiness record system. Each entry shall be made as soon as practicable but in no case more than 30 days after the day of the maintenance action.

(b) The aircraft continuing airworthiness record system shall cover the aircraft, engine(s), propeller(s), any service life limited component(s) as appropriate, and shall include an aircraft technical log.

(c) The aircraft type and registration mark, the date, together with total flight time and/or flight cycles and/or landings and any other airworthiness data as required by the MAA as appropriate, shall be entered in the aircraft continuing airworthiness record system.

▸ **GM**

GM M.A.305(c) - Aircraft continuing airworthiness record system (AUS)

Collection of operational usage data by the CAMO is also required to support MTC holder obligations regarding periodic monitoring and assessment to ensure the continued integrity of the aircraft structure and propulsion system (see DASR 21.A.44(c)). The MTC holder should define the data required for these purposes.

(d) The aircraft continuing airworthiness record system shall also contain as a minimum the current: ▸ **AMC**

AMC M.A.305(d) - Aircraft continuing airworthiness record system

The current status of ADs should identify the applicable ADs including any revision or amendment numbers. Where an AD is generally applicable to an aircraft or component type but is not applicable to the particular aircraft or component type used by the Operating Organisation, then this should be identified. The AD status includes the date when the AD was accomplished, and where the AD is controlled by flight hours or flight cycles it should include the aircraft or engine or component total flight hours or cycles or any other approved service life consumption units as appropriate. For repetitive ADs, only the last application should be recorded in the AD status. The status should also specify which part of a multi-part directive has been accomplished and the method, where a choice is available in the AD.

The status of current modification and repairs means a list of embodied modifications and repairs together with the substantiating data supporting compliance with the airworthiness requirements. This can be in the form of a Supplemental (Military) Type-certificate (S(M)TC), Service Bulletin (or national equivalent), Structural Repair Manual (SRM) or similar approved document.

The substantiating data may include:

a. compliance programme; and

b. master drawing or drawing list, production drawings, and installation instructions; and

c. engineering reports (static strength, fatigue, damage tolerance, fault analysis, etc.); and

d. ground and flight test programme and results; and

e. weight and balance change data; and

f. maintenance and repair manual supplements; and

g. AMP changes and Instructions for Continuing Airworthiness; and

h. aircraft flight manual supplement; and

i. symmetry check report (if applicable).

Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When Operating Organisations wish to take advantage of the modular design, then total time in service and maintenance records for each module are to be maintained. The continuing airworthiness records as specified are to be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

For some gas turbine engines, especially turbo-shaft engines, the true total time of continuous operation for particular power settings is to be maintained if applicable.

1. status of Airworthiness Directives and measures mandated by the MAA in immediate reaction to a safety problem;

2. status of modifications and repairs;

3. status of compliance with the AMP;

4. status of service life limited components; ▸ **AMC** ▸ **AMC1**

AMC1 M.A.305(d)(4) - Aircraft continuing airworthiness record system (AUS)

The system and methods required to track the status of structural and propulsion system life limited critical parts, ie those subject to Airworthiness Limitations; for military aircraft, eg Fatigue Life Expended Index, Equivalent Flight Hours, Engine Cycles and Life Usage Indices; are typically more complex than those for required for civil aircraft. The continuing airworthiness records system should contain all the data required to ensure components do not exceed the underlying basis of the Airworthiness Limitation interval. The MTC holder should provide any relevant technical requirements to track the status of life limited components. The systems to calculate and manage structural and propulsion system life consumption should typically be implemented through the relevant platform Aircraft Structural Integrity Program (ASIP) and Propulsion System Integrity Program (PSIP).

AMC M.A.305(d)(4) - Aircraft continuing airworthiness record system

The term 'service life limited components' embraces:

i. components subject to a certified life limit after which the components should be retired, and

ii. components subject to a service life limit after which the components should undergo maintenance to restore their serviceability.

The current status of service life limited aircraft components should indicate:

i. for components subject to a certified life limit: the component life limitation, total number of hours, accumulated cycles, calendar time or any other approved service life consumption units and the number of hours/cycles/time/ units remaining before the required retirement time of the component is reached;

ii. for components subject to a service life limit: the component service life limit, the hours, cycles, calendar time or any other approved service life consumption units since the component has been restored back to their service life and the remaining service life (hours, cycles, calendar time or any other approved service life consumption units) before the components need to undergo maintenance.

Any action that alters the components' life limit (certified or service) or changes the parameter of the life limit (certified or service) should be recorded.

When the determination of the remaining life requires knowledge of the different types of aircraft/engine on which the component has previously been installed, the status of all service life limited aircraft components should additionally include a full installation history indicating the number of hours, cycles, calendar time or any other approved service life consumption units relevant to each installation on these different types of aircraft/engine. The indication of the type of aircraft/engine should be sufficiently detailed with regard to the required determination of remaining life.

Recommendations from the (M)TC holder on the procedures to record the remaining life should be considered.

3. weight and balance report;

4. list of deferred maintenance;

5. symmetry check report (if required).

(e) In addition to the authorised release certificate, DASR Form 1 or equivalent, the following information relevant to any component installed (engine, propeller, engine module or service life-limited component) shall be entered into the aircraft continuing airworthiness record system:

1. identification of the component; and

2. the type, serial number and registration, as appropriate, of the aircraft, engine, propeller, engine module or service life-limited component to which the particular component has been fitted, along with the reference to the installation and removal of the component; and

3. the date together with the component's accumulated total flight time and/or flight cycles and/or landings and/or calendar time, and/or any other approved service life consumption units as appropriate; and

4. the current paragraph (d) information applicable to the component.

(f) The CAMO responsible for the management of continuing airworthiness tasks in accordance with DASR M.A. Subpart B, shall control the records as detailed in this paragraph and present the records to the MAA upon request.

(g) All entries made in the aircraft continuing airworthiness record system shall be clear and accurate. When it is necessary to correct an entry, the correction shall be made in a manner that clearly shows the original entry. ▸ **AMC** ▸ **GM**

GM M.A.305(g) - Aircraft continuing airworthiness record system

ISO 15489-1 (International Standard on Records Management) and Electronic Document and Records Management System provide further information on this topic.

AMC M.A.305(g) - Aircraft continuing airworthiness record system

For paper documentation, entries made in error should not to be erased but should be ruled through and initialled by the person making the correction. Opaque correction fluid should not be used in correcting paper records.

For electronic systems, incorrect entries should be flagged to indicate that they have been corrected, and a mechanism should be put in place to retain and easily access copies of the original, if incorrect, data.

(h) An Operating Organisation shall ensure that a system has been established to keep the following records for the periods specified: ▸ **AMC** ▸ **GM**

GM M.A.305(h) - Aircraft continuing airworthiness record system (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

AMC M.A.305(h) - Aircraft continuing airworthiness record system

When an Operating Organisation arranges for the relevant DASR 145 AMO to retain copies of the continuing airworthiness records on their behalf, the Operating Organisation will continue to be responsible for the retention of records. If they cease to be the Operating Organisation of the aircraft, they remain responsible for transferring the records to any other Operating Organisation of the aircraft.

Keeping continuing airworthiness records in a form acceptable to the MAA normally means in paper form or on a computer database or a combination of both methods. Records stored in microfilm or optical disc form are also acceptable. All records should remain readable and accessible for the duration of the storage period.

'Readable and accessible' means that the organisation should possess the ability to access the stored records in their original format for the duration of the specified storage period. Where the data contained in stored records is no longer compatible with changes and/or upgrades to equipment/computer/hardware/software, the organisation should put in place provisions to ensure that sufficient equipment is retained that is compatible with the storage medium, or that the records in their original format are transferred to an alternative medium.

Paper systems should use robust material, which can withstand normal handling and filing.

Computer systems should have at least one backup system, which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain program safeguards against the ability of unauthorised personnel to alter the database.

Continuing airworthiness records should be stored in a safe way with regard to damage, alteration and theft. Computer backup discs, tapes etc., should be stored in a different location from that containing the current working discs, tapes, etc., and in a safe environment. Reconstruction of lost or destroyed records can be done by reference to other records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics, etc. When these things have been done and the record is still incomplete, the Operating Organisation may make a statement in the new record describing the loss and establishing the time in service based on the research and the best estimate of time in service. The reconstructed records should be submitted to the MAA for acceptance. The MAA may require the performance of additional maintenance if not satisfied with the reconstructed records.

1. all detailed maintenance records in respect of the aircraft and any service life-limited component fitted thereto, until such time as the information contained therein is superseded by new information equivalent in scope and detail but not less than 36 months after the aircraft or component has been released to service; and

2. the total time in service (hours, calendar time, cycles, landings or any other approved service life consumption units) of the aircraft and all service life-

limited components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and

3. the time in service (hours, calendar time, cycles, landings or any other approved service life consumption units) as appropriate, since last scheduled maintenance of the component subjected to a service life limit, at least until the component scheduled maintenance has been superseded by another scheduled maintenance of equivalent work scope and detail; and

4. the current status of compliance with all maintenance programme tasks such that compliance with the Aircraft Maintenance Programme can be established, at least until the aircraft or component scheduled maintenance task has been repeated; and

5. the current status of Airworthiness Directives applicable to the aircraft and components, at least 12 months after the aircraft or component has been permanently withdrawn from service; and

6. details of current modifications and repairs to the aircraft, engine(s), propeller(s) and any other component vital to flight safety, at least 12 months after they have been permanently withdrawn from service. ▸ **AMC**

AMC M.A.305(h)(6) - Aircraft continuing airworthiness record system

For the purpose of this paragraph, a "component vital to flight safety" means a component that includes certified life limited parts or is subject to airworthiness limitations or a major component such as an engine, propeller, undercarriage or flight controls.

M.A.306 - Aircraft technical log

(a) In addition to the requirements of DASR M.A.305, an Operating Organisation shall use an aircraft technical log containing the following information for each aircraft: ▸ **AMC**

AMC M.A.306(a) - Aircraft technical log

The Operating Organisation's aircraft technical log is a system for recording defects and malfunctions during the aircraft operation and for recording details of all maintenance carried out on an aircraft between scheduled base maintenance visits. In addition, it is used for recording flight safety and maintenance information the flight crew need to know.

Where an MAA has promulgated instructions on the format and construct of an aircraft technical log, this format should be used by all organisations and personnel engaged in the maintenance and support of military registered aircraft and airborne equipment. These instructions should provide a description of the format and use of military aviation engineering documentation, together with any associated procedures.

Cabin or mission system defects and malfunctions that affect the safe operation of the aircraft or the safety of its occupants are regarded as forming part of the aircraft technical log where recorded by another means.

The aircraft technical log may range from a simple single section document to a complex system containing many sections but in all cases it should include the information specified for the example used here:

a. Details of the Operating Organisation, the aircraft type and the complete international registration marks of the aircraft.

b. Details of when the next scheduled maintenance is due, including, if relevant any out of phase component changes due before the next maintenance check. In addition this section should contain the current certificate of release to service (CRS), for the complete aircraft, issued normally at the end of the last maintenance check.

NOTE: The flight crew do not need to receive such details if the next scheduled maintenance is controlled by other means acceptable to the MAA.

c. Details of all information considered necessary to ensure continued flight safety. Such information includes:

i. the aircraft type and registration mark,

ii. the date and place of take-off and landing,

iii. the times at which the aircraft took off and landed,

iv. the running total of flying hours, such that the hours to the next schedule maintenance can be determined. The flight crew does not need to receive such details if the next scheduled maintenance is controlled by other means acceptable to the MAA.

v. details of any failure, defect or malfunction to the aircraft affecting airworthiness or safe operation of the aircraft including emergency systems, and any failure, defect or malfunctions in the cabin, galley or mission system that affect the safe operation of the aircraft or the safety of its occupants that are known to the aircraft captain. Provision should be made for the aircraft captain to date and sign such entries including, where appropriate, the nil defect state for continuity of the record. Provision should be made for a CRS following rectification of a defect or any deferred defect or maintenance check carried out. Such a certificate appearing on each page of this section should readily identify the defect(s) to which it relates or the particular maintenance check as appropriate.

It is acceptable to use an alternate abbreviated certificate of release to service consisting of the statement 'DASR 145 release to service' instead of the full certification statement specified in DASR AMC 145.A.50(b) paragraph 1. When the alternate abbreviated certificate of release to service is used, the introductory section of the technical log should include an example of the full certification statement from DASR AMC 145.A.50(b) paragraph 1.

vi. the quantity of fuel and oil uplifted and the quantity of fuel available in each tank, or combination of tanks, at the beginning and end of each flight; provision to show, in the same units of quantity, both the amount of fuel planned to be uplifted and the amount of fuel actually uplifted; provision for the time when ground de-icing and/or anti-icing was started and the type of fluid applied,

including mixture ratio fluid/water and any other information required by the CAMO's procedures in order to allow the assessment on whether inspections for and/or elimination of de-icing/anti-icing fluid residues that could endanger flight safety are required.

vii. the pre-flight inspection signature.

In addition to the above, it may be necessary to record the following supplementary information:

– the time spent in particular engine power ranges where use of such engine power affects the life of the engine or engine module;

– the number of landings where landings affect the life of an aircraft or aircraft component;

– flight cycles or flight pressure cycles where such cycles affect the life of an aircraft or aircraft component.

NOTE 1: Where content from paragraph (c) is of the multi-sector 'part removable' type, then such 'part removable' sections should contain all of the foregoing information where appropriate.

NOTE 2: Content from paragraph (c) should be designed so that one copy of each page may remain on the aircraft and one copy may be retained on the ground until completion of the flight to which it relates.

NOTE 3: Content from paragraph (c) should be divided to show clearly what is required to be completed after flight and what is required to be completed in preparation for the next flight.

d. details of all deferred defects that affect or may affect the safe operation of the aircraft and should therefore be known to the aircraft captain. Each page of this section should be pre-printed with the Operating Organisation's name and page serial number and make provision for recording the following:

i. a cross reference for each deferred defect such that the original defect can be identified in the particular paragraph (c) sector record page.

ii. the original date of occurrence of the defect deferred.

iii. brief details of the defect.

iv. details of the eventual rectification carried out and its CRS or a clear cross-reference back to the document that contains details of the eventual rectification.

e. Details any necessary maintenance support information that the aircraft captain needs to know. Such information would include data on how to contact maintenance engineering if problems arise whilst conducting the mission etc.

1. information about each flight, necessary to ensure continued flight safety; and

2. the current aircraft Certificate of Release to Service; and

3. the current maintenance statement giving the aircraft maintenance status of what scheduled and out of phase maintenance is next due except that the MAA may agree to the maintenance statement being kept elsewhere; and

4. all outstanding deferred defects rectifications that affect the operation of the aircraft; and

5. any necessary guidance instructions on maintenance support arrangements.

(b) The aircraft technical log and any subsequent amendments shall be approved by the MAA. ▸ **AMC**

AMC M.A.306(b) - Aircraft technical log

The aircraft technical log can be either a paper or computer system or any combination of both methods acceptable to the MAA.

In case of a computer system, it should contain program safeguards against the ability of unauthorised personnel to alter the database.

(c) An Operating Organisation shall ensure that the aircraft technical log is retained for at least 36 months after the date of the last entry. ▸ **GM**

GM M.A.306(c) - Aircraft technical log (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

M.A.307 - Transfer of aircraft continuing airworthiness records

(a) The Operating Organisation shall ensure when an aircraft is permanently transferred to another Operating Organisation, that the records within the DASR M.A.305 system, are also transferred. The time periods prescribed for the retention of records shall continue to apply to the new Operating Organisation.

(b) The Operating Organisation shall ensure that when the continuing airworthiness management tasks are contracted/tasked to an external CAMO, that the records within the DASR M.A.305 aircraft continuing airworthiness records system, are transferred to that CAMO.

(c) Moved to paragraph (a).

SUBPART D - MAINTENANCE STANDARDS

NOT APPLICABLE – See DASR 145

SUBPART E - COMPONENTS

NOT APPLICABLE – See DASR 145

SUBPART F - MAINTENANCE ORGANISATION

NOT APPLICABLE

SUBPART G - CONTINUING AIRWORTHINESS MANAGEMENT ORGANISATION (CAMO)

M.A.701 - Scope

This Subpart establishes the requirements to be met by an organisation to qualify for the issue or continuation of an approval for the management of aircraft continuing airworthiness.

M.A.702 - Application

(a) An application for issue or change of a CAMO approval shall be made on a form and in a manner established by the MAA. ▸ **AMC**

AMC M.A.702(a) - Application

'On a form and in a manner established by the MAA' means that the application should be made by using a DASR Form 2.

The DASR Form 2 is valid for the application for DASR 145 and DASR M.A. Subpart G organisations. Organisations applying for both approvals may do so using a single DASR Form 2.

(b) It shall include the following documents: ▸ **AMC**

AMC M.A.702(b) - Application

1. Draft documents should be submitted at the earliest opportunity so that MAA investigation of the application can begin. 'Issue' or 'Change' cannot be achieved until the MAA is in possession of completed documents.

2. This information is required to enable the MAA to conduct its investigation, to assess the volume of maintenance work necessary and the locations at which it will be accomplished.

3. The applicant should inform the MAA where base and scheduled line maintenance is to take place and give details of any contracted/tasked maintenance which is in addition to that provided in response to DASR M.A.201(h)2 or DASR M.A.708(c).

4. At the time of application, arrangements should be in place for all base and scheduled line maintenance for an appropriate period of time, as acceptable to the MAA. Further arrangements should be established in due course before the maintenance is due.

   Base maintenance contracts for high-life time checks may be based on one time contracts/taskings, when the MAA considers that this is compatible with the Operating Organisation's fleet size.

1. the Continuing Airworthiness Management Exposition (CAME); and

2. the Operating Organisation's Aircraft Maintenance Programmes (only if the participating Member State (pMS) requires the CAMO to develop and control the AMP for the aircraft managed); and ▸ **GM**

GM M.A.702(b)(2) - Application (AUS)

It is possible that the Aircraft Maintenance Programme (AMP) will be provided to the CAMO for some aircraft types whilst for other aircraft types the AMP is to be 'developed and controlled' by the CAMO. This will be identified by the MAA on a platform-by-platform basis. In these cases it is possible that the CAMO's responsibilities towards the 'development and control' of the AMP of the aircraft types for which it is responsible will differ. These differences are to be clearly identified in the CAME.

The default Defence position is that the CAMO develops and controls the DASA approved AMP for the aircraft managed.

3. the aircraft technical log(s); and

4. where appropriate, the technical specification(s) of the DASR M.A.708(c) maintenance contracts/taskings with the DASR 145 AMO(s); and

5. any additional documentation required by the MAA. ▸ **AMC**

AMC M.A.702(b)(5) - Application

1. Additional documentation may include, but not be limited to:

   a. contract/tasking between the CAMO and other organisations in accordance with AMC DASR M.A.201(h)1;

   b. DASR M.A.201(k) contract/tasking between the Operating Organisation and the CAMO.

2. As only the technical parts of any contracts have to be acceptable to the MAA, those elements that address costs, warranty etc. are not required.

M.A.703 - Extent of approval

(a) The approval is indicated on a DASR Form 14, issued by the MAA.

(b) NOT APPLICABLE.

(c) The scope of work deemed to constitute the approval shall be specified in the CAME in accordance with DASR M.A.704.

M.A.704 - Continuing Airworthiness Management Exposition (CAME)

▸ **AMC**

AMC M.A.704 - Continuing Airworthiness Management Exposition

1. The purpose of the CAME is to set forth the procedures, means and methods of the CAMO. Compliance with its contents will assure compliance with DASR M requirements.

2. The CAME should comprise:

Part 0 - General organisation

Part 1 - Continuing airworthiness management procedures

Part 2 - Quality system

Part 3 - Contracted/tasked maintenance

Part 4 - Airworthiness review procedures (if applicable)

Part 5 - Appendices

3. Where an Operating Organisation is also the DASR 145, the Exposition required by DASR 145 may form the basis of the CAME in a combined document:

DASR 145 Exposition (see equivalent paragraphs in DASR AMC 145.A.70 (a))

Part 1 - Management

Part 2 - Maintenance procedures

Part L2 - Additional line maintenance procedures

Part 3 - Quality system

Part 4 - Contracts/tasking with Operating Organisations

Part 5 - Appendices

Part 7 - (Not Applicable)

Part 8 - (Not Applicable)

Part 3 - should also cover the functions specified by DASR M.A.712 - Quality system.

Part 4 - should also cover contracted/tasked maintenance.

Additional parts should be introduced covering the following:

Part 0 - General organisation

Part 6 - Continuing airworthiness management procedures

Part 9 - Airworthiness review procedures (if applicable)

4. Personnel should be familiar with those parts of the CAME that are relevant to their tasks.

5. The CAMO should specify in the CAME who is responsible for the amendment of the document.

6. Unless otherwise agreed by the MAA, the person responsible for the management of the quality system should be responsible for monitoring and amending the CAME, including any associated procedures manuals, and the submission of proposed amendments to the MAA. The MAA may agree a procedure, which will be stated in the amendment control section of the CAME, defining the class of amendments which can be incorporated without the prior consent of the MAA.

7. The CAMO may use Electronic Data Processing (EDP) for publication of the CAME. The CAME should be made available to the MAA in a form acceptable to the MAA. Attention should be paid to the compatibility of EDP publication systems with the necessary dissemination of the CAME, both internally and externally.

8. Part 0 "General organisation" of the CAME should include a corporate commitment by the CAMO, signed by the Accountable Manager, confirming that the CAME and any associated manuals define the organisation's compliance with DASR M and will be complied with at all times.

9. The Accountable Manager's Exposition statement should embrace the intent of the following paragraph, and this statement may be used without amendment. Any modification to the statement should not alter the intent:

"This exposition defines the organisation and procedures upon which the (MAA - * see note below) DASR M.A. Subpart G continuing airworthiness management approval is based.

These procedures are approved by the undersigned and should be complied with, as applicable, in order to ensure that all continuing airworthiness tasks of... (quote Operating Organisation's name) fleet of aircraft and/or of all aircraft under contract/ tasking in accordance with DASR M.A.201(k) with ... (quote CAMO's name) ... are carried out on time to an approved standard.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the (MAA*) will approve this organisation whilst the (MAA*) is satisfied that the procedures are being followed and the work standard is maintained. It is understood that the (MAA*) reserves the right to suspend, limit or revoke the DASR M.A. Subpart G continuing airworthiness management approval of the organisation, if the (MAA*) has evidence that the procedures are not followed and the standards not upheld."

Signed.....

Dated.....

Accountable Manager and..... (quote position).....

For and on behalf of..... (quote organisation's name).....

NOTE: Where it states (MAA*), please insert the actual name of the MAA, for example DASA

10. Whenever the Accountable Manager changes, it is important to ensure that the new Accountable Manager signs the paragraph 9 statement at the earliest opportunity

Failure to carry out this action could invalidate the DASR M.A. Subpart G approval.

12. The CAME should contain information as applicable, on how the CAMO complies with CDCCL instructions.

(a) The CAMO shall provide a CAME containing the following information:

1. a statement signed by the Accountable Manager to confirm that the organisation will work in accordance with DASR M and the Exposition at all times; and
2. the organisation's scope of work; and
3. the title(s) and name(s) of person(s) referred to in DASR M.A.706(a), M.A.706(c), M.A.706(d) andM.A.706(i);
4. an organisation chart showing associated chains of responsibility between all the person(s) referred to in DASR M.A.706(a), M.A.706(c), M.A.706(d) and M.A.706(i); and
5. a list of the airworthiness review staff referred to in DASR M.A.707;
6. a general description and location of the facilities; and
7. procedures specifying how the CAMO ensures compliance with this DASR; and
8. the CAME amendment procedures; and
9. the list of approved AMPs (see DASR M.A. 302); and
10. a list of all contractors/tasked organisations (where applicable); and
11. the names of all Operating Organisations to which CAMO support activities are provided (if applicable).

(b) The CAME and its amendments shall be approved by the MAA.

(c) Notwithstanding paragraph (b), minor amendments to the CAME may be approved indirectly through an indirect approval procedure. The indirect approval procedure shall define the minor amendment eligible, be established by the CAMO as part of the CAME and be approved by the MAA. ▸ **GM**

GM M.A.704(c) - Continuing Airworthiness Management Exposition (AUS)

The indirect approval procedure may not include any changes to the CAMO defined in DASR M.A.713(a).

M.A.705 - Facilities

The CAMO shall ensure suitable office accommodation is provided at appropriate locations for the personnel specified in DASR M.A.706. ▸ **AMC**

AMC M.A.705 - Facilities

Office accommodation should be such that the occupants, whether they be continuing airworthiness management, planning, technical records or quality staff, can carry out their designated tasks in a manner that contributes to good standards. In a smaller CAMO, the approving MAA may agree to these tasks being conducted from one office subject to being satisfied that there is sufficient space and that each task can be carried out without undue disturbance. Office accommodation should also include an adequate technical library and room for document consultation.

M.A.706 - Personnel requirements

▸ **AMC**

AMC M.A.706 - Personnel requirements

1. The person or group of persons should represent the continuing airworthiness management structure of the CAMO and be responsible for all continuing airworthiness functions. Dependent on the fleet activity and the organisational structure, the continuing airworthiness functions may be divided under individual managers or combined in nearly any number of ways. However, the quality system should be independent from the other functions.

2. The actual number of persons to be employed and their necessary qualifications is dependent upon the tasks to be performed and thus dependent on the size and complexity of the CAMO (e.g. number of aircraft and the aircraft types, complexity of the aircraft and their age, operational usage etc.) and the amount and complexity of maintenance contracting or tasking. Consequently the number of persons needed, and their qualifications, may differ greatly from one CAMO to another and a simple formula covering the whole range of possibilities is not feasible.

3. To enable the MAA to accept the number of persons and their qualifications, a CAMO should make an analysis of the tasks to be performed, the way in which it intends to divide and/or combine these tasks, indicate how it intends to assign responsibilities and establish the number of individuals/hours and the qualifications needed to perform the tasks. If there are any significant changes that will impact on the number of persons and their qualifications, this analysis should be updated.

4. The nominated person or group of persons should have:

4.1. practical experience and expertise in the application of aviation safety standards and safe operating practices; and

4.2. a comprehensive knowledge of:

a. relevant military operational requirements and procedures; and

b. the MAOC holder's Operations Specifications when applicable;

c. the content of the relevant parts of the Operating Organisation's Operations Manual (or national equivalent) when it impacts the continuing airworthiness of the aircraft operated.

4.3. knowledge of quality systems; and

4.4. five years of relevant experience of which at least two years should be within the aviation environment in a position considered appropriate by the MAA; and

4.5. a relevant engineering degree or an aircraft maintenance technician qualification with additional education acceptable to the MAA. 'Relevant engineering degree' means an engineering degree from aeronautical, mechanical, electrical, electronic, avionic or other studies relevant to the maintenance and continuing airworthiness of aircraft/aircraft components;

The above recommendation may be replaced by 5 years of experience additional to those already recommended by paragraph 4.4 above. These 5 years should cover an appropriate combination of experience in tasks related to aircraft maintenance and/or continuing airworthiness management (engineering) and/or surveillance of such tasks.

4.6. thorough knowledge of the CAME; and

4.7. knowledge of a relevant sample of the type(s) of aircraft gained through a formalised training course(s). These course(s) should be at least at a level equivalent to DASR 66 Appendix III Level 1 familiarisation and could be imparted by a DASR 147 Maintenance Training Organisation (MTO), by the manufacturer, or by any other organisation accepted by the MAA;

"Relevant sample" means that these courses should cover typical systems embodied in those aircraft being within the scope of CAMO's approval.

4.8. knowledge of maintenance methods; and

4.9. knowledge of applicable regulations; and

4.10. Chartered Professional Engineer (CPEng), Chartered Engineering Technologist (CEngT) or Chartered Engineering Associate (CEngA) status with the Institute of Engineers Australia or an equivalent professional body recognised by the IEAust.

5. **Nominated Deputy Management Personnel**. A nominated deputy is a person who may be appointed as an alternate to the nominated person, when the incumbent nominated person is absent for a period of time. To ensure clear lines of responsibility, the

nominated deputy is required to assume all responsibilities when formally appointed in the absence of the incumbent nominated person. As a result, the nominated deputy is required to satisfy the same qualification experience and knowledge requirements as the incumbent per the relevant AMC and is to be approved by the MAA. This approval can either be through the CAME or on a Form 4 depending if the nominated person's position requires a Form 4 approval per the table below.

6. There can only be one person fulfilling the role of the nominated position at any single point in time. When designating a nominated deputy to fulfil the role of the nominated position, it should be clearly articulated and promulgated when the incumbent relinquishes responsibility of the position and a nominated deputy assumes responsibility as the nominated person and for what period.

7. Note, a deputy Accountable Manager or deputy nominated person is not intended to replace the nominated person for an indefinite period of time. This particularly applies when the Accountable Manager or a nominated person leaves the CAMO; in such a case the new nominated person is to be appointed within a reasonable period of time as agreed by the MAA.

8. Where a nominated position requires a Form 4 approval, and the nominated person has not nominated an alternate person to be their deputy in the regulatory intent, the nominated person may still task a person or group of persons without a Form 4 approval to fulfil the duties of the nominated person, however the nominated person retains responsibility for all functions performed.

9. **Management Personnel Requiring a Form 4**. The following table summarises when a DASR Form 4—Acceptance Of Nominated Management Personnel, is required in order for the management personnel to be approved by the MAA.

MANAGEMENT PERSONNEL	DASR Form 4 Required	DASR Form 4 Not Required
Accountable Manager (DASR M.A.706(a))		X
Continuing Airworthiness Manager (DASR M.A.706(d))	X	
Quality Manager (DASR M.A.706(f) and **DASR M.A.712**(a))	X	
Safety Manager (**DASR M.A.712**(g) and **DASR SMS**)		X
Nominated Management Team (DASR M.A.706(c))		X*
Airworthiness Review Staff (**DASR M.A.707**(b))	X	
Maintenance Program Approval Employee (DASR AMC M.A.706(f))		X

Other Managers		X	
Deputy Nominated Personnel	X**		

* DASR M.A.706(c) positions should be appointed by the CAMO and will be accepted by the MAA as part of the CAME approval and do not require a Form 4 approval. Form 4 applications for these personnel will only be processed if it is the intent that the person will be appointed as the CAM for a period of time in the absence of the CAM, ie a deputy CAM.

** A deputy requires a Form 4 approval when they are nominated as a deputy for a position requiring a Form 4 approval per this table.

(a) The CAMO shall appoint an Accountable Manager, who has corporate authority for ensuring that all continuing airworthiness management activities can be resourced and carried out in accordance with this DASR. Where the CAMO is part of an Operating Organisation, the Accountable Manager shall be the same person who has the corporate authority for ensuring that all operations of the Operating Organisation can be resourced and carried out to the standard detailed in DASR M.A.201(h). ▸ **AMC**

AMC M.A.706(a) - Personnel requirements

Accountable Manager is normally intended to mean the Chief Executive Officer or a senior military commander of the CAMO approved under DASR M.A. Subpart G, who by virtue of position has overall (including in particular resource allocation) responsibility for running the organisation. The Accountable Manager may be the Accountable Manager for more than one organisation and is not required to be knowledgeable on technical matters as the CAME defines the continuing airworthiness standards. When the Accountable Manager is not the Chief Executive Officer or senior military commander, the MAA will need to be assured that such an Accountable Manager has direct access to the Chief Executive Officer or senior military commander and has a sufficiency of 'continuing airworthiness resources' allocation.

(b) NOT APPLICABLE.

(c) A person or group of persons shall be nominated with the responsibility of ensuring that the CAMO is always in compliance with this Subpart. Such person(s) shall be ultimately responsible to the Accountable Manager.

(d) The Accountable Manager shall designate a Continuing Airworthiness Manager. This person shall be responsible for the management and supervision of continuing airworthiness activities, pursuant to paragraph (c). ▸ **AMC**

AMC M.A.706(d) - Personnel requirements (AUS)

The Continuing Airworthiness Manager (CAM) and the nominated deputy require formal acceptance by the MAA which is granted through the corresponding DASR Form 4—Acceptance of Nominated Management Personnel.

The Continuing Airworthiness Manager (CAM) should have:

1. practical experience and expertise in the application of aviation safety standards and safe operating practices;

2. a comprehensive knowledge of:

   a. relevant parts of operational requirements and procedures;

   b. the MAOC holder's Operations Specifications when applicable;

   c. the need for, and content of, the relevant parts of the MAOC holder's Operations Manual when applicable;

3. knowledge of quality systems;

4. five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position;

5. a relevant engineering degree or an aircraft maintenance technician qualification with additional education acceptable to the MAA. 'relevant engineering degree' means an engineering degree from aeronautical, mechanical, electrical, electronic, avionic or other studies relevant to the maintenance and continuing airworthiness of aircraft/ aircraft components;

6. The above recommendation may be replaced by five years of experience additional to those already recommended by paragraph 4 above. These five years should cover an appropriate combination of experience in tasks related to aircraft maintenance and/or continuing airworthiness management (engineering) and/or surveillance of such tasks;

7. Chartered Professional Engineer (CPEng), Chartered Engineering Technologist (CEngT) or Chartered Engineering Associate (CEngA) status with the Institute of Engineers Australia (IEAust) or an equivalent professional body recognised by the IEAust. Additionally, the Continuing Airworthiness Manager (CAM) requires Engineering Executive (EngExec) status with the Institute of Engineers Australia or an equivalent professional body recognised by the IEAust;

8. thorough knowledge with the organisation's continuing airworthiness management exposition;

9. knowledge of a relevant sample of the type(s) of aircraft gained through a formalised training course. These courses should be at least at a level equivalent to General Familiarisation and could be imparted by a DASR 147 organisation, by the manufacturer, or by any other organisation accepted by the MAA.

   "Relevant sample" means that these courses should cover typical systems embodied in those aircraft being within the scope of approval.

10. knowledge of maintenance methods;

11. knowledge of applicable regulations.

(e) The Continuing Airworthiness Manager referred to in paragraph (d) shall not be employed by a DASR 145 AMO under contract to the Operating Organisation, unless specifically agreed by the MAA. ▸ **AMC**

AMC M.A.706(e) - Personnel requirements

1. The MAA may accept that the Continuing Airworthiness Manager referred to in paragraph (d) is also part of a DASR 145 AMO being contracted/tasked by the Operating Organisation in the case where the individual has military command and control responsibilities over both organisations (e.g. a military Commanding Officer with responsibility for both organisations on an airbase).

2. This paragraph only applies to contracted/tasked maintenance and therefore does not affect situations where the organisation approved under DASR 145 and the Operating Organisation are the same organisation.

(f) The CAMO shall have sufficient appropriately qualified staff for the expected work. ▸ **AMC**

AMC M.A.706(f) - Personnel requirements

ADDITIONAL TRAINING

Additional training in fuel tank safety as well as associated inspection standards and maintenance procedures should be required of continuing airworthiness management organisations' technical personnel, especially the staff involved with the management of CDCCL (if applicable), Service Bulletin assessment, work planning and maintenance programme management. Further guidance is provided for training of CAMO's continuing airworthiness personnel in Appendix IV to DASR AMC 145.A.30(e).

QUALITY MANAGER (QM)*

The Quality Manager requires formal acceptance by the MAA which is granted through the corresponding DASR Form 4.

Qualifications:

Diploma level, or equivalent, qualification in Quality Auditing issued by an Australian registered training organisation (RTO) or other comparable qualification acceptable to the MAA.

Experience:

At least five years of Aviation experience including:

a. Two years experience as staff of DASA or an organisation holding an Organisational Approval (excluding 147), under DASR, CASA, EMAR, EASA or other acceptable to the MAA, and

b. Three years experience in aviation quality management.

MAINTENANCE PROGRAMME APPROVAL EMPLOYEE (MPAE)

1. A CAMO seeking an Aircraft Maintenance Programme privilege under DASR M.A.711(d) that includes an indirect approval process may use maintenance program approval employees to approve aircraft maintenance programs, or variations to an approved maintenance program.

2. If used, maintenance program approval employees should be authorised by the CAMO, in writing, to approve a maintenance program and/or variations to a maintenance program on behalf of the CAMO.

3. An MPAE authorisation should include the following information:

   a. name of the employee;

   b. an authorisation reference number and date;

   c. the type and model of aircraft for which the authorisation is given;

   d. the scope and the limitations of the authorisation;

   e. the duration (if applicable) of the authorisation.

Qualifications

4. The maintenance program approval employee should:

   a. hold, or have held, an aircraft maintenance licence in category B1, B2 or C; or

   b. hold, or have held, a licence that is equivalent to a licence in category B1, B2 or C; or

   c. have a qualification in aircraft maintenance at least at Certificate IV level; or

   d. have a qualification in aviation maintenance management at least at diploma level; or

   e. have an engineering qualification at least at diploma level in any of the following disciplines:

      i. aeronautical;

      ii. avionics;

      iii. mechanical;

      iv. electrical;

      v. electronics.

Experience

5. The maintenance program approval employee should have at least three years experience in the development and management of a maintenance program for aircraft that are the same, or of a similar type, as the aircraft for which the employee is authorised.

Knowledge

6. The maintenance program approval employee should have a comprehensive knowledge of the following:

a. the regulations and standards applicable to the maintenance program for the aircraft for which the employee is authorised;

b. maintenance requirements related to operational approvals, if applicable;

c. the regulations and standards applicable to aircraft reliability programs, if applicable;

d. regular maintenance requirements included in the instruction for continuing airworthiness for the aircraft for which the employee is authorised.

7. The maintenance program approval employee should have knowledge of the specifications and standards that have been used by the type certificate holder to develop regular maintenance requirements for the aircraft for which the employee is authorised.

8. The maintenance program approval employee should have satisfactory knowledge of the following for the aircraft for which the employee is authorised:

a. the aircraft's certification basis;

b. an overview understanding of the aircraft's structure and systems, including the propulsion system.

(g) All paragraph (c) and (d) persons shall be able to demonstrate relevant knowledge, background and appropriate experience related to aircraft continuing airworthiness.

(h) The qualifications of all personnel involved in continuing airworthiness management shall be recorded. ▸ **GM**

GM M.A.706(h) - Personnel requirements (AUS)

MAINTENANCE PROGRAMME APPROVAL EMPLOYEE RECORDS

If a CAMO uses Maintenance Programme Approval Employee (MPAE) in accordance with DASR AMC M.A.706(f), MPAE records should be maintained that include details of any appropriate qualification held together with a summary of relevant experience and knowledge and a copy of the authorisation. This record should be retained until two years after the MPAE have left the CAMO.

(i) For CAMOs extending Military Airworthiness Review Certificates (MARC) in accordance with DASR M.A.711(a)4 and DASR M.A.901(c)2, the CAMO shall nominate persons authorised to do so, subject to approval by the MAA. ▸ **AMC**

AMC M.A.706(i) - Personnel requirements

The approval by the MAA of the CAME, containing the list of DASR M.A.706(i) personnel, constitutes formal acceptance by the MAA and their formal authorisation by the CAMO.

Nominated airworthiness review staff who are accepted by the MAA are automatically recognised as persons with authority to extend a Military Airworthiness Review Certificate in accordance with DASR M.A.711(a)4 and DASR M.A.901(c)2.

(j) The CAMO shall define and keep updated in the CAME, the title(s) and name(s) of person(s) referred to in DASR M.A.706(a), M.A.706(c), M.A.706(d) and M.A.706(i).

(k) The CAMO shall establish and control the competence of personnel involved in the continuing airworthiness management, airworthiness review and/or quality audits, in accordance with a procedure and to a standard agreed by the MAA. ▸ **AMC**

AMC M.A.706(k) - Personnel requirements

Adequate initial and recurrent training should be provided and recorded to ensure continued competence.

M.A.707 - Airworthiness review staff

(a) To be approved to carry out airworthiness reviews, a CAMO shall have appropriate airworthiness review staff to issue Military Airworthiness Review Certificates (MARC) or recommendations referred to in DASR M.A. Subpart I: ▸ **AMC**

AMC M.A.707(a) - Airworthiness review staff

1. Airworthiness review staff are only required if the CAMO wants to be granted DASR M.A.711 (b) airworthiness review privileges.

2. "experience in continuing airworthiness" means any appropriate combination of experience in tasks related to aircraft maintenance and/or continuing airworthiness management (engineering) and/or surveillance of such tasks.

3. A person qualified to the DASR AMC M.A.706(c) paragraph 4.5 should be considered as holding the equivalent to an aeronautical degree.

4. An appropriate MAML in compliance with DASR 66 is any one of the following:

   – a category B1 licence in the subcategory of the aircraft reviewed, or

   – a category B2 or C licence.

It is not necessary to satisfy the experience requirements of DASR 66.A.20(b)(2) at the time of the review.

5. To hold a position with appropriate responsibilities means the airworthiness review staff should have a position in the CAMO independent from the airworthiness management process or with overall authority on the airworthiness management process of complete aircraft.

Independence from the airworthiness management process may be achieved, among other ways, by:

– Being authorised to perform airworthiness reviews only on aircraft for which the person has not participated in their management. For example, performing airworthiness reviews on a specific type or series, while being involved in the airworthiness management of a different type or series.

– CAMOs that are part of an Operating Organisation that also has a DASR 145 approval, may nominate maintenance personnel from their DASR 145 organisation as airworthiness review staff, as long as they are not involved in the airworthiness management of the aircraft. These personnel should not have been involved in the release to service of that particular aircraft (other than maintenance tasks performed during the physical survey of the aircraft or performed as a result of findings discovered during such physical survey) to avoid possible conflict of interests.

– Nominating as airworthiness review staff personnel from the Quality Department of the CAMO.

– Contracting/tasking staff from another organisation.

Overall authority on the airworthiness management process of complete aircraft may be achieved, among other ways, by:

– Nominating as airworthiness review staff the Accountable Manager or the Continuing Airworthiness Manager.

– Being authorised to perform airworthiness reviews only on those particular aircraft for which the person is responsible for the complete continuing airworthiness management process.

1. These staff shall have acquired:

   i. at least five years' experience in continuing airworthiness; and

   ii. an appropriate Military Aircraft Maintenance Licence (MAML) in compliance with DASR 66 or an aeronautical degree or a national equivalent; and

   iii. formal aeronautical maintenance training; and ▸ **AMC**

AMC M.A.707(a)(1)(iii) - Airworthiness review staff

Formal aeronautical maintenance training means training (internal or external) supported by evidence on the following subjects:

– relevant parts of initial and continuing airworthiness regulations; and

– relevant parts of operational requirements and procedures, if applicable; and the CAME; and

– knowledge of a 'relevant sample*' of the type(s) of aircraft gained through a formalised training course. These courses should be at least at a level equivalent to DASR 66 Appendix III Level 1 General Familiarisation and could be imparted by a DASR 147 MTO, by the manufacturer, or by any other organisation accepted by the MAA; and
* 'relevant sample' means that these courses should cover typical systems embodied in those aircraft being within the scope of approval.

– maintenance methods.

iv. a position within the CAMO with appropriate responsibilities.

v. Notwithstanding paragraph (i) to (iv), the requirement laid down in DASR M.A.707(a)1(ii) may be replaced by five years of experience in continuing airworthiness additional to those already required by DASR M.A.707(a)1(i).

2. NOT APPLICABLE.

(b) Airworthiness review staff nominated by the CAMO can only be issued with an authorisation by the CAMO when formally accepted by the MAA after satisfactory completion of an airworthiness review under supervision. ▸ **AMC**

AMC M.A.707(b) - Airworthiness review staff

The formal acceptance by the MAA of the airworthiness review staff is granted through the corresponding DASR Form 4—Acceptance Of Nominated Management Personnel.

An airworthiness review "under supervision" means under the supervision of the MAA. If the CAMO has already properly authorised airworthiness review staff, the MAA may accept that the supervision be performed by these existing airworthiness review staff in accordance with an approved procedure. In such cases, evidence of the airworthiness review performed under supervision should be provided to the MAA together with the DASR Form 4. If satisfied, the MAA will issue the formal acceptance through the DASR Form 4.

Once the airworthiness review staff have been accepted by the MAA, the inclusion of their name in the CAME (DASR M.A.704 constitutes the formal authorisation by the CAMO).

(c) The CAMO shall ensure that aircraft airworthiness review staff can demonstrate appropriate recent continuing airworthiness management experience. ▸ **AMC**

AMC M.A.707(c) - Airworthiness review staff

In order to keep their authorisations valid, the airworthiness review staff should have either:

– been involved in continuing airworthiness management activities for at least six months in every two year period; or

– conducted at least one airworthiness review in the last twelve month period.

In order to restore the validity of the authorisation, the airworthiness review staff should conduct at a satisfactory level an airworthiness review under the supervision of the MAA or, if accepted by the MAA, under the supervision of another currently valid authorised airworthiness review staff of the CAMO in accordance with an approved procedure.

(d) Airworthiness review staff shall be identified by listing each person in the CAME together with their airworthiness review authorisation reference.

(e) The CAMO shall maintain a record of all airworthiness review staff, which shall include details of any appropriate qualification held together with a summary of relevant continuing airworthiness management experience and training and a copy of the authorisation. This record shall be retained until two years after the airworthiness review staff have left the CAMO. ▸ **AMC** ▸ **GM**

GM M.A.707(e) - Airworthiness review staff (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

AMC M.A.707(e) - Airworthiness review staff

The minimum content of the airworthiness review staff record should be:

- Name,
- Rank/Grade and Service Number (if applicable),
- Date of Birth,
- Basic Education,
- Experience,
- Aeronautical Degree and/or DASR 66 qualification and/or nationally recognised maintenance personnel qualification,
- Initial Training received,
- Type of Training received,
- Continuation Training received,
- Experience in continuing airworthiness and within the organisation,
- Responsibilities of current role in the organisation,
- Copy of the authorisation (to include scope, date of first issue, expiry date, and identification number if applicable),
- Security clearance (where applicable).

M.A.708 - Continuing airworthiness management

GM GM1

GM1 M.A.708 - Continuing airworthiness management (AUS)

In the context of this regulation, a DASR 145 AMO also includes another maintenance organisation accepted by DASA in accordance with DASR M.A.201(g).

GM M.A.708 - Continuing airworthiness management AUS)

The CAMO should have adequate knowledge of the design status (type specification, customer options, airworthiness directives (ADs), airworthiness limitations contained in the aircraft instructions for continuing airworthiness, modifications, major repairs, operational equipment) and of the required and performed maintenance. The status of aircraft design and maintenance should be adequately documented to support the performance of the quality system.

For CS-25 aeroplanes, adequate knowledge of the airworthiness limitations should cover those contained in CS-25 Book 1, Appendix H, paragraph H25.4 and fuel tank system airworthiness limitations including critical design configuration control limitations (CDCCL).

(a) All continuing airworthiness management shall be carried out according to the prescriptions of DASR M.A. Subpart C—Continuing Airworthiness.

(b) For every aircraft managed, the CAMO shall:

1. have access to and use the applicable current AMP(s) for the aircraft managed;

2. if required by the pMS: ▸ **GM**

GM M.A.708(b)(2) - Continuing airworthiness management (AUS)

It is possible that the Aircraft Maintenance Programme (AMP) will be provided to the CAMO for some aircraft types whilst for other aircraft types the AMP is to be 'developed and controlled' by the CAMO. This will be identified by the MAA on a platform-by-platform basis. In these cases it is possible that the CAMO's responsibilities towards the 'development and control' of the AMP of the aircraft types for which it is responsible will differ. These differences are to be clearly identified in the CAME.

The default Defence position is that the CAMO develops and controls the DASA approved AMP for the aircraft managed.

i. develop and control the AMP for the aircraft managed including any applicable reliability programme; and
present the AMP and its amendments to the MAA for approval, unless covered by an indirect approval procedure.

ii. In that case, the indirect approval procedure shall be established by the CAMO, as part of the CAME, and shall be approved by the MAA. ▸ **GM**

GM M.A.708(b)(2)(ii) - Continuing airworthiness management (AUS)

Consistent with DASR M.A.704(c) the indirect approval procedure shall define the eligible amendments,(ie scope of changes) to the AMP, be established by the CAMO as part of the CAME and be approved by the MAA.

3. manage the accomplishment of modifications and repairs;

4. ensure that all maintenance is carried out in accordance with the AMP and released in accordance with DASR 145 or DASR M.A. Subpart H; ▸ **GM**

GM M.A.708(b)(4) - Continuing airworthiness tasks (AUS)

1. The situation may arise where a contracted/tasked maintenance organisation advises the CAMO that the contracted/tasked maintenance cannot be carried out by the required contracted/tasked timeframe and seeks a one-off extension of the promulgated maintenance interval. In processing the request for a maintenance interval extension the CAMO has the following options available:

a. where the packaged/promulgated interval is less than the engineering justified interval, extend the interval up to a maximum of the engineering interval;

b. extend the task interval using the CAMO's indirect approval procedure, if suitably privileged, either once-off or permanently,

c. request DASR 21J design support for the requested interval extension; or

d. utilise the Command Clearance process to operate the aircraft IAW DASR M.A.301(a)(2) .

2. **Extending the Packaged Interval**. Interval flexibility may exist between a maintenance task's packaged/promulgated interval and its engineering/design interval in the AMP. The task may be packaged at a lesser interval maintenance efficiency due to tasks required in the same area or aligning maintenance to be conducted in blocks. If this is the case, and provided the CAMO has the underlying analysis that identifies the engineering interval and the reasons why the task was packaged at a lesser interval, the CAMO may authorise an extension to the packaged interval up to a maximum of the recorded engineering interval.

3. **Extend the AMP Task Interval**. If the AMP task interval has been reached, the CAMO may have sufficient data to extend the AMP task interval either once off, for a defined period, or permanently. To amend the AMP the CAMO must have the privilege from the MAA and sufficient scope as agreed in the indirect approval procedure. Note: where a task's interval has been extended permanently, the task may still be packaged as desired (not exceeding the extended interval).

4. **Request DASR 21J Design Support**. If the two options at para 1a and b above are not applicable, the CAMO may request DASR 21J design support to either extend the interval once off, for a defined period, or permanently.

5. **Utilise the Command Clearance process**. DASR M.A.301(a)(2).contains provisions for the Operating Organisation to deviate from the Initial/Continued/Continuing regulations.

6. For servicings with multiple tasks, the decision on extending the interval and the method used will be dependent on the individual circumstances of each task within the servicing. A combination of para 1a to d may be necessary.

7. It is important to note that extending a maintenance task beyond its promulgated interval may reduce the preventive effect of the task by increasing the risk of exposure to the failure consequences of the failure mode being addressed. In certain situations extension of maintenance could adversely affect the operational capability and/or safety of the aircraft. Also, the percentage by which the interval is extended does not universally reflect the increase in risk in exposure to the failure consequences of the failure mode(s) the task is addressing. The increase in risk with the extension of a task's interval needs to be assessed individually based on the underlying Reliability Centred Maintenance (RCM) analysis that justified the existing interval and the context in which the interval extension is being asked.

5. ensure that all applicable Airworthiness Directives and operational directives with a continuing airworthiness impact are applied;

6. ensure that all defects discovered or reported, are managed appropriately until corrected by a DASR 145 AMO;

7. ensure that maintenance is only carried out by a DASR 145 AMO;

8. coordinate scheduled maintenance, the application of Airworthiness Directives, the replacement of service life limited parts and component inspection and ensure the work is carried out properly;

9. manage and archive all continuing airworthiness records;

10. ensure that the weight and balance statement reflects the current status of the aircraft;

11. ensure the symmetry check statement reflects the current status of the aircraft (if applicable);

12. initiate and coordinate any necessary actions and follow-up activity highlighted by an occurrence report.

(c) Where there is a maintenance contract/tasking with a DASR 145 AMO, it shall detail the functions specified under DASR M.A.301(a)2, DASR M.A.301(a)3, DASR M.A.301(a)5,DASR M.A.301(a)6 and DASR M.A.301(a)8, and define the support of the quality functions of DASR M.A.712(b). ▸ **AMC**

AMC M.A.708(c) - Continuing airworthiness management*

1. Where an Operating Organisation is not approved under DASR 145 or where an Operating Organisation's maintenance organisation is an independent organisation, formal tasking or a contract should be agreed between the Operating Organisation/ CAMO and a DASR 145 AMO which specifies, in detail the work to be performed by the DASR 145 AMO. Appendix XI to DASR AMC M.A.708(c) gives further details on the subject.

2. Both the specification of work and the assignment of responsibilities should be clear, unambiguous and sufficiently detailed to ensure that no misunderstanding should arise between the parties concerned (Operating Organisation, CAMO and DASR 145 AMO) that could result in a situation where work that has a bearing on the airworthiness or serviceability of an aircraft is not or will not be properly performed.

3. Special attention should be paid to procedures and responsibilities to ensure that all maintenance work is performed, Service Bulletins (or national equivalent) are analysed and decisions taken on their accomplishment, Airworthiness Directives are completed on time and that all work, including non-mandatory modifications, is carried out to approved data and to the latest standards.

4. For line maintenance, the actual layout of the line maintenance contract/tasking the IATA Standard Ground Handling Agreement may be used as a basis, but this does not preclude the MAA from ensuring that the content of the contract/tasking is acceptable to them, and especially that the contract/tasking allows the CAMO to properly exercise its maintenance responsibility. Those parts of a contract/tasking that have no bearing on the technical or operational aspects of airworthiness are outside the scope of this paragraph.

5. It is possible to contract/task another Operating Organisation that is not directly approved under DASR 145. In this case the CAMO's continuing airworthiness

management exposition should include appropriate procedures to ensure that all this contracted/tasked maintenance is ultimately performed on time by organisations approved under DASR 145 in accordance with the contract/tasking CAMO's data. In particular the quality system procedures should place great emphasis on monitoring compliance with the above. The list of DASR 145 approved contract/tasking, or a reference to this list, should be included in the CAMO's continuing airworthiness management exposition.

6. Such a maintenance arrangement does not absolve the Operating Organisation from its overall continuing airworthiness responsibility unless exception clause DASR M.A.201(k) is enacted. Specifically, in order to accept the maintenance arrangement, the MAA should be satisfied that such an arrangement allows the Operating Organisation to ensure full compliance with responsibilities pursuant to DASR M.A.201—Responsibilities.

7. The purpose of DASR M.A.708(c) is to ensure that all maintenance is carried out by DASR 145 AMOs. This does not preclude a primary maintenance arrangement with an organisation that is not such an DASR 145 AMO, when it proves that such an arrangement is in the interest of the Operating Organisation by simplifying the management of its maintenance, and the Operating Organisation/CAMO keeps an appropriate control of it. Such an arrangement should not preclude the Operating Organisation/CAMO from ensuring that all maintenance is performed by an DASR 145 AMO and complying with the DASR M.A.201 continuing airworthiness responsibility requirements. A typical example of such an arrangement is:

> The Operating Organisation may find it more appropriate to have a primary contractor that would dispatch the aircraft and/or components to appropriately approved maintenance organisations, rather than the Operating Organisation itself sending the aircraft and/or different types of components to various DASR 145 AMOs. The benefit for the Operating Organisation is that the management of maintenance is simplified by having a single point-of-contact for aircraft and/or component maintenance. The Operating Organisation remains responsible for ensuring that all maintenance is performed by DASR 145 AMOs and in accordance with the approved standard.
>
> The Operating Organisation may wish to have a maintenance contract/tasking with another Operating Organisation of the same type of aircraft not approved under DASR 145. A typical case is that of a dry-leased aeroplane between Operating Organisations where the parties, for consistency or continuity reasons (especially for short term lease agreements), find it appropriate to keep the aeroplane under the current maintenance arrangement. Where this arrangement involves various DASR 145 approved sub-contracted/tasked organisations, it might be more manageable for the lessee Operating Organisation to have a single contract/tasking with the lessor Operating Organisation. Such an arrangement should not be understood as a transfer of responsibility to the lessor Operating Organisation: the lessee Operating Organisation, being the approved Operating Organisation of the aircraft, remains responsible for the continuing airworthiness of the aircraft in performing the DASR M.A.708 functions, and employing the DASR M.A.706—

Personnel requirements, continuing airworthiness management group of persons and staff unless exception clause DASR M.A.201(k) is enacted.

An aircraft requiring unscheduled line maintenance, the contract may be in the form of individual work orders addressed to the DASR 145 maintenance organisation. The intent of this paragraph is that maintenance contract/taskings are not necessary when the CAMO's continuing airworthiness system, as approved by the MAA, specifies that the relevant maintenance activity may be ordered through one time work orders. This includes for obvious reasons unscheduled line maintenance and may also include aeroplane component maintenance up to engines, so long as the MAA considers that the maintenance is manageable through work orders, both in term of volume and complexity. It should be noted that this paragraph implies that even where base maintenance is ordered on a case-by-case basis, there should be a written maintenance contract/tasking.

In essence, this does not alter the intent of DASR M.A.201(h) in that it also requires that the Operating Organisation has to establish formal tasking or a written maintenance contract and, whatever type of acceptable arrangement is made, the Operating Organisation/CAMO is required to exercise the same level of control on contracted or tasked maintenance, particularly through the DASR M.A.706(c) continuing airworthiness management group of persons and quality system as referred to in DASR M.A.712—Quality system and Safety Management System.

* see Appendix XI to DASR AMC M.A.708(c)

M.A.709 - Documentation

AMC

AMC M.A.709 - Documentation

When a CAMO is contracted/tasked under DASR M.A.201(k) for the management of the continuing airworthiness of aircraft operated by the Operating Organisation and it uses maintenance data provided by the Operating Organisation, the CAMO is responsible for ensuring that this data is current. As a consequence, it should establish appropriate procedures or provisions in the contract/tasking with the Operating Organisation.

The sentence "…, except when required by DASR M.A.714", means, in particular, the need to keep a copy of the Operating Organisation's data which was used to perform continuing airworthiness activities during the contract/tasking period.

(a) The CAMO shall have access to and use applicable current maintenance data in accordance with DASR 145.A.45, for the performance of continuing airworthiness tasks referred to in DASR M.A.708. This data will be provided by the Operating Organisation/ (M)TC holder/any other organisation as defined in DASR 21 as appropriate, subject to an appropriate contract/tasking being established. In such a case, the CAMO only needs access to such data for the duration of the contract, except when required by DASR M.A.714.

(b) NOT APPLICABLE.

M.A.710 - Airworthiness review

(a) To satisfy the requirement for the airworthiness review of an aircraft referred to in DASR M.A.901, a review of the aircraft records shall be carried out by the CAMO in order to be satisfied that: ▸ **AMC** ▸ **GM**

GM M.A.710(a) - Airworthiness review (AUS)

The airworthiness review staff of the CAMO are required to examine the continuing airworthiness records for the aircraft to determine whether continuing airworthiness requirements are being met for the aircraft.

For many aircraft, the quantity of records that must be examined and the level of examination required will be extensive. It is anticipated that the airworthiness review staff will be assisted by other employees of the CAMO and/or appropriately experienced personnel in this regard. This does not prevent other personnelfrom assiting to retrieve records, compile information and prepare reports etc. for the examination by the airworthiness review staff. However, it is up to the airworthiness review staff carrying out the airworthiness review to be satisfied with the source, authenticity and accuracy of the information made available to them.

The airworthiness review staff are expected to have a level of understanding of the continuing airworthiness records system for the aircraft that allows them to carry out the review without error.

AMC M.A.710(a) - Airworthiness review

1. A review is a check of at least the following categories of documents:

- registration papers (where applicable);
- DASR M.A.305 aircraft continuing airworthiness record system;
- DASR M.A.306 aircraft technical log;
- list of deferred defects, MEL and CDL (if applicable);
- aircraft flight manual and / or any other manuals required by the MAA including aircraft configuration;
- AMP;
- maintenance data;
- relevant work packages;
- AD status;
- modification and SB status (or national equivalent);
- modification and repair approval sheets;
- list of service life-limited components (to include list of engine and / or propeller modules where appropriate);

– relevant DASR Form 1s or equivalent;

– weight and balance report and installed equipment list;

– aircraft, engine and propeller (M)TC Data Sheets;

– if applicable, latest symmetry report.

As a minimum, sample checks within each document category should be carried out.

2. In the context of DASR M.A.710(a), 'fully documented' means that the CAMO should develop procedures for airworthiness review staff to produce a compliance report that confirms the above have been reviewed and, based on objective evidence, found to be in compliance with DASR M.

In this context, 'objective evidence' is physical evidence that an individual auditing the airworthiness review can inspect and evaluate for themselves. It provides compelling evidence that the review or audit was actually performed as indicated, and that the criteria in DASR M.A.710(a) were found to be in order.

1. airframe, engine and propeller flying hours and associated flight cycles and / or landings and any other airworthiness data as required by the MAA, have been properly recorded; and ▸ **AMC**

AMC M.A.710(a)(1) - Airworthiness review (AUS)

Determine whether the information about the utilisation of the aircraft has been recorded properly. The records should be examined to the extent necessary to determine if the information is up to date and accurate.

2. the aircraft flight manual and / or any other manuals required by the MAA are applicable to the aircraft configuration and reflect the latest revision status; and

3. all the maintenance due on the aircraft according to the AMP has been carried out; and ▸ **AMC**

AMC M.A.710(a)(3) - Airworthiness review (AUS)

1. Examine the records of compliance with the maintenance program to determine whether each maintenance task due to be carried out in accordance with the aircraft's maintenance program has been carried out and properly certified.

2. If the record of compliance with the maintenance program is kept in a computerised system, then a report generated by the computerised system may be used to comply with this requirement; provided the report clearly shows when the maintenance was last carried out, when it is next due and highlight any overdue task. The airworthiness review staff carrying out the review should ensure that such computer generated reports include all maintenance tasks required to be carried out under the aircraft's maintenance program.

3. In addition to the examination of records kept the following actions should also be undertaken:

a. For each maintenance task that is mandatory under the aircraft's type design approval (such as airworthiness limitation and certification maintenance requirements if available for type of fleet), documents that substantiate that the maintenance has been carried out should be examined to verify that information kept for these tasks are correct;

b. For all other maintenance tasks that are not mandatory under the aircraft's type design approval, a sample of maintenance tasks should be selected and the documents that substantiate that the maintenance has been carried out should be examined to verify that information kept for these tasks is correct.

4. The sample should include a range of maintenance tasks carried out at various intervals. The sample size should be at least 5% (per cent) of the total number of maintenance tasks carried out or 50 maintenance tasks, whichever is lower. If discrepancies are found during the sample check, further investigation should be carried out to the extent necessary to determine the level of inaccuracy in the records kept. Each time a review is carried out, a different set of samples should be selected to ensure over time a wide range of maintenance tasks are checked.

5. Examples of documents that may substantiate maintenance has been carried out include:

a. maintenance records for maintenance carried out on the aircraft;

b. copies of authorised release certificates for product, parts or appliances;

c. log books for products such as engines and propellers; and

d. log cards for landing gear.

6. For product, parts or appliances, the document that substantiates that the maintenance has been carried out on the product, parts or appliances should relate to the product that is identified in the records kept by part number and serial number if applicable.

ERROR CAPTURING METHODS

7. Select a sample of critical maintenance tasks that have been carried out on the aircraft and examine the aircraft's continuing airworthiness records to determine whether error capturing methods have been recorded on each of these maintenance tasks. The samples should relate to critical maintenance tasks carried out on the aircraft in the past 12 months. As a minimum, 5 instances of critical maintenance tasks should be selected as the sample size. However if the extent of critical maintenance tasks carried out on the aircraft in the past 12 months is not sufficient for 5 samples then all the instances of critical maintenance tasks that have been carried out should be included in the review.

4. all known defects have been corrected or, when applicable, carried forward in a controlled manner; and ▸ **AMC**

AMC M.A.710(a)(4) - Airworthiness review (AUS)

RECTIFICATION OF DEFECTS

Examine the aircraft's continuing airworthiness record system to determine whether there is any defect in the aircraft that needs rectification before flight. Defects that require rectification before flight should be rectified before the issue of an airworthiness review certificate.

DEFERRED DEFECTS

Examine the existing deferred defects as recorded in the aircraft's continuing airworthiness record system to determine whether deferral of rectification has been done.

5. all applicable Airworthiness Directives have been applied and properly registered; and ▸ **AMC**

AMC M.A.710(a)(5) - Airworthiness review (AUS)

1. Examine the records containing compliance with Airworthiness Directives (AD) to determine whether actions required by each AD that applies to the aircraft, product, parts or appliances fitted to the aircraft have been complied with. An examination of documents that substantiate each AD has been complied with should be carried out to verify that information kept is correct. Examples of documents that may substantiate an AD has been complied with, includes:
   a. maintenance records for maintenance carried out on the aircraft;
   b. copies of authorised release certificates for product, parts or appliances; and
   c. log books for products such as engines and propellers.
2. For a product, parts or appliances, the document that substantiates that the AD has been complied with in relation to the product, parts or appliances should relate to the product that is identified in the records by part number and serial number if applicable.
3. Where an AD requires compliance with requirements contained in another document such as a service bulletin (SB), a record of compliance with the service bulletin would be acceptable as evidence of compliance with the AD.

6. all modifications and repairs applied to the aircraft have been registered and are in compliance with DASR M.A.304; and ▸ **AMC**

AMC M.A.710(a)(6) - Airworthiness review (AUS)

Examine the records of modifications kept to determine whether there is a DASR 21 (see DASR M.A.304—Data for modifications and repairs) approval for each design of the modification. For the purpose of this paragraph, a modification includes a repair that involves change to the approved design of the aircraft.

7. all service life limited components installed on the aircraft are properly identified, registered and have not exceeded their approved service life limit; and ▸ **AMC**

AMC M.A.710(a)(7) - Airworthiness review (AUS)

1. Examine the records of life limited components kept to determine whether each life limited part has been correctly identified by part number, serial number and whether the life limit has been exceeded for any of the parts.

2. In addition, documents that have been used to substantiate remaining life at installation should be checked to verify that information kept for life limited components is correct. Examples of such substantiating documents include:

a. maintenance records for installation of the parts;

b. authorised release certificates for the parts; and

c. life limited component history/log card.

8. all maintenance has been released in accordance with DASR 145 or DASR M.A.Subpart H; and

9. the current weight and balance statement reflects the configuration of the aircraft and is valid; and ▸ **AMC**

AMC M.A.710(a)(9) - Airworthiness review (AUS)

Examine the record of the aircraft's weight and balance kept to determine if it is consistent with all the changes made to the weight and balance since the last weighing of the aircraft. All changes made to the weight and balance should be substantiated by documents such as a modification approval and an equipment list for the aircraft.

10. the aircraft complies with the latest revision of its type design approved by the MAA/(M)TC holder; and ▸ **AMC**

AMC M.A.710(a)(10) - Airworthiness review (AUS)

Examine the aircraft's continuing airworthiness records to determine whether the aircraft's configuration as recorded complies with the specification mentioned in military type certificate data sheet (TCDS) for the aircraft, engine and propeller. Any variation of configuration from MTC should be supported by a DASR 21 approval.

11. NOT APPLICABLE.

12. if required, the current symmetry report reflects the configuration of the aircraft and is valid.

This review shall be fully documented.

(b) The airworthiness review staff of the CAMO shall carry out a physical survey of the aircraft. For this survey, airworthiness review staff not appropriately qualified to DASR 66 and authorised in accordance with DASR 145.A.35, shall be assisted by such qualified/authorised personnel. ▸ **AMC**

AMC M.A.710(b) - Airworthiness review

1. The physical survey could require actions categorised as maintenance, eg operational tests, tests of emergency equipment, visual inspections requiring panel opening etc. In this case, after the airworthiness review, a CRS for aircraft should be issued in accordance with DASR 145.

When the airworthiness review staff are not appropriately authorised to release such maintenance, DASR M.A.710(b) requires them to be assisted by DASR 145.A.35 certifying staff.

However, the function of such certifying staff is limited to performing and releasing the maintenance actions requested by the airworthiness review staff; it is not their function to perform the physical survey of the aircraft. As stated in DASR M.A.710(b), the airworthiness review staff shall carry out the physical survey of the aircraft, and this survey includes the verification that no inconsistencies can be found between the aircraft and the documented review of records.

2. The physical survey of the aircraft may include verifications to be carried out during flight.

3. The CAMO should develop procedures for the airworthiness review staff to produce a compliance report that confirms the physical survey has been carried out and found satisfactory.

4. To ensure compliance the physical survey of the aircraft may include relevant sample checks of items.

(c) Through the physical survey of the aircraft, the airworthiness review staff shall ensure that: ▸ **AMC**

AMC M.A.710(c) - Airworthiness review

1. The physical survey could require actions categorised as maintenance, eg operational tests, tests of emergency equipment, visual inspections requiring panel opening etc. In this case, after the airworthiness review, a CRS for aircraft should be issued in accordance with DASR 145.

When the airworthiness review staff are not appropriately authorised to release such maintenance, DASR M.A.710(b) requires them to be assisted by DASR 145.A.35 certifying staff. However, the function of such certifying staff is limited to performing and releasing the maintenance actions requested by the airworthiness review staff; it is not their function to perform the physical survey of the aircraft. As stated in DASR M.A.710(b), the airworthiness review staff shall carry out the physical survey of the aircraft, and this survey includes the verification that no inconsistencies can be found between the aircraft and the documented review of records.

2. The physical survey of the aircraft may include verifications to be carried out during flight.

3. The CAMO should develop procedures for the airworthiness review staff to produce a compliance report that confirms the physical survey has been carried out and found satisfactory.

4. To ensure compliance the physical survey of the aircraft may include relevant sample checks of items.

1. all required markings and placards are properly installed; and

2. the aircraft complies with its aircraft flight manual and/or any other manuals required by the MAA; and

3. the aircraft configuration complies with the approved data; and

4. no evident defect can be found that could not have been reasonably expected to be addressed; and

5. no inconsistencies can be found between the aircraft and the paragraph (a) review of records.

(d) By way of exception to DASR M.A.901(a), the airworthiness review can be anticipated by a maximum period of 90 days without loss of continuity of the airworthiness review pattern, to allow the physical survey to take place during a maintenance check. ▸ **AMC**

AMC M.A.710(d) Airworthiness review

When an airworthiness review is anticipated by up to 90 days, the expression "without loss of continuity of the airworthiness review pattern" means that the new expiration date is set up one year after the previous expiration date. As a consequence, when the airworthiness review is anticipated, the validity or the airworthiness review certificate is longer than one year (up to 90 days longer).

If for service reasons an airworthiness review is anticipated by more than 90 days, the next airworthiness review is due 12 months from this earlier anticipated date.

(e) The Military Airworthiness Review Certificate (MARC) (DASR Form 15b) or the recommendation for the issue of the MARC (DASR Form 15a) can only be issued: ▸ **AMC** ▸ **GM**

GM M.A.710(e) - Airworthiness review (AUS)

A DASR Form 15b—Military Airworthiness Review Certificate, must be used when a CAMO has a privilege to issue a MARC. DASR Form 15a—Military Airworthiness Review Certificate - Issue Recommendation, is to be used when a CAMO does not have a privilege and the MAA issues the MARC. In the case of not having the privilege, the CAMO can subcontract/task another CAMO that has approved scope to conduct MARCs, but by definition cannot issue the MARC for the contracting/tasking CAMO.

During airworthiness review of an aircraft, the airworthiness review staff must examine continuing airworthiness records for the aircraft and perform a physical survey of the aircraft to determine whether the aircraft continues to comply with the airworthiness requirements as set out in DASR M.A.710(a) and DASR M.A710(b).

All findings discovered during an airworthiness review should be documented and managed in accordance with the CAMO's quality management system / safety management system, consistent with requirements of M.A.905.

AMC M.A.710(e) - Airworthiness review

A copy of both the physical survey compliance report and the document review compliance report should be sent to the MAA together with any recommendation issued.

1. by airworthiness review staff appropriately authorised in accordance with DASR M.A.707, on behalf of the CAMO; and

2. when the airworthiness review has been completely carried out and that there is no non-compliance which is known to endanger flight safety.

(f) A copy of any MARC issued or extended for an aircraft shall be sent to the MAA within 10 days.

(g) All MARC tasks must be completed/supervised/managed by authorised airworthiness review staff. ▸ **AMC**

AMC M.A.710(g) - Airworthiness review

This means that the airworthiness review staff who is going to sign the MARC (DASR Form 15b) or the recommendation for the MAA to issue the MARC (DASR Form 15a) should be the one who carried out the physical survey of the aircraft and also completed/supervised/managed the documented review. It is not the intent of the requirement to delegate the physical survey of the aircraft to certifying staff who are not airworthiness review staff. Furthermore, the provision of DASR M.A.710(d) allowing a 90 days anticipation for the physical survey provides enough flexibility to ensure that the airworthiness review staff are present.

(h) NOT APPLICABLE.

M.A.711 - Privileges of the organisation

(a) In accordance with its CAME, for any aircraft listed on its approval certificate a CAMO approved in accordance with Section A, Subpart G:

1. shall manage the continuing airworthiness of specific aircraft;

2. NOT APPLICABLE;

3. may arrange for any of the continuing airworthiness management tasks to be carried out by another organisation that is: ▸ **GM**

GM M.A.711(a)(3) - Privileges of the organisation (AUS)

DASR M.A.711(a)(3)(i) contains provisions to contract/task an organisation to perform continuing airworthiness management tasks on behalf of the CAMO. The contracted/tasked organisation is considered to perform the continuing airworthiness management tasks as an integral part of the Operating Organisation's continuing airworthiness management system hence is required to work under the quality system of the CAMO. DASR M.A.711(a)(3)(ii) contains provisions for continuing airworthiness management tasks to be contracted/tasked to an organisation working under their own DASR M.A Subpart G approval. In this situation the contracted/tasked CAMO is not required to work under the quality system of the contracting/ tasking CAMO. In either case, the contracting/tasking CAMO retains the responsibility for all CAMO functions irrespective of who is undertaking them. DASR M.A.201(k) contains provisions for the Operating Organisation to contract/task a DASR M.A. Subpart G approved organisation for the management of the continuing airworthiness of the aircraft it operates. In this case the contracted/tasked CAMO assumes the responsibility for all CAMO functions.

i. working under the quality system of the CAMO; or

ii. working under their own DASR M.A. Subpart G approval.

In either case, the CAMO retains responsibility for all CAMO functions irrespective of who is undertaking them. All such organisations shall be listed on the approval certificate;

4. may extend, under the conditions of DASR M.A.901(f), a MARC.

(b) A CAMO may, additionally, carry out airworthiness reviews referred to in DASR M.A.710 for any aircraft listed on the approval certificate and:

1. issue the related MARC and extend it in due time under the conditions of DASR M.A.901(c)2; and

2. issue a recommendation for the airworthiness review to the MAA.

(c) NOT APPLICABLE.

(d) A CAMO may, if required by pMS according to DASR M.A.708(b)2, develop and control the DASR M.A.302 AMPs, including any applicable reliability programme for any aircraft listed on the approval certificate.

M.A.712 - Quality system and safety management system

(a) To ensure that the CAMO continues to meet the requirements of this Subpart, it shall establish a quality system and designate a Quality Manager to monitor compliance with, and the adequacy of, procedures required to ensure airworthy aircraft. Compliance monitoring shall include a feedback system to the Accountable Manager to ensure corrective action as necessary. ▸ **AMC**

AMC M.A.712(a) - Quality system

1. Procedures should be held current such that they reflect best practice within the CAMO. It is the responsibility of all CAMO staff to report any difficulties with the procedures via their CAMO's internal occurrence reporting mechanisms.

2. All procedures, and changes to the procedures, should be verified and validated before use where practicable.

3. The feedback part of the system should address who is required to rectify any non-compliance in each particular case and the procedure to be followed if rectification is not completed within appropriate timescales. The procedure should include the Accountable Manager specified in DASR M.A.706—Personnel requirements.

4. The independent quality audit reports referenced in AMC DASR M.A.712(b) should be sent to the relevant department for rectification action giving target rectification dates. Rectification dates should be discussed with such department before the quality department or nominated quality auditor confirms such dates in the report. The relevant department is required to rectify findings and inform the Quality Manager or the quality auditor of such rectification.

5. The Accountable Manager should hold regular meetings with staff to check progress on rectification. In large CAMOs such meetings may be delegated on a day to day basis to the Quality Manager, subject to the Accountable Manager meeting at least twice per

year with the senior staff involved to review the overall performance and receiving at least a half yearly summary report on findings of non-compliance.

(b) The quality system shall monitor DASR M.A. Subpart G activities. It shall at least include the following functions: ▸ **AMC** ▸ **GM**

GM M.A.712(b) - Quality System (AUS)

Monitoring of contracted / tasked DASR M Subpart G activities need not involve independent audit of procedures managed by external organisations. Other methods such as sampling and monitoring the suitability of products may be acceptable to DASA. The method used to monitor contracted / tasked DASR M Subpart G activities should be described in the CAME.

AMC M.A.712(b) - Quality system

1. The primary objectives of the quality system are to enable the CAMO to ensure airworthy aircraft and to remain in compliance with the DASR M requirements.

2. An essential element of the quality system is the independent audit.

3. The independent audit is an objective process of routine sample checks of all aspects of the CAMO's ability to carry out continuing airworthiness management to the required standards. It includes some on-aircraft sampling as this is the end result of the process.

4. The independent audit represents an objective overview of the complete continuing airworthiness management related activities. It is intended to complement the DASR M.A.902—Validity of the MARC requirement for an airworthiness review to be satisfied that all aircraft managed by the organisation remain airworthy.

5. The independent audit should ensure that all aspects of DASR M.A. Subpart G compliance are checked annually, including all the contracted/tasked activities, and may be carried out as a complete single exercise or subdivided over the annual period in accordance with a scheduled plan. If the continuing airworthiness of more than one aircraft type is managed, the independent audit does not require each procedure to be checked against each aircraft type when it can be shown that the particular procedure is common to more than one aircraft type and the procedure has been checked every year without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other aircraft types until the findings have been rectified after which the independent audit procedure may revert back to the annual interval for the particular procedure.

   Provided that there are no safety related findings, the audit time periods specified in this AMC may be increased by up to 100% subject to agreement by the MAA.

7. Where the CAMO has more than one approved location, the quality system should describe how these are integrated into the system and include a plan to audit each location every year.

8. A report should be raised each time an audit is carried out describing what was checked and the resulting findings against applicable procedures, contracts/taskings and DASR requirements.

9. The independence of the audit should be established by ensuring that audits are not carried out by personnel responsible for the function, procedure or products being checked.

10. A CAMO should establish a quality plan acceptable to the MAA that shows when and how often the activities required by DASR M.A. Subpart G will be audited.

1. monitoring that all DASR M.A. Subpart G activities are being performed in accordance with the approved procedures; and

2. monitoring that all contracted / tasked maintenance is carried out in accordance with the contract / tasking; and

3. monitoring the continued compliance with the requirements of this DASR.

(c) The records of these activities shall be stored for at least two years. ▸ **GM**

GM M.A.712(c) - Quality system (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

(d) Where an organisation has several DASR approvals, the quality systems may be combined.

(e) The CAMO's quality system shall be an integrated part of the Operating Organisation's quality system, unless the MAA approves otherwise. ▸ **GM**

GM M.A.712(e) - Quality system (AUS)

The phrase 'unless the MAA approves otherwise' allows for the case where the entire CAMO is tasked to an organisation separate from the Operating Organisation (see DASR M.A. 201(k)).

(f) NOT APPLICABLE.

(g) The CAMO's Safety Management System (SMS) shall be an integrated part of the Operating Organisation's SMS, unless the MAA approves otherwise. ▸ **GM**

GM M.A.712(g) - Safety Management System (AUS)

The phrase 'unless the MAA approves otherwise' allows for the case where the entire CAMO is tasked to an organisation separate from the Operating Organisation (see DASR M.A. 201(k)). In this instance the CAMO will be required to establish and maintain a Safety Management System (SMS), in accordance with DASR SMS.

NOTE: that 'Operating Organisation' is the 'Military Air Operator (MAO)' in Defence context.

M.A.713 - Changes to the CAMO

(a) In order to enable the MAA to determine continued compliance with this DASR, the CAMO shall notify the MAA of any proposal to change any of the following, before such changes take place: ▸ **AMC**

AMC M.A.713(a) - Changes to the CAMO (AUS)

1. This paragraph covers scheduled changes to the continuing airworthiness organisations (CAMO) approval. The primary purpose of this paragraph is to enable the CAMO to remain approved if agreed by the MAA during negotiations about any of the specified changes. Without this paragraph the approval would automatically be suspended in all cases.

2. All changes referred to in DASR M.A.713(a), should be notified to the MAA on the same form and in the same manner used for application, see DASR AMC M.A.702(a).

1. the name of the CAMO;
2. the location of the CAMO;
3. additional locations of the CAMO;
4. the Accountable Manager;
5. any of the persons specified in DASR M.A.706(c);
6. the facilities, procedures, work scope and staff that could affect the approval; ▸ **GM**

GM M.A.713(a)6 - Facilities, procedures, work scope and staff (AUS)

This includes organisations providing CAM services on behalf of the CAMO.

7. any change that affects the approval certificate. ▸ **GM**

GM M.A.713(a)7 - Changes that affects the Approval Certificate (AUS)

Changes that affect the Approval Certificate may include:

1. a change to the aircraft type and/or model, or
2. a change to the continuing airworthiness services provided.

(b) In the case of proposed changes in personnel not known to the management beforehand, these changes shall be notified at the earliest opportunity.

M.A.714 - Record-keeping

▸ **AMC** ▸ **GM**

GM M.A.714 - Record-keeping (AUS)

Other legislative requirements, overriding DASR, may require an organisation to keep records for a longer period of time.

AMC M.A.714 - Record-keeping

1. The system to retain the continuing airworthiness records should be described in the CAME.

2. When a CAMO arranges for a DASR 145 AMO to retain copies of the DASR M.A.714 continuing airworthiness records on its behalf, the CAMO will nevertheless continue to be responsible for their preservation. If another CAMO assumes responsibility for managing the continuing airworthiness of an aircraft, then the original CAMO is responsible for transferring the records.

3. Keeping continuing airworthiness records in a form acceptable to the MAA means in paper form or on a computer database or a combination of both methods. Records stored in microfilm or optical disc form are also acceptable. The record should remain readable and accessible throughout the required retention period.

   'Readable and accessible' is defined in AMC DASR M.A.305(h).

4. Paper systems should use robust material which can withstand normal handling and filing.

5. Computer systems should have at least one backup system which should be updated within 24 hours of any new entry. Each terminal is required to contain program safeguards against the ability of unauthorised personnel to alter the database.

6. Microfilming or optical storage of continuing airworthiness records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period.

(a) The CAMO shall record all details of continuing airworthiness management activity carried out. The aircraft records required by DASR M.A.305 and, if applicable, DASR M.A.306, shall be retained.

(b) If the CAMO has the privilege referred to in DASR M.A.711(b), it shall retain a copy of each MARC and recommendation issued or, as applicable, extended, together with all supporting documents. In addition, the CAMO shall retain a copy of any MARC that it has extended under the privilege referred to in DASR M.A.711(a)4.

(c) Permits to Fly, and all documents relating to their issue as detailed in DASR 21 Subpart P, shall be retained.

(d) The CAMO shall retain a copy of all records referred to in paragraphs (b) and (c) for at least two years after the aircraft has been permanently withdrawn from service.

(e) The records shall be stored in a manner that ensures protection from damage, alteration and theft. The records shall remain readable and accessible for the duration of the storage period.

(f) All computer hardware used to ensure backup shall be stored in a different location from that containing the working data, in an environment that ensures they remain in good condition.

(g) Where continuing airworthiness management of an aircraft is transferred to another CAMO, all retained records shall be transferred to the new CAMO. The time periods prescribed for the retention of records shall continue to apply to the new CAMO.

(h) Where a CAMO terminates its operation, all retained records shall be transferred to the Operating Organisation (if applicable), unless determined otherwise by the MAA.

M.A.715 - Continued validity of approval

(a) An approval shall be issued for an unlimited duration. It shall remain valid subject to:

1. the CAMO remaining in compliance with this DASR, in accordance with the provisions related to the handling of findings and; ▸ GM

GM M.A.715(a)(1) - Continued validity of approval (AUS)

1. When during audits or by other means, evidence is found showing non-compliance to the DASR M requirements, the MAA shall take the following actions:

   a. For level 1 findings, immediate action shall be taken by the MAA to revoke, limit or suspend in whole or in part, depending upon the extent of the level 1 finding, the CAMO approval, until successful corrective action has been taken by the CAMO.

   b. For level 2 findings, the corrective action period granted by the MAA must be appropriate to the nature of the finding but in any case initially must not be more than three months. In certain circumstances and subject to the nature of the finding the MAA may extend the three month period subject to a satisfactory corrective action plan agreed by the MAA.

   c. Observations will not require immediate action by the holder of the CAMO approval. If appropriate, the MAA will specify a compliance time.

2. Action shall be taken by the MAA to suspend, in whole or part, the approval in case of failure to comply within the timescale granted by the MAA.

2. the MAA being granted access to the CAMO to determine continued compliance with this DASR; and

3. the approval not being surrendered or revoked.

(b) Upon surrender or revocation, the approval certificate shall be returned to the MAA.

M.A.716 - CAMO findings by the MAA

▸ GM

GM M.A.716 - CAMO findings by the MAA

1. General

   a. Preventive action is the action to eliminate the cause of a potential non-compliance, or other undesirable potential situation.

   b. Corrective action is the action to eliminate or mitigate the root cause(s) and prevent recurrence of an existing detected non-compliance, or other

undesirable condition or situation. Proper determination of the root cause is crucial for defining effective corrective actions to prevent reoccurrence.

c. Correction is the action to eliminate a detected non-compliance.

2. Root-cause analysis

a. It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance but why it was caused. Establishing the root-cause or causes of a non-compliance often requires an overarching view of the events and circumstances that lead to it, to identify all possible systemic and contributing factors (regulatory, human factors, organisational, managerial, cultural, technical, etc.) in addition to the direct factors. A narrow focus on single events or failures, or the use of a simple method such as fault tree, to identify the chain of events that lead to the non-compliance may not properly reflect the complexity of the issue, and, therefore bears the risk that important factors required to be addressed in order to prevent reoccurrence will be ignored.

b. Such inappropriate or partial root-cause analysis often leads to defining 'quick fixes' addressing the symptoms of the nonconformity only. A peer review of the results of the root-cause analysis may increase its reliability and objectivity.

c. A system description of the organisation considering organisational structures, processes and their interfaces, procedures, staff, equipment, facilities and the environment in which the organisation operates will support both effective root-cause (reactive) and hazard (proactive) analysis.

(a) After receipt of notification of findings, the CAMO shall:

1. identify the root cause of the non-compliance; and

2. define a corrective action plan; and ▸ **AMC**

AMC M.A.716(a)(2) - CAMO findings by the MAA

The corrective action plan defined by the CAMO should address the effects of the non-compliance, as well as its root cause.

3. demonstrate corrective action implementation to the satisfaction of the MAA within a period required by the MAA.

(b) A level 1 finding is any significant non-compliance with DASR M requirements which lowers the safety standard and hazards seriously the flight safety. Depending upon the extent of the level 1 finding, it leads to an immediate full or partial revocation, limitation or suspension of the approval by the MAA until successful corrective action has been taken by the CAMO.

(c) A level 2 finding is any non-compliance with the DASR M requirements which could lower the safety standard and possibly hazards the flight safety.

(d) A CAMO's non-compliance with the actions identified in DASR M.A.716(a) leads to a full or partial suspension of the approval by the MAA.

SUBPART H - CERTIFICATE OF RELEASE TO SERVICE (CRS) (AUS)

M.A.801 - Aircraft certificate of release to service (AUS)

(a) Except for aircraft released to service by a maintenance organisation approved in accordance with DASR 145, the certificate of release to service shall be issued according to this Subpart;

(b) No aircraft can be released to service unless a certificate of release to service is issued at the completion of any maintenance, when satisfied that all maintenance required has been properly carried out, by: ▸ **AMC**

AMC M.A.801(b) - Aircraft certificate of release to service (AUS)

A certificate of release to service is necessary before flight, at the completion of any defect rectification, whilst the aircraft operates a flight between scheduled maintenance checks.

1. appropriate certifying staff on behalf of the maintenance organisation considered equivalent to DASR 145 in accordance with DASR M.A.201(g)

(c) NOT APPLICABLE

(d) NOT APPLICABLE

(e) NOT APPLICABLE

(f) A certificate of release to service shall contain as a minimum: ▸ **AMC**

AMC M.A.801(f) - Aircraft certificate of release to service (AUS)

1. The aircraft certificate of release to service should contain the following statement:

   a. 'Certifies that the work specified except as otherwise specified was carried out in accordance with DASR M and in respect to that work the aircraft is considered ready for release to service'.

2. The certificate of release to service should relate to the task specified in the manufacturer's or Operating Organisation's instruction or the aircraft maintenance programme which itself may cross-refer to a manufacturer's/Operating Organisation's instruction in a maintenance manual, service bulletin (SB) etc.

3. The date such maintenance was carried out should include when the maintenance took place relative to any life or overhaul limitation in terms of date/flying hours/cycles/ landings etc., as appropriate.

4. When extensive maintenance has been carried out, it is acceptable for the certificate of release to service to summarise the maintenance so long as there is a unique cross-reference to the work-pack containing full details of maintenance carried out. Dimensional information should be retained in the work-pack record.

5. The person issuing the certificate of release to service should use their normal signature except in the case where a computer release to service system is used. In this latter case the MAA will need to be satisfied that only the particular person can electronically issue the release to service. One such method of compliance is the use of a magnetic or

optical personal card in conjunction with a personal identity number (PIN) known only to the individual, which is keyed into the computer. A certification stamp is optional.

6. At the completion of all maintenance, owners, certifying staff, Operating Organisations and maintenance organisations should ensure they have a clear, concise, legible record of the work performed.

1. basic details of the maintenance carried out; and

2. the date such maintenance was completed; and

3. the identity of the organisation and/or person issuing the release to service, including:

   i. the approval reference of the DASR M.A.201(g) maintenance organisation (if applicable) and the certifying staff issuing such a certificate.

4. the limitations to airworthiness or operations, if any.

(g) By way of exception from paragraph (b) and notwithstanding the provisions of paragraph (h), when the maintenance prescribed cannot be completed, a certificate of release to service may be issued within the approved aircraft limitations. Such fact together with any applicable limitations of the airworthiness or the operations shall be entered in the aircraft certificate of release to service before its issue as part of the information required in DASR M.A.801(f).4. ▸ **AMC**

AMC M.A.801(g) - Aircraft certificate of release to service (AUS)

1. Being unable to establish full compliance with sub-paragraph M.A.801 (b) means that the maintenance required by the M.A. Subpart G—Continuing Airworthiness Management Organisation, could not be completed due either to running out of available aircraft maintenance downtime for the scheduled check or by virtue of the condition of the aircraft requiring additional maintenance downtime.

2. The DASR M.A. Subpart G organisation is responsible for ensuring that all required maintenance has been carried out before flight. Therefore the DASR M.A. Subpart G organisation should be informed and agree to the deferment of full compliance with DASR M.A.801(b). The certificate of release to service may then be issued subject to details of the deferment, including the DASR M.A. Subpart G organisation authorisation, being endorsed on the certificate.

3. If a certificate of release to service (CRS) is issued with incomplete maintenance a record should be kept stating what action the mechanic, supervisor and certifying staff should take to bring the matter to the attention of the DASR M.A. Subpart G organisation so that the issue may be discussed and resolved with the M.A. Subpart G organisation.

(h) A certificate of release to service shall not be issued in the case of any known non-compliance which endangers flight safety. ▸ **AMC**

AMC M.A.801(h) - Aircraft certificate of release to service

'Endanger flight safety' means any instance where safe operation could not be assured or which could lead to an unsafe condition. It typically includes, but is not limited to, significant cracking, deformation, corrosion or failure of primary structure, any evidence of burning (including overheating), electrical arcing, significant hydraulic fluid or fuel leakage and any emergency system or total system failure. An AD overdue for compliance is also considered a hazard to flight safety.

M.A.802 - Component certificate of release to service (AUS)

▸ **AMC**

AMC M.A.802 - Component certificate of release to service (AUS)

When an approved organisation maintains an aircraft component for use by the organisation, a DASR Form 1—Authorised Release Certificate, may not be necessary depending upon the organisation's internal release procedures, however all the information normally required for the DASR Form 1 should be adequately detailed in the certificate of release to service (CRS).

(a) Except for aircraft components released to service in accordance with DASR 21 or DASR 145, the certificate of release to service / authorised release certificate shall be issued according to this Subpart.

(b) A component certificate of release to service may be issued by a maintenance organisation accepted by DASA in accordance with DASR M.A.201(g).

(c) A component certificate of release to service may be issued by a production organisation accepted by DASA. ▸ **AMC**

AMC M.A.802(c) - Component certificate of release to service (AUS)

1. A production organisation is accepted by DASA if:

   a. the organisation is oversighted by a recognised aviation authority; and

   b. prior to accessing the services of an organisation through Recognition, the consumer ensures the organisation's suitability in accordance with the scope, conditions and caveats set out in the applicable Recognition certificate (see DASA Recognition web page).

2. In cases where a production organisation is unable to provide the recognised equivalent artefact to Defence under existing oversight arrangements, DASA may agree that the CAMO can consume an alternate artefact where the CAMO can demonstrate to the satisfaction of DASA that:

   a. it is not feasible for the production organisation to become a DASR 21 Subpart G production organisation or produce components in accordance with DASR 21 Subpart F,

b. the production organisation is unable to provide the alternate artefact under an existing DASR 21 Subpart G production organisation approval using the sub-contractor provisions of DASR 21.A.139 — Quality System,

c. the production is carried out, and the alternate artefact is issued, through the same processes by which the organisation provides a similar service under the oversight of a recognised aviation authority,

d. the organisation is a suitable provider of the required service, and

e. appropriate controls are in place to ensure safety.

SUBPART I - MILITARY AIRWORTHINESS REVIEW CERTIFICATE (MARC)

M.A.901 - Aircraft airworthiness review

To ensure the validity of the Military Certificate of Airworthiness an airworthiness review of the aircraft and its continuing airworthiness records shall be carried out periodically. ▸ **AMC**

AMC M.A.901 - Aircraft airworthiness review (AUS)

The initial airworthiness review is due within 12 months of the issue date of the aircraft's initial Military Restricted Certificate of Airworthiness (MRCoA) or Military Certificate of Airworthiness (MCoA).

(a) A MARC is issued in accordance with DASR Form 15a, or DASR Form 15b on completion of a satisfactory airworthiness review. The MARC is valid one year. ▸ **AMC**

AMC M.A.901(a) - Aircraft airworthiness review

DASR Form 15a is issued by the MAA while DASR Form 15b is issued by a CAMO.

(b) NOT APPLICABLE.

(c) The CAMO may, if appropriately approved, and subject to compliance with paragraph (k):

1. issue a MARC in accordance with DASR M.A.710; and

2. for MARCs it has issued, extend twice the validity of a MARC for a period of one year each time. ▸ **AMC**

AMC M.A.901(c)(2) - Aircraft airworthiness review

The extension of the validity of the MARC does not require an airworthiness review subject to compliance with DASR M.A.901(k).

It is acceptable for a CAMO to extend a MARC issued by another CAMO.

To extend the validity of a MARC for a period of one year the aircraft should have remained within a controlled environment. An aircraft in a controlled environment is an aircraft:

i. continuously managed during the previous 12 months by a DASR M CAMO, and

ii. which has been maintained for the previous 12 months by maintenance organisations defined at DASR M.A.201(g).

It is acceptable to anticipate the extension of the MARC by a maximum of 30 days without a loss of continuity of the airworthiness review pattern, which means that the new expiration date is set up one year after the previous expiration date.

– It is also acceptable to perform the extension of a MARC after its expiration date, as long as all the conditions for the extension are met. However, this means that:

– until the MARC is extended the aircraft cannot fly because the MARC has expired; and

– the new expiration date (after extension) is set one year after the previous expiration date (not one year after the extension is performed).

(d) For all aircraft that have their continuing airworthiness managed by a CAMO that does not hold the privilege to carry out airworthiness reviews, the MARC shall be issued by the MAA upon satisfactory assessment based on a recommendation made by a CAMO appropriately approved in accordance with DASR M.A.711(b)(2), sent together with the application from the Operating Organisation. This recommendation shall be based on an airworthiness review carried out in accordance with DASR M.A.710. ▸ **AMC**

AMC M.A.901(d) - Aircraft airworthiness review

The recommendation sent to the MAA should contain at least the items described below:

(a) General information

– CAMO information;

– Operating Organisation information;

– date and place the document review and the aircraft survey were carried out;

– period and place the aircraft can be seen if required by the MAA.

(b) Aircraft information

– registration;

– type;

– manufacturer;

– serial number;

– Aircraft Flight Manual reference;

– weight and centre of gravity data;

– AMP reference;

– symmetry check data (if applicable).

(c) Documents accompanying the recommendation

– copy of the Operating Organisation's request for a new MARC.

(d) Aircraft status

– aircraft total flight hours and cycles or other service life consumption units if applicable;

– list of organisations having carried out continuing airworthiness activities including maintenance tasks on the aircraft and its components since the last MARC was issued.

(e) Aircraft survey

– a precise list of the areas of the aircraft that were surveyed and their status.

(f) Findings

– a list of all the findings made during the airworthiness review with the corrective action carried out

(g) Statement
A statement signed by the airworthiness review staff recommending the issue of a MARC.

The statement should confirm that the aircraft in its current configuration complies with the following:

– Airworthiness Directives up to the latest published issue; and

– (Military) Type Certificate datasheet; and

– AMP; and

– component service life limitations; and

– the valid weight and centre of gravity schedule (weight and balance statement) reflecting the current configuration of the aircraft; and

– DASR 21 for all modifications and repairs, and;

– the current Aircraft Flight Manual including supplements; and

– valid symmetry check schedule (if applicable); and

– operational requirements.

The above items should clearly state the exact reference of the data used in establishing compliance; for instance the number and issue of the (M)TC data sheet used should be stated.

The statement should also confirm that all of the above is properly entered and certified in the aircraft continuing airworthiness record system and/or in the aircraft technical log.

(e) NOT APPLICABLE.

(f) Subject to compliance with paragraph (k), a CAMO may extend twice for a period of one year each time the validity of a MARC that has been issued by the MAA or by another CAMO approved in accordance with Section A, Subpart G.

(g) NOT APPLICABLE.

(h) Notwithstanding paragraphs (a), (c) and (d) above, the MAA may carry out a MARC at any time it considers it appropriate to do so.

(i) NOT APPLICABLE.

(j) When the MAA carries out the airworthiness review and/or issues the MARC itself, the Operating Organisation shall provide the MAA with: ▸ **AMC**

AMC M.A.901(j) - Aircraft airworthiness review

Suitable accommodation should include:

a. an office with normal office equipment such as desks, telephones, photocopying machines etc, whereby the continuing airworthiness records can be reviewed.

b. a hangar when needed for the physical survey.

The support of personnel appropriately authorised in accordance with DASR 145.A.35 is necessary to assist with depanelling/panelling/functional checks etc.

1. the documentation required by the MAA; and

2. suitable accommodation at the appropriate location for its personnel; and

3. when necessary, the support of personnel appropriately authorised in accordance with DASR 145.A.35;

(k) A MARC cannot be issued nor extended if there is evidence or reason to believe that the aircraft is not airworthy.

M.A.902 - Validity of the MARC

(a) A MARC becomes invalid if:

1. surrendered, suspended or revoked; or

2. the Military Certificate of Airworthiness is suspended or revoked; or

3. the aircraft is removed from the military aircraft register of the MAA; or

4. the (Military) Type Certificate under which the Military Certificate of Airworthiness was issued is suspended or revoked.

(b) Moved to DASR M.A.301(b).

(c) Upon surrender or revocation, the MARC shall be returned to the MAA.

M.A.903 - NOT APPLICABLE

M.A.904 - NOT APPLICABLE

M.A.905 - Findings from an aircraft airworthiness review carried out by the MAA

(a) After receipt of notification of findings by the MAA, the Operating Organisation of the aircraft concerned shall: ▸ **GM**

GM M.A.905(a) - Aircraft findings by the MAA

See GM DASR M.A.716 for further guidance.

1. ensure the aircraft subject to the finding does not fly until such time that the specific non-compliance with DASR M, or other condition as defined in DASR M.A.301(b), has been corrected; and ▸ **AMC**

AMC M.A.905(a)(1) - Aircraft findings by the MAA

The Operating Organisation should establish an effective system of communication with operating locations to ensure the timely suspension of flight operations of the affected aircraft.

2. identify the root cause of the non-compliance; and

3. define a corrective action plan; and ▸ **AMC**

AMC M.A.905(a)(3) - Findings from an aircraft airworthiness review carried out by the MAA

The corrective action plan defined by the Operating Organisation / CAMO should address the effects of the non-compliance, as well as its root cause.

4. demonstrate corrective action implementation to the satisfaction of the MAA within a period required by the MAA.

(b) A level 1 finding is any significant non-compliance with DASR M requirements which lowers the safety standard and hazards seriously the flight safety. ▸ **AMC**

AMC M.A.905(b) - Aircraft findings by the MAA

The Operating Organisation should consider at least the following:

(a) Probable root cause and contributory factors;

(b) Applicability of those to other aircraft under its responsibility;

(c) Other factors that could potentially lead to unsafe condition(s) in those other aircraft.

(c) A level 2 finding is any non-compliance with the DASR M requirements which could lower the safety standard and possibly hazards the flight safety.

(d) The Operating Organisation shall consider the potential for non-compliance in other aircraft under its responsibility and take appropriate action in accordance with DASR M.A.905(a)1.

DASR M Appendixes

Appendix I - Continuing Airworthiness Arrangement

Moved to AMC M.A.201(k).

Appendix II - Authorised Release Certificate DASR Form 1

DASR Form 1 is contained in the DASR Forms book.

Appendix III - Military Airworthiness Review Certificate – DASR Form 15

DASR Forms 15a and 15b are contained in the DASR Forms book.

Appendix IV - Class and Ratings System to be used for the Approval of Maintenance Organisations

NOT APPLICABLE - See DASR 145 Appendix II

Appendix V - Maintenance Organisation Approval referred to in Subpart F

NOT APPLICABLE

Appendix VI - Continuing Airworthiness Management Organisation Approval referred to in Subpart G

DASR Form 14 is contained in the DASR Forms book.

Appendix VII - Complex Maintenance Tasks

NOT APPLICABLE

Appendix VIII - Limited Pilot-Owner Maintenance

NOT APPLICABLE

Appendix I to AMC M.A.302: Content of the Aircraft Maintenance Programme (AMP)

▸ **Appendix I to DASR AMC M.A.302(4)**

Appendix I to DASR AMC M.A.302 - Content of the Aircraft Maintenance Programme (AMP)

1. **General requirements**

1.1 The Aircraft Maintenance Programme (AMP) should contain the following basic information:

1.1.1 The type/model and registration number of the aircraft, engines and, where applicable, auxiliary power units and propellers.

1.1.2 The name and address of the Operating Organisation(s) and the organisation responsible for producing and amending the AMP.

1.1.3 The reference, the date of issue and issue number of the AMP.

1.1.4 A statement signed by the CAMO's Accountable Manager or their nominated representative to the effect that the specified aircraft will be maintained to the AMP and that the AMP will be reviewed and updated as required.

1.1.5 Contents/list of effective pages and their revision status of the document.

1.1.6 Intervals for scheduled maintenance, which reflect the anticipated utilisation of the aircraft. Such utilisation should be stated and include a tolerance. Where utilisation cannot be anticipated, calendar time limits should also be included.

1.1.7 Procedures for the extension of established intervals for scheduled maintenance, where applicable and acceptable to the MAA.

1.1.8 Provision to record the date and reference of approved amendments incorporated in the AMP.

1.1.9 Details of pre-flight tasks that are accomplished by maintenance staff.

1.1.10 The tasks and the periods (intervals/frequencies) at which each part of the aircraft, engines, APU's, propellers, components, accessories, equipment, instruments, electrical and radio apparatus, together with the associated systems and installations should be inspected. This should include the type and degree of inspection required.

1.1.11 The periods at which components should be checked, cleaned, lubricated, replenished, adjusted and tested.

1.1.12 If applicable, details of ageing aircraft system requirements together with any specified sampling programmes.

1.1.13 If applicable, details of specific structural maintenance programmes where issued by the MTC holder / any organisation recognised by the MAA including but not limited to:

a. Damage Tolerance based Structural Maintenance Inspection Programmes and Supplemental Structural Inspection Documents (SSID).

b. Structural maintenance programmes resulting from the SB review performed by the MTC holder.

c. Corrosion Prevention and Control Programmes (CPCP).

d. Repair Evaluation Guidelines, Repair Assessment Programmes or similar documents.

e. Widespread Fatigue Damage.

1.1.14 If applicable, details of CDCCLs together with appropriate procedures.

1.1.15 If applicable, a statement of the limit of validity in terms of total flight cycles / calendar date / flight hours / other service life consumption units for the structural programme in 1.1.13.

1.1.16 The periods at which overhauls and/or replacements by new or overhauled components should be made.

1.1.17 A cross-reference to other documents approved by the MAA which contain the details of maintenance tasks related to mandatory life limitations, Certification Maintenance Requirements (CMR's) and ADs.

NOTE: To prevent inadvertent variations to such tasks or intervals these items should not be included in the main portion of the AMP document, or any planning control system, without specific identification of their mandatory status.

1.1.18 Details of, or cross-reference to, any required reliability programme or statistical methods of continuous surveillance.

1.1.19 A statement that practices and procedures to satisfy the programme should be to the standards specified in the maintenance instructions promulgated by the (Military) Type Certificate (MTC) and (Military) Supplementary Type Certificate (MSTC) holders and any other organisation that publishes such data in accordance with DASR 21. In the case of approved practices and procedures that differ, the statement should refer to them.

1.1.20 Each maintenance task quoted should be defined in a definition section of the AMP.

2. **Aircraft Maintenance Plan Basis**

2.1 An AMP should normally be based upon the MRB report (or equivalent), where applicable, and the MTC holder MPD or the manufacturer's recommended maintenance programme.

The structure and format of these maintenance recommendations may be re-written to better suit the operation and control of the particular AMP.

2.2 For a newly type-certificated aircraft where no previously approved AMP exists, it will be necessary to comprehensively appraise the manufacturer's recommendations (and the MRB report or equivalent where applicable), together with other airworthiness information, in order to produce a realistic AMP for approval.

2.3 For existing aircraft types it is permissible to make comparisons with AMPs previously approved. It should not be assumed that an AMP approved for one Operating Organisation will automatically be approved for another.

Evaluation should be made of the role, aircraft/fleet utilisation, landing rate, configuration, operating environment, equipment fit and, in particular, the experience of the Operating Organisation/CAMO/other Operating Organisations when assessing an existing AMP.

Where the MAA is not satisfied that the proposed AMP can be used as is, the MAA should request appropriate changes such as additional maintenance tasks or reduction of established intervals of scheduled maintenance tasks as necessary.

2.4 Critical Design Configuration Control Limitations (CDCCLs)

If CDCCLs have been identified for the aircraft type by the M(S)TC holder, maintenance instructions should be developed. CDCCLs are characterised by features in an aircraft installation or component that should be retained during modification, change, repair, or scheduled maintenance for the operational life of the aircraft or applicable component or part.

3. Amendments

Amendments (revisions) to an approved AMP should be made to reflect changes in the M(S)TC holder recommendations, modifications, service experience, or as required by the MAA.

4. Permitted variations to maintenance periods

Maintenance periods prescribed by the AMP may only be varied with the approval of the MAA or through a procedure developed in the AMP and approved by the MAA.

5. Periodic review of AMP contents

5.1 Approved AMPs should be subject to periodic review to ensure that they reflect current M(S)TC holder recommendations, revisions to the MRB report (or equivalent) if applicable, mandatory requirements and the maintenance needs of the aircraft.

5.2 A review of the detailed requirements should be carried out at least annually for continued validity in the light of operating experience and any changes to assumed utilisation, configuration, role or operating environment.

6. **Reliability Programmes**

6.1 A reliability programme should be developed for all aircraft (see DASR GM M.A.302(f))

6.1.1 Not Applicable.

6.1.2 Not Applicable.

6.1.3 Not Applicable.

6.2 Applicability for small fleets of aircraft

6.2.1 For the purpose of this paragraph, a small fleet of aircraft is a fleet of less than 6 aircraft of the same type.

6.2.2 The requirement for a reliability programme is irrespective of the fleet size.

6.2.3 Complex reliability programmes could be inappropriate for a small fleet. It is recommended that reliability programmes are tailored to suit the size and complexity of operational usage.

6.2.4 One difficulty with a small fleet of aircraft consists in the amount of available data which can be processed: when this amount is too low, the calculation of alert level is very coarse. Therefore “alert levels” should be used carefully.

6.2.5 When establishing a reliability programme for a small fleet of aircraft, the following should be considered:

a. The programme should focus on areas where a sufficient amount of data is likely to be processed.

b. When the amount of available data is very limited, engineering judgement is then a vital element. In the following examples, careful engineering analysis should be exercised before taking decisions:

- A “0” rate in the statistical calculation may possibly simply reveal that not enough statistical data is available, rather that there is no potential problem.
- When alert levels are used, a single event may have the figures reach the alert level. Engineering judgement is necessary so as to discriminate an artefact from an actual need for a corrective action.
- In making an engineering judgement, contact should be established and comparisons made with other Operating Organisations/CAMOs of the same aircraft type, where possible and relevant. Making comparison with data provided by the manufacturer may also be possible.

6.2.6 In order to obtain accurate reliability data, it should be recommended to pool data and analysis with one or more other Operating Organisations/CAMOs. Paragraph 6.6 of this Appendix specifies under which conditions it is acceptable that Operating Organisations/CAMOs share reliability data.

6.2.7 Notwithstanding the above there are cases where the pooling of data is not possible, eg at the introduction to service of a new aircraft type. In that case, the MAA should impose additional restrictions on the scheduled maintenance task intervals, eg no variations or only changes with MAA approval are possible.

6.3 Engineering Judgement

6.3.1 Engineering judgement is itself inherent to reliability programmes as no interpretation of data is possible without judgement. In approving the maintenance and reliability programmes, the MAA is expected to ensure that the organisation responsible for developing and controlling the AMP has sufficiently qualified personnel with appropriate engineering experience and understanding of reliability concepts.

6.3.2 It follows that failure to provide appropriately qualified personnel for the reliability programme may lead to the MAA rejecting the approval of the reliability programme and therefore the AMP.

6.4 Contracted / Tasked Reliability Programme

6.4.1 The organisation responsible for the development of the AMP may delegate certain functions to a suitably qualified organisation under contract/task, provided this organisation proves to have the appropriate expertise.

6.4.2 These functions are:

a. Developing the aircraft maintenance and reliability programmes,

b. Performing the collection and analysis of the reliability data,

c. Providing reliability reports, and

d. Proposing corrective actions to the organisation responsible for the development of the AMP.

6.4.3 Notwithstanding the above, the decision to implement a corrective action (or the decision to request from the MAA the approval to implement a corrective action) remains the CAMO's prerogative and responsibility. In relation to paragraph 6.4.2(d) above, a decision not to implement a corrective action should be justified and documented.

6.4.4 The arrangement between the organisation responsible for the development of the AMP and the contracted/tasked organisation should be specified in the contract/ task.

6.5 Reliability programme

In preparing the reliability programme details, account should be taken of this paragraph. All associated procedures should be clearly defined.

6.5.1 Objectives

6.5.1.1 A statement should be included summarising as precisely as possible the scope and prime objectives of the reliability programme. As a minimum it should include the following:

a. to recognise the need for corrective action; and

b. to establish what corrective action is needed; and

c. to determine the effectiveness of that action.

6.5.1.2 The extent of the objectives should be directly related to the scope of the reliability programme. Its scope could vary from a component defect monitoring system to an integrated maintenance management programme. The manufacturer's MPDs may give guidance on the objectives and should be consulted in every case.

6.5.1.3 In case of a MSG-3 (or equivalent) based AMP, the reliability programme should provide a monitor that all MSG-3 (or equivalent) related tasks from the AMP are effective and their periodicity is adequate.

6.5.2 Identification of items

The items controlled by the reliability programme should be stated, eg by S1000D Chapters. Where some items, eg aircraft structure, engines, APU, are controlled by separate reliability programmes, eg Aircraft Structural Integrity Program (ASIP) and Propulsion System Integrity Program (PSIP), the associated procedures, eg individual sampling or life development programmes, MTC holder structure sampling programmes) should be cross referenced in the reliability programme.

6.5.3 Terms and definitions

The significant terms and definitions applicable to the reliability programme should be clearly identified. Terms are already defined in MSG-3 (or equivalent) and other relevant documents.

6.5.4 Information sources and collection

6.5.4.1 Sources of information should be listed and procedures for the transmission of information from the sources, together with the procedure for collecting and receiving it, should be detailed.

6.5.4.2 The type of information to be collected should be related to the scope and objectives of the reliability programme and should be such that it enables both an overall broad based assessment of the information to be made and also allow for assessments to be made as to whether any reaction, both to trends and to individual events, is necessary. The following are examples of the normal prime sources:

a. Pilots' reports.

b. Aircraft technical Logs.

c. Aircraft maintenance access terminal / On-board maintenance system readouts.

d. Maintenance worksheets.

e. Workshop reports.

f. Reports on functional checks.

g. Reports on Special Inspections.

h. Stores issues/reports.

i. Air Safety Reports.

j. Reports on technical delays and incidents.

k. Other sources: ETOPS, RVSM, CAT II/III (where applicable).

6.5.4.3 In addition to the normal prime sources of information, due account should be taken of continued airworthiness and safety information promulgated under DASR 21.

6.5.5 Display of information.

Collected information may be displayed graphically or in a tabular format or a combination of both. The rules governing any separation or discarding of information prior to incorporation into these formats should be stated. The format should be such that the identification of trends, specific highlights and related events would be readily apparent.

6.5.5.1 The above display of information should include provisions for "nil returns" to aid the examination of the total information.

6.5.5.2 Where "standards" or "alert levels" are included in the reliability programme, the display of information should be orientated accordingly.

6.5.6 Examination, analysis and interpretation of the information.

The method employed for examining, analysing and interpreting the reliability programme information should be explained.

6.5.6.1 Examination.

Methods of examination of information may be varied according to the content and quantity of information of individual reliability programmes. These can range from examination of the initial indication of performance variations to formalised detailed procedures at specific periods, and the methods should be fully described in the reliability programme documentation.

6.5.6.2 Analysis and Interpretation.

The procedures for analysis and interpretation of information should be such as to enable the performance of the items controlled by the reliability programme to be measured; they should also facilitate recognition, diagnosis and recording of significant problems. The whole process should be such as to enable a critical assessment to be made of the effectiveness of the reliability programme as a total activity. Such a process may involve:

a. Comparisons of operational reliability with established or allocated standards (in the initial period these could be obtained from in-service experience of similar equipment or aircraft types).

b. Analysis and interpretation of trends.

c. The evaluation of repetitive defects.

d. Confidence testing of expected and achieved results.

e. Statistical analysis of reliability data.

f. Reliability predictions.

g. Other methods of assessment.

6.5.6.3 The range and depth of engineering analysis and interpretation should be related to the particular reliability programme and to the facilities available. The following, at least, should be taken into account:

a. Flight defects and reductions in operational reliability.

b. Defects found during line maintenance and those found during base maintenance.

c. Deterioration observed during routine maintenance.

d. Workshop and overhaul facility findings.

e. Modification evaluations.

f. Sampling programmes.

g. The adequacy of maintenance equipment and publications.

h. The effectiveness of maintenance procedures.

i. Staff training.

j. Service Bulletins (or national equivalent), Technical Instructions, etc.

6.5.6.4 Where there is reliance upon contracted/tasked maintenance and/or overhaul facilities as an information input to the reliability programme, the arrangements for availability and continuity of such information should be established and details should be included in the contract/tasking document.

6.5.7 Corrective Actions.

6.5.7.1 The procedures and time scales both for implementing corrective actions and for monitoring the effectiveness of corrective actions should be fully described. Corrective actions shall correct any reduction in reliability revealed by the reliability programme and could take the form of one or more of the following:

a. Changes to maintenance, operational procedures or techniques.

b. Maintenance changes involving inspection frequency and content, function checks, overhaul requirements and time limits, which will require amendment of the scheduled maintenance periods or tasks in the AMP. This may include the extension or reduction of task intervals, or the addition, modification or deletion of tasks.

c. Amendments to approved manuals, eg AMM, crew manual.

d. Initiation of modifications.

e. Special inspections or ‘fleet campaigns’.

f. Spares provisioning.

g. Staff training.

h. Manpower and equipment planning.

NOTE: Some of the above corrective actions may need the MAA’s approval before implementation.

6.5.7.2 The procedures for making changes to the AMP should be described. The associated documentation should include a planned completion date for each corrective action, where applicable.

6.5.8 Organisational Responsibilities.

The organisational structure and the department responsible for the administration of the reliability programme should be stated. The chains of responsibility for individuals and departments (Engineering, Production, Quality, Operations etc.) in respect of the reliability programme, together with the information and functions of any reliability programme control committees (reliability group), should be defined. Participation of the MAA should be stated.

6.5.9 Presentation of information to the MAA.

The following information should be submitted to the MAA for approval as part of the reliability programme:

a. The format and content of routine reports.

b. The time scales for the production of reports together with their distribution.

c. The format and content of reports supporting requests for increases in periods between maintenance (extension) and for amendments to the AMP. These reports should contain sufficient detailed information to enable the MAA to make its own evaluation where necessary.

6.5.10 Evaluation and review

Each reliability programme should describe the procedures and individual responsibilities in respect of continuous monitoring of the effectiveness of the AMP as a whole. The time periods and the procedures for both routine and non- routine reviews of maintenance control should be detailed (progressive, monthly, quarterly, or annual reviews, procedures following reliability “standards” or “alert levels” being exceeded, etc.).

6.5.10.1 Each reliability programme should contain procedures for monitoring and, as necessary, revising the reliability “standards” or “alert levels”. The organisational responsibilities for monitoring and revising the “standards” should be specified together with associated time scales.

6.5.10.2 Although not exclusive, the following list gives guidance on the criteria to be taken into account during the review.

a. Utilisation (high/low/operational environment).

b. Fleet commonality.

c. Alert Level adjustment criteria.

d. Adequacy of data.

e. Reliability procedure audit.

f. Staff training.

g. Operational and maintenance procedures.

6.5.11 Approval of AMP amendments

The MAA may authorise the organisation responsible for the development and control of the AMP to implement changes to the AMP arising from the reliability programme results prior to their formal approval by the MAA, when it is satisfied that;

a. the reliability programme monitors the content of the AMP in a comprehensive manner; and

b. the procedures associated with the functioning of the "Reliability Group" provide the assurance that appropriate control is exercised over the internal validation of such changes.

6.5.12 Performance Standards

The reliability programme should include a performance standard expressed in mathematical terms for each item covered by the programme that defines the acceptable level of reliability for the item.

6.6 Pooling Arrangements

6.6.1 In some cases, in order that sufficient data may be analysed it may be desirable to 'pool' data: ie collate data from a number of Operating Organisations of the same type of aircraft. For the analysis to be valid, the aircraft concerned, mode of operation, and maintenance procedures applied should be substantially the same: variations in utilisation between two Operating Organisations may, more than anything, fundamentally corrupt the analysis. Although not exhaustive, the following list gives guidance on the primary factors which need to be taken into account.

a. Certification factors, such as: aircraft MTC data sheet compliance (variant)/ modification status, including SB (or national equivalent) compliance.

b. Operational Factors, such as: operational environment/utilisation, eg low/high/ operational environment, respective fleet size operating rules applicable, eg ETOPS/RVSM/All Weather, operating procedures/MEL/CDL and MEL/CDL utilisation.

c. Maintenance factors, such as: aircraft age maintenance procedures; maintenance standards applicable; lubrication procedures and lubrication programme; MPD revision or extensions applied or AMP applicable.

6.6.2 Although it may not be necessary for all of the above to be completely common, it is necessary for a substantial amount of commonality to exist. The decision on whether pooling data is appropriate should be taken by the MAA on a case by case basis.

6.6.3 In case of a short term lease agreement (less than 6 month) more flexibility against the paragraph 6.6.1 criteria may be granted by the MAA, so as to allow the Operating Organisation to operate the aircraft under the same programme during the lease agreement effectivity.

6.6.4 Changes by any one of the Operating Organisations to the paragraph 6.6.1 factors will require re-assessment in order to determine whether or not the pooling benefits can be maintained. Where an organisation responsible for the development and control of an AMP wishes to pool data in this way, the approval of the MAA should be sought prior to any formal agreement being signed between the pooling organisations.

6.6.5 Paragraph 6.6 is intended to address the pooling of data directly between Operating Organisations. It is also acceptable that the organisation responsible for the production and control of an AMP participates in a reliability programme managed by the MTC holder, when the MAA is satisfied that the MTC holder manages a reliability programme which complies with the intent of this paragraph.

Appendix II to AMC M.A.201(h)1:Contracting/tasking of continuing airworthiness management tasks

Appendix II to DASR AMC M.A.201(h)1 .

Appendix II to AMC M.A.201(h)(1) - Contracting/tasking of continuing airworthiness management tasks

1. CONTRACTED/TASKED CONTINUING AIRWORTHINESS MANAGEMENT ACTIVITIES

1.1 NOT APPLICABLE.

1.2 The CAMO should conduct a pre-contract audit to establish that the contracted/tasked organisation can achieve the standards required by DASR M.A. Subpart G in connection with those activities to be contracted/tasked.

1.3 The CAMO should ensure that the contracted/tasked organisation has sufficient qualified personnel who are trained and competent in the activities to be contracted/tasked. In assessing the adequacy of personnel resources the CAMO should consider the particular needs of those activities that are to be contracted/tasked, while taking into account the contracted/tasked organisation's existing commitments.

1.4 To be appropriately approved to contract/task continuing airworthiness management activities the CAMO should have procedures for the management control of these arrangements. The CAME should contain relevant procedures to reflect the CAMO's control of those arrangements made with the contracted/tasked organisation(s).

1.5 Contracted/tasked continuing airworthiness management activities should be addressed in a contract/formal tasking document between the CAMO and the contracted/tasked organisation. The contract/formal tasking document should also specify that the contracted/ tasked organisation is responsible for informing the CAMO who is, in turn, responsible for notifying the MAA, of any subsequent changes that affect their ability to support the contract/ formal tasking document.

1.6 Contracted/tasked organisations should use procedures which set out the manner by which the organisation fulfils its responsibility to those contracted/tasked activities. Such procedures may be developed by either the contracted/tasked organisation or the CAMO.

1.7 Where the contracted/tasked organisation develops its own procedures, these should be compatible with the CAME and the terms of the contract/formal tasking document. These should be accepted by the MAA as extended procedures of the CAMO and as such should be cross-referenced from the CAME. One current copy of the contracted/tasked organisation's relevant procedures should be kept by the CAMO and should be accessible to the MAA when needed.

NOTE: Should any conflict arise between the contracted/tasked organisation's procedures and those of the CAMO then the policy and procedures detailed in the CAME will prevail.

1.8 The contract/formal tasking document should also specify that the contracted/tasked organisation's procedures may only be amended with the agreement of the CAMO. The CAMO should ensure that these amendments are compatible with their CAME and are in compliance with DASR M.A. Subpart G.

The CAMO should nominate who will be responsible for continued monitoring and acceptance of the contracted/tasked organisation's procedures and their amendments. The controls used to fulfil this function should be clearly set out in the amendment section of the CAME detailing the level of CAMO involvement.

1.9 Whenever any elements of continuing airworthiness management activities are contracted/tasked the CAMO's personnel should have access to all relevant data in order to fulfil their responsibilities.

NOTE: The CAMO retains authority to override any recommendation of the contracted/tasked organisation where necessary, for the continuing airworthiness of the aircraft for which they have responsibility.

1.10 The CAMO should ensure that the contracted/tasked organisation continues to have qualified technical expertise and sufficient resources to perform the contracted/tasked activities while in compliance with the relevant procedures. Failure to do so may invalidate the approval of the CAMO's continuing airworthiness management system.

1.11 The contract/formal tasking document should provide for MAA monitoring.

1.12 The contract/formal tasking document should address the respective responsibilities to ensure that any findings arising from MAA monitoring will be closed to the satisfaction of the MAA.

2. ACCOMPLISHMENT

This paragraph describes topics which may be applicable for contract/tasking activities.

2.1 Scope of work

The type of aircraft and their military registrations, engine types and/or components subject to the contract/tasking should be specified.

2.2 AMP development and amendment (where applicable - DASR M.A.708(b)2 refers)

The CAMO may contract/task the preparation of the draft AMP and any subsequent amendments. However, the CAMO remains responsible for assessing that the draft proposals meet their needs and obtaining MAA approval; the relevant procedures should specify these responsibilities. The contract/tasking should also stipulate that any data necessary to substantiate the approval of the initial AMP or an amendment to the AMP should be provided for CAMO and/or MAA agreement upon request.

2.3 AMP effectiveness and reliability (where applicable - DASR M.A.708(b)2 refers)

The CAMO should have in place a system to monitor and assess the effectiveness of the AMP based on maintenance and operational experience. The collection of data and initial assessment may be made by the contracted/tasked organisation; the required actions are to be endorsed by the CAMO.

Where reliability monitoring is used to establish AMP effectiveness, this may be provided by the contracted/tasked organisation and should be specified in the relevant procedures. Reference should be made to the CAMO's AMP and reliability programme. Participation of the CAMO's personnel in reliability meetings with the contracted/tasked organisation should also be specified.

In providing reliability data the contracted/tasked organisation is limited to working with primary data/documents provided by the CAMO or data provided by the Operating Organisation's DASR 145 AMO(s) from which the reports are derived. The pooling of reliability data from other CAMOs/Operating Organisations/DASR 145 AMOs is permitted if accepted by the MAA.

2.4 Permitted variations to the AMP (where applicable - DASR M.A.708(b)2 refers)

The reasons and justification for any proposed variation to scheduled maintenance may be prepared by the contracted/tasked organisation. The proposed variation should be reviewed by the CAMO and accepted or rejected as appropriate. The means by which CAMO acceptance is given should be specified in the relevant CAME procedures. When these proposed variations go outside the limits detailed in the approved data, the CAMO is required to obtain approval by the MAA.

2.5 Scheduled maintenance

Where the contracted/tasked organisation plans and defines maintenance checks or inspections in accordance with the AMP, the required liaison with the CAMO, including feedback, should be defined.

The planning control functions and required documentation should be specified in the appropriate supporting CAME procedures. These procedures should typically set out the

CAMO's level of involvement in each type of check. This will normally involve the CAMO assessing and agreeing to a work specification on a case-by- case basis for base maintenance checks. For routine line maintenance checks this may be controlled on a day-to-day basis by the contracted/tasked organisation subject to appropriate liaison and CAMO controls to ensure timely compliance. This typically may include, but is not limited to:

- Applicable work package, including job cards,

- Scheduled component removal list,

- ADs to be incorporated,

- Modifications to be embodied

The associated procedures should ensure that the CAMO is advised in a timely manner on the accomplishment of such activities.

2.6 Quality monitoring

The CAMO's quality system should monitor the adequacy of the performance of the contracted/tasked continuing airworthiness management activities for compliance with the contract/formal tasking document and DASR M.A. Subpart G. The terms of the contract/formal tasking document should therefore include a provision allowing the CAMO to perform a quality surveillance (including audits) upon the contracted/tasked organisation. The aim of the surveillance is primarily to investigate and judge the effectiveness of those contracted/tasked activities and thereby to ensure compliance with DASR M.A. Subpart G and the contract/formal tasking document. Audit reports may be subject to review when requested by the MAA.

2.7 Access by the MAA

The contract/formal tasking document should specify that the contracted/tasked organisation should grant access to the MAA when requested to determine continued compliance with the CAMO's DASR M.A. Subpart G approval.

2.8 Maintenance data

The approved maintenance data used for the purpose of the contract/tasking should be specified, together with the organisations responsible for providing such data. The CAMO should ensure such data, including revisions, is readily available to the contracted/tasked organisation who may be required to assess such data. The CAMO should establish a 'fast track' means of ensuring that urgent data is transmitted to the contracted/tasked organisation in a timely manner. Maintenance data may include, but is not necessarily limited to:

- AMP,

- ADs,

- Service Bulletins (or national equivalent),

- Major repairs/modification data,

- Aircraft Maintenance Manual,

- Engine overhaul manual,

- Aircraft Illustrated Parts Catalogue,

- Wiring diagrams,

- Trouble shooting manual,

2.9 Airworthiness directives

While the various aspects of AD assessment, planning and follow-up may be accomplished by the contracted/tasked organisation, embodiment is performed by an DASR 145 AMO. The CAMO is responsible for ensuring timely embodiment of applicable ADs and is to be provided with notification of compliance. It therefore follows that the CAMO should have clear policies and procedures on AD embodiment which will ensure that the CAMO finds the contracted/ tasked organisation's proposed means of compliance acceptable.

The policies and procedures should specify:

- What information, eg AD publications, continuing airworthiness records, flight hours/cycles, the contracted/tasked organisation needs from the CAMO. It is the responsibility of the contracted/tasked organisation to request from the CAMO any additional information that may be felt necessary.

- What information, eg AD planning listing, detailed engineering order, the CAMO needs from the contracted/tasked organisation in order to ensure timely compliance with ADs.

To fulfil their above responsibility, CAMOs should ensure that they are in receipt of current mandatory continued airworthiness information for the aircraft and equipment that they operate.

2.10 Service Bulletin (or national equivalent)/modifications

The contracted/tasked organisation may be required to review and make recommendations on the embodiment of an SB (or national equivalent) and other associated non-mandatory material based on a clear CAMO policy. This should be specified in the contract/formal tasking document.

2.11 Service life limit controls & component control/removal forecast.

Where the contracted/tasked organisation performs planning activities, it should be specified that the contracted/tasked organisation should be in receipt of the current flight time and/or flight cycles and/or landings and/or calendar time, and/or any other approved service life consumption units as applicable, at a frequency to be specified in the contract/formal tasking document. The frequency should be such that it allows the organisation to properly perform the contracted/tasked planning functions. It therefore follows that there will need to be adequate liaison between the CAMO, the DASR 145 AMO(s) and the contracted/tasked organisation.

Additionally, the contract/formal tasking document should specify how the CAMO will be in possession of all current flight cycles, flight hours, etc. in order that the CAMO may assure the timely accomplishment of the required maintenance.

2.12 Health monitoring

If the CAMO contracts/tasks health monitoring activities (for example on-wing engine health monitoring), the contracted/tasked organisation should be in receipt of all the relevant information to perform these activities, including any parameter reading deemed necessary to be supplied by the CAMO for this control. The contract/formal tasking document should also specify what kind of feedback information (such as engine limitation, appropriate technical advice, etc.) the contracted/tasked organisation should provide to the CAMO.

2.13 Defect control

Where the CAMO has contracted/tasked the day-to-day control of aircraft technical log deferred defects this should be specified in the contract/formal tasking document and should be adequately described in the appropriate procedures. The CAMO's MEL/CDL provides the basis for establishing which defects may be deferred and associated limits. The procedures should also define the responsibilities and actions to be taken for defects such as 'Aircraft On Ground' situations, repetitive defects, and damage beyond the MTC holder's limits.

For all other defects identified during maintenance, the information should be brought to the attention of the CAMO who, dependent upon the procedural authority granted by the MAA, may determine that some defects can be deferred. Therefore, adequate liaison between the CAMO, the contracted/tasked organisation and the DASR 145 AMO should be ensured.

The contracted/tasked organisation should make a positive assessment of potential deferred defects and consider potential hazards arising from the cumulative effect of any combination of defects. The contracted organisation should liaise with the CAMO to gain their agreement following this assessment.

Deferment of MEL/CDL allowable defects/deviations can be accomplished by an DASR 145 AMO in compliance with the relevant aircraft technical log procedures; they are subject to acceptance by the aircraft commander.

2.14 Mandatory occurrence reporting

All incidents and occurrences that fall within the reporting criteria defined in DASR M.A.202 and DASR 145.A.60 should be reported as required. The CAMO should ensure adequate liaison exists with the contracted/tasked organisation and the DASR 145 AMO.

2.15 Continuing airworthiness records

These may be maintained and held by the contracted/tasked organisation on behalf of the CAMO who remains responsible for the control of the records. However, the CAMO should be provided with the current status of AD compliance and service life limited components in accordance with agreed procedures. The CAMO should also be provided with unrestricted and timely access to original records as and when needed. On-line access to the appropriate information systems is acceptable.

The record keeping requirements of DASR M should be satisfied. Access to the records by duly authorised members of the MAA should be arranged upon request.

2.16 Maintenance check flight procedures

Maintenance check flights are carried out under the control of the Operating Organisation. Maintenance check flight requirements from the contracted/tasked organisation or the DASR 145 AMO should be agreed by the Operating Organisation.

2.17 Communication between the CAMO and contracted/tasked organisation

2.17.1 To exercise its airworthiness responsibility the CAMO needs to be in receipt of all relevant reports and relevant maintenance data. The contract/formal tasking document should specify what information should be provided and when.

2.17.2 Meetings provide one important corner stone whereby the CAMO can exercise part of its responsibility for ensuring the airworthiness of the operated aircraft for which it is responsible. The meetings should be used to establish good communications between the CAMO, the contracted/tasked organisation and the DASR 145 AMO. The terms of the contract/ formal tasking document should include, whenever appropriate, the provision for a certain number of meetings to be held between involved parties. Details of the types of liaison meetings and associated Terms of Reference of each meeting should be documented. The meetings may include but are not limited to all or a combination of:

a – Contract/Tasking review

Before the contract/formal tasking document comes into force, it is very important that the technical personnel of both parties that are involved in the application of the contract/tasking meet in order to be sure that every point leads to a common understanding of the duties of both parties.

b – Work scope planning meeting

Work scope planning meetings may be organised so that the activities to be performed may be commonly agreed.

c – Technical meeting

Scheduled meetings should be organised in order to review on a regular basis and agree actions on technical matters such as ADs, SBs (or national equivalent), future modifications, major defects found during maintenance facility visits, reliability, etc.

d – Quality meeting

Quality meetings should be organised in order to examine matters raised by the CAMO's quality surveillance and the MAA's monitoring activity and to agree upon necessary corrective actions.

e – Reliability meeting

When a reliability programme exists, the contract/formal tasking document should specify the CAMO's and DASR 145 AMO's respective involvement in that programme, including the participation at reliability meetings. Provision to enable MAA participation in these meetings should also be provided.

Appendix III to GM M.B.303(b): Key Risk Elements

NOT APPLICABLE

Appendix IV to AMC M.A.604

NOT APPLICABLE

Appendix V to AMC M.A.704: Continuing Airworthiness Management Exposition (CAME)

Moved to AMC M.A.704

Appendix VI to AMC M.B.602(f)

NOT APPLICABLE

Appendix VII to AMC M.B.702(f)

NOT APPLICABLE

Appendix VIII to AMC M.A.616

NOT APPLICABLE

Appendix IX to AMC M.A.702

NOT APPLICABLE

Appendix X to AMC M.A.702(a)

NOT APPLICABLE

Appendix XI to DASR AMC M.A.708(c) - Contracted/Tasked Maintenance

▸ **Appendix XI to DASR AMC M.A.708(c)**

Appendix XI to AMC M.A.708(c) - Contracted/tasked maintenance

1. Maintenance contracts/tasking

The following paragraphs are not intended to provide a standard maintenance contract/tasking document but to provide a list of the main points that should be addressed, when applicable, in a maintenance contract/tasking between an Operating Organisation/CAMO and an DASR 145 AMO. The following paragraphs only address technical matters and exclude matters such as costs, delay, warranty, etc.

When maintenance is contracted/tasked to more than one DASR 145 AMO (for example aircraft base maintenance to X and engine maintenance to Y), attention should be paid to the consistency of the different maintenance contracts/taskings.

A maintenance contract/tasking is not normally intended to provide appropriate detailed work instruction to the personnel (and is not normally distributed as such). Accordingly there should be established organisational responsibility, procedures and routines in the CAMO and DASR 145 AMOs to take care of these functions in a satisfactory way such that any person involved is informed about his/her responsibility and the procedures which apply. These procedures and routines can be included/appended to the CAME and the DASR 145 AMO's MOE or be located in separate procedures. Procedures and routines should always reflect the conditions of the contract/tasking.

NOTE: In the case where an Operating Organisation contracts/tasks an DASR 145 AMO through a CAMO (in accordance with DASR M.A.201(h)2 and DASR M.A.201(k)), it is important that all organisations fully understand their responsibilities for the continuing airworthiness of the aircraft operated. The text in this Appendix should be modified accordingly to ensure that the allocation of responsibilities is clearly detailed.

2. Aircraft/Engine maintenance

The following subparagraphs may be adapted to a maintenance contract/tasking that applies to aircraft base maintenance, aircraft line maintenance and engine maintenance.

Aircraft maintenance also includes the maintenance of the engines and APU while they are installed on the aircraft.

2.1. Scope of work

The type of maintenance to be performed by the DASR 145 AMO should be specified unambiguously. In case of line and/or base maintenance, the contract/tasking should specify the aircraft type and include the aircrafts' registrations.

In case of engine maintenance, the contract/tasking should specify the engine type.

2.2. Locations identified for the performance of maintenance / Certificates held

The place(s) where base, line or engine maintenance, as applicable, will be performed should be specified. The approval certificate held by the DASR 145 AMO at the place(s) where the maintenance will be performed should be referred to in the contract/tasking. If necessary the contract/tasking may address the possibility of performing maintenance at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance.

2.3. DASR 145 AMO contracting/tasking with approved/non-approved organisations

The maintenance contract/tasking should specify under which conditions the DASR 145 AMO may contract tasks to a third party (whether this third party is DASR 145 approved or not). At least the contract/tasking should make reference to DASR 145.A.75. Additional guidance is provided by AMC DASR 145.A.75. In addition the CAMO may require the DASR 145 AMO to obtain the Operating Organisation's agreement before contracting to a third party. Access should be given to the Operating Organisation/CAMO to any information (especially the quality monitoring information) about the DASR 145 AMO's contractors involved in the contract/ tasking.

2.4. Aircraft Maintenance Programme

The AMP under which the maintenance has to be performed should be specified.

2.5. Quality monitoring

The terms of the contract/tasking should include a provision allowing the CAMO to perform a quality surveillance (including audits) upon the DASR 145 AMO. The maintenance contract/ tasking should specify how the results of the quality surveillance are taken into account by the DASR 145 AMO (see also paragraph 2.22. 'Meetings').

2.6. MAA involvement

TO BE ADDED LATER IF REQUIRED.

2.7. Airworthiness data

The airworthiness data used for the purpose of this contract/tasking should be specified. This may include, but not be limited to:

- AMP,
- Airworthiness Directives,
- operational directives with a continuing airworthiness impact,
- Service Bulletins (or national equivalent),
- major repairs/modification data,
- Aircraft Maintenance Manual,
- aircraft Illustrated Parts Catalogue,
- wiring diagrams,
- trouble shooting manual,
- Minimum Equipment List (if applicable),
- Configuration Deviation List (if applicable)
- operators manual,
- Aircraft Flight Manual,

- engine maintenance manual,

- engine overhaul manual.

2.8. Incoming Conditions

The contract/tasking should specify in which condition the Operating Organisation should send the aircraft to the DASR 145 AMO. For larger maintenance activities, it may be beneficial that a work scope planning meeting be organised so that the tasks to be performed may be commonly agreed (see also paragraph 2.23: 'Meetings').

2.9. Airworthiness Directives and Service Bulletin/Modifications

The contract/tasking should specify what information the CAMO is responsible to provide to the DASR 145 AMO, such as the due date of the Airworthiness Directives (ADs), the selected means of compliance, the decision to embody Service Bulletins (SBs) or modifications, etc. In addition, the type of information the CAMO will need in return to complete the control of ADs and modification status should be specified.

2.10. Hours and Cycles control

Hours and cycles control is the responsibility of the CAMO, but there may be cases where the DASR 145 AMO should receive the current flight hours and cycles on a regular basis so that it may update the records for its own planning functions (see also paragraph 2.22: 'Exchange of information').

2.11. Service life-limited components

Service life-limited components control is the responsibility of the CAMO.

The DASR 145 AMO will have to provide the CAMO with all the necessary information about the service life-limited components removal/installation so that the CAMO may update its records (see also paragraph 2.22 'Exchange of information').

2.12. Supply of parts

The contract/tasking should specify whether a particular type of material or component is supplied by the Operating Organisation/CAMO or by the contracted/tasked DASR 145 AMO, which type of component is pooled, etc. The contract/tasking document should clearly state that it is the DASR 145 AMO's responsibility to be satisfied that the component in question meets the approved data/standard and to ensure that the aircraft component is in a satisfactory condition for installation. The DASR 145 AMO should not 'blindly' accept whatever is supplied by the Operating Organisation/CAMO. Additional AMC and GM is detailed for DASR 145.A.42 'Acceptance of components'.

2.13. Pooled parts at line stations

If applicable the contract/tasking should specify how the subject of pooled parts at line stations should be addressed.

2.14. Scheduled maintenance

When planning scheduled maintenance, the support documentation to be given to the DASR 145 AMO should be specified. This may include, but not be limited to:

- applicable work package, including job cards;

- scheduled component removal list;

- modifications to be incorporated.

When the DASR 145 AMO determines, for any reason, to defer a maintenance task, it has to be formally agreed with the CAMO. If the deferment goes beyond an approved limit, see paragraph 2.17: 'Deviation from the maintenance schedule'. This should be addressed, where applicable, in the maintenance contract/tasking document.

2.15. Unscheduled maintenance/Defect rectification

The contract/tasking should specify to which level the DASR 145 AMO may rectify a defect without reference to the Operating Organisation/CAMO. As a minimum, the acceptance and incorporation of major repairs should be addressed. The deferment of any defect rectification should be submitted to the CAMO and, if applicable, to the MAA.

2.16. Deferred maintenance

See paragraphs 2.14 and 2.15 above and AMC DASR 145.A.50(e). In addition, for aircraft line and base maintenance the use of the MEL and CDL (if applicable) or deferred defect process at AMC M.A.301(a)2 should be addressed.

2.17. Deviation from the maintenance schedule

Deviations have to be granted by the CAMO in accordance with a procedure approved by the MAA. The contract/tasking should specify the support the DASR 145 AMO may provide to the CAMO in order to substantiate a request for deviation from the maintenance schedule.

2.18. Maintenance check flight

If a maintenance check flight is required after aircraft maintenance, it should be performed in accordance with the procedures established in the CAME.

2.19 Engine Test

The contract/tasking should specify the acceptability criterion and whether a representative of the Operating Organisation/CAMO should witness an engine undergoing test.

2.20 Release to service documentation

The release to service has to be performed by the DASR 145 AMO in accordance with its MOE procedures. The contract/tasking should, however, specify which aircraft documentation should be used (e.g. Aircraft technical log,) and the documentation the DASR 145 AMO should provide to the CAMO upon delivery of the aircraft. This may include, but not limited to:

- Certificate of Release to Service — mandatory,

- maintenance check flight report,

- list of modifications embodied,

- list of repairs,

- list of ADs incorporated,

- engine test report.

2.21. Maintenance recording

The Operating Organisation/CAMO may contract/task the DASR 145 AMO to retain some of the maintenance records required by DASR M.A. Subpart C. It should be ensured that every requirement of DASR M.A. Subpart C is fulfilled by either the Operating Organisation/CAMO or the DASR 145 AMO. In such a case, free and quick access to the above-mentioned records should be given by the DASR 145 AMO to the Operating Organisation/CAMO.

2.22. Exchange of information

Each time exchange of information between the Operating Organisation/CAMO and the DASR 145 AMO is necessary, the contract/tasking should specify what information should be provided and when (i.e. on what occasion or at what frequency), how, by whom and to whom it has to be transmitted.

2.23. Meetings

To ensure that a good communication system exists between the Operating Organisation/ CAMO and the DASR 145 AMO, the terms of the maintenance contract/tasking should include the provision for a certain number of meetings to be held between all parties.

2.23.1. Contract/tasking review

Before the contract/tasking is applicable, it is very important for the technical personnel of all parties that are involved in the application of the contract/tasking to meet, in order to be sure that every point leads to a common understanding of the duties of all parties.

2.23.2. Work scope planning meeting

Work scope planning meetings may be organised so that the tasks to be performed may be commonly agreed.

2.23.3. Technical meeting

Scheduled meetings may be organised in order to review on a regular basis technical matters such as ADs, SBs (or national equivalent), future modifications, major defects found during maintenance check, reliability, etc.

2.23.4. Quality meeting

Quality meetings may be organised in order to examine matters raised by the CAMO's DASR M.A.712 quality surveillance and to agree upon necessary corrective actions.

2.23.5. Reliability meeting

When a reliability programme exists (DASR M.A.302(f) refers), the contract/tasking should specify the CAMO's and the DASR 145 AMO's respective involvement in that programme, including the participation in reliability meetings.

Appendix XII to AMC to M.A.706(f): Fuel Tank Safety Training

This Appendix is contained within Appendix IV to DASR AMC 145.A.30(e)

Appendix XIII to DASR AMC M.A.712(f)

NOT APPLICABLE

Appendix XIV to DASR AMC M.A.302(d)(3) Critical maintenance tasks and error capture methods (AUS)

▸ Appendix XIV to AMC M.A.302(d)(3)

Appendix XIV to AMC M.A.302(d)(3) - Critical maintenance tasks and error capture methods (AUS)

CRITICAL MAINTENANCE TASK IDENTIFICATION AND ERROR CAPTURE METHOD DETERMINATION

1. Error capture methods are developed as a result of a risk analysis and mitigation process tailored to detect or prevent maintenance errors from occurring prior to maintenance release. The methodology for identifying critical maintenance tasks and related error capture methods encompasses the following steps:
   a. identification of Critical Maintenance Task (CMT) Candidates
   b. determination of Inherent Maintenance Error Risk Level
   c. identification of Error Capture Methods, and
   d. determination of Residual Maintenance Error Risk Level.
2. Figure 1 shows the error capture method determination process.

Identification of Critical Maintenance Tasks Candidates

3. To identify tasks where the consequence of maintenance error could conceivably result in directly endangering flight safety, it is necessary to assess all Corrective Maintenance (CM) tasks which involve the following assembly or disturbance actions:
   a. installation,
   b. replacement,
   c. adjustment,

d. repair,

e. modification,

f. testing, or

g. reconnection.

4. Any Preventive Maintenance (PM) task identified through the Reliability Centred Maintenance (RCM) process as Safety (MSG-3 disposition 5) or Safety-hidden (MSG-3 disposition 8) is addressing safety-critical functional failure modes. Where the incorrect performance of such PM tasks could directly endanger flight safety, these tasks should be considered as critical maintenance tasks and will require assessment for error capture method(s). If task criticality is not available, care should be taken in defaulting to the applicable item criticality as not all tasks on a safety critical item will be addressing a safety critical failure mode. Each PM task needs to be assessed on its merits with respect to failure consequences of the failure mode the task is addressing.

5. Due to the highly integrated nature of modern aircraft, critical maintenance task candidates can be found in any system, so the assessment must not be limited to the obvious choices of flight controls, engine controls, undercarriage, hydraulic and fuel systems, brake and steering control, installed airborne oxygen, aircrew escape and explosive ordinance

6. A PM task often references a CM task or procedure in the OEM or derivative maintenance manual so error capture methods associated with a CM task identified as a critical maintenance task are equally applicable to the PM task. Where a PM task incorporates tasks or procedural content other than CM tasks, further assessment is required.

Determination of Inherent Maintenance Error Risk Level

7. The determination of inherent risk level requires the identification the consequences of conceivable maintenance error induced functional loss and an assessment of likelihood of committing maintenance or a maintenance error going undetected.

8. **Consequences**. This step requires an assessment of the potential functional loss caused by conceivable maintenance error on a specific task and determine whether this functional loss could directly endanger flight safety. If it does, this task is considered to be a critical maintenance task and further assessment for error capture methods is required

9. **Likelihood**. Where the functional loss as a result of maintenance error could directly endanger flight safety, that maintenance error must be assumed to occur, regardless competence of maintenance personnel. An appropriate likelihood rating should be assigned considering additional factors such as task complexity and accessibility which can increase the likelihood of maintenance error occurring.

10. Example Consequences and Likelihood categories/ratings can be found in the Defence Aviation Safety Manual and 7001.038 - Maintenance Requirements Determination Manual.

Identification of Error Capture Methods

11. The identification of error capture methods for critical maintenance tasks focuses on whether the selected error capture methods reduces the likelihood of a maintenance error directly endangering flight safety, to an acceptable level.

12. The application of error capture methods should result in a reduction of the maintenance error likelihood by providing error prevention or capture opportunities performed prior to maintenance release that act as barriers to prevent maintenance error(s) directly endangering flight safety.

13. Where an error capture method is only partially effective as a barrier, a combination of error capture methods may be required to achieve the acceptable reduction in likelihood.

14. The error capture methods, or risk controls and mitigations, are ranked hierarchically based on their individual effectiveness:

    a. design and testing barriers;

    b. locking methods, some of which may require physical verification;

    c. testing methods (primary error detection); and

    d. independent inspections.

15. Design and testing barriers are physical design features or system architectures that can prevent or detect a maintenance error. Design and test barriers are maintenance error specific. A keyed cannon plug may be a barrier to incorrect orientation but not failure to insufficient locking or electrical connection. Examples of valid design and testing barriers includes but is not limited to:

    a. Keyed cannon plugs;

    b. Spline lock fluid couplings with non-return valves; and

    c. Functional testing that provides autonomous and immediate indication of pass or fail without ambiguity; ie fault conditions are continuously monitored and become evident on the application of power.

16. Locking methods are a type of engineering control to address maintenance errors relating to the failure to secure the attachment of an item or part. Examples of valid locking methods includes but is not limited to:

    a. Ratchet/bayonet plugs,

    b. Split pins/cotter pins,

    c. Lock wire,

    d. Lock nuts,

e. Lock washers, and

f. Retaining rings.

17. Testing methods are functional tests referenced in maintenance documentation that provide error detection opportunities before task sign-off and/or CRS. The effectiveness of a testing method as a barrier is affected by factors such as whether the test is autonomous, requires human intervention (initiation), is affected by failures of indications and displays, are continuous or intermittently run, or the test procedure itself is affected by human factors such as interpreting indications, counting drops etc. Examples of valid testing methods includes but is not limited to:

a. functional tests that generate system/error fault indications,

b. functional tests that validate correct sense, operating limits or conformance with design,

c. physical leak checks,

d. Initiated Built-in Test (IBIT),

e. Periodic Built-in Test (PBIT), ie fault indication not immediately evident.

18. Independent Inspections (II) are a discrete activity utilised to verify conformance of the maintenance task or component against a prescribed standard, carried out by an authorised person who has not involved in performance of the maintenance being inspected. Because an Independent Inspection itself can be affected by human factors, no Independent Inspection is considered absolute in preventing or detecting maintenance error. The effectiveness of an Independent Inspection therefore needs to be considered in the assessment of residual risk of maintenance error with the Independent Inspection in place.

Determination of Residual Maintenance Error Risk Level

19. The determination of residual risk level primarily depends on identifying the reduction in likelihood of maintenance error being committed or going undetected, through the application of one or more error capture methods as effective barriers, or risk controls and mitigations. There should be no change to the initial consequence assessment made for the conceivable maintenance error resulting in functional loss that could directly endanger flight safety.

20. The level of reduction of likelihood of detecting or preventing a maintenance error is dependent on the effectiveness of the error capture method(s) used and whether they are used in isolation or combination. The error capture methods selected must lower the residual risk of not preventing or detecting a maintenance error to an acceptable method. An example Residual Task-based Maintenance Error Risk matrix is shown in 7001.038.

Documentation of the Application of Error Capture Methods Determination Process

21. The supporting analysis and output decisions of the application of the error capture methods determination process should be recorded by the CAMO. The analysis

summary and justification should provide a consolidated and concise record of the error capture methods analysis process and any resultant error capture method determination.

22. As a minimum, the error capture method(s) selected, the reasons for or against an error capture method requirement, and the justification on how the identified error capture method(s) does or does not reduce the Residual Task-based Maintenance Error Risk level to an acceptable level should be recorded.

Figure 1 – Critical Maintenance Task Identification and Error Capture Method Determination Process

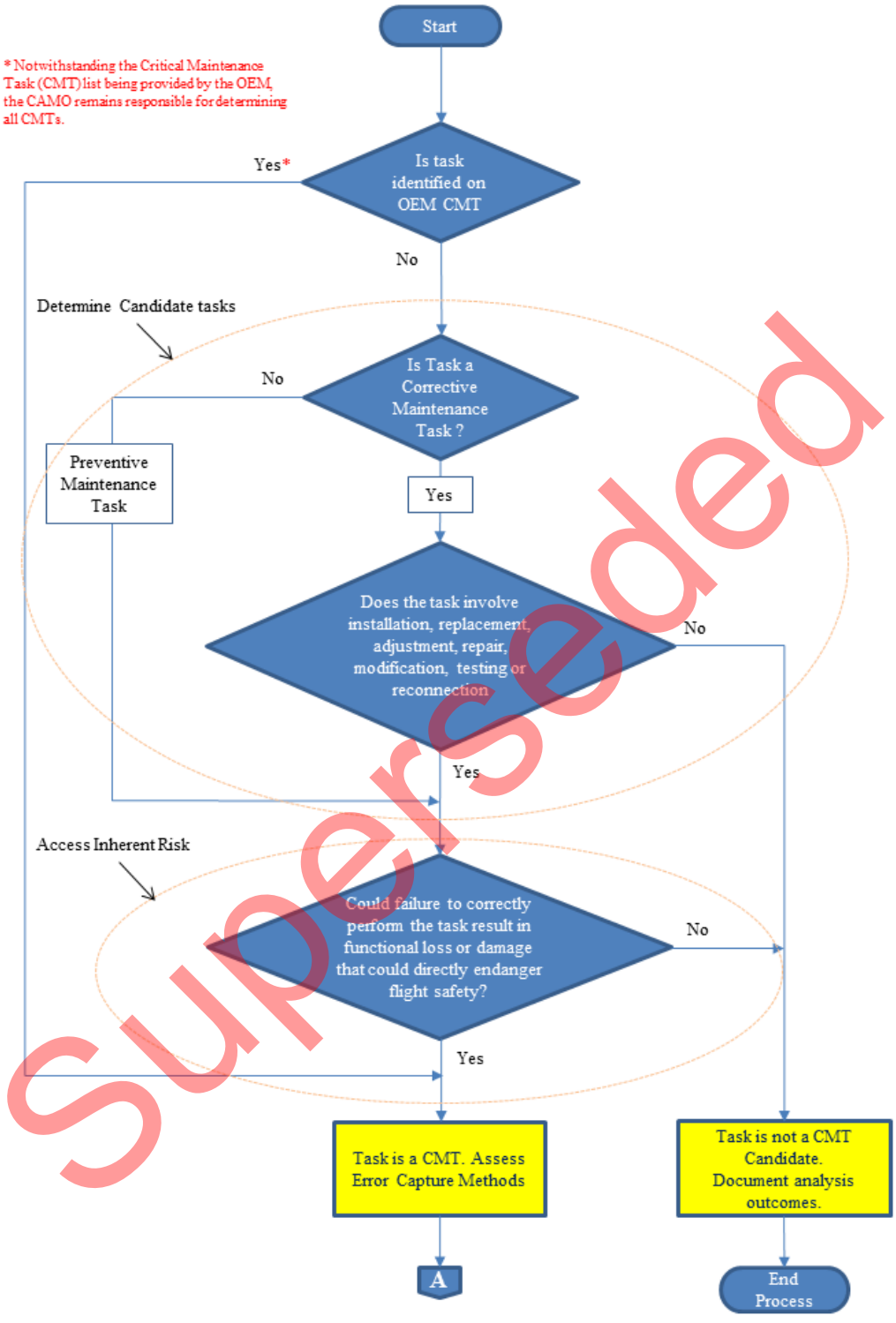

Figure 1 – Critical Maintenance Task Identification and Error Capture Method Determination Process

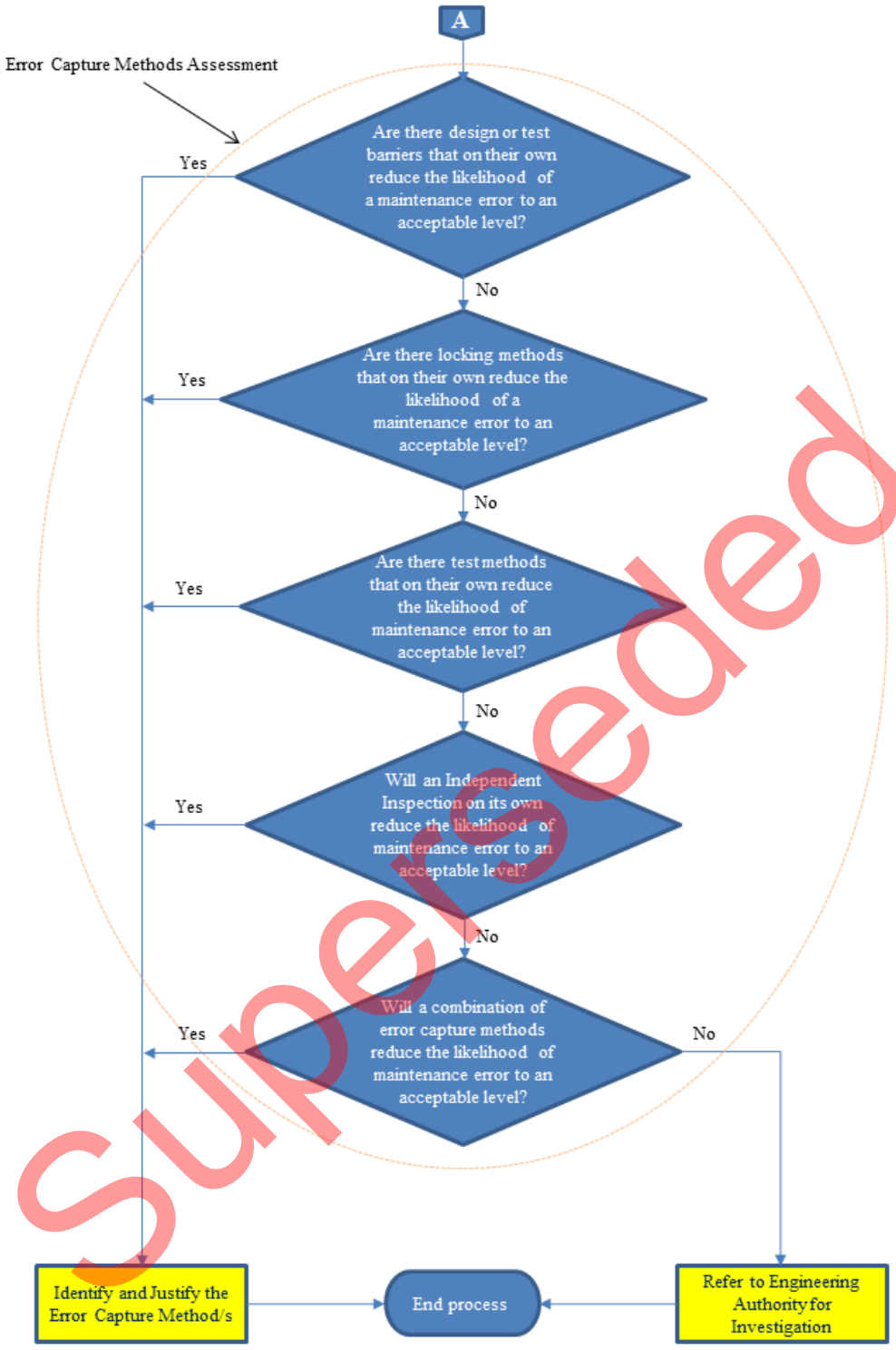

Figure 1 – Critical Maintenance Task Identification and Error Capture Method Determination Process

Figure 1 - Critical Maintenance Task Identification and Error Capture Method Determination Process

MED.05 – AVIATION MEDICINE (AVMED) TRAINING (AUS)

▸ **GM**

GM MED.05 – AVMED training (AUS)

Purpose. (Context) Crew, and High Altitude Parachute Operations (HAPO) personnel, can be subject to AVMED related effects during Operations. Normally these effects can be controlled using combinations of ground and aircraft systems; Crew, HAPO personnel and Aircraft Controller knowledge, skills and behaviours, and adherence to approved procedures. **(Hazard)** Suitability For Flight can be compromised when undesired Crew, HAPO personnel or Aircraft Controller knowledge, skills and behaviours result in a failure of Crew, HAPO personnel or Aircraft Controllers to either recognise adverse AVMED related effects, or to employ appropriate corrective actions. **(Defence)** This regulation requires Accountable Managers and Sponsors to ensure Crew, HAPO personnel and Aircraft Controllers have prior awareness of the Hazards that are present when humans operate Aircraft in military roles, and receive training in the knowledge and application of AVMED. This will enhance human performance and contribute effective controls to ensuring Suitability For Flight.

(a) The MAO or Sponsor (Sponsor only applicable under DASR NDR.05 or DASR NDR.10) must ensure Aircrew complete initial AVMED training IAW the learning requirements approved by Commanding Officer (CO) Institute of Aviation Medicine (IAM), prior to conducting flight operations in a military Configuration Role and Environment (CRE). ▸ **GM** ▸ **AMC**

AMC MED.05(a) – Initial AVMED training (AUS)

a. The MAO or Sponsor may meet initial AVMED training requirements by ensuring that Aircrew complete AVMED training:

   i. appropriate to their Configuration Role and Environment (CRE)

   ii. conducted by the Institute of Aviation Medicine (IAM).

b. Initial AVMED training scope at IAM should:

   i. address the relevant common Hazards present for Aircrew in the military CRE

   ii. be tailored to target specific Aircraft Hazards associated with the relevant Service

   iii. regardless of Service, ensure that Aircrew are provided an appropriate level of AVMED training for the specific Aircraft Type.

c. Initial AVMED training topics at IAM should include:

   i. lectures in AVMED appropriate to CRE of Aircraft Type to be operated

   ii. where appropriate, practical hypoxia awareness training that may include:

(a) rapid decompression

(b) pressure breathing

(c) effect of hypoxia on night vision.

iii. where appropriate:

(a) spatial disorientation, including simulator-based demonstrations of spatial disorientation in fixed or rotary-wing aircraft

(b) high-G environments

(c) centrifuge training

(d) anti-G straining manoeuvre

(e) parachute descent and landing fall

(f) physiological limitations with use of Night Vision Devices (NVD)

(g) ejection seats

(h) fast jet, fixed wing or rotary wing aircraft characteristics

(i) Physiological Episode Recognition and Recovery Training (PERRT).

GM MED.05(a) – Military Configuration Role Environment (CRE) (AUS)

a. Aircrew are performing military CRE related flying duties when operating Defence Registered Aircraft.

b. Aircrew are not performing military CRE related flying duties when operating a Non Defence Registered Aircraft (NDRA) in a CRE substantially similar to an equivalent civilian Aircraft Type. For example, Aircrew participating in the Aircrew Currency Flying Scheme (ACFS), operating entirely in accordance with the Defence Aviation Authority recognised Civil Aviation Authority (CAA) regulations, and with no specific military aspect to the CRE, is a case where the Aircrew are not performing in a military CRE.

c. However, where there is a military aspect to the CRE, such as Aircrew conducting tasking in a NDRA, where the operation may include requirements to operate outside the normal crew duty limits prescribed by the CAA, Aircrew are performing military CRE related flying duties.

(b) By way of exception from DASR MED.05(a), Aircrew who have completed initial AVMED training conducted by Air Force Interoperability Council (AFIC) member nations are exempt from the requirement to complete initial AVMED training. ▸ **GM**

GM MED.05(b) – Recognition of prior AVMED training (AUS)

Air Force Interoperability Council (AFIC) Air Standards detail the requirements for AVMED training of each AFIC member nation. AVMED training that meets the AFIC requirements is acceptable to other AFIC member nations—allowing Aircrew to perform flying related duties with any AFIC member nation. The MAO or Sponsor may refer instances of AVMED training conducted by non-AFIC member nations to Commanding Officer (CO) Institute of Aviation Medicine (IAM) for advice regarding recognition of learning.

(c) The MAO, ANSP, ABMO, HAPO personnel or Sponsor must ensure all AVMED related training results are recorded for all relevant personnel. ▸ **AMC**

AMC MED.05(c) – Documentation (AUS)

Acceptable means for recording AVMED related training include: certificates, an enterprise personnel management database, or annotation in flying logbooks.

(d) Where an MAO, ANSP, ABMO or Sponsor identifies a requirement for additional AVMED-related training to that provided by IAM, this training is to be co-ordinated and approved under the authority of CO IAM. ▸ **GM**

GM MED.05(d) – Other specific AVMED training needs (AUS)

For example, Aircrew Instructors may require training specific to the AVMED aspects of the instructional flight environment.

(e) The MAO or Sponsor must ensure Aircrew maintain AVMED Currency, as follows: ▸ **GM**

GM MED.05(e) – Supplemental Aviation Medicine (SAVMED) training (AUS)

a. **SAVMED training.**

i. The five-year Currency period for Aircrew AVMED training, benchmarked on AFIC standards, presents a Hazard that knowledge and skills may fade throughout the Currency period.

ii. SAVMED training provides a control to the Hazard of Aircrew knowledge and skill fade. Additionally, SAVMED training provides a means for the MAO and Sponsors to provide tailored AVMED related training pertinent to contemporary or emergent AVMED issues affecting operations within the organisation.

iii. SAVMED differs from AVMED training in that it is conducted by a Squadron Aviation Medicine Liaison Officer (SAMLO), Single Service Aviation Medicine Adviser (SSAMA) or an IAM representative and has no defined practical elements. Commanders may schedule SAVMED training pertinent to their capability at any time and any location—providing significant flexibility to ensure Aircrew SAVMED currencies are met.

b. **Single Service Aviation Medicine Advisor (SSAMA)** (As described in the Defence Health Manual). The SSAMA is responsible for AVMED advice to the relevant Service; and to ensure AVMED training meets COMAUSFLT, COMD AVNCOMD, or ACAUST requirements (as applicable to the relevant Service).

1. overall AVMED Currency is dependent on maintaining both AVMED Currency and Supplemental Aviation Medicine (SAVMED) Currency

2. SAVMED training Currency is initially set through completion of initial AVMED training, and reset through either AVMED refresher training, or SAVMED training ▸ **AMC1** ▸ **AMC2**

AMC2 MED.05(e)2 – SAVMED training (AUS)

a. While the minimum Currency requirement for SAVMED training is three years, IAM recommends the MAO or Sponsor provides annual SAVMED training.

b. SAVMED training may include:

i. topics appropriate to the CRE of Aircraft Type being operated

ii. physiological limitations of Aircrew, and how to:

(a) mitigate these limitations

(b) recognise and recover from approaching or exceeding these limitations.

iii. AVMED aspects of Occurrence Reporting, as well as accident and incident reports from other global operators relevant to the Aircraft Type being flown.

AMC1 MED.05(e)2 – AVMED refresher training (AUS)

a. AVMED refresher training to renew AVMED Currency is conducted by IAM or, for Navy and Army, a Single Service Aviation Medicine Adviser (SSAMA), as agreed with Commanding Officer (CO) IAM.

b. AVMED refresher training should include scope and topics as defined by CO IAM.

3. five years is the maximum Currency period for AVMED training ▸ **GM**

GM MED.05(e)3 - AVMED Currency (AUS)

A five year AVMED Currency period allows the MAO or Sponsor to set appropriate compliance periods and aligns with the AFIC Air Standard. The MAO or Sponsor may impose more stringent Currency requirements.

4. by way of exception from DASR MED.05(e)3, in consultation with CO IAM, and risk managed IAW DASR.SMS, the MAO or Sponsor may grant a currency extension ▸ **GM**

GM MED.05(e)4 - AVMED Currency extension (AUS)

The Currency extension allowed for in DASR MED.05(e)4 should only be applied in extenuating circumstances (ie after the decision maker has conducted risk management IAW DASR.SMS, consulted with CO IAM, and the operational need to apply an extension is warranted when weighed against the residual risk). Extenuating circumstances exclude the routine or casual application of Currency extensions.

5. three years is the maximum Currency period for SAVMED training.

(f) By way of exception from DASR MED.05(e), Aircrew that hold AVMED training Currency conducted by AFIC member nations are exempt from the requirement to complete AVMED training, while that Currency remains in effect.

(g) The MAO or Sponsor must obtain endorsement from CO IAM prior to the conduct of Squadron Aviation Medicine Liaison Officer (SAMLO)-provided SAVMED training ▸ **GM**

GM MED.05(g) – Squadron Aviation Medicine Liaison Officer (SAMLO) (AUS)

a. A SAMLO (as defined IAW IAM SI (PERS) 03-04 *Aviation Medicine Instructor Standardisation*) is an Aircrew member who has received additional AVMED training to assist in the ongoing provision of SAVMED training in conjunction with IAM, the Regional Senior Aviation Medicine Officer (RSAVMO) (As defined IAW *Defence Health Manual* Vol 2 Part 17 Chap 3) or Senior Aviation Medicine Officer (SAVMO).

b. SAMLOs are a link between units and IAM on all AVMED related matters. SAMLO is a secondary duty for Aircrew assigned by their unit.

c. A SAMLO may also assist in the conduct of decentralised Physiological Episode Recognition and Recovery Training (PERRT), conducted by IAM, subject to meeting the additional pre-requisite requirements (DASR MED.05(h)2 refers).

(h) Aircrew appointed as a unit SAMLO must meet:

1. initial and ongoing training requirements (defined by CO IAM) before exercising the privilege of conducting SAVMED training

2. additional initial and ongoing training requirements (defined by CO IAM) before exercising the privilege of assisting in the conduct of Physiological Episode Recognition and Recovery Training (PERRT) by IAM.

(i) The MAO or Sponsor must ensure that persons who authorise or operate Uncrewed Aircraft Systems (UAS) in the following categories of UAS, meet the AVMED training and Currency requirements defined by CO IAM: ▸ **GM**

GM MED.05(i) – UAS Crew (AUS)

Although Remote Pilots and other UAS Crew are normally employed in ground roles, there may be a requirement for tailored AVMED training relevant to their CRE. For Crew, this is only where there is a Non-Technical Skills (NTS) relationship with the Remote Pilot, critical to flight safety.

1. DASR UAS.20(a) Certified Category UAS

2. DASR UAS.30(a)1 Specific Type A Category UAS, where the Authority has stipulated a requirement to comply with DASR MED.05 in the relevant UAS Operating Permit (UASOP).

(j) Aircraft Controllers within an Air Navigation Service Provider (ANSP) or ABMO must meet the AVMED training and Currency requirements defined by CO IAM. ▸ **GM**

GM MED.05(j) – Aircraft Controllers (AUS)

a. Although Aircraft Controllers are normally employed in ground roles, there may be a requirement for tailored AVMED training relevant to their CRE. AVMED subjects of relevance to Aircraft Controllers may include information, but are not necessarily limited to:

i. enabling Aircraft Controllers to support Crew suffering the effects of AVMED related issues

ii. regarding health and fitness to perform Aircraft Controller duties (including the concept of temporarily medically unfit to control periods associated with certain activities or medications).

(k) Personnel conducting High Altitude Parachute Operations (HAPO) must meet the AVMED training and Currency requirements defined by CO IAM. ▸ **GM**

GM MED.05(k) – Personnel conducting High Altitude Parachute Operations (HAPO) (AUS)

a. There may be a requirement for tailored AVMED training for personnel conducting HAPO. AVMED subjects of relevance may include information, but are not necessarily limited to:

i. enabling HAPO personnel to recognise and recover from the effects of AVMED related issues

ii. regarding health and fitness to perform HAPO duties (including the concept of temporarily medically unfit periods associated with certain activities or medications).

(l) CO IAM must define UAS Crew, HAPO personnel and Aircraft Controller AVMED training and Currency requirements:

1. on the basis of CRE

2. consistent with AFIC Standards.

(m) DASR.MED.05 does not apply to Aircraft Passengers with the exception of HAPO personnel. ▸ **GM**

GM MED.05(m) – AVMED related Hazards to Aircraft Passengers (AUS)

The control for AVMED related Hazards to Aircraft Passengers is captured in DASR AMC ORO.70(a) *Pre-Flight Briefings*.

MED.10 - AVIATION MEDICAL CERTIFICATE

(a) The Accountable Manager must ensure aircrew, aircraft controllers and remote pilots have a current aviation medical certificate that is: ▸ **GM** ▸ **AMC**

AMC MED.10.A – Flexibility Provisions (AUS)

1. **Flexibility provision 1 – employment in non-flying related duties.** Aircrew, aircraft controllers and remote pilots not posted to flying related positions may maintain an aviation medical certificate currency period aligned to the normal Defence PHE currency. Medical certificate compliance is required prior to returning to flying related duties. Pilots participating in the ADF Currency Flying Scheme (ACFS) must maintain a current CASA medical certificate in addition to their normal Defence PHE requirement.

2. **Flexibility provision 2 – extensions.** Circumstances may arise beyond a member's control to maintain medical currency that may impact operational requirements. Should

a member's medical currency period expire, the Accountable Manager (AM) may issue a waiver; or authorise a command authority to issue a waiver, to extend the expiration date. The command authority should seek SSAMA advice before issuing a waiver past 60 days.

3. **Flexibility provision 3 – non–pilot aircrew.** The AM may determine if it is more appropriate for non-pilot aircrew to maintain 12 month medical currency requirements.

4. **Flexibility provision 4 – aircraft controllers.** Other than personnel who provide an Air Traffic Control (ATC) service, the AM may determine what aircraft controller category/ specialisations should comply with 24 month medical currency requirements.

5. **Flexibility provision 5 – medical certificate waiver.** The AM may approve waivers to specific medical requirements for the issue of an aviation medical certificate. The AM should consult the SSAMA when using this provision to ensure understanding of risk before making a decision to approve a waiver.

Medical Certificate Management

6. **Issuing authority.** An ADF aviation medical certificate is issued by an Aviation Medical Officer (AVMO).

7. **Certificate Types.** Medical certificates should be issued on appropriate forms using medical standards proposed by the SSAMA, endorsed by the Surgeon General ADF and approved by COMAUSFLT/COMD AVNCOMD/ACAUST. Certificates may follow a class system, Specialist Employment Stream/Specialist Employment Classification (SPEC), occupation name or similar. The method of recording may vary from electronic means to a hard copy log book entry.[6] ***The Defence Medical Certificate should not be confused with a CASA Medical Certificate, which is issued under CASA provisions.***

8. **Initial currency date.** The date the first aviation medical examination is completed. For example, a member who has never held a medical certificate has an examination for the issue of a medical certificate on 11 January 2015. The appropriate day for the certificate issue is 11 January 2015.

9. **Currency.** A medical certificate is considered current (valid) from the date of examination for a period not greater than the applicable 12/24 months duration, or the period directed by the AM if a relevant flexibility provision is used. Currency will vary depending on the currency management system used by the individual Service.

Ongoing Currency Management Compliance: Civil Harmonised System

10. A renewed certificate will remain current if a medical examination is completed within 28 days or less before the certificate's expiry date, allowing another 12/24 months currency from the original expiry date. A certificate that is renewed more than 28 days before the certificate's original expiry date, or after the original expiry date, is current from the date of issue and resets the expiry date. The following currency examples would apply:

    a. If an aircrew medical examination was performed on 11 January 2015, the medical remains valid until the 11 January 2016.

b. An aircrew member who holds a medical certificate that is due to expire on 11 January 2016 has an examination for a new certificate on 1 November 2015 (more than 28 days). The appropriate day for the new certificate is 1 November 2015, with an expiry date of 1 November 2016.

c. An aircrew member who holds a medical certificate that is due to expire on 11 January 2016 has an examination for a new certificate on 20 December 2015 (28 days or less). The appropriate day for the new certificate is 20 December 2015, with an expiry date of 11 January 2017.

d. An aircraft controller or remote pilot who held a medical certificate that expired on 11 January 2016 has an examination for a new certificate on 20 January 2016 (expired). The appropriate day for the new certificate is 20 January 2016, with an expiry date of 20 January 2018.

Ongoing Currency Management Compliance: Service Specific

11. COMAUSFLT / COMD AVNCOMD / ACAUST may decide harmonisation with the civil system is less important than the Service requirements and adopt a different method to allow flexibility in completing aircrew medical examinations. A renewed certificate will remain current if completed no later than the end of the month in which the certificate was issued the previous year. A certificate that is renewed in a different month to the certificate's expiry date is current from the date of issue with an expiry date to the end of the same month in the following year. The following currency examples would apply:

a. If an aircrew medical examination was performed on 11 January 2015, the medical remains valid until the 31 January 2016.

b. An aircraft controller or remote pilot who holds a medical certificate that is due to expire on 31 January 2016 has an examination for a new certificate on 20 December 2015 (different month). The appropriate day for the new certificate is 20 December 2015, with an expiry date of 31 December 2017.

c. An aircrew member who holds a medical certificate that is due to expire on 31 January 2016 has an examination for a new certificate on 20 January 2016 (same month). The appropriate day for the new certificate is 20 January 2016, with an expiry date of 31 January 2017.

d. An aircrew member who held a medical certificate that expired on 31 January 2016 has an examination for a new certificate on 5 February 2016 (expired). The appropriate day for the new certificate is 5 February 2016, with an expiry date of 28 February 2017.

GM MED.10.A – Medical Standards (AUS)

1. **Purpose.** The purpose of this regulation is to:

a. Assure an entry standard is established for a person to conduct flying related duties so that aircrew, aircraft controllers and remote pilots will not compromise suitability for flight due to deficiencies in Defence-prescribed physiological and psychological medical fitness standards.

b. Support civil recognition of Defence aviation medical standards by facilitating an option to harmonise Defence aviation medical currency with CASA regulatory requirements.

c. Provide a framework that allows the aviation command authority to direct aviation medical support requirements to the Defence health service provider.

2. **Applicability – Remote Pilot (RP):**

a. **Certified Category UAS operations.** DASR MED.10.A is applicable for all UAS operations under the Certified UAS category.

b. **UASOP (Specific Type A) UAS operations.** Applicability of DASR MED.10.A may be specified in the UASOP. The Authority and Command should consider the safety benefit of the RP holding a current aviation medical certificate.

c. **Standard Scenario (Specific Type B) UAS operations.** DASR MED.10.A is not applicable; however, Command may mandate the RP hold a current aviation medical certificate.

d. **Open Category UAS operations.** DASR MED.10.A is not applicable.

3. **Foreign aircrew operation of Defence registered aircraft.** Circumstances may exist where a foreign aircrew member is expected/required to operate a Defence registered aircraft. In such cases, the Accountable Manager (AM) should ascertain if the foreign aircrew medical requirements are reasonably comparable and acceptable to Defence medical requirements. If found acceptable, the AM may authorise foreign aircrew to operate the Defence registered aircraft. Advice may be sought from the relevant SSAMA regarding foreign aircrew medical requirements.

4. **CASA medical certificates.** Defence use of an appropriate CASA issued medical certificate is recognised as acceptable for Defence civilians who may provide Air Traffic Control services or civil pilots contracted to operate Defence aircraft, such as training flights, on condition that the CASA medical certificate supports only those duties directly related to the flying related duties the certificate was issued for.

5. CASA medical certificates issued to Reserve members may not be used to support any deployed operations, either within or outside of Australia. In such cases, a Defence medical is required as Defence has special needs that are not covered under CASA requirements. Detailed advice may be sought from the relevant SSAMA. Reserve Air Traffic Controllers performing flying related duties at an airbase are not deemed as deployed.

1. For pilot aircrew: valid for a period not greater than 12 months.

2. For non-pilot aircrew: valid for a period not greater than 24 months.

3. For aircraft controllers and remote pilots: valid for a period not greater than 24 months.[5] ***OAR DB of 26 Apr 15 (AB21783374)***

MED.15 - MEDICAL FITNESS MANAGEMENT

(a) The Accountable Manager must establish a medical fitness management system that ensures aircrew, aircraft controllers and remote pilots maintain medical fitness standards for flying related duties. ▸ **GM** ▸ **AMC**

AMC MED.15.A – TMUFF Management (AUS)

a. Aviation-related duties should not be performed when a medical or dental condition exists that may compromise suitability for those duties. IAM TMUFF Guidance provides minimum self-cancelling TMUFF periods for many conditions. If symptoms persist longer than the minimum self-cancelling TMUFF periods, an AVMO or Aviation Dental Officer (AVDO) consult is required.

b. **Documentation.** A TMUFF recommendation, including all restrictions, should be documented contemporaneously in writing.

c. **Medical certificate.** TMUFF does not affect medical certificate validity unless the condition persists into the next medical certificate currency period. In such cases, a flexibility provision under DASR MED.10.A may be used if the Accountable Manager (AM) deems this suitable and required.

TMUFF Reversal

d. **TMUFF reversal.** The AM, or a delegated command authority including Flight Authorising Officer / Supervisor, has final authority regarding authorisation of personnel to perform aviation-related duties including TMUFF reversal. TMUFF reversal is dependent on mission essential requirements and written AVMO advice, to inform a risk assessment. Some TMUFF issues may be managed administratively rather than seeking or returning for additional AVMO consultation. In such situations, the person may be TMUFF for a specified period and return to duty without AVMO review. Such circumstances include the following:

i. defined time limits prescribed in IAM TMUFF Guidance; and

ii. where the AVMO has set a defined time limit or conditions–based return to aviation-related duties for uncomplicated, self-limiting conditions, e.g. gastric problems, cold, flu or similar, not prescribed in IAM TMUFF Guidance.

e. **Remote AVMO consultation.** Direct consultation with an AVMO may not always be possible. Verbal advice can be given by an AVMO. In the absence of the member's usual AVMO, the Institute of Aviation Medicine duty SAVMO can be contacted for acute / operational SAVMO advice. Phone 0408 234 044.

f. **Use of a Designated Aviation Medical Examiner (DAME).** For Defence personnel who operate under oversight of a CASA medical certificate, a CASA DAME consultation may replace the AVMO consultation.

GM MED.15.A – Medical Fitness Management (AUS)

1. **Purpose.** The purpose of this regulation is to assure personnel engaged in aviation-related duties remain medically fit to do so through effective health management. Noting they will have a current medical certificate, factors such as injury or illness can

adversely affect medical fitness, both in the short and long-term, but may not require assessment of the person's medical certificate. TMUFF may be recommended by:

a. any health care provider

b. commanders and supervisors

c. the individual concerned (self-imposed TMUFF).

2. **Authority.** The Accountable Manager, or a delegated command authority, has final authority regarding authorisation of personnel to perform aviation-related duties, including TMUFF reversal.

3. **Applicability - Remote Pilot (RP):**

a. DASR MED.15(a) is applicable for all UAS operations under the Certified UAS category.

b. DASR MED.15(a) is applicable to UAS operations under a UASOP (Specific Type A) category if the UASOP specifies requirement for the RP to hold a current aviation medical certificate.

c. DASR MED.15(a) is not applicable to UAS operations under Standard Scenario (Specific Type B) or Open category.

DASR NDR - Non-Defence Registered aircraft

NDR.05 - OPERATION OF NON DEFENCE REGISTERED AIRCRAFT BY DEFENCE ORGANISATIONS

(a) The Sponsor that purchases, wet leases, dry leases, charters or authorises operation of a non-Defence registered aircraft by or on behalf of Defence must ensure the aircraft's operation is subject to the regulatory requirements of a Defence AA recognised CAA / MAA. ▸ **GM** ▸ **AMC**

AMC NDR.05.A — Evidence of CAA or MAA oversight (AUS)

1. Defence AA recognised CAA / MAA are advised on the DASP website.

2. An NDRA under the oversight of an approved CAA / MAA will have documents supporting the aircraft's airworthiness status that include:

   a. A current Type Certificate, or equivalent document; for the aircraft type/class.

   b. A Certificate of Airworthiness (CoA), or equivalent document, for each aircraft.

   c. Any additional CAA / MAA directives, limitations or restrictions that apply to the relevant aircraft.

   d. An Air Operator's Certificate (AOC), or equivalent certificate, applicable for the operation to be conducted.

   e. System of maintenance approval, or equivalent document.

3. Where a NDRA is oversighted by a CAA / MAA not recognised by Defence, advice should be sought from DASA regarding flexibility provisions.

4. A Sponsor considering use of a non-Defence Registered Uncrewed Aircraft (NDRUA) should seek DASA advice regardless of CAA / MAA recognition.

CASA Aviation Administration Organisations Sports Aviation oversight

5. This AMC provides oversight supporting sports aviation activities.

6. CASA established an extended sports aviation oversight system of approved Recreational Aviation Administration Organisations (RAAO). The system allows CASA to set the regulations and then work in close cooperation with an established RAAO to make sure the regulations are applied and enforced.

7. A RAAO provides CASA with specialist knowledge and insight into the relevant sport aviation industry. A RAAO will oversight members' activities and continually assess how the required performance standards are being achieved in accordance with RAAO operational regulations.

8. CASA needs to be fully confident that each RAAO has the capacity to provide the safety outcomes required and therefore aspires to monitor RAAO conformance through six-monthly reporting, annual auditing and ongoing engagement. If an RAAO cannot assure

CASA confidence, then CASA will not allow the organisation to continue to administer its activities under the exemption.

9. The CASA sponsored Sport Aviation Self-Administration Handbook 2010 (or subsequent) provides additional information on sports aviation management.

10. CASA approved RAAO include:

a. Australian Parachute Federation (APF). The APF is the organisation which controls skydiving and parachuting at nearly all the civilian operations in Australia. With the approval of CASA the APF sets operational standards, issues licences and instructor ratings, conducts exams and publishes information to keep its members informed of safety standards.

b. Gliding Federation of Australia (GFA). The GFA is the recreational aviation administration organisation responsible for gliding and has accepted full responsibility for glider airworthiness through CASA authorised exemptions and delegations.

c. The Australian Warbirds Associated Limited (AWAL). The AWAL RAAO is the industry body that undertakes self-administration of the Special (limited category) CoA, which includes ex-military aircraft. AWAL is also recommended in AC 21.5(0) as the RAAO best suited to advise those people or organisation who desire to restore ex-military heritage aircraft. AWAL services include:

i. Administration of Limited Category Warbirds Historic and Replica aircraft (WHRA) on behalf of CASA.

ii. Provision of maintenance systems for various warbird types.

iii. The conduct of seminars and training days for engineers, owners, and pilots of limited category aircraft.

iv. Assistance for enthusiasts to get close to real WHRA and their operators.

d. Australian Ballooning Federation (ABF). The ABF administers recreational ballooning, to standards accepted by CASA. Recreational ballooning refers to those pilots who hold a private ABF issued balloon certificate and who don't carry fare-paying passengers. In addition to regulatory requirements, the ABF publishes information to keep its members informed of safety standards.

ADF Currency Flying Scheme

11. Short-term lease includes operation of NDRA for the purposes of the Australian Defence Force Currency Flying Scheme (ACFS).

12. Aircraft hired for operations under the ACFS are subject to the requirements of a CASA issued AOC or CASA Part 141 certificate.

Defence Flying Clubs

13. DASR NDR.05.A requirements pertain only to those Defence Flying Clubs that will operate from a Defence aerodrome with NDRA.

15. Flying is recognised as an approved Defence recreational activity. The management of RAAF flying clubs is facilitated under the auspices of the Air Force Sports Council (AFSC).

16. The Sponsor should appoint an OIC Flying Club to ensure that the Defence Flying Club will operate under a valid AOC applicable to the activities being conducted. The AOC need not be directly held by the Flying Club.

GM NDR.05.A – Oversight of NDRA Operations (AUS)

1. Purpose. The purpose of this regulation is to assure that operation of non-Defence registered aircraft by or on behalf of Defence is conducted under the airworthiness oversight of Defence AA recognised airworthiness authorities to ensure that Non Defence Registered Aircraft (NDRA) are operated in a manner no less safe than Defence registered aircraft.

2. While most aircraft acquired for use by Defence are listed on the Defence Register, circumstances exist where Defence registration may be impractical, inappropriate or even undesirable. Defence activities may involve the use of Australian civil registered aircraft or foreign registered aircraft. In such cases, the flexibility to operate a NDRA enhances Defence capability; however, the operation of a NDRA does not remove the requirement to ensure that acceptable aviation safety management is in place prior to NDRA use.

3. DASA should advise the applicable CAA of the intention to operate a Defence owned or dry leased NDRA prior to the commencement of operations.

Applicability

4. Conditions where a NDRA may be operated by or on behalf of Defence include:

   a. Aircraft performing in a configuration, role and environment substantially similar to an equivalent civilian aircraft type.

   b. Aircraft undergoing flying activity prior to issue of a Defence airworthiness instrument.

   c. Foreign military aircraft operated by Defence personnel.

   d. Aircraft temporarily chartered in support of Defence operations.

   e. Aircraft temporarily operated by Defence personnel in the course of their duties.

   f. Aircraft in which Defence personnel are deemed crew for Defence purposes.

   g. Aircraft in which Defence personnel are passengers for Defence purposes.

   h. Temporary operation of an aircraft for the purpose of capability trials or demonstrations.

   i. Aircraft conducting approved sports aviation activities for Defence purposes.

   j. Defence Flying Club activity from Defence Aerodromes.

k. The following sports aviation activities:

i. Gliders.

ii. Parachuting.

iii. Recreational ballooning.

iv. Warbirds Historic and Replica Aircraft (WHRA).

5. This regulation does not apply to:

a. Defence Personnel or External Service Providers travelling as passengers on Australian or foreign public air transport.

b. Defence Personnel or External Service Providers acting as crew or travelling as passengers on foreign military flights which are not exclusively for Defence use.

c. Defence Personnel or External Service Providers participating in recreational flying not identified under paragraph 4.

d. The following sports aviation activities:

i. Amateur built and experimental aircraft.

ii. Gyroplanes.

iii. Hang gliders, paragliders and powered parachutes.

iv. Light recreational and microlight aircraft.

v. Model aircraft, unless conducted as a Defence Flying Club activity.

(b) The Sponsor that purchases, wet leases, dry leases, charters or authorises operation of a non-Defence registered aircraft by or on behalf of Defence must implement safety controls to the operation of non-Defence registered aircraft such that it is reasonably expected that suitability for flight will not be compromised. ▸ **GM** ▸ **AMC**

AMC NDR.05.B – Approval to Operate an NDRA (AUS)

1. The Sponsor approving the acquisition or operation of a NDRA is responsible for the associated safe aviation outcomes. Once satisfied, the Sponsor can issue an Approval to Operate (ATO) once satisfied suitability for flight will not be compromised. Where the Sponsor is not a Defence AA appointed authority, advice should be sought from DASA.

2. The level of rigour applied to an ATO decision is dependent on the aircraft lease or ownership. In some cases, such as a one off charter/short term lease, the ATO may be issued verbally. In other cases, such as a dry lease, a Defence AA independent review may be necessary. If required, advice may be sought from DASA to assist with ATO determinations.

3. The controls for an NDRA Approval to Operate may include:

a. Suitability for flight determination.

b. Determination of the most recent CAA / MAA oversight activity.

c. Appropriate contractual controls.

d. Additional operational controls for identified and untreated hazards.

e. Periodicity of Aviation Safety review (as required).

f. Approval to operate has been issued.

4. The NDRA sponsor may defer or be directed to defer the approval to operate decision to the Defence AA.

Suitability for Flight of NDRA

5. Understanding the Hazards associated with NDRA is critical to identifying required controls and delivering acceptable safety outcomes. The Sponsor should consider all elements of suitability for flight. For example, whether the aircraft will carry Defence personnel as passengers or the loss of the NDRA over a populated area.

6. A NDRA is deemed suitable for flight when it is operated:

a. In approved roles appropriate to the certification basis of the aircraft as described in the applicable Type Certificate or authorised exemption.

b. Within the limitations and conditions established by the certifying authority in the applicable aircraft operating instructions, Type Certificate and/or authorised exemption.

c. In accordance with an applicable Defence AA recognised CAA/MAA aviation safety regulations appropriate to the aircraft operating role and environment.

d. By flight crew and maintenance personnel who are deemed qualified and capable by a Defence AA recognised regulatory framework.

e. Within Defence approved levels of risk to first, second and third party persons or property.

f. In accordance with any directives or requirements issued by the regulator.

g. In accordance with orders and instructions issued by the relevant Sponsor.

h. In accordance with any directives issued by the CAA or MAA, where applicable.

7. Where there is doubt surrounding the suitability of flight of a particular NDRA activity, the Sponsor that is responsible for authorising operation of an NDRA and therefore the associated aviation outcomes should seek specific aviation safety advice from DASA prior to authorising the activity.

8. Factors such as type of charter, length of charter and the operational circumstances will influence the level of assurance and compliance required in each case. DASA may recommend additional levels of mitigation for use of the NDRA by endorsing the contractual terms of the lease intended for use, or specifying any additional terms/ limitations that may be necessary.

Contractual Controls

9. A Sponsor desiring to utilise a NDRA will do so under the terms of an enforceable legally binding instrument that requires the NDRA operator to comply with any lease requirements.. The legally binding instrument should include aviation safety controls:

   a. The aircraft captain, crew, aircraft owners, and operators will abide by ICAO and relevant CAA or MAA requirements.

   b. Implementation of an accident and incident reporting system that, in addition to the CAA / MAA requirements, includes an equivalent notification period to DFSB. This ensures Defence awareness of safety issues, and thereby allows for improved control over flight authorisation under the contract, particularly outside Australia. In addition to country of occurrence incident reporting, the contract should identify the 1800 notification number for both Australian transport Safety Bureau (ATSB) (or equivalent) and DFSB, desired reporting formats, and email notification addresses.

   c. Upon request, make all documentation supporting the continuing airworthiness of the aircraft available to Defence. Records may include any contracts, inspections, documents, accident reporting or incident reporting requirements used to establish and maintain the continuing airworthiness of the aircraft operation. Documentation may include but not limited to, documents provided to the recognised CAA, operations manuals, maintenance records, individual licenses (aircrew and maintenance), flight records, safety occurrence reports and investigation reports.

   d. Compliance with the Australian Work Health and Safety (WHS) Act 2011 as appropriate.

   e. Any exemption from IATA dangerous cargo requirements will comply with Defence Air Cargo Delivery regulations.

   f. Any sub-contracts to be subject to the requirements of this regulation. This ensures Defence has the ability to conduct regulatory oversight across the complete operation if required.

   g. Allowance for Defence to make any safety inspections prior to task or at anytime during the charter. This ensures Defence has the ability to conduct regulatory oversight across the complete operation if required.

   h. Any additional aviation safety controls/limitations to ensure the aircrafts operation will not compromise suitability for flight.

   i. Appropriate insurance policies are in place to cover the legal liabilities of both Defence and the registered operator for the lease activity. The registered operator may already have appropriate insurance coverage, but may not provide the required cover for a Defence person operating the aircraft.

Ramp Inspections

10. Purpose. The purpose of a Ramp Inspection of NDRA is to provide the Sponsor a higher degree of confidence that the operator, flight crew and aircraft intended for use by or on behalf of Defence is suitable for flight by ensuring that the aircraft and crew do not have significant defects or obvious aviation safety issues.

11. A Ramp Inspection is an acknowledged means of providing additional confidence in the fitness for purpose of a NDRA intended for use by or on behalf of Defence. Ramp Inspections may also be suitable for services provided to Defence personnel under sport aviation activities who may be conducting non–Defence required activities, but require approval in order to participate in such an activity such as, a civilian parachuting club. A Ramp Inspection does not provide a means to gain an exemption for a relevant regulation; rather, it provides an improved understanding of suspected or known facts.

12. The inspection regime should allow the approval authority to access applicable resources relevant to inspecting the leased aircraft shortly prior to flight regarding readily apparent technical issues and the overall operational readiness of the aircraft. Control of the inspection process should be delegated to aviation safety personnel to ensure appropriate risk management and resource management. Personnel who conduct ramp inspections should have relevant experience and deemed competent to conduct them. Inspections teams should comprise at least one operational representative, one maintenance representative and other relevant personnel as required. Such personnel may be identified by the Authority or COMAUSFLT / COMD AVNCOMD / ACAUST.

13. A NDRA used by or on behalf of Defence, that is not dry leased, should be considered for a Ramp Inspection if the lease will be 12 months or longer. Additional considerations should be the amount of sorties the aircraft will conduct. For example, a WHRA sortie rate of more than three flights in a three month period may be sufficient activity to consider a Ramp Inspection. Consideration does not mean an inspection must occur.

14. Ramp Inspection reports should be provided to the Sponsor. Any adverse inspections reports should also be provided to DASA.

Sports Aviation Controls

15. General controls for assessing the sports aviation activity risk include:

    a. The aircraft will operate under a CASA approved instrument.

    b. The aircraft will operate under the oversight of a CASA recognised RAAO.

    c. Any Defence personnel or organisation identified to undertake the activity will be a full member of the relevant RAAO prior to conducting the activity. Full membership assures Defence personnel are able to obtain all required compliance information from the RAAO, as well as other benefits supporting safe conduct of the activity.

    d. A periodic safety audit has been conducted. An appropriate audit includes any CASA approved audit process or a COMAUSFLT / COMD AVNCOMD / ACAUST recognised audit process.

ADF Cadets Flying Operations Controls

16. ADF Cadets is a collective reference to any of:

    a. Australian Navy Cadets.

    b. Australian Army Cadets.

    c. Australian Air Force Cadets (AAFC).

17. Due to the limited opportunity and exposure to flying operations of the Army and Navy Cadet organisations, the AAFC is the authority for control and management of ADF Cadet flying operations.

18. For ADF Cadets flying related operations the Sponsor is DGCADETS.

19. The Sponsor has established (and is the authority for) the AAFC Manual of Aviation Operations to support ADF Cadets flying operations. Unless OIP stipulate otherwise, the AAFC Manual of Aviation Operations will apply.

Gliding Operations Controls

20. Glider activity may only be conducted under oversight of the Glider RAAO, supplemented by any additional Sponsor requirements.

21. For ADF Cadets gliding activities the Sponsor is DGCADETS.

22. A glider need not be operated under an AOC.

Parachute Operations Controls

23. The Sponsor considerations for parachute operations conducted from NDRA by Defence members on duty may include:

    a. If parachute operations are likely to exceed either 70 events per year or 10 events per month that the non-Defence registered aircraft will meet full NDRA requirements.

    b. The commercial or private entity is an Australian Parachute Federation (APF) member organisation.

    c. Parachute operations are conducted in accordance with APF Operational Regulations or the Defence Parachute Training School Standing Instructions as appropriate.

    d. The aircraft operator is compliant with the APF regulations, as confirmed through review of an APF Safety Audit (Aircraft Operations Supplementary Safety Audit) conducted on the operator within the previous 12 months.

    e. Where parachute operations exceed 3 events per annum or the number of Defence personnel involved in any one event is greater than 10, a Ramp Inspection is conducted prior to first operations with the aircraft.

    f. The aircraft pilot holds a CASA issued Commercial Pilots License (Aeroplane) (CPL(A)) or an Air Transport Pilots Licence (Aeroplane) (ATPL(A)).

g. Need not be operated under an AOC, but is desirable.

24. For ADF Cadets parachute activities the Sponsor is DGCADETS.

25. For Defence parachute activities the Sponsor is CO Parachute Training School.

Recreational Ballooning Controls

26. Ballooning may only be conducted under oversight of the Australian Ballooning Federation (ABF) RAAO, supplemented by any additional Sponsor requirements.

27. RAAF Balloons may also be subject to increased DASP oversight as directed by the Defence AA.

Warbirds Historic and Replica Aircraft Controls

28. Defence operates a small and diverse fleet of Defence owned Warbirds Historic and Replica aircraft (WHRA) that are civil registered for the purpose of maintaining Australian military heritage and promoting Defence within the wider community. In general, WHRA are designed and manufactured to historical standards and for various reasons are no longer eligible for the issue of a Type Certificate, and by extension a Standard Certificate of Airworthiness (CoA). In such cases, CASA may approve a special purpose operation where an aircraft issued with a Special (limited category) CoA under CASR 21.189 for the purposes that are set out in CASR 21.189(3) and as prescribed in Civil Aviation Regulation (CAR) 262.

29. CASA does not require limited category ex-military aircraft to comply with any specific civil airworthiness standards or design codes. The basic eligibility requirement for certification of a limited category aircraft is that it is one of a type that at some stage has undergone some form of formal airworthiness acceptance process. If the aircraft type is of military origin, then it must have been produced in accordance with the requirements of, and accepted by, an armed force of any nation. The applicant must also demonstrate a safe history of operation of the type. If the aircraft is of civil origin, then an authorised person or CASA must be satisfied that the aircraft meets the airworthiness requirements (present or past) applicable to an aircraft for which a Standard CoA has been issued, except for any requirements that are inappropriate for the special purpose(s) for which the aircraft is to be used.

30. The short term lease of WHR aircraft by Defence may represent an increased airworthiness risk due to the operation of an aircraft designed to a reduced or unknown original airworthiness standard, and the operation of an aircraft that is not part of an organisation covered by an AOC.

31. WHR aircraft that do not qualify for a special (limited category) CoA may operate in accordance with an experimental certificate issued by CASA under CASR 21.191. CASA currently maintains administrative responsibility for aircraft issued with an experimental certificate. Under DASR NDR.05.A, the Defence AA has reserved the decision for approving the operation of WHRA issued with an experimental certificate due to the associated airworthiness exceptions.

32. Controls that may assist the Sponsor in ensuring that WHRA operation will not compromise suitability for flight include:

a. For an aircraft with a Special CoA, the registered operator is approved for special purpose operations under the administration of a CASA recognised RAAO.

b. The aircraft is maintained in accordance with a Defence recognised or approved maintenance system, and the aircraft has a current maintenance release.

c. The aircraft is maintained in accordance with the approved AWAL maintenance system.

d. Defence Personnel may not fly as passengers aboard the WHRA, regardless of CoA status, unless deemed mission essential and approved by the Sponsor.

e. If leased for more than 3 flights (start-ups and shutdowns) but less than 12 flights in a 12-month period, a Ramp Inspection should be conducted prior to first WHRA use and then on an annual basis thereafter.

33. Additional controls for WHRA leased from a private or commercial entity include:

a. Need not be operated under an AOC, but is desirable.

b. Operation under an experimental certificate complies with DASR NDR.05.D.

c. Prior to first flight ensuring that the registered operator is approved for special purpose operations under the administration of a CASA recognised RAAO and CAR 262AM.

34. In addition to contractual controls at paragraph 9 of this AMC, additional lease controls may be applied that limit WHRA operations to the following activities:

a. Training of Defence personnel to qualify for an aircraft flying endorsement for an aircraft type or category in which the aircraft is included and that flying instructors are appropriately qualified and licensed.

b. Practice by Defence personnel in flying the aircraft in, or training for, a special purpose operation for which the aircraft is certified.

c. An operation necessary to maintain aircrew currency of Defence personnel on the aircraft type.

d. Flying the aircraft to or from a place where the above flights are to occur.

GM NDR.05.B – Equivalent Level of Safety for Operation of NDRA (AUS)

1. **Purpose.** The purpose of this regulation is to assure that operations of non-Defence registered aircraft by or on behalf of Defence are conducted at an equivalent level of safety to that of Defence registered aircraft.

2. Whilst restricting utilisation of NDRA to aircraft that are operated under the regulatory control of a Defence AA recognised CAA or MAA is an effective safety control, this control in isolation may not deliver Defence the required aviation safety outcomes.

Imposing additional safety controls (as required) on the operation of NDRA will assist in mitigating the associated hazards.

3. When deciding the NDRA acquisition, contracting or approval strategy, the Sponsor should consider Defence registration when:

   a. operations are expected to occur for a period in excess of 12 months, and

   b. the aircraft contains a military-like modification or role equipment, or

   c. the aircraft operates in a military-like role and/or environment.

4. Should DASA assistance be requested, the following NDRA information may be required:

   a. Identification of the:

      i. proposed operator

      ii. aircraft make, model and tail number(s)

      iii. aircraft owner

      iv. aircraft operator

      v. country of registration/regulator and country of maintenance/regulator.

   b. Number of sorties and duration.

   c. Total number of Defence personnel to be transported, or special cargo requirements.

   d. A description of the operational imperative or practical necessity that requires the lease.

   e. Details of any current or recent AOC, or equivalent such as a Non-Scheduled Flight Approval.

   f. Advice of what military options are available and what lower risk civilian assets are available.

   g. Any relevant notes or comments from the tasking authority.

   h. The aviation activities the aircraft operator is endorsed to undertake and the organisation that provides the endorsement.

   i. Any relevant findings regarding oversight activities already conducted by the CAA / MAA.

(c) The Sponsor that purchases, wet leases, dry leases, charters or authorises operation of a non–Defence registered aircraft by, or on behalf of Defence must suspend flight operations when suitability for flight is believed to be compromised. ▸ **GM** ▸ **AMC**

AMC NDR.05.C – When to Suspend (AUS)

1. Suspension of NDRA flight operations should occur when:

a. there is clear evidence that a CAA / MAA is not applying the regulations and level of oversight that its policy requires to the relevant aircraft; or

b. the aircrew and/or passengers flying in the aircraft are of a fundamentally different category to that envisaged by the CAA / MAA in deciding what regulations and oversight to apply; or

c. the aircraft operations generate a risk that is significantly increased from the risk considered by the CAA / MAA in deciding what regulations and oversight should apply.

Cancelling Suspension

2. Procedures to reinstate flight operations should follow the general guidance and procedures provided for Defence registered aircraft, noting that engagement with the CAA / MAA may be required.

GM NDR.05.C – Suspension of NDRA Operations (AUS)

1. Purpose. The purpose of this regulation is to assure there is a mechanism to suspend NDRA operations by or on behalf of Defence, when suitability for flight of the activity is believed to be compromised.

2. Suspension of flight will treat a Defence aviation risk, noting that a contracted flying organisation operating the aircraft may still use it for another non-Defence purpose. As such, any suspension of flight regarding a non–Defence registered aircraft should be advised to the relevant CAA / MAA and the Defence AA via DASA.

(d) The Defence AA must approve any Defence operation of a non–Defence registered aircraft to be operated under an Experimental Certificate of Airworthiness. ▸ **GM** ▸ **AMC**

AMC NDR.05.D – Approval to Operate an NDRA (Experimental CoA) (AUS)

1. Defence AA approval may be obtained though consultation with DASA. Depending on the conditions of intended use and other factors, the rigour applied will be variable.

GM NDR.05.D – Approval to Operate an NDRA (Experimental CoA) (AUS)

1. **Purpose.** The purpose of this regulation is to assure that an additional level of control and oversight of non–Defence registered aircraft (NDRA) that are experimental is provided though involvement of DASA.

2. CASA or an authorised person can issue experimental certificates to allow specific operations of aircraft that are not by their nature type certificated or have certain unapproved modifications embodied. Defence has a duty of care to ensure Defence personnel operating such aircraft are provided oversight. This is assured as any requests to the Defence AA will undergo rigorous assessment by the operational and technical agencies who support the Defence AA decision making process.

NDR.10 - OPERATION OF NDRA BY DEFENCE PERSONNEL

(a) Defence personnel that operate a non-Defence registered aircraft on behalf of Defence must comply with the Defence AA recognised CAA or MAA regulatory requirements and any further controls imposed by the relevant Sponsor. ▸ **GM** ▸ **AMC**

AMC NDR.10.A – Sponsor Controls (AUS)

1. The Sponsor Controls to ensure that Defence members who intend to hire, lease or operate an NDRA within the scope of this regulation may include:

   a. Compliance with DASR NDR.05.A and DASR NDR.05.B as appropriate.

   b. Restrict carriage of passengers to mission essential personnel that are:

      i. Required to travel on the aircraft for duty.

      ii. Civilian instructional staff required to perform supervision and assessment for the attainment of a requisite civil license and/or appropriate endorsements.

   c. The aircraft is maintained in accordance with a Defence recognised maintenance system, and the aircraft has a current maintenance release.

   d. Implement other FMS controls as appropriate.

Pilot Controls for NDRA under CASA Oversight

2. Controls that ensure Defence personnel who, in the course of their duties, safely operate an NDRA oversighted by CASA include:

   a. Hold a current and appropriate civil aviation licence, endorsements and ratings relevant to the aircraft type and operations to be conducted:

      i. without Passengers – current and appropriate civil aviation license

      ii. with Passengers – current civilian Commercial Pilots Licence (CPL) and have a current Command Instrument Rating (CIR). Military pilots who qualify for entry into the ACFS, are not required to hold a civilian Command Instrument Rating if they have previously held an instrument rating on a military aircraft.

   b. Operate within the scope of a valid Air Operator's Certificate (AOC) or CASA Part 141 Certificate.

   c. Log flying times in accordance with CASA requirements in the member's Defence flying logbook.

   d. Operate solely under the relevant Civil Aviation Safety Regulations (CASR) or equivalent for the type of aircraft and operation.

Controls for Aircraft Owned by Defence Personnel Used Whilst on Duty

3. The Sponsor may approve Defence personnel to operate an aircraft whilst on duty which they own, part own or source from a commercial organisation in which they or their next of kin hold an interest.

4. The owned aircraft need not operate under an AOC; however, it is to have the following requirements:

   a. a valid CASA Standard Certificate of Airworthiness

   b. civil registration

   c. other CASA requirements that may apply

   d. not included in the list sports aviation activities that are not regulated under NDR.05.A.

5. The Aircraft Captain requirements include:

   a. hold a current and appropriate civil aviation license

   b. hold appropriate civil endorsements and ratings relevant to the aircraft type and operations to be conducted

   c. hold other CASA requirements that may apply

   d. not carry passengers unless appropriate command authority is provided to do so.

GM NDR.10.A – Sponsor Controls (AUS)

1. **Purpose.** The purpose of this regulation is to provide clarity as to the jurisdiction of the recognised CAA/MAA regulator with respect to licensing and training requirements of Defence personnel who operate non–Defence registered aircraft (NDRA).

2. There are circumstances where Defence personnel temporarily operate NDRA in the course of their normal duties. These circumstances may include flying as part of the ADF Currency Flying Scheme (ACFS) and type conversion flying. Unless an agreement is in place between Defence and the relevant CAA / MAA, compliance is required with the CAA / MAA operating requirements.

3. The Sponsor responsible for the DASR NDR.10.A outcome may impose additional limitations on operating personnel where it is deemed warranted to assure suitability for flight.

4. **Flexibility provision.** Defence personnel that operate a chartered, dry or short term leased NDRA as a 'State Aircraft' may comply with Defence regulatory requirements, providing that the applicable aircraft is not flown outside of the approved CRE without the relevant CAA / MAA approval. This exemption affords flexibility for Defence personnel to utilise their existing qualifications without having to undertake additional training and recognises that some rules of the air, as published by the NDRA regulator, may not be complied with due operational requirements.

NDR.15 - FOREIGN MILITARY OPERATIONS IN AUSTRALIA

(a) The Sponsor who approves a foreign military aircraft to operate within Australian airspace as part of Defence exercises, capability trials or under other sustained operations must ensure that the foreign aircraft operation will not compromise suitability for flight. ▸ **GM** ▸ **AMC**

AMC NDR.15.A – Managing Approvals (AUS)

1. Foreign militaries seeking to operate aircraft in Australian airspace may require additional clearances that are separate to this regulation, such as a diplomatic clearance. Diplomatic approvals for foreign military of government aircraft are managed by the Diplomatic Clearance Cell within the Air and Space Operations Centre. Agencies involved in such clearances include the Department of Foreign Affairs and Trade.

2. **Coordination.** Foreign military flight operations within Australian airspace should be planned with an Australian Defence aviation command or HQJOC. Advice from the Authority may help ensure this outcome is achieved.

3. **Assessment requirements.** This regulation requires that an assessment of Flight Operations and Airworthiness requirements be completed to provide the Defence AA confidence that Foreign Military Aircraft are operated safely within Australian Airspace. If the MAA is not Defence AA recognised, advice should be sought from DASA.

4. **Operational restrictions.** Implementing operational restrictions is an acceptable control. For example, foreign fast jets might be based at RAAF Base Tindal and required to transit to / from the designated training area via routes constrained over sparsely populated areas where possible.

5. If the MAA is not Defence AA recognised, the Sponsor should request a Defence AA recommendation (from the Authority) that would consider evidence that the MAA has a system in place for type certification and continuing airworthiness management of the foreign military aircraft and whether the system might provide the required assurances for the intended operations.

GM NDR.15.A – Responsibilities for Approval of Foreign Military Operations in Australia (AUS)

1. **Purpose.** The purpose of this regulation is to assure the Sponsor responsible for approving foreign military aircraft operations in Australian airspace is also responsible to ensure that the approved operation will not compromise suitability for flight.

Applicability

2. This regulation applies to foreign military aircraft that:

   a. Use Australian airspace for military activity extending to 12 nm offshore from surface level and above.

   b. Operate as part of an exercise, including foreign aircraft that will launch and recover outside of Australia airspace,, but will conduct a military activity within

Australian airspace. Such activity may include weapons release or simulated weapons release activity at an air weapons range or air combat manoeuvres.

c. Conduct sustained operations within Australian airspace. An example of sustained operations is a foreign military that has established a permanent military flying training program within Australian airspace utilising foreign registered aircraft, or civil registered aircraft operated by foreign aircrew. For example, a foreign military flying training school based within Australia.

3. This regulation does not apply to foreign military aircraft that:

a. Operate as a passenger transport or air cargo flight, transiting through Australian airspace – including stopovers – without conducting a military activity.

b. Are used as a static display for commercial interests and will not conduct military operations as part of their time within Australian airspace. For example, the aircraft used by a visiting State dignitary that will remain parked until the State visit is completed, or a foreign military aircraft used only as a display aircraft at an air show. If the aircraft was to conduct an air demonstration, then the regulation would apply.

4. **Suitability for flight considerations.** The sponsor should consider all elements of suitability for flight. For example, whether the foreign aircraft will carry Defence personnel as passengers; or the loss of a foreign military aircraft with respect to other parties. While not a Defence capability issue, such an incident will become a Defence management issue regarding the associated recovery operations, potential for harm to people and property and Defence's public image as a result of a mishap.

(b) The Sponsor who approves a foreign military aircraft to operate within Australian airspace must suspend the foreign military aircraft flight operation when there is concern that suitability for flight may be compromised. ▸ **GM** ▸ **AMC**

AMC NDR.15.B – When to Suspend (AUS)

1. Suspension of flight operations should occur when the aircraft operations generate a risk exposure that is increased from the risk levels considered by the Sponsor during the approval process and the Sponsor believes suitability for flight may be compromised.

Cancelling Suspension

2. Procedures to reinstate flight operations should follow the general guidance and procedures provided for Defence Registered aircraft, noting that engagement with the MAA may be required.

GM NDR.15.B – Suspension of Foreign Military Operations in Australia (AUS)

1. **Purpose.** The purpose of this regulation is to assure that foreign military aircraft are operated safely within Australian airspace.

2. The authority suspending flight operations should advise COMAUSFLT / COMD AVNCOMD / ACAUST and the Authority (through DASA) as soon as practicable.

DASR NTS - Non-Technical Skills

NTS.10 – Defence NTS construct (AUS)

▸ **GM**

NTS.10 – Defence NTS construct (AUS)

Purpose. (Context) The safe and effective delivery of Defence Aviation capabilities is enhanced by human performance skills that promote reliable and effective task performance in teams and in complex work systems (ie NTS). **(Hazard)** Suitability For Flight can be compromised by the inability to recognise and manage threats, errors and human performance limitations. **(Defence)** This regulation requires MAOs, ANSPs and ABMOs to address NTS-related safety risks in the operating environment to ensure Suitability For Flight.

(a) MAOs, ANSPs and ABMOs must utilise defined controls to eliminate NTS-related safety risks SFARP and, if it is not reasonably practicable to do so, to minimise those risks SFARP. ▸ **GM**

GM NTS.10(a) – Defence NTS construct (AUS)

a. MAOs, ANSPs and ABMOs are identified in the Organisation's Compliance Statement, and are accountable for maintaining NTS standards.

b. The terms NTS and Human Factors (HF) are often utilised interchangeably, which can cause confusion. HF refers to the broader field of study that draws together knowledge from psychology, ergonomics, medical and engineering disciplines to minimise human error and its consequences by optimising the relationships within systems between people, activities and equipment. NTS is a branch of HF that focuses on the mental, social, and personal-management abilities that complement the technical skills of workers and contribute to safe and effective performance in complex work systems.

c. NTS training is one example of applied HF training. NTS training provides personnel with the awareness, knowledge and skills required to manage threats and errors in their work environment more effectively.

(b) MAOs, ANSPs and ABMOs management of NTS safety risks must:

1. include within its scope:

   i. Aircrew

   ii. Crew who operate UAS IAW DASR UAS.20(a) Certified Category UAS or DASR UAS.30(b) Specific Type A Category UAS, and where DASA has identified a need to comply with DASR NTS through the OpSpec or UASOP

   iii. Aircraft Controllers.

2. be defined using benchmark information acceptable to DASA ▸ **GM**

GM NTS.10(b)2 – Benchmarking (AUS)

MAOs, ANSPs and ABMOs should benchmark aviation NTS risk management against information and solutions used by exemplar operators with comparable CRE, to develop their own local, contextualised solutions. While MAOs, ANSPs and ABMOs can use information from any DASA-recognised MAAs and CAAs to assist with the development of a DASR-compliant NTS risk management solution, DASA developed the *Aviation Non-Technical Skills: Fundamentals for Aviation Professionals and Aviation Non-Technical Skills: Essentials for Trainers* guidebooks for MAOs, ANSPs and ABMOs, summarising relevant global benchmarking information. These guidebooks align with ICAO's Standards and Recommended Practices (SARPS) and reflect Defence's unique NTS context. Both are available from the DASA website.

3. be integrated into the organisation's:

   i. Flying Management System (FMS) (or equivalent) ▸ **GM**

GM NTS.10(b)3(i) – FMS integration (AUS)

Integration of NTS into the FMS (or equivalent) improves the transfer of knowledge and skills to operational performance, and ensures the training is contextualised based on task, applicable processes and Aviation System in use.

   ii. Safety Management System (SMS) ▸ **GM**

GM NTS.10(b)3(ii) – SMS integration (AUS)

a. MAOs, ANSPs and ABMOs should consider the following when integrating NTS into the SMS:

   i. ensuring hazard identification defines potential NTS safety issues for assessment and mitigation

   ii. ensuring NTS lessons learned from investigations, both internally and from other organisations, are disseminated widely (eg through safety notices, briefings or training) and incorporated into the FMS (or equivalent) where appropriate.

   iii. Quality Management System (QMS). ▸ **GM**

GM NTS.10(b)3(iii) – QMS integration (AUS)

MAOs, ANSPs and ABMOs have regulatory requirements to ensure compliance and conformance. A functioning QMS enables MAOs, ANSPs and ABMOs to be reasonably informed about the level of compliance and conformance of their organisation, to ensure they are meeting their responsibilities under the DASR. The MAOs, ANSPs and ABMOs QMS should include quality planning, quality assurance, quality control and quality improvement for all NTS training.

4. include the following NTS training: ▸ **GM**

GM NTS.10(b)4 – NTS training (AUS)

NTS training content should assess an individual's performance against established standards of validity, sufficiency and currency, as well as address NTS skill gaps within the organisation. An

assessment against 'all dimensions of competency' means that the assessment is not narrowly based on a task, but embraces all aspects of task performance and represents an integrated and holistic approach to the assessment. NTS training should include an assessment process that takes into account: task skills, management and contingency skills, role skills and transfer skills. The DFSB *Aviation Non-Technical Skills: Essentials for Trainers* guidebook is structured to assist MAOs, ANSPs and ABMOs to develop NTS training programs.

i. initial knowledge-based training conducted prior to either: ▸ **GM** ▸ **AMC**

AMC NTS.10(b)4(i) – Initial knowledge-based NTS training (AUS)

a. Regulated entities may meet initial knowledge-based NTS training requirements by ensuring that personnel complete the DFSB *Aviation Non-Technical Skills (NTS) Foundation Course* conducted by either:

i. DFSB

ii. an NTS Trainer (NTST)

iii. or if risk managed IAW DASR SMS, by an NTS Facilitator (NTSF) who holds a Defence-recognised instructor qualification.

GM NTS.10(b)4(i) – Initial knowledge-based NTS training (AUS)

a. The DFSB *Aviation Non-Technical Skills (NTS) Foundation Course* provides Defence Aviation personnel with the theoretical background of aviation NTS and supports the development of practical knowledge relevant to skilled performance. The course provides personnel with a common frame of reference and language, and is designed to be incorporated into the curriculums of initial aviation operations employment training and other aviation-related training courses. *Aviation Non-Technical Skills (NTS) Foundation Course* covers the following topics:

i. history and development of NTS training

ii. Human Performance and its limitations

iii. error and violation

iv. culture

v. decision-making

vi. situation awareness

vii. communication

viii. managing stress

ix. managing fatigue

x. leading and working in teams

xi. threat and error management

xii. automation.

a. conducting Flight Operations

b. controlling Defence Aviation operations under an ANSP

c. managing Defence Aviation operations under an ABMO.

ii. by exception from DASR NTS.10(b)4(i), and risk managed IAW DASR SMS, the regulated entity may exempt personnel from the requirement to complete knowledge-based NTS training prior to conducting flight operations, or controlling or managing Defence Aviation operations ▸ **GM**

GM NTS.10(b)4(ii) – Initial knowledge-based NTS training exemption (AUS)

a. The training exception allowed for in DASR NTS.10(b)4(ii) should only be applied in extenuating circumstances (ie after the MAO, ANSP or ABMO has conducted risk management IAW DASR SMS, and the operational need to apply an exception is warranted when weighed against the residual risk). Extenuating circumstances:

i. could include personnel who are graduates of an exemplar CAA or MAA equivalent NTS or HF training course

ii. exclude the routine or casual application of exceptions.

iii. bridging training conducted:

a. during Aircrew or Crew conversion training, or Aircraft Controller endorsement training or equivalent ▸ **GM** ▸ **AMC**

AMC NTS.10(b)4(iii)(a) – Conversion or endorsement NTS bridging training (AUS)

a. MAOs, ANSPs and ABMOs may meet conversion or endorsement NTS bridging training requirements by ensuring that personnel delivering the training are either:

i. an NTST

ii. or if risk managed IAW DASR SMS, by an NTSF who holds a Defence-recognised instructor qualification.

GM NTS.10(b)4(iii)(a) – Conversion or endorsement NTS bridging training (AUS)

MAOs, ANSPs and ABMOs providing conversion or endorsement training should provide NTS bridging training that contextualises NTS theories and concepts taught during initial knowledge-based NTS training, to the task, applicable processes and Aviation System in use. Such training should incorporate case studies and examples from the associated organisation and exemplar operators with comparable CRE, to contextualise the theory taught during initial knowledge-based NTS training and support the transition from knowledge to skills-based performance.

b. periodically. ▸ **GM** ▸ **AMC**

AMC NTS.10(b)4(iii)(b) – Periodic NTS bridging training (AUS)

a. MAOs, ANSPs and ABMOs may meet periodic bridging training requirements by ensuring that personnel delivering the training are either an:

i. NTST

ii. NTSF.

GM NTS.10(b)4(iii)(b) – Periodic NTS bridging training (AUS)

a. SMS processes can be used to identify and address topical and emerging HF and NTS related issues specific to the organisation that may be targeted through NTS bridging training.

b. Periodic NTS bridging training should be conducted informally in the non-operational environment away from the pressures of the usual working environment, so that the opportunity is provided for personnel to interact and communicate in an environment conducive to learning. Periodic NTS bridging training should be facilitated through small dedicated group sessions (eg no more than 15 personnel). Alternatively, periodic NTS bridging training may be integrated into other training programs, such as NTS continuation training, Aviation Safety days or those outlined within the operator's SMS. NTSF or NTST should use a risk-based approach, relevant case studies and Aviation Safety Events to tailor the training and to encourage the exchange of ideas and concepts regarding topical and emerging NTS issues.

iv. skills-based training and assessment integrated into the organisation's FMS (or equivalent) ▸ **GM** ▸ **AMC**

AMC NTS.10(b)4(iv) – Skills-based NTS training (AUS)

a. MAOs, ANSPs and ABMOs may meet skills-based training requirements by ensuring that personnel demonstrate the application of NTS knowledge during:

i. FMS (or equivalent) training and assessment events

ii. specific NTS training events that include both normal and non-normal situations, and that target relevant and emerging NTS performance issues that are identified through:

(a) Aviation Safety Events

(b) accident and incident reports from other global operators of the Aviation System

(c) contemporary literature.

b. The skills-based training should:

i. be defined in OIP

ii. reference the applicable LMP (if implemented)

iii. use industry standards, operational knowledge and experience to contextualise the training for the Aviation System and the organisation's roles and tasks

iv. be developed with reference to the DFSB *Aviation Non-Technical Skills: Essentials for Trainers guidebook*

v. be delivered by an NTST

vi. be evaluated and updated IAW DASR SMS (management of change).

GM NTS.10(b)4(iv) – Skills-based NTS training (AUS)

a. NTS skills-based performance focuses on competencies such as maintaining situational awareness, decision-making, communication and the management of available resources and involves active practice, assessment and feedback on NTS performance. The DFSB produced *Aviation Non-Technical Skills: Essentials for Trainers* guidebook provides guidance material to support the development of skills-based training.

b. NTS effects on Aviation Safety are contextual, based on task, people, applicable processes and Aviation System in use. NTS training may be inadequate if unique workplace context factors are not addressed. For example, one Aircraft Type could be operated by multiple MAOs but still necessitate differing NTS management solutions due to different CRE. Therefore, common NTS management solutions may not minimise all risks SFARP.

v. continuation knowledge-based training conducted no less frequently than every two years ▸ **GM** ▸ **AMC**

AMC NTS.10(b)4(v) – Knowledge-based continuation NTS training (AUS)

a. MAOs, ANSPs and ABMOs may meet knowledge-based NTS continuation training requirements by ensuring that personnel complete either:

i. DFSB developed NTS continuation training

ii. a course of continuation training that delivers equivalent learning and assessment outcomes to the DFSB developed NTS continuation training.

GM NTS.10(b)4(v) – Knowledge-based continuation NTS training (AUS)

a. **Continuation NTS training.** A single exposure to an NTS training course will not have a lasting effect and does not exploit the additional experience personnel have gained since. It is widely acknowledged that the science associated with NTS and HF continues to advance and therefore without ongoing continuation training and reinforcement, knowledge decays. The periodic assessment of NTS theories and concepts is used to ensure that an individual's level of NTS knowledge remains contemporary.

b. Knowledge-based continuation NTS training should refresh, advance and assess knowledge on topics that include:

i. decision-making

ii. situation awareness

iii. communication

iv. managing stress

v. managing fatigue

vi. leading and working in teams

vii. threat and error management

viii. automation.

c. **NTS Currency.** A two-year NTS Currency period for knowledge-based continuation training allows the MAO, ANSP or ABMO to set appropriate compliance periods and aligns with international best practice. MAOs, ANSPs and ABMOs may impose more stringent Currency requirements. Currency requirements may differ across different roles and positions, and the MAO, ANSP or ABMO should consider the function and roles of each position when determining an appropriate Currency interval.

vi. by exception from DASR NTS.10(b)4(v) and risk managed IAW DASR SMS, MAOs, ANSPs and ABMOs may grant a maximum extension of up to one year ▸ **GM**

GM NTS.10(b)4(vi) – Knowledge-based continuation training extension (AUS)

a. The extension allowed for in DASR NTS.10(b)4(vi) should only be applied either:

i. in cases where the MAO, ANSP or ABMO adopts a cyclical training schedule where a subset of the course content is conducted at more frequent intervals with the intent that all content is covered over the extended period

ii. in extenuating circumstances (ie after the MAO, ANSP or ABMO has conducted risk management IAW DASR SMS, and the operational need to apply an exception is warranted when weighed against the residual risk). Extenuating circumstances:

(a) could include personnel who are graduates of an exemplar CAA or MAA equivalent NTS or HF training course

(b) exclude the routine or casual application of exceptions.

(c) MAOs, ANSPs and ABMOs must:

1. utilise defined: ▸ **GM** ▸ **AMC**

AMC NTS.10(c)1 – NTS Trainers (AUS)

a. MAOs, ANSPs and ABMOs may meet NTST training requirements by ensuring that personnel complete one of the following courses:

i. the *Aviation Non-Technical Skills (NTS) Trainer Course* conducted by DFSB

ii. a course of training that delivers equivalent learning outcomes to the DFSB *Aviation Non-Technical Skills (NTS) Trainer Course.*

b. NTST must:

i. hold one of the following aviation qualifications:

(a) Aircrew Instructor

(b) Check Captain or Category Assessor

(c) Flying Supervisor

(d) ATC or ABM instructor or Training Officer

(e) ATC supervisor.

ii. undergo specialised HF and NTS training

iii. during their knowledge-based continuation NTS training refresh their knowledge in NTS instruction and assessment.

GM NTS.10(c)1 – NTS Facilitators and Trainers (AUS)

a. Effective NTS training relies on the quality and integrity of NTSF and NTST to create and implement strategies to support learning. By ensuring the competency of NTSF and NTST, Defence can reduce variance in performance, including the application of NTS between individuals.

b. DFSB supports tri-Service standardisation of NTST training programs and delivery techniques. However, DFSB does not assess the suitability of candidates or the ongoing standardisation of NTSF or NTST. This is the responsibility of the MAO, ANSP or ABMO.

c. The DFSB *Aviation Non-Technical Skills (NTS) Trainer Course* provides applicable personnel with the knowledge and skills to support the integration of NTS into the FMS (or equivalent).

d. **Facilitators.** NTSF enable learning by guiding participants to new insights through discussions, interactions, structured exercises and experiences. NTSF are not required to undergo specialised HF and NTS training nor are NTSF required to hold an instructor qualification. NTSF may be any member of the organisation. However, they should have the right attitude, behaviours, knowledge and skill including:

i. having an interest in HF and NTS

ii. possessing suitable communication and presentation skills

iii. having an understanding of the operational context

iv. being someone respected by the cohort being trained.

e. The Defence-recognised instructor qualification for NTSF who deliver initial knowledge-based NTS training, or conversion or endorsement NTS bridging training does not need to be an aviation instructor qualification. Personnel who have completed a Defence-recognised instructor's course or a specialist instructor course (eg Driver Instructor) may hold suitable instructor skills.

f. **Trainers.** NTST should have the same attitude, behaviours, knowledge and skill as required of an NTSF. Additionally, NTST specialised HF and NTS training should ensure they have sufficient depth of knowledge in HF and NTS to:

i. impart new NTS knowledge

ii. respond with authority to related questions that may arise during HF and NTS training

iii. deliver all NTS training and evaluate NTS performance

iv. develop and integrate NTS training programs into the organisation's FMS (or equivalent).

g. It is not the intent of this regulation for MAOs, ANSPs or ABMOs to deliver a specific NTS Trainer course where such specialised HF and NTS training has already been achieved through extant aviation instructor, flight test or supervisor courses.

h. **Third-party facilitators and trainers.** MAOs, ANSPs and ABMOs may use a third-party provider to deliver NTS training. In this case, the MAO, ANSP or ABMO should ensure that the third-party provider's:

i. initial knowledge-based NTS training is as required in AMC NTS.10(b)4(i)

ii. knowledge-based continuation NTS training content covers the topics detailed in GM NTS.10(b)4(v)

iii. NTSF and NTST understand the operational context, and NTST meet the training requirements of AMC NTS.10(c)1.

i. selection criteria for NTS Facilitators (NTSF) and NTS Trainers (NTST)

ii. Learning Management Plans (LMP) to train NTST

iii. qualification processes for NTSF and NTST.

2. record NTS training in an enduring format.

DASR ORO - Organisation Requirements for Air Operations

ORO.05 - CONDUCT OF FLYING OPERATIONS

(a) Defence registered aircraft must be operated: ▸ **GM**

GM ORO.05.A – Flight Operations (AUS)

1. **Purpose. (Context)** Defence is required to manage flying operations so that risk to health and safety is eliminated or otherwise minimised SFARP in the delivery of capability. **(Hazard)** Compromised implementation of flying operations risk management controls can impact health and safety in the delivery of capability. **(Defence)** This regulation specifies the requirements for organisations operating the aircraft to ensure they eliminate or otherwise minimise risks SFARP in flying operations.

Overview

2. Flight Operations is concerned with ensuring aircraft are operated in approved roles, with correct mission equipment, by competent and authorised individuals, according to approved procedures and instructions, under a system of supervision and monitoring. This is achieved in practical terms through a structure of three interconnected elements:

   a. Competent flying organisation

   b. Approved operating standards and limitations

   c. Qualified and authorised aircrew.

Flying organisations

3. The aviation community has learnt from experience that aircraft accidents are normally the result of a linked sequence of errors, omissions or failures; the prevention of any one of which would have broken the 'chain' and stopped the accident from occurring. The community has also learnt that such 'chains-of-failure' are unlikely to develop within structured organisations where activities are performed and supervised by appointed individuals in accordance with refined processes and instructions. The likelihood of accidents is further reduced where such organisations are subjected to ongoing (internal and external) assessments of their performance and compliance with prescribed requirements.

4. Flying organisations provide local guidance, training, supervision and monitoring of individual aircrew to ensure they are competent and authorised to conduct specific flying operations. To support the performance of this role, Defence flying organisations are required to establish and abide by local management practices, rules, orders and instructions regarding flying operations. They are also required to develop training and qualification requirements appropriate to the operations they conduct. Collectively, such administrative arrangements, or elements, form the organisation's 'Flying Management System'. DASR ORO.10 identifies the key elements of an FMS.

5. A FMS may be local in focus, but to allow organisations to safely operate with one another, and to provide for the movement of personnel between them, there must be some consistency or commonality across organisations. For this reason, FMSs are subject to Defence-wide requirements relating to operational rules and pre-requisite training and qualification standards.

Operating standards and limitations

6. Operational rules establish boundaries for the conduct of flight operations. Defence operating standards and limitations are the set of approved guidelines, instructions and restrictions within which aircraft are to be operated by personnel belonging to a flying organisation. Such criteria are derived from a collective wisdom that encompasses the engineering and operational fields; with the latter including the military operating area. Operating standards and limitations may be high-level and general in nature or specific to an Aircraft Type, operating locality, competency level, mission category or flying organisation. The common feature is that operating standards and limitations should all promote the attainment of a known level of safety for aviation operations. They should also be consistent and not susceptible to mixed interpretations or subject to arbitrary alteration. Notwithstanding this, the nature of the considerations behind operating standards and limitations means that they are not always permanent; they may change as more becomes known about human behaviour and aircraft design or as other factors come into play.

7. The Defence flight operations concept operates on the principle of centralised control and decentralised execution (or Mission Command). This allows commanders the flexibility to exercise discretion and judgement in managing the safe operation of aviation systems they are familiar with in roles and environments they are accustomed to and approved for. There remains, though, a need for operational rules to be based on minimum and consistent criteria, so Defence flying operations regulations are intended to prescribe common minimum requirements which are then supported by more focused and tailored rules developed for individual flying organisations.

8. At the level of a flying organisation, standards and limitations whether locally and externally developed may take a number of forms including, among others, flight manuals, Orders, authoritative Flight Information Documents and rules governing crew training and currency, low flying, air displays, cargo carriage, the use of role equipment and others. Collectively, such documentation comes under the title of OIP, the subject of DASR.AO.GEN.05. Other MAAs and CAAs may use the term Instructions for Continuing Airworthiness (ICA) in lieu of OIP.

Aircrew qualification and authorisation

9. The safety of aviation systems depends upon them being designed, constructed, maintained and operated by personnel who are competent and authorised to do so. The abilities of the end-user are key design considerations for any item of equipment, but this is a particularly important principle in aviation. Designers, however, still need to presume a certain level of proficiency or competency in operators and this manifests itself in design parameters covering such matters as handling characteristics, cockpit and control layouts and the coverage of automated systems. Defining and attaining

these operator abilities is a prerequisite to achieving known minimum levels of operational safety and effectiveness.

10. To help meet operational safety and effectiveness minima, Defence only permits aviation systems to be operated by qualified and authorised individuals who have been assessed as competent and fit to operate a particular type of aviation system in specified roles. However, since Defence aircraft may be operated in multiple roles (many of which may be unusually demanding) it may be not be feasible for aircrew flying a particular type to be competent in all of its intended roles. There may necessarily be a range of competencies required within a flying organisation. Furthermore, some roles that may be technically possible for an aircraft to perform may not be approved for a particular flying organisation because it is not practicable for its personnel to become and stay competent in performing the roles.

11. Competency in the context of Defence flying operations refers to the capacity of an individual to effectively and safely complete a task to a required standard of performance through the application of appropriate skills, knowledge and attitude. For aircrew, competency is achieved and recognised through a controlled and progressive process of training, accumulated experience and formal assessments.

12. Since competency is measured against a standard of performance, flying organisations must determine what these standards are. Certain competencies are regarded as essential for the safe operation of all aircraft, so these are set under Defence-wide arrangements or articulated through common principles. For example, Defence has common principles relating to minimum levels of training and proficiency required to safely operate aircraft in general. There are also minimum training and qualification requirements stipulated for medical fitness and general aviation operations, such as basic flying training, Non-Technical Skills Training (NTS), Risk Management (RM) and aviation safety. Flying organisations are responsible for establishing local requirements that relate more particularly to the organisation's operating environment, roles and aviation systems. Competency requirements must be sufficient in scope and detail to provide a suitable degree of confidence that a known level of safety can be achieved in flying operations when aviation systems are operated by personnel with prescribed qualifications and levels of experience and proficiency.

13. Defence flying operations requirements regarding competency levels and the management of local competency assurance regimes are prescribed in DASR AIRCREW.

Operation of Non-Defence Registered Aircraft (NDRA)

14. Where Defence personnel operate non-Defence registered aircraft, the principles that underpin the Defence concept of flight operations remain relevant. Operational safety depends upon the aircraft being flown in accordance with approved standards and limitations by qualified and authorised individuals working within an effective flying organisation.

15. As with operations involving Defence aircraft, commanders will need to make determinations about criteria that must be satisfied in order to obtain a desired level of safety in the operation of non-Defence registered aircraft. Conformance to applicable civil aviation requirements covering crew competency and operating standards and limitations is mandatory in making such determinations, but additional criteria may

need to be developed under some circumstances. Moreover, though non-Defence registered aircraft may be operated under arrangements that incorporate a level of oversight by a civil flying organisation, Defence flying organisations will nonetheless need to supplement civil requirements with their own to ensure that Defence personnel continue to receive suitable guidance, supervision and monitoring. The nature of such supplementation will depend upon the situation and the associated degree of risk.

1. within the approved Statement of Operating Intent and Usage (SOIU) and Configuration Role and operating Environment (CRE) parameters
2. in accordance with the Type Certificate and MAOC limitations
3. in accordance with the procedures in Defence AIP, except as required by the CAA of the state of operation
4. as detailed in the Aircraft Flight Manual and applicable OIP
5. in accordance with Defence OIP, and
6. at certified aerodromes, non-certified aerodromes and any other non-defined areas where it is safe to do so. ▸ **GM**

GM ORO.05.A(6) - Aerodromes (AUS)

1. It is the responsibility of the MAO to determine which aerodromes are safe and suitable for the operation of their aircraft. The suitability of an aerodrome depends on aircraft capabilities, the declared features of the aerodrome and the activity being carried out.
2. Certified aerodromes operated under the oversight of a recognised CAA or MAA have systems in place to ensure the ongoing safety of the aerodrome. Defence aerodromes are regulated under DASR 139. CAA / MAA systems include design and maintenance standards, operational controls and reporting mechanisms to ensure that published data remains valid. Operations at these aerodromes therefore, have a lower level of risk than those at non-certified aerodromes.
3. Non-certified aerodromes may still meet the physical and operational characteristics as that of certified aerodromes but may have less oversight and assurance by a CAA or MAA, due to potentially less stringent inspection and maintenance regimes.
4. Aircraft can be operated from a non-defined area. Non-defined areas are not considered aerodromes but may be utilised subject to MAO-approved procedures.
5. The MAO should consider a system to assess, control and manage the risk of operating at aerodromes other than those that are certified. The MAO is expected to use professional judgement in determining whether an aerodrome meets the requirements for safe operation of their aircraft in the absence of formal certification.

ORO.10 - FLYING MANAGEMENT SYSTEM

(a) The MAO must ensure a flying management system (FMS) is maintained that includes:
▸ **GM**

GM ORO.10.A – Flying Management Systems (AUS)

1. Purpose. The purpose of this regulation is to ensure flying organisations have an adequate flight operations framework of authority to enable assurance of flight safety.

2. The key elements of an FMS are:

   a. **Appointment of Key Staff.** Key staff are those personnel appointed or delegated by commanders to be responsible for managing or controlling some aspect of the FMS. Appointment responsibilities are usually based on performance of a specified function; for example, flight authorisation officers. All Key Staff appointments are made in writing at the appropriate command level. Further guidance is provided in DASR ORO.15.A.

   b. **Management of the Statement of Operating Intent and Usage (SOIU).** The SOIU defines the approved roles and environment for the aircraft type. Guidance on the content and structure of an SOIU is contained in DASR ARO.50. A SOIU for each aircraft type is managed within the FMS. Management of the SOIU ensures that any changes or variations are appropriately handled, and ensures the SOIU remains up-to-date and valid.

   c. **Aircrew competency.** For each aircraft type, aircrew competency and currency standards must be defined and recorded. Management of aircrew competency within the FMS ensures that prerequisite qualifications are obtained, aircrew currency is achieved, and that aircrew are competent to perform their assigned roles.

   d. **Flight Authorisation.** Flight Authorisation underpins safe Flight Operations by assuring that all contributing factors to the conduct of safe Flight Operations have been considered, and an appropriate basis exists for safe Flight Operations. The FMS ensures that the Flight Authorisation process is defined, controlled and recorded. Further guidance on Flight Authorisation is provided in DASR ORO.30.

   e. **Risk Management (RM).** RM is a documented process to assess hazards resulting from aviation operations. Whilst the RM process is described in Defence Aviation Safety Manual and associated subordinate single-Service instructions, the FMS ensures the process is applied locally and that operations are authorised at the appropriate level. Additional guidance on RM management is included in the Defence Aviation Safety Manual.

   f. **Aviation safety management.** Aviation safety management includes education, incident prevention and correction, and investigative functions aimed at promoting a ‘safety culture’ within the Defence aviation community. The FMS ensures aviation safety principles are applied and incidents or potential hazards are investigated, reported and prevented. Further guidance on flying safety management is provided in the Defence Aviation Safety Manual.

g. **Management of Orders,** Instructions and Publications (OIP). OIP collectively document all limitations, instructions, procedures, processes and rules necessary to operate an aircraft type. OIP includes all documents which are essential for operation of an aircraft type in the approved roles, or are authoritative in terms of providing a framework of orders and information to facilitate safe operations. Management of OIP ensures they are accurate, available and authorised. Additional guidance on OIP management is included in DASR AO.GEN.05.

h. **Management of Flying Simulation Training Devices (FSTD).** Some aspects of flying training are performed via ground based simulation devices. Where these systems are utilised in lieu of actual flying, the training value provided must be validated, and the basis of validation maintained. The FMS ensures that such devices are managed to assure the continued validity of the simulated curricula. Guidance on the management of FSTDs is included DASR FSTD.

3. Each element of the FMS, when cohesively managed in relation to aircraft types, collectively contributes to the conduct of safe operations. Whilst the FMS provides the framework for managing day-to-day operations, the system is directly supported by defined operational rules as required by DASR Aircrew. These regulations prescribe a consolidated list of rules and standards which are required to support the safety of operations for applicable aircraft types. The FMS should be constructed on the basis of these rules and requirements and continually assure compliance.

4. The interaction of the FMS elements described in the preceding paragraphs is expanded further in Figure ORO.10.A–1. The Flying Management System can be considered an interdependent system with the aim of enabling safe and effective Flight Operations. An important feature is the role of the defensive mechanisms inherent to the FMS which are designed to allow a combination of activities to result in safe Flight Operations.

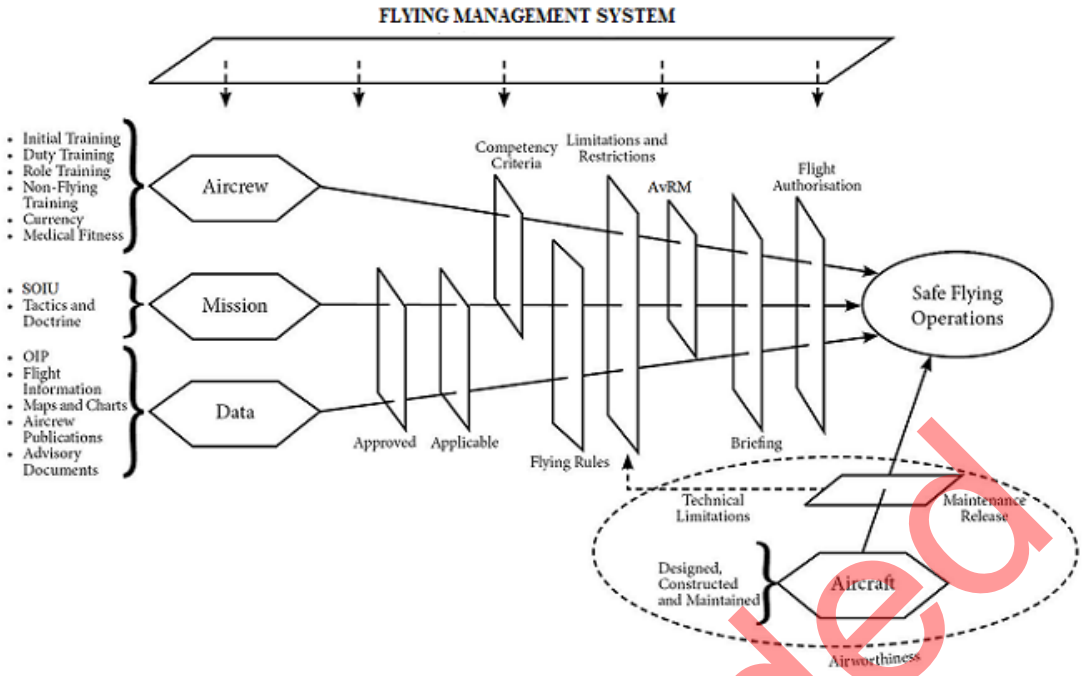

Figure ORO.10.A–1—Flying Management System (FMS)

Organisational Implementation

5. **Implementation of an FMS for an aircraft type occurs at various command levels within an overall flying organisation.** The custodian of the system is the MAO who is responsible for the safe management of the aircraft type. Implementation of the FMS by the MAO may vary depending on the variety or complexity of the subordinate units operating the aircraft types. The MAO and commanders at different levels may appoint Key Staff to manage aspects of the system according to their experience and position within the flying organisation.

6. **Unit Level implementation.** Unit Level management is the lowest level of implementation of the system. The flying unit is primarily concerned with the day-to-day conduct of operations and as such should define authorisation and supervision processes, and operational procedures particular to specialist roles performed by the unit. Operating units should provide advice to higher level command on the effectiveness of the FMS arrangements directed by the Wing or Group level. Compliance with the FMS requirements should mainly be assessed at the operating unit level.

7. **Wing (E) Level implementation.** Flying operations management at Wing level may satisfy the majority of the regulatory requirements for an FMS. Although the SOIU may be managed at a higher level, the Wing Level organisation should be the custodian of the aircraft roles and environment. The Wing may provide advice to COMAUSFLT/ COMD AVNCOMD/ ACAUST on any necessary changes to the SOIU, or identify new roles. With a number of operating units utilising the same aircraft type, the Wing may also be best placed to define and standardise currency and competency criteria, manage OIP and training devices, and define policy and processes for RM and aviation safety.

8. **Group (E) Level implementation.** Flying management at Group Level (which is the next level above Wing) should include those functions generic to the operation of all aircraft types within the MAO. These might include the:

   a. definition and approval of pre-requisite training and qualification criteria for the broader discipline of flying operations, for example, fast-jet operations, Army helicopters, transport aircraft, etc;

   b. management of the SOIUs for each aircraft type, and

   c. management of Group Level OIP applicable to operations involving the aircraft types and roles.

9. **Management of Aircraft Types across Command boundaries.** In some situations, a flying organisation will operate an aircraft type which is mainly flown by a separate sub-element of the flying organisation. For example, the PC-21 is predominantly operated by AFTG. However AWC also operate PC-21 aircraft for the purposes of flight test training. A flying organisation may also operate an aircraft type where flying operations of the type is the responsibility of an MAO outside of that organisation's chain of command, for example, PC-21 aircraft operated in the JTAC role, and Army aircraft operated by AWC. In these situations, flying operations authority does not challenge the command chain. Rather, it provides commanders with a source of authoritative advice upon which to base decisions which impact flying operations. In such cases the flying management arrangements which have been implemented to manage an aircraft type should be effective across command boundaries where they remain valid for the roles performed by the external organisation. Such organisations, by their nature, may perform unique roles beyond those typically conducted during 'normal operations'. In this case, the organisation may become the custodian or subject matter expert for the roles they perform. The overall FMS for the aircraft type should therefore be augmented by processes or standards defined by the unique organisation.

10. Ultimately, the distribution of flying management responsibility at group level and below should suit the operational circumstances of the organisation and seek to standardise flying practice in consideration of the intended roles and the impact on flying operations of each aircraft within the scope of the delegation.

Documentation of the Flying Management System

11. The MAO should document the FMS and should:

   a. describe the strategy to manage the flying operations of the aircraft types within scope of the MAO.

   b. identify any unique operational circumstances affecting the management of the aircraft type;

   c. for a large organisation, describe how the FMS has been implemented at each level within the flying organisation;

   d. identify who may appoint Key Staff;

e. identify the custodians or sponsors of specialist roles or functions within the organisation;

f. describe any relationships with external organisations that assist in the operational management of an aircraft type under the management of the MAO; and

g. provide a compliance cross reference of orders and instructions necessary to meet DASR requirements.

1. appointment of key staff
2. management of the Statement of Operating Intent and Usage (SOIU)
3. aircrew competency
4. flight authorisation
5. Risk Management
6. aviation safety management
7. management of Orders, Instructions and Publications (OIP)
8. management of Flight Simulation Training Devices (FSTD).

ORO.15 - APPOINTMENT OF KEY STAFF

(a) The MAO must ensure that OIP issued under this regulation includes: ▸ **GM**

GM ORO.15.A – Appointment of Key Staff (AUS)

1. **Purpose.** The purpose of this regulation is to assure Key Personnel and expertise are assigned within a Flying Management System.

2. Flying organisations contribute to the safety of Defence Aviation by providing local guidance, training, supervision and monitoring to help ensure that only competent and authorised personnel operate aviation systems. Their contribution occurs through the interaction of people, processes and information. Defence views the people formally involved in this interaction as 'Key Staff'. All appointed personnel who support the safe operation of Aviation Systems, such as flight authorisation officers, flight examination officers, aircraft captains, standards officers, and others, are considered to be Key Staff.

3. **Key Staff are not casually appointed.** They must be suitably competent to manage, train and supervise others, and, in turn, must be subject to ongoing supervision and assessment of their competency and performance. They must also understand that they are Key Staff and be formally made aware of their responsibilities and delegations. This requires that those appointments important to the safe management of flying operations be identified, and the associated eligibility criteria and authority delegations determined and made known within the organisation.

4. Personnel who are appointed Key Staff in support of Flight Operations play an essential role in the overall management of the FMS. Key Staff includes:

a. **Flight Authorisation Officers.** Flight authorisation officers are responsible for the flight authorisation of all aircraft operations or simulator flights undertaken by the unit.

b. **Aviation Safety Officer (ASO).** An ASO is a specialist, eg aircrew, ATCO or air defence officers, as applicable to the organisation, appointed at the Command, Group and Wing level and is responsible for management and maintenance of flying safety practices and flying operations frameworks within the operating organisations. Such duties might include, flying safety practices are applied to all flying and aircraft operations; including flying safety training, crew duty limits are being enforced, operational hazards and incident reporting and investigation, and correction of identified deficiencies and SME on flying operations matters.

c. **Flying Instructor.** A flying instructor is a pilot who has been trained and certified as competent to give flying instruction. Sub-categories or specialised Flying Instructor roles may be created or endorsed by COMAUSFLT/ COMD AVNCOMD/ ACAUST as part of the applicable FMS, eg QHI.

d. **Instrument Rating Examiner (IRE).** An IRE is a pilot who may conduct instrument flight tests for the award of an instrument rating. A Senior Instrument Rating Examiner (SIRE) is a Flying Instructor authorised to renew IRE ratings and to conduct instrument flight tests.

e. **Standardisation Officer (STANDO).** A STANDO is responsible to operating unit CO for monitoring and reporting on aircrew compliance with OIPs, and providing guidance for standardisation of unit flying operations.

f. **Unit Maintenance Test Pilot (UMTP).** A UMTP is a pilot specifically trained and endorsed to carry out post maintenance check flights of an aircraft.

g. **Qualified Test Pilot (QTP).** A QTP is a pilot who has postgraduate qualifications to carry out research, development, test or evaluation of an aircraft.

h. **Single Service Aviation Medical Advisor (SSAMA).** A COMAUSFLT/ COMD AVNCOMD/ ACAUST appointment who represents a single Service, is recognised by the Surgeon General ADF as being qualified to provide authoritative aviation medical advice and is responsible for the implementation of aviation medicine policies.

1. key appointments in the management of flying operations are identified
2. the initial and continuing eligibility criteria for each appointment are identified
3. the responsibility and authority of each appointment is clear and unambiguous
4. appointed individuals receive written authorisation which includes any limitations to their responsibility or authority.

ORO.30 - FLIGHT AUTHORISATION (AUS)

▸ **GM**

GM ORO.30 - Flying Supervision and Flight Authorisation (AUS)

Purpose. (**Context**) Defence Flight operations require careful consideration in both planning and execution to ensure safety. (**Hazard**) Depending on the operations' complexity, Crew involved in their planning and execution may not adequately consider, monitor, and mitigate relevant Aviation Safety and Mission factors, leading to potentially compromised Suitability For Flight. (**Defence**) This regulation requires the MAO or Sponsor to define Flying Supervision and Flight Authorisation requirements to provide an independent control of Flight Planning and execution, so that Aviation Safety risks are eliminated or otherwise minimised so far as reasonably practicable; and Mission risks are appropriately managed.

(a) The MAO or Sponsor must utilise a defined Flying Supervision and Flight Authorisation (FLTAUTH) management system to ensure Suitability For Flight for Defence Aircraft, as follows:

1. Initial Airworthiness and Continuing Airworthiness risk controls must be considered by reviewing the planned Flight against the requirements of DASR ORO.05 and, where applicable:

   i. OpSpec limitations defined though DASR ARO.100

   ii. the Flight conditions imposed through DASR 21.A.708, in respect of any approved Military Permit To Fly (MPTF)

   iii. risk controls as required by DASR SPA.10, in respect of any approved Command Clearance

   iv. the Flight conditions imposed through DASR M.A.301(a)2, in respect of any approved deferred defects

   v. for Non-Defence Registered Aircraft (NDRA), the risk controls required by the relevant CAA or MAA. ▸ **GM**

GM ORO.30(a)1(v) – NDRA risk controls (AUS)

The risk controls required by the relevant CAA or MAA may include, for example, geographical operational restrictions associated with a CASR 132 Permit Index (relevant to Limited Category Aircraft operating as Warbirds and Historic Registered Aircraft (WHRA)).

2. Flying Supervision management risk controls must be utilised. ▸ **GM** ▸ **AMC**

AMC ORO.30(a)2 – Flying Supervision management risk controls (AUS)

a. The minimum Flying Supervision management risk controls include:

   i. **Minimum levels of Crew qualification**. The MAO should define in OIP the minimum Crew composition and qualification requirements that support the specific Mission types of a particular Aircraft Type.

   ii. **Assigning Crew to tasks**. Flying supervisors should assign an Aircraft Captain and Crew to each task based on the supervisor's assessment of the nature of the task, the potential risks, and the suitability of the individuals. Flying supervisors should consider cockpit gradient, Crew cohesion, and other associated Human Factors issues when assigning Crew and determining the

Crew structure. Crew selection should occur at unit level to ensure that specific individual Crew limitations and abilities associated with the task or Mission are considered (cognisant of the requirement to develop Crew experience, additional supervising Crew members may be utilised to assure Suitability For Flight whilst developing junior Crew).

iii. **Risk managemen**t. The MAO may utilise Type Specific standard risk assessments of Flights and profiles, to ensure safety.

GM ORO.30(a)2 – Flying Supervision management risk controls (AUS)

a. Flying Supervision includes oversight of the full spectrum of the aviation activity (safety and Mission). Flying supervisors should be familiar with the competencies, capabilities and personal disposition of all Crew that may require authorisation. Such knowledge forms the basis of sound Flying Supervision and enhances Flight Authorisation (FLTAUTH) decision making.

b. Flying Supervision ensures that the controls inherent within the Flying Management System (FMS) are being adhered to on a daily basis at unit level. Flying supervisor controls may be applied (days or weeks in advance) during task programming, Flight Planning and Mission execution.

c. Air tasking and Mission scheduling are distinct from Flight Authorisation.

3. FLTAUTH system risk controls must be utilised, and include the following: ▸ **GM1** ▸ **GM2** ▸ **GM3** ▸ **GM4** ▸ **AMC**

AMC ORO.30(a)3 - Flight Authorisation (FLTAUTH) system risk controls (AUS)

a. Minimum FLTAUTH system risk controls include:

i. **FLTAUTH management responsibilities.** Defining the following in OIP:

(a) the FLTAUTH approval authority

(b) the responsibilities of the Flight Authorisation Officer (FLTAUTHO).

ii. **A FLTAUTH approval authority.** A FLTAUTH approval authority:

(a) should appoint suitable FLTAUTHOs within the operating unit and associated detachments or deployments via a written delegation

(b) should approve the duties, responsibilities and limitations of a FLTAUTHO via a written delegation.

iii. **FLTAUTHO suitability criteria.** The MAO must define minimum FLTAUTHO suitability criteria, which may include:

(a) **Minimum qualification and competency.** FLTAUTHO candidate suitability should be assessed against MAO defined criteria that ensure only appropriately trained, competent and experienced individuals are selected and appointed as a FLTAUTHO.

(b) **Specific authorisations.** FLTAUTHOs may be granted permissions to authorise specific types of Flights only, where a FLTAUTHO is experienced in a niche role of a particular Aircraft Type.

(c) **FLTAUTHO specialisation definition.** A FLTAUTHO should be a pilot. The MAO may specify additional Crew specialisations suitable for FLTAUTHO duties.

(d) **Flying Supervision training requirements.** FLTAUTH should only be delegated to an individual who satisfactorily completes a Service-endorsed Flying Supervision training course, defined in a Learning Management Plan, that includes:

(i) Human Factors

(ii) the Defence Aviation Safety Program and Regulations

(iii) Aviation Safety Hazards

(iv) contemporary risk management

(v) study of Occurrence Reporting, as well accident and incident reports from other global operators, of related Aircraft Types

(vi) FLTAUTHO roles and responsibilities

(vii) supervision of Crew.

iv. **FLTAUTHO periodic reviews.** Reviews at regular intervals, not exceeding 24 months, of the following:

(a) **Delegates (people)** - all FLTAUTHO delegates, to ensure the delegate remains qualified and competent for appointment as a FLTAUTHO

(b) **Appointments (positions)** - all FLTAUTHO appointments, to ensure qualification and competency requirements for the appointment remain valid.

v. **Restrictions on further FLTAUTHO delegation.** The FLTAUTHO may not further delegate their authority except as provided within the limits of their appointment.

vi. **FLTAUTH responsibilities are executed through the normal chain of command.** The MAO or Sponsor should define in OIP:

(a) the responsibilities associated with FLTAUTH

(b) suitable personnel within the chain of command to discharge that responsibility.

vii. FLTAUTHO appointments should not be lower than the Flight Commander or equivalent level, with the exceptions of:

(a) Flying Instructors

(b) OASS participants.

viii. Notwithstanding AMC ORO.30(a)3vii, limited term delegations (for example, to a Detachment Commander for the duration of the relevant deployment) to a lower level may be necessary to meet specific needs.

ix. **Requirements for FLTAUTH by non-executive Flying Instructors**. The FLTAUTH approving authority in flying training units may delegate FLTAUTH of Flights by trainee pilots as Aircraft Captain to approved Flying Instructors. Due to the limited nature of this delegation and the supervisory training provided on Flying Instructor courses, the MAO may waive the requirement for non-executive Flying Instructors to attend a formal flying supervisor course. The following restrictions apply:

(a) Delegations should be limited to those Flights required by the approved flying training curriculum and defined in OIP.

(b) Unit flying executives must maintain close scrutiny of the overall FLTAUTH process, particularly in regard to external factors such as weather.

(c) The FLTAUTH must utilise a check-list based process to ensure all considerations are assessed.

(d) The requirement to define other restrictions to the delegation, based on:

(i) the experience of the Flying Instructor

(ii) the specific nature of relevant Flights within the curriculum.

x. Following Aircraft maintenance, specific limitations must apply to the authorisation of Flights where the Aircraft Captain is a trainee. Any Aircraft which has had maintenance carried out on any of the following components must first be flown by a Pilot categorised on Type:

(a) engine and control linkages

(b) flying controls and associated linkages

(c) flaps and associated linkages

(d) undercarriage

(e) flight instruments.

xi. A trainee Pilot must not be authorised as Aircaft Captain when a Flying Instructor or a Pilot (where the Flying Instructor or Pilot is categorised and current on Type) is allocated as Crew on the Aircraft.

xii. **Use of non-unit personnel as FLTAUTHOs.** All Flights should be authorised by a unit-based FLTAUTHO whenever possible. The MAO or Sponsor should define in OIP the circumstances under which authorisations by non-unit personnel may be performed.

xiii. **Crew disclosure requirements.** Crew should advise the FLTAUTHO, or Aircraft Captain, or other senior Crew members, of anything that may affect a particular

member's medical or psychological fitness, or technical mastery to perform flying related duties.

xiv. **Requirements of the FLTAUTHO.** The minimum requirements of the FLTAUTHO include:

(a) **Conducting a Suitability For Flight assessment.** FLTAUTHO considerations involve a range of factors that ensure an overall Suitability For Flight determination on a Flight-by-Flight basis, and should include:

(i) **Individual FLTAUTHO suitability assessment.** The FLTAUTHO is to conduct a self-assessment to ensure that the FLTAUTHO is appropriate to authorise the Flight.

(ii) **Review of Flight and Flight Related Operations safety risks.** The FLTAUTHO is to conduct a review of the Flight and Flight Related Operations safety risks, considering all factors arising from the SOIU Configuration, Role or Environment (CRE) that have the potential to compromise Suitability For Flight, and being satisfied that the Flight will be conducted whereby residual risk is eliminated or otherwise minimised SFARP.

(iii) **Review of Crew medical fitness to fly.** The FLTAUTHO is to conduct a review of the Crew's medical fitness against DASR MED.15, including:

(A) Temporary Medical Unfitness For Flying (TMUFF) considerations

(B) psychological fitness

(C) the disposition of Crew members in terms of individual Human Factors, including abnormal stresses and external influences which might compromise Suitability For Flight.

(iv) **Crew are trained, competent and current.** The Crew authorised for each Flight meet the Currency, Competency and training criteria relevant to the flying operation to be conducted, specifically considering Aircrew Currency and Competency for the specific operation which is to be conducted.

(v) **Crew are prepared.** The FLTAUTHO is to conduct a review of Crew preparation for the planned Flight, ensuring the Crew have received, or will receive, adequate instructions, information and tasking details to complete the Flight safely and effectively.

(vi) **Crew duty Limitations.** The FLTAUTHO is to confirm the Flight can be performed in accordance with approved Crew duty limitations.

(vii) **Aircraft Captain's Flight Planning process**. The FLTAUTHO is to conduct a review of the Aircraft Captain's Flight Planning,

including to ensure there has been adequate consideration of Aircraft normal and emergency performance.

(b) **Additional considerations for Flights of a more hazardous nature**. In addition to the requirements of the Suitability For Flight assessment, the minimum additional considerations to be applied by the FLTAUTHO include:

(i) **Maintenance Check Flights.** When authorising Maintenance Check Flights, the FLTAUTHO should as a minimum:

(A) be acquainted with Maintenance practices and the applicable Flight check schedule

(B) ensure that the Aircraft Captain meets minimum qualifications and is familiar with relevant requirements and OIP supporting the safe and effective conduct of the check Flight.

(ii) **Flights outside the Aircraft CRE.** Planned Flights outside an Aircraft approved CRE, as defined by DASR ORO.05, require additional planning, training, and approval prior to execution; and should be limited to Flights in accordance with Flight conditions imposed through DASR 21.A.708 for MPTF (including Flight Test) or Command Clearance approvals, and risk controls as required by DASR SPA.10.

(iii) **Low Flying operations.** All Low Flying and terrain Flight operations require specific FLTAUTH, ensuring:

(A) the minimum heights to be flown, along with any route restrictions, are entered in the FLTAUTH record

(B) Flights should be planned to remain over Sparsely Populated Areas and to avoid operating mines, quarries or other industrial centres

(C) weather aspects have been considered where applicable

(D) Crew are aware of:

1. height and lateral separation limitations
2. obstacles
3. other known Hazards
4. their Aircraft's performance and capability in relation to the likely ground and air Hazards
5. known sensitive areas or other Airspace concerns.

(iv) Consideration of specific authorisation limitations that may be applicable to:

(A) operational Missions

(B) Flight Crew training, for Flight Crew normal and emergency training and assessments

(C) Flight Tests

(D) the carriage of certain types of dangerous cargo

(E) Flying Displays.

(c) **Conducting a FLTAUTH briefing.** FLTAUTH briefing requirements include:

(i) that the FLTAUTHO should provide unambiguous instructions and guidance to allow the Aircraft Captain to make well-balanced decisions, while avoiding unnecessary interference with the Aircraft Captain's legitimate decision-making responsibilities

(ii) that the FLTAUTHO must establish FLTAUTH validity criteria, and any limitations that apply, with the Aircraft Captain, including:

(A) the FLTAUTH validity period (time), and if applicable, multi-Flight FLTAUTH requirements (including any requirements for update briefings between the Aircraft Captain and the FLTAUTHO)

(B) Flight meteorological conditions, Aircraft performance considerations, Crew fatigue status, and any other criteria and limitations directed by the FLTAUTHO.

xv. **Conducting Flight monitoring.** The minimum requirement for the monitoring of the Flight, after FLTAUTH, includes:

(a) that the FLTAUTHO or other suitable person maintains oversight of the Flight until its completion

(b) that the Aircraft Captain is to inform the FLTAUTHO of deviations from the bounds of the FLTAUTH as soon as practicable.

xvi. **FLTAUTH record requirements.** A record of FLTAUTH is documented via use of a hard copy form, soft copy form or an electronic means. The minimum requirements for the FLTAUTH record include:

(a) that the FLTAUTH record may not be carried on the Aircraft conducting the task unless a duplicate copy of the record is handled in accordance with a MAO authorised procedure

(b) the relevant Flight details, including as a minimum:

(i) Flight date

(ii) Aircraft Type

(iii) call sign

(iv) pilots

(v) Crew and specified Passengers not recorded in a Passenger manifest

(vi) route if applicable

(vii) sufficient summarised evidence to detail the FLTAUTH (which may include coded Mission descriptors if those Missions are defined in OIP, eg 'GF01'—for the case where GF01 is defined in the relevant LMP)

(viii) any specific limitations that apply to the Flight

(ix) planned Flight start and duration times

(x) identifiable acknowledgements by the FLTAUTHO and the Aircraft Captain

(c) that the Aircraft Captain is responsible for ensuring that post-Flight details are entered in the FLTAUTH record as soon as practicable after Flight

(d) **FLTAUTH record retention.** FLTAUTH records should be retained as a permanent record of flying activity. When no longer required by the unit, FLTAUTH records are archived. An Acceptable Means of Compliance to preserve records is adherence to the relevant Commonwealth records management policy issued under the *Archives Act 1983*.

GM4 ORO.30(a)3 – Flight following maintenance where the Aircraft Captain is a trainee (AUS)

a. The purpose of AMC ORO.30.A.3.X is to require MAOs to risk manage flights, in which the Aircraft Captain is a trainee, following maintenance to Aircraft systems critical to flight safety—to eliminate or otherwise minimise so far as is reasonably practicable the hazard that an incorrect maintenance procedure, or inadequately managed modification, would lead to an adverse safety outcome.

b. This AMC does not preclude trainee Aircraft Captains flying Aircraft immediately following routine maintenance activities (eg an After Flight Servicing, Before Flight Servicing or Turn-around Servicing) in respect of such systems. Nor does this AMC preclude trainee Aircraft Captains flying Aircraft immediately following replenishment of consumables, including tyre changes.

c. Further, the list of Aircraft systems to which a MAO should place restrictions on trainee Aircraft Captains flying on the first flight following significant maintenance is not limited to those detailed in AMC ORO.30.A.3.X. MAOs may identify, through risk assessment, additional Aircraft maintenance activities for which it is appropriate to place restrictions on trainee Aircraft Captains for the first flight following such maintenance

GM3 ORO.30(a)3 – FLTAUTHO Flight Planning review (AUS)

The intent is to ensure the Aircraft Captain discusses performance planning for the Flight at the FLTAUTH brief. The FLTAUTH should, for example, ensure that the planned flight will enable the aircraft to avoid all obstacles, throughout all phases of flight by a safe margin; and ensure the fuel, and weight and balance calculations are accurate. Where standard operating conditions

exist (Flight out of normal operating base with no adverse conditions or no aircraft marginal performance expected for the Flight), this may be a simple discussion. However, there may be other cases where obstacles, environmental, and required aircraft performance (normal and emergency) for the expected runway conditions, warrant additional controls. In these latter cases the FLTAUTHO should consider all available controls, and if necessary include an independent review of aircraft performance criteria (including for example, engine out performance). Where the Aircraft Captain is inexperienced, or Flight Planning indicates the planned Flight may approach conditions leading to marginal aircraft performance, the FLTAUTHO, if a non-pilot, should self-assess whether they hold the competency to conduct the FLTAUTH. Where necessary the FLTAUTH should be referred to a pilot FLTAUTHO that is current and holds a category on the relevant Aircraft Type.

GM2 ORO.30(a)3 – Flight monitoring oversight (AUS)

The nature of oversight is context-based and risk dependent. At a school this would likely be fulfilled by virtue of a duty Instructor monitoring both the relevant Air Traffic Control frequency and Pilot Monitoring Frequency (PMF), positioned either in the vicinity of the control tower, airborne, or at the operations desk. At an air combat unit, where most sorties launch and recover from the main operating base, this is typically achieved by virtue of a duty pilot monitoring the PMF. At a transport or surveillance unit, where the range and duration of missions is typically more extensive, this may be achieved by virtue of an operations cell maintaining two-way communication with the Aircraft Captain, or the FLTAUTHO remaining contactable via phone patch.

The purpose of such oversight is to support the aircraft captain in maintaining Suitability For Flight. In doing so, the FLTAUTHO or other suitable person should provide unambiguous instructions and guidance to allow the Aircraft Captain to make well-balanced decisions, while avoiding unnecessary interference with the Aircraft Captain's legitimate decision-making responsibilities.

GM1 ORO.30(a)3 - Flight Authorisation Officer (FLTAUTHO) system risk controls (AUS)

a. **FLTAUTHO approval authorities**. These are unit commanding officers with the authority for the management of the FLTAUTH system.

b. **The need for Flight Authorisation**. Crew are qualified to operate Defence Aircraft after being assessed as competent and medically fit to do so. However, owing to the complexity of Defence Aviation (ie Aircraft configuration, Crew composition, environmental conditions and individual Mission requirements vary frequently), without an independent FLTAUTH decision, real-time threats to operational Aviation Safety may bypass preventative controls within the Flying Management System (FMS). The lack of an independent FLTAUTH decision may force sole reliance on Crew performing post-event recovery actions to maintain safe Flight operations (see Figure GM1 ORO.30.A (3)–1). The process of authorising Crew to operate Defence Aircraft is intended to ensure system controls are utilised to address the identified Hazards

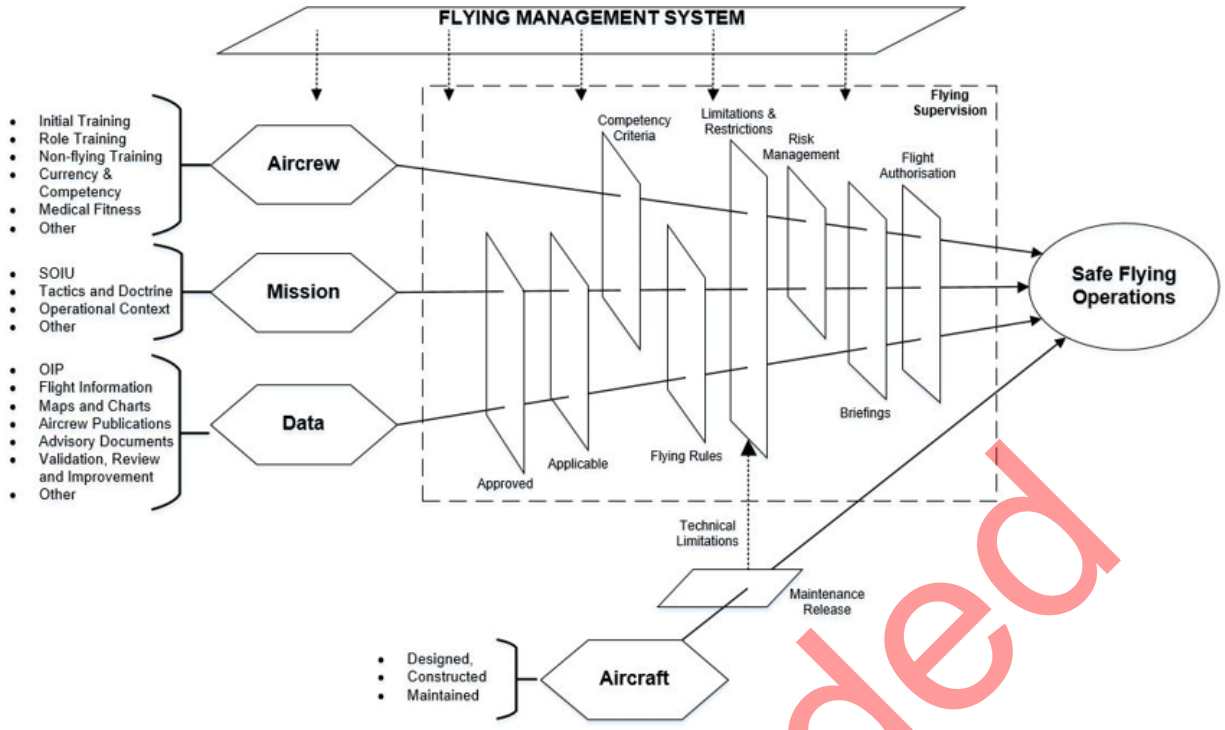

Figure GM1 ORO.30.A (3)–1 — Flying Supervision and FLTAUTH role in the FMS

c. MAO-AMs are accountable for ensuring that flying supervisors make real time, Suitability For Flight determinations through a structured and formal process. This assures the preventative controls within the FMS, as defined by DASR ORO.10, are utilised. The outcome is that Crew are authorised to perform specific roles in a particular Aircraft Type within a planned environment and timeframe.

d. An effective FLTAUTH system should ensure:

i. FMS controls are suitable and in place on a Flight-by-Flight basis

ii. a Suitability For Flight assessment is made by a qualified, competent and appointed FLTAUTHO

iii. the acceptance of responsibility for the safe and effective conduct of the Aircraft Flight by a competent, current and medically fit Aircraft Captain (although the Aircraft Captain is granted authority, it is expected that the minimum required Flight Crew to complete the task are also qualified, fit and competent)

iv. maximum flexibility to support Defence Aircraft operations.

e. **FLTAUTHO suitability criteria**. Effective FLTAUTH draws heavily on aviation experience, technical mastery and proven decision making attributes (where technical mastery is 'The combination of an individual's training, knowledge, experience and skills that ensures their ability to carry out a specific employment function with a high level of competence.' Reference: AAP 1000-D *Air Power Manual*). Accordingly, a potential FLTAUTHO candidate requires both time and aviation experience to develop the requisite knowledge and skills to perform the associated duties.

f. FLTAUTH competency is achieved and recognised through a controlled and progressive process of training and accumulated experience. A potential FLTAUTHO should have demonstrated competency across the spectrum of operations for an Aircraft Type prior to being appointed.

g. The importance of the FLTAUTHO holding a category on Type is to ensure that the FLTAUTHO has technical mastery on the applicable Aircraft Type, inclusive of:

i. demonstrated competency in the Aircraft Type's Configuration, Role and Environment (CRE), as defined in the SOIU

ii. awareness of the Human Factors requirements of the Aircraft Type

iii. awareness of the 'nuances' of a particular Aircraft Type.

h. The regulation requires initial category on Type only. Ongoing category on Type currency requirements may be specified by the MAO.

i. **FLTAUTH in practice:**

i. **Use of non-unit Personnel as FLTAUTHOs**. Operational requirements may exist which necessitate the authorisation of Flight operations by a higher headquarters or an associated training unit.

ii. **FLTAUTH by non-executive Flying Instructors**. Trainee pilots are tasked as Aircraft Captain to meet curriculum objectives during pilot training. Accordingly, the FLTAUTH approval authority of a flying training unit may delegate FLTAUTH of Flights by trainee pilots as Aircraft Captain to approved Flying Instructors.

j. **Crew disclosure requirements.** For FLTAUTH to be effective, the FLTAUTHO requires sound and up-to-date knowledge. Therefore, the Crew disclosing factors that could potentially compromise Suitability For Flight is essential.

i. the provision of a FLTAUTH mechanism for the identification of potential Hazards and controls independent of the Aircraft Captain

ii. by way of exception from ORO.30(a)3(i), self-authorisation provisions may apply as follows:

a. Under certain circumstances a Flight Authorisation Officer (FLTAUTHO) may authorise Flights where they are acting as the Aircraft Captain, commonly referred to as 'self–authorisation'. ▸ **AMC**

AMC ORO.30(a)3(ii)a – Requirements for self–authorisation (AUS)

a. The MAO or Sponsor should define in OIP the minimum requirements to exercise self-authorisation, including that:

i. OIP supporting this control should list the circumstances under which self-authorisation may be performed

ii. self–authorisation should only occur when another suitable FLTAUTHO is not available and, regardless of the reason for doing so, the default position should always be to obtain independent FLTAUTH whenever practicable

iii. if a suitably qualified FLTAUTHO is not available and self–authorisation is necessary, the Aircraft Captain should attempt to discuss the Flight profile with a qualified Flight Crew member to provide some measure of independent oversight

iv. a check-list based process should be used whenever self–authorisation occurs, to ensure all considerations are assessed.

b. ADF Currency Flying Scheme (ACFS) participants, unless the Sponsor directs otherwise, must 'self-authorise'. ▸ **AMC**

AMC ORO.30(a)3(ii)b – ADF Currency Flying Scheme (ACFS) (AUS)

ADF Currency Flying Scheme (ACFS) participants may not have previously held a FLTAUTH appointment, or have access to an appropriate FLTAUTHO. Therefore, unless the Sponsor directs otherwise, in addition to any civil requirements, ACFS participants must 'self-authorise' IAW AMC ORO.30(a)3(ii)a.

iii. the FLTAUTHO must have gained an initial category on Type to undertake FLTAUTH duties on the relevant Type

iv. by way of exception from ORO.30(a)3(iii):

a. the MAO-AM may issue a waiver against the requirement to have gained an initial category on Type if the FLTAUTHO holds, or has held, a category on Type for a similar Aircraft, or is assessed to possess the technical mastery required to compensate for the lack of a specific category on Type.

b. an approved Flight Test organisation is exempt from category on Type requirements for Flight Test activities where the FLTAUTHO both:

(1) holds a DASR AIRCREW.10 Flight Test (Flight Test Pilot or Flight Test System Specialist) or Flight Test Engineer qualification relevant to the Flight Test activity

(2) has been informed as to the Type Specific considerations relevant to the Flight. ▸ **GM**

GM ORO.30(a)3(iv)b(2) – Type Specific considerations (AUS)

The intent is for the FLTAUTHO to be informed by a pilot with a category on Type as to the considerations relevant to the Flight, or to have completed a Type Specific familiarisation course endorsed by the MAO of the relevant Aircraft.

v. the FLTAUTHO and Aircraft Captain must certify the FLTAUTH record before Flight

vi. by way of exception from ORO.30(a)3(v), FLTAUTH or changes to FLTAUTH may be given verbally or via electronic means. However:

a. the details of any verbal FLTAUTH should be recorded in the FLTAUTH record as soon as practicable

b. wherever possible, the Aircraft Captain or FLTAUTHO should leave a written record on the ground with a responsible person, or an electronic record, of a verbal FLTAUTH prior to the Flight, as directed by the FLTAUTHO.

(b) **Non-Defence Registered Aircraft (NDRA).** By way of exception from ORO.30(a), for NDRA Flights that are solely conducted by non-Defence Flight Crew, the requirements of ORO.30(a) do not apply.

ORO.40 - AERONAUTICAL LIFE SUPPORT EQUIPMENT

▸ **GM**

GM ORO.40 – ALSE Management System (AUS)

1. **Purpose.** (Context) Crew and passengers on aircraft are often required to wear or carry ALSE to support mission requirements, or to control potential post-crash hazards. (Hazard) Compromised function of ALSE affects Suitability For Flight or post-crash survivability. (Defence) This regulation requires the MAO to implement ALSE management controls to eliminate or otherwise minimise risks to health and safety.

(a) The MAO must establish an ALSE management system to enable the acquisition, integration and use of ALSE. ▸ **GM**

GM ORO.40.A - ALSE Management System (AUS)

1. **Appointment of key staff.** The MAO should appoint an ALSE manager in accordance with DASR.ORO.15.

2. **Scope of ALSE management system.** The scope of the MAO's ALSE management system comprises all ALSE, including that subset of ALSE managed as part an aircraft's type design (detailed in DASDRM Section 5 Chapter 2). This ALSE subset is considered during an aircraft's initial type certification. Subsequent changes, additions or deletions considered through Supplemental Type Certification or as either Major/Minor Changes to the type design.

3. **Role of SRSPO ALSLMU.** ALSLMU is sponsored by HQAC A8 as the ADF SME agency and the manager of ADF common ALSE. ALSLMU is the primary SME referred to at DASR ORO.40.B(2). ALSLMU also provides ALSE risk advice contextualised to ALSE functions in the operational context. The senior engineer within ALSLMU may also be assigned as the DoSA-ALSE.

4. **MAO evaluations.** The MAO should conduct evaluations of ALSE application, integration and hazards associated with their applicable platform. Such assessments are subject to the requirement for SME advice at DASR ORO.40.B(2). SME endorsement by SRSPO ALSLMU will encompass both platform-specific ALSE as well as those which are common across platforms.

5. **ALSE obligations external to DASR.** Platform-specific configuration control and CASG Materiel Design Acceptance processes may also exist. The MAO ALSE management

system should integrate DASR and other platform requirements not regulated under DASR.

(b) Prior to to approving ALSE, the MAO must ensure:

1. that the ALSE is certified. ▸ **GM**

GM ORO.40.B(1) - Certified ALSE (AUS)

1. In this context, the term 'certified' has two meanings:

   a. **For ALSE considered to be part of an aircraft's type design,** certification refers to the outcome of the DASR.21 processes associated with type certification, supplemental type certification and MAJOR / Minor changes. The MAO may approve the use of the ALSE based on these certifications. Prior to approval of any ALSE, the MAO should assess the adequacy of the integration between certified and non-certified ALSE by seeking SME advice (see **DASR GM ORO.40.A**).

   b. **For ALSE which is not part of an aircraft's type design,** certification refers to a process in which the MAO ensures that the ALSE complies with the relevant design requirements in DASDRM Section 5 Chapter 2. Although some ALSE is not considered part of an aircraft's type design, it may still adversely impact broader aviation safety matters. Certification should be performed, on the MAO's behalf, by ALSLMU.

2. the ongoing use of ALSE is risk-managed under the MAO SMS, seeking Subject Matter Expert (SME) advice to identify and manage ALSE hazards. ▸ **GM**

GM ORO.40.B(2) - Risk management of ALSE (AUS)

1. ALSE-related hazards and their resultant risks should be considered in conjunction with all other risks within the MAO's SMS.

2. The ability to eliminate or otherwise minimise ALSE risks SFARP does not remain static throughout the ALSE operational lifecycle. The MAO ALSE management system should enable investigation of ALSE technology improvements to ensure ALSE-related hazards continue to be eliminated or minimised SFARP. ALSLMU can offer SME advice relating to ALSE technology.

3. **SRSPO ALSE advice.** SME advice contributes to the MAO's reasonable knowledge of their ALSE hazards, risks and treatment options to assist with meeting their Duty Holder obligations. Risks are communicated to MAO's through SRSPO Formal Advice using the Defence Harmonised Risk Matrix. SRSPO ALSLMU has access to Defence Science and Technology Group (DSTG), Institute of Aviation Medicine (IAM) and commercial Original Equipment Manufacturer (OEM) expertise to support complex ALSE matters.

3. that maintainers and operators of ALSE are trained and their continued competence in its use can be demonstrated. ▸ **GM**

GM ORO.40.B(3) - Personnel requirements (AUS)

1. **ALSE training.** Aircrew and maintenance training, and their currency requirements need to be defined.

4. the OIP contain when ALSE is to used / operated / carried. ▸ **GM**

GM ORO.40.B(4) - ALSE OIP (AUS)

1. ALSE OIP. ALSE carried on Defence registered aircraft should have associated OIP to govern use, operation and carriage (refer DASR AO.GEN.05).

ORO.50 - AIRCRAFT CREWING

▸ **GM**

GM ORO.50 - Aircraft Crewing (AUS)

1. **Purpose. (Context)** Crew requirements need to consider crew necessary to conduct normal operations and to manage potential in-flight emergencies. **(Hazard)** Compromised crew requirements affect Suitability For Flight. **(Defence)** This regulation requires the MAO to define crew requirements to safely conduct each aircraft role.

(a) Defence registered aircraft must be crewed in accordance with minimum and normal crew compositions promulgated by the MAO. ▸ **GM**

GM ORO.50.A - Aircraft Crewing (AUS)

1. To maintain Aviation Safety in Defence Flight Operations, Aircraft operating within the scope of the DASP must be crewed by an appropriate number of Crew meeting specified qualification and currency requirements, and who have been authorised to conduct the SOIU-approved role.

2. **Aviation safety occurrences.** All crew members have a responsibility to clearly advise the aircraft captain of any circumstance that may compromise the safety of a flight. Where the captain does not properly report a flight safety compromise or breach, it is incumbent on the other crew members to ensure that the authorising officer and aviation safety officer are informed.

3. **Defence members crewing non-defence aircraft.** Defence aircrew may fly on duty as crew in aircraft operating outside of the scope of the DASP provided the flight will further their Service knowledge and experience and that any pre-conditions imposed by the operating authority are satisfied.

(b) Aircraft crews operating Defence registered aircraft must be trained, qualified, competent and authorised in accordance with DASR AIRCREW.

(c) Foreign military aircrew operation of Defence registered aircraft must only be approved by the MAO on the basis that the aircraft will be operated in accordance with the requirements of a Defence FMS.

(d) Civilian aircrew operation of Defence registered aircraft must only be approved by the MAO on the basis of: ▸ **GM**

GM ORO.50.D - Civilian aircrew operation of Defence registered aircraft (AUS)

1. Non-Defence registered aircraft covered by Implementation Procedure for Australian Civil Registered Aircraft Operated as State Aircraft and Aircrew Licensing may be operated in accordance with the CASA / Defence agreement, see DASA Key Documents webpage for details.

2. Civilian aircrew medical fitness is to be in accordance with DASR MED.

1. Identification and attainment of prerequisite civil and military training, qualifications and competency.

2. Familiarity and adherence to applicable Defence, single-Service and type related OIPs.

3. Identification and provision of flying clothing and ALSE necessary to crew the aircraft type.

4. Approval is provided under the appropriate flight authorisation system.

ORO.55 - AIRCRAFT CAPTAINCY

▸ **GM**

GM ORO.55 – Aircraft Captaincy (AUS)

1. **Purpose. (Context)** An aircraft captain is responsible for the overall safe operation of the aircraft. **(Hazard)** Compromised execution of an aircraft captain's responsibilities may adversely affect Suitability For Flight. **(Defence)** This regulation requires the organisation operating the aircraft to define the requirements of an aircraft captain to ensure the safe and effective operation of the aircraft against approved OIP.

(a) An aircraft captain must be assigned for each flight and must be one of the following:

1. a qualified pilot endorsed on the aircraft type and certified as a captain by the commander of the operating unit

2. a qualified pilot undergoing an approved conversion training course on the aircraft type

3. a trainee pilot undergoing an approved pilot training course.

(b) An aircraft captain is responsible for the safe and effective operation of the aircraft in carrying out the assigned task. ▸ **GM** ▸ **AMC**

AMC ORO.55.B – Aircraft Captaincy (AUS)

Authority of Aircraft Captain

1. Within the bounds of section 28 of the Defence Force Discipline Act 1982 (DFDA), all other legal orders and the scope of the flight authorisation, the authorised aircraft captain has total responsibility for the safe and effective operation of an aircraft. The aircraft captain therefore has authority over all persons on board, irrespective of rank, for the period of operation of the aircraft.

2. **Flying instructors.** In any aircraft in which dual controls are fitted and instruction is being given, the instructor should be designated as aircraft captain, and has authority, irrespective of rank, over the student or pilot to whom instruction is being given in all matters concerning the operation of the aircraft. Where the instructor is non-pilot aircrew, the pilot will be designated captain.

Duties and Responsibilities of Aircraft Captain

3. **In flight.** An aircraft captain is responsible for the effective operation of the aircraft in meeting the assigned task. In particular, the captain is to:

   a. ensure that they have received sufficient pre-flight detail by way of tasking information, authorisation guidance, mission briefing, and/or curriculum description

   b. conduct an adequate pre-flight briefing for any crew

   c. ensure the requirements of all orders, instructions, regulations and publications relating to the aircraft and its operation are observed

   d. conduct a post-flight crew debrief

   e. notify the authorising officer of any unusual occurrences or deviations from the flight authorisation.

4. **Aircraft marshalling.** While taxiing an aircraft under the guidance of a marshaller, the aircraft captain retains overall responsibility for its safe operation. The aircraft captain should follow the marshaller's directions except where the aircraft captain considers that, in so doing, the safety or effective operation of the aircraft would be compromised. The aircraft captain should stop the aircraft at once if, whilst receiving marshalling directions, sight of, or confidence in, the marshaller is lost.

5. **Aircraft serviceability and flight safety.** The aircraft captain is responsible for ensuring that the aircraft serviceability state, as indicated by the Certificate of Release to service and associated documentation, is adequate for the safe conduct of the flight.

6. **In–flight occurrences.** Occurrences outside the scope of the flight authorisation should be handled in accordance with the flight manual and applicable OIP if possible. Where that guidance is insufficient or inappropriate, aircraft captains should exercise their best judgement and use all the resources at their disposal to ensure the safe recovery of their aircraft, crew and passengers. As soon as circumstances allow, the authorising officer should be contacted for advice, or informed, when a captain finds it necessary to deviate from the flight authorisation given. During normal peacetime operations, captains should give overriding consideration to flight safety during any deviation from flight authorisation.

7. **Passenger and cargo requirements.** The aircraft captain is responsible for all aspects associated with the carriage of passengers and cargo, appropriate Service specific OIP and other approved publications relevant to the carriage of passengers and cargo.

8. **In-flight transfer of Captaincy.** The in-flight transfer of aircraft captaincy is an undesirable practice which should be avoided if possible. However, where the in-flight transfer of aircraft captaincy becomes necessary for the successful completion of a task, the authorising officer should:

   a. clearly indicate to both pilots the point in the flight that aircraft captaincy transfer is to occur

   b. record the transfer details in appropriate documentation.

9. To make sure there is no uncertainty concerning who is acting as aircraft captain at various stages of the flight or task, all pilots involved should:

   a. advise all crew members on intended aircraft captaincy transfer arrangements during the pre-flight briefing

   b. conduct a formal 'hand-over / take-over' of the aircraft captaincy

   c. advise all crew members when the aircraft captaincy transfer is actually completed.

GM ORO.55.B – Aircraft Captaincy (AUS)

1. The aircraft captain is in the unique position of being the only person on the aircraft who must be aware of all the factors and operational constraints affecting their particular flight. The aircraft captain is assigned command of the aircraft and is legally responsible for the safe and effective operation of the aircraft in performing its mission. Being accountable for the safety of the aircraft and its crew and passengers while underway, the captain has authority over all persons on board, regardless of their rank.

(c) An aircraft captain must:

   1. ensure they have received sufficient pre-flight detail by way of tasking information, authorisation guidance, mission briefing, or curriculum description

   2. conduct an adequate pre-flight briefing for any crew

   3. ensure the aircraft and ancillary equipment is serviceable, a certificate of release to service has been issued at the completion of any maintenance and the aircraft accepted for the flight

   4. ensure the requirements of all OIPs relating to the aircraft and its operation are observed and obeyed

   5. ensure the flight is conducted in accordance with authorised sequences, and relevant OIP

   6. deal with occurrences outside the scope of the flight authorisation in accordance with the flight manual, SI and the principles of good airmanship

7. use all the resources at their disposal to ensure the safe recovery of their aircraft, crew and passengers

8. contact the authorising officer for advice and guidance when necessary to deviate from the flight authorisation given, as soon as circumstances allow

9. conduct a post-flight crew debrief

10. notify the authorising officer of any unusual occurrences or deviations from the flight authorisation

11. comply with post-flight documentary requirements.

(d) OIP issued under this regulation must identify:

1. the responsibilities of aircraft captains

2. the authority of the aircraft captain in all circumstances relating to flying operations

3. the responsibilities of the aircraft captain in relation to cargo and passengers

4. considerations for flight authorisation regarding firearms and ammunition carried aboard Defence registered aircraft, the authorised degree of weapon readiness and method of carriage

5. the circumstances and requirements under which an in-flight transfer of captaincy may occur, including a mechanism to record the transfer in the appropriate documentation.

ORO.60 - PROVISION AND USE OF OXYGEN IN AIRCRAFT

(a) The MAO must establish an oxygen management system that ensures appropriate provision and use of oxygen systems on Defence aircraft. ▸ **GM** ▸ **AMC**

AMC ORO.60.A – Oxygen Management System (AUS)

CONTROLS

1. The oxygen management system controls should include:

a. Direction on determination of appropriate supplemental oxygen supply duration periods and system design as relates to flight crew, other crew and passengers.

b. Ejection seat aircraft occupants are provided a correctly fitted oxygen mask and that maximum use of the oxygen mask is achieved to the extent practical during flight.

c. A suitable supplemental oxygen dispensing system within easy reach of the personnel carried on-board the aircraft.

d. **Methods for calculating supplementary oxygen requirements.** Calculations may consider aircraft performance characteristics WRT emergency requirements as a balance to total quantities of oxygen carried.

e. Oxygen training requirements, unless covered under other OIP.

f. Pre-flight briefing requirements by a suitably qualified person that may include appropriate briefings and demonstrations in the use of the oxygen system.

g. For pressurised aircraft, direction that ensures enhanced emergency response for the pre–fitment of oxygen masks. Examples include:

i. **Above 25 000 ft AMSL:** At least one pilot is seated at the flight controls using an oxygen mask, unless the aircraft is fitted with a quick donning mask system for each pilot. Aircraft fitted with a quick donning mask system must provide a warning of a depressurisation that would necessitate the masks to be donned.

ii. **Above 45 000 ft AMSL:** At least one pilot will use an oxygen mask that is properly fitted and supplying oxygen at all times.

h. Advice relating to high altitude management procedures for levels above 21 000 ft cabin altitude (CA) that reduces the risk of decompression illness (DCI). Refer AMC 2.

HIGH ALTITUDE EXPOSURE MANAGEMENT

2. In the absence of other DCI risk factors, the risk of DCI is considered very low at or below 21 000 ft CA without the need for 100% oxygen or flight restrictions.

3. When an on-board oxygen generation system (OBOGS) is used, the maximum oxygen concentration output achieved by the OBOGS is sufficient when the AMC refers to 100% oxygen.

4. **Unplanned flight above 21 000 ft CA:** 100% oxygen should be applied and time spent above that level should be kept to a minimum.

5. Controls for aircrew and passengers (to include parachutists) that may reduce the risk of DCI for planned flight above 21 000 ft CA include:

a. **Pre–oxygenation.** 20 minutes of pre-oxygenation with 100% oxygen completed before ascending above 21 000 ft CA. Pre-oxygenation is to commence at an altitude where the oxygen system is delivering 100% oxygen (the altitude will vary dependent on the OBOGS) and continued during the climb. If the oxygen system is unable to deliver 100% oxygen prior to flight above 21 000 ft CA, BOS should be selected. A single inadvertent brief break in pre-oxygenation of less than or equal to 60 seconds does not require recommencement of the pre-oxygenation time.

b. **100% oxygen.** Use of 100% oxygen during flight until final descent below 10 000ft CA.

c. **Time at altitude.** After pre-oxygenation, time limits above 21 000 ft CA are applied as specified in Table–1. The time above 21 000 ft CA is based on the highest cabin altitude reached during the sortie. Pilots should descend to or below 10 000 ft CA before the Table–1 time limit is reached. Any breach of

Table–1 limits requires an AVMO assessment before conducting further flight, and requires appropriate safety reporting.

d. **Time between re–exposures within a sortie.** Time spent at or below 10 000 ft CA resets the allowable duration above 21 000 ft CA at a one-for-one rate. For example, when aircrew spend 60 minutes at 23 000 ft CA and descend to 10 000 ft CA or below for 60 minutes, they regain 60 minutes of exposure time and may operate at 23 000 ft CA for a further 120 minutes (allowable at Table 1) before having to descend again. Use of 100% oxygen when resetting for exposure within a sortie, including below 10 000 ft CA, is required.

e. **Subsequent sorties.** Following flight above 21 000 ft CA, within the Table–1 time limits, crew or passengers may only conduct subsequent sorties providing CA exposure does not exceed 21 000 ft CA again within the next 24 hour period.

f. Aircraft equipped with irregular oxygen systems that prevent the use of 100% oxygen for pre-oxygenation, or other aspects of exposure to high altitude requirements, should have alternative RAAF Institute of Aviation Medicine endorsed DCI risk reduction procedures published in type specific OIP that provide an equivalent level of DCI protection.

g. The exposure limits at Table 1 are established utilising the Aviation Decompression Sickness Risk Assessment Computer (ADRAC). These limits do not eliminate the risk of DCI; with a residual DCI risk of approximately 5 - 15% for a person engaged in mild physical activity.

Table 1 – Above 21 000 ft CA time limits

TIME IN MINUTES	CABIN ALTITUDE (FT)
45	24 001 – 25 000
70	23 001 – 24 000
120	22 001 – 23 000
200	21 001 – 22 000

VERY HIGH ALTITUDE EXPOSURE MANAGEMENT PROCEDURES

6. Planned flight at altitudes above 25 000 ft CA may not be conducted without MAO approval as this incurs a significantly increased risk of DCI.

7. MAO may not approve planned flight above 25 000 ft CA unless the RAAF Institute of Aviation Medicine (IAM) has provided written advice and special operational reasons exist, which inform a risk assessment. IAM advice must be sought prior to operating above 25 000 ft CA.

8. When an on-board oxygen generation system (OBOGS) is used, the maximum oxygen concentration output achieved by the OBOGS is sufficient when the AMC refers to 100% oxygen.

9. IAM advice will consider controls for aircrew and passengers (to include parachutists) that may reduce the risk of DCI for planned flight above 25 000 to 38 000 ft CA, which may include:

a. **Pre–oxygenation.** 60 minutes of pre-oxygenation with 100% oxygen completed before ascending above 21 000 ft CA. Pre-oxygenation is to commence at an altitude where the oxygen system is delivering 100% oxygen (the altitude will vary dependent on the OBOGS) and continued during the climb. If the oxygen system is unable to deliver 100% oxygen prior to flight above 21 000 ft CA, BOS should be selected. A single inadvertent brief break in pre-oxygenation of less than or equal to 60 seconds does not require recommencement of the pre-oxygenation time.

b. **100% oxygen.** Use of 100% oxygen during flight until final descent below 10 000ft CA.

c. **Time at altitude.** After pre-oxygenation, time limits above 25 000 ft CA are applied as specified in Table–2. The time above 25 000 ft CA is based on the highest cabin altitude reached during the sortie. Pilots should descend to or below 10 000 ft CA before the Table–2 time limit is reached. Any breach of Table–2 limits requires an AVMO assessment before conducting further flight and appropriate safety reporting.

d. **Subsequent sorties.** Following flight above 25 000 ft CA, within the Table–2 time limits, crew or passengers may only conduct subsequent sorties providing CA exposure does not exceed 21 000 ft CA again within the next 24 hour period.

e. IAM advice will consider the Aviation Decompression Sickness Risk Assessment Computer (ADRAC).

f. The exposure limits at Table 2 are established utilising the ADRAC. These limits do not eliminate the risk of DCI; with a residual DCI risk of approximately 2 - 6% at 25 001 to 30 000 ft CA, and 3 - 16% at 30 001 to 38 000 ft CA, for a person engaged in mild physical activity.

Table 2 - Above 25 000 ft CA time limits

TIME IN MINUTES	CABIN ALTITUDE (FT)
30	25 001 – 30 000
20	30 001 – 38 000

GM ORO.60.A Oxygen Management System (AUS)

1. **Purpose.** The purpose of this regulation is to assure suitability of supplemental oxygen systems for use on Defence aircraft.

2. For Defence aircraft that are not Defence registered, unless agreement exists with CASA that assigns oversight responsibility of the aircraft operation to Defence, or the aircraft is not deemed a State aircraft, the MAO may rely upon the oxygen management provisions required by CASA.

3. The regulatory outcome required is not intended to replace formal aviation medicine training requirements. In developing the oxygen management system, decompression illness (DCI) references should be balanced by limiting oxygen management system to general prevention measures, leaving the more detailed awareness and procedures to be prescribed by aviation medicine regulation outcomes.

(b) The MAO must ensure that flight crew who are occupants of flight crew seats on flight crew compartment duty use supplemental oxygen above 10 000 ft cabin altitude (CA).
GM AMC

AMC ORO.60.B – Flight Crew Oxygen Requirements (AUS)

1. Oxygen management system controls should include:

   a. The supplemental oxygen supply is sufficient to ensure availability for the flight crew for the planned time above 10 000 ft CA if a planned operation, or if unplanned, 15 minutes as a minimum period to allow descent to 10 000 ft CA.

   b. Pre-flight calculation should include the anticipated flight profiles above 10 000 ft CA, planned depressurisation aspects, and potential emergency descent profiles required to descend the aircraft to 10 000 ft CA.

   c. To ensure flight crew are able to achieve access to supplemental oxygen when required the oxygen system should include:

      i. Individual oxygen dispensing units that are connected to the oxygen supply terminal, can be readily and visually checked for the flow and quantity of available oxygen, and are available for immediate use.

      ii. A quick donning mask that can be placed on the face with one hand from the ready position within five seconds, properly secured, sealed and supplying oxygen. RAAF Institute of Aviation Medicine written advice is required if time periods will exceed five seconds.

      iii. The mask should be a pressure demand type mask .Use of a diluter demand pressure breathing regulator design is not mandatory.

      iv. An ability to access the aircraft communications system simultaneously with the use of oxygen.

      v. A portable oxygen system, sufficient supply hose, or spare oxygen outlets and masks to ensure immediate availability of oxygen for flight crew members who are required to move around in the aircraft to perform essential flight crew duties.

GM ORO.60.B – Flight Crew Oxygen Requirements (AUS)

1. **Purpose.** The purpose of this regulation is to assure that reduced levels of oxygen do not introduce performance deficiencies that could compromise safety of flight. The regulation does not consider mission capability beyond airworthiness aspects and specifically addresses only the flight crew who are holding primary control of aircraft flight systems. If deemed necessary, the MAO may expand those flight crew members

who are deemed to be actively conducting essential flight crew duties. In this manner, the regulator does not impose potentially unneeded aircraft design features.

2. The regulation does not discriminate between pressurised or non-pressurised aircraft, as a cabin altitude above 10 000 ft CA presents the same hazards and requires the same controls.

3. **Flexibility Provision.** The MAO may approve flight above 10 000 ft CA, where the aircraft is not equipped with an adequate supplemental oxygen system, if required due to operational reasons.

(c) The MAO must ensure passengers (to include parachutists) and crew not regulated under DASR ORO.60.B use supplemental oxygen whenever: ▸ **GM** ▸ **AMC**

AMC ORO.60.C - Supplemental Oxygen Requirements (AUS)

1. Oxygen supply durations, means of supply and other considerations may be provided under DASR ORO.60 outcomes. Defence aircraft are not always constructed to civil design standards; however, use of any recognised CAA standard for the provision of oxygen, or a hybrid of more than one such standard, which may achieve the required outcome may be used provided technical endorsement and approval has been obtained by the appropriate CAMO.

2. If not considered as part of the initial Military Type Certification, and depending on the complexity of the design, the introduction of a new passenger supplemental oxygen system could be undertaken as:

   a. a change to the Military Type-certificate (MTC),

   b. a (Military) Supplemental Type-certificate,

   c. a modification, or

   d. approved role equipment (see DASR GM ORO.75 – Use of Aircraft Role Equipment (AUS); for guidance on role equipment.)

GM ORO.60.C – Supplemental Oxygen Requirements (AUS)

1. **Purpose.** The purpose of this regulation is to assure that reduced levels of oxygen do not introduce physiological harm to passengers and crew.

2. This regulation does not discriminate between pressurised or non-pressurised aircraft, as a cabin altitude above 10 000 ft CA presents the same hazards and requires the same controls.

3. This regulation does not consider safety procedures and equipment for mission essential passengers who are intending to egress an aircraft above 10 000 ft CA, such as parachute operations. Should mission essential personnel be equipped with mission commander authorised self-contained breathing apparatus (SCBA) for use upon egress of the aircraft, the SCBA may also be used as the onboard aircraft oxygen support system for those personnel.

   1. flight above 10 000 ft CA but not above 13 000 ft CA exceeds 30 minutes, or

2. flight is above 13 000 ft CA.

ORO.65 - CARRIAGE and USE of PORTABLE ELECTRONIC EQUIPMENT

(a) The MAO must ensure that portable electronic equipment (PEE) is only carried and used in accordance with approved Defence OIP that includes the requirements for their carriage and operation by aircrew and passengers: ▸ **GM**

GM ORO.65.A – Authorised Portable Electronic Equipment (AUS)

1. Purpose. **(Context)** PEE is now commonplace on board aircraft, either as carried equipment, or operated whilst on board. **(Hazard)** However, some PEE characteristics may interfere with aircraft operation, compromising aviation safety. **(Defence)** This regulation requires the MAO to implement controls for the carriage and operation of PEE on aircraft, to ensure hazards to aviation safety are eliminated or otherwise minimised SFARP.

2. In the context of this regulation, PEE includes:

   a. personal electronic devices such as laptop computers, tablets and game consoles

   b. personal communication devices such as mobile telephones

   c. medical or monitoring equipment such as heart pacemakers, hearing aids and blood glucose monitors.

3. PEE may be used without any physical / electrical connection to the aircraft, or may be powered through aircraft power outlets such as 240 / 115 V GPO or USB.

4. In order to create the approved Defence OIP, the MAO should seek engineering advice through its CAMO.

ORO.70 - CARRIAGE OF PERSONNEL ON DEFENCE AIRCRAFT

(a) The MAO must ensure a system is established that assures the carriage of personnel in Defence aircraft will not compromise suitability for flight. ▸ **GM** ▸ **AMC**

AMC ORO.70.A - Carriage of Personnel in Defence Aircraft (AUS)

1. While aircraft configuration and mission requirements will vary, the system controls should:

   a. Address the hazards that are present when personnel are carried on Defence aircraft.

   b. Vary depending on whether the person is classified as mission crew or passenger, noting mission crew may not have the equivalent training as flight crew regarding aircraft operations.

   c. Where appropriate, consider and utilise requirements that exist to support carriage of personnel in civil registered aircraft. For example, a civil registered

A340 used to transport troops will already be under CASA oversight, alleviating the need for Defence to produce additional controls, or minimising any additional treatments that may be desired.

System Controls

2. System controls supporting development of a carriage of personnel control system may include:

   a. **Approval authorities.** A system that delegates decisions to carry personnel on Defence aircraft using approved restraints and seating to airworthiness appointments[12] ***Delegation via command authority is less restrictive than delegation via airworthiness appointments, thereby affording increased flexibility.*** and/or relevant command appointments. Approval authorities should be able to:

      i. determine the classification of personnel

      ii. approve the carriage of personnel[13] ***In deciding whether a passenger will be granted carriage, the guiding principle for the approving authority is that such carriage is of benefit to, or in the interests of, Defence. Where delegated approving authorities have any doubt as to the eligibility of an applicant for travel on Defence aircraft, the request should be forwarded to a higher authority for decision.***

      iii. if required, assess documentation that supports judgement of an individual's fitness for flight and the suitability of the aircraft for carriage of such personnel.

   b. **Safety assessments.** Consideration of safety risks apply equally regarding personnel carriage on operations or during training. Similarly, when engaged on operations, in addition to the aircraft captain, the operational commander should be jointly responsible for eliminating or otherwise minimising the safety risk to personnel SFARP.

   c. **Dedicated seats or crew stations.** Personnel should only be carried in dedicated seats or crew stations in accordance with an aircraft's approved SOIU CRE[14] ***Carriage of personnel may be authorised in non-standard aircraft seating under DASR ORO.70.B.***. Considerations include:

      i. passenger capacity and seating configurations

      ii. any passenger capacity limitations due to restricted access to emergency exits by cargo or role equipment

      iii. requirement for the use of seatbelts, harnesses and aircraft fittings and equipment.

   d. **Classification of personnel.** Personnel are classified as crew or passengers, from which risk levels should be determined. Classifying personnel travelling in Defence aircraft with precision assures that the requirement for an individual's presence on-board an aircraft is balanced against the hazards of the aviation

activity[15] ***Definitions for crew, passenger and mission essential are requirements of the COI into the CH–47F crash in AFG 30 May 11 – recommendations 8 and 9.*** . For example, the treatment of risk for a mission essential passenger may be different to that of passenger, as one must fly while the other need not.

e. **Classifying sub-categories of passengers.** When not classified as mission essential, passenger sub-categories can improve awareness of increased risks regarding carriage of a particular passenger type in a crew station or in a specific aircraft type. For example, opportunity travel, VIP, Defence personnel, foreign Defence personnel, Commonwealth employees, external service providers, other non-Defence personnel.

f. **Restricting non-Defence personnel from acting as crew.** Non-Defence personnel should not be permitted to fly as crew on Defence aircraft without approval from an appropriate authority.

g. **Training mission crew and mission essential passengers.** Identifying and training personnel who travel frequently on Defence aircraft may be considered a way of managing increased risk exposure.

h. **Restrictions regarding flights of a hazardous nature.** Unless classified as crew or a mission essential passenger, personnel should be not be authorised for carriage on flights of a hazardous nature. Hazardous flights may include test flights, low level operations, operational missions, certain types of dangerous cargo carriage and display flying.

i. **Restrictions regarding flight crew stations.** Before approving carriage of passengers in flight crew stations, where the presence of the passenger could compromise flight safety, consideration should be given to:

   i. the potential for passengers to access aircraft systems or equipment which may jeopardise the aircraft safety

   ii. the possibility of interference with essential crew functions.

j. **Pre-flight briefings.** Defence has a duty of care for the carriage of passengers who may be unaware of basic aircraft safety requirements. Personnel should be briefed on aspects relating to passenger safety by an authorised person, normally a crew member. At a minimum, all personnel should be instructed on how to use restraint and seating systems and how to operate relevant safety systems, such as emergency oxygen masks. Consideration should be given to comfort breaks, repositioning within the aircraft during flight and other reasons a person may be required to move within an aircraft during flight time. Additionally, an authorised person should brief passengers seated in crew stations on:

   i. flight profiles and sequence of events, especially those sequences that may cause concern

   ii. emergency procedures

iii. any controls or switches that the passenger may be asked to operate

iv. securing or stowage of loose items.

k. **Personnel are fit to fly.** This particularly applies to fast jet aircraft as such aircraft will expose individuals to higher physiological stresses than transport aircraft or rotary wing aircraft. Medical checks should be considered on advice of medical SME.

l. **Use of aeronautical life support equipment (ALSE) and/or personal protective equipment (PPE).** Use of such ALSE and PPE includes training in its use prior to flight.

m. **Minimum levels of qualification.** Minimum flight crew composition and qualification requirements should be specified that support the safe carriage of passengers

n. **Restricting the carriage of loose articles.** Requirements for carriage, stowing and restricted items should be defined to ensure FOD hazards are minimised.

o. **Personnel supervision requirement.** Ratio of supervising flight crew to passengers is defined, particularly with respect to cabin crew vs. passengers on those flights dedicated to passenger transport activities. While CASA standards provide an acceptable means of compliance for this ratio, mission requirements may dictate differing ratios from civil practice.

p. Requirements for the carriage of infants, sick or injured personnel, and handicapped personnel. Any increased requirement for supervising crew members, or competent passengers, to assist in the evacuation of personnel with limited mobility should be considered.

Compliance Examples

3. Examples of a management system supporting the carriage of personnel in Defence aircraft may include:

a. **Example 1:** A MAO of transport aircraft types with dedicated passenger seats that operate in a CRE substantially similar to an equivalent civil aircraft type, may choose to implement appropriate controls from civil aviation that may include:

i. Delegated approval authorities for crew and passengers.

ii. Passenger capacity, ratio of supervising crew and crew qualifications are consistent with civil standards for operation of a similar aircraft type.

iii. Verbal passenger briefs and briefing cards meet an acceptable civil standard consistent with a similar aircraft type.

iv. Provisions for the carriage of loose articles on-board the aircraft meet an acceptable civil standard consistent with a similar aircraft type.

v. Special provisions for carriage of infants, sick or injured persons, and handicapped persons meet civil standards consistent with a similar aircraft type.

vi. The quantity and type of available survival equipment meets an acceptable civil standard consistent with a similar aircraft type.

vii. Minimum requirements for passenger medical fitness for flight are defined.

viii. Any other controls necessary to manage specific hazards identified.

b. **Example 2:** A MAO of aircraft types with dedicated passenger seats, but operating in a specific military configuration and/or role that does not lend itself to drawing from civil aviation controls, may choose to implement appropriate controls that include:

i. Delegated approval authorities for crew and passengers.

ii. The passenger capacity and seating configurations are defined.

iii. Requirements for numbers and type of supervising crew are defined, including crew qualifications and currency requirements.

iv. Passenger briefing requirements are defined, as applicable to the role or mission.

v. Requirement for the use of seatbelts, harnesses and aircraft fittings and equipment are identified.

vi. Requirements for stowage of loose articles and passenger related cargo are identified.

vii. Survival equipment appropriate to the task or mission is carried.

viii. Requirements for the carriage of sick or injured personnel are defined.

ix. Any passenger capacity limitations due to restricted access to emergency exits by cargo or role equipment are identified.

x. Minimum requirements for passenger medical fitness for flight are defined.

xi. Requirements for the use of personal protective equipment (PPE) appropriate to the task or mission are defined.

GM ORO.70.A - Carriage of Personnel in Defence Aircraft (AUS)

1. **Purpose.** The intent of this regulation is to assure that carriage of personnel on Defence aircraft using approved aircraft restraints and seating systems is conducted appropriately, with emphasis on eliminating or otherwise minimising risk SFARP regarding loss of life or injury to personnel carried on the aircraft.[11] ***OAR Decision Brief of 16 Dec 14 (AB20660751)***

2. **Exemption.** This regulation does not apply to crew, who are managed under other approved OIP, such as the aircraft flight manual.

3. **Equipment Inclusion.** Carriage of personnel includes any required equipment a person must use or control to achieve an assigned mission outcome. For example, parachutes or dive equipment. Such equipment is restrained by the owning person, with direction and assistance of a relevant crew member as may be appropriate. Equipment handed over to crew to restrain is treated as cargo and not managed under this regulation.

(b) The MAO must establish a system that ensures a requirement to carry personnel using Non–standard Aircraft Restraint and Seating (NSARS) is such that risk is eliminated or otherwise minimised so far as is reasonably practicable. ▸ **GM** ▸ **AMC**

AMC ORO.70.B – Non–standard Aircraft Restraint and Seating (AUS)

Non–standard Aircraft Restraint and Seating Criteria

1. Use of Non–standard Aircraft Restraint and Seating (NSARS) should only occur where alternate methods of mission execution present greater safety risk. NSARS requirements are based on criteria that may include:

   a. The required configuration of the aircraft provides insufficient seating for the number of mission essential passengers.

   b. The required configuration of the mission essential passenger's equipment being carried restricts use of the approved restraint and seating system.

   c. One or more passengers are required to perform a mission essential function that cannot be achieved if limited to the approved restraint and seating system.

   d. The mission requires personnel in excess of the aircraft's maximum approved seating. This may involve the removal of some or all seats in order to load mission essential passengers and their personal equipment up to the maximum lift carrying capacity of the aircraft.

NSARS Management System Controls

2. The NSARS management system should define controls that may include:

   a. **Approval authorities.** The MAO may agree with commanders on who should approve NSARS activity; however, the approval of NSARS activities remains a joint responsibility as follows:

      i. The commander of the passenger being carried should authorise activities associated with the reduced level of safety provided. Where an operational commander is not readily apparent, is unavailable, or will not have sufficient knowledge of the NSARS risks, the decision to approve an NSARS activity should fall to the chain of command under which the aircraft is operated, which includes the aircraft captain. For example, for a passenger being winched from a submarine by a helicopter, the aircraft captain may be better placed to authorise the activity on behalf of the passenger than the submarine commander.

ii. The MAO retains responsibility for the safety during the NSARS activity and the safety of passengers when carried in approved restraint and seating systems. The MAO approval is executed through the existing FMS via the command chain, flight authorisation (for planned NSARS activities) and ultimately the aircraft captain.

b. **Activity identification.** The MAO should identify and establish a comprehensive list of defined NSARS activities supported by the FMS. The MAO may, where appropriate, approve specific NSARS activities for each delegated aircraft type. Examples might include parachuting, rappelling, helicopter casting, diver drop insertions and winching.

c. **Risk management.** DASR.SMS details the risk management process. NSARS risk management should focus on the likelihood that death or injury to mission essential passengers or crew in the event of violent aircraft motion, heavy landing or aircraft crash may be increased when using NSARS. So that the commander considering approval of an NSARS activity can do so with certainty, the system should provide precise guidelines as to the risk authorisation thresholds at each command level authority. Should such advice already exist in other Orders, Instructions or Publications (OIP), a direction to that OIP is sufficient.

Compliance Example

3. The MAO of an aircraft type with dedicated passenger seats, but operating in a specific military configuration and/or role that requires the use of NSARS, may choose to implement appropriate controls that include:

a. Delegated NSARS approval authorities for both crew and passengers, including risk authorisation thresholds.

b. Specifying responsibilities of aircraft captains for both planned and unplanned NSARS activities.

c. Requirement for the use of NSARS is identified.

d. Maintaining an approved list of NSARS activities for the type, which should include the NSARS passenger capacity, configuration and a supporting mission risk profile (MRP).

e. Requirements for numbers and type of supervising crew are defined, including crew qualifications.

f. Passenger briefing requirements are defined, as applicable to the role or mission.

g. Requirements for stowage of loose articles and passenger related cargo are identified.

h. Survival equipment appropriate to the task or mission is carried.

i. Requirements for the carriage of sick or injured personnel are defined.

j. Any passenger capacity limitations due to restricted access to emergency exits by cargo or role equipment are identified

k. Minimum requirements for passenger medical fitness for flight are defined.

l. Requirements for the use of personal protective equipment (PPE) appropriate to the task or mission are defined.

m. Any other controls necessary to manage specific hazards identified.

GM ORO.70.B - Non–standard Aircraft Restraint and Seating (AUS)

1. **Purpose.** The intent of this regulation is to assure that when use of Non-standard Aircraft Restraints and Seating (NSARS) may be required, the aviation activity is authorised and conducted such that risk is eliminated or otherwise minimised SFARP.

2. Personnel should be secured in certified aircraft restraint and seating systems whenever possible; however, Defence will have operational requirements that may require use of NSARS systems. Previously such a scenario was referred to as contingency loading; however, this term is no longer used as it implies use of NSARS is an unplanned activity, which is not always the case. An example of an unplanned activity, whether an emergency situation or a contingency operation, might be a flood or fire evacuation of more passengers than an aircraft has certified seating for in order to save lives with little or no planning notice. Such activity is not regulated under DASR ORO.70; rather, such activities would be better managed under primacy of command.

3. **History.** The Black Hawk 221 Board of Inquiry report found that over time, activities involving the carriage of unrestrained or improperly restrained passengers and equipment had become the norm when conducting training for Special Operations tasks. The normalisation of such activities made it difficult for participants to identify and mitigate risks. The recommendation from the report, which the then CDF accepted, was:

   - "A review of Operational Contingency Loading (OCL) requirements for Black Hawk operations be conducted to ensure that safety of passengers is not being unnecessarily compromised or sacrificed in trying to gain operational capability. The need is to provide safe operating systems and that any contingent loading should only be considered in operational extremis. The review should ensure that ADF complies as best it can and certainly within the spirit and intent of current WHS requirements."

4. The subsequent CDF direction was aimed at Army Aviation. However, is equally applicable to all Defence aviation activities:

   - "CA, in consultation with CAF is to review OCL requirements for aviation operations, to ensure OCL in training is limited to that which is necessary to meet specific training objectives. The review is to be conducted with cognisance of extant Occupational Health and Safety (OH&S) requirements and [RM] principles."

5. That advice recognises that use of NSARS systems are required in training in order to meet specific training and/or readiness objectives. It is clear from the direction that all Defence organisations were to conduct a review to determine their training requirements. Where carriage of personnel using NSARS is considered necessary to achieve mission objectives, the NSARS management system is intended to eliminate or otherwise minimise risk SFARP.

(c) The MAO must ensure that records of personnel carried in Defence aircraft are raised, maintained and preserved. ▸ **GM** ▸ **AMC**

AMC ORO.70.C – Preservation of Records (AUS)

1. An acceptable means of compliance to preserve records is adherence to the relevant Commonwealth Records Management Policy issued under the Archives Act 1983.

GM ORO.70.C – Passenger and Flight Crew Manifest (AUS)

1. **Purpose.** The intent of this regulation is to assure that manifests, once raised and recorded, are not destroyed prematurely. The COI into the CH-47D crash in AFG 30 May 11 – Recommendation 10 – required that consideration be given to maintaining a record of passengers carried on ADF aircraft to afford the ability for future reference to such manifests. Such information can be invaluable assistance to accident investigations and WHS matters.

2. Lack of a formalised process for raising and preserving a manifest should not be used as a means to stop an operational outcome, as long as the data can be made available at a future date. For example, a passenger who may require a change of flight at short notice, but the passenger manifest has been closed. Rather than not allowing the passenger on the flight, a temporary means may be used to record the passenger details and the manifest be amended when possible. If a passenger record system is not available, the crew manifest system may also be used to capture the passenger data.

3. **Exemption.** Regulatory compliance requires the ability to understand an operation before commencement of the aviation activity. Scenarios may exist where the operational commander or aircraft captain may not be able to formally document passengers in order to comply with this regulation. For example, emergency evacuation of personnel from a dangerous environment where planning is unable to properly identify passenger names and numbers in advance. In such cases, the operational commander and/or the aircraft captain should make decisions regarding safe passenger carriage. If possible, the crew may notify operations staff enroute to the intended landing point, or post landing, of the manifest requirement so that arrangements to create a record post flight.

ORO.75 - USE OF AIRCRAFT ROLE EQUIPMENT

▸ **GM**

GM ORO.75 - Use of Role Equipment (AUS)

1. **Purpose.** The purpose of this regulation is to assure the adequate controls for, and oversight of aircraft role equipment. In essence any equipment that is to be used as role

equipment during flight must be approved for that use. Most aircraft will have a range of operating parameters and technical specifications which govern, or constrain, the design and use of role equipment.

2. Normally, role equipment approval would be given for a specific item part number. However, for some types of generic role equipment, where variation between items is so minor that it does not warrant assessing each item individually, MAO approval may be given for a range of items, such as 'electronic flight bag' tablets, hand held GPS or SF field radios.

3. In order to provide role equipment approval, the MAO would seek engineering advice through its CAMO. For the purposes of determining technical input to the approval process, role equipment is divided into the following categories:

   a. **Certified.** The 'Certified' category includes all role equipment that forms part of the certified aircraft design and thus is subject to DASR.21 requirements. Examples would include external fuel tanks, missile launchers and certified tablet / camera mounting hardware. This category requires no additional technical inputs to the MAO's role equipment approvals. Technical consideration of this category of role equipment, including the development and approval of any required Instructions for Continuing Airworthiness, is provided either through the aircraft's initial type certification program, or approval of in-service design changes. Where new or modified role equipment is proposed for use on a Defence aircraft, the CAMO should seek MTC holder advice regarding whether the equipment should be managed under the 'Certified' category.

   b. **Specific Approval.** Equipment in the 'specific approval' category does not affect the certified aircraft design. This equipment usually has a low level of integration into the aircraft or no integration. The equipment in this category would comprise role equipment:

      i. that has been anchored to the aircraft via a means that is not needed to be certified under DASR.21, (e.g. a medical oxygen bottle strapped to a stanchion)

      ii. that has been anchored via a certified means, but the equipment itself is not certified, (e.g. an 'electronic flight bag' tablet or a camera)

      iii. electronically/electrically connected to the aircraft via an existing certified interface, (e.g. AME equipment using aircraft power}

      iv. unconnected (either electronically / electrically or physically) to the aircraft, (e.g. non-aircraft / non-integrated radios to be used in flight); noting that this equipment differs from portable electronic equipment which is approved via DASR.ORO.65.

      NOTE: 'Specific Approval' role equipment is not synonymous with 'specific equipment' per DASR.21 and is therefore not subject to DASR.21 Subpart K Parts and Appliances requirements. 'Specific Approval' role equipment is approved under the provisions of DASR.ORO.75, not under DASR.SPA.

4. The MAO should seek advice through its CAMO on the categorisation of proposed role equipment and the degree of engineering rigour necessary to inform any 'specific approval' role equipment approvals. Where required, the CAMO should undertake a technical evaluation of 'specific approval' role equipment for potential impact on aircraft safe flight or capability using the criteria defined in the Defence Aviation Safety Design Requirements Manual (DASDRM). The CAMO should provide a recommendation as to the embodiment and use of the equipment, including the implementation of operation, installation and maintenance instructions and support associated with the equipment.

5. Regardless of the role equipment category, risks associated with carriage and use must be eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP). Robust technical evaluation of the role equipment supports the RMA in making this determination.

6. The MAO should ensure that approval for any role equipment, its application criteria and limitations are promulgated in appropriate OIP.

(a) The MAO must ensure that aircraft role equipment is only carried and operated in accordance with approved OIP.

ORO.85 - FLIGHT RECORDER AND LOCATING EQUIPMENT

(a) The MAO must ensure Defence aircraft are fitted with flight recorder and locating equipment appropriate to its military CRE to: ▸ **GM** ▸ **AMC**

AMC ORO.85.A – Flight Recorder and Locating Equipment Management (AUS)

FLIGHT RECORDER SYSTEM AND LOCATING EQUIPMENT REQUIREMENTS

1. All Defence aircraft should be fitted with flight recorder and locating equipment that meet the requirements specified in the Defence Aviation Safety Design Requirements Manual (DASDRM). As part of the system, Flight Recorders should meet the download, interpretation and analysis capabilities specified in the Defence Aviation Safety Manual (DASM).

Flight with Unserviceable Flight Recorder or Locating Equipment

2. A system should be established for the approval of flight for aircraft with unserviceable flight recorder or locating equipment components. When assessing an approval, the nature, risk and urgency of the mission should be considered. All approvals should be recorded.

Intentional Disabling of Flight Recorder Equipment

3. In the event of an aircraft operation where, following an aviation safety occurrence or diversion, unauthorised recovery of flight recorder data could significantly damage national security, the MAO may direct that a component(s) of flight recorders be

disabled for the duration of the particular mission, or that part of the mission pertaining to national security.

Erasure of Flight Recorder Data

4. Flight Recorder data should only be erased where possible in the following circumstances:

   a. In accordance with Intentional Disabling of Flight Recorder Equipment AMC

   b. Under a MAO system of approval, when any component of a flight recorder/ system containing a memory module is removed from an aircraft prior to routine maintenance action not requiring data analysis

   c. When otherwise authorised by the MAO or DFSB.

Quarantine of Flight Recorder Equipment

5. In the event of an aviation safety occurrence requiring investigation, flight recorder equipment from all aircraft involved should be quarantined and access to the data limited to approved delegates.

6. The process of quarantining equipment should ensure that flight recorder information is not erased or corrupted.

7. The DASM provides guidance for flight recorder quarantining after an aviation safety occurrence.

Flight Recorder Data Download, Interpretation, Analysis and Management of Data

8. DFSB should be provided a download, interpretation and analysis capability prior to the issue of an airworthiness instrument. This ensures compatibility with DFSB equipment and / or safety investigation requirements.

9. To ensure flight recorder integrity, routine data captures should be analysed for serviceability.

10. Management of data should address the use and approval of flight recorder data in support of non-safety purposes such as Flight Test and/or other maintenance related functions.

11. The DASM details flight recorder data download, interpretation, analysis and reference data requirements for flight recorder integrity checks.

GM ORO.85.A –Flight Recorder and Locating Equipment (AUS)

1. **Purpose.** The purpose of this regulation is to assure:

   a. that in the event of an aircraft crash:

      i. aircraft and/or occupants are located in a timely manner to increase their chances of survival. Locating equipment includes an Emergency Locating Transmitter (ELT)

ii. accident site hazards are controlled in a timely manner.
Flight and voice recorded information is downloaded, interpreted and analysed by DFSB or approved personnel in a timely manner in support of a safety investigation to aid in the prevention of a future aviation safety occurrence.

2. The primary purpose of flight recorders is to record parametric aircraft flight data and the aural environment of the cockpit including communication to and from the aircraft and between the flight crew members for aviation safety occurrence investigative purposes. Flight Recorders may include:

a. Flight Data Recorder (FDR)

b. Cockpit Voice Recorder (CVR)

c. Voice Flight Data Recorder (VFDR)

d. Underwater Locator Device (ULD)

e. UAV Ground Station record system.

1. Locate aircraft and personnel in the event of an aircraft crash.

2. Provide data that can be downloaded, interpreted and analysed by approved personnel to assist in the prevention of further aviation safety occurrences.

DASR RoA - Rules of the Air

RoA.05 - RULES OF THE AIR

(a) COMAUSFLT/ COMD AVNCOMD/ ACAUST must ensure that the Rules of the Air as they apply to Defence Aviation as stipulated within Defence AIP are harmonised with ICAO and national civil practice wherever practical in order to assure Defence Aviation interoperability with non-Defence aviation activities. ▸ **GM** ▸ **AMC**

AMC ROA.05.A – Rules of the Air (AUS)

1. RoA information sources that will ensure interoperability include:
   a. ICAO Annex 2 – Rules of the Air
   b. Civil Aviation Act 1988 (Clth)
   c. Australian Airspace Regulations 2007.
2. Defence AIP is the preferred document to hold Defence RoA; however, in interests of harmonisation, a shared civil–military RoA document with the civil regulator may also be published.

GM ROA.05.A – Rules of the Air (AUS)

1. The Chicago Convention, including associated amending protocols, is set out in the Schedules to the Air Navigation Act 1920 and further implemented through the Civil Aviation Act 1988 (the Act). Consistent with Article 3 of the Chicago Convention, Section 4 of Part I of the Act states that 'except where the expression state aircraft is used, references in Part III or IIIB or section 98 to aircraft or air navigation do not include references to state aircraft or air navigation by state aircraft.
2. The Civil Aviation Safety Authority (CASA) is the agency responsible for implementing Civil Aviation Regulations 1988 (CAR) and Civil Aviation Safety Regulations (CASR) 1998, which are derived from the Act and other legislation.
3. The International Civil Aviation Organisation (ICAO) implements the requirements set by the Chicago Convention through the distribution of ICAO Standards and Recommended Practices (SARPS)[1] ***ICAO DOC 7231/11*** ICAO publishes Annexes[2] ***Annexes to the Convention on International Civil Aviation may be referred to as ICAO Annexes.*** to the Convention that contain SARPS and Procedures for Air Navigation Services (PANS) documents that provide guidance and information facilitating the uniform application of the SARPS. ICAO Annexes have a higher status than PANS documents, therefore Defence RoA will normally only make mention of ICAO Annexes when used for acceptable mean of compliance. As States may also exempt themselves from ICAO SARPS, any significant differences to ICAO SARPS should be documented as an exemption as identified in ICAO Annex 15, Appendix 1 section GEN 1.7 or within Defence AIP and advised to CASA.
4. A significant consideration is that the use of the term state aircraft may not exempt all Defence Aviation from the Act because:

a. Defence provides air navigation services (ANS) to civil aircraft, which are required to comply with the Act. Therefore, the Defence services provided to civil aircraft must also comply in order to be interoperable.

b. Civil aircraft operate in Defence controlled airspace, and Defence aircraft operate in civil controlled airspace; as such, Defence is well motivated to align with the Act to ensure interoperability between Defence and civil aviation.

c. Where practicable, Defence RoA harmonisation with civil RoA can ensure Defence Aviation is conducted in a manner no less safe than civil aviation.

DASR RP – RESERVED. 'Current remote pilot regulation contained in DASR.UAS'.

DASR SMS - Aviation Safety Management Systems

SMS.A.10 - Scope (AUS)

a. This section specifies Safety Management System (SMS) requirements that must be met by an organisation to qualify for the issue or continuation of an approval. This section only applies to organisations where the DASR SMS is listed as a requirement from the relevant section of the DASR.

SMS.A.25 - Safety Management System (AUS)

a. The approved organisation shall establish and maintain a Safety Management System (SMS). The SMS of the approved organisation shall: ▸ **AMC**

AMC SMS 25(a) - The Defence Aviation Safety Manual

1. Compliance with Defence's corporate aviation Safety Management System (SMS) solution, the Defence Aviation Safety Manual (DASM), currently satisfies the SMS requirements for the issue of an MAOC. Those entities subject to the DASR.SMS regulations and currently assessed against the DASM, are to continue using the Aviation Safety Management System (ASMS) prescribed in the DASM, while it continues to evolve as a corporate SMS solution that incorporates all DASR.SMS elements.

1. be established in accordance with the 4 components and 12 elements contained in paragraph (b);

2. be commensurate with the size of the organisation and the complexity of its aviation products and/or services; ▸ **GM** and

GM SMS.A.25(a)(2) - Size and complexity considerations (AUS)

1. Every organisation should ensure that its SMS is tailored for its size, the nature of its operations and the complexity of its aviation products and services. There is no 'one size fits all' SMS.

2. Larger or more diverse organisations may require several safety management levels and/or safety committees. Conversely, small organisations may not need dedicated safety staff, instead relying on a number of employees to perform the multiple functions required. In very small organisations, maintaining independence in safety oversight and improvement functions may not be possible, in which case these functions could be conducted by external parties with the required competencies.

3. Where one or more organisations exist within a larger business group, each organisation may leverage off a single, corporate-level SMS.

3. be maintained with a maturity level that is acceptable to the Authority. ▸ **GM**

GM SMS.A.25(a)3 - Safety management system maturity level (AUS)

1. Variations in the size of the organisation, the nature of its operations and the complexity of its aviation products and services make it necessary to assess organisations on the 'performance' of their SMS rather than their 'compliance' and 'conformance'. These performance assessments primarily focus on the effectiveness of the SMS and its maturity growth.

2. Assessment against the indicators that are contained within the published SMS assessment tool is used to determine the maturity of the organisation. Further information on the maturity and growth expectations can be found at DASA ASMS website.

b. The approved organisation's SMS shall comprise of, or map to, the following 4 components and 12 SMS elements:

1. SAFETY POLICY AND OBJECTIVES:

1.1 Management commitment ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(1)(1.1) - Management commitment (AUS)

Safety Policy

1. In preparing a safety policy, the accountable manager should consult widely with staff members in charge of key safety areas. Consultation ensures that the document is relevant to staff and provides them with a sense of ownership in it.

Unacceptable behaviours

2. Human error is unavoidable and must be managed. Just culture refers to the way that both errors and violations are treated. For a just culture to exist, it must be collectively agreed and clearly understood as to the distinction between acceptable and unacceptable behaviour. All personnel must understand the difference between intentional departures from the rules and honest errors. To ensure the fair treatment of persons involved, it is essential that those responsible for making determinations have the necessary technical expertise so that the context of the event may be fully considered. To maintain an effective, just and fair reporting culture, the organisation should consider utilising a standardised/documented tool such as the DFSB developed Safety Behaviour Management Tool (SBMT).

Visible endorsement

3. 'Visible endorsement' refers to making management's active support of the safety policy visible to the rest of the organisation. This can be done via any means of communication and also through the alignment of activities to the safety policy statement.

4. If the organisation chooses to make use of a 'safety policy statement' as its safety policy, visible endorsement could be demonstrated through attaching an annual safety schedule to the safety policy statement.

Safety objectives

5. Organisations should also consider the following suggestions when establishing their safety objectives:

   a. Choose a variety of objectives that when combined encompass all of the components (policy and objectives, risk management, oversight & improvement and promotion) of the DASR SMS.

   b. Write objectives in a SMART format (specific, measureable, achievable, relevant and timely), or support them with SMART safety targets. This will assist in demonstrating progress towards achieving the objectives.

   c. If the organisation chooses to make use of a 'safety policy statement' as its safety policy, the safety objectives could be included as an attachment to the statement.

AMC SMS.A.25(b)(1)(1.1) - Management commitment (AUS)

1. The organisation must define its safety policy and safety objectives. In doing this, the organisation must be able to demonstrate the following:

   a. There is a safety policy that:

      i. reflects organisational commitment regarding safety, including the promotion of a positive safety culture;

      ii. includes a clear statement about the provision of the necessary resources for the implementation of the safety policy;

      iii. includes safety reporting procedures;

      iv. clearly indicates which types of behaviours are unacceptable related to the organisation's aviation activities and includes the circumstances under which disciplinary action would not apply;

      v. is signed by the accountable manager of the organisation; and

      vi. is periodically reviewed to ensure it remains relevant and appropriate to the service provider.

   b. Taking due account of its safety policy, the organisation has defined its safety objectives that:

      i. form the basis for safety performance monitoring and measurement as required by element 3.1;

      ii. reflect the organisation's commitment to maintain or continuously improve the overall effectiveness of the SMS;

      iii. are communicated throughout the organisation; and

      iv. are periodically reviewed to ensure they remain relevant and appropriate for the organisation.

c. The Accountable Manager and key safety management personnel promote and demonstrate their commitment to their safety policy and safety objectives through active and visible participation in the SMS.

GM SMS.A.25(b)(1)(1.2) - Safety accountability and responsibilities (AUS)

SAFETY ACCOUNTABILITY AND RESPONSIBILITIES

Accountable Manager

1. In the context of this regulation the term 'accountability' refers to obligations which cannot be delegated. The term 'responsibilities' refers to functions and activities which may be delegated.

2. The accountable manager is the person who is accountable for the safe operation of the organisation on behalf of the organisation. The Accountable Manager is typically the Chief Executive Officer (CEO) or senior military commander who:

   a. has the authority to make decisions on behalf of the organisation;

   b. has control of resources, both financial and human; and

   c. is responsible for ensuring appropriate actions are taken to respond to accidents and incidents, address safety issues and address safety risks.

3. In the case where a SMS applies to several different approvals, that are all part of the same organisation, there should be a single accountable manager. Where this is not possible, individual accountable managers should be identified for each organisation approval with clearly defined lines of accountability. It is also important to identify how their safety accountabilities will be coordinated.

4. Although responsibility for the day-to-day operation of the SMS is typically managed by other key safety personnel, the accountable manager cannot delegate accountability for the system, nor can accountability of the decisions regarding safety risks be delegated (the authority to make decisions regarding safety risk may be assigned to individuals, management positions, ranks or committees).

Organisational safety structure

5. The responsibilities of all personnel with safety-related duties should be clearly defined through the organisation's safety structure. The organisation's safety structure should:

   a. Define the responsibilities of all personnel involved in the management and operation of the SMS. The responsibilities should be commensurate with the extent to which the personnel are involved with and utilise the SMS.

   b. Contain clear lines of communication and safety responsibility so that personnel can locate their superiors and subordinates in the safety structure.

   c. Be clearly written, in a format that is understandable and easily accessible to all personnel.

d. Focus on the staff member's contribution to the safety performance of the organisation (the organisation's safety outcomes).

Safety risk decisions

6. An organisation ensures that decisions carrying significant potential consequences are made at an appropriate level by establishing levels of management that have the authority to make decisions regarding safety risk. Authority may be assigned to individuals, management positions, ranks or committees.

7. Decisions regarding safety risk are business decisions, aimed at ensuring that activities with residual risk are not conducted without approval from the appropriate level of management. All activities that are conducted are still required to have safety risks eliminated, So Far As is Reasonably Practicable (SFARP), and where not reasonably practicable to eliminate, minimised SFARP. That is, a predetermined level of safety risk must not influence the risk management process to cease the elimination and minimisation of risks prematurely.

AMC SMS.A.25(b)(1)(1.2) - Safety accountability and responsibilities (AUS)

1. The organisation must appoint an Accountable Manager and develop an organisational safety structure with clearly defined lines of safety accountability and responsibilities. As part of this structure, the organisation must be able to demonstrate the following:

   a. An accountable manager has been identified who is accountable on behalf of the organisation for the implementation and maintenance of an effective SMS.

   b. Lines of safety accountability have been clearly defined throughout the organisation, including a direct accountability for safety on the part of senior management.

   c. Responsibilities have been identified for all personnel with respect to the safety performance of the organisation.

   d. Levels of management with the authority to make decisions regarding safety risk have been defined.

   e. Safety accountability, responsibilities and authorities have been documented and communicated throughout the organisation.

1.3 Appointment of key safety personnel ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(1)(1.3) - Appointment of key safety personnel (AUS)

APPOINTMENT OF KEY SAFETY PERSONNEL

The safety manager function

1. Appointment of a competent individual or group to fulfil the safety manager function is essential to an effectively implemented and functioning SMS. The individual or persons filling the function of safety manager advise the accountable manager and line managers on safety management matters, and are responsible for coordinating and

communicating safety issues within the organisation. Safety manager functions and responsibilities may include:

a. manage the SMS implementation plan on behalf of the accountable manager (upon initial implementation);

b. perform/facilitate hazard identification and safety risk analysis;

c. monitor corrective actions and evaluate their results;

d. provide periodic reports on the organisation's safety performance;

e. maintain SMS documentation and records;

f. plan and facilitate staff safety training;

g. provide independent advice on safety matters;

h. monitor safety concerns in the aviation industry and their perceived impact on the organisation's operations aimed at product and service delivery; and

i. coordinate and communicate (on behalf of the accountable manager) with the Authority and CASA as necessary on issues relating to safety.

AMC SMS.A.25(b)(1)(1.3) - Appointment of safety personnel (AUS)

1. The organisation must allocate responsibilities to key safety personnel for the implementation and maintenance of the SMS. Depending on the size of the organisation and the complexity of its aviation products or services, the key safety personnel may be an individual or a group within the organisation. As part of this, the organisation must be able to demonstrate the following:

a. A competent individual or group with the appropriate knowledge, skills and experience has been nominated to manage the operation of the SMS and fulfils the required job functions and responsibilities.

b. There is a direct reporting line between the Safety Manager and the Accountable Manager, and the Accountable Manager and other key safety personnel are made aware of agreed safety information.

c. The organisation has allocated sufficient resources to manage the SMS including human resources for safety investigation, analysis, auditing and promotion, and personnel in key safety roles are kept trained and current.

1.4 Coordination of emergency response planning ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(1)(1.4) - Coordination of emergency response planning (AUS)

COORDINATION OF EMERGENCY RESPONSE PLANNING

Applicability

1. The DASR SMS requirement for emergency response planning applies to all emergency situations/scenarios that could affect the safety of aviation products or services.

Although it may seem indirect, poor emergency response in manufacturing and maintenance organisations could introduce latent hazards in aviation systems.

2. An ERP may not be relevant to all organisations. Currently all DASR 21J organisations are exempt from the need to have an ERP to handle aviation-related emergencies.

The Emergency Response Plan

3. An emergency response plan (ERP) is an integral component of an organisation's safety risk management process to address aviation related emergencies, crises or events. The ERP should:

   a. address reasonably foreseeable aviation-related emergencies;

   b. ensure an orderly and efficient transition from normal to emergency operations;

   c. aim to re-establish 'normal' operations following the emergency (this includes all of the checks/inspections that are to be conducted prior to resuming work);

   d. provide a selection of standard mitigating actions, processes and control measures;

   e. assign appropriate personnel with emergency responsibilities and delegation(s) of authority;

   f. provide actions to be taken by responsible personnel during an emergency;

   g. contain coordinated actions with different organisations, eg airfield management services and external, non-aviation, emergency services; and

   h. be easily accessible to the appropriate key personnel and the coordinating external organisations.

AMC SMS.A.25(b)(1)(1.4) - Coordination of emergency response planning (AUS)

1. The organisation must, if required, establish and maintain an emergency response plan for accidents and incidents in aircraft operations and other aviation emergencies. As part of this plan the organisation must be able to demonstrate the following:

   a. An Emergency Response Plan (ERP) that reflects the size, nature and complexity of the operation has been developed, defining the procedures, roles, responsibilities and actions of the various organisation's and key personnel, and is periodically tested.

   b. The organisation has a process to inform all personnel of the ERP requirements, and all personnel are aware of their responsibilities.

      NOTE: An ERP may not be relevant to all organisations. Currently all DASR 21J organisations are exempt from the need to have an ERP to handle aviation-related emergencies.

GM SMS.A.25(b)(1)(1.5) - SMS documentation (AUS)

SMS documentation

1. The SMS documentation should describe the organisation's SMS policies, processes and procedures to facilitate the organisation's internal administration, communication and maintenance of the SMS. SMS documentation should:

   a. help personnel to understand how the organisation's SMS functions;

   b. describe how the safety policy and objectives will be met;

   c. include a system description that provides the boundaries of the SMS;

   d. help clarify the relationship between the various policies, processes, procedures and practices, and define how these link to the organisation's safety policy statement and objectives;

   e. be written to address the day-to-day safety management activities of the organisation;

   f. be easily understood by personnel throughout the organisation;

   g. be kept up to date; and

   h. provide appropriate cross-referencing to other relevant documentation.

2. SMS documentation may be a stand-alone document, or it may be integrated with other documents maintained by the organisation. Where details of the organisation's SMS processes are already addressed in existing documents, appropriate cross-referencing to such documents (demonstrating compliance with the 4 components and 12 elements) may be considered sufficient.

AMC SMS.A.25(b)(1)(1.5) - SMS documentation (AUS)

1. The organisation must produce and maintain its Safety Management System (SMS) documentation in a way that is accessible and useable to all relevant personnel. As part of this process the organisation must be able to demonstrate the following:

   a. There is documentation that describes the SMS and the interrelationships between all of its elements, and it is readily available to all personnel.

   b. SMS documentation is regularly reviewed and updated with appropriate version control in place.

   c. The SMS documentation describes the means for the storage of SMS related records.

2. SAFETY RISK MANAGEMENT:

2.1 Hazard identification ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(2)(2.1) - Hazard identification (AUS)

HAZARD IDENTIFICATION

Introduction

1. Organisations must develop and maintain a formal process to identify hazards that could impact aviation safety in all areas of operations and activities. This includes hazards that may be introduced through the use of plant, substances, structures and any goods or services provided by external organisations.

Common sources for hazard identification

2. There are a variety of sources for hazard identification, some internal to the organisation and some external to the organisation. Sources of hazard identification include:

    a. daily monitoring of normal operations,

    b. automated monitoring systems,

    c. voluntary and mandatory safety reporting systems,

    d. surveys and audits,

    e. feedback from training,

    f. internal and external safety investigations,

    g. interfaces with external organisations (3rd party relationships and interactions),

    h. aviation accident reports,

    i. safety publications and notifications produced by aviation safety authorities, and

    j. WHS legislation (Act, Regulations and Codes of practice).

Safety reporting system

3. A safety reporting system is a major source for ongoing hazard identification, regularly raising potential safety issues such as those found in accidents, incidents, near misses or errors. It can provide valuable information to the Authority and the organisation on lower consequence events.

4. The Defence corporate solution for a safety reporting system is now 'Sentinel'. The organisation should contact the Defence Flight Safety Bureau (DFSB) for assistance and information regarding its function and use.

5. It is important that organisations provide appropriate protections to encourage people to report what they see or experience. It should be clearly stated that reported information will be used primarily to support the enhancement of safety. The intent is to promote an effective reporting culture and proactive identification of potential safety deficiencies.

6. Voluntary safety reporting systems should be confidential, requiring that any identifying information about the reporter is known only to the custodian to allow for follow-up action. The role of custodian should be kept to a few individuals, typically restricted to the safety manager and personnel involved in the safety investigation. Maintaining

confidentiality will help facilitate the disclosure of hazards leading to human error, without fear of retribution or embarrassment. Voluntary safety reports may be de-identified and archived once necessary follow-up actions are taken. De-identified reports can support future trending analyses to track the effectiveness of risk mitigation and to identify emerging hazards.

7. To be effective, safety reporting systems should be readily accessible to all personnel. Depending on the situation, a paper-based, web-based or desktop form can be used. Having multiple entry methods available maximises the likelihood of staff engagement. Everyone should be made aware of the benefits of safety reporting and what should be reported

Feedback to the reporter

8. Anybody that submits a safety report should receive feedback on what decisions or actions have been taken. Feedback to reporters in voluntary reporting schemes serves to demonstrate that such reports are considered seriously. This helps to promote a positive safety culture and encourage future reporting.

SAFETY INVESTIGATIONS

When to conduct a safety investigation?

9. The organisation must establish, implement and maintain procedures for:

   a. Investigating, responding to, an taking action to minimise any harm caused by accidents and incidents;

   b. investigating and responding to system failures; and

   c. initiating and completing appropriate corrective and preventive action.

10. In addition to accidents and incidents, there are other conditions that may merit more detailed investigation, eg where the organisation experiences an unexplained increase in aviation safety-related events or regulatory non-compliance. Any additional conditions that may require a safety investigation are to be identified in the organisation's SMS documentation.

11. The organisation must implement and record any changes in SMS documentation and procedures that result from safety investigations and their corrective and preventive actions.

The safety investigation process

12. Providing in-depth detail of the process for conducting safety investigations is outside of the scope of this guidance material. Further information regarding the conduct and application of safety investigations can be obtained through contacting the Defence Flight Safety Bureau (DFSB) and consulting their associated publications.

13. In establishing and maintaining procedures for safety investigations the organisation should include these basic elements:

   a. identifying the causal and contributing factors for the incident(s) or hazard(s);

b. identifying and implementing the necessary corrective action(s);

c. implementing or modifying control measures that are necessary to avoid occurrence or repetition of the incident/situation; and

d. recording any changes in SMS documentation and procedures resulting from the safety investigation and its corrective and preventative actions.

Safety investigation training

14. Safety investigations, and the resultant reports, are to be conducted by staff with, or supervised by staff with, relevant safety investigation or incident investigation training. The suitability of safety investigators will be assessed on a case-by-case basis, taking into account the size of the organisation, the nature of its operations and the complexity of its aviation products and services.

15. Although there are no specific training courses required by the DASR SMS for safety investigators, organisations may choose to utilise the Aviation Incident Investigation Course (AIIC) provided by the Defence Flight Safety Bureau (DFSB).

Third party relationships and interactions

16. Third party relationships and interactions previously existed as a separate element (1.4.) of the DASR SMS. The decision was made to align more closely with ICAO and incorporate its requirements into the safety risk management component. This change does not mean that the treatment of third party hazards and risks is to be forgotten in any way. Hazards and risks associated with interactions with third parties are still to be identified and treated using the process outlined in element 2.1. and 2.2.

AMC SMS.A.25(b)(2)(2.1) - Hazard identification (AUS)

1. The organisation must develop and maintain a process to identify hazards associated with its aviation operations, products or services. As part of this process the organisation must be able to demonstrate the following:

a. The organisation, in managing risks to health and safety, has identified reasonably foreseeable hazards that could give rise to risks to health and safety.

b. Hazard identification is an ongoing process, involving key personnel and appropriate stakeholders.

c. Identified hazards are documented, reviewed regularly and kept available for future reference.

d. The organisation has a reporting system that:

i. can be used to identify hazards from a variety of sources;

ii. is simple to use;

iii. is accessible to all personnel;

iv. provides feedback to the reporter (and where appropriate the rest of the organisation) of any actions taken or not taken; and

v. has the confidence and trust of the organisation's personnel.

e. The organisation conducts safety investigations that:

i. are conducted by personnel with investigation training or who are supervised by personnel with investigation training;

ii. establish causal and contributing factors;

iii. identify underlying potential hazards for existing and future operations; and

iv. produces investigation reports completed by personnel with investigation training.

2.2 Safety risk assessment and mitigation ▸ AMC ▸ GM

GM SMS.A.25(b)(2)(2.2) - Safety risk assessment and mitigation (AUS)

1. The Work Health and Safety Act 2011 and Work Health and Safety Regulations 2011 outline a number of specific requirements relating to the management of risks to health and safety. Although these requirements can be easily understood when read in isolation, the final risk management process can become complicated due to the interactions between them.

2. For example, the reasonably practicable requirements must be applied up to 4 times in the execution of managing risks due to the structure and use of the hierarchy of control measures being applied during minimisation. This makes for a non-linear process that will vary in difficulty depending on the context.

3. To provide direction on the application of the WHS legislated requirements, Defence has produced a 7 step Safety Risk Management (SRM) process, incorporating the 5 requirements outlined in the AMC:

Step 1. Establish hazard and risk context.

Step 2. Be reasonably informed of the risk and all possible controls.

Step 3. Eliminate risk so far as is reasonably practicable (SFARP).

Step 4. Minimise risk SFARP.

Step 5. Characterise risk.

Step 6. Decision to proceed.

Step 7. Continuous risk monitoring and review.

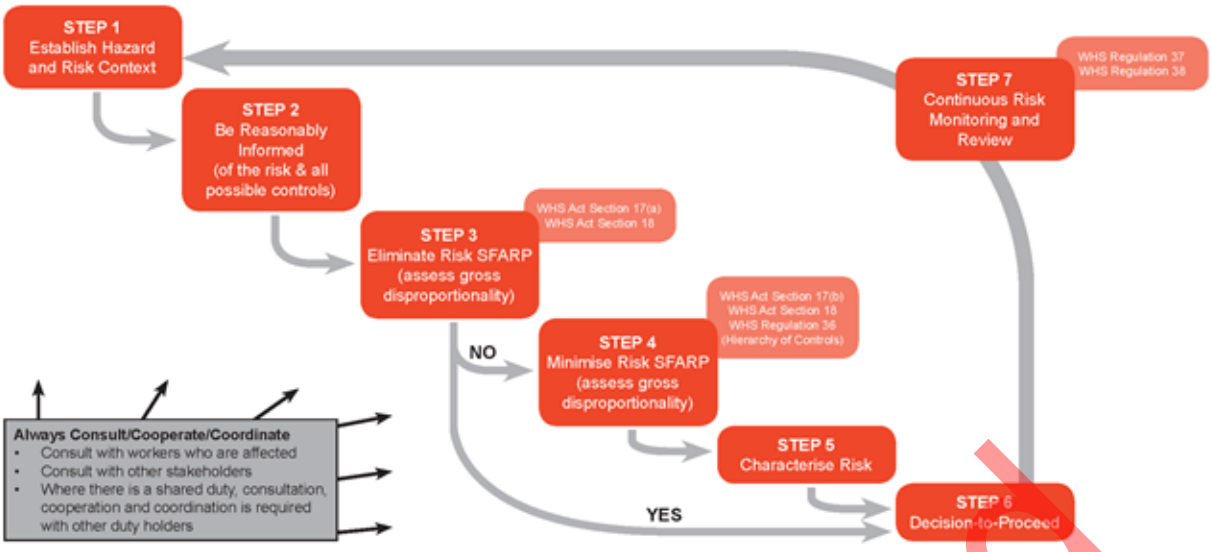

Figure 1—Safety Risk Management Process

4. Guidance for the application of the 7 step SRM process can be found in the Advisory Circular 'AC 003/2018 – Risk Management in the Defence Aviation Safety Program'.

AMC SMS.A.25(b)(2)(2.2) - Safety risk assessment and mitigation (AUS)

INTRODUCTION

1. Risks to health and safety must be managed in accordance with the requirements contained within the Work Health and Safety Act 2011 and the Work Health and Safety Regulations 2011. The requirements of WHS legislation are not optional and should be strictly adhered to by all organisations for the management of all safety risks including aviation safety risks.

2. The parts of WHS legislation that relate to the management of risks to health and safety are relatively few and simple enough to understand. These requirements apply to all persons at the workplace as well as to all decisions that may carry a safety risk.

3. The requirements listed below, reflect the requirements of WHS legislation and should be applied after the identification of reasonably foreseeable hazards as outlined in the AMC for element 2.1. 'Hazard Identification'.

1 – THE MANAGEMENT OF RISKS [1]

Sourced from section 17 of the Work Health and Safety Act 2011

4. A duty imposed on a person to ensure health and safety requires the person:

   a. to eliminate risks to health and safety, so far as is reasonably practicable; and

b. if it is not reasonably practicable to eliminate risks to health and safety, to minimise those risks so far as is reasonably practicable.

2 – UNDERSTANDING AND APPLYING THE CONCEPT OF REASONABLY PRACTICABLE [2]

Sourced from section 18 of the Work Health and Safety Act 2011

5. Reasonably practicable, in relation to a duty to ensure health and safety, means that which is, or was at a particular time, reasonably able to be done in relation to ensuring health and safety, taking into account and weighing up all relevant matters including:

   a. the likelihood of the hazard or the risk concerned occurring; and

   b. the degree of harm that might result from the hazard or the risk; and

   c. what the person concerned knows, or ought reasonably to know, about:

      i. the hazard or the risk; and

      ii. ways of eliminating or minimising the risk; and

   d. the availability and suitability of ways to eliminate or minimise the risk; and

   e. after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk.

3 – HIERARCHY OF CONTROL MEASURES [3]

Sourced from regulation 36 of the Work Health and Safety Regulations 2011

6. This regulation applies if it is not reasonably practicable for a duty holder to eliminate risks to health and safety.

7. A duty holder, in minimising risks to health and safety, must implement risk control measures in accordance with this regulation.

8. The duty holder must minimise risks, so far as is reasonably practicable, by doing 1 or more of the following:

   a. substituting (wholly or partly) the hazard giving rise to the risk with something that gives rise to a lesser risk;

   b. isolating the hazard from any person exposed to it;

   c. implementing engineering controls.

9. If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by implementing administrative controls.

10. If a risk then remains, the duty holder must minimise the remaining risk, so far as is reasonably practicable, by ensuring the provision and use of suitable personal protective equipment.

NOTE: A combination of the controls set out in this requirement may be used to minimise risks, so far as is reasonably practicable, if a single control is not sufficient for the purpose.

4 – MAINTENANCE OF CONTROL MEASURES [4]

Sourced from regulation 37 of the Work Health and Safety Regulations 2011

11. A duty holder who implements a control measure to eliminate or minimise risks to health and safety must ensure that the control measure is, and is maintained so that it remains, effective, including by ensuring that the control measure is and remains:

    a. fit for purpose; and

    b. suitable for the nature and duration of the work; and

    c. installed, set up and used correctly.

5 – REVIEW OF CONTROL MEASURES [5]

Sourced from regulation 38 of the Work Health and Safety Regulations 2011

12. A duty holder must review and as necessary revise control measures implemented under these requirements so as to maintain, so far as is reasonably practicable, a work environment that is without risks to health or safety.

13. Without limiting the intent of paragraph 12, the duty holder must review and as necessary revise a control measure in the following circumstances:

    a. The control measure does not control the risk it was implemented to control so far as is reasonably practicable (e.g. monitoring shows that the control measure does not control the risk or a notifiable incident has occurs because of the risk);

    b. Before a change at the workplace (e.g. changes to the work environment, system of work, a process or procedure) that is likely to give rise to a new or different risk to health or safety that the measure may not effectively control;

    c. A new relevant hazard or risk is identified;

    d. The results of consultation by the duty holder indicate that a review is necessary

    e. A health and safety representative requests a review because they reasonably believe that:

        i. A circumstance referred to in (a), (b), (c) or (d) of this paragraph affects or may affect the health and safety of a member of the work group represented by the health and safety representative; and

        ii. The duty holder has not adequately reviewed the control measure in response to the circumstance.

3. SAFETY OVERSIGHT and IMPROVEMENT: (see NOTE 1 below)

GM SMS.A.25(b)(3)(3.1) - Safety performance monitoring and measurement (AUS)

SAFETY PERFORMANCE OBJECTIVES, TARGETS AND INDICATORS

1. Safety performance monitoring is conducted through the collection of safety data and safety information from a variety of sources typically available to an organisation. Data availability to support informed decision-making is one of the most important aspects of the SMS. Using this data for safety performance monitoring and measurement are essential activities that generate the information necessary for safety risk decision-making.

2. Safety performance monitoring and measurement should be conducted observing some basic principles. The safety performance achieved is an indication of organisational behaviour and is also a measure of the effectiveness of the SMS. This requires the organisation to define:

   a. Safety Objectives – Safety objectives should be established first to reflect the strategic achievements or desired outcomes related to safety concerns specific to the organisation's operational context and produced in a Suitable, Measureable, Achievable Relevant and Timely format (SMART);

   b. Safety Performance Targets (SPTs) - SPTs are tactical level SMART goals that work individually or as a group to monitor progress towards the achievement of the safety objectives.

   c. Safety Performance Indicators (SPIs) - SPIs are tactical parameters related to safety objectives and SPTs and therefore are the reference for data collection; and

3. SPIs are used to measure operational safety performance of the organisation and the performance of their SMS. SPIs rely on the monitoring of data and information from various sources including the safety reporting system. They should be specific to the individual organisation and be linked to the safety objectives already established.

4. When establishing SPIs organisations should consider:

   a. Measuring the right things - Determine the best SPIs that will show the organisation is on track to achieving its safety objectives and SPTs. Also consider what are the biggest safety issues and safety risks faced by the organisation, and identify SPIs which will show effective control of these.

   b. Availability of data - Is there data available which aligns with what the organisation wants to measure? If there isn't, there may be a need establish additional data collection sources. For small organisations with limited amounts of data, the pooling of data sets may also help to identify trends. This may be supported by industry associations who can collate safety data from multiple organisations.

c. Reliability of the data - Data may be unreliable either because of its subjectivity or because it is incomplete.

d. Common industry SPIs - It may be useful to agree on common SPIs with similar organisations so that comparisons can be made between organisations. The regulator or industry associations may enable these.

5. A more complete picture of the organisation's safety performance will be achieved if SPIs encompass a wide spectrum of indicators. This should include:

a. low probability/high severity events, eg accidents and serious incidents;

b. high probability/low severity events, eg uneventful operational events, non-conformance reports, deviations etc;

c. process performance, eg training, system improvements and report processing;

d. qualitative and quantitative type indicators; and

e. leading (inputs) and lagging (outputs) type indicators.

6. Primarily, safety performance monitoring and measurement provides a means to verify the effectiveness of safety risk control measures, a requirement of the Work Health and Safety Regulations 2011, in particular Regulations 37 and 38.

Internal audits

7. Internal audits are performed to assess the effectiveness of the SMS and identify areas for potential improvement. Internal audits are most effective when conducted by persons or departments independent of the functions being audited. Such audits should provide the accountable manager and senior management with feedback on:

a. the current state of compliance with DASR regulations;

b. the current state of compliance with policies, processes and procedures;

c. the effectiveness of safety risk control measures;

d. the effectiveness and status of recent corrective actions;

e. any deficiencies identified in the SMS; and

f. any opportunities for improvement for the SMS.

8. Some organisations cannot ensure appropriate independence of an internal audit, in such cases, the organisation should consider engaging external auditors (e.g. independent auditors or auditors from another organisation).

9. The results of the internal audit process become one of the various inputs to the SRM process and safety oversight and improvement functions. Internal audits inform the organisation's management of the level of compliance within the organisation, the degree to which safety risk controls are effective and where corrective or preventive action is required.

AMC SMS.A.25(b)(3)(3.1) - Safety performance monitoring and measurement (AUS)

1. The organisation must develop and maintain a means to verify, monitor and measure the safety performance of the organisation. As a result, the organisation must be able to demonstrate the following:

   a. Safety targets and performance indicators have been defined, promulgated and are being monitored and analysed for trends, forming part of the SMS review.

   b. Safety targets and performance indicators are reviewed and updated periodically.

   c. There is an internal safety audit programme that focuses on the safety performance of the organisation and its services.

   d. Information obtained from safety oversight and improvement and compliance monitoring activities feeds back into the safety risk management process.

3.2 The management of change ▸ AMC ▸ GM

GM SMS.A.25(b)(3)(3.2) - The management of change (AUS)

THE MANAGEMENT OF CHANGE

1. Organisations experience change due to a number of factors including, but not limited to:

   a. organisational expansion or contraction;

   b. business improvements that impact safety; these may result in changes to internal systems, processes or procedures that support the safe delivery of the products and services;

   c. changes to the organisation's operating environment;

   d. changes to staffing numbers;

   e. changes to shift work schedules;

   f. changes to the SMS interfaces with external organisations;

   g. legislative and regulatory changes; and

   h. economic changes and emerging risks.

2. Change may affect the effectiveness of existing safety risk controls. In addition, new hazards, and related safety risks may be inadvertently introduced into an operation when change occurs. Hazards should be identified and related safety risks assessed and controlled as defined in the organisation's existing hazard identification and SRM procedures.

3. Small incremental changes often go unnoticed, but the cumulative effect can be considerable. Changes, large and small, might affect the organisation's system description, and may lead to the need for its revision. Therefore, the system description

should be regularly reviewed to determine its continued validity, given that most organisations experience regular, or even continuous, change.

4. The organisation should define the triggers for the formal change process. Changes that are likely to trigger 'management of change' processes include:

   a. introduction of new technology or equipment;

   b. changes in the operating environment;

   c. changes in key personnel;

   d. significant changes in staffing levels;

   e. changes in safety regulatory requirements;

   f. significant restructuring of the organisation; and

   g. physical changes (new facility or base, aerodrome layout changes etc.).

AMC SMS.A.25(b)(3)(3.2) - The management of change (AUS)

1. The organisation must develop and maintain a process to identify and treat new or different risks that may arise from changes at the workplace. As part of this process the organisation must be able to demonstrate the following:

   a. The organisation has established a process to conduct hazard analyses and risk assessments for major operational changes, major organisational changes and changes in key personnel.

   b. Key stakeholders are identified and involved in the management of change process.

   c. Previous risk assessments and existing hazards are reviewed for possible effect.

3.3 Continuous improvement of the SMS ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(3)(3.3) - Continuous improvement of the SMS (AUS)

CONTINUOUS IMPROVEMENT OF THE SMS

1. Maintenance and continuous improvement of the organisation's SMS effectiveness is supported by safety oversight and improvement activities that include the verification and follow up of actions and the internal audit processes. It should be recognised that maintaining and continuously improving the SMS is an ongoing journey as the organisation itself and the operational environment will be constantly changing.

2. Assessing the SMS's effectiveness should not be based solely on SPIs; organisations should aim to implement a variety of methods to determine its effectiveness, measure outputs as well as outcomes of the processes, and assess the information gathered through these activities. Such methods may include:

   a. audits,

   b. assessments,

c. monitoring of occurrences,

d. safety surveys,

e. management reviews,

f. evaluation of Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs), and

g. addressing lessons learnt.

3. Ongoing monitoring of the SMS, its related safety risk controls and support systems assures the organisation that the safety management processes are achieving their desired safety performance objectives.

Safety committees

4. The organisation should consider the establishment of safety committees to support the continuous improvement of SMS effectiveness. Some types of safety committees that organisations may consider establishing include:

a. **Safety Review Board (SRB)** – A high level safety committee that discusses the strategic direction and performance of the SMS.

b. **Safety Action Group (SAG)** – Operationally focussed safety committees that coordinate the implementation of safety strategies decided by the SRB.

AMC SMS.A.25(b)(3)(3.3) - Continuous improvement of the SMS (AUS)

1. The organisation must develop and maintain a process to ensure continuous improvement of the performance of the SMS. As part of this process the organisation must be able to demonstrate the following:

a. A Safety Committee has been established and has the authority to make decisions related to the improvement and effectiveness of the SMS.

b. The SMS is periodically reviewed such that improvements in safety performance can be demonstrated.

4. SAFETY PROMOTION:

4.1 Training and education ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(4)(4.1) - Training and education (AUS)

TRAINING AND EDUCATION

1. Personnel being trained and competent to perform their SMS duties, regardless of their level in the organisation, is an indication of management's commitment to an effective SMS. The training programme should include initial and recurrent training requirements to maintain competencies. Initial safety training should consider, as a minimum, the following:

a. organisational safety policies and safety objectives;

b. organisational roles and responsibilities related to safety;

c. a foundational understanding of the SRM process;

d. safety reporting systems;

e. the organisation's SMS processes and procedures; and

f. human factors.

2. Recurrent safety training should focus on changes to the SMS policies, processes and procedures, and should highlight any specific safety issues relevant to the organisation or lessons learnt.

3. The training programme should be tailored to the needs of the individual's role within the SMS. For example, the level and depth of training for managers involved in the organisation's safety committees will be higher than personnel directly involved with delivery of the organisation's product or services.

Training needs analysis

4. For most organisations, a formal training needs analysis (TNA) is necessary to ensure there is a clear understanding of the operation of the organisation, the safety duties of the personnel and the available training. A typical TNA will normally start by conducting an audience analysis, which usually includes the following steps:

a. Identify each safety duty and in what ways they will interact with the safety management processes, inputs and outputs.

b. Identify the knowledge and competencies needed to perform each safety duty and the knowledge and competencies required by each staff grouping.

c. Conduct an analysis to identify the gap between the current safety skill and knowledge across the workforce and those needed to effectively perform the allocated safety duties.

d. Identify the most appropriate skills and knowledge development approach for each group with the aim of developing a training programme appropriate to each individual or group's involvement in safety management.

5. The main purpose of the safety training programme is to ensure that personnel, at all levels of the organisation, maintain their competence to fulfil their safety roles; therefore, competencies of personnel should be reviewed on a regular basis.

AMC SMS.A.25(b)(4)(4.1) - Training and education (AUS)

1. The organisation must establish a process to ensure that personnel are trained and competent to perform their SMS duties. As part of this process the organisation must be able to demonstrate the following:

a. There is a documented process to identify Safety Management training requirements so that personnel are competent to perform their duties and takes appropriate remedial action when necessary.

b. Appropriate action is taken to measure and possibly improve the effectiveness of training.

c. A training record is maintained for all personnel.

4.2 Safety communication ▸ **AMC** ▸ **GM**

GM SMS.A.25(b)(4)(4.2) - Safety communication (AUS)

SAFETY COMMUNICATION

1. There should be a communication strategy that enables safety communication to be delivered by the most appropriate method based on the individual's role and need to receive safety related information. This may be done through safety newsletters, notices, bulletins, briefings or training courses. The safety manager should also ensure that lessons learned from investigations and case histories or experiences, both internally and from other organisations, are distributed widely.

2. Organisations should consider whether any internal safety information needs to be communicated to external organisations.

3. Organisations should assess the effectiveness of their safety communication by checking personnel have received and understood any safety critical information that has been distributed. This can be done as part of the internal audit activities or when assessing the SMS effectiveness.

4. Safety promotion activities should be carried out throughout the life cycle of the SMS, not only at the beginning.

AMC SMS.A.25(b)(4)(4.2) - Safety communication (AUS)

1. The organisation must establish a process to ensure that personnel, internal and external to the organisation, have current and pertinent safety information. As part of this process the organisation must be able to demonstrate the following:

   a. There is a communication strategy to ensure the safety policy and safety information is communicated to all personnel with the intent that they are made aware of their individual contributions and obligations with regard to safety.

   b. Significant events and investigation outcomes associated with the organisation are communicated to all personnel, including contracted organisations where appropriate.

NOTES:

NOTE 1: The word 'assurance', as used by ICAO, has been replaced with 'oversight and improvement' so as to avoid confusion between oversight and improvement activities that are conducted by the organisation and the assurance activities of the Authority.

NOTE 2: The approved organisation may elect to extend one SMS across multiple organisations and organisation types. Where this is the case, approved organisations must ensure that a accountable manager and

safety manager are positioned within their own organisation or an overarching organisation.

NOTE 3: The SMS framework required by this regulation is not designed to satisfy the requirements of safety management systems required by 'major hazard facilities'. If the approved organisation believes that it may be a 'major hazard facility' as defined in the Work Health and Safety Regulations 2011, it should notify Safe Work Australia for further guidance on this matter.

SPA.05 - FLYING RULES FOR SPECIAL MISSIONS AND TASKS

(a) The MAO must ensure promulgation of OIP that addresses, where applicable, rules and requirements relating to:

1. flypasts and flying displays
2. formation flying
3. airborne emergency training
4. missions and tasks involving search and rescue and aeromedical evacuation[1] ***Aeromedical evacuation regulated under DASR SPO***
5. missions and tasks involving civil and community support activities
6. missions and tasks involving use of automated flight control, Communication, Navigation and Surveillance (CNS) and Air Traffic Management Systems (ATMS)
7. flights involving interaction with UAS
8. any other task or mission which requires special consideration.

(b) Flying rules and requirements with applicability under this regulation must be based upon a Risk Management assessment.

SPA.10 - COMMAND CLEARANCE

▸ **GM**

GM SPA.10 - Command Clearance (AUS)

1. **Purpose**. **(Context)** On occasion, to maintain key capabilities at high levels of operational readiness and to undertake non-discretionary activities in support of Australia's national interest, commanders may be required to operate aircraft outside of approved configuration, role, environment (CRE), limitations or conditions. **(Hazard)** Operating aircraft outside of approved CRE, limitations or conditions may affect Suitability For Flight. **(Defence)** This regulation requires the MAO to establish a process to manage risk of Suitability For Flight for aircraft operated under a Command Clearance.

(a) The MAO must maintain a Command Clearance management system for approval to operate an aviation system outside the system's configuration, role, environment, limitation or condition. ▸ **GM** ▸ **AMC**

AMC SPA.10.A - Command Clearance (AUS)

1. The Command Clearance management system should:

a. Be a formal, documented process. Any products supporting a decision to approve a Command Clearance should be made available for review.

b. Provide a rigorous and disciplined review of all relevant aspects that affords the Commander effective decision making advice where the management of risk is eliminated, or otherwise minimised SFARP, so that the aviation activity is conducted safely, including how the activity might compromise each element of suitability for flight.

GM SPA.10.A – Command Clearance (AUS)

1. A Command Clearance is an authorisation that allows a Commander to operate an aircraft when such authorisation is not available under other DASR.

(b) the Command Clearance management system shall specify requirements for the completion of a risk assessment prior to issue of a Command Clearance. ▸ **GM** ▸ **AMC**

AMC SPA.10.B – Command Clearance (AUS)

1. Risk Assessment in accordance with DASR.SMS.

2. Risk assessments should be approved by the specified Risk Management Authority (RMA) delegated by the Commander as detailed in the Command Clearance management system.

GM SPA.10.B – Command Clearance (AUS)

1. Due the breadth of circumstances that may be approved by a Command Clearance, the documentation of the decision-making process may range from a stand-alone Command Clearance approval that elaborates on the factors considered, through to being documented in the AMD risk assessment process as used for a Deferred Defect.

2. Where immediate operational or emergency needs preclude completion of a formal, documented process prior to the activity, the primary focus remains the management of risk, which should be eliminated, or otherwise minimised SFARP. A record of the risk management determination, and supporting recommendations and/or decisions should be collated as a formal record at the conclusion of the event.

3. Regardless of documentation method, the Command Clearance approval shall document the risk assessment.

4. In any Command Clearance decision and associated risk assessment process, the option not to conduct the activity remains valid.

(c) The MAO must ensure records of Command Clearances decisions are available to the Authority.

SPA.20 - LOW FLYING

(a) The MAO must maintain a system for the conduct of Low Flying. ▸ **GM** ▸ **AMC**

AMC SPA.20.A – Low Flying Areas, Routes And Charts, and Conduct (AUS)

Low flying areas

1. COMAUSFLT / COMD AVNCOMD / ACAUST should nominate suitable appointments at each Flying Base for the management of low flying issues. These appointments should promulgate approved low flying areas (LFA) for their respective bases in the appropriate SI. Areas selected for promulgation as LFA should be:

    a. surveyed to identify and locate all hazardous obstructions

    b. where possible, clear of promulgated instrument approaches

    c. as clear as possible of hazardous obstructions

    d. as clear as possible from aerodrome Obstacle Limitation Surfaces (OLS).

2. Where an approved LFA infringes the PANS OPS and aerodrome OLS, the nominated appointment should promulgate and implement local procedures that ensure positive separation is maintained between aircraft operating in the LFA and aircraft conducting instrument approaches, including practice instrument approaches.

Low flying routes

3. Commanding Officers (CO) of flying units are responsible for approving low flying routes (LFR) outside designated LFAs. LFR's should be planned to avoid aerodromes by at least the CTR / CTAF-R boundary, and other known landing areas by a minimum of 3 nm or 1 500 feet above ground level (AGL). Routes should also be planned to avoid sensitive and noise nuisance areas.

Low flying charts

4. Base delegates should maintain master reference charts for:

    a. promulgated local LFA

    b. promulgated LFR used by aircraft operating from that base.

5. The charts should be kept current and made available to all base and transient aircrews. CO of local flying units should be responsible for ensuring that master copies of these reference charts are maintained and displayed at an appropriate place within the unit.

6. The reference charts should display the following information:

    a. approved LFA and weapons ranges

    b. all known obstacles within 5 nm of the LFA or LFR

    c. areas of major air activity, including conflicting instrument approaches

    d. noise sensitive areas.

Low Flying Route and Area Survey

7. The purpose of surveying a LFA or LFR is to safely pinpoint, and record the location of, overhead wires and other obstructions that present a significant hazard to aircraft operating at low altitude in the vicinity. Consequently, a Base delegate should promulgate a maximum period between surveys. If an LFA / LFR has not been surveyed within that period, it should be regarded as unsurveyed. Depending on the frequency of use of the area or route and the likelihood of hazard variation, commanders are to exercise their judgment on the possible need for additional surveys and the timing of surveys before use of the area or route.

8. **Conduct of surveys.** Commanders responsible for conducting surveys of intended LFA and LFR should ensure:

   a. that a thorough pre-flight investigation is undertaken to ascertain whether any inconspicuous hazards exist (this investigation should include liaison with appropriate authorities);

   b. the crews employed and aircraft utilised are suitable for the task and authorised in accordance with the appropriate SI;

   c. the crews exercise due care and conduct a thorough aerial inspection of any ridgeline, with the aim of detecting wire supports, before flying below the height of that ridgeline (ie low flying); and

   d. on completion of the survey, the aircraft captain should submit a report to the appropriate commander detailing the nature and location of all located hazards, together with an indication of the captain's confidence in the validity of the report. RAAF Aeronautical Information Service (AIS) should be notified of any significant changes or new data uncovered on the survey.

9. After the survey has been completed, the following details should be recorded on the appropriate master hazard chart:

   a. the survey date and required date of resurvey

   b. hazardous obstructions, in particular, wires

   c. instrument approach paths

   d. the minimum height and lateral separation to which the area or route has been cleared.

10. **Obstructions.** Australian CASR prescribe obstruction height limitations. Further information regarding obstruction databases may be provided by the Defence Aeronautical Information Service Provider (AISP)

Low Flying Minimum Separation Heights

11. The MAO should define low flying minimum separation heights and distances for aircraft types, within the following areas:

   a. Surveyed LFA and LFR

   b. Unsurveyed LFR

c. Low Flying over water

d. Flypasts and flying displays

e. Built-up areas.

12. The following minimum heights apply to all fixed wing peacetime low flying operations:

a. **Surveyed LFA and LFR.** Operations within a promulgated LFA and on a promulgated LFR may be authorised to a height not below 150 feet AGL.

b. **Unsurveyed LFR.** Operations over land which are conducted over unsurveyed routes or areas, or for which the surveys are not current, may be authorised to a height not below 250 feet AGL.

c. **Low flying over water.** By day, aircraft fitted with serviceable and operating ground proximity devices (eg radar altimeters) and operating over open water may be authorised to fly not below 100 feet AGL. Aircraft operating over water by day without radar altimeters are not to be authorised below 250 feet. By night, the MAO should determine if higher heights are suitable and publish the night minima heights in OIP.

d. **Built-up areas**. Aircraft are not to be authorised for flight below 1000 feet Height Above Obstacles Within (HAOW) 600 meters of a built-up area without MAO approval.

Conduct of Flight at Low Altitude

13. When operating at low altitude, aircrew should carry, in their aircraft, charts indicating applicable hazards as shown on the appropriate master maps. As part of their pre-flight preparation, aircrew should validate these low flying charts against master charts held at the unit.

14. Whilst low flying, aircrew should:

a. observe the authorised minimum height for the flight unless weather or an emergency dictates otherwise

b. be cognisant of their aircraft's performance and capability and exercise vigilance to avoid ground and air hazards

c. avoid known terminal air traffic areas

d. avoid built-up or closely settled areas

e. avoid operating mines, quarries or other industrial centres

f. avoid, as far as practicable, farmhouses, livestock and known sensitive areas.

15. If flight below the authorised height is necessary for any reason, the captain of the aircraft should report the details to the authorising officer as soon as practicable after landing.

GM SPA.20.A – Low Flying (AUS)

1. **Purpose.** The purpose of this regulation is to assure the safe management of low flying activities.

2. This regulation does not apply to non-Defence registered aircraft being operated by Defence aircrew; such operations are to be in accordance with the relevant civil air rules and regulations.

3. This regulation does not apply to non-Defence registered aircraft covered by Implementation Procedure for Australian Civil Registered Aircraft Operated as State Aircraft and Aircrew Licensing, see DASA Key Documents webpage for details.

(b) The MAO must ensure OIP includes low flying orders including: ▸ **AMC**

AMC SPA.20.B – Low Flying OIP (AUS)

The MAO should promulgate Standing Instructions (SI) detailing minimum low flying heights and lateral separations for each aircraft type.

1. low flying areas
2. routes
3. minimum heights
4. separation requirements
5. limitations of each aircraft type
6. use of any specialised equipment (such as Terrain-Following radar, GPWS, vision enhancing equipment).

SPA.30 - FLYING DISPLAYS AND FLYPASTS

(a) The MAO must establish a system that ensures aircraft conducting flying displays do not compromise the suitability for flight. ▸ **GM** ▸ **AMC**

AMC SPA.30.A – Flying Displays and Flypasts (AUS)

Crowd Line Management

1. A Crowd Line will normally be provided by an event organiser for air shows. Depending on the event's nature, the event organiser may not fully understand the implications of aircraft flying displays from a safety point of view. There may be times when the crowd line (or similar) needs to be determined by planning staff and the aircraft captain due to the nature of the event, such as a car race. In this circumstance, the aircraft captain and event organiser should work together to determine the position of all potential spectators, personnel, and structures at the time of the display. Locations of spectators and structures may also change over the course of the event. This may warrant a site assessment and/or airborne recce prior to the display.

2. **Crowd Line Infringement.** There may be circumstances requiring some people to be closer to the aircraft than the designated crowd line. In such cases, the aircraft captain should ensure the display organiser has provided a safety briefing to the exposed people so that appropriate precautions may be taken. For example, helicopter downwash may require display signs to be firmly fastened or removed prior to the air display Assumptions should not be made that the same level of controls such as site preparation, FOD awareness to that of military controlled environments will be in place. If the aircraft captain is unsure such a safety briefing has occurred, the crowd line measurements should be modified to include those people and objects who would have been outside the crowd line.

3. **Flying display sequences.** Flying display sequences may not take place over the main crowd without specific MAO approval, unless the display is a single aircraft in erect flight, not below 500 feet HAOW, when positioning for the beginning of, or on departure from, a display.

Safe Distance from Spectators and Structures

4. **Fixed Wing Aircraft.** Excluding flypasts, the normal separation distance between fixed wing aircraft and the crowd line is a minimum of 200 metres Further risk assessment should be conducted on:

   a. Elements of the display with significant vector towards the crowd line, taking into account the complexity of the manoeuvre and/or formation type/size.

   b. Personnel and fragile object, eg marquees or advertising hoarding, closer than the crowd line to ensure their safety is not compromised.

5. **Rotary Wing Aircraft.** Excluding flypasts, the normal separation distance between helicopters and the crowd line should be a minimum of 200 metres. Further risk hazard analysis should be conducted regarding the location of people and fragile objects such as marquees or advertising hoarding, that are closer than the crowd line to ensure personnel safety is not compromised. The minimum distance may be reduced for:

   a. **Hovering.** For normal take off and landing and transitional manoeuvres, the minimum distance should be not less 65m. This distance is based on a medium weight helicopter, eg S-70 / MRH-90, and should be adjusted using RM for helicopters of differing all up weight but can be reduced if RM allows.

   b. **Low speed manoeuvring.** The normal minimum distance should be 100m.

   c. **Underslung load.** The normal minimum distance whilst carrying an underslung load should be 100m.

6. Rotor downwash effect will vary with channelling/funnelling objects (such as buildings, concrete barriers etc), which must be accounted for by the aircraft captain during display planning and execution (assessing the risk of rotor downwash). This may require the minimum distance to be based on the channelling/funnelling object.

7. Rotor downwash effect area is influenced by ambient wind. The separation distance should be increased downwind by an additional 20 m per 10 knots of wind[2]

N24-006 (875) Rotor Downwash Incident (DDAAFS/OUT/2015/AB23962744 and DSTO Rotor Downwash Modelling, AB26272152

Speed Limitation

8. Aircraft should not exceed:

   a. Mach 0.90 or 550 Knots Indicated Air Speed, whichever is least, so as to avoid accidental generation of a sonic disturbance during manoeuvres. Aircraft flying at or approaching this limit should reduce speed further before initiating any manoeuvre to avoid in inadvertent sonic disturbances.

   b. 300 KIAS, or operate at high power settings, when approaching the display area from the rear of the crowd.

Height Limitations

9. **Fixed Wing Aircraft.** The following height minima apply to fixed wing aircraft participating in flying displays:

   a. **Aerobatic manoeuvres.** Aerobatic manoeuvres, except spinning, may be performed down to a minimum of 500 feet HAOW.

   b. **Non–aerobatic manoeuvres.** Low level runs or flypasts may not be conducted below 200 feet HAOW.

   c. **Spinning.** Recovery to erect flight should be completed by 1000 feet HAOW.

10. **Rotary Wing Aircraft.** The following height minima should be applied to helicopters participating in flying displays:

   a. **Display manoeuvres.** Display manoeuvres (wingovers/pedal turns) may be performed down to a minimum of 100 feet HAOW.

   b. **Low speed handling manoeuvres.** Low speed handling manoeuvres may be performed down to a minimum of 50 feet HAOW except for live winching demonstrations which may be conducted at a height that provides the maximum degree of safety for the wireman (person being winched).

   c. **Flypasts.** Low level runs or flypasts may be flown to a minimum of 100 feet HAOW.

Flying Display Weather Minima

11. Pilots should maintain clear of cloud and a visibility suitable for the display at all times to ensure suitability for flight will not be compromised. This ensures that aircraft remain in a position to provide visual separation with other display aircraft, terrain, structures and to aid in the maintenance of situational awareness throughout.

12. The flight authorisation officer and aircraft captain should establish minimum weather in advance based on the complexity and location of the display. Where practicable, the event planner should be included in the planned weather determinations.

Flying Display Limitations and Approval

13. Flying Display Limitations and Approval controls include:

a. identification of approval authorities for flying displays that include aerobatics or opposition manoeuvres

b. any additional limitation that is deemed necessary to further restrict aircraft flying display operations.

14. High level approval, administrative and indemnity insurance aspects of flying displays can be found in the Defence Assistance to the Civil Community Manual.

Flight Conduct

15. In addition to DASR ORO.30, flight authorisation and conduct should include[3] ***AMC DASR ORO.30.A. – Flight Authorisation System Control***:

a. **Officer-in-charge (OIC) display.** Where a display involves aircraft from different Services/Commands/Units, an OIC display is to be nominated. The OIC display is to coordinate all flying displays and flypasts.

b. **Communications.** To aid in situation awareness, ensuring the display aircraft should have continuous communication with the event organiser or similar (such as unit personnel at the event) during the display.

c. **Risk Management.** Where the display sequence is not fully covered in existing Core Risk Profiles (CRP), Mission Risk Profiles (MRP) or Risk Management Plans (RMP), further risk management is completed to ensure all known risks are eliminated or otherwise minimised SFARP.

d. **Public Awareness.** Ensure there is a mechanism to allow for public awareness of upcoming flying displays and flypasts where required. This is to ensure a duty of care to the public's safety who may not aware of the event, and to reduce the potential for adverse publicity.

e. **Display sequence.** The display sequence is to be discussed with the flight authorisation officer in accordance with DASR ORO.30, paying particular attention to and specifying in detail each authorised manoeuvre. Any changes to a display sequence are to be approved by the flight authorisation officer, thoroughly briefed and practised before being incorporated in a display.

f. **Briefings.** A comprehensive crew briefing is to be given before any practice or display flight. The briefing is to cover all instructions, orders, procedures and sequences relevant to the flight, paying particular attention to:

i. Noise sensitive areas which are to be avoided.

ii. The location and height of obstacles in and near the area of operations including channelling/funnelling objects.

iii. The location of the crowd line, spectators and applicable display axis (orientation of display).

iv. The specific limitations on aircraft operations detailed in this regulation such as:

v. Height minimums.

vi. Manoeuvring and operating limitations (speed, 'G', roll rates, aircraft systems etc)

vii. Distance from crowd line.

viii. Weather minimums and considerations.

ix. Contingency procedures.

x. RMP/MRP constraints.

xi. Ground Special Effects (such as pyrotechnics, smoke etc).

xii. Other expected airborne traffic.

g. **Minimum height.** The minimum height and lateral distance to be maintained from the surrounding terrain and obstacles is to be entered in the Flight Authorisation documentation.

Formation Flying Display

16. Specific limitations and restrictions for formation flying displays are:

a. opposition manoeuvres involving vectors towards the crowd are prohibited except as specifically authorised by the MAO

b. new manoeuvres or sequences may not:

i. be practised without MAO approval

ii. be performed in public without MAO approval.

c. The MAO may promulgate the minimum qualifications of pilots selected for formation aerobatic teams.

GM SPA.30.A – Flying Displays and Flypasts (AUS)

1. **Purpose.** Throughout any type of display flying, the safety of spectators and other personnel is paramount. The purpose of this regulation is to assure that flying displays are conducted without damage to the aircraft involved, at an appropriate position from spectators and structures to ensure 1st, 2nd or 3rd party risk is mitigated from :

a. rotor/jet downwash or jet blast

b. a mishandled sequence

c. an aircraft malfunction

d. high-speed aerodynamics.

2. For the purpose of this regulation unless stated otherwise, flying displays include flypasts.

3. Without specific approval from the approving authority, Defence aircraft may not engage in any aerobatics or manoeuvring display over any city, town or densely inhabited district. In most cases, this will preclude flying displays, but not flypasts, over any regatta, race meeting or similar event. The adequacy of a display venue is to be considered in all cases and specifically addressed in any application submitted to the approving authority as appropriate for approval to conduct a flying display. Particular attention should be given to the availability of clear areas appropriate to the likely consequences of airborne emergencies.

4. Helicopter flying displays may involve operations conducted in the avoid area of the height velocity diagram. Helicopter flying displays must be planned and conducted in a manner that does not expose spectators to the consequences of a loss of power while operating the avoid area of the height velocity diagram.

NOTE: Throughout DASR SPA.30.A, minimum heights have been referenced to height above obstacles within (HAOW) without a lateral distance provided as flying display lateral distances will vary. As such, lateral distance calculations control should be determined within OIP.

(b) The MAO must ensure that objects released from Defence aircraft during flying displays will not compromise suitability for flight. ▸ **GM** ▸ **AMC**

AMC SPA.30.B – Objects Released during a Flying Displays or Flypasts (AUS)

1. The following controls may ensure safe release of objects during flying displays:

   a. specific MAO approvals are required

   b. the object to be released has technical and operational clearance for release from the participating aircraft

   c. the release of objects is included in the Risk Management for the display

   d. ensuring all safety distance requirements are observed.

GM SPA.30.B – Objects Released during a Flying Displays or Flypasts (AUS)

1. **Purpose.** The purpose of this regulation is to ensure that objects that are released from aircraft during flying displays are appropriately approved and will not compromise suitability of flight.

SPA.40 - DEFENCE LONG RANGE OPERATIONS (DLRO)

(a) The MAO must ensure a DLRO Management System is established. ▸ **GM** ▸ **AMC**

AMC SPA.40.A - DRLO Risk Assessment Considerations

1. DLRO risk assessment considerations are provided in Table 1.

Table 1 - Risk Assessment Considerations	
General assessment – aircraft role and flight profiles:	Aircraft role, eg tactical and strategic transport, SAR, ISR, air to air refuelling, battle space management / C2 and VIP transport. Benign or challenging environments. Carriage of passengers and crew. Carriage of cargo / Dangerous Goods (DG).
General assessment - DLRO area of operations and/or air route:	Threshold time for diversion. The maximum diversion time. Diversion profile and speed schedule. Adequate aerodromes to which an aircraft can divert, approach and land within the maximum diversion time. Effective communication for all sections of the route. Time limited aircraft system performance.
General assessment - capacity to undertake DRLO:	Aircraft type certification status for EDTO. Sufficiency of supporting information, eg aircraft performance data and systems, pre and in-flight information and systems monitoring, and appropriate OIP. Compliance with Defence AIP and relevant regulatory requirements. Ground support and facilities. Communications over the planned route and altitudes (including diversions), reliable two-way voice and / or data link communications under expected conditions.
DLRO risk assessment – areas for consideration (not limited to)	**Flight crew training:** Competency, check programme and experience regarding: -Routes and aerodromes to be used. -Fuel planning to be used to the Point of Safe Diversion (PSD), and from the PSD to the diversion aerodrome (ie critical fuel scenario). -Navigation methods to be used.

-Diversion profiles from the PSD, eg long range cruise, normal cruise, obstacle clearance, depressurised, engine failure depressurised.

-Diversion procedures.

-Evaluation of probable propulsion and system failures.

-Criteria for significant system(s) failure.

-Performance including a total loss of thrust in one engine (twin engine aircraft).

-Total loss of normal generated electrical power.

-Diversion, approach and landing on standby power if applicable.

-Emergency training relevant to particular types of flight operation and cargo.

-Any other condition considered likely to impact airworthiness, crew workload or performance risk.

Maintenance:

-Procedures to verify the status of the aircraft and significant systems.

-Procedures to maximise system reliability through maintenance action (eg maintenance to safety critical systems performed by different personnel or with additional supervision).

-Any additional maintenance deemed necessary to support higher system reliability required for DRLO operations. This includes (but is not limited to) oil consumption monitoring, failures / incident reporting, monitoring programs and parts control for DLRO significant systems.

Adequate diversion aerodrome (for the expected time of use):

-Adequate diversion aerodromes authorities (approval to use, contact procedures).

-Defined procedures for obtaining over flight and landing authorisation.

-Visual and non-visual aids for the anticipated types of approaches and operating minima are available at diversions.

-Physical requirements for the approved aircraft weight range (length, manoeuvring area size, strength, and lighting).

-At least one approved instrument approach procedure which permits the conduct of an instrument approach to the expected runway while complying with applicable minima.

-Known status and availability of navigation aids, ATC, ACD, lighting, ARFFS and MET forecasts.

-Required level of technical assistance and ground handling (fuel, food etc).

-Required ability to receive and accommodate the planned complement of passengers, crew and cargo, or a recovery plan in place to ensure the protection and well-being of passengers and crew until they are transported to another location.

-The accuracy and completeness of ground support and any passenger recovery plans.

-Meet other requirements applicable to the flight (eg DG handling, ground security, ITAR compliance).

Aircraft equipment: Minimum Equipment List (MEL) and appropriate redundancy for systems that have a fundamental influence on flight safety, ie significant systems, including but not limited to:

-electrical

-hydraulic

-pneumatic

-fuel

-APU oil consumption

-flight instruments

-flight controls

-navigation and communication equipment

-pressurisation

-fire suppression

-emergency equipment.

Fuel planning:

-in-flight management

-aircraft configuration / contingencies (including consideration of OEI performance and OEI cruise speed)

-critical fuel reserves

-critical fuel scenario

-effect of icing

-PSD / Point of Safe Return (PSR) / Equal Time Point (ETP).

Environmental:

-communications (en-route and on ground).

-fuel freeze.

-aircraft cooling / de-icing.

-crew / passenger training and survival considerations.

-passenger recovery plan.

-operation of ground equipment.

Weather information:

-weather information system can be relied upon to forecast terminal and provide en-route weather forecasts with a reasonable degree of accuracy and reliability.

-weather information will remain valid for ETA (within defined buffer periods).

Delayed dispatch considerations:

-If delayed for more than 1 hour, the ability to monitor weather forecasts and aerodrome status at the nominated en-route diversions to ensure that they stay within the specified planning minima requirements until dispatch.

Diversion decision making:

-procedures, policy and guidance for in-flight monitoring and decisions regarding any significant changes in conditions at diversions.

-aerodrome facility information.

-other appropriate planning data.

2. DLRO OIP should include:

a. The threshold diversion flight time, beyond which an operation is considered as a DLRO, for each aircraft type.

b. OEI and any other critical operating speed, to be used for the calculation of the threshold time, for each aircraft type.

c. Limitations for each aircraft type.

d. Use of any specialised equipment for each aircraft type.

e. Diversion time.

f. Diversion speed.

g. Special equipment requirements.

3. A review of compliance against DLRO approvals should be conducted in the following circumstances:

a. Changes to the aircraft CRE.

b. Changes to type design.

c. Significant safety incidents / issues.

d. Issues with DLRO significant system reliability.

e. The continued validity and effectiveness of OIP and aircrew training.

GM SPA.40.A – Defence Long Range Operations (AUS)

1. Purpose. The purpose of this regulation is to ensure that additional safety controls to treat the risks of flight operations with an extended flight time to an adequate diversion aerodrome.

Applicability

2. DLRO applies to fixed wing multi-engine turbine aircraft, operated by Defence, that may carry Defence personnel on long range flights. The approved aircraft Statement of Operating Intent and Usage (SOIU) forms the basis for applicability and the MAO is responsible for determining which aircraft should be managed under DLRO.

Introduction

3. The DLRO system supports standing risk assessments and approvals for aircraft, based on the Configuration, Role and operating Environment (CRE), to develop technical and/ or operational mitigation strategies. These standing assessments and approvals are valid until a change occurs to the approved CRE or as directed by the MAO.

4. The premise behind DLRO management strategy is that Defence aviation risks associated with the conduct of long range flights are identified and treated. Defence should consider the various civil practices as potential DLRO risk mitigating strategies where reasonably practicable; however, DLRO management strategy should be flexible and tailored to the Defence context. The end state is the identification, documentation

and treatment of risk, with any residual risk being reduced so far as reasonably practicable and retained by the appropriate risk management authority.

5. Defence is not bound by civil regulation, nor would it be advantageous for Defence to mandate a strict compliance with civil regulation pertaining to long range operations, also known as Extended Diversion Time Operations (EDTO). Implementation of civil regulation may result in unnecessary costs to Defence, potential operational constraints and a potentially false sense of improved safety; however, there are risks associated with long range flights conducted by Defence which can be controlled through appropriate risk management.

6. DLRO is an extension of the extant Flying Management System (FMS) and therefore a number of the recommended mitigation strategies are expected to be in place. As such, DLRO should be treated as 'business as usual' in the context of Defence operations and any approvals should be simple, at the lowest level practicable and integrated into extant risk management systems.

Risk Management

7. The aim of DLRO is to eliminate or otherwise minimise risks so far as is reasonably practicable (SFARP) to aircraft occupants in the event of an in-flight emergency, and to ensure the delivery of capability and achievement of the mission. This is done through the identification of the DLRO area of operations and the management of DLRO significant events. Analysis is focused towards the risk domains and processes provided within the Defence Aviation Safety Manual (DASM). In identifying any risks associated with the conduct of long range flights, it is important to establish the applicability to aircraft types and the risk context.

8. **Establish the context.** For DLRO, this is achieved through review of the following:

   a. **The approved aircraft SOIU.** This includes an assessment of the approved roles / flight profiles and environment which involve exposure to long range flights and flights which involve significant flight time from adequate aerodromes. Such roles include tactical and strategic transport, VIP transport, Search and Rescue (SAR), Intelligence Surveillance Reconnaissance Command and Control (ISR/C2) and Air to Air Refuelling (AAR). The assessment of the SOIU includes an understanding of the operating environment, either benign or challenging, any hazards associated with the carriage of cargo/dangerous goods and the exposure of risk to aircraft occupants. Consideration should also be given to whether aircraft occupants are aware of any risks, for example civil passengers versus military passengers/crew.

   b. **The capabilities, design features and certification basis of the applicable aircraft which includes DLRO significant systems.** This includes compliance to contemporary design requirements, including the Authority (DASA) prescribed design requirements, CAA certification of the same or similar type for EDTO, impacts of military modifications to civil derivative aircraft, critical system performance, the capacity of the aircraft to conduct long range operations and Original Equipment Manufacturer (OEM) Instructions for Continuing Airworthiness (ICA).

c. The conduct of operations and the supporting FMS which includes all relevant OIP.

9. **Risk Identification.** Once the context is clearly established, any hazards and associated risks should be identified. Identification of the hazards should consider impacts to the mission, equipment, personnel and the environment. Once the hazards are identified, the risks are determined considering the six risk dimensions – personnel safety, mission, capability, reputation, financial and environment.

10. **Analyse risks**. The risks are analysed in terms of likelihood and an assessment of the most credible consequence for each risk dimension. Any existing controls are considered; including analysis of extant OIP and mitigating strategies that should be conducted for aircraft in service.

11. **Identify Reasonable Measures.** Controls and mitigating strategies are identified to eliminate or otherwise minimise risk SFARP. This step can establish whether a system of mitigating strategies is required under DLRO, or whether specific risks need to be addressed only.

12. When selecting controls or mitigating strategies to treat risk, an assessment must be made as to whether the strategy is reasonably practicable and the cost of implementation does not outweigh the benefit or unnecessarily constrain capability or the conduct of the mission. Risk mitigation strategies are designed to preclude an in-flight emergency and should it occur, to protect occupants and capability as follows:

a. **Preclude**. Measures to preclude an in-flight emergency are largely technically based. Strategies may include:

i. Aircraft which are designed, configured and certified in accordance with CAA EDTO requirements and are supported by an associated Type Certificate (TC).

ii. Specific maintenance procedures and training.

iii. Specific aircraft parts control procedures.

iv. Specific condition monitoring programs and on-board health and usage monitoring systems.

v. Critical system reliability requirements.

vi. The capture and analysis of critical system data across fleets.

vii. The use of a long range operation Minimum Equipment List (MEL).

viii. The implementation of approved aircraft operating limitations.

b. **Protect.** Measures to protect in the event of an in-flight emergency are largely operationally based. Strategies include:

i. Specific flight planning and time-limited system planning.

ii. Access to specific aircraft performance data for all viable aircraft configurations and contingencies.

iii. The conduct of specific aircrew and operational staff training and currency.

iv. The implementation of procedures in OIP.

v. Use of constant communication, flight-following and 'real time' operational planning facilities.

vi. Assessment of alternate aerodrome facilities to cater for diversions.

vii. The implementation of effective Non-Technical Skills (NTS) such as decision making, situation awareness, communication, stress and fatigue management.

13. **Review.** The documentation of a risk assessment process forms the basis for a DLRO approval for the respective aircraft type. The MAO is responsible for conducting DLRO risk assessments.

14. The MAO determines the applicability of DLRO, how risks are managed, the control strategies to be used and the documentation and issue of approvals. The basis for an approval and the associated documentation should include:

a. A standing risk assessment that contains MAO-endorsed operational and technical assessments, supported if required by Authority (DASA) advice. The standing risk assessment is valid until a change occurs to the approved aircraft CRE.

b. DLRO threshold times and maximum diversion times are predetermined and should be reflected in OIP. An appropriate threshold time ensures maximum flexibility and capability whilst duly considering safety. A threshold time is based on worst case contingencies, which have been analysed, reviewed and treated under a risk assessment.

c. The maximum diversion time should factor a suitable allowance for holding, approach and landing. The maximum divesion time should be assessed and nominated by the respective MAO and it must be greater than the nominated threshold time.

d. The MAO may approve DLRO threshold times based on considerations that include:

i. Risk assessment based on a judgement of aircraft design, configuration and performance.

ii. Technical advice regarding technical and design considerations, including advice from the relevant initial airworthiness (military design) organisation. Where relevant, reference should be made to the Defence Aviation Safety Design Requirements Manual (DASDRM) .

iii. Nominated threshold time for an aircraft type, based on a system safety analysis that considers the most limiting aircraft system (including the most time limited system) and related system effects.

iv. The nature of operations.

v. The personnel exposed to the risks.

e. Threshold times and maximum diversion time determinations may be managed as follows:

i. Within (less than) the approved DLRO threshold time use extant procedures as documented in OIP.

ii. At or above (greater than) the approved DLRO threshold time as detailed in this regulation.

f. Aircraft specific limitations and type certified data.

g. Once the risks and associated treatments have been determined, Mission Risk Profiles (MRP) which document aircraft and operational specific risks and mitigation strategies.

h. OIP that support the predetermined threshold times and risk management strategies. This includes provision of DLRO specific operational manuals, Standing Instructions (SI), ICA, maintenance/logistic manuals and adequate aerodrome information. Information contained in OIP should address any DLRO specific operating limitations, component life limits, MEL, specific maintenance / inspection requirements and any specific aircraft CRE considerations. Where able, consideration should be given to adopting only one management framework that is interchangeable. References to compliance with CAA EDTO approvals should not be documented in OIP, nor should CAA requirements be referred to as 'related OIP'.

15. Where MAO decisions may be influenced by technical considerations, including airworthiness design requirements, the interface should be described in the DLRO management system.

16. Where previously assessed / approved DLRO limits are expected to be exceeded, such as an immediate operational requirement, a specific or 'one off' risk assessment / approval should be conducted. This one off assessment should consider all aspects and should be documented in the same manner as a standing risk assessment / approval, noting that such approvals may involve an operational imperative and may be subject to time constraints for development and approval. It is expected that a 'one off' assessment / approval is time limited and subject to review as required.

Additional Reference Material

17. Additional historical background to DLRO is provided in DASA Advisory Circular 004/16 (Objective Id: AB28337244).

SPA.50 – DEFENCE NAVIGATION APPROVALS (AUS)

▸ **GM**

GM SPA.50 – Defence navigation approvals (AUS)

a. **Purpose. (Context)** CAAs have introduced Performance Based Navigation (PBN), Reduced Vertical Separation Minima (RVSM) and North Atlantic High Level Airspace (NAT HLA) requirements to deliver global improvements in air navigation safety, capacity and efficiency. Defence can utilise PBN, RVSM and NAT HLA when operating in national and international Airspace. **(Hazard)** Suitability For Flight can be compromised by inadequate compliance with PBN, RVSM and NAT HLA requirements causing reduced separation from obstacles or other Aircraft. **(Defence)** This regulation requires MAOs that utilise PBN, RVSM or NAT HLA capabilities to implement defined controls to ensure Suitability For Flight.

b. The following additional acronyms and terms are used in DASR SPA.50:

Acronym	Description
ADS-C	Automatic Dependent Surveillance – Contract
APCH	Approach
APV	Approach with Vertical Guidance
AR	Authorisation Required
A-RNP	Advanced RNP
B-RNAV	Basic RNAV
CPDLC	Controller-Pilot Data Link Communications
FL	Flight Level
FRT	Fixed Radius Transition
LNAV	Lateral Navigation
LNAV / VNAV	Lateral Navigation with Vertical Navigation
LP	Localiser Performance
LPV	Localiser Performance with Vertical Guidance
NAT HLA	North Atlantic High Level Airspace
P-RNAV	Precision RNAV
RF	Radius to Fix

RNP	Required Navigation Performance
RNP APCH	RNP Approach
RNP AR	RNP Authorisation Required
RNP AR APCH	RNP Authorisation Required Approach
RNP AR DP	RNP Authorisation Required Departure Procedures
SBAS	Satellite Based Augmentation System
TOAC	Time of Arrival Control
UTC	Coordinated Universal Time
VNAV	Vertical Navigation

Term	**Definition**
Calendar day	A 24-hour period from midnight to midnight based on either UTC or local time, as selected by the MAO. All calendar days are considered to run consecutively.
Conventional routes and procedures	Published navigation routes and instrument procedures defined by ground-based navigation aids.
Fixed Radius Transition (FRT)	In an FRT, a fixed radius value is associated with a waypoint, and the area navigation system is required to fly by that waypoint using the same turn radius regardless of the Aircraft ground speed.
Navigation specification	A set of Aircraft and Aircrew requirements needed to support PBN Operations within a defined Airspace, being either of: 1. **RNAV specification.** A navigation specification based on area navigation that does not include the requirement for on-board performance monitoring and alerting, designated by the prefix RNAV (eg RNAV 5, RNAV 1). 2. **RNP specification.** A navigation specification based on area navigation that includes the requirement for on-board performance monitoring and alerting, designated by the prefix RNP (eg RNP 4, RNP APCH).
Radius to Fix (RF)	A constant radius circular path around a defined turn centre that terminates at a fix.

Time of Arrival Control (TOAC)	TOAC is a system capability that determines the necessary and available adjustments to Aircraft speed and vertical profile necessary to satisfy a required time of arrival at a fix.

(a) The MAO must obtain approval IAW DASR ARO.100 for the following Defence navigation Operations: ▸ **GM1** ▸ **GM2** ▸ **AMC**

AMC SPA.50(a) –OpSpec variations for PBN, RVSM and NAT HLA (AUS)

a. The MAO should use DASR Form 139a to request an OpSpec variation.

b. The MAO should use DASR Form 1307 and an updated OCS to request new or revised navigation approvals in the OpSpec for the following:

i. PBN navigation specifications:

(a) RNAV 10 (RNP 10)

(b) RNAV 5

(c) RNAV 2

(d) RNAV 1

(e) RNP 4

(f) RNP 2

(g) RNP 1

(h) A-RNP

(i) RNP 0.3 (Helicopter)

(j) RNP APCH, including:

(i) LNAV

(ii) LNAV / VNAV

(iii) LP

(iv) LPV

(k) RNP AR (RNP AR APCH and RNP AR DP Operations may include One Engine Inoperative (OEI) procedures), including:

(i) RNP AR APCH

(ii) RNP AR DP

(iii) PBN supplementary capabilities:

(a) APV / Baro-VNAV

(b) Radius to Fix (RF)

(c) Fixed Radius Transition (FRT)

(d) Time of Arrival Control (TOAC)

(e) use of suitable area navigation systems on conventional routes and procedures (both en route and terminal)

ii. RVSM

iii. NAT HLA.

GM2 SPA.50(a) – Defence navigation approvals and specifications in context (AUS)

a. Table GM2 SPA.50(a)–1 lists typical Defence navigation Operations and corresponding navigation approvals and specifications.

LSN	Typical Defence navigation operations	Applicable navigation approvals and specifications
1	Australian continental Operations not entering oceanic Airspace that include en route, terminal and RNAV (GNSS) approach.	• RNP 2 • RNP 1 • A-RNP • RNP APCH (LNAV)
2	Australian continental Operations not entering oceanic Airspace that include en route, terminal and RNAV (GNSS) approach with Baro-VNAV.	• RNP 2 • RNP 1 • A-RNP • RNP 0.3 (Helicopter) • RNP APCH (LNAV) • RNP APCH (LNAV /VNAV) • RNP AR
3	Operations entering oceanic Airspace as well as continental Operations that include en route, terminal and RNAV (GNSS) approach.	• RNAV 10 (RNP 10) • RNP 2 • RNP 1 • A-RNP • RNP APCH (LNAV)
4	Operations entering oceanic Airspace as well as continental Operations that include en route, terminal and RNAV (GNSS) approach that will also be operating in Airspace with the service volume of a Space Based Augmentations System (SBAS) system.	• RNAV 10 (RNP 10) • RNP 2 • RNP 1 • A-RNP • RNP APCH (LP) • RNP APCH (LPV)

5	Operations entering oceanic Airspace with reduced separation (30 NM lateral and longitudinal separation) as well as continental Operations that include en route, terminal and RNAV (GNSS) approach. **Note**: There are likely to be additional requirements for Aircraft to be equipped with Controller-Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance – C (ADS-C) to support reduced separation Operations in oceanic Airspace.	• RNAV 10 (RNP 10) • RNP 4 • RNP 2 • RNP 1 • A-RNP • RNP APCH (LNAV)
6	Aircraft that operate in B-RNAV Airspace in Europe.	• RNAV 5
7	Aircraft that operate in European P-RNAV Airspace or US RNAV Type A or Type B Airspace.	• RNAV 1 • RNAV 2
8	Aircraft that operate in RVSM Airspace (FL290 to FL410)	• RVSM
9	Aircraft that operate in North Atlantic High Level Airspace between FL285 and FL420	• NAT HLA

Table GM2 SPA.50-(a) 1 – Typical Defence navigation Operations and the corresponding navigation approvals and specifications

b. Note, an RVSM approval is valid globally provided that the MAO prescribes any operating procedures specific to a given region in OIP.

GM1 SPA.50(a) – Defence navigation approvals (AUS)

The DASR requirement for MAOs to obtain approval for all RNP specifications differs from CASA. Under the CASA system an Operator is required to seek approval for a limited number of specifications (RNP AR APCH, and RNP 0.3). Operations under the remaining specifications require the Operator to utilise TSO equipment. However, DASA approvals may not require TSO equipment provided capability, functionality and performance equivalence can be demonstrated. In addition, CASA requires that the Aircraft Flight Manual states that the aircraft is capable of the particular navigation specification—where DASA does not. CASA surveillance includes an annual audit of the Operator's PBN training program. Whereas, DASA does not require an annual audit of the MAO's PBN training program.

1. Performance Based Navigation (PBN)
2. Reduced Vertical Separation Minima (RVSM)
3. North Atlantic High-Level Airspace (NAT HLA).

(b) The MAO must utilise navigation equipment and management, monitoring and alerting controls for Defence navigation Operations defined at DASR SPA.50(a), that: ▸ **GM** ▸ **AMC**

AMC SPA.50(b) – Navigation equipment and management, monitoring and alerting controls (AUS)

The MAO must utilise the navigation equipment and management, monitoring and alerting controls defined in DASA Form 1307 for the relevant navigation approvals.

GM SPA.50(b) – DASA Form 1307- *Application for Navigation Specification Approval* (AUS)

a. MAOs should submit a completed DASR Form 1307 for Defence navigation approval requests. DASA assesses the evidence MAOs submit for each specification approval sought against the eligibility requirements. The eligibility requirements include technical and operational components.

b. MAOs, that cannot meet Aircraft eligibility requirements outright, may demonstrate alternate compliance via DASR Form 1307.

1. complies with initial Airworthiness and Aircraft eligibility ▸ **GM1** ▸ **GM2** ▸ **AMC**

AMC SPA.50(b)1 – Demonstration of compliance for Aircraft Eligibility (AUS)

a. **Equipage Requirements.** The level of equipage provided to meet aircraft eligibility requirements must be included in the TCB.

b. **Demonstration of Compliance.** Demonstration of compliance with Aircraft Eligibility requirements can be met IAW AMC to DASR 21.A.20 through either:

i. Compliance Demonstration evidence developed by a MDOA holder (or alternative as agreed by the Authority); or

ii. through appropriate evidence of prior certification provided by another CAA / MAA.

GM2 SPA.50(b)1 – Alternate means of demonstrating compliance

Defence aircraft, in particular aircraft which are not civil derivative, will not often be able to achieve strict compliance with the civil PBN and RVSM requirements. In this case, an alternative means of establishing compliance with the civil standards, in which equivalent performance outcomes are demonstrated, may be acceptable to the Authority. These alternate means will achieve an equivalent level of safety and will be implemented through agreed tailoring to the TCB documented by MCRI. See AMC1 to DASR 21.A.17A.

GM1 SPA.50(b)1 – Demonstration of compliance for Aircraft Eligibility (AUS)

If approval is being sought as part of initial Aircraft acquisition, aircraft eligibility will be documented in the aircraft TCB and TCDS when the MTC is issued. Where a Defence aircraft has not previously been certified for PBN or RVSM, a major change to Type Design will be required, to update the aircraft's Type Certification Basis (TCB). Supplementation may be required to include equipage requirements, and will be implemented through agreed tailoring. See AMC1 to DASR 21.A.17A.

2. ensures operations will not compromise Suitability For Flight. ▸ **GM1** ▸ **GM2** ▸ **AMC1** ▸ **AMC2**

AMC2 SPA.50(b)2 – Navigation database integrity (AUS)

a. MAO controls to ensure the integrity of the navigation Operations database should include:

i. evidence that navigation data received by the MAO will satisfy prescribed requirements for required navigation approvals and routes

ii. OIP for the management of navigation data integrity for navigation approvals and routes flown, including:

(a) descriptions of MAO interfaces to, and product from, applicable commercial navigation database providers and the Aeronautical Information Service – Air Force (AIS-AF)

(b) in circumstances where blended commercial and AIS-AF navigation database products are necessary, the corresponding database integrity controls

(c) management, maintenance (where applicable) and verification of navigation databases

(d) the identification, management and closure of navigation database discrepancies with the database provider

(e) Aircrew procedures for:

(i) checking navigation database validity

(ii) loading or selecting a new navigation database

(iii) verifying the navigation database required for the specific PBN Operation includes the routes and procedures required for the Flight

(iv) navigation database expiry contingencies

iii. that where the navigation database has expired:

(a) an Aircraft that is operated IAW a MEL (or equivalent) that includes navigation database relief may operate for up to three calendar days after the database expires

(b) an Aircraft that is not operated with a MEL (or equivalent) may operate for a period of not more than 72 hours from the time that the database expires.

b. Navigation data should satisfy the requirements of RTCA DO-200 or EUROCAE ED-76 (latest revisions) for the requested navigation approvals and routes, and be compatible with the intended function of the Aircraft equipment used.

AMC1 SPA.50(b)2 – Suitability For Flight (AUS)

a. MAO controls for Defence navigation Operations should include:

i. OIP that address Defence navigation Operations, inclusive of:

(a) PBN, RVSM and NAT HLA Airspace, route or procedure operating criteria

(b) procedures where navigation Operations are not able to sustain promulgated navigation management, monitoring and alerting requirements

(c) consideration of:

(i) oceanic and remote continental region Operations

(ii) Minimum Equipment List (MEL) requirements, or equivalent requirements

(iii) degraded navigation Operations

(iv) GNSS integrity availability scenarios during Flight Planning

(v) navigational error management pre-Flight and in-Flight

(vi) use of suitable area navigation systems on conventional routes and procedures (both en route and terminal)

ii. risk assessments in accordance with DASR SMS, including consideration of the scope of Operations for the requested navigation approvals.

GM2 SPA.50(b)2 – Navigation database integrity and discrepancies (AUS)

Additional navigation database integrity and discrepancy guidance is available from CASA Civil Aviation Order 20.91 *(Instructions and directions for Performance Based Navigation) Instrument 14, of 2 Nov 2018.*

GM1 SPA.50(b)2 – Flight Authorisation (FLTAUTH) (AUS)

A Flight Authorisation Officer (FLTAUTHO) who has experience in the navigation Operation being authorised, may support improved hazard identification through a better appreciation of factors affecting such operations, including degraded or failed navigation equipment or aircraft instruments. FLTAUTHOs should self-assess their competency to conduct the FLTAUTH for the Defence navigation Operations being authorised, inclusive of potential abnormal or alternate procedures required.

(c) The MAO must utilise defined training and Currency requirements IAW DASR AIRCREW.10 for all Defence navigation Operations. ▸ **GM**

GM SPA.50(c) – Defence navigation Operations training and Currency requirements (AUS)

PBN, RVSM and NAT HLA Operations training development supporting material is accessible from the *Aviation Operations Supporting Material* webpage of the DASA internal website.

SPA.55 – NIGHT VISION IMAGING SYSTEM (NVIS) (AUS)

▸ **GM**

GM SPA.55 – Night Vision Imaging System (NVIS) (AUS)

a. **Purpose. (Context)** The safe and effective delivery of military aviation capabilities is enhanced by exploiting evolving Night Vision Imaging System (NVIS) technologies. However, these technologies have limitations, particularly in military aviation applications, when used as the primary means of vision for Safety Critical tasks. **(Hazard)** Suitability For Flight can be compromised by an inadequately defined NVIS, or ineffective management of NVIS equipment and operations. **(Defence)** This regulation requires the MAO or Sponsor to utilise a defined NVIS that ensures Suitability For Flight when Night Vision Devices (NVDs) are used as the primary means of vision for Safety Critical tasks.

b. **Applicability.** This regulation applies to MAOs or Sponsors operating Aircraft crewed by NVIS-qualified Aircrew (including Mission Crew) utilising NVDs as the primary means of vision while performing Safety Critical tasks—where Safety Critical tasks in the NVIS context include:

   i. Aircraft control (ie managing the Aircraft Flight path) during: taxi, take-off, cruise, in-Flight manoeuvring, approach, and landing

   ii. terrain and obstacle avoidance, Aircraft separation, visual navigation, and other tasks where direction, spacing, distance or rate of closure information is obtained from the NVD.

c. Note: DASR SPA.55 does not apply when any NVIS component is utilised for a non-Safety Critical task (eg as a sensor for targeting or search) where the primary defences against Controlled Flight Into Terrain (CFIT) and collision with other Aircraft are achieved via other means. For example, for operations at or above Area Safe Height (ASH), Lowest Safe Altitude (LSALT) or Minimum Sector Altitude (MSA) the regulatory hazard controls contained with SPA.55 defending against CFIT are not applicable. Similarly, when using height blocks or radar trail to ensure de-confliction between Aircraft, the regulatory hazard controls contained with SPA.55 defending against collision with other Aircraft do not apply.

d. **DASR SPA.55 NVIS-terminology and definitions:**

   i. **Night aided.** Flight at night using NVD.

   ii. **Night unaided.** Flight at night without the use of NVD.

   iii. **'NVIS equipment'** includes items such as: NVD, NVD Head Up Display (HUD), optical cueing device, Helmet Mounted Sight and Display (HMSD), and any other aviation night vision enhancing technology or equipment that delivers an image directly, or indirectly (ie from single, multiple or blended sources) to Aircrew.

   iv. **'Visual acuity'** is the ability of the eye to distinguish shapes and the details of objects at a given distance (note, use of the term 'visual acuity' is synonymous with 'visual definition').

(a) The MAO or Sponsor must utilise a defined Night Vision Imaging System (NVIS) to ensure Suitability For Flight for Defence Aircraft when using Night Vision Devices (NVDs) as the primary means of vision for Safety Critical tasks. The defined NVIS must include:

1. Aircraft Type Design compatibility IAW DASR 21

2. compliance to approved equipment design requirements ▸ **GM** ▸ **AMC**

AMC SPA.55(a)2 – Night Vision Imaging System (NVIS) equipment design (AUS)

The MAO or Sponsor should ensure NVIS equipment complies with the approved design requirements prescribed in the Defence Aviation Safety Design Requirements Manual (DASDRM).

GM SPA.55(a)2 – Night Vision Imaging System (NVIS) equipment design (AUS)

a. The Defence Aviation Safety Design Requirements Manual (DASDRM) prescribes NVIS equipment design and integration requirements, minimum operational performance standards, and key considerations for the introduction of NVIS equipment, or modification of existing configurations. Design requirements for NVIS equipment categorised as Aeronautical Life Support Equipment (ALSE) can be found in the DASDRM Aeronautical Life Support Equipment chapter. Aircraft and aerodrome lighting design requirements are found in the DASDRM Lighting Systems chapter and Aerodrome Design Requirements chapter respectively.

b. Aircrew NVIS equipment (eg NVG) is categorised as ALSE under the Night Vision Systems domain IAW the DASDRM Aeronautical Life Support Equipment chapter. NVIS ALSE certification and management is regulated through DASR ORO.40. The process for NVIS ALSE certification and approval, will depend on whether the NVIS ALSE is included in the Aircraft's Type design, as detailed in DASR GM ORO.40.B(1) – Certified ALSE (AUS), or not. NVIS integration requirements (equipment integration with Aircraft and Aircrew) may be included in the DASR 21 Aircraft Type design and certification process, whereas NVIS equipment design (eg NVG) is not normally part of the Aircraft Type design.

3. NVIS equipment and NVIS-specific aircraft components applicable to each Aircraft Type, which meets the: ▸ **GM** ▸ **AMC**

AMC SPA.55(a)3 – Night Vision Imaging System (NVIS) equipment and NVIS-specific Aircraft component management (AUS)

a. The MAO or Sponsor should:

i. manage and maintain Night Vision Device (NVD) Aeronautical Life Support Equipment (ALSE) (eg NVD and helmet mount equipment) IAW DASR ORO.40

ii. manage and maintain NVIS Aircraft components such as Aircraft lighting, instruments, Aircraft HUD, windshield and transparencies, IAW approved OIP

iii. ensure NVIS equipment is assessed to be serviceable and correctly set up for use prior to Flight, and Aircrew conduct NVD performance checks and calibration pre-Flight or at intervals recommended by the OEM

iv. define NVIS equipment unserviceability reporting requirements.

GM SPA.55(a)3 – Night Vision Imaging System (NVIS) equipment management (AUS)

a. **NVIS equipment approval and maintenance.** The MAO or Sponsor should consider approval of NVIS equipment (eg NVD, helmet, helmet mount and HMSD) for use by Aircrew after a test and evaluation process, including technical assessments IAW standards prescribed by Aeronautical Life Support Logistics Management Unit (ALSLMU). Qualified ALSE personnel should maintain NVIS equipment (designated as ALSE) IAW MAO or Sponsor approved OIP.

b. **NVD pre-Flight checks.** Pre-Flight checking of NVD serviceability and calibration (typically by Aircrew) normally involves a serviceability check conducted in a specially fitted darkened room, and a field check (outdoors or in the Aircraft). In the absence of an approved pre-Flight checking facility, NVD pre-Flight checks should be conducted IAW OEM manual(s) and as approved by the MAO or Sponsor.

c. **Minimum Equipment List (MEL).** The MAO or Sponsor may choose to add unserviceability deferral or relief options (if applicable) for NVIS equipment and NVIS-specific Aircraft components into the DASA approved aircraft MEL.

d. **Eye protection.** Where the helmet visor cannot be worn with NVDs, the MAO or Sponsor should consider (IAW RAAF IAM Document-Aviation Medicine for ADF Aircrew, 3rd edition, 2012 AL6) providing Aircrew with alternative NVIS compatible protective eyewear (eg plano safety lenses) to provide eye protection (where feasible). Safety lenses are less likely to shatter during an impact event than non-safety spectacle lenses. The DASDRM ALSE chapter defines the required standards to be met for protective eyewear.

e. **Vision correction.** The DHM Vol 2 Part 9 Chapter 10 details the policy and guidelines for selection and use of Aircrew optical aids. RAAF IAM report Guidelines for the Selection and Use of Spectacles and Contact Lenses by Aircrew of 25 July 2016 provides AVMOs and Aircrew with additional guidance on implementation of DHM policy, including optical aids' integration considerations with ALSE such as NVDs.

f. **NVIS equipment integration with other Personal Protective Equipment (PPE).** Defence WHS policy prescribes MAO or Sponsor obligations for the provision of PPE in the workplace. The DASDRM defines the requirements for certification of PPE such as safety goggles, Helicopter Aircrew Respiratory System (HARS), immersion suits, Chemical, Biological, Radiological and Nuclear (CBRN) suits or other protective equipment. If an NVD is to be used in conjunction with PPE, ALSLMU (or other appropriate organisation) should be consulted to inform MAOs and Sponsors about NVD compatibility.

i. requirements of DASR ORO.40

ii. NVIS maintenance requirements promulgated in OIP approved by the MAO or Sponsor.

4. integration into DASR ORO.10 Flying Management System (FMS), to ensure: ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4 – Night Vision Imaging System (NVIS) integration with the Flying Management System (FMS) (AUS)

a. The MAO or Sponsor must ensure the FMS:

i. integrates NVIS operations IAW DASR ORO.10

ii. includes Aircraft crewing and captaincy risk controls for NVIS operations IAW DASR ORO.50 and DASR ORO.55

iii. where applicable, includes NVIS-specific:

(a) training IAW DASR AIRCREW.55

(b) low flying risk controls IAW DASR SPA.20

(c) formation flying risk controls IAW DASR SPA.05

(d) procedures for operating with third parties, such as other Aircraft, Aerodromes, ships, Shipborne Heliports, vehicles or personnel at landing zones; and the third parties respective equipment, considering:

(i) lighting type, levels, and light discipline during NVIS operation

(ii) communication requirements (aural or visual), standard terminology, signals, and back-up procedures

(iii) hazard controls.

GM SPA.55(a)4 – Night Vision Imaging System (NVIS) integration with the Flying Management System (FMS) (AUS)

a. When planning NVIS operations with friendly third parties, MAOs and Sponsors should make every practicable effort to coordinate and standardise procedures in an effort to minimise the risk of the third party (inadvertently) introducing a hazard to Aircrew using NVDs, especially during Aircrew performance of a Safety Critical task while using NVDs. The intent of third party coordination procedures is to prevent recurrence of past aviation safety incidents. Third party (eg ship, tanker Aircraft, Aerodrome) use of NVIS-incompatible lighting during critical Flight phases (eg landing approach or Air to Air Refuelling (AAR)) have resulted in the degradation of Aircrew vision, and compromised Suitability For Flight.

b. When it is not feasible to coordinate with third parties, or attain their cooperation, MAOs or Sponsors should identify and treat NVIS-related hazards from third party interactions in order to eliminate or otherwise minimise risk SFARP.

i. NVIS Aircrew composition, qualifications, Currency and training are defined IAW DASR AIRCREW.10 ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(i) – Night Vision Imaging System (NVIS) Aircrew composition, qualification, Currency and training (AUS)

a. The MAO or Sponsor should define in OIP the minimum Crew composition, qualification, Currency and training requirements for NVIS roles and tasks, including for both normal and low illumination operations.

b. The MAO or Sponsor should define Currency requirements for the enablers to NVIS Flight and instruction. Currency in the following Flight disciplines should be met prior to NVIS Flight:

i. Instrument Flight (IF)

ii. day Flight

iii. night (unaided) Flight.

c. The MAO or Sponsor should provide Aircrew and instructor NVIS training IAW DASR AIRCREW.10, including:

i. an Aircrew and instructor NVIS Learning Management Plan (LMP)

ii. training OIP

iii. qualification, Currency, refresher and differences (or gap) training (where differences training addresses significant changes, modifications or updates to NVIS equipment or the Human Machine Interface (HMI) that impacts existing Aircraft capabilities, functions or procedures, or causes operational impacts to Aircrew).

iv. Aircrew training and standards for the award of:

(a) an NVIS qualification

(b) an MAO- or Sponsor-specified NVIS low illumination level qualification.

v. Aircrew NVIS initial training, and methods of maintaining and regaining currency, including:

(a) actions during NVIS critical Flight phases for NVD faults, failures or events that result in NVD vision degradation or loss

(b) formation flying (including procedures to ensure intra-formation de-confliction in the event a pilot loses visual on other Aircraft in formation, eg the requirement to establish positive vertical or lateral deconfliction)

(c) transition to and from aided Flight

(d) weather-related loss of visibility or entry into IMC during NVIS critical Flight phases

(e) Aircraft normal and emergency actions while operating with NVDs

(f) unusual attitude recovery.

d. **Flight Simulator Training Device (FSTD) Training.** The MAO or Sponsor should minimise or eliminate emergency training in the Aircraft through utilisation of the FSTD for emergency training. The FSTD should also be used to complement training for normal NVIS operations. MAOs or Sponsors should consider utilising virtual mission training systems, and other ground based training aids (eg physical or virtual terrain boards) to the maximum extent possible to complement NVIS training.

e. **In-Flight emergency training.** The MAOs or Sponsor should not permit intentional NVD shutdown in-Flight for the purpose of emergency training, unless the training benefit cannot be achieved by any other simulated failure method in-Flight, and appropriate controls are in place to minimise risk SFARP.

f. **Single-pilot NVIS operations.** Where single-pilot NVIS operations are conducted below Area Safe Height (ASH), Lowest Safe Altitude (LSALT) or Minimum Sector Altitude (MSA), MAOs or Sponsors should apply additional procedural controls to the risk of Controlled Flight Into Terrain (CFIT) (due to the loss of NVIS redundancy and increased aircrew workload).

g. **AVMED training.** Aircrew should complete Institute of Aviation Medicine (IAM) NVD training IAW DASR MED.05 before commencement of NVIS qualification training.

GM SPA.55(a)4(i) – Night Vision Imaging System (NVIS) Aircrew composition, qualification, Currency and training (AUS)

a. **Crew composition.** The MAO or Sponsor should consider the increased safety risk mitigation provided by multi-crew operations (in comparison to single pilot operations) when establishing the minimum Crew for NVIS operation below ASH, LSALT or MSA , or for other high workload tasks. However, the MAO or Sponsor may still approve single-pilot NVIS operations below ASH, LSALT or MSA. Where multi-pilot NVIS operations are mandated, single-pilot Flight below ASH, LSALT or MSA may be continued in an emergency situation, or during a return to base or diversion, following a non-normal situation, where remaining below ASH, LSALT or MSA is considered the safest option.

b. **Qualification, Currency and training.** The MAO or Sponsor should consider including physiology and Non-Technical Skills (NTS) associated with NVIS operations in initial and refresher training courses. The MAO or Sponsor should consider the following roles and tasks when setting NVIS qualification, Currency and training requirements:

i. instruction

ii. formation

iii. low-level or terrain Flight

iv. air drop

v. air land

vi. air intercepts

vii. air to air refuelling

viii. weapon employment

ix. helicopter operations such as:

(a) hoisting

(b) confined area approaches

(c) special operations approaches

(d) embarked operations.

c. **Critical Flight phases.** The MAO should determine critical Flight phases for their CRE. Critical Flight phases are those in which NVD vision degradation or loss, without prompt and effective treatment, could lead to an adverse safety outcome. Critical Flight phases are higher-risk phases of Flight including taxiing, departure, recovery, low flying, formation manoeuvring, Air to Air Refuelling, tactical manoeuvring, intercepts, combat manoeuvring, and weapons or payload delivery.

d. **Learning Management Plan (LMP).** A stand-alone NVIS LMP is not required where NVIS training is incorporated into existing approved LMPs (eg Flying Instructor course, conversion course, or refresher course).

e. **Difference (or gap) training.** Differences training may be tailored to the situation, dependent on the scale or impact of system change. However, training should normally consist of both theory (eg self-study, briefs, presentations, or CBT) and practical elements. Significant modifications and equipment changes may require Flight Simulator Training Device (FSTD) or Flight training with an Aircrew Instructor for qualification award.

f. **Prerequisites for NVIS Flight.** NVIS operations require Flight Crew to have a solid foundation in Instrument Flying (IF), night unaided flying, and day Flight. IF and night unaided Flight currency is particularly important in case of reversion to unaided Flight or inadvertent entry into IMC. Many tasks performed with NVD (eg low level Flight or formation) may require Aircrew prerequisite qualifications and equivalent task day or night unaided Currency.

ii. Flight Authorisation system risk controls are utilised IAW DASR ORO.30 ▸ **GM**

GM SPA.55(a)4(ii) – Night Vision Imaging System (NVIS) Flight Authorisation (AUS)

a. Flight Authorisation Officer (FLTAUTHO) NVIS qualification may support improved hazard identification through a better appreciation of factors affecting NVIS operations, including: Crew composition, qualifications, Currency, environmental aspects (illumination, contrast conditions, weather and visibility), task complexity, NVIS and supporting systems' (eg NVD, FLIR, IR searchlight, HMSD, Aircraft lighting) limitations, and associated risks and controls.

b. Formation flying authorisation. FLTAUTHOs should consider existing Core Risk Profiles (CRP), Mission Risk Profiles (MRP), and Risk Management Plans (RMP) controls, formation complexity, weather, visibility, illumination, Crew composition, NVIS equipment, formation experience and Currency, and contingency plans for loss of visual reference and collision avoidance. Additional procedural controls may be necessary for low illumination conditions.

iii. Safety Management System (SMS) controls are utilised, incorporating:

a. risk management IAW DASR SMS ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(iii)a – Night Vision Imaging System (NVIS) risk management (AUS)

a. The MAO or Sponsor should define NVIS safety management controls for NVIS roles and tasks, utilising Core Risk Profiles (CRP), Mission Risk Profiles (MRP), and Risk Management Plans (RMP) as necessary, considering:

i. NVIS operations below ASH, LSALT or MSA, and the use of controls reducing risk of CFIT SFARP

ii. NVIS operations in formation, and the use of controls reducing risk of collision SFARP

iii. Aircraft external lighting requirements for NVIS operations in civil and military airspace and Aerodromes, and the implementation of controls to reduce risk of collision SFARP—IAW Flight Information Handbook Australia (FIHA) - ENR 1.1 General Rules of the Air.

b. The MAO or Sponsor should ensure NVIS-related hazards, faults, failures, incidents and accidents are reported and investigated IAW DASR SMS.

GM SPA.55(a)4(iii)a – Night Vision Imaging System (NVIS) risk management (AUS)

a. The MAO or Sponsor should consider (and mitigate where necessary) NVD characteristics and limitations, which may impact NVIS operations, including:

i. **Reduced Field Of View (FOV).** NVDs that utilise Image Intensifying Tubes (IITs) can have a significantly reduced FOV (approximately 40° cone) compared to normal unaided FOV (approximately 200° horizontal and 140° vertical). In order to compensate for the significantly reduced NVD FOV, pilots flying aided must increase head movement and scan rates. The Field Of Regard (FOR) may also be reduced compared with unaided flight due to narrow FOV combined with physical limitations of head movement, and may be restricted by cockpit obstructions such as canopy bows, frames, etc.

ii. **Visual acuity and contrast.** Although visual acuity with NVDs is greater than that obtained unaided at night, NVDs do not turn 'night into day'. Visual acuity obtained with NVD is approximately 50% less than that which can be obtained with the naked eye in equivalent daytime conditions. This reduced NVD visual acuity can be further degraded by atmospheric and environmental factors (eg illumination, weather, obscurants, and low contrast terrain). Low illumination increases NVD background noise and results in reduced visual acuity as image contrast is reduced. High illumination or exposure to incompatible or bright light sources (visual or IR) can cause image 'blooming' or result in activation of automatic gain reduction features, resulting in reduced visual acuity.

iii. **Resolution.** Resolution is an objective measure of the ability to distinguish a separation between two objects. Resolution decreases with low illumination due to increases in NVD image background noise. This a design limitation of NVDs based primarily on the number of channels in the microchannel plate, optics and inherent video noise.

iv. **Fatigue.** In addition to physiological fatigue resulting from night operations, the use of NVIS equipment can result in additional physical fatigue, neck muscle strain or injury, asthenopia (eye fatigue), and headaches. Physical fatigue and muscle strain is largely dependent on NVD weight, position on helmet, head movement, and g-forces encountered during flight. The establishment of NVIS-specific fatigue control measures will support the reduction of fatigue or injury SFARP, and can include training, physical fitness and conditioning programs, adaption, and rest and recovery aided by duty cycle management. Flight time limits for NVIS operations may also vary for Aircraft Type and equipment combinations, and for different roles and tasks.

v. **Spatial disorientation.** The significant reduction (or absence) of peripheral vision when using NVDs (eg NVGs) requires Flight Crew to rely primarily on central (focal) vision for the maintenance of spatial orientation. Flight Crew must consciously process and assimilate information received from the NVD image (including, where applicable, the horizon, Stabilised Horizon Bar or ground reference), flight instruments (ie the instrument panel or HUD) or other Aircrew (eg verbal communication or gestures) in order to maintain, spatial orientation and situation awareness. Flight Crew reliance on focal vision during aided Flight significantly increases their cognitive workload. Flight Crew cognitive processing must be prioritised, between maintaining spatial orientation, and performing other Flight and mission tasks including navigation, communication, maintaining formation, targeting, weapons or payload delivery and threat avoidance. There is a significant increase in the risk of spatial disorientation-related accidents during night aided Flight, compared with unaided Flight. It is crucial to train Flight Crew in the early recognition, intervention and recovery from spatial disorientation events to mitigate the increased risk of spatial disorientation associated with NVD operations. Early transition from visual (aided) Flight to instrument Flight (eg following NVD image degradation) is a critical defence in avoiding spatial disorientation. Effective Flight Crew training and competency in instrument flying is crucial to a successful recovery from spatial disorientation.

vi. **Reduced depth perception and distance estimation accuracy.** Binocular NVD systems are well-known for reduced depth perception and reduced accuracy in distance estimations, particularly for objects at close range. This is primarily due to eye physiology (eg stereopsis) and NVD optical performance, but can also be impacted by a degraded NVD image due to environmental factors (such as illumination and obscurants). Hyper-stereopsis can also result when using indirect (Type II) view NVD imaging systems (eg Top Owl) where the IITs are not aligned directly with the pilot's eyes. This can create a situation where objects appear closer when viewed through the NVD, or with a slight image shift compared to unaided vision, or to an image provided by other sensors.

vii. **Night vision recovery.** Following the removal of NVDs, and during transition to unaided flight, human eyes can take several minutes to adapt to 'natural' dark conditions. Safe transition from aided to unaided flight is best achieved by allowing sufficient time at a safe Flight altitude, under low workload, for the eyes to adapt.

b. **Hazard identification.** Although NVDs enhance the safety of night operations through increased night vision and situational awareness, NVIS operations also present unique challenges, limitations and hazards compared to day or night unaided operations. The creation of MRPs for specific NVIS roles and tasks will aid identification of NVIS hazards and risks controls required to eliminate, or where not possible, otherwise minimise risk SFARP. The conduct of additional risk assessments before each Flight will aid identification of contextual hazards and will provide an opportunity to implement additional controls. These additional risk assessments would be based on, for example, MRP controls; Crew composition, experience and Currency; knowledge of NVD characteristics and limitations; and environmental and weather conditions for the specific role and task.

c. **Risk assessments.** The MAO or Sponsor should consider conducting risk assessments for all NVIS operations. Additional preventative controls may be required for high risk NVIS activities such as those conducted in reduced visibility, low illumination, or in close proximity to terrain and other Aircraft. The MAO's or Sponsor's risk assessments should consider:

i. existing MRPs (including consideration of tactics, techniques and procedures; and other risk controls, employed in similar operations by other Defence and global operators)

ii. illumination variations expected during the task

iii. weather (such as cloud, visibility, obscurants)

iv. terrain features and contrast

v. Crew composition, NVIS qualifications, experience and Currency

vi. Aircrew fatigue levels as the task progresses

vii. NVD performance

viii. role and task to be conducted, and associated NVIS hazards

ix. Mission complexity

x. Role Equipment

xi. extant Aircraft unserviceability effects on NVIS operations

xii. Aerodrome and Aircraft lighting requirements

xiii. Light discipline and procedures for operations with third parties

xiv. emergency procedures.

d. **Environmental threats.** NVD performance can be affected by the availability of light or environmental visibility. Any atmospheric condition which absorbs, scatters, or refracts illumination, either before or after it strikes terrain, may reduce the usable energy available to NVGs. Although latest generation NVDs can provide improved performance in low illumination conditions, they still require some available light, favourable atmospheric and environmental conditions, terrain contrast and reflectivity. The MAO

or Sponsor should consider the following environmental aspects when planning NVIS operations:

i. **Weather.** Light rain, mist and thin fog may be difficult to detect with NVD. These weather phenomena (despite not being visible to pilot on NVD) can reduce depth perception and contrast, affect distance estimation, mask terrain, and mask signs of impending IMC—creating a potential hazard to NVIS operations. Precipitation (eg snow, rain), hail and obscurants (eg fog, dust, and smoke) can also degrade NVD performance and create a hazard to NVIS operations. The MAO or Sponsor should consider the following controls relating to weather when planning NVIS operations:

(a) **Preventative controls** as follows:

(i) **NVD knowledge and pre-Flight planning.** NVD performance predictions can be improved during the mission planning stage, through knowledge of:

(A) NVD-specific characteristics and limitations

(B) the prevailing environmental conditions in anticipated operating areas (eg terrain features and contrast)

(C) accurate weather forecasts that include illumination levels and weather (eg cloud amount and level, precipitation, obscurants), and briefings which include consideration of the impacts of forecast conditions on NVD performance

(D) defined weather, visibility and illumination minimums.

(ii) **In-Flight weather detection and avoidance procedures.** As some obscurants and weather cannot be easily detected with NVDs, Aircrew should remain alert to changes or degradation in NVD performance. Weather, visibility or illumination deterioration may be indicated by the presence of halos, scintillation, loss of scene definition, or image degradation. It may be necessary to periodically look under NVDs, or assign a Crew member to periodically scan for weather unaided. Use of weather radar or FLIR will assist in detection and avoidance of rain and thunderstorms.

(iii) **Cockpit environmental control.** Appropriate use of cockpit environmental control systems can assist to minimise NVD fogging. Fogging can occur with exposure to high humidity in a cold soaked cockpit (eg exposure to outside air via the opening of Aircraft doors or windows in-Flight or on the ground).

(b) **Recovery controls** as follows:

(i) IFR Aircraft and Aircrew qualified and current in IF

(ii) carriage of a cleaning cloth for NVD fogging situations

(iii) emergency recovery procedures for inadvertent IMC entry

(iv) designated ASH, LSALT, MSA or visual manoeuvring altitudes and procedures

(v) unusual attitude recovery procedures (eg spatial disorientation).

ii. **Terrain and obstacles.** Visual acuity of terrain and obstacles is dependent on a number of factors, including NVD performance, illumination, in-Flight meteorological visibility, and contrast and reflectivity of terrain or water. The contrast of terrain being overflown will vary depending on topography and illumination, including cultural lighting and the angle of the moon. Mountainous terrain may be more perceptible than flat terrain with low reflection or low contrast. When flying over low contrast or low reflectivity featureless terrain, or over water, it may be difficult to judge height without reference to a RADALT. Without the use of an IR searchlight or supplemental IR or EO vision system (eg FLIR) it may also be difficult to detect objects and terrain in shadows or in low illumination conditions when flying over low contrast areas. The MAO or Sponsor should consider the following controls relating to terrain and obstacle when planning NVIS operations:

(a) pre-Flight planning to include pre-Flight study of:

(i) terrain features, predicted terrain contrast and shadows, obstacle locations and lighting

(ii) route surveys and topographical maps prior to aided low level or terrain Flight

(b) use of minimum visual manoeuvring altitudes in low illumination conditions

(c) utilising topographical map (electronic or physical) in-Flight

(d) use of the Automatic Flight Control System (AFCS) (eg autopilot or Flight Directors with RADALT or altitude hold) for over water Flights

(e) use of terrain awareness and avoidance equipment, including:

(i) RADALT for all operations below ASH, LSALT or MSA, especially for night low level aided Flight over low contrast terrain or over water

(ii) Terrain Awareness and Warning System (TAWS), Enhanced Ground Proximity Warning Systems (EGPWS), Ground Proximity Warning Systems (GPWS), and Ground Collision Avoidance system (GCAS) to provide advance alert and warning of terrain or obstacles

(iii) ground mapping and millimetre-wave radar that provide a radar presentation of terrain and reflective obstacles

(iv) IR searchlights and landing lights to illuminate terrain ahead of the Aircraft

(v) IR and EO vision systems (eg FLIR)

(vi) Synthetic Vision Systems (SVS) or equivalent, to provide a digital terrain graphic on MFD or NVDs

(f) defined scanning techniques, co-ordinated between Crew, scanning for terrain and obstacles while at low level; and including 'look under', or intervals of non-flying pilot unaided scan for obstacles (such as LED-lit masts that may be undetected on NVDs)

(g) Crew coordination and communication skills, and defined Aircrew roles and responsibilities during NVIS Safety Critical operations

(h) the application of defined Aircraft performance parameters (eg speed and configuration) to provide emergency terrain or obstacle avoidance manoeuvre capabilities.

(i) terrain threat recognition and recovery training, including:

(i) RADALT minimum height excursion recovery procedures

(ii) TAWS, EGPWS, GPWS, GCAS, caution and warning activation recovery procedures

(iii) visual terrain and obstacle threat recovery procedures

(j) IF training, including procedures to recover to ASH, LSALT or MSA when entering IMC from below ASH, LSALT or MSA.

b. fatigue management IAW DASR AVFM.20 ▸ **AMC**

AMC SPA.55(a)4(iii)b – Night Vision imaging System (NVIS) fatigue management (AUS)

The MAO or Sponsor should define NVIS fatigue management IAW DASR AVFM, including consideration of NVIS Human Factors when establishing Flight duty limitations.

c. defined environmental minimums for Aircraft Type's roles and tasks ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(iii)c – Environmental minimums (AUS)

a. The MAO or Sponsor should establish environmental minimums consistent with NVIS capability as determined for Aircraft Type, roles and tasks. MAOs or Sponsors may define environmental minimums applicable to all NVIS operations, or define minimums for individual roles and tasks. Environmental minimums should include the following:

i. **Weather.** When utilised as the primary means of vision for Safety Critical tasks, the MAO or Sponsor should ensure Aircrew only operate NVDs in VMC (as defined in FIHA ENR 1.2). Note, NVIS operations may be filed and operated under IFR. However, NVDs may not be used as the primary means of separation from terrain and other obstacles when operating in less than VMC below ASH, LSALT or MSA unless the Aircraft Captain meets the requirements for visual approach as detailed in FIHA ENR 1.14.6 and 2.11.3. Where a MAO or Sponsor otherwise intends to operate below ASH, LSALT or MSA in IMC an alternate means of ensuring separation from terrain and obstacles is required (eg TFR; or if operating over the high seas, RADALT).

ii. **Visibility.** NVIS operations in visibility below VMC increase risks of disorientation, traffic confliction, inadvertent entry into IMC and CFIT. However, notwithstanding para i. above, the MAO or Sponsor may approve NVIS operations below VMC, for high priority missions (eg search and rescue, combat, SO), provided risk can be eliminated or otherwise minimised SFARP. The MAO or Sponsor should limit Special VFR and reduced visibility (less than VMC) NVIS approvals to not less than:

(a) Aeroplanes:

(i) 3000m visibility when above ASH, LSALT or MSA

(ii) 3000m visibility for departure and arrival below ASH, LSALT or MSA IAW Special VFR

(b) Helicopters:

(i) 3000m visibility when above 700ft AGL or ASL

(ii) 800m visibility when below 700ft AGL or ASL

(iii) 800m visibility IAW Special VFR.

iii. **Illumination Level.** MAOs and Sponsors should define illumination level minimums for all the relevant Aircraft Type's NVIS roles and tasks. To aid operational planning, risk decision making, OIP development, authorisation, and to improve standardisation across Defence, MAOs and Sponsors should use the Illumination Levels defined in Table 1, or specify a minimum illumination in millilux (mlx), when defining illumination minimums for the relevant Aircraft Type's NVIS roles and tasks.

	Defence Illumination Levels[1]		
	Illumination Level	**Illumination (mlx)**	**Night Sky[2]**
Normal Illumination	1-Very Light	≥ 40	Full Moon
Normal Illumination	2-Light	10 to <40	≥½ Moon
Low Illumination	3-Intermediate	2 to <10	<½ Moon
Low Illumination	4-Dark	0.7 to <2	No Moon + starlight
Low Illumination	5-Very Dark	< 0.7	No Moon + overcast

Note 1: Defence Illumination Levels define the atmospheric conditions for given location. Illumination level alone will not adequately inform an NVD performance estimate, without consideration of other environmental factors such as weather, visibility and contrast conditions. Failure to consider weather, visibility and contrast conditions can result in higher risk to NVIS operations.

Note 2: Indicative Night Sky conditions for equivalent illumination level shown. Many factors such as Moon elevation, environmental conditions and cultural lighting affect illumination levels.

Table 1 - AMC SPA.55(a)4(iii)c - Standardised Defence Illumination Levels (AUS)

b. **Forecasts.** The MAO or Sponsor should define requirements to obtain forecast weather, visibility and illumination in the area of operations, and on intended route, for the period of planned NVIS operations. Forecast illumination should be obtained from tools which incorporate the effect of cloud cover on illumination, such as the Bureau of Meteorology's Meteorology Office Night Illumination Model (MONIM). If using Flight Planning tools such as Solar Lunar Analysis Tool (SLAT), Solar Lunar Analysis Planner (SLAP), or other MAO-approved sources, the MAO or Sponsor should define and utilise procedures to account for the impact of:

i. cloud cover

ii. moon phase

iii. moon rise and set

iv. ambient and cultural lighting.

GM SPA.55(a)4(iii)c – Environmental minimums (AUS)

a. **Minimum weather and visibility.** The MAO or Sponsor should consider establishing weather and visibility minimums based on the fundamental requirement for NVIS operations to remain in VMC. Defining weather minimums for the conduct and continuance of NVIS Flights for training and operations will assist to reduce the risk of CFIT, collision, and inadvertent entry into IMC. Night aided Flight should normally be conducted in VMC, clear of cloud, and clear of obscurants (eg fog, smoke, haze, dust) likely to reduce visibility below VMC, or to reduce NVD visual acuity below that required for the safe conduct of the task.

b. The MAO or Sponsor should consider defining the environmental conditions for which additional qualifications, Currency, controls, and authorisations are required, and any other limitations for operations in those specified conditions. Aircrew should remain vigilant for signs of deteriorating visibility during Flight and ensure visual conditions remain suitable for NVIS operations, and within authorised limits.

c. The MAO or Sponsor should therefore consider defining:

i. the maximum cloud cover and minimum cloud base for low level or terrain Flight

ii. limitations and procedures for operating in reduced visibility caused by precipitation (rain, drizzle, snow, hail) or obscurants (mist, fog, dust, sand, smoke, ash, haze)

iii. thunderstorm avoidance criteria.

d. **Considering visual acuity when setting environmental minimums.** When establishing environmental minimums, the MAO or Sponsor should consider the effect weather, visibility, illumination and contrast may have on NVD performance, and the resultant visual acuity. Defined minimums increases safety by establishing the parameters of an operating environment to enable the appropriate visual acuity. This enables Aircrew to identify terrain and obstacles with ample time for detection, reaction and avoidance. Defining a minimum visual acuity based on low level operating speed ranges will reduce the threat of CFIT or collision. In most circumstances, visual acuity out to a distance

equivalent to a minimum of 30 seconds flight time is sufficient. DASA recommends the following minimum visual acuity:

i. **Helicopter.** Minimum of 30 secs flight time based on ground speed, but not less than 800m (0.5nm*) (*rounded up to nearest 0.5nm)

ii. **Aeroplane.** Minimum of 30 secs flight time based on ground speed, but not less than 5000m (3nm*) (*rounded up to nearest 0.5nm).

e. **Monitoring and maintenance of visual acuity.** Aircrew should continuously assess the actual visual acuity experienced airborne to ensure conditions remain safe for NVIS operations. MAO or Sponsor-defined environmental minimums may not guarantee the required visual acuity to safely conduct roles and tasks. Actual visual acuity may be significantly less than anticipated, based on forecast weather, visibility, illumination and contrast conditions. Visual acuity may also be degraded by obscurants such as dust, haze, fog, smoke or sea spray; or NVD performance degradation (eg activation of automatic gain reduction when subjected to bright light sources). Reducing flying speeds with decreasing visual acuity may reduce the risks of CFIT. However, it may not be tactically sound, or may compromise Aircraft manoeuvrability and safety by reducing aerodynamic performance.

f. **Illumination minimums.** Defined minimum illumination levels should support the visual acuity necessary for safe operations of NVIS roles and tasks. Roles and tasks which require a higher degree of Crew skill, or involve elevated risk, may require higher illumination minimums.

g. Illumination levels should be determined for the Flight en-route, in the area of operations, and during the period of operation. Illumination level should be categorised (see Table 1 in AMC SPA.55(a)4(iii)c to ensure Aircrew qualifications, Competency and Currency (when combined with anticipated NVD performance) will meet the requirements for the intended operation to be conducted.

h. **Actual conditions in Flight.** Actual illumination or light level may be determined by an approved light meter where available. However, Aircrew judgement will be necessary in-Flight, as it is generally impractical to measure illumination levels once airborne. While airborne, Aircrew should ensure illumination levels provide the visual acuity required for safe operation.

i. **Aircraft role or task minimums.** The MAO or Sponsor should consider defining minimum weather and illumination required for the following Aircraft roles and tasks (where applicable):

i. **Training.** The minimum illumination or night levels required for initial qualification (ab initio), recurrent and refresher training.

ii. **Low level or terrain Flight.** The minimum weather, visibility and illumination conditions for low level or terrain Flight, including the following considerations:

(a) **Visual acuity.** The weather, visibility and illumination combinations to provide the minimum NVD visual acuity to enable terrain or obstacle identification and avoidance.

(b) **Operation in <2 millilux (mlx) illumination.** Additional controls (eg use of a visual safe altitude, IR Search light, formation limitations, training Flight limitations) to be considered and applied.

iii. **Formation.** The minimum weather, visibility and illumination conditions for formation Flight, including the following considerations:

(a) **Visual acuity.** The weather, visibility and illumination combinations (including the use of formation lights) to provide the minimum NVD visual acuity to enable Aircraft identification, position keeping and collision avoidance.

(b) **Operations in <2mlx illumination.** Additional controls (eg formation limitations, reduced formation complexity, procedural controls) to be considered and applied.

iv. **Specialised helicopter operations.** IR searchlight and landing light availability and performance should be considered when establishing illumination minimums for low level Flight and approaches. The MAO or Sponsor should consider defining minimum weather, visibility and illumination required for specialised helicopter operations, roles and tasks, such as those with increased risk and requiring additional Aircrew training and skills, including:

(a) low level or terrain Flight

(b) formation

(c) confined area approaches

(d) special operations approaches

(e) embarked operations

(f) hoisting.

d. defined minimum NVIS equipment required for aided Flight operations. ▸ **AMC**

AMC SPA.55(a)4(iii)d – Minimum Night Vision Imaging System (NVIS) equipment (AUS)

a. Aircraft and Aircrew equipment. The MAO or Sponsor should define the minimum Aircraft and Aircrew equipment required for NVIS Flight. Minimum serviceable equipment to be available for NVIS operations should include:

i. For all NVIS operations:

(a) the NVD type and configuration permitted to be worn by Flight Crew

(b) the NVD type and configuration permitted to be worn by Mission Crew

(c) a spare or backup power source or battery pack for NVDs (where applicable)

(d) compatible internal and external Aircraft lighting

(e) Aircrew NVIS compatible role equipment lights (eg torch, finger light, lip light or cyalume stick)

(f) instruments and equipment required for IFR operations

(g) a weather radar (where fitted).

ii. For NVIS Operations below ASH, LSALT or MSA:

(a) a RADALT capable of visual and audio warnings when below the minimum set height

(b) an autopilot (with the helicopter autopilot capable of RADALT or Barometric height hold) for overwater operations

(c) a topographical map with hazards and obstacles annotated (electronic or physical)

(d) a ground mapping radar (where fitted)

(e) TAWS or EGPWS or GPWS (where fitted)

(f) IR searchlight and IR landing light (required for Helicopters, and as applicable to fixed-wing aircraft)

(g) FLIR or other EO or IR device (where fitted)

(h) NVD HUD, helmet mounted display or Aircraft HUD (where fitted and certified).

iv. OIP details:

a. the illumination level below which additional Aircrew training, qualifications and hazard controls are required ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(iv)a – Night Vision Imaging System (NVIS) low illumination (AUS)

a. The MAO or Sponsor should provide OIP which defines:

i. the illumination level (expressed in mlx) below which NVIS roles, tasks or activities require additional controls to minimise risk SFARP

ii. low illumination levels by role, task or activity where multiple high risk, specialised or complex NVIS operations are conducted (or alternatively, the MAO or Sponsor may choose to define one low illumination level applicable to all NVIS operations, below which additional controls are required for all roles and tasks)

iii. additional qualifications, training, and hazard controls required for the safe conduct of roles and tasks below the defined low illumination level.

GM SPA.55(a)4(iv)a – Night Vision Imaging System (NVIS) low illumination (AUS)

a. NVGs require natural light (moonlight, starlight, sky glow) or artificial light (searchlights, cultural lights) to produce an image. Weather and illumination will normally be

evaluated during Flight planning, immediately pre-Flight, and continuously in-Flight. NVIS operations should not commence, or continue, when actual environmental conditions may compromise Suitability For Flight. NVIS ab initio, initial qualification, and refresher training should ideally be conducted in good weather and illumination conditions, thereby allowing trainees to build confidence and competence before being exposed to low illumination or poor weather conditions. Weather limits defined for training should be more conservative than those for operational activities (which are crewed by qualified and current Aircrew, none of whom are under training).

b. **Low illumination level.** When defining low illumination levels (below which additional qualification, training or hazard controls are necessary) the MAO or Sponsor should consider the following factors:

i. NVD performance in low illumination

ii. type of operations conducted using NVDs, and associated risk

iii. Aircrew experience levels

iv. other aircraft systems and controls in place to support NVIS safety in low illumination conditions.

b. normal and emergency procedures for the Aircraft Type's roles and tasks ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(iv)b – Normal and emergency procedures (AUS)

a. The MAO or Sponsor should include the following in documented NVIS normal and emergency procedures:

i. transition to and from aided Flight, and minimum transition altitude

ii. loss of visibility and inadvertent entry into IMC

iii. NVD fault or failure (including optical degradation such as blooming) actions during critical Flight phases

iv. unusual attitude recovery

v. Aircrew and third party actions and responsibilities.

GM SPA.55(a)4(iv)b – Normal and emergency procedures (AUS)

a. The MAO or Sponsor is responsible for the provision of OIP detailing training, policy and procedures for the management of normal and emergency conditions while flying aided. MAO or Sponsor training and procedures should include:

i. guidance as to whether to remain on NVDs or transition to unaided Flight following defined faults, failures or emergencies

ii. immediate actions (drills) to be conducted following NVD failure (or vision impairment or loss) during critical Flight phases such as take-off, approach, landing and low level Flight.

c. instructions and limitations for the Aircraft Type's roles and tasks. ▸ **GM** ▸ **AMC**

AMC SPA.55(a)4(iv)c – Role and task instructions and limitations (AUS)

a. The MAO or Sponsor should define procedures and limitations for the following (where applicable):

i. operations below ASH, LSALT or MSA and low flying

ii. formation (including procedures for loss of visual contact)

iii. Air to Air Refuelling (AAR)

iv. weapons employment

v. Air Intercepts (AI) and Air Combat Manoeuvring (ACM)

vi. aerodrome, Ship deck, Heliport and other landing zones

vii. embarked operations

viii. hot refuelling and Forward Arming and Refuelling Point (FARP) tasks

ix. transition from aided to unaided, and unaided to aided Flight

x. use of Aircraft lighting

xi. Aircrew and ATC communication.

GM SPA.55(a)4(iv)c – Role and task instructions and limitations (AUS)

a. When defining instructions and limitations for NVIS Aircraft Type roles and tasks, the MAO or Sponsor should consider the following:

i. **Operations below ASH, LSALT or MSA and low flying.** NVIS Low flying operations should be conducted IAW DASR SPA.20, specifically:

(a) **Visibility.** Minimum visibility should be expressed in metres—not less than VMC.

(b) **Weather.** Weather minimums should support the requirement to remain VMC, clear of cloud and in continuous visual contact with the ground or water.

(c) **Visual acuity.** Minimum visual acuity should enable terrain and obstacle detection and avoidance, providing enough time for Aircrew detection, recognition and avoidance.

(d) **Illumination.** Minimum illumination (expressed in mlx) should support the requirement for a minimum visual acuity, and include consideration of NVD performance, IR searchlight or landing light performance (where applicable), Aircraft role and Aircrew experience.

(e) **Safety altitudes.** Definitions, methods for calculation, and use of visual and non-visual safety altitudes during NVIS operations.

(f) **Minimum level.** Minimum height permitted above terrain, water or obstacles when using NVDs as the primary means of vision for Safety Critical tasks.

(g) **Degraded Visual Environment (DVE).** (Synonymous with Restricted (or Reduced) Visual Operations (RVO)). A DVE is considered conditions that impair the visual orientation of Aircrew during take-off, Flight and landing. DVE includes circumstances wherein weather, obscurants or obstacles impede the ability of Aircrew to see properly or accurately know where they are in relation to surrounding terrain. Conditions include brown-out, white-out, night glare, fog and mist (and any combinations of these). DVE can lead to reduced situation awareness, increased Aircrew workload, and the partial or total loss of aircraft control. Notably, DVE can also occur in circumstances of high illumination but very low contrast–where the NVD spectral response is uniform across the image, and hence not providing any definition to the observer. Examples include operating over vast flat areas (eg over water, featureless terrain or paddocks with uniform texture). In these circumstances, Aircrew can have difficulty discerning height above terrain, and perceiving gradual climb and descent rates, with the potential to compromise obstacle and terrain clearance.

(h) **Speed restrictions.** Speed flown should allow sufficient reaction time for weather, obstacle, terrain and collision avoidance: while maintaining adequate Aircraft aerodynamic performance.

(i) **Navigation tolerance.** Navigation criteria, position keeping, required accuracy and tolerances (ie maximum distance allowable off track) for continued NVIS operations below ASH, LSALT or MSA.

(j) **Equipment.** Minimum Aircraft equipment for Flight below ASH, LSALT or MSA, including low level or terrain Flight, or Flight at defined operational or tactical safety altitudes.

(k) **Formation.** NVIS low level formation OIP including:

(i) formation type, composition, positions and limitations

(ii) minimum Aircrew complement

(iii) minimum visibility and illumination, and procedures in the event of loss of formation visual contact

(iv) minimum height above terrain.

ii. **Formation.** Formation procedures and limitations, including:

(a) **Aircraft lights.** Use of external lighting such as IR lights, navigation, formation, anti-collision and strobe lights.

(b) **Minimum illumination levels.** Minimum illumination levels required for NVIS formation should allow for safe formation join (or rejoin) and position keeping. Formation in low illumination conditions requires

consideration of additional risk controls due to the increased potential for collision.

(c) **Formation positions.** Day formation positions and procedures should be adapted to account for NVIS limitations such as reduced peripheral vision (narrow FOV), reduced field of regard (FOR), reduced depth perception and difficulty in accurately assessing closure rates.

iii. **Air to Air Refuelling (AAR).** Training, policy and procedures for the conduct of AAR with NVDs, including AAR normal and emergency procedures while using NVDs.

iv. **Weapons employment.** Procedures and limitations for use of weapons or expendables that may degrade NVD performance (such as IR flares, missiles or high explosive munitions).

v. **Air intercepts (AI) and Air Combat Manoeuvring (ACM).** Procedures and limitations for air interception or air combat manoeuvres during NVIS Flight.

vi. **Aerodrome, Ship deck, Heliport or other landing zones.** Procedures and limitations for each landing site, including:

(a) aerodrome and ATC coordination and lighting requirements

(b) deck landings and integration with ship procedures and NVIS lighting

(c) contingencies and procedures for DVE

(d) confined area landing procedures.

vii. **Embarked operations.** Integration, policy and procedures for NVIS embarked operations.

viii. **Hot refuelling and Forward Arming and Refuelling Point (FARP).** Safety protocols, lighting, normal and emergency procedures, and Aircrew and ground Crew and ATC and Rescue and Fire Fighting (RFF) communication and coordination.

ix. **Transition procedures.** Requirements for the conduct of transition to or from aided Flight at a safe altitude, including minimum altitudes, and goggle-up (donning) or de-goggle (doffing) procedures for normal and emergency conditions.

x. **Lighting.** NVIS lighting requirements and configurations for Aircraft interior and exterior, including formation exterior lighting configurations, and controls for contingencies such as light interference from internal (cockpit) or external sources.

xi. **Communication.** NVIS procedures for Crew communication and coordination, including common terms for use in emergency situations, to avoid miscommunication or delays.

DASR SPO - Special Purpose Operations

SPO.00 - SUITABILITY FOR FLIGHT ASSESSMENT

▸ GM

GM SPO.00 – (AUS)

1. Joint personnel recovery (JPR) can compromise suitability for flight should the ability to recover personnel transported aboard the aircraft who are in need of JPR be ineffective. Just as airworthiness commences with pre-flight preparations, such as flight planning, so does suitability for flight extend to the post flight phase.

SPO.05 - JOINT PERSONNEL RECOVERY (JPR)

▸ GM

GM SPO.05 – Joint Personnel Recovery (AUS)

1. DASR does not specifically regulate JPR; however flights must comply with other DASR regulations as applicable.

2. JPR provides a mechanism to reduce, wherever possible, the risk to the lives and welfare of personnel as a result of Defence aviation activity.

3. The Australian National Search and Rescue (NATSAR) , comprising representatives from the Commonwealth, States and Department of Defence, sponsors the NATSAR Manual (NATSARM). The ADF is responsible for providing SAR coverage for military assets and within the Australian Search and Rescue Region (SRR), including visiting military foreign forces.

4. The ADF recognises JPR as the mechanism for recovering all isolated personnel from all environments at all levels of hostility. As part of JPR, SAR operations are those operations executed in a permissive environment, while JPR operations are executed in an uncertain or hostile environment.

5. CJOPS has established a policy that while the NATSARM is accepted as the Australian standard procedural guide for coordinating peacetime SAR activities within the Australian SRR, the NATSARM is not to be used as the authority for recovery operations. Under this policy, CJOPS has published a comprehensive JPR Manual that is intended to achieve Defence JPR requirements.

SPO.10 - AEROMEDICAL EVACUATION

▸ GM

GM SPO.10 – Aeromedical Evacuation (AUS)

1. DASR does not specifically regulate aeromedical evacuation; however flights must comply with other DASR regulations as applicable.

2. Defence Health Manual, Part 17, Chapter 1 prescribes the policy for rotary wing aeromedical evacuation training in Defence.

DASR UAS - Uncrewed Aircraft Systems

UAS.10 - UAS APPROVAL AND AUTHORISATION

GM1 GM2 GM3

GM3 UAS.10 - Definitions (AUS)

1. DASR.UAS employs the following definitions:

a. **Uncrewed Aircraft System (UAS).** The entire system consisting of the Uncrewed Aircraft (UA), Remote Pilot Station (RPS), communications/data links, networks, launch and recovery systems, and personnel required to fly/control the UA.

b. **Uncrewed Aircraft (UA).** An air vehicle that flies under RP control or autonomous programming without a human on board in control.

c. **UAS Operator.** The organisation, e.g. MAO; or person with Operational Control (OPCON) or tasking authorisation for the UAS.

d. **Remote Pilot (RP).** The person in direct command/control of the UAS, including manipulating flight controls or programming waypoints during flight.

e. **Remote Pilot Station (RPS).** A station at which the RP manages the flight of a UA.

f. **Mission Essential Personnel (MEP)** (UAS context). All persons directly associated with the operation of the UAS or briefed as part of the UAS mission.

NOTE: MEP includes all persons directly associated with the operation of the UAS or briefed as part of the UAS mission. MEP is broader than personnel directly associated with the launch, recovery and control during flight of the UAS. MEP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign defence personnel. MEP must be aware of the UAS operations, the associated hazards and be essential to the conduct of the UAS task. MEP may include ground troops within a Defence joint operation/exercise area, troops on a Defence ship or civilian personnel operating as part of a counter terrorism tasking.

g. **General Public (GP) (UAS context).** All persons not classed as MEP, including all persons not directly associated with the operation of the UAS or briefed as part of the UAS mission.

NOTE: GP includes all persons not classed as MEP, including all persons not directly associated with the operation of the UAS or briefed as part of the UAS mission. GP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign military personnel.

h. **Segregated Airspace.** Airspace of specified dimensions allocated for exclusive use to a specific user(s).

i. **Populous area (UAS context).** An area in relation to the operation of a UA that has a sufficient density of population for some aspect of the operation, or some event that might happen during the operation (in particular, a fault in, or failure of, the UA) to pose an unreasonable risk to the life or safety of somebody who is in the area, but is not connected with the operation.

j. **Critical infrastructure (UAS context).** A facility that, if damaged by a UA, may have an immediate and adverse effect on MEP or GP health and safety.

k. **Standard Scenario.** A description of a UAS operation in the Specific category, for which risk mitigation measures have been determined based on a risk assessment, and introduced by the Authority.

l. **UAS Operating Permit (UASOP).** Approval to operate a UAS that is not certified. Issued by the Authority, based on a risk assessment and implementation of related mitigation measures.

m. **Defence Controlled Land (UAS context).** Land where Defence controls access by the GP, such that Defence can ensure UAS operations can be conducted which are not in the proximity of, or overhead, the GP.

2. To promote international harmonisation, definitions per ICAO Doc 10019—Manual on RPAS; are employed by Defence where applicable. Consequently, the definitions for UAS, UA, UAS Operator, RP, RPS and segregated airspace are drawn from ICAO Doc 10019, with minor adaptation to suit the military context where necessary. Where additional UAS definitions are required, preference should be given to those in ICAO Doc 10019.

3. The MEP and GP concepts are drawn from the USA Range Commanders Council Standard 321.10—Common Risk Criteria Standards for National Test Ranges; but adapted for Defence UAS operations.

4. The definition for 'populous area' is drawn from Civil Aviation Safety Authority (CASA) Advisory Circular (AC) 101.10—Remotely Piloted Aircraft Systems - licensing and operations; however, reference to property belonging to people in the area has been removed as it is not relevant to the Defence aviation safety context. While AC 101.10 also provides for explanatory material for the concept of populous areas in the civil context, the information contained within is not entirely relevant to the Defence context. Consequently, the material in DASR.UAS takes precedence.

5. In the Defence aviation safety context 'critical infrastructure' is defined slightly differently to the civilian context as it relates only to facilities where UAS damage may have an 'immediate and adverse' affect. Examples may include chemical plants, armament storage and fuel storage facilities.

GM2 UAS.10 - Applicability (AUS)

1. DASR.UAS is applicable to all UAS including uncrewed targets, decoys and simulated weapons with a programmed or remotely piloted flight path and which have a recoverable and reusable airframe. DASR.UAS may be applicable to disposable/one time use UA such as submarine launched or air dropped UA. It is not applicable to guided missiles/rockets designed for single flight, including guided weapons with a loiter

capability, provided the safety of those systems is assured via Defence's regulations for guided weapons. Where doubt exists as to regulation applicability, advice should be sought from the Authority.

2. For UAS operated by or on behalf of Defence, other than those regulated under DASR.NDR, DASR.UAS is applicable in its entirety. Furthermore, DASR.UAS presents the complete set of initial airworthiness, continuing airworthiness and operations regulations relevant to UAS. Notably, other DASR are only relevant to UAS if explicitly invoked through DASR.UAS.

> **NOTE:** DASR.UAS necessarily presents an independent regulation to the remaining DASR. This is due to the provenance of the remaining DASR, which were created for the risk context of crewed aircraft. Consequently, for the most part, DASR focuses on aircraft safe flight, since this is essential to preserving the safety of aircraft and the occupants. In achieving that aim, the safety of other airspace users, people and critical infrastructure on the ground or water, is inherently preserved. The absence of aircraft occupants in UAS changes that risk context. For example, from a safety perspective, an uncontrolled ground or water impact might be considered acceptable for a UA operating in a sufficiently remote area. This difference in risk context is often sufficient to preclude the direct adoption of extant DASR. Consequently, DASR.UAS presents the complete set of initial airworthiness, continuing airworthiness and operations regulations relevant to UAS.

3. Even where an external party is providing the UAS as a service to Defence, the relevant Command/Group are to retain shared responsibility for ensuring the health and safety of Defence and non-Defence personnel and the GP. This statutory duty cannot be transferred in its entirety to the external party.

4. **UAS regulated by another Civil Aviation Authority (CAA) or Military Aviation Authority (MAA).** Where a UAS is being used for Defence purposes but is regulated by another CAA or MAA:

   a. Authorisation by the relevant Command/Group is required for UAS operations, under DASR.UAS.10.A

   b. The statutory obligations for persons authorising UAS operations and operating the UAS must be met, under DASR.UAS.10.B

   c. The requirements of NDR apply.

> **NOTE:** DASR.NDR was created with the crewed aircraft risk context in mind, so some minor interpretation is needed for UAS, as follows:
>
> (1) All references in DASR AMC NDR.05.A to '... or equivalent document' may be taken to refer to the approval granted by the CAA or MAA for that particular UAS and its operation.
>
> (2) The flexibility provision presented in DASR GM NDR.10.A cannot be used to operate the UAS outside the requirements and limitations, including operating areas, imposed by the CAA or MAA unless the sponsor either applies to the relevant CAA or MAA for a dispensation to their regulations, or temporarily operates under DASR.UAS. If the latter

option is selected, the CAA or MAA regulations, requirements and limitations will cease to apply for that period.

d. DASR.UAS.20, DASR.UAS.30 and DASR.UAS.40 are not applicable under DASR.NDR

e. Where the Command/Group is not satisfied that compliance with another CAA or MAA regulations will promote an appropriate level of safety, the Command/ Group is obliged to impose all additional controls necessary to manage that risk.

5. Where the role and extent of involvement of another CAA or MAA is unclear, or the CAA or MAA is not recognised by the Authority, Authority advice, through DASA, must be sought.

6. **Foreign UAS.** Where a Defence Organisation is sponsoring a foreign military UAS that is to operate in Australian airspace, only DASR.UAS.80 applies. The remaining DASR.UAS regulations are not applicable.

GM1 UAS.10 - Concept of Authority Approval and Command/Group Authorisation (AUS)

1. This GM defines the respective roles of the Authority and the relevant Defence Command/Group with respect to UAS operations.

2. For certain combinations of UAS and operating environments, the Authority will issue a discrete Authority approval, through either:

a. the issue of a Military Type Certificate (MTC), (for the UAS), and a Military Air Operator Certificate (MAOC), (for the UAS Operator)

b. the issue of a UASOP (covering both the UAS and the UAS Operator).

3. For some UAS operations, an explicit Authority approval is not required. Rather, the Command/Group may authorise a UAS operation provided certain Authority-defined risk controls have been implemented, as presented in Standard Scenarios (see DASR.UAS.30.C) or Standard Operating Conditions (see DASR.UAS.40).

4. Irrespective of whether the Authority issues a discrete approval, the relevant Command/Group always maintains responsibility for ensuring the safe operation of UAS under their control. Consequently, the Command/Group must authorise all UAS operations.

(a) Defence UAS must only be operated if authorised by the relevant Command or Defence Group. ▸ **AMC**

AMC UAS.10.A - Responsibility for UAS Authorisation (AUS)

1. **Purpose.** The purpose of this regulation is to emphasise the primacy of commanders and managers in ensuring the safety of UAS under their control.

2. Authorisation is required by the relevant Command/Group for all Defence UAS operations, irrespective of whether the UAS is operated by or on behalf of Defence, and whether the UAS operation is regulated by another CAA or MAA. The level and the mechanism to issue such authorisations is determined by the Command / Group.

3. **Authorisations by Defence Groups.** Where a Defence UAS is being operated by a Service (Navy, Army or Air Force), the responsibility for authorising UAS operations falls on Command. Where a Defence UAS is being operated by a Defence Group, eg Defence Science and Technology Group (DSTG), Estate & Infrastructure Group (E&IG), Chief Information Officer Group (CIOG); the responsibility for authorising UAS operations falls on the Group Head. The Group Head is responsible for determining who within their Group has the authority to make UAS safety risk decisions for their own staff and for external parties. Where no such determination has been made, the Group Head should be approached to authorise the UAS operation.

(b) Persons authorising and operators of a UAS must: ▸ **GM**

GM UAS.10.B - Responsibilities (AUS)

1. **Purpose.** The purpose of this regulation is to emphasise the statutory responsibilities held by persons who authorise and/or operate UAS, to eliminate or minimise risks So Far As is Reasonably Practicable (SFARP).

2. While adherence to the risk controls inherent in DASR.UAS will assist in executing this responsibility, it is up to Command/Group to assess the risks and decide on the controls they need to put in place to meet their statutory responsibilities to the persons potentially affected by the activity. Also, in authorising UAS operations by a RP who may be less familiar with the broader concepts of flight operations safety management, the relevant Command/Group may need to apply additional risk controls.

3. While RP are not explicitly included in this regulation, they still have a statutory duty to take reasonable care that their acts or omissions do not adversely affect the health and safety of other persons.

1. eliminate risk to the health and safety, So Far As is Reasonably Practicable (SFARP), to other air users, and to people and critical infrastructure on the ground or water, and

2. if it is not reasonably practicable to eliminate risk to health and safety, minimise those risks SFARP.

(c) All Defence UAS must operate in accordance with the requirements and limitations of Certified, Specific or Open category. ▸ **GM** ▸ **AMC1** ▸ **AMC2**

AMC2 UAS.10.C - UAS Categorisation (AUS)

1. UAS categories are defined by the intended UAS operations and technical specifications of the UAS. Each UAS category imposes particular requirements and limitations, and these requirements/limitations are to be met in their entirety if operations under a particular UAS category are to be pursued.

2. Where the UAS category is unclear or disputed, the Authority will make the determination.

AMC1 UAS.10.C - Applicability of this Regulation (AUS)

1. Defence UAS regulated under DASR.NDR are not subject to DASR.UAS.10.C.

2. All other UAS operated by or on behalf of Defence are to operate in accordance with the requirements and limitations of Certified, Specific or Open category.

GM UAS.10.C - Operation under UAS Categories (AUS)

1. **Purpose.** The purpose of this regulation is to allow the relevant Command/Group to authorise UAS operations with the risk treatment and Authority oversight applicable to that operation.

2. A central tenet of DASR is to provide the Command/Group with a defensible safety framework, tailored to the hazards peculiar to aviation and based on contemporary global practice. UAS operations are to be permitted within recognised categories of operation while still allowing the Command/Group freedom to conduct missions/ tasking.

3. DASR.UAS does not require UAS to operate within a fixed category from acquisition. Rather, any UAS that meets all the requirements of a given category may be operated in that category under Command/Group authorisation. Three categories of UAS operation are:

   a. **Certified Category.** Intended for UAS operations where the UAS Operator expects to operate in all Airspace and over Populous Areas. DASA approvals for Initial Airworthiness, Continuing Airworthiness, and Operations are analogous to crewed Aircraft.

   b. **Specific Category.** Intended for UAS operations where the UAS is not certified to robust airworthiness standards. Consequently, increased operational constraints and risk assessment provide justification for safe operation. UAS may operate either:

      i. under an Authority issued UASOP, or

      ii. in accordance with an Authority-published 'Standard Scenario', without a discrete Authority approval.

   c. **Open Category.** Intended for UA weighing less than 25 kg, and UAS operations within Authority-defined Standard Operating Conditions. UAS operations may proceed without a discrete Authority approval, under Command/Group authorisation.

4. The above approach shares its genesis with the extant CASA and proposed European Aviation Safety Agency (EASA) approaches to UAS regulation. The three category names and underlying regulatory approach are drawn from EASA, thus promoting commonality with an emerging global convention and future compatibility with European Military Airworthiness Requirements (EMAR). Defence's Open category has been aligned with CASA Excluded category, to promote commonality in Australian civil and military UAS regulation.

(d) Defence UAS must be either on the Defence Register when directed by the Authority, or on a local register. ▸ **AMC** ▸ **GM**

GM UAS.10.D - Registration of Defence UAS (AUS)

The purpose of this regulation is to allow the Authority to best determine what type of registration is required for UAS.

AMC UAS.10.D - Registration of Defence UAS (AUS)

With the exception of UAS operated under DASR NDR, all Defence UAS should be registered on the Defence Register (where directed by the Authority) or a local register prior to first operation. For UAS that require only local registration, a centralised register for each Service/ Group is recommended. Local registers need be no more complex than an asset list.

(e) Local registers raised in accordance with DASR.UAS.10.D must be made available to the Authority on request.

UAS.20 - CERTIFIED CATEGORY UAS

(a) UAS shall only be eligible for operation under Certified category if they: ▸ **GM**

GM UAS.20.A - Scope (AUS)

1. **Purpose.** The purpose of this regulation is to require UAS operated in the Certified category to be airworthy and operated to equivalent standards of safety to that of crewed aircraft.

2. UAS operated under the Certified category are intended to operate over both GP and MEP, and in all classes of civil and military administered airspace for which they are equipped, and demonstrate the ability to act and respond, similarly to crewed aircraft.

1. are Defence registered in accordance with DASA.ARO.60.

2. have a Statement of Operating Intent and Usage (SOIU) in accordance with DASR.ARO.50

3. are Type Certified in accordance with DASR.21. ▸ **AMC**

AMC UAS.20.A(3) - Initial Airworthiness (AUS)

1. The airworthiness of the UAS design (including through-life modifications) must be demonstrated to the satisfaction of the Authority under DASR.21. The Defence Aviation Safety Design Requirements Manual (DASDRM), presents design requirements for Certified category UAS. In addition to design requirements common to crewed aircraft, it includes those systems and functions that are needed to address the UAS-unique hazards due to the RP being separated from the UA. This includes, for example, communications relay capability between the RP and ATC, timely reaction to ATC instructions, systems to maintain safe separation and collision avoidance with other air traffic, and the ability to recover the UA under abnormal emergency conditions.

4. comply with all initial airworthiness, and continuing airworthiness DASR

5. are operated under a Military Air Operator Certificate (MAOC) in accordance with DASR.ARO.100

6. comply with DASR Air Operations and DASR Standard Rules of the Air Regulation. ▸ **AMC**

AMC UAS.20.A(6) - Standard Rules of the Air (AUS)

1. UAS operated under the Certified category are intended to operate over both MEP and GP, and in all classes of civil and military administered airspace for which they are equipped, and therefore demonstrate the ability to act and respond, similarly to crewed aircraft.

2. In applying DASR Standard Rules of the Air, Command must ensure that degraded modes of UAS operation, which can impose hazards that are unique to UAS (for example, failure of the Detect and Avoid capability), are robustly identified and risk managed. An Air Traffic Management Plan (ATMP), as described in DASR AMC UAS.30.B presents one means of documenting these unique hazards and risk treatments.

7. are controlled by a RP who is a qualified military pilot, or qualified in accordance with requirements mandated by either Commander Australian Fleet (COMAUSFLT), Commander Army Aviation Command (COMD AVNCOMD), or Air Commander Australia (ACAUST). ▸ **AMC**

AMC UAS.20.A(7) - RP Qualifications (AUS)

1. UAS operated under the Certified category are to be controlled by an appropriately qualified RP, in accordance with DASR.AIRCREW.

2. The requirement for a RP who is a qualified military pilot does not preclude the future development of a specialised Defence RP category as a potential DASR AMC under UAS.20.A(7).

3. RP must comply with DASR.MED.10 and DASR.MED.15.

4. In the future, DASR.UAS FSTD/simulator regulation may be developed and be included in DASR.FSTD.

UAS.30 - SPECIFIC CATEGORY UAS

(a) UAS shall only be eligible for operation under Specific category if they are operated under either: ▸ **GM**

GM UAS.30.A - Eligibility Criteria (AUS)

1. **Purpose.** The purpose of this regulation is to define the eligibility criteria for Defence UAS operations under Specific category.

2. Defence UAS operating under Specific category employ a risk assessment as the primary basis for managing the safety risk to other airspace users, and persons/critical infrastructure on the ground or water. There are several means available to manage this safety risk:

   a. **Design mitigation.** Design mitigation concerns the application of rigour to the design and construction process such that system's likelihood of catastrophic failure is known and controlled. Through the application of more rigorous

design standards, or inclusion of systems designed to support safe operation, the likelihood of failure can be reduced.

b. **Operational mitigation.** Operational mitigation concerns the application of restrictions and limitations to the operating environment of the system. This may include such measures as limiting operation to segregated airspace, over a designated ground or water safety area or restricting flight over the GP.

c. **Systemic mitigation.** Systemic mitigation concerns the application of regulatory standards to organisations involved in the design, construction, maintenance and operation of the system. Systemic mitigation is intended to reduce the occurrence of organisational and human errors which can contribute to failure of a system. Systemic mitigation supports design mitigation, operational mitigation, and continuing airworthiness of the system.

3. Commonly, UAS operating under Specific category will exhibit deficiencies in their design (or in the available evidence to confirm the adequacy of the design) compared to certified category UAS. Further, eliminating these design deficiencies is not always considered reasonably practicable, particularly for smaller UAS. Consequently, safety risk due to Specific category UAS operations is managed through operational and systemic controls.

4. **Authority Approval.** Under Defence Specific category, a UAS operation may be explicitly approved by the Authority via the issue of a UASOP. An alternative approach is for the Command/Group to authorise the UAS operation without an explicit Authority approval, provided every requirement and limitation of an Authority-published Standard Scenario has been met and risk controls implemented. The alternative approach is intended to reduce the administrative work for Command/Groups and the Authority, since those same requirements, limitations and risk controls would have been agreed by the Authority had they been included in an application for a UASOP.

5. Defence may elect to refer to UAS operations approved by the Authority via a UASOP as 'Specific Type A', and UAS operations authorised by the relevant Command/Group under a Standard Scenario as 'Specific Type B'.

1. a UASOP issued by the Authority (Specific Type A), or

2. a Standard Scenario published by the Authority (Specific Type B).

(b) Specific category UAS to be operated under a UASOP (Specific Type A) must: ▸ **GM1** ▸ **GM2** ▸ **AMC**

AMC UAS.30.B - Authority Requirements for Issue of a UASOP (AUS)

1. This AMC presents the Authority's minimum application requirements for the issue of a UASOP and provides a means to assist Command/Group's risk analysis.

2. Compliance with this regulation requires disclosure of the intended operating environment for the UAS and an understanding of the design deficiencies of the UAS. Provided constraints in the operating environment minimise risks due to the design deficiencies of the UAS, So Far As is Reasonably Practicable (SFARP), the Authority will

issue a UASOP for the particular UAS and scope of UAS operations if satisfied that the relevant Command/Group:

a. has clearly defined the intended operating environment for the UAS

b. has provided a meaningful characterisation of the risks presented by the UA to other aircraft, and people/critical infrastructure on the ground or water

c. has implemented robust operational risk controls to minimise the risk to other aircraft, and people/critical infrastructure on the ground or water SFARP

d. is supported in minimising these risks by sufficient UAS initial and continuing airworthiness arrangements

e. fully comprehends and has retained any remaining risks at a suitable level after risk minimisation.

3. The UASOP should include the UAS basis of technical approval, key initial and continuing airworthiness requirements, and special conditions to balance the operational requirements with the risk of the UAS operation. A UASOP enables the UAS to operate in its designated Configuration, Role and operating Environment (CRE), and will:

a. identify the UAS

b. reference the approved SOIU, or Orders, Instructions and Publications (OIP) defining the designated CRE

c. reference appropriate design documentation which identifies the approved configuration(s)

d. identify operational restrictions applied to mitigate the risk the UAS presents to personnel, critical infrastructure and other aircraft

e. identify, or reference, any unique aviation safety management arrangements required for ongoing operations with the UAS type

f. identify operational, maintenance and engineering authority for the UAS

g. identify the approved UAS operating units

h. identify the authoritative operating and maintenance documentation

i. identify any applicable operating limitations resulting from:

   i. the immaturity of the supporting management arrangements

   ii. airworthiness issues affecting the system's suitability for the SOIU purpose and scope

   iii. Test and Evaluation activities performed prior to issue of the UASOP.

4. AMC for each of these elements is included below.

RISK ASSESSMENT - RISK TO OTHER AIRSPACE USERS

5. For a UAS to have the benefit of unimpeded access to an airspace class, it should include all equipage required for the airspace and be operated by a RP with the pre-requisite qualifications for the airspace. Unless the UAS has been specifically designed with particular airspace in mind, including all equipage required for the airspace can be problematic. Issues such as replacements for pilot 'see-and-avoid' capability, and the integrity of positional and altitude information sources require dedicated design effort and are difficult to retrofit.

6. Where a UAS requires access to an airspace class but does not exhibit the required equipage or RP qualifications, operational risk treatments will be required. Provided the Authority is satisfied the risk to other airspace users has been eliminated or otherwise minimised SFARP, then a UASOP may still be issued by the Authority. Importantly, the Authority expects explicit written confirmation that the Command / Group had comprehensively understood the risks to other airspace users, and that the Command / Group had effectively executed its duties to eliminate/minimise those risks SFARP.

> **NOTE:** While airspace modelling might contribute to the relevant Command/ Group's risk management endeavours, a modelling conclusion that risk is 'low' would not normally be sufficient justification to omit higher order controls. Rather, the difficulty of modelling collision likelihoods may require the risk to be considered in absolute, worst case terms, ie the likelihood that a collision will occur is assumed to be certain if the aircraft is operating within a certain density level or volume of airspace.

7. Systems should be included in the UAS to prevent inadvertent UA flight beyond authorised airspace, or the absence of such systems should be managed through operational risk controls.

8. **Segregated Airspace.** In considering the risk presented by a UAS to other airspace users, the term Segregated Airspace is used. Mixing of other aircraft (crewed or uncrewed) and a UA within a Segregated Airspace intended for use by the UA should be avoided. Specific operational restrictions pertaining to UA flight within Segregated Airspace (sustained, limited or otherwise), should be identified to ensure the UAS presents risks that are minimised SFARP to other airspace users. Airspace Control Measures (ACM) may be used to facilitate the containment of a UA within Segregated Airspace.

9. Additional considerations for segregated airspace include air traffic density, particularly if the UA airspace is other than controlled airspace, as other aircraft may be able to enter the airspace without a clearance. Danger Areas designed for General Aviation (GA) transit and similar flight paths should be avoided. Importantly, the 'see and avoid' principle is a main safety defence for any shared airspace.

10. The Authority will require assurance that UAS operations will remain within the allocated Segregated Airspace, including an assessment of the level of confidence that escape will not occur. Factors that affect this confidence may include the integrity of UAS positional information, UAS communications performance, RP experience and maturity of procedures.

11. **Air Traffic Management Plan.** An ATMP is one means of documenting the specific risks of collision with other airspace users, and the operational or airspace limitations needed to maintain the safety of the airspace. It may include:

a. operational restriction and mitigation measures to enable operation in the required airspace, in the absence of approved navigation and communication capability

b. operational restriction and mitigation measures to enable separation in the required airspace, such as Air Traffic Service (ATS) in controlled airspace, in the absence of approved means of self-separation and/or collision avoidance or Certified detect and avoid capability

c. approved RPs (as per Certified category UAS) or suitably trained RPs restricted to operate in specific airspace only.

12. In achieving the above outcomes, an ATMP may include:

a. where the UA is required or likely to operate

b. the nature and density of the air traffic in the required area of operations, noting such specifications are likely to change as mission objectives change post UASOP approval

c. the size and velocity of the UA, and unique characteristics of the UAS

d. the accuracy, integrity and reliability of fitted systems such as positional information, collision avoidance, flight control, communication and other relevant UAS systems

e. the strategy or method for the safe interaction or de-confliction with all other airspace users

f. the requirements for notification to other airspace users of intended operations with the UA

g. the requirements for notification to other airspace users of any segregated airspace required for the intended UAS operations

h. the anticipated segregated airspace volumes required to support UAS operations, including airspace boundary buffers

i. any utilisation of unique ACMs such as Flexible Use Airspace (FUA), User Preferred Trajectories (UPTs) or UAS Transit Corridors.

13. Headquarters Joint Operations Command (HQJOC) Air and Space Operations Centre (ASOC) Joint Airspace Control Cell (JACC) provides support for the development or amendment of UAS ATMPs and should be used to gain SME advice before an ATMP is recommended for endorsement by the airspace management agencies and the Authority. UA transit through non-segregated airspace may be conducted where UA transit routes have been designated and activated by the appropriate airspace management agency, which includes Airservices Australia, Defence Air Traffic Services or JACC. Any desire for permanent transit routes should be processed via the JACC in all cases.

RISK ASSESSMENT - RISKS TO PEOPLE

14. A UAS is normally assigned to a Specific category because the design cannot, or need not, meet certified aircraft airworthiness standards. Where reasonably practicable, these safety risks should be eliminated or otherwise minimised through engineering effort. However, such design solutions may not always be practicable, especially for smaller off-the-shelf UAS.

15. Consequently, a Specific category UAS may suffer catastrophic failures more often than a Certified category UAS. These failures may result in either controlled or uncontrolled descent of the UA. Failures resulting in controlled descents, eg engine failure; should present minimal risk to people and critical infrastructure, but only to the extent that pre-flight planning has identified appropriate forced landing sites, or on-board systems enable the RP to identify suitable sites in real time. Failures resulting in uncontrolled descents, e.g. structural failure, system-induced stalls, seized control surface; on the other hand, will present risks to people on the ground or water, depending on the location and orientation of the UA at the time of the failure.

16. Risk may be eliminated or otherwise minimised SFARP by limiting the exposure of people to the risk, which in turn could be achieved by limiting where and how a Specific category UAS can operate. For the Authority to issue a UASOP, it must be satisfied that the relevant Command/Group has made informed decisions on eliminating/minimising risk to people. A systematic process is therefore required to identify, analyse and treat all risks to people (both MEP and GP) on the ground or water.

17. The Authority broadly separates UAS operations into three operating environments, with each logically increasing the level of risk to people on the ground or water, as follows:

    a. UAS operations in a sufficiently remote area, such that a catastrophic UAS failure is very unlikely to result in an impact to a person

    b. UAS operations in proximity, ie near but not over; of a population (whether GP or MEP), and therefore certain catastrophic failures could result in an impact to a person

    c. UAS operations overhead of a population (whether GP or MEP), and therefore certain catastrophic failures will likely result in an impact to a person.

18. Each of these three operating environments requires a tailored approach to risk characterisation, sufficient for the Command/Group to make informed decisions on eliminating or otherwise minimising risk SFARP, and therefore warranting issue of a UASOP.

19. UAS operations in remote areas. Regardless of UA size, the Authority would normally issue a UASOP for this operating environment provided:

    a. The applicant has confirmed that technical issues, including the following, have been addressed:

        i. Systems are included in the UAS to prevent inadvertent UA flight beyond authorised area of operation, or the absence of such systems has been managed through operational risk controls.

ii. The likelihood of controlled and uncontrolled ground or water impacts have been estimated and communicated to UAS Operators.

iii. Potential spectrum conflicts between the UAS and local transmitters/ receivers have been managed.

iv. The UA has been designed for immunity to electro-magnetic interference, or operational controls have been employed to reduce the likelihood of adverse effects.

b. The relevant Command/Group has confirmed the sufficiency of operational measures, including the following:

i. OIP has been issued to guide UAS Operators on identifying and avoiding any isolated populations, eg homesteads, busy roads.

ii. OIP precludes UAS operations in other than remote areas, unless the UASOP covers other areas.

iii. RPs have the qualifications, training and supervision to safely retain the UAS within the assigned area.

iv. OIP requires risks to the MEP in the area to be minimised SFARP.

v. A system is in place for authorising each flight that focuses on confirming risks have been minimisedSFARP.

20. Work Health and Safety (WHS) legislation makes the Command/Group accountable for treating the broader hazards related to the handling of a UA, such as hazardous materials, sharp edges, or electric shock and these are not further amplified under DASR.

21. **UAS operations in proximity of populations.** The likelihood of a ground fatality as a result of a catastrophic UAS failure when near (but not over) populations is likely to be a function of the UA size, failure type, distance from the population and the population density. Energy attenuation devices, eg a parachute, may also contribute, although the increased uncertainty in landing footprint needs to be taken into account.

22. The effort applied to characterising the risk should be proportionate to the time in proximity to people (since it affects collective risk), the closest approach distance (since it affects the likelihood of a dangerous impact) and the size of the UAS (since it affects the casualty expectation):

a. At the lower end of the scale would be a small UAS with only occasional fleeting proximity to the GP. In those cases, the Authority may issue a UASOP on the basis of confirmation that the Command/Group had a process in place for authorising such UAS operations, and OIP has been published to ensure risks were minimised SFARP.

b. At the higher end of the scale would be a large UAS that will loiter for extended periods in close proximity (near but not over) to densely populated areas. In those cases, the Authority would only issue a UASOP if the complex risk

environment had been well-characterised, sufficient for the Command/ Group to make informed decisions on eliminating/reducing risks, including:

i. effort to confirm the design deficiencies of the UAS are well understood and well communicated to RPs, so they can robustly identify and manage occurrences (and therefore reduce the likelihood of a ground impact)**NOTE:** Where quantitative assessments are not practicable, eg fleeting exposures; then conservative qualitative assessments may suffice.

> **NOTE:** While evidence may not always be available to confirm design deficiencies, professional engineering judgement will often suffice. For example, an integrated Global Positioning System (GPS)/Inertial Navigation System (INS) that appears markedly less complex than similar crewed aircraft systems could reasonably be expected to exhibit higher drift rates when GPS signal is lost and may therefore display erroneous position information. The Defence Aviation Safety Design Requirements Manual (DASDRM) Section 4 Chapter 3, presents candidate systems for such assessments. Operational risk controls can be established on the basis of this judgement.

ii. confirmation via quantitative analysis that agreed individual risk and collective risk safety targets for GP will not be exceeded for discretionary UAS operations

> **NOTE:** Where quantitative assessments are not practicable, eg fleeting exposures; then conservative qualitative assessments may suffice.

iii. establishment of stand-off distances needed for discretionary UAS operations to maintain those safety targets

iv. OIP that clearly defines where stand-off distances can be exceeded for non-discretionary tasks, including the authorising authority, bounds on authority and criteria for exercising that authority

v. confirmation that initial and continuing airworthiness arrangements have been implemented to the extent that they contribute to minimising risks to GP/MEP SFARP

vi. operational aerodrome assessments, including qualitative runway assessments for take-off/departure and approach/landing, to robustly control the risk of uncontrolled ground impacts due to technical failures.

23. **UAS operations overhead of populations.** The likelihood of a ground fatality due to a catastrophic UAS failure when operating overhead of populations, is primarily a function of the UAS impact lethality (a function of weight, size, energy attenuation devices, etc), the population distribution, and the effect and extent of sheltering. To estimate collective risk, the duration of UAS operations and the frequency of catastrophic UAS failures must also be accounted for.

24. For the Authority to issue a UASOP that includes flight over people:

a. Command/ Group must confirm there are no reasonably practicable alternatives that eliminate the risk

b. all reasonably practicable technical measures to minimise the risk must be implemented

c. all reasonably practicable operational measures to minimise the risk must be implemented

d. all reasonably practicable RP training measures to minimise the risk must be implemented

e. OIP must be issued to guide the RP (and UAS Operator, if a separate person) in minimising the risk SFARP

f. the scope and conditions for discretionary, ie non-mission essential; flight over people must be well defined

g. the risk to MEP inherent in such UAS operations must have been well articulated to COMAUSFLT, COMD AVNCOMD, ACAUST, or Head of Defence Group, (as appropriate), and residual risk, (including any uncertainty in residual risk) must have been retained

NOTE: UASOP Applicants considering MEP overflight should seek current advice from the DASA.

h. the risk to GP (if GP overflight is contemplated) inherent in such UAS operations must have been well articulated to Defence, and residual risk (including any uncertainty in residual risk) must have been retained.

NOTE: UASOP Applicants considering GP overflight should seek current advice from the DASA.

25. The Authority expects there should be an overriding and substantial capability imperative for flying a Specific category UAS over the GP, and that all reasonably practicable steps would have been considered to minimise the GP's risk exposure. Where these cannot be established to the Authority's satisfaction, a Certified category UAS should be employed.

RISK ASSESSMENT - RISKS TO CRITICAL INFRASTRUCTURE

26. Larger UAS have the potential to damage ground-based infrastructure. From an aviation safety perspective, only damage that may have an immediate and adverse effect on MEP or GP health and safety is considered within the scope of DASR.UAS. Examples may include UAS damage to chemical plants, armament storage facilities, fuel storage facilities, and so on.

27. The Authority's requirement for issue of a UASOP is that Command/ Group should approve and issue OIP that defines critical infrastructure (relevant to the size and operating environment of the UAS), and the measures to be taken by the UAS Operator to minimise risks to that critical infrastructure SFARP.

28. While the Authority's focus for critical infrastructure is confined to immediate and adverse safety effects, the Command/Group might elect to encompass a wider scope. For example, the USA military document RCC 323–99—Range Safety Criteria for Unmanned Air Vehicles, Rationale and Methodology Supplement; provides the following suggested criteria for significant facilities:

a. loss or degradation of a major function

b. significant monetary loss

c. significant environmental impact and/or cultural impeach.

ADDITIONAL OPERATIONAL CONTROLS

29. When formulating the operational controls identified in the previous sections for minimising risk to other airspace users and persons/critical infrastructure on the ground or water, the Command/Group must also identify where operational errors may impact safety. In each case, the risk must be robustly managed and may include:

a. mid-air collision resulting from inadequate mission planning or RP induced error

b. controlled flight into terrain

c. loss of control through inadvertent operation outside approved limits

d. incorrect use of on-board mission systems, eg laser designation systems.
NOTE: In each case, the risk must be robustly managed.

GM2 UAS.30.B - Extent of Compliance (AUS)

1. DASR.UAS.30.B(2) to DASR.UAS.30.B(5) recognise that many DASR were created for the context of crewed aircraft, so the burden of full compliance may be disproportionate to the safety benefit for certain UAS designs and operations. Consequently, each provides scope for the Authority to moderate the required level of compliance.

2. Normal practice would be for the UASOP Applicant to propose a suitable extent of compliance, for Authority approval.

GM1 UAS.30.B - Eligibility for a UASOP (AUS)

1. **Purpose.** The purpose of this regulation is to define the Authority's requirements for issue of a UASOP for UAS that are to be operated under Specific category, but whose operations do not conform to an Authority-published Standard Scenario.

2. The UASOP is an instrument issued by the Authority for certain Specific category UAS operations. A UASOP would normally only be pursued where:

a. the operating freedoms of Certified category are either not necessary or not achievable

b. the UAS design and/or its proposed operations do not meet the entirety of the requirements of an Authority-published Standard Scenario

c. (for UA with a Maximum Take-Off Weight (MTOW) of less than 25 kg) the proposed UAS operations do not meet the entirety of Standard Operating Conditions under Open Category.

1. be registered in accordance with DASR.UAS.10.D

2. have its role and operating environment documented in an SOIU when directed by the Authority ▸ **GM** ▸ **AMC**

AMC UAS.30.B(2) - Defining the UAS Operating Environment (AUS)

1. An SOIU presents a common tool for the relevant Command/Group to disclose their intended operating environment for an aircraft. If the Command/Group elects to employ an SOIU, it would benefit from expansion beyond DASR AMC ARO.50.A to account for UAS-unique hazards, and might include:

   a. the extent to which the UA is required to operate near or over people and critical infrastructure including the duration and expected population density, amplifying:

      i. population distributions of MEP to whom the UA may present a hazard

      ii. population distributions of the GP to whom the UA may present a hazard

   b. airspace environments in which the UA may operate, including the extent to which the UAS will operate in shared airspace

   c. the extent to which the UA is required to operate in the proximity of aerodromes and ships

   d. the extent to which the UA is required to operate near critical infrastructure.

      NOTE: The Authority may be able to issue a UASOP without the need for an SOIU in certain circumstances. Examples may include small UAS that do not qualify for operation under Open category due to exceeding a Standard Operating Condition. Conversely, a large UAS operating in a diverse and complex operating environment will inevitably require a detailed SOIU. Consequently, the Authority will direct when a SOIU is required.

GM UAS.30.b(2) - Documenting UAS role and operating environment

1. When DASA directs that the UASOP applicant must document the role and operating environment in an SOIU, the UASOP applicant may use the UAS SOIU template. SOIU approval is IAW AMC ARO.50.A. When an SOIU is not required, the UASOP applicant may use a UAS CRE document template for capturing the Configuration, Role and operating Environment (CRE). The Commander/Group Head (or delegate) may approve the UAS CRE document. In any case, a UASOP applicant must reference the document defining the designated CRE as per AMC UAS.30.B.3(b) in the relevant DASR Form 152.

3. comply with DASR initial and continuing airworthiness regulations as directed by the Authority ▸ **AMC**

AMC UAS.30.B(3) - Initial Airworthiness, and Continuing Airworthiness Requirements (AUS)

1. The Authority will direct compliance with DASR initial and continuing airworthiness requirements only to the extent they make a tangible contribution to the safety of other airspace users, or persons/critical infrastructure on the ground or water. The extent of compliance directed by the Authority ultimately depends on the complexity of the proposed operating environment and the robustness of the UAS design. While the level of compliance will be agreed with the Authority, some upper and lower examples are illustrative:

   a. At the lower end of the scale would be a small UAS with only occasional fleeting proximity to the GP. In those cases, the Authority may impose no requirements for initial and continuing airworthiness. This does not preclude the Command/ Group from imposing UAS design and maintenance support requirements, in an effort to ensure health and safety, and improve capability through reduced attrition.

   b. At the higher end of the scale would be a large UAS that will loiter near/over the GP, or a UAS that will operate in shared airspace. In those cases, the Authority would require compliance to initial and continuing airworthiness requirements, to the extent that it makes a direct and meaningful contribution to safety.

4. comply with the Military Air Operator requirements of DASR.ARO.100, to the extent directed by the Authority ▸ **AMC**

AMC UAS.30.B(4) - UAS Operations under a Military Air Operator Certificate (AUS)

1. The Authority may require a particular UAS to be operated under a MAOC, where the risks to other airspace users and/or persons/critical infrastructure on the ground or water warrants the robust approach to aviation safety management provided by a MAOC.

2. MAO regulation for Flying Management System (FMS) captaincy, crewing and flight authorisation apply to UAS. However, they should be appropriately contextualised by the Command/Group to adapt to the UAS role and operating environment.

3. **UAS operations not under a MAOC.** Even where the risk due to UAS operations does not justify operations under a MAOC, the Authority would still require an FMS based on the following requirements from DASR.ORO.10, contextualised for each UAS role and operating environment:

   a. key staff are identified and appointed

   b. OIP are applicable, approved, available and relevant to the scope of operations

   c. crew competency is defined, assessed and maintained

   d. the authorisation process for conduct of UAS operations is defined

e. Risk Management (RM) is applied relevant to the impact of UAS operations on other airspace users, people and critical infrastructure

f. any necessary ground or water safety or exclusion templates are implemented and controlled

g. use of ground and air collision avoidance, flight termination and emergency recovery systems is defined and controlled

h. OIP issued to manage UAS flying operations take into account the CRE and any unique operating characteristics of the UAS

i. the UAS is only operated when serviceable and suitable for the proposed operations.

5. comply with DASR under Air Operations and Standard Rules of the Air to the extent directed by the Authority ▸ **AMC**

AMC UAS.30.B(5) - Compliance with DASR Air Operations and Standard Rules of the Air (AUS)

1. Unless operational controls preclude any need, UAS are expected to comply with DASR Air Operations and Standard Rules of the Air, to the extent needed to manage risks to other airspace users or persons/critical infrastructure.

6. be controlled by a RP who is qualified as specified in the UASOP ▸ **AMC**

AMC UAS.30.B(6) - RP Qualifications (AUS)

1. When proposing a new or updated UASOP to the Authority, the Command/Group should define:

a. the required RP qualifications

b. any requirement for the RP to hold a current aviation medical certificate in accordance with DASR.MED.10.

7. operate within the requirements and limitations included on the UASOP. ▸ **AMC**

AMC UAS.30.B(7) - Requirements for Embarked UAS operations (AUS)

1. Where a UASOP allows for embarked UAS operations, the Command/Group should ensure that any potential requirements and limitations have been evaluated and documented within the UASOP where relevant, including:

a. any impact to the Ship's Aviation Facilities Certification (AFC)

b. identified vessel operational restrictions

c. safety assessment of the ship and air operations interface.

(c) Specific category UAS to be operated under a Standard Scenario (Specific Type B) must: ▸ **GM** ▸ **AMC**

AMC UAS.30.C - Operations under a Standard Scenario (AUS)

1. If a Standard Scenario is to be employed by the Command/Group, the requirements of the Standard Scenario must be met in their entirety. Where an element of a Standard Scenario cannot be met, use of that Standard Scenario is precluded and the Command/ Group are to pursue a UASOP under DASR.UAS.30.B.

2. The Command/Group's intention to operate a UAS under a Standard Scenario must be communicated in writing to the Authority prior to commencement of UAS operations. Written notification must be via DASR Form 150 through the DASA Registry email address: dasa.registry@defence.gov.au. This notification should include:

   a. identification of the Command/Group accountable person responsible for authorising the operation

   b. a description of the UAS

   c. a description of the intended use of the UAS

   d. a reference to the Standard Scenario(s) under which the UAS shall be operated

   e. the date or period of time that the operation is intended to occur (may be open ended).

3. Authority acknowledgement of receipt of the declaration is not needed prior to first operation. There is also no need to re-declare to the Authority any subsequent intentions to operate that same UAS under the same Standard Scenario(s} provided details in the original declaration remain unchanged.

4. Amendment and Withdrawal. Where the Authority elects to make a minor amendment to a Standard Scenario, the Authority will notify all registered users of that Standard Scenario. The Authority will include in the notification any flexibility for the Command/ Group in implementing the updated Standard Scenario. Where the Authority elects to withdraw a Standard Scenario, the Authority will individually negotiate a transitional arrangement until the issue of a UASOP, with each affected UAS Operator.

GM UAS.30.C - Standard Scenarios (AUS)

1. **Purpose.** The purpose of this regulation is to outline the Authority's requirements for the Command/Group to authorise operation of a UAS under an Authority-published Standard Scenario.

2. Defence UAS operating under Specific category employ a risk assessment as the primary basis for managing the safety risk to other airspace users, and persons/critical infrastructure on the ground or water. Commonly, UAS operating under this category will exhibit deficiencies in their design compared to Certified UAS, so the safety risk due to these deficiencies is managed through imposing constraints in their airspace access and constraints in their operations near or over people/critical infrastructure.

3. Authority-published Standard Scenarios present an alternative to the issue of a UASOP for a particular UAS and operating environment. A Standard Scenario defines each of the technical and operational risk controls that, had the Command/Group presented them to the Authority, should justify Authority issue of a UASOP. Consequently, both

approaches should achieve similar levels of safety, but Standard Scenarios provide a means for reducing administrative overheads.

4. Standard Scenarios are best suited to UAS that are employed in benign and predictable operating environments, and therefore technical and operational risk controls are likely to be more straightforward. For larger UAS that are intended to conduct diverse operations in non-benign environments, a UASOP under DASR.UAS.30.B is likely to be more suitable.

5. **New Standard Scenarios.** Standard Scenarios are raised by the Authority where there is an expectation of multiple future Defence UAS being operated in a similar operating environment, and where the required risk controls can be clearly identified by the Authority. Suggestions for new Standard Scenarios may be proposed to the Authority. Development of new Standard Scenarios will normally involve a collaborative effort between the Command/Group and the Authority.

1. be operated only under Standard Scenarios in DASR.UAS.35

2. be notified to the Authority via submission of DASR Form 150 prior to commencement of UAS operations

3. be registered in accordance with DASR.UAS.10.D.

UAS.35 - STANDARD SCENARIOS FOR UAS OPERATIONS

(a) **Standard Scenario for Micro UAS**. UAS operations under the Micro UAS Standard Scenario must comply with the following requirements and limitations: ▸ **GM**

GM UAS.35.A – Standard Scenario for Micro UAS

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which Micro UAS may be safely operated within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 0.1 kg, provided that every requirement and limitation of the Scenario is met. UAS operations may include, but are not limited to, trials, training, Defence exercises, Defence Force assistance to the civilian authorities, and Defence operations.

1. UAS MTOW must not exceed 0.1 kg.

2. Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

3. Not operate in such a manner as to create an obstruction to another aircraft.

4. Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸ **GM**

GM UAS.35.A(4) – Aerodrome operators

1. En Route Supplement Australia (ERSA) can be referred to for contact details of aerodrome operators.

5. Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸ **GM**

GM UAS.35.A(5) – Approach and departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

2. ERSA can be referred to for contact details of aerodrome operators.

6. Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group.

7. Allow RP intervention during all stages of the flight. ▸ **GM**

GM UAS.35.A(7) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

8. Employ suitable risk controls when operating: ▸ **AMC**

AMC UAS.35.A(8) – Risk Controls for Micro UAS

1. Operations permitted under Standard Scenario for Micro UAS require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for Command/Group to meet their statutory obligations.

2. **Technical risk controls.** Technical risk controls for this standard scenario should include design features that:

   a. trigger automatic flight actions upon loss of datalink, eg Autonomous Recovery System (ARS), Go-Home mode

   b. positively contain the UA within a pre-programmed volume, eg geo-fencing, tether, range limiter, programmable maximum and minimum altitude

   c. enable the RP to locate and avoid GP/MEP, eg on-board EO/IR camera

   d. enable manual termination of flight by the RP during emergencies.

      NOTE: Some technical risk controls might not be suitable for UAS operations where tactical time constraints do not permit pre-

programming. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

a. pre-flight checks, carried out in accordance with documented Original Equipmenty Manufacturer (OEM) or locally produced procedures, that confirm the setup/functionality of:

i. UA airframe and propellers/rotor blades

ii. navigation system

iii. technical risk controls, eg ARS, geo-fencing, altitude and range limiter, on-board camera

iv. any other feature/system that may contribute to safe operation of the UAS.

b. documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

i. range limits of the datalink

ii. limitations of technical risk controls, eg limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

iii. any other design feature that may contribute to safe operation of the UAS.

c. planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

i. de-confliction and safe separation from other airspace users

ii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation.

d. emergency procedures, documented in a flight manual or equivalent document, for any reasonably foreseeable event that creates a hazard to GP, MEP, critical infrastructure or other airspace users.

e. emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, eg alerting GP/MEP and/or other airspace users.

NOTE: Some operational risk controls might not be suitable for UAS operations where tactical time constraints do not permit the carrying out of required tasks/checks. Alternate operational

risk controls, documented in a specific instruction, should be developed for such UAS operations.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

   a. training that prepares the RP to:

      i. perform the required action/tasks for employing/programming technical risk controls

      ii. perform the required pre-flight checks

      iii. operate within the documented UA limitations

      iv. operate the UA in a way that minimises the risk to GP, MEP, critical infrastructure or other airspace users.

   b. emergency procedure training that prepares the RP for all documented emergency procedures

   c. RP qualification system that defines the requirements for training and experience.

      i. beyond visual line of sight

      ii. outside of daylight hours

      iii. in cloud or reduced visibility

      iv. above 400 ft Above Ground Level (AGL)

(b) **Standard Scenario for Very Small UAS.** UAS operations under the Very Small UAS Standard Scenario must comply with the following requirements and limitations: ▸ **GM**

GM UAS.35.B – Standard Scenario for Very Small UAS

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which Very Small UAS may be safely operated within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 2 kg, provided that every requirement and limitation of the Scenario is met. UAS operations may include, but are not limited to, trials, training, Defence exercises, Defence Force assistance to the civilian authorities, and Defence operations.

   1. UAS MTOW must not exceed 2 kg.

   2. Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

   3. Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

   4. Not operate in such a manner as to create an obstruction to another aircraft.

5. Not operate in controlled airspace higher than 400 ft AGL without approval of the relevant airspace authority. ▸ **GM**

GM UAS.35.B(5) – Operations in controlled airspace

1. ATC should be advised of all UAS operations in controlled airspace below 400 ft AGL.

6. Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸ **GM**

GM UAS.35.B(6) – Aerodrome operators

1. ERSA can be referred to for contact details of aerodrome operators.

7. Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸ **GM**

GM UAS.35.B(7) – Approach and Departure paths

1. Approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

2. ERSA can be referred to for contact details of aerodrome operators.

8. Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group.

9. For each air vehicle, have a dedicated RP.

10. Allow RP intervention during all stages of the flight. ▸ **GM**

GM UAS.35.B(10) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

11. Employ suitable risk controls when operating: ▸ **AMC**

AMC UAS.35.B(11) – Risk Controls for Very Small UAS

1. Operations permitted under Standard Scenario for Very Small UAS require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for the Command/Group to meet their statutory obligations and to achieve compliance with DASR.UAS.10.B.

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

a. design features that:

i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-Home mode

ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude;

iii. enable the RP to locate and avoid GP/MEP, e.g. on-board EO/IR camera

iv. enable manual termination of flight by the RP during emergencies

v. display remaining battery/fuel level to the RP at all times

vi. assists other aircraft to visually see the UA, where tactical constraints permit, e.g. lighting, hi-visibility colour scheme.

vii. inspection, maintenance and testing that could prevent technical failures of the UAS, if carried out at regular intervals in accordance with documented OEM or locally produced procedures, e.g. maximum airframe/propeller hours, battery servicing/replacement.

NOTE: Some technical risk controls might not be suitable for UAS operations where tactical time constraints do not permit pre-programming. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

a. pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

i. UA airframe, control surfaces and propellers/rotor blades

ii. navigation system

iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

iv. any other feature/system that may contribute to safe operation of the UAS.

b. documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

i. UA endurance, eg battery/fuel limits and performance in different flight modes

ii. range limits of the datalink

iii. weather limitations of the UA, eg not to operate in rain, wind gusts

iv. limitations of technical risk controls, eg limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

v. any other design feature that may contribute to safe operation of the UAS.

c. planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

i. de-confliction and safe separation from other airspace users

ii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

iii. safe operation within 3 nm (5.5 km) of a controlled aerodrome, eg obtaining ATC approval and/or notifying ATC.

d. planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

i. operate the UAS within its weather limitations, eg obtaining weather forecast, monitoring weather radar

ii. maintain a 30 m horizontal distance from GP unless essential for mission/training requirements, eg area survey, planning of ARS routes, geo-fencing

iii. remain clear of populous areas unless essential for mission/training requirements, eg area survey, planning of ARS routes, geo-fencing

iv. remain clear of critical infrastructure, eg area survey, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e. specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements:

i. within 30 m horizontally of GP

ii. over populous areas

iii. over or in proximity of critical infrastructure.

f. emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. change in weather conditions that could adversely affect the UA

ii. any other reasonably foreseeable event that creates a hazard to GP/ MEP, critical infrastructure or other airspace users.

g. emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, eg alerting GP/MEP, ATC or other airspace users.

NOTE: Some operational risk controls might not be suitable for UAS operations where tactical time constraints do not permit the carrying out of required tasks/checks. Alternate operational risk controls, documented in a specific instruction, should be developed for such UAS operations.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a. training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises the risk to GP/MEP, critical infrastructure or other airspace users

b. emergency procedure training that prepares the RP for all documented emergency procedures

c. RP qualification system that defines the requirements for training and experience.

i. beyond visual line of sight

ii. outside of daylight hours

iii. in cloud or reduced visibility

iv. above 400 ft AGL

v. within 30 m horizontally of GP

vi. over populous areas

vii. over or in proximity of critical infrastructure

viii. within 3 nm (5.5 km) of the movement area of a controlled aerodrome.

(c) **Standard Scenario for Defence Ranges and Exercise Areas.** UAS operations under the Defence Ranges and Exercise Areas Standard Scenario must comply with the following requirements and limitations: ▸ **GM**

GM UAS.35.C(1) – Restricted airspace

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated in Defence Ranges and Exercise Areas within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 150 kg, provided that every requirement and limitation of the Scenario is met. UAS operations may include, but are not limited to, unit level training, Navy fleet exercises, and Joint Operations Command exercises. At all times, the UAS is to operate within airspace that enables the exclusion of civilian aircraft, and over Defence controlled land, or water where Defence can ensure that UAS operations are not in the proximity of the GP.

1. Operate only in airspace that enables the exclusion of civilian aircraft. ▸ **GM**

GM UAS.35.C(1) – Restricted airspace

1. UAS operation is confined to airspace that enables the exclusion of civilia aircraft; however, aircraft operated under DASR.NDR are permitted.

2. Generally, this would be possible only in a Restricted Area. Clearance to operate in a Restricted Area must be granted by the airspace control authority, eg range control/ safety officer.

2. Operate only over:

   i. Defence Controlled Land, or

   ii. water designated for a planned Defence exercise only during that exercise period.

3. UAS MTOW must not exceed 150 kg.

4. Not operate in a Prohibited Area or Restricted Area unless approved by the authority controlling the area.

5. Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

6. Not operate in such a manner as to create an obstruction to another aircraft.

7. Not operate over an aerodrome runway/movement area without approval from the relevant authority. ▸ **GM**

GM UAS.35.C(7) – Aerodrome Operators

1. ERSA can be referred to for contact details of aerodrome operators.

8. Not operate in the approach or departure path of a runway, landing area or ship without approval from the relevant authority. ▸ **GM**

GM UAS.35.C(8) – Approach and departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

2. ERSA can be referred to for contact details of aerodrome operators.

9. Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group.

10. For each air vehicle, have a dedicated RP.

11. Allow RP intervention during all stages of the flight. ▸ **GM**

GM UAS.35.C(11) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

12. Employ suitable risk controls when operating: ▸ **AMC**

AMC UAS.35.C(12) – Risk Controls for Defence Ranges and Exercise Areas

1. Operations permitted under Standard Scenario for Defence Ranges and Exercise Areas require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for Command/Group to meet their statutory obligations and for compliance with DASR.UAS.10.B.

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

a. features that:

i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-home mode

ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

iii. enable the RP to locate and avoid GP/MEP, vessels, critical infrastructure and terrain, e.g. on-board EO/IR camera

iv. enable manual termination of flight by the RP during emergencies

v. display remaining battery/fuel level to the RP

vi. enable the UA to be physically seen by other airspace users, where tactics permit, e.g. lighting, hi-visibility colour scheme.

NOTE: Inspection, maintenance and testing is required to prevent technical failures of the UAS, if carried out at regular intervals in accordance with documented OEM or locally produced procedures.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a. pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. UA navigation systems

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b. documented UA limitations, in a flight manual or equivalent document, that provide sufficient details on:

      i. UA endurance, eg battery/fuel limits and performance in different flight modes

      ii. range limits of the datalink

      iii. weather limitations of the UA, eg not to operate in rain, wind gusts

      iv. limitations of technical risk controls, eg limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      v. any other design feature that may contribute to safe operation of the UAS.

   c. planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. containment of the UA within the assigned airspace, eg airspace buffers

      ii. de-confliction and safe separation from other airspace users

      iii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

      iv. communication with ATC.

   d. planning and procedures for intended operational areas, documented in a local instruction, that enable the RP to:

      i. contain the UA within the operational area, eg area buffers

      ii. operate the UAS within its weather limitations, eg obtaining weather forecast, monitoring weather radar

iii. remain clear of MEP, eg operational coordination, briefing for MEP, planning of ARS routes, geo-fencing

iv. remain clear of areas where GP could be present, eg area survey, planning of ARS routes, geo-fencing

v. remain clear of vessels in the exercise area, eg detect and avoid with EO/IR data, area survey, planning of ARS routes, geo-fencing

vi. remain clear of critical infrastructure, eg area survey, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e. planning to avoid spectrum conflict and electromagnetic interference, eg coordination with relevant spectrum management authority, RF survey for high intensity emitters

f. specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements, over or in proximity of:

i. MEP

ii. vessels in the exercise area

iii. critical infrastructure.

NOTE: DASR AMC UAS.30.B - Authority Requirements for Issue of a UASOP; provides detailed guidance on aspects to be considered for risk assessment of UAS operations over or in proximity of populations (GP/MEP) and critical infrastructure. This guidance should be followed to develop specific procedures in order to eliminate or otherwise minimise risks SFARP, proportionate to the risk presented by intended UAS operations.

g. handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP, eg checklists, crew coordination, monitoring during handover

h. emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. change in weather conditions that could adversely affect the UA

ii. intrusion by GP into the operational area

iii. intrusion by another airspace user into the assigned airspace

iv. any other reasonably foreseeable event that creates a hazard to GP/ MEP, critical infrastructure or other airspace users

i. emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/ MEP, ATC or other airspace users,

iii. UA ground impact.

4. RP Training and Management risk controls. RP training and management risk controls for this standard scenario should include:

a. training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises risk to GP/MEP, critical infrastructure or other airspace users

b. emergency procedure training that prepares the RP for all documented emergency procedures

c. RP qualification system that defines the requirements for training and experience

d. RP fatigue management system that defines crew requirements and restrictions on work hours

e. RP workload assessment, resource planning and procedures.

i. beyond visual line of sight

ii. outside of daylight hours

iii. in cloud or reduced visibility

iv. above 400 ft AGL

v. over or in proximity of MEP

vi. over or in proximity of vessels in the exercise area

vii. over or in proximity of critical infrastructure.

(d) **Standard Scenario for High Seas.** UAS operations under the High Seas Standard Scenario must comply with the following requirements and limitations: ▸ **GM**

GM UAS.35.D - Standard Scenario for the High Seas

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated on the High Seas (>12 nm from land) within a Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS with MTOW not exceeding 150 kg, provided that every requirement and limitation of the Standard

Scenario is met. UAS operations may include, but are not limited to, trials, training, exercises and operations.

1. Operate no closer than 12 nm to land, except for operations within 12 nm of rocks, shoals, and islands which have no permanent human inhabitants.

2. UAS MTOW must not exceed 150 kg.

3. Not operate in a Prohibited or Restricted Area unless approved by the authority controlling the area.

4. Not operate over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of the person in charge of the operation.

5. Not operate in such a manner as to create an obstruction to another aircraft.

6. Not operate in controlled airspace without approval of the relevant airspace authority.

7. Not operate in the approach or departure path of a ship's runway/landing area without approval from the relevant authority. ▸ **GM**

GM UAS.35.D(7) – Approach and Departure paths

1. Approach and departure paths are considered three dimensional airspace and UA may operate under an approach/departure path provided the UA remains well clear of other aircraft at all times. These are generally considered to extend 5 nm from the end of the runway.

8. Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group.

9. For each air vehicle, have a dedicated RP.

10. Allow RP intervention during all stages of the flight. ▸ **GM**

GM UAS.35.D(10) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

11. Employ suitable risk controls when operating: ▸ **AMC**

AMC UAS.35.D(11) – Risk Controls for the High Seas

1. Operations permitted under Standard Scenario for High Seas require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SAFARP) for Command/Group to meet their statutory obligations and for compliance with DASR.UAS.10.B.

2. **Technical risk controls.** Technical risk controls for this standard scenario should include:

   a. design features that:

      i. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-home mode

      ii. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

      iii. enable the RP to locate and avoid GP/MEP, vessels, critical infrastructure and terrain, e.g. on-board EO/IR camera

      iv. enable manual termination of flight by the RP during emergencies

      v. display remaining battery/fuel level to the RP

      vi. enable the UA to be physically seen by other airspace users, where tactics permit, e.g. lighting, hi-visibility colour scheme.

   b. inspection, maintenance and testing that could prevent technical failures of the UAS, carried out at regular intervals in accordance with documented OEM or locally produced procedures.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a. pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b. documented UA limitations, in a Flight manual or equivalent document, that provide sufficient details on:

      i. UA endurance, e.g. battery/fuel limits and performance in different flight modes

      ii. range limits of the datalink

iii. weather limitations of the UA, eg not to operate in rain, wind gusts

iv. limitations of technical risk controls, eg limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

v. any other design feature that may contribute to safe operation of the UAS.

c. planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

i. containment of the UA within the assigned airspace, eg airspace buffers

ii. de-confliction and safe separation from other airspace users

iii. co-ordination of UAS operations with other airspace users when operating as part of a military exercise or operation

iv. communication with ATC.

d. planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

i. contain the UA within the operational area, eg area buffers

ii. operate the UAS within its weather limitations, eg obtaining weather forecast, monitoring weather radar

iii. remain clear of MEP, eg operational coordination, briefing for MEP, planning of ARS routes, geo-fencing

iv. remain clear of vessels unless essential for training/operational requirement, eg detect and avoid with EO/IR data, obtaining information on vessel traffic/routes, planning of ARS routes, geo-fencing

v. remain clear of critical infrastructure, eg obtaining information for operational area, planning of ARS routes, geo-fencing setup, minimum operating altitude.

e. planning to avoid spectrum conflict and electromagnetic interference, eg coordination with relevant spectrum management authority, obtaining information on high intensity RF emitters or expected ships

f. specific procedures, documented in a local instruction, for UAS operations essential for mission/training requirements, over or in proximity of:

i. MEP

ii. vessels

iii. critical infrastructure.

NOTE: DASR AMC UAS.30.B - Authority Requirements for Issue of a UASOP, provides detailed guidance on aspects to be considered for risk assessment of UAS operations over or in proximity of populations (GP/MEP) and critical infrastructure. This guidance should be followed

to develop specific procedures in order to eliminate or otherwise minimise risks SFARP, proportionate to the risk presented by intended UAS operations.

g. specific requirements, documented in a local instruction, for risks unique to embarked UAS operations

h. handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP (eg checklists, crew coordination, monitoring during handover)

i. emergency procedures, documented in a flight manual or equivalent document, for the following events:

i. change in weather conditions that could adversely affect the UA

ii. intrusion by GP into the operational area

iii. any other reasonably foreseeable event that creates a hazard to GP, MEP, critical infrastructure or other airspace users.

j. emergency response procedures, documented in a local instruction, for the following events:

i. loss of positive control

ii. UA escape from operational area/assigned airspace, e.g. alerting GP/ MEP, other airspace users, ATC

iii. UA ship/vessel impact.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a. training that prepares the RP to:

i. perform the required action/tasks for employing/programming technical risk controls

ii. perform the required pre-flight checks

iii. operate within the documented UA limitations

iv. conduct embarked UAS operations

v. operate the UA in a way that minimises risk to GP/ MEP, critical infrastructure or other airspace users.

b. emergency procedure training that prepares the RP for all documented emergency procedures.

c. RP qualification system that defines the requirements for training and experience

d. RP fatigue management system that defines crew requirements and restrictions on work hours

e. RP workload assessment, resource planning and procedures.

i. beyond visual line of sight

ii. outside of daylight hours

iii. in cloud or reduced visibility

iv. above 400 ft Above Mean Sea Level (AMSL)

v. over or in proximity of MEP

vi. over or in proximity of vessels

vii. over or in proximity of critical infrastructure.

(e) **Standard Scenario for Trials and Experimentation.** UAS operations under the Trials and Experimentation Standard Scenario must comply with the following requirements and limitations: ▸ **GM**

GM UAS.35.E – Standard Scenarios for Trials and Experimentation

1. **Purpose.** The purpose of this regulation is to provide an Authority-published Standard Scenario under which UAS may be safely operated for the purposes of Trials and Experimentation within Specific Type B category.

2. **Applicability.** This Standard Scenario may be applied to all UAS, provided that every requirement and limitation of the Scenario is met. UAS trials/experimentation may include new aircraft/platforms, variation to equipment/sensor fit, new Configuration, Role, and operating Environment (CRE), operational evaluation, and flight test. UAS operation must only be in airspace that enables the exclusion of civilian and military aircraft and in a sufficiently remote area, such that a catastrophic UAS failure is very unlikely to result in impact to a person.

1. Operate only in airspace that enables the exclusion of civilian and military aircraft, except those specifically planned as part of the trial. ▸ **GM**

GM UAS.35.E(1) – Restricted airspace

1. UAS operation is confined to airspace that enables the exclusion of civilian and military aircraft, except those specifically planned as part of the trial.

2. Generally, this would be possible only in a Restricted Area. Clearance to operate in a Restricted Area must be granted by the airspace control authority, eg range control/ safety officer.

2. Operate only over:

i. Defence Controlled Land that precludes GP access, or

ii. water where the UAS is not in the proximity of, or overhead of, GP.

3. Operate well clear of MEP, except where operation in their proximity is essential to a trial outcome. ▸ **GM**

GM UAS.35.E(3) – Separation of MEP

1. Trial and experimentation, by its nature, includes uncertainty. DASR.UAS.35.E(3) therefore requires UAS operations to be conducted well clear of MEP. This specific requirement for physical separation of MEP from the hazard (unless that impedes an essential trial outcome) is a key risk control for the uncertainty of UAS operations under this Standard Scenario. It also inherently requires the UA to be kept well clear of critical infrastructure involving MEP (noting that critical infrastructure involving GP is protected under DASR.UAS.35.E(2)).

4. Not operate in a Prohibited Area or Restricted Area unless approved by the authority controlling the area.

5. Be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group.

6. Allow RP intervention during all stages of the flight. ▸ **GM**

GM UAS.35.E(6) – Intervention by the RP

1. Intervention refers to an action, command or input by the RP to dictate the UA's flight actions. In all situations (apart from when link is lost), the RP should be able to alter the flight path of the UA or perform any other suitable actions as necessary to ensure safe flight.

7. Employ suitable risk controls when operating: ▸ **AMC**

AMC UAS.35.E(7) – Risk Controls for Trials and Experimentation

1. Operations permitted under Standard Scenario for Trials and Experimentation require suitable risk controls to treat safety risks to other airspace users, people and critical infrastructure. This AMC provides the Command/Group authorising UAS operations under this standard scenario the means to develop and/or employ suitable risk controls. These are grouped into technical, operational and RP training and management risk controls.

   NOTE: This AMC should not be interpreted as presenting a complete set of risk controls and additional controls may need to be implemented to eliminate or otherwise minimise risks So Far As is Reasonably Practicable (SFARP) for Command/Group to meet their statutory obligations and for compliance with DASR.UAS.10.B

2. **Technical risk controls.** Technical risk controls for this standard scenario should include design features that:

   a. trigger automatic flight actions upon loss of datalink, e.g. Autonomous Recovery System (ARS), Go-Home mode

   b. positively contain the UA within a pre-programmed volume, e.g. geo-fencing, tether, range limiter, programmable maximum and minimum altitude

   c. enable manual termination of flight by the RP during emergencies.

NOTE: Depending on the nature of the trial and the unique risks it presents, the need for additional technical risk controls, e.g. a fully independent flight termination system should be critically assessed.

3. **Operational risk controls.** Operational risk controls for this standard scenario should include:

   a. pre-flight checks, carried out in accordance with documented OEM or locally produced procedures, that confirm the setup/functionality of:

      i. UA airframe, control surfaces and propellers/rotor blades

      ii. UA navigation system

      iii. technical risk controls, e.g. ARS, geo-fencing, altitude and range limiter, on-board camera

      iv. any other feature/system that may contribute to safe operation of the UAS.

   b. documented UA limitations, in a Flight manual or equivalent document, that provide sufficient details on:

      i. range limits of the datalink

      ii. limitations of technical risk controls, e.g. limitations of ARS, geo-fencing, altitude and range limiter, on-board camera

      iii. any other design feature that may contribute to safe operation of the UAS.

   c. planning and procedures for intended operational airspace, documented in an ATMP or equivalent document, that enable:

      i. containment of the UA within the assigned airspace, e.g. airspace buffers

      ii. co-ordination and deconfliction of UAS operations with other airspace users when operating as part of a joint trial

      iii. communication with ATC.

   d. planning and procedures for intended operational area, documented in a local instruction, that enable the RP to:

      i. contain the UA within the operational area, eg area buffers

      ii. operate the UA in proximity of MEP, when essential to a trial outcome, e.g. operational coordination, briefing for MEP, planning of ARS routes, geo-fencing.

         NOTE: As highlighted in DASR GM UAS.35.E(3) operations in proximity of MEP are only allowed when operation in their proximity is essential to a trial outcome. Due to the uncertainty of UAS operations under this Standard Scenario, other means of

enhancing the risk control, for example limiting the number of MEP involved in the activity, providing sheltering for MEP, and so on, as part of planning and procedures for the intended operational area, should also be evaluated.

e. planning to avoid spectrum conflict and electromagnetic interference, eg coordination with relevant spectrum management authority, or RF survey for high intensity emitters

f. specific procedures, documented in a local instruction, for UAS operations involving more than one UA per RP

g. handover procedures, documented in a local instruction, that enable the RP to perform an effective handover to another RP, eg checklists, crew coordination, monitoring during handover

h. emergency procedures, documented in a flight manual or equivalent document, for the following events:

   i. intrusion by GP into the operational area

   ii. intrusion by another airspace user into the assigned airspace

   iii. any other reasonably foreseeable event that creates a hazard to GP/MEP, critical infrastructure or other airspace users.

i. emergency response procedures, documented in a local instruction, for the following events:

   i. loss of positive control

   ii. UA escape from operational area/assigned airspace, eg alerting GP/MEP, other airspace users, ATC

   iii. UA ground impact.

j. briefing for MEP covering risks unique to the trial/experiment.

   NOTE: Depending on the nature of the trial and the unique risks it presents, the need for additional operational risk controls, e.g. the requirement of a chase plane should be critically assessed.

4. **RP Training and Management risk controls.** RP training and management risk controls for this standard scenario should include:

a. training that prepares the RP to:

   i. perform the required action/tasks for employing/programming technical risk controls

   ii. perform the required pre-flight checks

   iii. operate within the documented UA limitations

iv. operate the UA in a way that minimises risk to GP/ MEP, critical infrastructure or other airspace users

v. identify and manage risks unique to the trial/experiment.

b. emergency procedure training that prepares the RP for all documented emergency procedures

c. RP qualification system that defines the requirements for training and experience.

NOTE: Depending on the nature of the trial and the unique risks it presents, the need for additional RP training and management risk controls, eg increased supervision should be critically assessed.

i. beyond visual line of sight

ii. outside of daylight hours

iii. in cloud or reduced visibility

iv. above 400 ft AGL

v. in proximity of MEP

vi. more than one UA per RP.

UAS.40 - OPEN CATEGORY UAS

(a) Micro, Very Small and Small UAS shall only be eligible for operation under Open Category if they comply with the requirements and limitations contained in the following Standard Operating Conditions: ▸ **GM** ▸ **AMC**

AMC UAS.40.A - Operations under Open Category (AUS)

1. DASR.UAS.40.A presents explicit UAS weights (referring to Maximum Take-Off Weight (MTOW) and limitations on use). Where any of these limitations are exceeded, UAS operations under Open category are not permitted.

GM UAS.40.A - Open Category (AUS)

1. **Purpose.** The purpose of this regulation is to permit the operation of Open category UAS without the need for Authority approval.

2. Where 'AGL' is used, this can also be read as 'Above Mean Sea Level (AMSL)' for UAS operations over water.

3. The MTOW and limitations applied in DASR UAS.40.A intentionally mirror those of CASA. This promotes a common approach to small UAS regulation across the Australian aerospace sector. Given Defence is increasing its use of civilian UAS service providers, eg E&IG engaging civilian UAS Operators for facilities inspections, the use of common regulations promotes a seamless approach.

4. The following departures from CASA regulations have been included in DASR UAS.40.A:

a. CASA's 'landowner' provision has been modified, whereby land controlled by Defence is considered equivalent to a landowner under CASA regulations. This applies equally to the 'waterspace' in an exclusion zone immediately surrounding a naval vessel.

b. CASA's preclusion of very small UAS operations within 3 nm (5.5 km) of a controlled aerodrome under Civil Aviation Safety Regulation (CASR) Part 101 Excluded Category has been moderated. Since some Defence Bases encompass a Defence controlled aerodrome and some Defence Bases are within 3 nm (5.5 km) of a civilian controlled aerodrome, it makes sense for certain UAS operations within these areas to be approved by the relevant airspace authorities.

c. CASA's preclusion of operating in a prohibited or restricted (RA3) areas has been moderated. As many of these areas are restricted due to Defence operations, and are under Defence control, it makes sense for certain UAS operations within these areas to be approved by the authority in control of the area.

d. While CASA does not require RP training or qualifications under their CASR Part 101 Excluded UAS regulation, this was not considered sufficient for the professional nature of Defence UAS operation.

e. CASA's requirement to hold relevant aeronautical radio qualifications for small UAS operations in controlled airspace, which may include some Defence bases, has been moderated. When obtaining approval from the relevant airspace authority, any requirements for airspace access would be negotiated.

1. **Micro UAS (< 0.1 kg) must:**

   i. be operated within visual line of sight

   ii. be operated no higher than 400 ft above ground level (AGL)

   iii. be operated during daytime and not in cloud

   iv. not operate in a way that creates a hazard to another aircraft, person or critical infrastructure

   v. not operate in a Prohibited Area, or a Restricted Area unless approved by the authority controlling the area

   vi. not operate in the movement area or the approach or departure path of a runway of an aerodrome/ship without approval from the relevant authority

   vii. not operate in such a manner as to create an obstruction to an aircraft

   viii. be controlled by a RP who meets training, qualification and experience requirements defined by the relevant Command/Group ▸ **AMC**

AMC UAS.40.A(1)(viii) - RP Qualifications (AUS)

1. The relevant Command/Group retains the accountability for ensuring that RPs of UAS operating within the Open category are trained to a standard so that that risks to people and critical infrastructure are eliminated or otherwise minimised as far as is reasonably practicable. This approach provides flexibility to Command/Groups in ensuring Open category UAS are controlled by suitably qualified personnel without placing undue limitations on the Command/Group ability to conduct tasking.

2. The training standard for commercial civilian UAS RPs may provide the Command/ Group with a useful benchmark.

ix. allow RP intervention during all stages of the flight

x. be registered in accordance with DASR UAS.10.D.

2. **Very Small UAS (0.1–2 kg), in addition to the requirements and limitations for Micro UAS, must:**

i. not be operated within 30 m of the GP

ii. not operate over populous areas

iii. not operate within 3 nm (5.5 km) of the movement area of a controlled aerodrome without approval of the relevant airspace authority ▸ **AMC**

AMC UAS.40.A(2)(iii) - UAS Operations near controlled aerodromes (AUS)

1. For civilian controlled aerodromes, permission must be obtained from the air traffic control service for the aerodrome.

2. For military controlled aerodromes, standing permissions should be sought where practicable and written approval must be obtained from the Senior Air Traffic Control Officer (SATCO) which includes:

a. details of the UAS

b. the operating unit

c. how the UAS operations will interact safely with other aviation activity

d. provision for the Air Traffic Service (ATS) provider to suspend UAS operations for safety reasons

e. the Command/Group position responsible for ensuring each RP abides by the requirements/limitations imposed by the SATCO.

iv. not operate over an area where a fire, police or other public safety or emergency operation is being conducted without approval of the person in charge of the operation

v. for each air vehicle, have a dedicated RP.

3. **Small UAS (2–25 kg), in addition to the requirements and limitations for Very Small UAS, must:**

i. only operate over land/water controlled by Defence

ii. not operate in controlled airspace without approval of the relevant airspace authority.

UAS.50 - WEAPONISATION AND CARRIAGE OF PASSENGERS

(a) Integration of weapons onto Defence UAS must require approval by the Authority. ▸ **GM**

GM UAS.50.A - Weaponised UAS (AUS)

The Authority has determined that any form of ordnance adopted/included/attached to a Defence owned or operated UAS for the purposes of applying a kinetic effect to personnel and/or equipment, is to be classified as 'Weaponisation' under DASR.

1. **Purpose.** The purpose of this regulation is to provide additional safety assurance as to the Airworthiness and Operational considerations of a UAS determined to be classified as Weaponised. It does not aim to prescribe any limitations on a Commander's decision of when or how to employ those weapons once approved by the Authority.

2. A weaponised UAS may only operate under a Certified or Specific Type A category UAS, after gaining specific Authority approval. The mitigation of risks in support of any application for the Weaponisation of a UAS should consider:

   a. Any undue exposure of MEP or the GP to hazards

   b. Possible impacts to Airworthiness of the platform as a consequence of subsequent weapon release and/or separation

   c. Hazards identified during launch/recovery and/or flight loads of the UAS/Weapon combination

   d. Accuracy, integrity, availability and continuity of service of targeting applications upon the deploying of the weapon system, including any latency of the command and control link

   e. Sufficient coverage within OIP of the likely risk profiles associated with the application and/or intended mission of the UAS to aid the RP

   f. Safety requirements with the use of any laser technology.

      NOTE 1: Any safety risks applicable with the adoption of laser technology to the UAS will require alternative assessment and Command/Group authorisation to operate safely. Normal Defence procedures for laser safety clearances apply as per the Defence Radiation Safety Manual.

      NOTE 2: The use of smoke, flares, and methods of illumination utilised for Search and Rescue purposes should not be classified as weapons. The Command/Group remains responsible for ensuring that anything dropped or discharged from a UAS does not pose any undue risk. This

includes ensuring the adequate safe carriage of stores to prevent unintentional release and/or discharge of those stores.

(b) Carriage of persons on Defence UAS shall require approval by the Authority. ▸ **GM**

GM UAS.50.B - Carriage of Persons (AUS)

1. **Purpose.** The purpose of this regulation is to provide additional safety assurance through Authority oversight of the airworthiness and operations elements of UAS that are intended for carriage of persons.

2. Airworthiness and operations requirements for a UAS that will also carry persons will be determined on a case-by-case basis. For discretionary UAS operations, the level of safety presented by crewed aircraft airworthiness and operations regulations would normally be used by the Authority as a benchmark. For UAS operations where the carriage of personnel on a UAS reduces total mission risk, for example SAR or battlefield medical evacuation, airworthiness and operations requirements would be derived through Authority and the Command/Group consultation.

UAS.60 - OCCURRENCE REPORTING

(a) The operator of a UAS must report any identified UAS aviation safety event. ▸ **GM** ▸ **AMC**

AMC UAS.60.A - Occurrence Reporting (AUS)

1. UAS aviation safety events and issues should be reported by the operator of a UAS in accordance with the Defence Aviation Safety Manual (DASM).

GM UAS.60.A - Occurrence Reporting (AUS)

1. **Purpose.** Enhanced UAS safety and accident prevention will only be possible if information related to UAS aviation safety events and issues is available in sufficient quantity and quality, from a broad range of UAS settings in a protected and comparable format. Full, open, timely and accurate reporting of information related to UAS aviation safety events and issues allows Defence to respond to information received and apply corrections to prevent future reoccurrence of such events and issues. This regulation requires the operators of UAS to ensure reporting requirements are completed pertaining to UAS related aviation safety events and issues.

(b) The operator of a UAS under any one of the following UAS categories must report any identified UAS aviation safety issue:

1. **Certified.**

2. **Specific Type A.** The Authority will define the minimum reporting requirements as part of the UASOP approval process.

UAS.70 - SUPPORT OF AUTHORITY COMPLIANCE ASSURANCE

(a) Upon request, all data and access to support initial and on-going compliance assurance of UAS operations must be made available to the Authority. ▸ **GM**

GM UAS.70.A - Support for Authority Compliance Assurance (AUS)

1. **Purpose.** The purpose of this regulation is to provide the Authority with access to data and facilities, required for safety assurance activities.

2. The regulated community must regularly, and at any time on request from the Authority, provide to the Authority all data and access that will support the Authority undertaking, reviewing, monitoring and updating its Assurance functions. The Authority may from time to time request data as part of its safety assurance compliance and audit roles and in its administration of independent reviews such as Airworthiness Boards. The notification period for requesting data will be similar to that for safety assurance of crewed aircraft; however, the data required will be commensurate to the complexity of relevant UAS operations.

3. The UAS Operator shall ensure arrangements are in place to allow the Authority to carry out any investigation, including investigation of partners or subcontractors, considered necessary to determine compliance and continued compliance with the applicable requirements of DASR.UAS.

UAS.80 - FOREIGN UAS OPERATIONS

(a) Foreign military UAS must have authorisation from an organisation within Defence prior to conducting flight operations in Australian airspace. ▸ **GM**

GM UAS.80.A - Authorisation of Foreign Military UAS Operations (AUS)

1. **Purpose.** The purpose of this regulation is to require Defence to be aware of foreign military UAS operating in Australian airspace, and apply appropriate safety controls.

2. Foreign UAS Operators are not subject to the DASR. However, a sponsor may require the foreign UAS Operator to operate in accordance with DASR provisions. Foreign UAS Operators are obliged to protect the safety of Australian airspace users and persons/ critical infrastructure.

3. For a foreign military UAS to operate in Australia, it must be sponsored by an organisation within Defence. It is the responsibility of that sponsor to ensure the foreign military understands Australian statutory safety responsibilities, and for ensuring the safety of the proposed UAS operations.

4. The level of safety implicit in DASR.UAS provides a suitable benchmark for the sponsor to execute their responsibilities. That is, a sponsor could identify which UAS category an equivalent Defence UAS would operate within, and use this equivalent Categorisation as a basis for assessing the foreign UAS Operator's risk controls. For example, where a foreign UAS operation is within the scope of a Specific category Standard Scenario, or within scope of the Open category, the sponsor could reasonably confirm each of the inherent risk controls for those categories has been implemented.

5. To assist in the above assessment, the sponsor could request relevant information from the foreign UAS Operator, including:

   a. evidence and details of similar categorisation and approvals from another CAA or MAA

   b. full disclosure of the scope of proposed UAS operations in Australia

   c. information on operational conditions and limitations placed on the UAS operations

   d. confirmation that the RP has the skills commensurate with proposed airspace operations

   e. any relevant risk assessments produced by the foreign UAS Operator

   f. other documentation to assist the sponsor in drawing equivalence with DASR.UAS.

6. Where the scope of foreign UAS operations is commensurate with a Defence Specific category Type A UAS (and therefore, if this was a Defence UAS, it would require Authority issue of a UASOP), the sponsor assessment can become complex. The Authority cannot provide an approval for the operation unless the foreign UAS Operator has agreed to be subject to DASR. However, the DASA may be approached for SME advice.

7. Foreign militaries seeking to operate aircraft (in this paragraph, meaning crewed and uncrewed) in Australian airspace may require additional clearances that are separate to this regulation. Diplomatic approvals for foreign military or government aircraft are managed by the Diplomatic Clearance Cell within the Air and Space Operations Centre. Agencies involved in such clearances include the Department of Foreign Affairs and Trade. Foreign military flight operations within Australian airspace should be planned with an Australian Defence aviation command or HQJOC. A diplomatic clearance would normally be required for foreign military UAS operating outside of Defence areas.

(b) The organisation within Defence sponsoring the foreign military UAS must ensure the risks to other airspace users and persons/critical infrastructure are eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP). ▸ **GM**

GM UAS.80.B - Risk Management of Foreign Military UAS Operations (AUS)

1. **Purpose.** The purpose of this regulation is to promote compliance by foreign UAS Operators and RP with Australian safety requirements, legislated in the Work Health and Safety (WHS) Act 2011, and reinforce that this compliance is to be ensured through the organisation in Defence sponsoring the foreign UAS Operator.

2. The risk presented by foreign UAS to other airspace users (both Defence and civilian) or persons/critical infrastructure on the ground or water (both GP and MEP) must be eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP).

Glossary Of Terms

Definitions with no superscript have been sourced directly from the European Military Airworthiness Document (EMAD 1). Those definitions and terminologies with a superscript * are DASP specific and have been derived or contextualised for Australian use by the Defence Aviation Safety Authority (DASA).

2D Approach Operation *

An approach conducted by reference to instrument displays that provide lateral (directional) navigation information. This includes all Non-Precision Approaches (NPA) flown without requiring reference to vertical navigation guidance.

3D Approach Operation *

An approach conducted by reference to instrument displays that provide both lateral (directional) and vertical navigation information. This includes all Precision Approaches (PA) and Approach Procedures with Vertical guidance (APV) using Satellite Based Augmentation System (SBAS) or Barometric Vertical Navigation (Baro-VNAV). A 3D approach operation is characterised by a Decision Altitude (DA) and does not have a Missed Approach Point.

Above Obstacles (AO) *

The vertical distance between an aircraft and the highest obstacle on the terrain or water surface.

Acceptable Means Of Compliance (AMC) *

Information published by DASA to identify a means of meeting one or more requirements of the DASR. Regulated entities are not required to comply with AMC and may instead propose an Alternative Means of Compliance (AltMoC) to DASA. Any such proposal will be subject to separate assessment by DASA to determine whether the approach is compliant with the DASR.

Acceptance Test And Evaluation (AT&E) *

An acceptance function used by Defence to verify that a system complies with the defined acceptance requirements. AT&E is used to establish specification compliance and verify airworthiness.

Accountable Manager (AM) *

Person designated by the Approved Organisation, and identified in the Organisation Exposition or Compliance Statement, who is accountable for maintaining safety standards required by relevant DASR and any additional standards specified. Typically, this is a key figure who has influence within the organisation and the ability to make appropriate resource decisions.

ACD Equipment*

Equipment employed in ACD via Airdrop, Airland and External Lift on transport or rotary wing Aircraft; including ADE, pallets, restraint devices, chains, straps, nets and loading devices.

Adequate Aerodrome *

An aerodrome on which an aircraft can be operated, taking account of the applicable performance requirements, runway characteristics and other relevant support facilities and services.

ADF Cadets *

A collective reference to the three cadet organisations, namely, the Australian Navy Cadets, Australian Army Cadets and Australian Air Force Cadets (Defence Act 1903, section 62).

Advisory Circular (AC) *

A document issued by the Authority to promulgate important information to the Defence Aviation regulated community but does not mandate any action.

Advisory Material

Material that provides interpretation of technical airworthiness requirements and standards to assist in understanding and implementation. It also provides guidance on methods and procedures that are in compliance with technical airworthiness requirements and standards. Advisory material, including the described methods and procedures, is not mandatory and organisations may choose to follow other means of demonstrating compliance.

Aerial Delivery *

The process of dispatching cargo or stores from an operating aircraft in flight.

Aerial Delivery Equipment

Equipment employed on transport or rotary wing Aircraft in the aerial delivery of materiel; including slings, platforms, containers, parachutes, rigging materials, cloths, cords, tapes, threads and webbing (Note: Aerial delivery equipment does not include equipment employed in the aerial delivery of personnel).

Aerodrome (AD) *

A defined area on land or water (including any buildings, installations, and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of fixed wing and rotary wing aircraft.

Aerodrome Apron Areas *

The surfaces intended to accommodate aircraft for purposes of loading or unloading air cargo, passengers, fuelling, parking or maintenance, excluding hangars.

Aerodrome Certificate *

A certificate granted to an Aerodrome Operator by the Authority under DASR 139 that certifies the aerodrome meets the technical specifications outlined in its certification basis.

Aerodrome Manager (ADM) *

The representative of the Aerodrome Operator, responsible for ensuring:

a. a Certified Aerodrome continues to maintain its certified status; and

b. for non-certified aerodromes, the aerodrome is safe and fit-for-purpose as required.

Aerodrome Manoeuvring Areas *

The surfaces of the aerodrome used for the take-off, landing, and taxiing of aircraft, excluding aprons.

Aerodrome Movement Areas *

A term describing the combined manoeuvring areas and apron areas, excluding hangars.

Aerodrome Operator (AD OPR) *

The Defence organisation accountable for the overall safe operations of a Defence Aerodrome.

Aerodrome Rescue And Fire Fighting (ARFF) *

A service whose principal objective is the preservation of life and materiel in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome.

Aeronautical Information *

Information and other required data necessary for the safety and efficiency of air navigation.

Aeronautical Life Support Equipment (ALSE) *

Safety or mission equipment to be carried or worn by crew or passengers when operating aircraft in a military configuration, role or environment.

Aeronautical Product *

Includes type-certificated or restricted type-certificated aircraft, engines, propellers and AUSMTSO approved Auxiliary Power Units (APU).

Aeroplane *

A power-driven heavier-than-air aircraft deriving its lift in flight chiefly from aerodynamic reactions on surfaces remaining fixed under given conditions of flight, but does not include a power-assisted sailplane.

Air Battle Management (ABM)*

The control of military air operations that may include the control and coordination of integrated air and missile defence, offensive counter-air, strategic attack, close air support and other warfighting or supporting air activities.

Air Battle Management Operations (ABMOps)*

Those ABM operations provided to military operations as defined in the Air Battle Management Operator Certificate (ABMOC) and the accompanying Operations Specification (OpSpec).

Air Battle Management Operator (ABMO)*

A generic term for an organisation certified by a Military Aviation Authority (MAA) to conduct Air Battle Management.

Air Battle Management Operator Certificate (ABMOC)*

A certificate issued by DASA to authorise an Air Battle Management Operator (ABMO) to provide Air Battle Management Operations (ABMOps) as defined in the accompanying Operations Specification (OpSpec) and in accordance with DASR.

Air Capable Ship *

A sea based facility from which aircraft can take-off, be recovered, or routinely receive and transfer logistic support.

Air Cargo Delivery (ACD)*

A process that involves the loading (including the preparation, composition, configuration, placement and restraint) of air cargo, whatever it may be (including Passengers, freight, paratroopers, animals and EO materials) and the subsequent unloading of that air cargo—either on the ground, surface or while in the air. ACD includes Airland, Airdrop and External Lift.

Air Cargo Delivery Service Provider (ACDSP)*

An organisation approved by DASA to provide an Air Cargo Delivery (ACD) service to a defined scope.

Air Cargo Delivery Service Provider Certificate (ACDSPC)*

A certificate issued by DG DASA to authorise an Air Cargo Delivery Service Provider (ACDSP) to provide Air Cargo Delivery (ACD) Services as defined in the accompanying Operations Specification (OpSpec) and in accordance with DASR ACD.

Air Force Interoperability Council (AFIC) *

An international organisation which provides a framework for the air forces of Australia, Canada, New Zealand, United Kingdom and United States to work collaboratively to enhance coalition expeditionary air and space interoperability.

Air Navigation Service Provider Certificate *

A certificate issued by the Defence AA to authorise an Air Navigation Service Provider (ANSP) to provide Air Navigation Services (ANS) as defined in the accompanying Service Provision Conditions (SPC) and in accordance with DASR.

Air Navigation Services (ANS) *

Those services provided to air traffic during all phases of operations (approach, aerodrome and en route). Under DASR, ANS includes air traffic management (ATM), meteorological services for air navigation (MET) and aeronautical information services (AIS).

Air Navigation Services Provider (ANSP) *

A generic term for an organisation certified by a National Aviation Authority (NAA) and / or a Military Aviation Authority (MAA) to provide an Air Navigation Service.

Air Operator Certificate (AOC) *

A certificate granted by a National Aviation Authority permitting the conduct of commercial flying activities.

Air Traffic Advisory (ATA) *

An ATS subcategory provided within advisory airspace to help ensure separation, in so far as is reasonably practicable (SFARP), between aircraft through the provision of advisory information that may be used by pilots to avoid collision with other aircraft.

Air Traffic Control (ATC) *

A service provided for the purpose of:

a. preventing collisions between aircraft

b. on the manoeuvring area, preventing collisions between aircraft and obstructions

c. expediting and maintaining an orderly flow of air traffic.

Air Traffic Management (ATM) *

A generic term encompassing the dynamic, integrated management of air traffic and airspace in a safe, economical and efficient manner through the provision of facilities and seamless services in collaboration with all parties involving airborne and ground-based functions. Under DASR the two subsets of ATM are Air Traffic Control (ATC) and Communications, Navigation and Surveillance (CNS).

Air Traffic Management Plan (ATMP) *

A plan that outlines the systems and processes that will be used to ensure the safe operation of Uncrewed Aircraft Systems (UAS) in conjunction with other air traffic.

Air Traffic Service (ATS) *

A generic term meaning (variously), flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service) and battlefield airspace control.

Air Vehicle Operator (AVO) *

A qualification awarded to a trained and competent individual who controls a Certified, Specific or Open Category UAS during flight time.

Aircraft *

Any machine or craft, including an uncrewed machine or an uncrewed craft, that can derive support in the atmosphere from the reaction of air, other than reactions of the air against the earth's surface (Civil Aviation Act 1988, section 3).

Aircraft Altitude *

The vertical distance above mean sea level as indicated by an externally sourced altimeter set to either QNH (atmospheric pressure adjusted to sea level) or standard pressure of 1013.2 millibars, as appropriate to the procedures being used.

Aircraft Captain *

A pilot designated as being in command and charged with the safe and effective conduct of the aircraft during flight. Analogous with the civil term 'pilot–in–command'.

Aircraft Controller *

A generic term used by aviation medicine describing those specialist personnel who may issue control or advisory information to aircraft that the pilot may base flight decisions upon.

Aircraft Flight Manual (AFM)

A manual, associated with Military Type Certificate, containing limitations within which aircraft is to be considered airworthy, and instructions and information necessary to the flight crew for the safe operation of the aircraft.

Aircraft Maintenance Programme

A document which describes or incorporates by reference the specific scheduled maintenance tasks and their frequency of completion, the associated maintenance procedures and related maintenance standards and practices necessary to preserve the airworthiness of those aircraft to which it applies.

Aircraft Oxygen System *

A means to store and supply aviators’ breathing oxygen.

Aircraft Stores *

Any devices, excluding air cargo, intended for internal or external carriage and mounted on aircraft suspension and release equipment, whether or not the items are intended to be separated in flight from the aircraft. Aircraft Stores include missiles, rockets, bombs, mines, torpedoes, gun ammunition, grenades, pyrotechnic devices, sonobuoys, signal underwater sound devices, fuel and spray tanks, dispensers, pods (refuelling, thrust augmentation, gun, electronic countermeasures, etc), targets, chaff and flares from countermeasures dispensing systems, and suspension equipment (racks and pylons).

Aircrew *

A generic term describing personnel whose primary duties are conducted within the confines of an aircraft during flight time. Aircrew are deemed passengers unless authorised as crew or as a mission essential passenger for the specific aviation mission.

Aircrew Instructor *

A generic term describing a crew member who is qualified and authorised to deliver instruction in the airborne simulated or airborne environment.

Airdrop

Delivery of personnel or cargo from Aircraft in Flight.

Airland

The delivery of personnel, materiel or forces from an Aircraft after it has landed.

Airside *

The movement area and other facilities or zones on the aerodrome vital to the safe operation of aircraft and the personnel working with those aircraft.

Airside Breach *

Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person beyond the designated airside protected area.

Airspace *

The zone next to the earth consisting of atmosphere capable of sustaining flight.

Airspace Management *

The design, allocation, integration, and regulation of airspace, including the application of airspace usage procedures to ensure the airspace is appropriate for the mission or activity.

Airworthiness

The ability of an aircraft, or other airborne equipment or system, to operate in flight and on ground without significant hazard to aircrew, ground-crew, passengers (where relevant) or to other third parties.

Airworthiness Board (AwB) *

An independent board of review appointed by the Defence AA to advise and make recommendations on airworthiness certification and to review the in-service management of Aviation Systems.

Airworthiness Codes

Product airworthiness requirements, applicable to the design of a product, that are approved by a competent airworthiness authority for the use with standardised aircraft categories Examples

include, but not limited to EASA Certification Specifications (CS), FAA Federal Aviation Regulations (FAR) and Standardisation Agreements (STANAG) and Defence Standards (DEF STAN).

Airworthiness Directive (AD)

A document issued or adopted by the Authority which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised.

Airworthiness Limitation (AwL) *

An item arising from the certification process that has been shown to have failure mode(s) associated with an unsafe condition. The terms Airworthiness Limitation Item or Airworthiness Limitation Instruction are also used in certain sections of the implementing regulations.

Airworthiness Standards *

Detailed and comprehensive design and safety criteria applicable to the category of aeronautical product (aircraft, engine or propeller).

Alerting Service *

An ATS subcategory provided to notify appropriate organizations regarding aircraft in need of search and rescue aid, and assist such organisations as required.

Alternative Means Of Compliance (AltMoC) *

An alternative to an Acceptable Means of Compliance or a means of complying with a requirement for which no AMC exists. The entity proposing the AltMoC must demonstrate to DASA that it satisfies the regulation.

Application Identifier (AI) *

The A or N prefix of the Australian military aircraft registration number. For example, A41 for C–17 Globemaster III, N48 for MH–60R Seahawk.

Approval To Operate (ATO) *

Authorisation to operate a non-Defence registered aircraft.

Approved Organisation

That which has been assessed by the Authority and deemed to meet their applicable regulations or requirements.

Area Navigation (RNAV)

Method of navigation that permits aircraft operation on any desired flight path within the coverage of ground-based or spaced-based navigation aids or within the limits of the capability of self-contained aids, or a combination of these.

Note: *Area navigation includes PBN as well as other operations that do not meet the definition of PBN.*

Area Safe Height (ASH)*

The lowest altitude which will provide safe terrain clearance within a defined area.

Artefact

An airworthiness related document, either hardcopy or electronic, that can be used as evidence in making an airworthiness judgement.

Authorised Maintenance Data *

Those instructions, approved for use by the responsible Authority, required to retain aircraft and aircraft-related equipment in an airworthy condition. These instructions include, but are not limited to, maintenance manuals, technical maintenance plans, servicing schedules, component lifing policies and inspection programs.

Autonomous Aircraft *

An uncrewed aircraft that does not require pilot intervention in the management of flight.

Autonomous Operation *

An operation during which an uncrewed aircraft is operating without pilot intervention in the management of flight.

Aviation Fatigue Management (AVFM) *

The management of fatigue in a manner appropriate to the level of risk exposure and the nature of the task or operation, in order to minimise the adverse effects of fatigue on safety during those activities.

Aviation Medical Certificate *

A document provided by an AVMO attesting to the medical fitness of a person to conduct flying related duties.

Aviation Medical Officer (AVMO) *

A medical practitioner who is recognised by Surgeon General–ADF as being appropriately trained and authorised to provide aviation medicine support to Defence Aviation.

Aviation Medicine (AVMED) *

The component of military medicine that is concerned with the interaction between the aerospace environment and human physiology, psychology and pathology.

Aviation Physiology Training Officer (APTO) *

A person who is recognised by a Single Service Aviation Medical Advisor (SSAMA) as being appropriately trained and authorised to provide supplemental aviation medicine training support.

Aviation Safety *

A state in which risks to personnel arising from aircraft operations are eliminated or otherwise minimised so far as is reasonably practicable through a continuing process of hazard identification and safety risk management.

Aviation Safety Acquisition Management Plan (ASAMP) *

A document that describes the safety strategy to introduce an aircraft type into Defence service. May include the safety strategy to achieve airworthiness, manage flight operations, and achieve broader capability/logistics milestones

Aviation Safety Event *

Any event where an aviation system (including the human element) fails to perform in the expected manner and, adversely affects, or could adversely affect, the safety or airworthiness of an aviation system or third party.

Aviation Safety Issue *

A characteristic of an organisation or a system that can reasonably be regarded as having the potential to adversely affect the safe operation of an aircraft, aviation-related equipment or products and services.

Aviation Safety Management (ASM) *

A function integral to safe flying operations and requires processes and procedures to ensure competence of commanders and all personnel associated with flying operations, adherence to authorised orders and instructions, promotion of and maintenance of high levels of aviation safety awareness, and systematic evaluation and management of risk in operations.

Aviation Safety Management System (ASMS) *

A systematic approach to managing aviation safety, including the necessary organisational structures, accountabilities, policies and procedures. Reference to SMS in DASR means ASMS unless expressly stated to the contrary.

Aviation Support System (AvSS) *

The systems or services that are Defence-owned or are operated exclusively for or on behalf of Defence, have a functional or physical interface with aircraft, and have the potential to compromise suitability for flight.

Aviation Support System Certificate (AvSSC) *

A document that confirms an AvSS has been designed, constructed, and can be maintained and operated for its intended purpose (similar to the MTC for aircraft).

Aviation Support System Management Plan (AvSSMP) *

Intended to capture the scope and requirements of an AvSS over its lifecycle.

Aviation System *

The integration of equipment, personnel, organisation, publications and procedures to achieve an aviation role. Aviation systems include: Defence registered aircraft types, non-Defence registered aircraft types, Uncrewed Aircraft Systems (UAS) and Aviation Support Systems (AvSS).

Base Maintenance

Maintenance tasks falling outside the criteria for Line Maintenance.

Basic Aircrew Qualification *

The qualification aircrew are awarded upon becoming Type Rated.

Basic Flight Trainer (BFT) *

A device, which does not meet the requirements for categorisation as a Flight Simulator / Flight Simulator Training Device, approved for the purpose of permitting experience acquired therein to be credited towards meeting a sub-set of requirements for aircrew qualification, categorisation or currency.

Basic Regulation

The DASR Basic Regulation was withdrawn on 01 September 2022. Its purpose was to establish a framework for the definition and implementation of common safety requirements and administrative procedures in the field of military aviation.

Battlefield Airspace Control (BAC) *

An Air Traffic Service (ATS) subcategory provided in assigned airspace that supports the air, land or amphibious scheme of manoeuvre by providing airspace management, coordination and de–confliction of joint fires and effects in that airspace in order to facilitate safe and efficient access to airspace through a combination of coordination with adjoining civil/military agencies and through the application of both procedural and positive control methods.

Cabin Altitude *

The pressure altitude inside the pressure hull of the aircraft and as indicated on a ‘cabin altimeter’.

Category Assessor *

An experienced aircrew member who is qualified and authorised for the purpose of operational training and assessment of other aircrew within the same Basic Aircrew Qualification.

Certificate Of Airworthiness (CoA) *

A certificate issued to aircraft which conform to a type certificate that has been issued in accordance with DASR.21 (or if appropriate and if national regulations allow, based upon a Civil Type Certificate issued by a recognised Civil Authority.

Certificate Of Release To Service (CRS)

This is a statement, signed by an appropriately authorised person, on behalf of an approved organisation, which asserts that maintenance has been properly carried-out.

Certification

Recognition that a product, part or appliance, organisation or person complies with the applicable airworthiness requirements followed by the declaration of compliance.

Certification Maintenance Requirements (CMR) *

Scheduled maintenance that is required by the design to help show compliance with the appropriate type certification basis by detecting the presence of a safety-significant latent failure that would result in a hazardous or catastrophic failure condition.

Certification Privileges *

The authority to issue a Certificate of Release to Service (CRS). Where on-aircraft maintenance has occurred, the CRS must be issued by the holder of a relevant MAML. Component certifying staff must be authorised by the maintenance organisation on the basis of appropriate competence, training and experience in accordance with a procedure(s) contained in the MOE. Individuals issuing a CRS for components are not required to hold a MAML.

Certified Aerodrome *

An aerodrome in respect of which an aerodrome certificate is in force.

Certified Life Limit For Components *

Specified life limit after which the components should be retired.

Certifying Staff

Personnel responsible for the release of an aircraft or a component after production and/or maintenance.

Charter *

The commercial renting of a complete aircraft, crew and maintenance system for tasking undertaken within the bounds of a legally binding contract.

Check Captain *

An experienced Aircraft Captain who is qualified and authorised for the purpose of assessing operational flying skills of other pilots.

Chief Executive Officer (CEO)

Person who is responsible for a civil company within which the Approved Organisation operates. The CEO may report to a board of directors and may appoint other managers, or they may be one of very few people in a small company. In relation to EMAR/DASR, the CEO is mentioned as they may be senior to the Accountable Manager.

Civil Aviation Authority (CAA)*

The governmental entity or entities, however titled, that are directly responsible for the regulation of all aspects of civil air transport, technical (i.e. air navigation and aviation safety) and economic (i.e. the commercial aspects of air transport). Source: ICAO Doc 9734 Safety Oversight Manual Part A.

Civil Register *

The CASA-maintained Australian civil aircraft register. Aircraft on this register are referred to as civil registered aircraft and will be appropriately marked with a 'VH' registration (e.g. VH-ABC). This may be extended to include similar registers maintained by other NAA.

Civil Registered Aircraft *

An aircraft that is registered by a National Airworthiness Authority.

Cockpit Voice Recorder (CVR) *

A device that uses a combination of microphones and other audio and digital inputs to collect and record the aural environment of the cockpit and communications to, from and between the flight crew members.

Command And Control (C2) Link (UAS Context) *

The data link between a remotely piloted aircraft and a remote pilot station for the purposes of managing flight.

Command Clearance *

An approval to deviate from an aviation system's approved configuration, role, environment, limitation or condition, when mission requirements cannot be achieved otherwise.

Competency *

The capacity of an individual to effectively and safely complete a task consistently, to a required standard of performance, through the application of appropriate skills, knowledge and attitude.

Compliance Demonstration

Activities to demonstrate that the product, part or appliance complies with the requirements in the Certification Basis.

Component Maintenance Manual (CMM)

A formal document which details the way in which off-aircraft maintenance instructions on the specified component shall be accomplished.

Concern (Independent Board Of Review) *

A review finding which identifies a critical aviation safety issue that requires immediate action, and if not resolved by a specified date, will highly likely result in the limitation or withdrawal of aviation safety Instruments.

Configuration *

The functional and physical characteristics of existing or planned hardware, firmware, software or a combination thereof, as set forth in technical documentation (which includes specifications, standards and drawings) and ultimately achieved in a product.

Configuration Control

A systematic process that ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.

Configuration Item (CI)

Any component, module, sub-component, equipment, technical manuals, software, ground support equipment, which can be submitted to the configuration control process.

Configuration Management

A management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design and operational information throughout its life.

Configuration, Role And Operating Environment (CRE) *

The configuration (functional and physical characteristics), role (warfighting function) and environment (physical and meteorological conditions); as specified in an aviation system's Statement of Operating Intent and Usage (SOIU).

Consequence *

The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain.

Contemporary Crash Protection Design Requirement (CCPDR) *

Design requirements prescribed by a National Aviation Authority (NAA) and /or a Military Aviation Authority (MAA), which form the basis to certify the aircraft Type.

Continued (Design) Airworthiness

All tasks to be carried-out to verify that the conditions under which a type- certificate or a supplemental type-certificate has been granted continue to be fulfilled at any time during its period of validity.

Continuing Airworthiness

All of the processes ensuring that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.

Continuing Airworthiness Management Organisation (CAMO) *

Organisation approved by the Authority that ensures on behalf of the Military Air Operator (MAO), that each aircraft they manage is of the approved configuration available to meet the intended purpose and safe to fly.

Continuing Airworthiness Manager (CAM) *

Person designated by the MAO Accountable Manager to be responsible for the management and supervision of MAO continuing airworthiness activities.

Co–Pilot *

A pilot qualified and authorised to manipulate the flight controls of an aircraft during flight under the command of an Aircraft Captain.

Corrective Maintenance *

Those maintenance tasks necessary to restore items to a specified condition or to restore them to serviceability after failure.

Crash Protection (CP) *

Requirements designed to protect occupants and improve the chances of survival, during the initial impact phase as well as subsequent evacuation and post evacuation phases of a survivable crash.

Crew *

Competent and authorised individuals, including personnel authorised to undertake aircraft type qualification training, who may operate or interface with an aircraft's systems during flight specific aviation mission, including temporary equipment installations. Crew is broken into subsets of flight crew and mission crew.

Crew Station *

A position, seated or otherwise, within an aircraft from which a crew member may perform an operational function.

Critical Design Configuration Control Limitations (CDCCL) *

These identify the critical design features such as proper wire separation, proper installation of a panel gasket, maximum acceptable bonding jumper resistance levels, etc., that must be maintained in exactly the same manner throughout the life of the aircraft in order to comply with the type certificate and maintain airworthiness. The purpose of CDCCL is to provide instructions to ensure these critical features are present throughout the life of the aircraft and are inspected and verified when alterations, repairs, or maintenance actions occur in the area.

Critical Infrastructure * (UAS Context)

A facility that, if damaged by an Uncrewed Aircraft (UA), may have an immediate and adverse effect on Mission Essential Personnel (MEP) or General Public (GP) health and safety.

Critical Parts *

Critical parts are identified by the design approval holder in accordance with the applicable Type Certification Basis requirements. Critical parts include, but are not limited to, those parts required to be identified by the following airworthiness code clauses: FAR / CS 27.602, FAR / CS 29.602, FAR 33.70 (termed engine life-limited parts), CS-E 515, FAR 35.16, CS-P 150 and CS-APU 210.

Critical Phase Of Flight *

A phase of flight determined by aircraft specific orders, instructions and publications (OIP) whereby only essential duties for the safe operation of the aircraft are permitted.

Crowd Line *

The forward edge of the area(s) intended for spectators during a Flying Display from which aircraft safety distances may be calculated.

Currency *

A prescribed period during which a qualification or skill is valid without further assessment.

Dangerous Goods *

Articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in authoritative technical instructions or which are classified according to those instructions. Dangerous goods include explosives, flammable liquids, gases, corrosives and chemically reactive or acutely (highly) toxic substances. Authoritative technical instructions include ICAO – Technical Instructions for the Safe Transport of Dangerous Goods by Air and IATA –- Dangerous Goods Regulations (DGR) Manual.

Declaration Of Compliance

A statement, signed by the Head of Design Organisation or by an authorised representative, to show compliance with all applicable type-certification basis and, where applicable, environmental protection requirements. It declares that the product is airworthy within the specific design limitations.

Decompression Illness (DCI) *

A term referring to a group of clinical conditions that may result from exposure to a change in ambient pressure.

Defect *

A fault, other than by fair wear and tear, which renders an item unsuitable for its intended use. The fault may be in design or deviation of a dimension, finish or other functional characteristic from specified requirements or from recognised standards of engineering practice.

Defence *

Civilian and Service elements of the Defence portfolio.

Defence Aircraft *

Aircraft operated by or on behalf of Defence (see also Military Aircraft).

Defence Area (DA) *

An area intended to protect public safety by giving notice of a practice, prohibiting entry to, and allowing the removal of unauthorised people, vehicles, vessels or aircraft from a DA when an authorised Defence operation or practice is in progress. DA's may also be referred to as Defence training areas and ranges.

Defence Aviation *

The design, construction, maintenance and operation of any aircraft owned, leased, hired or chartered by Defence; any aircraft operated exclusively for or on behalf of Defence; any aircraft for which CASA has placed statutory airworthiness responsibilities on Defence; and any AvSS.

Defence Aviation Authority (Defence AA) *

Appointment by the Secretary of Defence and the Chief of the Defence Force (SEC/CDF) to the Chief of Air Force (CAF) assigning accountability for the regulation and oversight of all aspects of Defence aviation.

Defence Aviation Authority Directive (DAAD) *

Directive issued by the Defence AA to promulgate immediate and binding requirements to authorise or restrict a course of action in relation to an Aviation System.

Defence Controlled Land * (UAS Context)

Land where Defence controls access by the General Public (GP), such that Defence can ensure, for example: UAS operations can be conducted which are not in the proximity of, or overhead, the GP.

Defence Employee *

A person employed in the Department of Defence under section 22 of the Public Service Act 1999.

Defence Long Range Operations (DLRO) *

Involves fixed-wing multi-engine turbine aircraft, operated by Defence, which may carry Defence personnel on long-range flights, as determined by the MAO.

Defence Member *

A person as defined in section 3 of the Defence Force Discipline Act 1982, means (1) a member of the Permanent Navy, the Regular Army or the Permanent Air Force; or (2) a member of the Reserves who is rendering continuous full-time service or is on duty or in uniform.

Defence Organisation *

The Australian Defence Force and the Department of Defence.

Defence Personnel *

In the context of DASR applicability, Defence Personnel means all Defence Employees, Defence Members, ADF Cadets and ADF Cadet Staff and foreign equivalents while serving with Defence.

Defence Register *

The Defence aircraft register maintained by DASA.

Defence Registered Aircraft *

An aircraft listed on the Defence Register.

Delegate Of The Safety Authority (DoSA) *

An individual, external to the Defence Aviation Safety Authority, who has been formally assigned an Authority responsibility and is considered an agent of the Authority when exercising that delegation. The individual may be external to Defence.

Design Change

A change in type design (described in DASR 21.A.91 - Classification of change in type design).

Detect And Avoid *

The capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action.

Developmental Test And Evaluation (DT&E) *

An engineering function used by the manufacturer, or a nominated test agency, to establish that a system complies with the design requirements.

DLRO (Defence Long Range Operations) Area Of Operations *

The area of operations, over land or water, where an aircraft's diversion time is outside of the nominated threshold time.

DLRO Benign Environment *

For the purpose of DLRO, a benign operating environment is one where military aircraft operations are largely 'civil Regular Public Transport (RPT) like'. Therefore, flight profiles will typically involve take-off, climb to altitude, cruise / loiter at altitude and a decent / hold at the nominated destination. In addition, a benign operating environment is associated with numerous DLRO aerodromes / alternates, high reliability and availability of Communication, Navigation and Surveillance (CNS) and Air Traffic Management (ATM) services.

DLRO Challenging Environment *

For the purpose of DLRO, a challenging operating environment is one where military aircraft operations are potentially conducted in a contested environment and within complex airspace. Therefore, flight profiles will typically involve low level nap of earth flight, manoeuvring and

defensive action. In addition, a challenging environment is associated with limited aerodromes / alternates and potentially reduced CNS and ATM services / facilities.

DLRO Maximum Diversion Time *

The maximum time an aircraft can fly from an adequate aerodrome, based on endurance afforded by the aircraft's most time limited system at the One Engine Inoperable (OEI) speed, in International Standard Atmosphere (ISA) still air conditions.

DLRO Significant Event *

For the purposes of DLRO, a significant event is where there is any system malfunction, degradation or other in-flight event, which requires the flight crew to make a decision to turn back, divert or continue at an increased level of alertness.

DLRO Significant System *

A propulsion system or any other aircraft system whose failure could adversely impact the safety of a DLRO flight, or whose function is required for continued safe flight and landing.

DLRO Threshold Time *

A 'threshold time' is the maximum flight time to an adequate aerodrome (at OEI, ISA still air conditions) before a DLRO approval is required.

Dry Lease *

A Defence aircraft lease for an aircraft that does not include, maintenance or insurance requirements.

Dual Flight *

Flight conducted in an aircraft or accredited Flight Simulation Training Device while receiving training from a flying instructor.

Emergency Locator Transmitter (ELT) *

Equipment which broadcasts distinctive signals on designated frequencies and depending on application, may be automatically activated or be manually activated.

Engineering Authority (EA) *

The authority assigned expressly to an organisation or to an individual within an organisation to undertake specific engineering activities.

Exposition

The document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organisation complies with a DASR.

Extension

Inclusion of additional topics to Category A, B1 and B2 Military Aircraft Maintenance Licences (MAML) as detailed in DASR 66 Appendix I (which includes Modules 55–55) that are not part of the applicable modules for that category of MAML.

External Lift*

The external carriage of air cargo by rotary wing aircraft.

External Service Providers *

Contractors, consultants and professional service providers engaged by Defence.

Fatigue *

A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental or physical activity) that can impair a member's alertness and ability to safely operate an asset or perform safety-related duties.

First Pilot *

The Aircraft Captain or a type rated pilot authorised as crew who is occupying a seat with access to flight controls and actually in control of the aircraft.

Fit For Flight

Condition of a type design being certified as compliant with applicable airworthiness requirements as well as of an aircraft having been serviced and inspected as meeting the certified design and prepared for the intended flight.

Flight *

a. In the case of a heavier-than-air Aircraft, the operation of the Aircraft from the moment at which the Aircraft first moves under its own power for the purpose of taking-off, until the moment at which it comes to rest after being airborne. (Note: DASA does not intend for the definition of Flight to affect the way in which environmental commanders define 'Flight Time'. Environmental commanders may define 'Flight Time', or delegate the definition of 'Flight Time' to FEG Commanders).

b. In the case of a lighter-than-air Aircraft, the operation of the Aircraft from the moment when it becomes detached from the surface of the earth, or from a fixed object on the surface of the earth, until the moment when it becomes again attached to the surface of the earth or a fixed object on the surface of the earth.

Flight Authorisation *

The process through which qualified and competent Crew are approved to conduct a particular Mission, including the application of limitations or controls.

Flight Crew *

Crew, including personnel authorised to undertake aircraft type qualification training, who are charged with duties essential to the safe operation of an aircraft, including remotely piloted aircraft. Flight crew is a subset of crew.

Flight Data Recorder (FDR) *

A device that use a combination of data providers to collect and record parameters that reflect the state and performance of an aircraft.

Flight Information Documents (FID) *

A suite of documents that includes Flight Information Publications (FLIP) aeronautical maps, aeronautical charts and similar documents that support aviation activities.

Flight Information Publication (FLIP) *

An enduring term that describes various aeronautical information designed for use primarily in the cockpit environment.

Flight Information Service (FIS) *

An Air Traffic Services (ATS) subcategory provided for the purpose of giving advice and information useful for the safe and efficient conduct of flight.

Flight Planning *

The Aircraft Captain's planning for the safe conduct of the Flight, based on considerations of:

a. Aircraft performance

b. Mission considerations

c. expected conditions on the route to be followed, or in the area of operations and at the relevant aerodromes

d. navigation sources and facilities associated with the intended route and relevant aerodromes

e. the effects of normal, emergency and operating limitations on the above.

Flight Recorder *

Any type of receiver installed in the aircraft for the purpose of complementing accident/ incident investigation or flight analysis, this includes a Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR).

Flight Related Operations *

Flight Related Operations refer to those operations which, while not strictly meeting the definition of 'Flight', warrant consideration of the application of Flight Authorisation and related aviation Hazard controls. Such operations may include: high-speed aborts, engine running on-loads and off-loads, rotors-turning ground events on helicopters, engine ground runs (excluding

ground runs conducted by maintenance personnel as a part of routine maintenance activities) and taxiing.

Flight Simulation Training Device (FSTD) *

A device that simulates an aircraft or part of an aircraft used to train personnel who interact with aircraft flight controls or power plant controls to manoeuvre the aircraft in flight and/or on the ground, and needs approved standards for the purpose of permitting experience acquired therein to be credited towards meeting requirements for operator qualification, categorisation or currency.

Flight Simulator (FS) *

See Flight Simulation Training Device (FSTD).

Flight Test *

A type of flying activity conducted in support of broader Defence Test and Evaluation (T&E) requirements that has any of the following characteristics:

a. flight of a not yet certified design (aircraft, propulsion systems, parts or appliances);

b. flights to demonstrate compliance to certification basis or conformity to type design;

c. flights intended to experiment new design concepts, requiring unconventional manoeuvres or profiles for which it could be possible to exit the already approved envelope of the aircraft;

d. flight to evaluate a change in role or operating environment; or

e. training flights in support of the above activities.

Flight Test Pilot *

A pilot qualified and authorised to carry out research, development, test or evaluation of Flight Test activities.

Flight Test System Specialist *

A person qualified and authorised to carry out research, development, test or evaluation of Flight Test activities.

Flight Training Device (FTD) *

A Synthetic Training Device (STD) that simulates the aircraft in ground and flight operations to the extent of the systems installed in the device and comprises a full size replica of the instruments, equipment, panels and controls in an open flight deck area, or an enclosed flight deck of the aircraft, but does not, in every respect, simulate the aircraft in ground and flight operations. An FTD includes the necessary software and equipment, and the way that the equipment is interconnected.

Flying Display *

A planned display of sequence(s) by one or more aircraft for an assembled group of people that may include demonstrations of handling and operational capabilities within the approved envelope for the type.

Flying Instructor *

A pilot who is qualified and authorised to deliver pilot type qualification training in the airborne or simulated airborne environment.

Flying Management System (FMS) *

A system of processes and procedures within a flying organisation centred on Aircraft types or AvSS which establishes the management practices, operational rules, and operator training and qualification requirements that support safe Flight Operations.

Flying Supervision *

The function of oversight and management of Crew in aviation operations, considering both safety and Mission, to ensure the safety of Defence aviation through adherence to Flying Management System controls. Flying Supervision is more than Flight Authorisation and monitoring of any single Flight. Supervision is a holistic task that requires:

a. overseeing training, qualification and development of Crew

b. the assignment of a suitable Crew to a task or Mission

c. supervising the Mission planning and Flight Planning, Mission execution and post-Mission reporting and recording

d. Flight Authorisation, where the Flying Supervisor is a qualified and authorised Flight Authorisation Officer.

Flypasts *

A flight by one or more aircraft tasked to pass over a specific location on a constant track and at a constant altitude at a specified time.

Foreign Military Aircraft *

A military aircraft of any foreign nation, certified for flight under that nation's Military Aviation Authority.

Foreign Object Debris (FOD) *

A substance, debris or article alien to a vehicle or system that has potential to cause damage to aircraft. Examples of FOD are aircraft parts, rocks, broken pavement, ramp equipment, and vehicle parts.

Foreign Register *

A civil aircraft register or military aircraft register maintained by any country other than Australia.

General (Standard) Cargo

Cargo without special, hazardous or dangerous properties and therefore does not require extra precautions or special handling for air transport.

General Public (GP) * (UAS Context)

All persons not classed as Mission Essential Personnel (MEP), including all persons not directly associated with the operation of the UAS or briefed as part of the UAS mission.

NOTE: GP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign military personnel.

Ground Support Equipment (GSE) *

The ancillary maintenance equipment necessary to maintain an aircraft during servicing.

Guidance Material (GM) *

This is typically developed to provide additional explanation to assist the application of the requirement and/or explain the Acceptable Means of Compliance (AMC).

Hazard *

A source of potential harm or a situation with a potential to cause loss.

Hazard Log *

A data base of identified hazards. It is a formal record of all data and tasks associated with identifying and resolving hazards.

Hazard Tracking Authority (HTA) *

An appointment or appointments – made by the appropriate Force Element Group (FEG) commanders or Navy and Army equivalents - responsible for tracking actions and recommendations from FEG aviation safety reports to completion.

Height Above Obstacles Within (HAOW) *

The vertical distance between an aircraft and the highest obstacle on the terrain or water surface within a specified lateral radius from the aircraft's position. For example, '500ft HAOW 600m' means 500 feet of vertical separation between the aircraft and the highest obstacle within 600 metres of that aircraft.

Helicopter

A heavier-than-air aircraft supported in flight chiefly by the reactions of the air on one or more normally power-driven rotors on substantially vertical axes.

Helicopter Landing Site (HLS) *

A defined area that may be used by helicopters for the purposes of landing or taking off, including infrequent, opportunity and short term basis for all types of operations. It may or may not be located on an Aerodrome. It may also be referred to as a helipad.

Helipad *

See Helicopter Landing Site.

Heliport *

An Aerodrome or a defined area on a structure intended to be used wholly or in part for the arrival, departure and surface movement of helicopters.

Human Factors

Principles which apply to design, certification, production, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance.

Human Performance

Human capabilities and limitations which have an impact on the safety and efficiency of operations.

Hypoxia *

A lack of oxygen to the tissues sufficient to cause impairment of function.

Implement

To introduce requirements into regulations (DASR) by either adoption or compliance.

Implementing Regulation

Regulation that amplifies the operation of Basic Regulation, within the defined constraints as provided within the Basic Regulation.

Includes (Rules Of Interpretation) *

'Includes' means: 'includes but is not limited to'.

Independent *

In the context of, or similar to, 'independent board' or 'independent inspection' and within these Regulations means independent of the chain of command which is being assessed or inspected.

Inshore *

Flight over water below LSALT within 20 nm of land, including reefs and rocks, or fixed obstacles, which include manufactured obstacles such as oil rigs that are continually above the high water mark.

Inspection *

The process of determining compliance with engineering standards and applicable maintenance documents.

Instructions For Continuing Airworthiness (ICA)

Instructions for Continuing Airworthiness (ICA) detail the methods, inspections, processes, and procedures necessary to keep aircraft and/or products airworthy.

Instrument Rating *

An award that indicates a pilot has attained a high level of specialist instrument flying skills required for the safe and effective operation of the specified aircraft type in IMC.

Instrument Rating Examiner (IRE) *

A pilot who is qualified and authorised to conduct Instrument Rating Tests.

Key Staff *

Appointments within a DASA approved organisation that contribute to the safe operation of an aviation system.

Life Limited Parts

Parts that, as a condition of their type-certificate, may not exceed a specified operating time, calendar time, number of operating cycles, or any other approved service life consumption units.

Limitations *

Lack of capacity; inability to achieve required outputs; restrictive weakness; physical or environmental constraint; an action imposed by an authority, eg an AwB or Defence AA constraint, which must be undertaken, ie you MUST DO something.

Limited Certification Authorisation

This is issued by the AMO, in accordance with a procedure approved by the NMAA, for flight crew, flight engineer or crew chief to carry out specific tasks (usually away from their home base or station). The authorisation permits the holder to issue certificates of release to service following specific tasks within the limits of the tasks specifically endorsed on the authorisation.

Line Maintenance

Carried out before flight to ensure that the aircraft is fit for the intended flight.

Long Term Lease *

The dry or wet leasing, renting or hiring of an aircraft by Defence, usually for more than a year, to support ongoing Defence activity.

Lost Link * (UAS Context)

The loss of command and control link contact with a remotely-piloted aircraft during its operation.

Low Flying *

By day, night or in IMC, flight below the authorised minimum height above and within a defined lateral distance of an obstacle. Low flying does not include flight associated with: a published instrument arrival, approach and departure procedure; or take-off and landing.

Low Flying Area (LFA) *

A surveyed area that is approved for use and unlimited aircraft manoeuvring within the LFA boundaries to an authorised height.

Low Flying Route (LFR) *

A surveyed route that is approved for use and assures obstacle and terrain clearance will exist within the LFR boundaries to an authorised height.

Lowest Safe Altitude (LSALT)

The lowest altitude which will provide safe terrain clearance at a given place.

Maintenance

Any one or combination of overhaul, repair, inspection, replacement, modification or defect/ fault rectification of an aircraft or component, with the exception of pre-flight inspection.

Maintenance Check Flight *

Flying activity conducted after aircraft maintenance when required by Instructions for Continuing Airworthiness (ICA). However, ICA may use different terminology. Note, there may be other check flights conducted in service that are not required by ICA; these flights are not a regulatory requirement. Maintenance check flight is not to be confused with flight test which is covered under DASR 21. (Refer to glossary entry for `Unit Maintenance Test Pilot'.)

Maintenance Manual

That part of the Military Air System document set which identifies the particular maintenance procedures and periodicity necessary to maintain the airworthiness of the Military Air System.

Master Minimum Equipment List (MMEL)

A list established for a particular aircraft type by the organisation responsible for the Type Design with approval of DASA. The MMEL identifies items which individually may be unserviceable at the commencement of flight. The MMEL may be associated with special operating conditions, limitations or procedures.

May * (Rules Of Interpretation)

'May' is used in the permissive sense to state authority or permission to do the act prescribed, and the words 'no person may' or 'a person may not' mean that no person is required, authorised or permitted to do the act described.

Means Of Compliance

The techniques that will be used to demonstrate the compliance of the type design against each certification requirement identified in the Certification Basis. Examples include test, analysis and inspection.

Mechanic *

Mechanics carry out maintenance tasks to standards specified in the maintenance data and should notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.

Meteorology (MET) *

A service that provides area and terminal weather information services that safely support aviation activities, such as flight planning and enroute diversion decisions based upon changing weather conditions.

Military Air Operator (MAO) *

The regulated organisation approved by the Defence Aviation Authority to perform military air operations as defined in the issued Military Air Operator Certificate (MAOC) and in accordance with DASR. In Defence, a MAO is usually a Force Element Group (FEG) or equivalent.

Military Air Operator Certificate (MAOC) *

Certificate (DASR Form 138) issued by the Defence AA to authorise the Military Air Operator (MAO), usually a Force Element Group (FEG) or equivalent, to perform military air operations as defined in the accompanying Operations Specification (OpSpec) and in accordance with DASR.

Military Aircraft *

An Aircraft, (including Uncrewed Aircraft System (UAS)), designed and/or operated for military use and/or registered or intended to be registered on the military register of a Military Airworthiness Authority (MAA).

Military Aircraft Maintenance Licence (MAML)

A categorised licence which, dependent upon completion of all relevant approved training and examinations, and the requisite levels of practical experience, permits an authorised individual to issue certificates of release to service (CRS) or act as support staff for scheduled and / or unscheduled maintenance performed on an aircraft or aircraft systems as defined by DASR 66.

Military Airworthiness Authority (MAA) *

See Military Aviation Authority

Military Aviation Authority*

A person or organisation responsible for the safety oversight of military aviation. An MAA acts independently from the operational, acquisition and sustainment chains of command and is assigned responsibility through a formal instrument such as legislation or an order, directive or decree.

Military Certification Review Item (MCRI) *

A document recording Deviations, Special Conditions, new Means of Compliance or any other certification issue which requires clarification and interpretation, or represents a major technical or administrative issue.

Military Permit To Fly (MPTF) *

Permit issued by the Authority or organisations granted such privilege by the Authority when an aircraft does not meet, or has not been shown to meet, applicable airworthiness requirements but is capable of safe flight under defined conditions and for specified purposes. A Military Permit to Fly (MPTF) is also issued for Flight Test activities.

Military Restricted Type Certificate (MRTC) *

Certificate issued by the Authority for a product that does not comply with the applicable Type Certification Basis with restrictions imposed in regard to the intended use of the product.

Military Supplemental Type Certificate (MSTC) *

Certificate issued by the Authority that certifies a MAJOR change to a product's type design.

Military Type Certificate (MTC) *

Certificate issued by DASA stating that a product complies with the applicable airworthiness requirements.

Military Type Certificate (MTC) Holder

The organisation responsible for the relevant Type Design accepting the rights and obligations for the product.

Minimum Equipment List (MEL)

A document that allows for the operation of a specific aircraft under specific conditions with particular item(s) of equipment inoperative at the time of dispatch for the intended flight. Despite the inoperative equipment, the aircraft still complies the Master Minimum Equipment List. (CASA CAAP 37-1(5) - Minimum Equipment Lists).

Minimum Sector Altitude (MSA)

The lowest altitude which may be used which will provide a minimum clearance of 1,000FT above all objects located in an area contained within a circle or a sector of a circle of 25NM or 10NM radius centred on a significant point, the ARP or the HRP.

Minor Amendment

Those changes to the organisation's Exposition(s) which do not affect the DASR related approvals.

Mission *

The assignment of one or more Aircraft to complete a specific task, which may involve multiple Flights.

Minor Maintenance

Includes repetitive tasks and simple defect/fault rectification.

Mission Crew *

Crew who may or may not be qualified on aircraft type, but their qualifications are essential for the successful outcome of a specific aviation mission. Mission crew is a subset of crew.

Mission Essential *

Personnel, equipment or cargo required to successfully conduct a specific aviation mission.

Mission Essential Passenger *

A passenger whose carriage aboard an aircraft is directly associated with the specific mission being conducted. A mission essential passenger may include a boarding party, medical patient, paratroops, troops, deploying personnel or survivors from a Search and Rescue task.

Mission Essential Personnel (MEP) * (UAS Context)

All persons directly associated with the operation of the UAS or briefed as part of the UAS mission.

NOTE: MEP includes all persons directly associated with the operation of the UAS or briefed as part of the UAS mission. MEP is a broader class than personnel directly associated with the launch, recovery and control during flight of the UAS. MEP may, depending on the UAS mission, include civilians, Defence personnel, and/or foreign military personnel. MEP must be aware of the UAS operations, the associated hazards and be essential to the conduct of the UAS task. MEP may include ground troops within a Defence joint operation/exercise area, troops on a Defence ship or civilian personnel operating as part of a counter terrorism tasking.

Mission Instructor *

A non-pilot crew member who is qualified and authorised to deliver instruction in the airborne environment or simulated airborne environment.

Model *

An aircraft or system model is a derivative of an aircraft or system type that follows a unique lineage. For example, an A-47 Poseidon is an aircraft type, whilst P-8A is the aircraft model.

Modification

A modification is a change of design to the authorised configuration of the approved type design of product, part or appliance.

Typical examples are component changes, equipment additions, or software changes and often involve a revision to the drawings and support documentation.

Multi-Crew *

The crewing of an aircraft by more than one crew member.

Must (Rules Of Interpretation) *

'Must' is used in the imperative sense. Use of other commonly used imperatives, such as 'shall', 'is to', or 'will' should not occur.

National Airworthiness Authority (NAA) *

See Civil Aviation Authority

National Military Airworthiness Authority (NMAA) *

See Military Aviation Authority (MAA).

Negative Training *

Techniques learned or practiced in the Flight Simulation Training Device (FSTD) which do not translate to correct actions during a safety-critical activity in the airborne environment as a result of incorrect training, fidelity or fit out of the FSTD.

Night Vision Device (NVD)

Any electro-optical device that is used to detect visible and infrared energy and provide a visible image.

Night Vision Goggles (NVG)

An electro-optical image intensifying device that detects visible and near-infrared energy, intensifies the energy, and provides a visible image for night viewing.

NOTES:

1. Night vision goggles can be either hand-held or helmet-mounted.
2. Plural form (Night Vision Goggles) refers to binocular equipment and the singular form (Night Vision Goggle) refers to monocular equipment.

Night Vision Imaging System (NVIS)*

A system in which all of the elements required to operate an Aircraft successfully and safely using NVDs are integrated, including NVDs, NVIS compatible lighting, Aircraft components and equipment, training and currency, operating procedures and Continuing Airworthiness.

Non Compliance *

The failure of a plan or procedure to comply with requirements.

Non Conformance *

The failure of a product, process or system to meet its regulatory, specification, drawing, or quality requirements.

Non-Certified Aerodrome *

An aerodrome in respect of which an aerodrome certificate has not been issued.

Non-Defence Registered Aircraft *

An aircraft operated by or on behalf of Defence that is not recorded on the Defence Register.

Non-Standard Cargo*

Non-Standard Cargo is cargo that requires special handling, additional precautions or specific procedures developed for either its preparation, composition, configuration, loading, placement, restraint or unloading. Non-standard cargo includes Dangerous Goods, security-protected consignments, service weapons, safe hand, human remains, unaccompanied personal effects, live animals, mail, perishables, and unserviceable or crashed Aircraft. Non-Standard Cargo also includes the following, where special handling, additional precautions or specific procedures are required:

(a) cargo that is not contained in a unit load device or pallet certified for the aircraft cargo loading system

(b) cargo requiring attachment directly to the aircraft floor.

Non-Technical Skills (NTS) *

Those human performance skills that promote reliable and effective task performance in complex work systems. NTS encompass attributes such as the ability to recognise and manage human performance limitations, make sound decisions, communicate effectively, lead and work as a team and maintain situation awareness.

Note: (Independent Board Of Review) *

A review finding which identifies a significant aviation safety issue that is being addressed through management action.

Observation (Independent Board Of Review) *

A review finding which is worthy of comment, but does not require additional management action.

Obstacle *

Is all fixed (whether temporary or permanent) and mobile objects, or parts thereof, that are located on an area intended for the surface movement of aircraft; or extend above a defined surface intended to protect aircraft in flight; or stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

Occurrence Reporting *

The reporting of any failure, malfunction, defect, act, omission or other occurrence which has resulted in or may result in an unsafe condition. The objective of occurrence reporting is to use the reported information to contribute to accident prevention and the improvement of aviation safety. Further detailed information regarding occurrence reporting including reportable incidents, timeframes and occurrence reporting types is contained in AMC GR.40 - Occurrence Reporting.

Offshore *

Flight over water other than ‘inshore’.

Operation *

The process and action of operating aircraft following the initial and continual acceptance of the design, construction and maintenance processes, acts and actions by the operational chain of command in relation to the flight of such aircraft in the operational environment.

Operational Effectiveness *

The ability of a system to perform its intended function over its intended operational spectrum, in the expected operational environment, and in the face of expected threats when operated by typical operational Defence personnel.

Operational Servicings (B/F, T/A, A/F) *

Operational Servicings are any maintenance conducted before or after flight as defined in the Aircraft Maintenance Program (AMP). The AMP may include pre-flight inspection tasks outlined in DASR AMC M.A.301(a)(1).

Operational Suitability *

The capacity of the system, when operated and maintained by typical operational Defence personnel in expected numbers, at the expected level of competency, to be reliable, maintainable, available, logistically supportable, compatible, interoperable, safe and is ergonomically satisfactory.

Operations Specification (OpSpec) *

An integral component of the Military Air Operator Certificate (MAOC), Air Cargo Delivery Service Provider Certificate (ACDSPC) and Air Battle Management Operator Certificate (ABMOC), but prepared on a separate form (DASR Form 139) and details key positions of the MAO, ACDSP and ABMO, aircraft types or operations authorised, and operating provisions. Roles and tasks, specific approvals and any limitations/conditions (where necessary) for each approved aircraft type or operation are detailed in separate annexes.

Opposition Manoeuvre *

A manoeuvre where flight vectors of aircraft are opposing each other in close proximity.

Orders, Instructions And Publications (OIP) *

A suite of advisory, informative, procedural, directing and mandating documents that support the operations of an aviation system. OIP may include: aircrew manuals specific to type; general aircrew publications; Defence Instructions; Standing Instructions; command and unit issued Flying Orders, Special Flying Instructions and standard operating procedures.

Original Equipment Manufacturer (OEM) *

A manufacturer listed as the approved source of manufacture for components in the Type Certificate data sheet. The OEM owns and controls the source drawings, i.e. the design of the component.

Passenger *

Any person who is on board an aircraft other than a member of the authorised crew.

Perform Maintenance / Task Sign-Off *

Task sign-off attests that a competent and authorised person has performed the maintenance task prior to certification.

Performance Based Navigation (PBN)

Area navigation based on performance requirements for aircraft operating along an Air Traffic Services (ATS) route, on an instrument approach procedure or in a designated airspace.

Note: Performance requirements are expressed in navigation specifications (ie RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.

Periodic Health Examination (PHE) *

A more comprehensive assessment that periodically replaces the Specialist Employment Stream Annual Health Assessment (SESAHA) in accordance with Defence policy. Also considered an aviation medical certificate assessment when conducted by an AVMO.

Pilot *

A person qualified and authorised to manipulate the flight controls of an aircraft during flight.

Populous Area * (UAS Operations Context)

An area in relation to the operation of a UA that has a sufficient density of population for some aspect of the operation, or some event that might happen during the operation (in particular, a fault in, or failure of, the UA) to pose an unreasonable risk to the life or safety of somebody who is in the area, but is not connected with the operation.

Portable Electronic Equipment (PEE) *

Comprises all electrically powered equipment that is carried on Defence aircraft by crew and passengers, not forming part of the certified aircraft type, Role Equipment, ALSE or cargo.

Pre-Flight Inspection *

The pre-flight inspection is a continuing airworthiness task intended to encompass all of the actions necessary to ensure that the aircraft is fit to make the intended flight. The pre-flight inspection is not maintenance and can be carried out by appropriately trained maintenance,

aircrew or other personnel in accordance with published guidance from the operating organisation.

Preventive Maintenance *

Those actions that reduce the probability of a known failure mode in items with predictable wear-out characteristics by retaining materiel and restoring it to a specified condition.

Primary Runway *

The runway used most frequently or that provides the best overall aerodrome capability.

Privilege *

The means by which the holder of a qualification, rating, endorsement or approval is authorised to conduct an activity.

Production *

The manufacture and assembly of new parts, appliances, aircraft, engines or propellers to approved design data.

Products, Parts And Appliances

Product = the design of an aircraft, engine or propeller (each can be granted with a Type-certificate).

Parts and appliances = lower level components for which an AUSMTSO (or foreign TSO) may exist, and fitted to a product.

Qualification * (Flight Simulation Training Device Context)

The verification and validation of the functionality and fidelity of a Flight Simulation Training Device (FSTD) against an accepted standard. The end result of a process which formally examines and documents compliance of a FSTD, against predefined standards, to the satisfaction of the relevant qualification organisation approved by the Authority.

Qualified Entity *

A body (Commonwealth or commercial) which may be allocated a specific certification task by, and under the control and responsibility of, the Authority.

Quality Management System (QMS) *

All activities of the overall management function that determine the quality policy, objectives and responsibilities and implement them by means such as quality planning, quality controls, quality assurance and quality improvement.

RAAF Institute Of Aviation Medicine (IAM) *

The ADF Centre of Excellence for aviation medicine related issues.

Ramp Inspection *

Related to the operation of Civil Registered Aircraft chartered for temporary use by Defence. The Ramp Inspection is an acknowledged means of providing confidence in a charter aircraft's fitness for purpose and assessing the suitability of a charter supplier.

Recency *

A prescribed period of on-going practical application of a function, set within a prescribed currency period that ensures a qualification or skill remains proficient throughout the currency period.

Reduced Vertical Separation Minima (RVSM)

Reduced vertical separation minimum of 300 m (1000 ft) between FL 290 and FL 410 inclusive.

Registration

Registration is the formal recording by the NMAA of an individual aircraft on the military aircraft register and the assignment of a tail number.

Remote Pilot (RP) * (UAS Context)

The person in direct command/ control of the UAS, including manipulating flight controls or programming waypoints during flight.

Remote Pilot Station (RPS) * (UAS Context)

A station at which the RP manages the flight of a UA.

Remotely Piloted Aircraft (RPA) * (UAS Context)

An uncrewed aircraft that is operated by a remote pilot or air vehicle operator.

Remotely Piloted Aircraft (RPA) Observer * (UAS Context)

A trained and competent person designated by the operator who, by visual observation of the remotely piloted aircraft, assists the remote pilot in the safe conduct of the flight.

Remotely Piloted Aircraft System (RPAS) * (UAS Context)

A subset of Uncrewed Aircraft Systems (UAS), a RPAS is a system consisting of the remotely piloted aircraft (RPA), together with any Remote Pilot Station (RPS), communications/data links, maintenance, launch and recovery systems. This includes the network and operating personnel required to control the RPAS. A RPAS may also be referred to as a UAS.

Repair

A 'repair' means the elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part or appliance.

Required Navigation Performance (RNP)

A statement of the navigation performance necessary for operation within a defined airspace.

Note: Navigation performance and requirements are defined for a particular RNP type or application.

Rest Period *

A continuous uninterrupted and defined period of time, following duty or prior to duty, during which a person is free of all duties, standby and reserve.

Restricted Instrument Rating *

An award that indicates a pilot has attained a level of specialist instrument flying skills required for the safe and effective operation of the specified aircraft type in IMC, but has not met the full criteria to be awarded an Instrument Rating.

Restricted Type-Certificate Data Sheet (RTCDS)

Companion document to Military Restricted Type-Certificate (MRTC) and describes the basis of certification, lists any associated Military Certification Review Items (MCRIs), details technical characteristics and operating limitations, and includes details of each aircraft added to the RTCDS.

Restrictions *

Prohibitions on activities that an authority might impose (i.e. you MUST NOT DO something). Such imposed conditions are designed to treat limitations.

Risk Management (RM) *

The application of Risk Management in the context of Defence aviation operations. RM offers a systematic, logical approach to identifying and treating risks to Defence aviation resources and missions, while supporting initiative, flexibility and adaptability

Risk Mitigation *

The strategy and methods employed to eliminate or minimise risks presented by a hazard.

Role Equipment *

Any equipment, apart from ALSE, fitted to an aircraft on a non-permanent basis, or carried on board, for operation by crew or passengers in flight to support a Defence role or mission.

Runway Incursion *

Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

Safety Critical

Applied to a condition, event, operation, process, or item whose proper recognition, control, performance, or tolerance is essential for safe system operation or use; eg safety critical function, safety critical path, safety critical component.

Safety Critical Area *

A working environment assessed as having a heightened risk to the physical safety of personnel, or where key operational decisions are made. For example an aircraft flight deck or an ATC Control Tower.

Safety Management System (SMS) *

See Aviation Safety Management System (ASMS).

Segregated Airspace (SA) * (UAS Context)

Airspace of specified dimensions allocated for exclusive use to a specific user(s).

Segregation *

Airspace Control Measures (ACM) that ensure that two or more aircraft do not come into such close proximity that a threat to the safety of those aircraft exists.

Senior Air Traffic Control Officer (SATCO) *

An internationally recognised civil/military term describing the person commanding and/or managing the ATC unit responsible for the ATS delivery at a specific aerodrome and the airspace relevant to the aerodrome. At Defence aerodromes, the SATCO may also hold an administrative command title appropriate to the ATS unit concerned.

Senior Instrument Rating Examiner (SIRE) *

A pilot who is qualified and authorised to conduct Instrument Rating Examiner assessments.

Sensor Operator *

A person charged to operate airborne sensor systems on a crewed aircraft or UAS to collect, analyse and distribute airborne sensor data.

Separation Assurance *

The assurance provided by the Air Traffic Control (ATC) service provider that if the pilot complies with ATC control instructions an aircraft will maintain a prescribed minimum separation standard from another aircraft or object.

Serious Injury Or Illness *

An injury or illness requiring the person to have:

a. immediate treatment as an in-patient in a hospital, or

b. immediate treatment for:

1. the amputation of any part of their body
2. a serious head injury
3. a serious eye injury

4. a serious burn

5. the separation of their skin from underlying tissue (such as degloving or scalping)

6. a spinal injury

7. the loss of a bodily function

8. a serious laceration.

c. medical treatment within 48 hours of exposure to a substance. (WHS Act 2011)

Service Life-Limit For Components *

Specified life-limit after which the components should undergo maintenance to restore their serviceability.

Service Provision Conditions (SPC)*

An integral component of the Air Navigation Service Provider Certificate (ANSPC) that details:

(a) key positions

(b) the types of service the ANSP Air Navigation Service Provider (ANSP) is certified to provide

(c) operating provisions.

The complexity of the service(s) may be further detailed in separate annexes. For example, ATM services may have a separate annex for each Defence site where services are provided.

Shall (Rules Of Interpretation)

'Shall' is used in the mandatory requirement, as is 'must'.

Shipborne Heliport *

A defined area on a ship (including any installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of helicopters.

Short Term Lease *

The dry or wet leasing, renting or hiring of an aircraft by Defence, usually for less than one year, to support specialised Defence activity.

Should * (Rules Of Interpretation)

‘Should’ is used to imply an act or process identified for inclusion in a desired outcome is complied with unless sound reasoning may determine otherwise.

Side Number *

A unique RAN number that differs from the 'tail number' and is applicable to RAN aircraft only. The side number is normally the identifier used in call signs and for flight planning purposes. The side number is not normally included in the Defence Register.

Simulator Instructor *

A crew member who is qualified and authorised to deliver instruction in a simulated airborne environment.

Single Pilot *

The crewing of an aircraft by one pilot, even though other pilot positions may be available and occupied by non-pilot crew members.

Single Service Aviation Medical Advisor (SSAMA) *

An Aviation Medical Officer (AVMO) who represents a single Service, is recognised by the Surgeon General–ADF as being qualified to provide authoritative aviation medical advice and is responsible for the implementation of aviation medicine policies.

Solo Flight *

Flight in which the pilot is the sole occupant of the aircraft.

Sparsely Populated Area *

An area considered outside the areas of cities, towns or settlements characterised by rangeland grazing, desert, uncultivated landscapes, wilderness, infrequent homesteads, large land holdings, extensive uncleared land, salt lakes, adjacent coastal waters and open ocean or navigable tracts of water with infrequent water traffic.

Special Conditions

Are introduced when the design features of a particular product or the experience in operation render any of the airworthiness code provisions inadequate or inappropriate to ensure conformity with essential requirements.

Specialised Services *

Services that include, but are not limited to, structural repair, composite repair, surface finishing, metal machining, metal spraying, shot peening, welding, electroplating and anodising, non-destructive testing, borescope inspections, in-flight entertainment systems.

Specialised Services Staff *

Staff who carry out specialised maintenance tasks to the standard specified in the maintenance data or defined standards acceptable to the NMAA.

Specialist Employment Stream Health Assessment (SESHA) *

A generic term that may be used to describe an aviation medical certificate assessment.

Sponsor *

The entity/organisation responsible for defining the required aviation outcome, receives or uses the outcome and is responsible for funding the related activities, processes, project or products required to safely achieve the outcome.

Standard *

A description of a material, product, doctrine or process meant for repeated applications by many users. A Technical Standard is an established norm or requirement. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes and practices.

Standard Part

A Standard part is a part designated as such by the design approval holder responsible for the product, part or appliance, in which it is intended to be used and manufactured in complete compliance with an established specification which includes design, manufacturing, test and acceptance criteria, and uniform identification requirements. Examples of standard parts are aircraft general spares as defined by the design approval holder, such as nuts, bolts, washers, split pins, etc. All design, manufacturing, inspection data and marking requirements necessary to demonstrate conformity of the part will be in the public domain and published or established as part of recognised specifications.

Standard Scenario * (UAS Context)

A description of a UAS operation in the Specific category, for which risk controls have been determined based on a risk assessment, and introduced by the Authority.

State Aircraft * (Australian Context)

Aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force in the course of duties as such a member); and aircraft used in the military, customs or police services of a foreign country: Civil Aviation Act 1988, section 3; Air Navigation Act 1920, section 3.

Statement Of Operating Intent And Usage (SOIU) *

A document describing the approved roles, operating envelope, usage spectrum and operating environment for a particular aircraft type. The SOIU differentiates between tasks for which the type has been certified and tasks that are planned but will require certification action before flight can be authorised.

Stores Suspension Equipment *

All aircraft devices such as racks, adaptors, missile launchers, internal guns, countermeasure dispensers and pylons, used for carriage, employment and jettison of aircraft stores. Aircraft guns and countermeasure dispensers for flares and chaff must be considered to be stores suspension equipment.

Sub-Atmospheric DCI *

The term used to describe cases of decompression illness (DCI) induced by exposure to pressures less than sea level equivalent, such as encountered during flight. DCI is a potentially lethal condition and should be treated as a medical emergency. The term is referred to simply as DCI in DASR.

Suitability For Flight *

Aircraft flight where the risk is eliminated or minimised so far as is reasonably practical to:

a. loss of life or injury to aircrew and passengers

b. loss to other personnel or property as a direct consequence of the flight

c. loss of, or damage to, the aircraft.

Supervisor *

Personnel who ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the approved maintenance data, then such problems should be reported to the DASR 145.A.30(c) person for appropriate action.

Supplemental Oxygen *

Refers to acceptable aviators' breathing oxygen that is available for use whenever required.

Support Staff

Those personnel holding a DASR 66 Military Aircraft Maintenance Licence in Category B1 and/or B2 with the appropriate privileges, certification authorisations and Military Aircraft Type Ratings, working in a base maintenance environment while not necessarily holding certification privileges.

Support Staff support the Category C licence holder and are required to ensure that all relevant maintenance tasks have been carried out to the required standard.

Surveyed Route Or Area *

A route or area is considered surveyed when it is flown in VMC by day and all hazards and obstacle data that may compromise suitability for flight has been identified and recorded.

Survivable Crash Or Accident *

An accident where the cockpit and/or structure remained relatively intact and the forces experienced by the occupants did not exceed, or should not have exceeded, the survivable limits of human G-tolerance.

Symmetry Check

A symmetry check is equivalent to a mensuration check or alignment check which is typically covered in the applicable Aircraft Maintenance Programme (AMP).

Synthetic Training Device (STD) *

Means:

a. a flight simulator

b. a flight training device

c. a basic instrument flight trainer

d. an air traffic control simulator; or

e. an air traffic control part-task trainer.

System Safety *

The application of engineering management principles, criteria and techniques to optimise the safety of a 'system', within the constraints of operational effectiveness, time and cost throughout all phases of the life cycle.

System Safety Engineering *

An engineering discipline requiring specialised professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards, in order to reduce the associated risk.

System Tolerance *

The inherent ability of the Aviation System to compensate for inadequate/absent defences.

Tail Number *

The tail number is the unique numerical identifier, which is appended to the Application Identifier (AI), and identifies each individual aircraft. For example, A41–nnn for C–17 Globemaster, N48–nnn for MH–60R Seahawk.

Task Authorisation *

The legal authority allowing a person to perform a specified maintenance task, recognising that the person has completed the prerequisite training relevant to the task and has demonstrated competency in performance of the task. Task authorisations are recorded in the persons Navy 'A' card, AATTR or RAAFRTE or equivalent document.

Task 'Sign-Off' *

This is a statement, signed by an appropriately authorised and competent person or an appropriately authorised and competent MAML holder, that, the maintenance task has been completed, to the standard required, in accordance with the AMD.

Temporarily Medically Unfit For Flying (TMUFF) *

Where an aircrew member, remote pilot or aircraft controller is temporarily medically unfit to perform specialist flying related duties, but may perform non-flying related duties.

Test And Evaluation (T&E) *

T&E is a process to obtain information to support the objective assessment of a Capability System with known confidence, and to confirm whether or not a risk is contained within acceptable boundaries across all facets of a system's life cycle. The individual terms are defined as: a test is an activity in which a scientific method is used to obtain quantitative or qualitative data relating to the safety, performance, functionality, contractual compliance, and supportability of a system; and evaluation is analysis of test results to determine (verify) or prove (validate) something.

The Authority *

The Authority collectively refers to the Defence Aviation Authority (Defence AA), and specific appointments within the Defence Aviation Safety Authority (DASA) who have been given a delegation from the Defence AA to exercise authority on their behalf.

Time Limited System*

An aircraft system which when operated / activated, has a useful or safe operating time that is less than the maximum endurance of the aircraft. An example is a cargo bay fire suppression system.

Time Zone *

A time zone is one of the areas into which the world is divided according to what time it is there.

Two Pilot *

The crewing of an aircraft by two pilots in aircraft fitted with dual flying controls

Type *

A specific design (make and model) of a product certified under a single Type Certificate.

Type Certificate Data Sheet (TCDS) *

Companion document to a Military Type Certificate (MTC) and describes the basis of certification, lists any associated Military Certification Review Items (MCRIs), details technical characteristics and operating limitations, and includes details of each aircraft added to the TCDS.

Type Certification *

The process through which compliance of the design with the Type Certification Basis is established within the bounds of the intended operating roles and environment contained in the Statement of Operating Intent and Usage (SOIU).

Type Certification Basis

An agreed set of airworthiness requirements (including code, special condition, etc) that a product must be compliant with in order to obtain a Military Type Certificate.

Type Design

The set of approved design information necessary to define the product type, as detailed in DASR 21.A.31 - Type design.

Type Rated *

Crew that are qualified to operate a particular aircraft type, or ground crew that are qualified to maintain a particular aircraft type.

Type Specific *

A qualification or endorsement is type specific if the qualification or endorsement applies only to an aircraft type that is specified on the qualification or endorsement.

UAS Flight Termination System * (UAS Context)

A control system that can immediately terminate flight of an uncrewed aircraft (UA) safely.

UAS Operating Permit (UASOP) * (UAS Context)

Approval to operate a UAS that is not Certified. Issued by the Authority, based on a risk assessment and the implementation of related risk controls.

UAS Operator * (UAS Context)

The organisation, eg MAO; or person with Operational Control (OPCON) or tasking authorisation for the UAS.

Unapproved Aeronautical Product *

Any part, component or material that has not been manufactured and certified as conforming to the technical data against which type certification is provided.

Underwater Locating Device (ULD) *

A device to allow the flight recorder to be located underwater post-crash.

Uncrewed Aircraft (UA) * (UAS Context)

An air vehicle that flies under RP control or autonomous programming without a human on board in control.

Uncrewed Aircraft System (UAS) * (UAS Context)

The entire system consisting of the uncrewed aircraft (UA), Remote Pilot Station (RPS), communications/data links, networks, launch and recovery systems, and personnel required to fly/control the UA.

Unit Maintenance Test Pilot (UMTP) *

A pilot authorised to fly an aircraft after aircraft maintenance has been conducted as required by Instructions for Continuing Airworthiness (ICA) to check aircraft serviceability. (Refer to glossary entry for `Maintenance Check Flight'.)

Unpopulated Area *

A geographic area which contains no people, including no Defence personnel and no civilian persons.

Validate *

Confirmation, through the provision of objective evidence, that the requirements for a specific intended use (ie outcome) or application have been fulfilled.

Variant *

A variant of an aircraft or system is derived from a 'model'. For example; the C–130J is a model of the A-97 Hercules type, and the C–130J–30 is a variant of the C–130J model.

Verify *

Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled.

Warbird, Historic And Replica Aircraft (WHRA) *

A non–Defence registered aircraft that is an ex-armed forces (Warbird) aircraft, a historic aircraft or a replica aircraft.

Weight And Centre Of Gravity Schedule

Weight and centre of gravity schedule - This is an EMAR term and is equivalent to a weight and balance statement.

Wet Lease *

A lease where an organisation provides Defence with an aircraft, crew, maintenance and insurance for Defence tasking.

DASP Acronym List

ACRONYM	EXPANSION
AAFC	Australian Air Force Cadets
AAMP	Aviation Acquisition Management Plan
AAP	Australian Air Publication
ABL	Allocated Baseline
ABM	Air Battle Management
ABMO	Air Battle Management Operator
ABMOC	Air Battle Management Operator Certificate
ABMOps	Air Battle Management Operations
ABR	Australian Books of Reference (Navy)
AC	Airworthiness Circular (FAA and CASA)
ACAR	Airworthiness Board Corrective Action Request
ACAUST	Air Commander Australia
ACB	Aviation Coordination Board
ACD	Air Cargo Delivery
ACDSP	Air Cargo Delivery Service Provider
ACDSPC	Air Cargo Delivery Service Provider Certificate
ACM	Airspace Control Measures
ACN	Aircraft Classification Number
ACO	Air Combat Officer
Acq	Acquisition
AD	Airworthiness Directive

AD OPR	Aerodrome Operator
ADE	Aerial Delivery Equipment
ADF	Australian Defence Force
ADM	Aerodrome Manager
AdrIP	Aerodrome Issue Paper
AEP	Aerodrome Emergency Plan
AFC	Aviation Facilities Certificate
AFIC	Air Force Interoperability Council
AFM	Aircraft Flight Manual
AFRU	Aerodrome Frequency Response Unit
AGL	Above Ground Level
AI	Application Identifier
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
ALI	Airworthiness Limitation Items
ALSE	Aeronautical Life Support Equipment
ALSLMU	Aeronautical Life Support Logistics Management Unit
AltMOC	Alternative Means of Compliance
AM	Accountable Manager
AMAFTU	Aircraft Maintenance and Flight Trials Unit
AMC	Acceptable Means of Compliance
AME	Aeromedical Evacuation
AMM	Aircraft Maintenance Manual

AMO	Approved Maintenance Organisation
AMP	Aircraft Maintenance Programme
AMS	Airworthiness Management System
AMSL	Above Mean Sea Level
AMTDU	Air Movements Training and Development Unit
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
AO	Above Obstacles
APTO	Aviation Physiology Training Officer
APU	Auxiliary Power Unit
APV	Approach Procedure(s) with Vertical Guidance
ARFF	Aerodrome Rescue and Fire Fighting
ARP	Aerodrome Reference Point
ARP	Aerospace Recommended Practice
AS	Accomplishment Summary
AS/NZS	Australia/New Zealand Standards
ASAMP	Aviation Safety Acquisition Management Plan
ASH	Area Safe Height
ASI	Aircraft Structural Integrity
ASIC	Air and Space Interoperability Council
ASIMP	Aircraft Structural Integrity Management Plan
ASIP	Aircraft Structural Integrity Program
ASM	Aviation Safety Management

ASMS	Aviation Safety Management System
ASO	Aviation Safety Officer
ASOR	Aviation Safety Occurrence Report (replaced by ASR)
ASR	Aviation Safety Report
AT&E	Acceptance Test and Evaluation
ATA	Air Traffic Advisory
ATA	Air Transportation Association
ATACSPO	Air Training and Aviation Commons System Program Office
ATC	Air Traffic Control
ATE	Aircraft Test Equipment
ATI	Aerodrome Technical Inspection
ATM	Air Traffic Management
ATMP	Air Traffic Management Plan
ATS	Air Traffic Service
ATSB	Australian Transport Safety Bureau
AUSMPA	Australian Military Part Approval
AUSMTSO	Australian Military Technical Standard Order
AUTHOP	Authority to Operate
AVFM	Aviation Fatigue Management
AVMED	Aviation Medicine
AVMO	Aviation Medical Officer
AVO	Air Vehicle Operator
AvSS	Aviation Support System(s)

AvSSC	Aviation Support System Certificate
AvSSMP	Aviation Support System Management Plan
AwB	Airworthiness Board
AwL	Airworthiness Limitation
BAC	Battlefield Airspace Control
Baro-VNAV	Barometric Vertical Navigation
BASO	Base Aviation Safety Officer
BFT	Basic Flight Trainer
BoM	Bureau of Meteorology
CA	Cabin Altitude
CAA	Civil Aviation Authority
CAAP	Civil Aviation Advisory Publication (CASA)
CAF	Chief of Air Force
CAM	Continuing Airworthiness Manager
CAME	Continuing Airworthiness Management Exposition
CAMO	Continuing Airworthiness Management Organisation
CAO	Civil Aviation Order (CASA)
CAR	Civil Aviation Regulations 1988 (Australia)
CAR	Corrective Action Request
CASA	Civil Aviation Safety Authority (Australia)
CASR	Civil Aviation Safety Regulations 1998 (Australia)
CDCCL	Critical Design Configuration Control Limitations
CDF	Chief of Defence Force

CDL	Configuration Deviation List
CENGR	Chief Engineer
CEO	Chief Executive Officer
CFIT	Controlled Flight Into Terrain
CI	Configuration Item
CIMHS	Critical Incident Mental Health Support
CJOPS	Chief of Joint Operations
CMM	Component Maintenance Manual
CMR	Certification Maintenance Requirement
CNS	Communication, Navigation and Surveillance
CNS/ATM	Communication, Navigation, Surveillance/Air Traffic Management
CoA	Certificate of Airworthiness
COMAUSFLT	Commander Australian Fleet
COMD AVNCOMD	Commander Army Aviation Command
COTS	Commercial Off-The-Shelf
CP	Certification Programme
CPCP	Corrosion Prevention and Control Program
CRE	Configuration, Role and operating Environment
CRP	Core Risk Profile
CRS	Certificate of Release to Service
CS	Certification Specification (EASA)
CTAF	Common Traffic Advisory Frequency
CVR	Cockpit Voice Recorder

DAAD	Defence Aviation Authority Directive
DAH	Designated Airspace Handbook
DASA	Defence Aviation Safety Authority
DASDRM	Defence Aviation Safety Design Requirements Manual
DASF	Defence Aviation Safety Framework
DASM	Defence Aviation Safety Manual
DASP	Defence Aviation Safety Program
DASR	Defence Aviation Safety Regulations
DAVENG	Directorate of Aviation Engineering (DASA Directorate)
DAVFMG	Defence Aviation Fatigue Management Guidebook
DAVNOPS	Directorate of Aviation Operations (DASA Directorate)
DCA	Directorate of Continuing Airworthiness (DASA Directorate)
DCAF	Deputy Chief of Air Force
DCI	Decompression Illness
DDA	Defence Disposal Agency
DDP	Declaration of Design and Performance
DEF STAN	Defence Standard (UK MoD)
Defence AA	Defence Aviation Authority
DFSB	Defence Flight Safety Bureau (DASA Directorate)
DI	Defence Instruction
DIA	Directorate of Initial Airworthiness (DASA Directorate)
DID	Data Item Description
DLRO	Defence Long Range Operations

DoD	Department of Defence (US)
DOE	Design Organisation Exposition
DoSA	Delegate of the Safety Authority
DoSA(FT)	Delegate of the Safety Authority – Flight Test
DSpace	Directorate of Space
DSTG	Defence Science and Technology Group
DT&E	Developmental Test and Evaluation
E3	Electromagnetic Environmental Effects
E3CP	E3 Control Program
E3CPP	E3 Control Program Plan
EASA	European Aviation Safety Agency
ECS	Environmental Control Systems
EDP	Electronic Data Processing
EDTO	Extended Diversion Time Operations
EFB	Electronic Flight Bag
ELT	Emergency Locator Transmitter
EMACC	European Military Airworthiness Certification Criteria
EMAD	European Military Airworthiness Document
EMAD 1	European Military Airworthiness Document - Definitions and Acronyms Document
EMAD R	European Military Airworthiness Document - Recognition
EMAR	European Military Airworthiness Requirements
EMAR 21	Requirements for the Certification of military aircraft and related products, parts and appliances, and design and production organisations
EMAR 66	Requirements for Military Aircraft Maintenance Licensing (of Personnel)

EMAR M	Continuing Airworthiness Requirements
EMC	Electromagnetic Compatibility
EMCON	Emissions Control
EME	Electromagnetic Environment
EMI	Electromagnetic Interference
EMPA	European Military Part Approval
EMSEC	Emanations Security
EO	Explosive Ordnance
EPM	Engine and Propeller Manual
EROPS	Extended Range Operations
ESF	Equivalent Safety Finding
ESI	Engine Structural Integrity
ESIMP	Engine Structural Integrity Management Plan
ETOPS	Extended Twin-engined Operations
EUROCAE	European Organisation for Civil Aviation Equipment
FAA	Federal Aviation Administration (US)
FAR	Federal Aviation Regulations (US)
FDR	Flight Data Recorder
FID	Flight Information Documents
FIR	Flight Information Region
FIS	Flight Information Service
FLIP	Flight Information Publication
FLTAUTH	Flight Authorisation

FLTAUTHO	Flight Authorisation Officer
FMEA	Failure Modes and Effects Analysis
FMS	Flight Management System
FMS	Foreign Military Sales
FO	Flying Order
FOB	Forward Operating Base
FOC	Full / Final Operational Capability
FOD	Foreign Object Damage
FOD	Foreign Object Debris
FPO	Failure Probability Objectives
FPS	Function and Performance Specification
FRS	Flammability Reduction Systems
FS	Flight Simulator
FSR	Field Service Representative
FSTD	Flight Simulation Training Device
FT	Flight Test
FTD	Flight Training Device
FTO	Flight Test Organisation
FTS	Flight Test Schedule
FTS	Fuel Tank Safety
FUA	Flexible Use Airspace
GCS	Ground Control Station
GM	Guidance Material

GNSS	Global Navigation Satellite System
GP	General Public
GPWS	Ground Proximity Warning System
GR	General Requirements
GSE	Ground Support Equipment
GWEO	Guided Weapons and Explosive Ordnance (Branch)
HAOW	Height Above Obstacles Within
HERF	Hazards of Electromagnetic Radiation to Fuel
HERO	Hazards of Electromagnetic Radiation to Ordnance
HERP	Hazards of Electromagnetic Radiation to Personnel
HF	High Frequency
HF	Human Factors
HFE	Human Factors Engineering
HIC	Head Injury Criteria
HLS	Helicopter Landing Site
HMI	Human Machine Interface
HTA	Hazard Tracking Authorit
IAM	RAAF Institute of Aviation Medicine
IATA	International Air Transport Association
IAW	In Accordance With
ICA	Instructions for Continuing Airworthiness
ICAO	International Civil Aviation Organization
IEEE	Institute of Electrical and Electronic Engineers

IFR	Instrument Flight Rules
IGW	Increased Gross Weight
ILS	Instrument Landing Syste
IMC	Instrument Meteorological Conditions
IOC	Initial Operational Capability
IOP	Installation Operating Permit
IR	Implementing Regulation
IRE	Instrument Rating Examiner
ISA	International Standard Atmosphere
ISO	International Standards Organisation
ISO	International Organisation for Standardisation
JAA	Joint Airworthiness Authorities
JAR	Joint Airworthiness Requirements
JPR	Joint Personnel Recovery
JSSG	Joint Services Specification Guide
JUA	Joint User Airspace
KCAS	Knots Calibrated Air Speed
KIAS	Knots Indicated Air Speed
LFA	Low Flying Area
LFR	Low Flying Route
LOG	Logistics
LSALT	Lowest Safe Altitude
LSE	Life Support Equipment

LVP	Low Visibility Procedures
MAA	Military Aviation Authority
MACRI	Military Aerodrome Certification Review Item
MAML	Military Aircraft Maintenance Licence
MAO	Military Air Operator
MAOC	Military Air Operator Certificate
MARC	Military Airworthiness Review Certificate
MATS	Manual of Air Traffic Services
MAUW	Maximum All Up Weight
MCOA	Military Certificate of Airworthiness
MCRI	Military Certification Review Item
MDOA	Military Design Organisation Approval
MDOE	Military Design Organisation Exposition
MDR	Maintenance Deficiency Report
MEL	Minimum Equipment List
MEP	Mission Essential Personnel
ME	Meteorology
MIL-HDBK-xxx	Military Handbook (US)
MIL-STD-xxx	Military Standard (US)
mlx	millilux
MMEL	Master Minimum Equipment List
MOB	Main Operating Base
MOE	Maintenance Organisation Exposition

MoS	Manual of Standards
MOTS	Military-off-the-shelf
MoU	Memorandum of Understanding
MOWP	Minimum Operational Performance Specifications
MOWP	Method of Works Plan
MP	Management Plan
MPD	Maintenance Planning Document
MPOA	Military Production Organisation Approval
MPOE	Military Production Organisation Exposition
MPS	Mission Planning System
MPTF	Military Permit to Fly
MRP	Mission Risk Profile
MRTC	Military Restricted Type-Certificate
MSA	Minimum Sector Altitude
MSTC	Military Supplemental Type-Certificate
MTC	Military Type-Certificate
MTO	Maintenance Training Organisation
MTOE	Maintenance Training Organisation Exposition
MTOW	Maximum Take Off Weight
NAA	See CAA
NDI	Non-destructive Inspection
NDRA	Non-Defence Registered Aircraft
NDT	Non-destructive Test(ing)

NMAA	See MAA
NPA	Non-precision Approach
NPA	Notice of Proposed Amendment
NTS	Non-Technical Skills
NVD	Night Vision Device
NVG	Night Vision Goggles
NVIS	Night Vision Imaging System
O&SHA	Operating and Support Hazard Analysis
OBOGS	On-board Oxygen Generation System
OBR	On-board Recording
OCS	Operations Compliance Statement
OEI	One Engine Inoperable
OEM	Original Equipment Manufacturer
OFI	Operational Flying Instructor
OIP	Orders, Instructions and Publications
OLS	Obstacle Limitation Surfaces
OP	Other Parties
OPCON	Operational Control
OPHAZ	Operational Hazard
OPS	Operations
OpSpec	Operations Specification
OSN	Operational Support Network
OT&E	Operational Test and Evaluation

PA	Precision Approach
PAL	Pilot Activated Lighting
PBN	Performance Based Navigation
PCN	Pavement Classification Number
PED	Portable Electronic Device
PEE	Portable Electronic Equipment
PEM	Project Engineering Manager
PHE	Periodic Health Examination
PLT	Pilot
pMS	participating Member State
PO	Project Office
POA	Production Organisation Approval
POE	Production Organisation Exposition
PPR	Prior Permission Required
PRD	Prohibited, Restricted and Danger (areas)
PSAC	Plan for Software Aspects of Certification
PSIMP	Propulsion Systems Integrity Management Plan
PSIP	Propulsion Systems Integrity Program
QAI	Qualified Aviation Instructor
QFI	Qualified Flying Instructor
QHI	Qualified Helicopter Instructor
QM	Quality Manager
QMS	Quality Management System

QTP	Qualified Test Pilot
RA	Restricted Area
RDS	Runway Distance Supplement
RM	Responsible Manager
RM	Risk Management
RMA	Risk Management Authority
RMP	Risk Management Plan
RNAV	Area Navigation
RNP	Required Navigation Performance
RP	Remote Pilot
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
RPS	Remote Pilot Station
RPT	Regular Public Transport
RTCA	Requirements Technical Commission for Aeronautics
RTCA	Radio Technical Commission for Aeronautics
RVR	Runway Visual Range
RVSM	Required Vertical Separation Minima
SAE	Society of Automotive Engineers
SAF	Ship Aviation Facility
SAR	Search and Rescue
SARPS	Standards And Recommended Practices (ICAO)
SATCO	Senior Air Traffic Control Officer

SAVMO	Senior Aviation Medical Officer
SB	Service Bulletin
SBAS	Satellite Based Augmentation System
SESHA	Specialist Employment Stream Health Assessment
SFARP	So Far As is Reasonably Practicable
SFI	Special Flying Instructions
SHA	Safety Hazard Analysis
SHOL	Ship Helicopter Operating Limits
SI	Standing Instructions
SI	Structural Integrity
SIRE	Senior Instrument Rating Examiner
SME	Subject Matter Expert
SMS	Safety Management System
SOIU	Statement of Operating Intent and Usage
SOW	Statement of Work
SPC	Service Provision Conditions
SPO	Systems Program Office
SRM	Safety Risk Management
SRM	Structural Repair Manual
SRSPO	Surveillance and Response Systems Program Office
SSAMA	Single Service Aviation Medical Advisor
SSG	System Safety Group
SSP	System Safety Program

STANAG	Standardisation Agreement (in NATO)
STC	Supplemental Type Certificate
STD	Synthetic Training Device
T&E	Test and Evaluation
TC	Type Certificate
TCAE	Type Continued Airworthiness Exposition
TCB	Type Certification Basis
TCDS	Type Certificate Data Sheet
TLS	Through Life Support
TMUCD	Temporarily Medically Unfit Controlling Duties
TMUFF	Temporarily Medically Unfit for Flying (related duties)
TO	Technical Order (USAF)
TRR	Test Readiness Review
TSO	Technical Standard Order (FAA)
UA	Uncrewed Aircraft
UAS	Uncrewed Aircraft System
UASOP	Uncrewed Aircraft Systems Operating Permit
UAT	Uncrewed Aerial Target
UCS	UA Control Station
UK MoD	Ministry of Defence (UK)
ULD	Underwater Locating Device
UPT	User Preferred Trajectories
US DoD	United States Department of Defence

USAF	United States Air Force
USN	United States Navy
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
WHMP	Wildlife Hazard Management Plan
WHRA	Warbird, Historic and Replica Aircraft