Australian Government
Department of Defence
Defence Aviation Safety Authority

Quality Management Systems
Expectations of Part 145/M/147 Approval Holders

DCA – Defence Aviation Safety Authority

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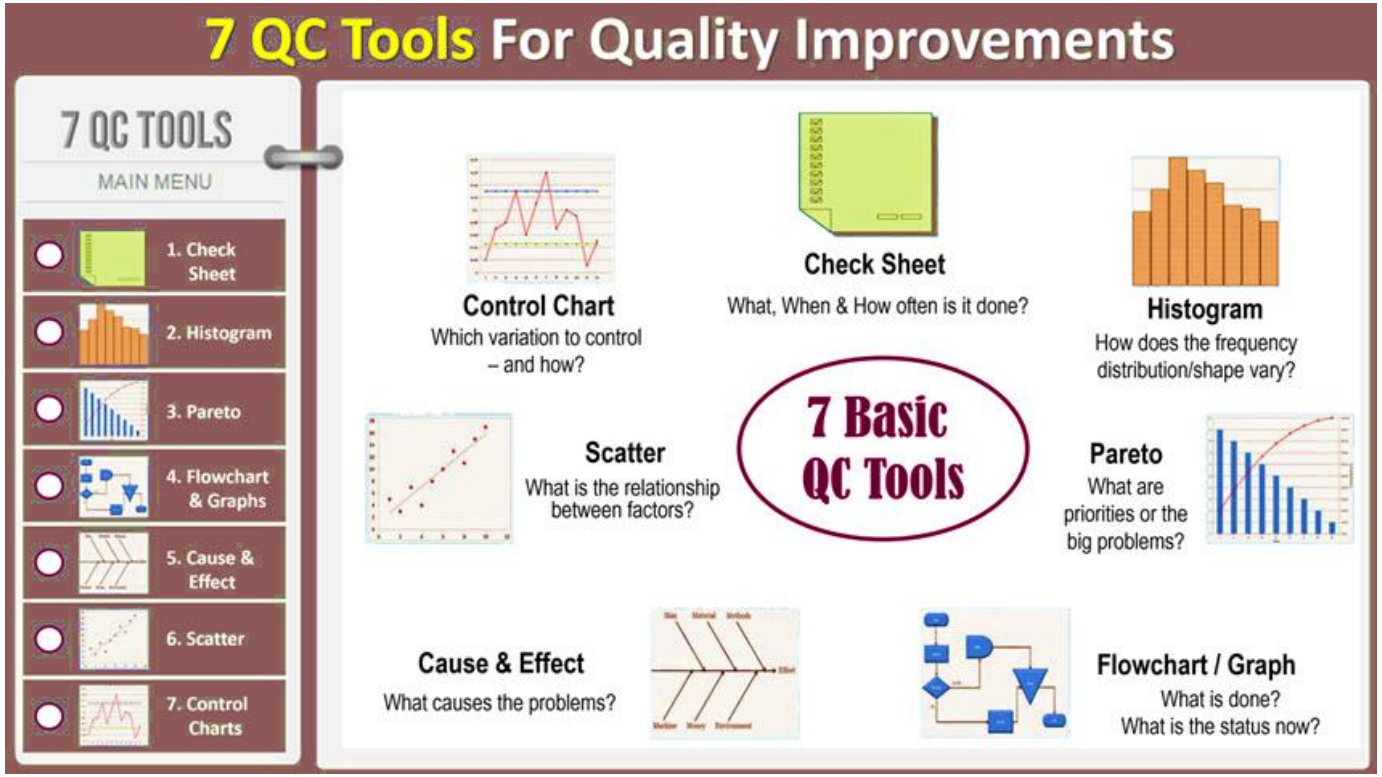
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DASA Findings Summary

- QMS Related Findings are common across majority of defence and commercial organisations under a DASR approval.
- 12 out of 18 DASR M/145 and 5 DASR 147 Level 1/2 Findings are related to QMS



QMS Regulation – MAO Integration

- DASR CAMOs (and military 145s) typically integrate with the MAOs QMS
- When doing so, the *integrated* QMS (iQMS) must satisfy all regulatory requirements, such as DASR ARO.100(c)9, that requires the iQMS to:
  - *… achieve consistency, continuity and compliance of safe operations—through **quality planning**, **quality assurance**, **quality control** and **quality improvement.***
- AMC ARO.100(c)9 further expands:
  - **Quality planning** defines the quality policy and approach so as to meet the safety needs of the MAO.
  - **Quality assurance**, provided through a quality assurance program, contains procedures to verify all activities are being conducted in accordance with applicable safety requirements.
  - **Quality control** is managed by appointed representatives to monitor conformance with, and adequacy of procedures and services, to ensure safe operations.
  - **Quality improvement** consists of reviews and remedial action as appropriate, for the continuous improvement of the safety of operations.
- ***Note**:*
  - *In essence this AMC reflects the 'Plan-Do-Check-Act' principles of all QMS best practice*
  - *These MAO AMC requirements have been specifically contextualised for operations, but are completely complementary and aligned to extant QMS requirements in DASR 145/M/147*

QMS regulation references - DASR 145, DASR M & DASR 147

Element	DASR 145 Reference	DASR M Reference	DASR 147 Reference	Key requirements	AMC ARO100(c)9
Quality System Requirement	145.A.65(a),(b)	M.A.712(b)	147.A.130 (a) (b)	All require a QMS to monitor compliance and ensure airworthiness and safety	Quality Planning
Scope of QMS	AMC 145.A.10	AMC M.A.712(b)	AMC 147.A.130(b)	Must cover all activities affecting airworthiness, including audits, feedback loops, and continuous improvement	
Proportionality Principle	AMC 145.A.65(c)(1)		AMC/GM 147.A.130	The extent of the QMS can be scaled based on the organisations size, complexity, and nature of operations.	
Documentation	145.A.70 (MOE requirements)	M.A.704 (CAME requirements)	147.A.140 (MTOE requirements)	QMS procedures must be documented in the MOE (Part145), CAME (Part M) or MTOE (Part 147)	
Audit programme	AMC 145.A.65(c) 1	M.A.712(b)	AMC 147.A.130(b)	Internal audits must be scheduled and conducted to verify compliance with procedures and regulations	Quality Assurance
Independence of Audit Function	AMC 145.A.65(c) 1	AMC M.A.706 AMC 712 b 2-5 & 8	147.A.130 (b) 1.	Audits must be conducted independently from functions being audited	
Management Review	AMC 145.A.65(c) 2	M.A.712(a)	GM 147.A.130(b) 5	Regular review by management of audit result and corrective actions to ensure continuous improvement	Quality Control.
Quality Manager	145.A.30(c)	AMC M.A.706(f)	147.A.105 (b) .	Part 145 requires a designated Quality Manager. Part M suggest responsible staff within the QMS. Part 147 requires nominated QM.	
Personnel Competency	AMC 145.30(e), AMC 145.A.35	M.A.706	147.A.105 (b)	Personnel involved in the QMS must be adequately trained and competent	
Corrective & Preventive Actions	AMC 145.65(c) 2	Ref to GR.60	147.A.130 (b) 2.	Findings must be addressed through documented corrective / preventive actions with follow-up to verify effectiveness	Quality Improvement

Summary Table - Form 4 Holder Requirements

- Requirement

Requirement	Source	Details
Nomination & Acceptance	DASR M.A.706(c) DASR 145.A.30(c) DASR 147.A.105(b)	CAMO & 145 must nominate key personnel accepted by DASA via DASR Form 4
Competence & Qualifications	AMC M.A.706(f), AMC 145.A.30(b)(3) GM 147.A.105(b)	Must have relevant QT&E (See next slide)
Oversight & Evaluation	AMC M.A.706(f), AMC 145.A.30(b)(3) GM 147.A.105(b)	DASA may interview or assess individual suitability for certain Form 4 roles
Defence Specific Amplification	DASP Volume 3, Ch 4	Must understand Defence-specific requirements and integration

Summary Table - Form 4 Holder Requirements Description

- DASR M (M.A.706(f))
  - **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: 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 Three years experience in aviation quality management.
- DASR 145 (AMC 145.A.30(b)(3)
  - **Qualification:** 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; 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 Three years experience in aviation quality management.
- DASR 147 (GM 147.A.105(b))
  - **Qualifications:**
    - Recommended: Diploma level, or equivalent qualification in Quality Management or other comparable qualification acceptable to DASA.
    - Desirable: Diploma level, or equivalent, qualification in Quality Auditing issued by an Australian registered training organisation (RTO) or other comparable qualification acceptable to DASA
  - **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.

Quality Manager

Under DASR, the Quality Manager must be:

- **Independent from the operational line management** they are auditing.
- **Free from conflicts of interest,** especially when auditing areas for which they are responsible.
- **Given sufficient authority and resources** to perform compliance monitoring independently.

Key point : Secondary duties are **not prohibited,** but

- segregation of duties must be maintained, and
- The Quality Manager must be afforded sufficient time to execute their quality management responsibilities .



ISO 9001/9100 and DASR QMS

What are the requirements of an effective QMS from the Standards?

- *ISO 9001 is a globally recognised standard for Quality Management Systems.*
- *It defines a framework for consistent quality customer satisfaction, and continuous improvement.*

Key principles include:

- *Process approach*
- *Risk-based thinking*
- *Evidence-based decision making*
- *Leadership engagement*

In the defence aviation context, these principles contribute to reliable processes, traceability, quality outputs in a safety-critical environment.

ISO 9001/9100 and Aerospace QMS



ISO 9100 (also known as AS9100) builds upon ISO 9001 with additional requirements tailored to the aerospace and defence sectors.

It introduces :

- *Product safety and reliability*
- *Configuration management*
- *Supply chain control*
- *Operational risk and human factors*

This makes it particularly useful to organisations operating under DASRs.

Benefits of ISO 9100 and DASR alignment



- Streamlined compliance with both civil (ISO) and military (DASR) aviation authorities
- Improved operational efficiency and safety
- Simplified audit and certification processes
- Enhanced reputation and trust

ISO 9001 and 9100 form the foundation for a robust QMS that not only meets international best practices.

- Holding ISO 9001/9100 does not imply the organisation meets the requirements of DASR Quality Regulations
- an organisation holding ISO 9001/9100 approval must still address all DASR QMS requirements

CAMO Obligations - Service Providers

- *What are the Quality obligations of an organisational approval holder for services provided by contracted service providers?*

  - The approved Organisation may contract/task certain continuing airworthiness management tasks to be carried out by competent organisations working under the quality system of the CAMO/AMO.

  - This is an integral element of the approved Organisation's approval where the quality management system is considered to be extended to the contracted/tasked organisation.

  - The approved Organisation's quality system shall monitor all DASR M.A Sub-part G / DASR 145 activities (including contracted/tasked activities) are being performed IAW the approved procedures to ensure airworthy aircraft and to remain in compliance with the DASR requirements.

  - The approved procedures in use by the contracted/tasked organisation form part of the approved Organisation's system. ie. are extended procedures of the approved Organisation and should be cross-referenced from the Exposition.

CAMO Obligations - Service Providers cont.

- *How does the QMS integrate contracted services?*
  - The approved Organisation must explain how the QMS monitors the contracted/tasked activities in the Exposition.
  - The approved Organisation should conduct a pre-contract audit to establish the contracted/tasked organisation can achieve the standards required by DASR with respect to the tasked activities.
  - The quality monitoring should ensure all aspects of DASR compliance are checked annually, including all contracted/tasked activities and may be achieved by either:
    - the approved Organisation performing the independent audits of the contracted/tasked Org
    - the contracted/tasked Org performing the audits and providing the audit reports to the approved Organisation for review
    - the independent audit function is outsourced externally

Note: independence should be established by ensuring audits are not carried out by personnel responsible for the function, procedure or products being checked

CASG QMS

- The Operating Organisation, (MAO) is ultimately accountable for the Continuing Airworthiness (CAw) of the aircraft it operates.
  - *Including **all** CAw management activities contracted / tasked to any CAM-Service Provider (CAM-SP).*
- The CAMOs QMS shall monitor **all** DASR M Subpart G activities, regardless of who is carrying out the activities.
  - *this may be by CAMO staff directly, CASG, UMQR or by the CAM-SP*
- Through the relevant PdS, CASG manage the contracted CAw tasks provided by commercial organisations.
  - *the CAME reflects all CAw requirements and those CAMO tasks performed by each CAM-SP.*
  - *the CAM-SP documents how CAw tasks are provided and assessed.*

CASG QMS cont....

- CAM-SP QMS* monitors contracted / tasked CAM Services through their internal audit system
  - *internal audits are performed by the CAM-SP on behalf of the CAMO and the results are provided to the CAMO through the QM*
- CASG QMS
  - ***conduct independent audits** on contracted / tasked CAM Services IAW CASG procedures.*
  - ***monitors CAw** contracted / tasked activities to CAM-SP to ensure suitability of products.*
  - ***provides feedback** on contracted / tasked CAM Services to the CAMO AM through the QM*

(where the CAM-SP has no approved QMS, the CAMO will extend their QMS to the CAM-SP).*

DASA QMS Expectations

- What expectations does DASA have of an effective QMS?

1. *Quality Plan - Guiding principles and objectives for achieving quality, aligning with the company's mission and strategic direction to meet the customers needs.*
2. *Quality Policy - Documents that outline the specific actions, resources, and procedures an organisation will use to ensure products or services meet DASR requirements*
3. *Sound continuation and communication process – are changes to processes, lessons learnt, continual improvement practices well communicated across the organisation*
4. *Approved Exposition and associated Instructions, procedures and processes – these are reviewed and updated accordingly. DASA approval is sought where necessary*
5. *Approved Quality Audit Plan – the Audit Plan is it being executed effectively? Does the Audit Plan determine, measure and monitor key indicators to demonstrate process performance.*

DASA QMS Expectations cont....

- What expectations does DASA have of an effective QMS cont.…?

6. *Effectively Managing Findings – Findings are analysed to determine the Root Causes, develop appropriate Corrective Actions and assess the effectiveness of action taken*
7. *Appropriately experienced Quality Manager (Form 4 Holder) – a Quality Manager that has the requisite training and experience who can build strong customer relationships*
8. *Quality Key Performance Indicators (KPIs) - KPIs are Specific, Measurable, Achievable, Relevant, and Time-bound (SMART) metrics that are used to track progress towards achieving specific objectives.*
9. *Having the right organisational culture - "Culture Eats Strategy for Breakfast…" this Peter Drucker quote is very apt when considering the effectiveness of the QMS*

- The quote means that no matter how well-designed your system is, it will fall flat unless your organisation shares the appropriate culture. Equally, the people who implement the QMS also matter. So unless everyone is enthusiastic about the quality system, they won't put much effort into ensuring the success of the QMS.

Quality Key Performance Indicators (KPIs)

- What are Quality KPIs?
  - *In aviation, quality indicators are used to measure and monitor the performance of various aspects of operations, capability, safety and quality. These indicators help to assess the effectiveness of processes, identify areas for improvement, and ensure that safety and quality standards are met.*
- What do good Quality KPIs look like? (**Non exhaustive sample only**)
  - **Safety Performance and Culture Indicators:**
    - Safety & Quality training completion rate: Percentage of staff completing required initial/ongoing training. Healthy manning levels and no gaps in workforce training
    - Staff satisfaction: Measured through surveys and feedback mechanisms
    - Employee turnover rate: Separation rate, (not postings)
  - **Operational Performance Indicators:**
    - Defect Deferrals: Number of defects deferred per flight operation per aircraft
    - Command Clearance/MPTFs: Number of Command Clearance/MPTF applied per flight operation per aircraft
    - Capability availability rate: Percentage of aircraft capable of meeting operational schedule
  - **Quality Management Indicators:**
    - Accident/Incident: Number of accidents/incidents reported per flight operation
    - Findings: Number of Findings raised, no repeat Findings, no overdue findings
    - Corrective action closure rate: Effective corrective actions completed within a specified timeframe
    - Reporting Culture: Hazard reporting rate. i.e. How often and proactive is the workforce actively reporting hazards before they become incidents.

DASA QMS Principles



1. **Customer focus:** Organisations should strive to meet customer requirements and expectations.
2. **Leadership:** Accountable Manager should be committed to the QMS and provide the necessary resources and support it.
3. **Engagement of people:** All levels of personnel should be involved in the QMS and understand their roles and responsibilities.
4. **Process approach:** Organisations should manage their processes as systems to ensure consistency and efficiency.
5. **Improvement:** Organisations should continuously seek ways to improve their QMS and products/services.
6. **Evidence-based decision making:** Decisions should be based on data and evidence.
7. **Relationship management:** Organisations should build and maintain strong relationships with stakeholders, including suppliers and customers.

Organisational Culture

- *"What is Quality Culture?"*
  - Quality culture refers to the collective beliefs, attitudes, values, behaviours, and practices within an organisation that prioritises and promotes quality as a fundamental aspect of its operations
- *"What is our Quality Culture?"*
  - Management/Leadership commitment, employee engagement, and a focus on processes, all aimed at preventing defects and delivering a quality product to support capability
- *"How do we know that?"*
  - Implementing and cultivating quality cultures starts with effective communication.
    - Do you measure your Quality Culture?
      - Assess your QMS maturity, conduct quality culture surveys, review and analyse your quality KPIs, review your quality audits, apply continuous improvement .
- *They will no doubt have a range of Quality Indicators but what is the relationship back to culture?*

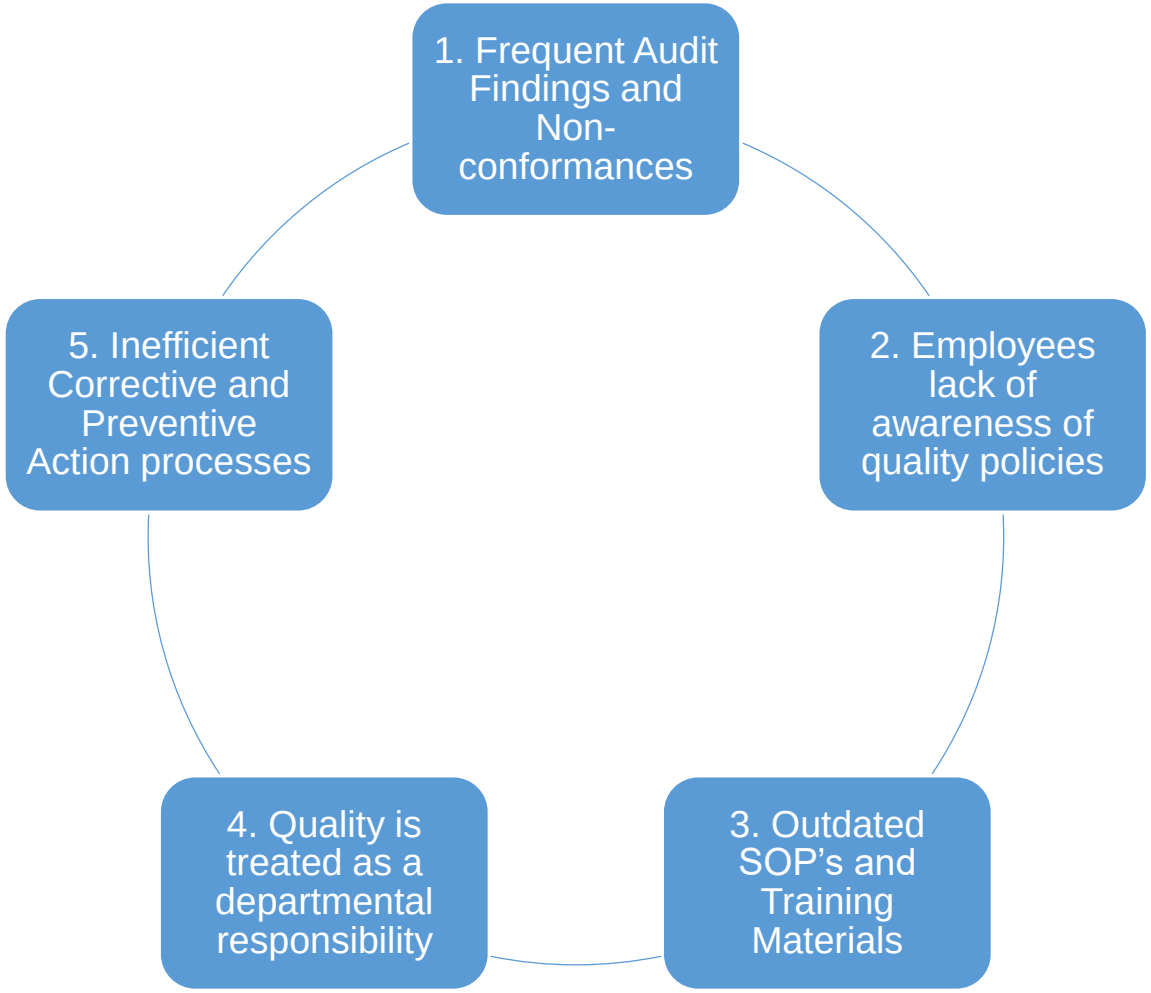
DASA Quality Culture Principles



1. Customer Focus: Placing the customer at the centre of all activities and decisions, understanding their needs and expectations, and consistently delivering products or services that satisfy those requirements.
2. Continuous Improvement: Embracing a mindset of ongoing learning, innovation, and process refinement to enhance quality, efficiency, and effectiveness.
3. Accountability: Holding individuals and teams accountable for the quality of their work, with clear roles, responsibilities, and metrics to measure performance.
4. Communication and Collaboration: Fostering open and transparent communication across all levels and functions of the organisation.
5. Training and Development: Providing employees with the necessary knowledge, skills, and resources to perform their work effectively and contribute to quality initiatives.
6. Data-Driven Decision Making: Using data and metrics to drive decision-making processes, identify trends, and monitor performance.
7. Leadership Commitment: Demonstrating visible and active support for quality initiatives and fostering a culture of quality from top management.

Indicators & Warnings of a Poor QMS

- *The 5 common warning signs that a quality management system is struggling*



Indicators & Warnings of poor QMS

DASA's indicators have included:

- Multiple extensions to Corrective Actions(amber)/Immediate Actions(red flag)
- Quality of submissions - # of reworks/resubmits
- No or inadequate Root Cause Analysis
- Corrective action not adequate. Same observations found during subsequent oversights.
- QMS Staff turnover
- No Audit schedule – DASR's not audited – Considerable number of audits overdue

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