***<File Reference Number>***

**STATEMENT OF OPERATING INTENT AND USAGE**

*<Aircraft Photograph>*

***<Aircraft Type>***

***<Year of current version>***

**APPROVALS PAGE**

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\* DASA endorses the SOIU as an appropriate input to Initial Airworthiness and Flight Operations authorisations. This endorsement does not authorise any role or usage stated within the SOIU. For a list of authorised roles the MAO must consult the appropriate DASA Aviation Safety Authorisation (e.g. MTC, MAO OpSpec).

**Amendment Certificate**

Proposals for amendments or additions to this document should be made through DASA to COM FAA/COMD AVNCOMD/ACAUST.

**Certification**

The following is certification that the amendments issued in the amendment list have been correctly incorporated in this document:

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**Distribution**

*<POSITION> <Location>*

DG DASA (F4-1-115 Fairbairn)

DAVNOPS (F4-1-118 Fairbairn)**CONTENTS**

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**STATEMENT OF OPERATING INTENT AND USAGE**

**<***Aircraft Type>*

INTRODUCTION

1. *The SOIU synthesises the capability requirements into intended functional, enabling and sustainment requirements for a Defence aircraft system. The SOIU is to inform decisions on whether an aircraft design remains safe for operations in the defined configuration, roles and operating environment. The development of SOIUs for Defence aircraft ensures adequate detail to operational and technical communities to support initial definition of Type Certification Basis (TCB) design standards, compliance demonstration against the TCB, and ongoing management of aircraft operations consistent with these standards. Importantly, while the SOIU provides a description of the roles and operating environment, it is not a vehicle to promulgate operational limitations.*
2. *The acquisition project office develops the SOIU as a joint operational and technical document, approved by the respective service Two Star Commander (COM FAA/COMD AVNCOMD/ACAUST) following endorsement by DG DASA. In-service management of the SOIU is the responsibility of the Military Airworthiness Organisation (MAO) Accountable Manager (AM), supported by the Continuing Airworthiness Management Organisation (CAMO) and Military Type Certificate Holder (MTCH) (or delegate) and endorsed by DAVNOPS.*
3. This SOIU has been developed for the *<insert aircraft type>* and includes the *<aircraft type>* roles, tasks, flight profiles and operating environment and is issued in compliance with DASR ARO.50.

*<The purpose of the Role, Tasks and Flight Profiles sections are to describe in increasing detail the intended flight operations contemplated by the MAO. This informs the development of the TCB for type-certification and the applicable Flight Operations regulations for approval of the MAOC Operational Specification (OpSpec). Given the purpose of these sections, it is essential that drafters include all information required for DASA to determine the scope of Aviation Safety regulations applicable to the platform.>*

ROLE

1. *This section describes the aircraft’s roles related to the intended operational effects. The description of role usually reflects the roles articulated in service doctrine. For example, these may include offensive counter air, defensive counter air, strategic attack, close air support, air interdiction, anti-surface warfare, anti-submarine warfare, electronic warfare, information operations, air logistics support, airborne operations, air-to-air refuelling, aeromedical evacuation, and intelligence, surveillance and reconnaissance. The role description in this section can be quite high level as the subsequent tasks and flight profiles sections will elaborate in more detail. While the aircraft’s role is a component and intrinsic attribute of capability, the capability objectives that the aircraft supports should not be documented here.*

TASKS

1. *This section describes the tasks required to support the roles described in the previous section. Where different models or configurations of aircraft are assigned different tasks then identify which models/configuration operate which tasks. For example, search and rescue tasks, humanitarian assistance tasks, disaster relief tasks, counter-terrorism tasks, aircraft displays and flypasts, maintenance test flights etc. Note that when developing flight profiles in the next section, there may be multiple flight profiles for each task undertaken. For example, search and rescue may have different flight profiles for over land and over water tasks. Describe each task with sufficient detail such that the MAO and DASA can understand the proposed scope of tasks enabled by the Flying Management System and Authority Approvals. Furthermore, the degree of detail must enable further definition in the subsequent flight profiles and operating environment sections.*

FLIGHT PROFILES

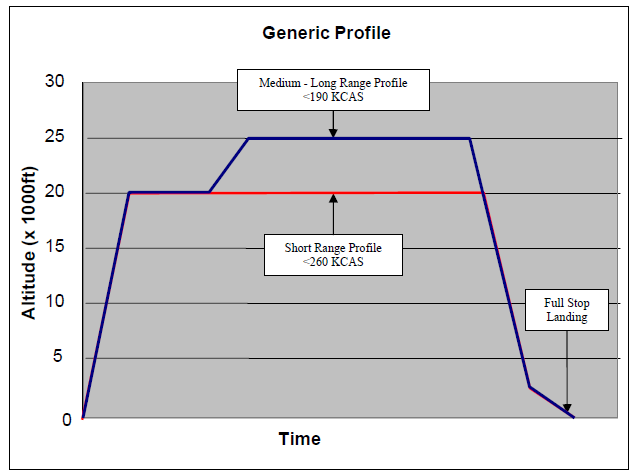
1. *This section should further describe tasks by articulating them in the form of flight profiles. Flight profiles should be compiled into logical groups such as ‘Common Profiles’, ‘Ground Attack’, ‘Air-to-Air’, ‘Aeromedical Evacuation’, etc. Annexes can be used to capture Flight Profiles.*
2. *Each of the representative flight profiles should include the following details where relevant - delete those not applicable and include other details where appropriate:*
   1. **Description of the sortie.** *For example: “Typical profiles for ALS will be either medium range or short range. Generically this profile consists of a sortie in which one take-off, normal climb, cruise, normal descent and landing occur.”*
   2. **Take-off.** *STOL performance, if applicable*
   3. **Climb profile.** *Climb speed (IAS) and time to altitude*
   4. **Cruise profile.** *Cruise speed (IAS or Mach No) and height (above ground level) or altitude for each leg. For example:*
      1. *Medium-long range: Step climb profile to cruise ceiling at long range cruise (LRC) speed (x–yKTAS).*
      2. *Short range: Constant altitude cruise at not above 260 KCAS/M0.55.*
   5. **Duration of sortie:**
      1. Total: *hours*
      2. At various engine settings: *afterburner, reverse thrust or other engine conditions as appropriate*
      3. Taxi time:
      4. Percentage of sortie over land and over sea: *Only important for those aircraft that carry out regular operations at low level over water. This information can be used to determine servicing intervals for the prevention of corrosion.*
   6. **Manoeuvring profile(s):** *complete the following for each manoeuvring profile*
      1. Type of manoeuvre:
      2. Speed: *IAS or Mach No*
      3. Height or altitude: *maximum and minimum*
      4. Manoeuvre ‘g’ envelope: *i.e. maximum and minimum value of positive and, where applicable, negative ‘g’ applied during the manoeuvre. Average ‘g’ loading may also be appropriate.*
      5. Duration of manoeuvre:
      6. Stores released:
   7. **Pressurisations.** *Number of pressurisation cycles (characterised in terms of transitions between pressurised/non-pressurised flight profiles)*
   8. **Air to air refuelling.** *If applicable, include AAR refuelling events table if appropriate*
   9. **Descent profile.** *Descent speed (IAS or Mach No) and time to descend)*
   10. **Circuit profile.** *Circuit speed, circuit altitude and time (typical)*
   11. **Landings:**
       1. Number of landings (touch and go and full stop)
       2. Percentage landings on rough or smooth surfaces
       3. Arrested landings *if applicable*
       4. Sharp take-off/landing profile(s) *if applicable*
   12. **Engines.** *Minimum and maximum thrust, power cycles, profiles*
   13. **Theatre of operation.** *e.g. worldwide.*
3. *Additionally, each representative flight profile should have an accompanying table showing the aircraft configuration for the task and a graphical representation of the profile. For example:*

|  |  |
| --- | --- |
| **Aircraft Configuration** | |
| Stores | *e.g. weapons, external pods, external fuel tanks) including possible configurations of stores following stores release, and mixed configurations* |
| Loads | *e.g. underslung or internal loads* |
| Mission/Role equipment | *e.g. aeromedical equipment, ferry tanks* |
| Life support equipment | *e.g. active noise reduction, personnel survival packs* |
| Take off AUW |  |
| Average sortie weight |  |
| Takeoff fuel |  |
| Takeoff fuel distribution |  |
| Fuel use schedule | *E.g. Climb: 3500 lb/hr*  *Cruise: 1900-2700 lb/hr*  *Descent: 850 lb/hr*  *Land with 1350 lb remaining* |
| Weight movement during cargo delivery, stores release, and so on | *If applicable* |

1. **Flight profile aspects relevant to rotary wing aircraft:** *Add or delete as necessary. These are in addition to those listed above where relevant. Note that basic manoeuvres need not be repeated for each flight profile if they are constant, they could just be stated at the start of this section. Otherwise, include specific details about the manoeuvres for relevant profiles (e.g. number of roll on landings expected, number of approach to ground manoeuvres expected, manoeuvre durations).*
   1. **Hovering:**
      1. **Hover In Ground Effect (HIGE).** *e.g. Hovering at or below x height*
      2. **Hover Out of Ground Effect (HOGE).***e.g. Hovering above x height*
   2. **Transitions to forward flight:**
      1. **Standard take-off.** *e.g. commences from HIGE and involves level acceleration segment*
      2. **Profile departure.** *e.g. performed from HIGE in confined area, and involves transition to forward flight whilst maintaining constant climb angle*
      3. **OGE departure.** *e.g. performed from a confined area or area prone to recirculation and reduced visibility, and is a vertical takeoff with transition to forward flight at a height commensurate with the required transition path.*
   3. **Turns.** *e.g. all climbing turns are conducted at an Angle Of Bank (AOB) to achieve a rate one turn. Level and descending turns are conducted at AOB as required within aircraft limits.*
   4. **Terrain flight:**
      1. **Low level.** *e.g. flown at constant altitude and airspeed, normally a minimum of x ft AGL*
      2. **Contour.***e.g. flown at x ft AGL, conforming generally to contour of terrain. Turns may be conducted at up to y degrees AOB, though generally conducted below z degrees AOB.*
      3. **Nap of the Earth (NOE).** *e.g. flown at varying speeds and heights AGL to make maximum use of cover and concealment.* *As low as 10ft above height of obstacles (AHO)*
   5. **Approach angles.** The following approach angles are typically used:
      1. *Normal approach angle is approximately x degrees*
      2. *Steep approach is approximately y degrees*
      3. *Shallow approach is approximately z degrees.*
   6. **Termination.** Approaches may be terminated as follows:
      1. **Approach to the hover.** *e.g. This approach terminates at HIGE or HOGE. Approach to HIGE may be used prior to landing at an ALA or in an unprepared area. Approach to HOGE may be used when occupying a battle position or firing point or when a vertical descent is required into a confined area. In tactical situations, approach and termination to the hover is generally executed via a terrain flight approach, with termination via a quickstop.*
      2. **Approach to the ground (“Zero/Zero”).** *e.g. The approach is terminated to the ground with zero ground speed on contact, usually tail wheel first, then rotating onto the main wheels. This is the technique used during a degraded visual environment (DVE) approach*
      3. **Roll on landing.** *e.g. Roll-on landings are often conducted to minimise power requirements and/or minimise rotor downwash. They may be used for emergency landings where a suitable landing surface is available. A flared attitude or flat attitude roll-on landing may be flown as required. Maximum ground speed for roll-on landings is restricted by Flight Manual limitations.*
   7. **Autorotations.** *e.g. Autorotations are conducted as part of training sequences and maintenance test flights per the below:*
      1. *e*.*g. During type transition training autorotations are conducted where the power levers remain at ‘FLY’ and the collective is lowered to simulate an autorotation are conducted by day and night.*
      2. *e*.*g. A number of autorotations flown to recover in a hover will be conducted by each pilot yearly in order to maintain currency and competency within UTAP events and annual handling assessments. For simulated emergencies, these autorotations can be flown without retarding the power levers to ‘IDLE’.*
      3. *e*.*g. The Maintenance Test Flight Manual (Ref), details the occasions where autorotations are conducted as part of maintenance test flights. The proscribed procedures are the ‘Flight Check’ and ‘MSPU Rotor Smoothing’ procedures for rotor RPM checks with power levers at ‘IDLE’.*
   8. **Operations below single engine flyaway performance.***e*.*g. Exposure to risk where engine failure occurs and continued safe flight is not possible or where safe landing is not assured has been characterised across three difference categories including non-tactical tasks (including training), tactical tasks and tactical operations. During non-tactical tasks the AH-64E crews will minimise operations within the avoid region of the HV diagram in the Operating Manual. During tactical training there is expected to be limited, controlled exposure in the avoid curve to achieve necessary training outcomes. During tactical operations, exposure may be increased depending on other threats. OEI performance is assessed and risk will be eliminated or minimised SFARP. [A table may be inserted if required to articulate maximum expected exposure to operations below single engine flyaway performance].*
   9. **Number of rotor brake applications:***dual and single engine*
      1. **Startup:**
      2. **Shut down:**

*NOTE: These lists are not exhaustive and should be adapted as appropriate for the aircraft type*

*Example graphical flight profile:*

**

**Mission Mix**

1. *An understanding of the mission mix between roles, including flight profiles associated with each role, is necessary for a comprehensive understanding of the Defence aircraft’s design usage spectrum (DUS). Therefore, an indication of the mix between each profile should be included in this section. For example:*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Role*** | ***ALS*** | | ***SAR*** | ***Training*** | ***ABNOPS*** | | | |
| ***% of total*** |  | |  |  |  | | | |
| ***Flight Profile*** | *Long Range* | *Short Range* |  | *High Level* | *High / Low* | *High / Low / High* | *Low / High /Low* | *Low Level* |
| ***% of total*** |  |  |  |  |  |  |  |  |

OPERATING ENVIRONMENT

1. **Airborne physical environment.** *The airborne physical operating environment should be defined in terms of:*
   1. Physical flight conditions: *Indicate expected or dust, sand, rain, snow, icing, volcanic ash, wind shear, humidity, lightning– may determine whether additional protection such as anti-ice systems or servicings required*
   2. Impact with objects: *hail, bird strike, foreign object debris/damage – may determine whether additional protection is required*
   3. Turbulence: *differences between high and low altitude operations, operating region effects*
   4. Solar conditions: *Level of exposure to* *radiation and UV*
   5. Temperature ranges: *normal or extreme - may assist in determining system environmental operating requirements*
   6. Gust loads/wind shear:
   7. Electromagnetic environment: *e.g. high intensity radiated fields and lightning – this will assist in determining the level of HIRF protection required*
2. **Ground physical environment.** *The ground physical operating environment should to be defined in terms of*:
   1. Short runway landing and approach profiles:
   2. Unprepared airfields/landing sites:
   3. Ship landing/take-off:
   4. Tie-down and lashings: *land-based – expected wind conditions, ship based – expected sea conditions*
   5. Ground handling: *towing distances, frequency and so on.*
   6. Ground running:
   7. Corrosive/salt laden atmospheric conditions whilst on the ground: *such* *as those experienced during embarked operations, requiring specialist continuing airworthiness support (e.g. aircraft washing facilities, surface finish maintenance and so on)*
3. **Functional environment.** *The functional environment represents the suite of conditions for which compliance is mandated prior to conducting specified operations, usually through airspace access regulations (e.g. required navigation performance), or where compliance provides desired safety enhancements for certain niche activities (e.g. frequent operations close to the ground) or is mandated in Defence Policy. For items classified above Official Sensitive, a reference to the applicable document that contains the required information is appropriate. The following functional environmental characteristics need to be clearly defined where applicable:*
   1. Communication, Navigation, Surveillance / Air Traffic Management (CNS/ATM): *each item below will assist in determining design requirements for applicable systems*
      1. Performance Based Navigation (PBN specifications):
         1. RNP/RNAV: *e.g. RNP APCH, RNP 10, RNP 2, RNP 1, RNAV 1 etc*
         2. RVSM
         3. North Atlantic High Level Airspace (NAT HLA)
      2. ADS-B:
         1. *ADS-B In*
         2. *ADS-B Out*
      3. IFR:
      4. VOR/ILS:
      5. TCAS:
      6. IFF: *[List applicable modes]*
      7. TAWS/GPWS:
      8. Reduced visibility operations: *identify the requirement for low visibility operations and the requirement for SA CAT 1/II and III approaches*
      9. Enhanced Flight Vision:
      10. Class of airspace: *e.g. controlled, carry out due regard operations, self-separation*
      11. Navigation systems: *i.e. GNSS/INS*
      12. Communication systems: *BLOS SATCOM, NAVAID availability, ATC etc.*
      13. *Datalink systems:*
   2. Crash protection: *Benign or challenging environment (if aircraft type is applicable). Refer to eADRM S2C6 for definitions*
      1. *Are crash protection requirements applicable to this aircraft type? Yes / No. If no briefly explain why in one sentence?*
      2. *Characterisation of crash protection environment: Benign or challenging environment (if aircraft type is applicable). Refer to DASDRM S2C6 for definitions*
   3. Flight over water: *Will the aircraft operate over water? Will this be extended flight over water operations as described in certification codes and operational requirements? Will there be limitations on overwater operations?*
   4. Defence Long Range Operations: *Do any roles require operation more than 60 mins from nearest divert? What is the DLRO max divert time?*
   5. Electronic flight bags:
   6. Units of measurement (QNH, fuel, oil, etc):
   7. Frequency spectrum requirements:
   8. Night vision capabilities: *Anticipated off the visual minima conditions, this may include identification of aircraft vision equipment that supports NVIS capabilities. Note: Night Vision equipment that is not part of the aircraft type design will be listed below in the standard equipage section.*
   9. Minimum crew requirements for specified roles/tasks:
   10. Teaming: *[Research required to ensure this section has sufficient content to include developments in teaming with Ghostbat and the MUM-T system on Apache]*
   11. Emerging or novel technologies: *An emerging area that my warrant consideration (e.g. AI, disruptive technologies)*

*NOTE: This list is not exhaustive and should be adapted as appropriate for the aircraft type*

STANDARD EQUIPAGE

*<The aircraft type certification only extends to components that form part of the aircraft configuration. Ordinarily, this does not include all of the equipment required to safely conduct the defined roles and tasks. This section should identify the standard equipment that the MAO anticipates will be carried on most missions. Additional, mission specific equipment is listed in the Flight Profiles section above. This information will be used to determine design and operational requirements applicable to use of the equipment.>*

1. *Standard Role Equipment.*
2. *Personal Aeronautical Life Support Equipment.*

RATE OF EFFORT AND PLANNED LIFE

1. *This section should provide an indication of the annual rate of effort as well as the expected or required life for the aircraft type*
2. **Rate of effort (RoE).** *Planned number of hours per annum for the fleet of xx aircraft.*
3. **Planned withdrawal date (PWD).** *Indicate the PWD including the expected out-of-service drawdown if applicable.*

ADF POLICY AND PROCEDURES

1. *There may be ADF policies and procedures, or Australian legislation requirements that could affect Defence aircraft design, therefore requiring inclusion in the Type Certification Basis (TCB). The SOIU must articulate these requirements to ensure that the TCB captures the design requirements.*
2. *Additionally, there may be ADF policies and procedures, or Australian legislation, requirements that could influence Defence aircraft operations. For example, Defence policy and Australian legislation governing laser and radiation safety imposes different exposure standards to those of other countries, which could influence aircraft operations. Therefore, this section should describe any ADF policy and procedures that could influence the Defence aircraft operations, as well as identify Australian legislation that must be complied with that could affect the aircraft design.*

GENERAL INFORMATION

1. *Any additional information that may enhance the understanding of the usage spectrum for the type or model should be included here.*

FUTURE CHANGES

1. **General.** *This section details the initial or future intent for the aircraft type. The SOIU should clearly state if the future use is likely to be the same as historical use. Determinations should be made on future significant modification programs, changes in operational environments, capabilities, roles and aircraft usage.*
2. **Timescale.** *Timescale for expected application of changes described above.*