DEFENCE AVIATION SAFETY REGULATION

“DASR M PRACTITIONER”
(Continuing Airworthiness Management)

Course Administration

- Welcome / course intro
- Emergency Brief – Fire Exits / First Aid
- Amenities – Toilet / Coffee / Food
- Mobile Phones
- Course:
  - Style (guided discussion)
  - Questions
  - Terminology (acronym bingo)
  - Feedback (formal/informal)
  - Sign in (PMKeys reported)
Online Course Administration

- Welcome / course intro
- Introductions / comms check
  - Name, organisation, role, experience, aim
- Emergency brief
- Style – guided discussion
- Questions
- GovTeams etiquette
- Terminology (acronym bingo)
- Feedback methods
- Attendance

DASR M Practitioner Course Program

Morning:
- Introduction
- What is a CAMO?
- Continuing Airworthiness Management Exposition (CAME)
- Aircraft Maintenance Program (AMP)
- Analysis of AMP
- Reliability Program
- Accomplishment of Maintenance
- Coordination of Scheduled Maintenance
- Pre Flight Inspection
- Management of Defects
- Airworthiness Directives
- Modification, Repair and Inspection

Afternoon:
- Aircraft Continuing Airworthiness Record System
- Aircraft Technical Log
- Weight and Balance/Symmetry Checks
- Occurrence Reporting
- Maintenance Check Flights
- Airworthiness Review
- Recognition of other Airworthiness Authorities
- Quality Management System
- Safety Management System
- Summary
- Discussion/Feedback
Learning Outcomes

To provide an understanding of DASR M regulations and their application to a Continuing Airworthiness Management Organisation.

Specifically:

- CAMO Structure
- CAMO Responsibilities
- Continuing Airworthiness Tasks
- Airworthiness Review
- CAME Contents

How did we get here?
Nimrod Accident

- The Nimrod was a 30+ year old surveillance aircraft operated by UK MOD.
- In 2006, suffered a catastrophic mid-air fire, leading to total loss of aircraft and all 12 crew.
- British QC (Haddon-Cave) provided independent investigation into the accident.
- Identified multiple engineering, maintenance, design and organisational factors.
- UK MOD was forced (by government) to change its system for regulating aviation safety.

Findings from the Nimrod Report

The RAF’s maintenance regime of the Nimrod fuel system prior to the loss of XV230 in September 2006 was unsatisfactory because:

- There was insufficient analysis of fuel leak trends,
- Fuel system tests were not carried out properly,
- There was no system of sampling seals,
- There was poor guidance in Maintenance Manuals, and
- The RAF did not follow the manufacturer’s guidance on the recommended inspection frequency of the FRS seals.
Findings from the Nimrod Report

7 pillars of Nimrod:
- Responsibility
- Risk to life/operators input
- Challenge orthodox practices
- Have moral courage
- Leadership
- Just Culture
- Duty Holders (accountability vs. responsibility)

The outcomes:
- Clear lines of accountability and responsibility
- Issues with outsourcing
- Assignment of risk
- Status of continuing airworthiness
Defence Aviation Safety Regulations (DASR)

• DASR is based on European Military Airworthiness Requirements (EMAR), derived from ICAO based EASA airworthiness regulations:
  – Credible and defensible aviation safety framework
  – Hazard and (mostly) outcome based regulation
  – Common part and numbering system to EMAR
  – Any unique Australian requirements are in green text
  – AMC is ‘an’ acceptable means of compliance – not the only solution
  – GM is non-binding explanatory and interpretation material

• For DASR queries or to recommend changes to DASR:
  – Liaise with DASA Desk Officer in the first instance
  – Use DASR Query Form or DASR Change Proposal Form
Better Practice Regulation

• Hazard based
  – Focus regulation on safety hazards
  – Remove regulation not related to safety hazards

• Outcome based
  – Focus regulation on the outcome needed to treat threats to safety and not the means to achieving the outcome

INTRODUCTION

1. Defence has a moral and legal obligation to ensure risks to the health and safety of personnel arising from military aircraft operations are eliminated or otherwise minimised so far as is reasonably practicable. The basis for these safety obligations is found in Commonwealth Work Health and Safety Legislation and Common Law.

2. Military aviation is a unique and complex undertaking that necessitates the amplification of statutory Work Health and Safety requirements for the Defence Aviation context. This amplification of safety obligations and provision of the means to discharge them is achieved through the adoption of a structured aviation safety framework.
UNCLASSIFIED

JOINT DIRECTIVE 04/2018 BY THE CHIEF OF DEFENCE THE FORCE AND SECRETARY, DEPARTMENT OF DEFENCE

EXTENSION OF JOINT DIRECTIVE 24/2016 ON THE DEFENCE AVIATION SAFETY FRAMEWORK

INTRODUCTION

BACKGROUND
2. Joint Directive 24/2016 is widely known and regarded by Defence, industry and partner nations as the legal basis for the Defence Aviation Safety Authority to implement and administer the Defence Aviation Safety Program.

3. An extension of joint directive 24/2016 beyond 31 December 2018 is necessary for the full implementation of the Defence Aviation Safety Program.

UNCLASSIFIED

DASA Purpose – WHS and CDF/SEC JD 24/2016

Command exploits air power in satisfaction of Australia’s Strategic Defence Initiatives (SDIs) while satisfying statutory safety obligations. Command must ensure that hazards are eliminated SFARP or if not, that risks are minimized SFARP.

DASF amplifies statutory safety obligations in line with international conventions for aviation safety. DASF assures that safety of military aviation is both credible and defensible.

Defence Aviation Safety Framework
- Defence AA
- DASA
- DASP
  - Policy/Regulation
  - Promotion/Education
  - Initial Safety Case
  - Ongoing Assurance
- DASR
Source: Sea King Board of Inquiry Report

ASSURE: ‘to give confidence, to reassure (implying a monitoring and reporting role)’

ENSURE: ‘to make sure, certain or safe (implying a responsibility to make it happen)’

UNCLASSIFIED

Command must ensure that hazards are eliminated SFARP or if not, that risks are minimized SFARP

Risk decisions regarding capability / safety

Obligation from S10/11 of Defence Act to amplify statutory safety obligations IAW international conventions in safety aviation

UNCLASSIFIED
Airworthiness Definition

DASR (and EMAR) definition

- 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.

Consistent with EASA use and ICAO definition of “Airworthy”

- The status of an aircraft, engine, propeller or part when it conforms to its approved design and is in a condition for safe operation

“Focus on the Air Vehicle”
DASR Terminology

Derogation /dəˈɡeɪʃən/ – ‘An alternative to’

Example:

• **DASR M.A.901(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.

• **By derogation 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.

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Initial vs Continuing Airworthiness

**Initial Airworthiness (& Continued):**

- Type Design
- Certification
- Production
- Design changes post initial type certification

**Continuing Airworthiness:**

- All of the processes ensuring that the aircraft:
  - complies with airworthiness requirements
  - is in condition for safe operation
  - supported within a ‘Controlled Environment’
Summary

• Defence Aviation Safety Regulation (DASR) are based on European Military Airworthiness Requirements in an Airworthiness context

• Better practice regulations should be hazard and outcome based

• Command must ensure that hazards / risks are eliminated, or otherwise reduced So Far As Reasonably Practicable (SFARP)

• Defence Aviation Authority assures Defence Aviation Safety

• Defence Aviation Safety Framework is setup through Joint Directive 24/2016, extended by JD 04/2018

• DASR comprises of basic and implementing regulations

Questions?
What is a CAMO?

Do you perform CAMO-like tasks?

- Own and operate a car?
- What are your responsibilities?
- i.e. ‘continuing roadworthiness’

Operate  Monitor Performance  Approved Parts
Fix (maintain)  Scheduled Maintenance  Configuration  Modification
What is a CAMO responsible for?

On behalf of the ‘Operator’ (MAO) the CAMO is to ensure that the various aircraft ‘Tail Numbers’ are:

- Of the correct Configuration (IAW MTC)
- Available to meet the intended purpose
- Safe to fly (ie Airworthy)

*The CAMO does NOT have to actually perform these tasks – CAMO services can be contracted*

Indicative Continuing Airworthiness Management Tasks

- Aircraft Continuing Airworthiness Record System
- Accomplishment of Maintenance
- Aircraft Maintenance Program
- Management of Defects
- Airworthiness Review
- Pre-Flight Inspection
- Reliability Program
- Analysis of AMP
- Occurrence Reporting
- Aircraft Tech Log
- Airworthiness Directives
- Maintenance Check Flights
- Modification, Repair & Inspection
- Coordinate scheduled maintenance
- Weight & Balance/Symmetry Checks
A Military Air Operator

DASR Organisational Structure
DASR Framework

**Operating Organisation** – aka Military Air Operator (MAO)
- Conducts flight operations
- Manages the QMS/SMS
- Has an associated Continuing Airworthiness Management Organisation (CAMO)

**DASR M – CAMO**
- Individual aircraft configuration management
- Fleet maintenance planning
- Management/approval of modification/repairs onto individual aircraft
- Maintenance system – including release to service
- Airworthiness Reviews – product configuration sampling

**DASR 145 – Maintenance Organisation**
- Maintenance of aircraft and components (inclusive of repair embodiment)

**DASR 147 – Aircraft Maintenance Training Organisations**

**DASR 66 – Military Aircraft Maintenance Licences (MAML)**

**DASR 21J – Design Organisation**
- Initial design and changes to type design
- Provide approved designs to CAMO

**DASR 21G – Production Organisation**
- Production of aeronautical product
- Maintain production organisation in conformity with approved data and procedures
- Provide statement of conformity
7 CAMOs in Defence

- Air Mobility Group (AF)
- Air Combat Group (AF)
- Surveillance and Response Group (AF)
- Air Warfare Centre (AF)
- Air Force Training Group (AF)
- Forces Command Aviation Branch (ARMY)
- Fleet Air Arm (NAVY)
Why is DASR M Required?

**DASR M.A.201(a):** The Operating Organisation is accountable for the continuing airworthiness of an aircraft and shall **ensure** that no flight takes place unless:

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; and
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.
Why is DASR M Required?

DASR M.A.201(h): The Operating Organisation is responsible for the continuing airworthiness of the aircraft it operates and shall:

1. be appropriately approved, in accordance with DASR M Subpart G, for the management of the continuing airworthiness of the aircraft it operates; and

2. be approved in accordance with DASR 145 or contract/task directly (or through a Continuing Airworthiness Management Organisation (CAMO)) such organisations; and

3. ensure that paragraph (a) is satisfied (see previous slide).

DASR Key Organisational Appointments

<table>
<thead>
<tr>
<th>MAO</th>
<th>DASR M (Commonwealth)</th>
<th>DASR 145</th>
<th>DASR 145 (Commercial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountable Officer</td>
<td>Accountable Manager (AM)</td>
<td>Accountable Manager (AM)</td>
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</tr>
<tr>
<td>Responsible Appointment</td>
<td>Continuing Airworthiness Manager (CAM)</td>
<td>Responsible Manager (RM)</td>
<td>Responsible Manager (RM)</td>
</tr>
<tr>
<td>Standards – Processes &amp; People</td>
<td>Quality Manager (QM)</td>
<td>Quality Manager (QM)</td>
<td></td>
</tr>
<tr>
<td>Standards - Product</td>
<td>Airworthiness Review (Awr) Staff</td>
<td>NDT R Level 3</td>
<td>NDT R Level 3</td>
</tr>
</tbody>
</table>
**DASR Form 4**

- Complete DASR Form 4 and supporting evidence (application pack)
- Submit to DASA
  - Note: One Form 4 is required for each nominated position

**Acceptance**

- DASA assessment of application pack against DASR QTE requirements
  - Accept / Accept with conditions / Resubmit / Not accepted
  - Form 4 returned to applicant

**Authorise**

- Organisation authorises member to carry out duties of position

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**Accountable Manager**

*Reference: DASR M.A.706(a)*

- Corporate authority for ensuring that all continuing airworthiness management activities can be resourced and carried out
- Where the CAMO is part of a MAO, Accountable Manager shall cover both organisations

- ADF Organisations: Senior military commander
- Commercial Organisation: Chief Executive Officer
- Not required to be knowledgeable on technical matters
Continuing Airworthiness Manager  
Reference: DASR M.A.706(d)

- Responsible for the management and supervision of continuing airworthiness activities

- Qualifications
  - Engineering degree or aircraft maintenance technician qualification with additional education acceptable to DASA
  - Chartered Engineer (CPEng, CEngT or CEngA)
  - Engineering Executive (EngExec) status

- Experience
  - Five years relevant work experience of which at least two years should be from the aeronautical industry in an appropriate position.

Quality Manager  
Reference: DASR M.A.706(f), DASR M.A.712(a)

- Monitor compliance with, and the adequacy of, procedures required to ensure airworthy aircraft.
- Must have a feedback system to the Accountable Manager.

- Qualifications
  - Diploma level, or equivalent, qualification in Quality Auditing or other comparable qualification.

- Experience
  - Five years relevant work experience including:
    - Two years experience as staff of DASA or a regulated Organisation
    - Three years experience in aviation quality management.
DASR Terminology - ‘Alternate Appointment’

Typical Military CAMO

Other Possible Arrangements - ‘Acting’

(*) Form 4 Holder
The Continuing Airworthiness Management Exposition (CAME)

The CAME documents relevant information about the CAMO’s:
- Organisational structure, scope, facilities, staff, etc.
- Continuing Airworthiness Management Activities.
- Quality System.
- Safety Management System.
- Airworthiness Review Process.

Have you seen your organisation’s CAME?

CAME (General)

- Accountable Manager’s Statement (M.A.704)
- Organisation Objective
- Relationship with Other Organisations
- Scope of CAMO Services (M.A.704)
- Management Positions and Employees (M.A.706)
- Organisational Chart
- Facilities and Equipment (M.A.705)
- Documentation
- Exposition (M.A.704)
CAME (General) - Scope of CAM Services
Reference: DASR M.A.704(a)2

The CAMO must outline the scope of its continuing airworthiness management activities by listing:

- All functions and privileges required to ensure the aircraft are maintained in an airworthy condition. Privileges may include:
  - Issue of Military Airworthiness Review Certificates (MARC), and/or
  - Changes to the Aircraft Maintenance Program (AMP).
- All aircraft types and tail numbers.

CAME (General) - Management Positions and Employees
Reference: DASR M.A.706

The CAME will list the key management positions of:

- Accountable Manager
- Continuing Airworthiness Manager
- Nominated Management Team
- Quality Manager (AMC M.A.706(f))
- Airworthiness Review Staff (M.A.707)
- Maintenance Program Approval Employee (AMC M.A.706(f))
CAME (General) - Management Positions and Employees

Reference: DASR M.A.706

Suitable management personnel should demonstrate knowledge of:

- Quality System,
- Applicable regulations,
- The organisation’s CAME,
- Maintenance arrangements, and
- A relevant sample of the type/s of aircraft gained through a formalised training course.

CAME (General) - Documentation


- When undertaking any continuing airworthiness activity, the persons engaged in the activity must have access to applicable and current data, including maintenance data, from the (M)TC holder/DASR 21J.

- The CAMO must have a system to maintain the currency of the maintenance data.
Proposing changes to the CAME

- Ensure that you understand ‘WHAT’ the DASR outcome is.
- Document ‘HOW’ you plan to comply (keep it simple and achievable).
- Identify ‘WHO’ is responsible for achieving the outcome.
- Should be written such that new personnel can easily understand how the CAMO works.

*The CAME is written by the CAMO, for the CAMO. Do not write it for the Authority.*

Additional Information

- Some contractors and/or SPOs may separately document the CAM services they provide. For example:
  - CASM (Continuing Aw Services Manual),
  - CAMSP (Continuing Aw Management Services Plan),
  - CASS (Continuing Aw Services Summary),
  - Handbooks, etc.

- Not mandatory but if referenced in the CAME, are treated as part of the CAME.
Questions?

Aircraft Continuing Airworthiness Record System
Accomplishment of Maintenance

Aircraft Maintenance Program

Management of Defects
Airworthiness Review
Pre-Flight Inspection
Reliability Program
Analysis of AMP

Occurrence Reporting
Aircraft Tech Log
Airworthiness Directives
Maintenance Check Flights
Modification, Repair & Inspection
Coordinate scheduled maintenance
Weight & Balance/Symmetry Checks

CAMO Tasks
Aircraft Maintenance Program

Reference: DASR M.A.302(a)4

- The intent of this regulation is to establish and have approved by DASA an Aircraft Maintenance Program (AMP)

- The purpose of the AMP is to establish what maintenance is required, when it is to be carried out and how it is to be performed – to maintain ‘continuing airworthiness’ of the aircraft or component.

Development and Variation of AMP

- Initial AMP based on MRB report/MPD/MSG3 logic
- Incorporates reliability/health monitoring throughout aircraft life cycle
Variation of AMP

Variation of approved AMP:
- CAMO to establish procedures to either make and approve changes \( (\text{if privileged}) \) or recommend changes to DASA

DASA initiated variation of approved AMP:
- CAMO is to establish procedures for the incorporation of DASA mandated variation

Structures, Engines and Propellers:
- Procedures to manage variation to the AMP are required for complex systems such as structures, engines and propellers (ASIP/PSIP)

What is an AMP

Reference: DASR: M.A.302, Appendix I to AMC M.A.302

AMP contains:
- Details of all maintenance to be carried out
  - Scheduled maintenance
  - Associated procedures
  - Standard maintenance practices
- Frequency of maintenance
- Specific tasks linked to type and operations
- Instructions issued by DASA (ADs)
- Instructions for Continuing Airworthiness (ICA)
- Additional instructions (Error capturing)
- Pre-flight inspection tasks accomplished by maint pers
- Reliability program
Types of Maintenance Data Constituting AMP

- Instructions for Continuing Airworthiness (ICA) is only a subset of all maintenance data that must be complied with in the conduct of maintenance. Other sources of maintenance data include:
  - Airworthiness Directives (or other applicable requirements or operational directives issued by DASA)
  - Modification and repair implementation instructions
  - Applicable maintenance standard practices.

- ICA should not be used as a collective term for all maintenance data as other sources of maintenance data are derived from different sources and subject to different regulation.

Types of Maintenance Data Constituting AMP

- Maintenance organisations may locally modify maintenance instructions using an approved procedure specified in their Maintenance Organisation Exposition (MOE) only for the purposes of efficiency, achieving the intent of the instructions when they are deficient, or for the use of alternative tools/equipment.
- The maintenance organisation shall demonstrate that the changes result in equivalent or improved maintenance standards.
- A maintenance organisation must notify the MTC holder (or relevant design approval holder) when it has locally modified maintenance instructions, so consideration can be given to amending the master copy for wider distribution. Only the MTC holder or design approval holder can approve amendments to maintenance data.
AMP – Indirect Approval Procedure
Reference: DASR M.A.708(b)(2)(ii)

- The AMP and its amendments are required be approved by DASA, unless covered by an indirect approval procedure

- Indirect approval procedure shall:
  - define the eligible amendments (i.e scope of changes) to the AMP
  - process to be followed when changing AMP
  - describe the personnel authorisation process
  - be part of (or referenced by) the CAME, and
  - be approved by DASA

AMP – Maintenance Program Approval Employee (MPAE)
Reference: DASR AMC M.A.706(f)

- If CAMO has privilege to amend AMP the CAMO should authorise MPAE to approve AMP or variations to AMP

- MPAE QTE requirements (AMC M.A.706(f)):
  - Qualifications
    • Maint licence or equivalent, or engineering degree
  - Experience
    • At least 3 years experience in development and management of maintenance program
  - Knowledge
    • Regulations and standards for AMP and reliability
    • Maint requirements linked to op approvals
    • Specifications and standards used by TC holder
    • Certification basis
    • Aircraft structure and systems
AMP – Error Capturing Methods
Reference: DASR AMC M.A.302(d)(3)

- Ensure that an error capturing method is implemented after performance of any critical maintenance task.
- CAMO is to establish procedures for the identification of critical maintenance tasks and associated error capture methods which must be included in the AMP.
- CAMO can identify critical maintenance tasks and associated error capture methods using:
  - information from the MTC Holder, and/or
  - methodology at Appendix XIV to DASR AMC M.A.302(d)(3).
- DASR 145.A.48(b) and associated AMC detail how to conduct error capturing methods.

AMP – Periodic Validation
Reference: DASR M.A.302(g)

- CAMO is to establish procedures for the periodic (at least annual) validation of the AMP to ensure:
  - it meets operational and safety requirements
  - any new requirements from the NMAA/MTCH/DASR 21 MDOA are captured
  - It is current (i.e. amended)
Analysis of effectiveness of AMP

Reference: DASR M.A.301(a)4

• Procedures should be in place to review and analyse the effectiveness of the AMP with regard to
  – spares,
  – established defects,
  – malfunctions and damage,
  – and to amend the maintenance programme accordingly.

• Methods for analysis include
  – Reliability Program
  – Review of usage data and occurrence reports
  – Condition reports
Reliability Program

Reference: DASR M.A.302(f)

- Reliability program is a **proactive** measure to enhance safety and optimise the AMP

- Output from a Reliability Program used to:
  - Review and validate the AMP
  - Support analysis of the AMP
  - Support EROPS/DLRO
  - Provide feedback to the MTCH/OEM/21J
Reliability Program Considerations

- Selection of target items. Typical considerations:
  - Safety
  - Cost
  - Downtime
  - Cost of ownership

- The reliability program stages:
  - Collect
  - Analyse
  - Synthesise
  - Act on data
  - Report

Effective Reliability Program

- The primary objective of the program is to monitor Reliability, Availability and Maintainability (RAM) to ensure that the maintenance program promotes fleet safety.

- Secondary objectives are to ensure that maintenance, operating, engineering, training and supply support are optimal to maximise fleet RAM for the lowest life cycle cost.
Effective Reliability Program

- RAM monitoring is achieved by:
  - Determining the items in the system to be monitored
  - Determining the metrics to be used for each item
  - Setting performance standards

- Typical reliability metrics include:
  - Corrective maintenance removal rates
  - System and component failure rates
  - Shutdown or failure rates for propulsion engines
  - Repair and delay times (administrative and logistic) due to an item failure
  - Condition data such as hydraulic or pneumatic subsystem leak down rates, heat exchanger temperatures etc

The data sources, collection and analysis methods should be included in the reliability program

- Information sources may include:
  - Operator reports
  - Technical logs
  - Inspection and sampling reports
  - Maintenance terminals
  - On-board maintenance systems
  - Maintenance and overhaul workshops
  - Stores inspection reports
  - Continuing Airworthiness Record System
Questions?

Aircraft Continuing Airworthiness Record System

Accomplishment of Maintenance

CAMO Tasks

- Aircraft Maintenance Program
- Management of Defects
- Airworthiness Review
- Pre-Flight Inspection
- Reliability Program
- Analysis of AMP
- Occurrence Reporting
- Aircraft Tech Log
- Airworthiness Directives
- Maintenance Check Flights
- Modification, Repair & Inspection
- Coordinate scheduled maintenance
- Weight & Balance/Symmetry Checks
Accomplishment of Maintenance

DASR M.A.201(g): Maintenance of military aircraft, and components thereof shall be carried out by a DASR 145, or another maintenance organisation accepted by DASA.*

• The DASR 145 will ensure that a Certificate(s) of Release to Service (CRS) is issued prior to flight at the completion of maintenance (DASR 145.A.50(b)).
• The CAMO must ensure that an aircraft is not released to service unless all maintenance events are covered by a CRS(s) (DASR M.A.801(b)).

* Refer recognition slides for amplification

Certificate of Release to Service (CRS)

The CRS is an attestation made by authorised Certifying Staff that:

1. All maintenance ordered/tasked has been properly carried out, IAW maintenance data and the MOE, and
2. There are no non-compliances which are known to affect flight safety.

Achieved through:

1. Oversight and management of the maintenance, and
2. Assessment of the flight safety impact of the completed maintenance.

There are two types of CRS:

• A CRS for Aircraft, and
• A CRS for Components (Authorised Release Certificate/Form 1)
CRS for **Aircraft**

*References: DASR M.A.801, 145.A.50, M.A.305*

- CAMO is to have procedures to:
  - ensure a CRS is received at the completion of maintenance – details incorporated into the aircraft continuing airworthiness record system within 30 days
  - that the A/C is not released for flight unless all maintenance is covered by a CRS(s).

- Incomplete maintenance:
  - A CRS can be issued provided incomplete maintenance is identified and CAMO approval is obtained and documented in the CRS.
  - Many other options are available for the management of defects.

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CRS for **Components** (Authorised Release Certificate)

*References: DASR 145.A.50(d), M.A.802*

- An Authorised Release Certificate is for return to service of component or aeronautical product (engine, propeller, APU)

- **Issued for new and/or repaired components**

- All components must have a valid Authorised Release Certificate before fitment to an aircraft

- Authorised Release Certificates are retained and form part of the continuing airworthiness record system

- Components without an Authorised Release Certificate or acceptable alternate, should be considered as unserviceable
### Raised for Components that have been Manufactured (Block 13a)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Part Number</th>
<th>Qty</th>
<th>Serial Number</th>
<th>Status/Work</th>
</tr>
</thead>
</table>

**Remarks**

- 13a. Certified that the items identified above were manufactured in conformity to:
  - approved design data and are in a condition for safe operation
  - non-approved design data specified in Block 12

- 13b. Authorised Signature
- 13c. Approval/Authorisation Number
- 13d. Name
- 13e. Date (dd/mm/yyyy)

**Notes**

- 13f. Approval/Authorisation Number (Department signature only)
- 13g. Name
- 13h. Date (dd/mm/yyyy)

### Raised for components following Completion of Maintenance (block 14a)

<table>
<thead>
<tr>
<th>Item</th>
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<th>Part Number</th>
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**Notes**

- 13f. Approval/Authorisation Number (Department signature only)
- 13g. Name
- 13h. Date (dd/mm/yyyy)


Coordinating Scheduled Maintenance

Reference: DASR M.A.708(b)8

• This section should set out the procedures that the CAMO must follow to ensure:
  – the coordination of scheduled maintenance,
  – the application of Airworthiness Directives,
  – the replacement of Service Life Limited parts and component inspection
  – the work is carried out properly
Maintenance Interval Extension Requests (MIER)

Reference: DASR GM M.A.301(a)3, GM M.A.708(b)(4)

A CAMO can amend the scheduled interval of maintenance in the following ways:

1. Adjust the packaging of maintenance within approved limitations
2. Extend the AMP task interval (if privileged)
3. Request DASR 21J design support

Packaging of Maintenance

Time

Task 1  Task 2  Task 3

Major Servicing
Service Life Limited Parts
Reference: DASR M.A.710(a)7

The CAMO must:

• ensure all service life limited components installed on the aircraft are properly identified, registered and have not exceeded their approved service life limit.

• have a system to gather, record, monitor and report the usage of Service Life Limited parts.

CAMO Tasks

- Pre-Flight Inspection
- Reliability Program
- Analysis of AMP
- Occurrence Reporting
- Aircraft Tech Log
- Airworthiness Directives
- Maintenance Check Flights
- Modification, Repair & Inspection
- Coordinate scheduled maintenance
- Weight & Balance/Symmetry Checks

Aircraft Continuing Airworthiness Record System
Accomplishment of Maintenance
Aircraft Maintenance Program
Management of Defects
Airworthiness Review
Pre-Flight Inspection  
Reference: DASR M.A.301(a)1

- Pre-flight inspection is intended to mean all of the actions necessary to ensure that the aircraft is fit to make the intended flight.
- CAMO is required to ensure all members engaged in the conduct of a pre-flight inspection are competent (i.e. authorised).
- Pre-flight inspection is not maintenance, unless included within the AMP.
  - therefore pre-flight inspection tasks do not require a certificate of release to service.

What makes up a pre-flight?

- Walk around to inspect condition of aircraft, emergency equipment and stores for obvious signs of wear, damage or leakage.
- Inspection of the aircraft’s continuing airworthiness records.
- Check consumable fluids and gases are correct specification, free of contamination and correct level.
- All doors and panels are securely fastened.
- Locks for control surfaces, landing gear, pitot/static covers, engine intake blanks, etc. have been removed.
- Check aircraft external surfaces and engines are free from ice, snow, dust, sand etc.
- Removal of safety/arming pins.

*Note:* Tasks such as oil and hydraulic fluid uplift and tyre inflation may be considered part of the pre-flight inspection.
Questions?

Aircraft Continuing Airworthiness Record System
Accomplishment of Maintenance
Aircraft Maintenance Program
Management of Defects CAMO Tasks
Airworthiness Review
Pre-Flight Inspection
Reliability Program
Analysis of AMP
Occurrence Reporting
Aircraft Tech Log
Airworthiness Directives
Maintenance Check Flights
Modification, Repair & Inspection
Coordinate scheduled maintenance
Weight & Balance/Symmetry Checks
Management of Defects

References: DASR 145.A.50(e), M.A.301(a)(2)

• The CAMO shall ensure that:
  – all defects discovered or reported, are managed appropriately until corrected by a DASR 145
  – there are options for deferment

• The DASR 145 shall comply with the CAMO’s defect management system IAW the CAME and in consultation with the CAMO
A.17(a) / R.35 (a) minimise,
*objective is to eliminate

Reg.36 Hierarchy
of controls measures

Safety Risk Management Process
Management of 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,

• Deferring the defect may be considered. In these cases, it may be appropriate for the CAMO to defer defects subject to a deferment period using credible data.

Management of Defects – Credible Data

• Credible data is considered to be any instructions or information resources defined by the CAMO in the NMAA 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:
  – MEL/CDL
  – Maintenance Data as defined by DASR 145.A.45(b)
  – OEM publications / Type certification data
  – Designs or advice from the relevant design approval holder
  – Field Service Representative data
  – Flight operations advice
MEL or CDL (if available)

- **Master Minimum Equipment List (MMEL)** – Established for a particular aircraft type by the manufacturer. It identifies items which, individually, may be unserviceable at the commencement of a flight.

- **Minimum Equipment List (MEL)** – This list is prepared by the operator for their own aircraft, taking into account their aircraft configuration and the relevant operational and maintenance conditions.

- **Configuration Deviation List (CDL)** – Similar to MEL, but refers to external components that are missing/uninstalled and may have associated *operating limitations and/or performance corrections*.

### Using the MEL/CDL:

- The Operating Organisation develops the MEL/CDL and, once approved by DASA, provides the MEL/CDL to the aircrew and DASR 145.

- The approved MEL/CDL can be used by the pilot or authorised DASR 145 certifying staff to defer a defect. The deferred defect is documented in the aircraft technical log.
Management of Defects – ‘Endanger Flight Safety’

Reference: DASR AMC1 to 145.A.50(a)

- Requires a technical assessment by DASR 145 staff and agreement by the CAMO for deferral.
- Authorised certifying staff conduct an assessment to determine if the defect ‘endangers flight safety’. Note ‘authorised certifying staff’ is used indicating the certifying staff are required to be specifically authorised to defer defects.
- Definition of endangers flight safety:
  - ‘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.’
Management of Defects – ‘Endanger Flight Safety’

• If the defect does not 'endanger flight safety' the decision is then passed to the CAMO or delegate for agreement to defer the defect in accordance with the procedure approved in the CAME.

• If the CAMO agrees to the deferment, the DASR 145 may raise a deferred defect subject to details of the deferment, including the CAMO’s agreement, being endorsed on the certificate.

• The CAMO must ensure that deferred defects are documented in the continuing airworthiness record system, including the deferment period and any associated limitations/restrictions.

Management of Defects – CAMO

• If assessment determines the defect does (or may) ‘endanger flight safety’ and is referred to the CAMO, the CAMO can:
  – Task a DASR 145 to rectify the defect.
  – Provide a life extension to the maintenance interval IAW GM M.A.301(a)(3).
  – Seek an approved repair (may be unrepaired damage) from a Military Design Organisation Approval (MDOA), who will issue an approved repair and/or modified flight conditions.
  – Seek a Military Permit to Fly (MPTF) per the requirements of DASR 21 Subpart P
  – Utilise Command Clearance IAW DASR SPA.10
Command Clearance

Reference: DASR SPA.10

- The CAMO engages the Military Air Operator (MAO) to seek a Command Clearance.
- Provides flexibility to assist commanders faced with operational imperatives or emergencies.
- The purpose of this regulation is to ensure that directed mission objectives that require Defence to operate an aviation system outside of the system’s approved configuration, role, environment (CRE), limitations or conditions are conducted safely.
- Such judgements must be made at the appropriate command level to ensure that aviation safety risks are eliminated or otherwise minimised So Far As is Reasonably Practicable (SFARP)
Command Clearance

- The use of the MEL/CDL and Credible Data to assess defects under CAMO management are covered under Initial/Continued/Continuing Airworthiness approvals (DASR M/145) and instruments (Designs/MPTF) subject to DASA approval and issue.

- The Command Clearance is an Operational Airworthiness instrument authorised via the command chain.

- A Command Clearance provides the authority to operate the aircraft outside of the Continuing Airworthiness framework, and allows the CAMO to defer the defect.

- Legal obligation remains to ensure risks to the health and safety of personnel are managed SFARP

Command Clearance

- 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.

- The Command Clearance management system shall specify requirements for the completion of a risk assessment (SFARP) prior to issue of a Command Clearance.

- Command Clearance management system should be a formal, documented process. The MAO must ensure records of Command Clearances decisions are available to the Authority.
Summary

The regulations for management of defects:
• Allows consistency, clarity and accountability
• Provides a pragmatic process to addresses operational scenarios
• Provides military commanders with ‘military flexibility’

Questions?
Airworthiness Directives

References: DASR M.A.303, 21.A.3B

- The intent of an AD is to ensure that any information of an airworthiness safety nature is received, assessed for applicability and acted upon appropriately.
- An AD can only be issued by the Authority (or DoSA).
- The CAMO is also required to assess data other than ADs such as mandatory Service Bulletins to determine action required.
- The CAMO is required to coordinate the incorporation of the AD with the issuing Authority.
### Defence Aviation Safety Authority - Airworthiness Directives (ADs)

Note: For copies of Airworthiness Directives contact the relevant Systems Program Office.

<table>
<thead>
<tr>
<th>AD Number</th>
<th>Title</th>
<th>Issue Date</th>
<th>Sponsor</th>
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<tr>
<td>A99 2016-001 R03</td>
<td>KC-30 A Structural Airworthiness Limitations</td>
<td>11 Sep 17</td>
<td>RASQ (DASR)</td>
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<td>ATS 23 - General procedures for Shut-off Valve Actuator inspection</td>
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<td>ATS 05 - Time Limits, Maintenance Checks - System</td>
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<td>HALSPO DOSS</td>
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<td>Centre-Wing Box Load Beam Fastener Holes</td>
<td>29 Jul 17</td>
<td>HALSPO DOSS</td>
</tr>
<tr>
<td>AER/7130/D/AR/L/WRTT/2014/007</td>
<td>Cockpit Instrument Panel Brackets</td>
<td>29 Jul 17</td>
<td>HALSPO DOSS</td>
</tr>
</tbody>
</table>

Modification, Repair and Inspection

References: DASR M.A.301(a), M.A.708(b), M.A.304

- A CAMO must:
  - Use modification and repair data approved by DASA, DASR 21J or another organisation accepted by DASA (refer to recognition section).
  - Manage the accomplishment of modifications and repairs.
  - Record the status of modifications and repairs in the aircraft’s continuing airworthiness record system.
  - have approved procedures to facilitate the request, development and approval of the repair and/or assess the compatibility of a modification to an aircraft or component configuration.

Modification, Repair and Inspection

- Modifications are changes to type design such as the issuance of an STC.
- Non-standard repairs (i.e. repairs not already covered in the approved AMM or SRM) are similar to other design changes, and must:
  - restore the aircraft to an airworthy condition
  - comply with applicable airworthiness codes in the type-certification basis
  - be tail specific
Modification, Repairs and Inspection

Reference: DASR AMC M.A.304(d)

A CAMO must use appropriate and approved design data, i.e.

• the design data is certified within a regulatory system equivalent to DASR. (E.g. EASA / EMAR based), or
• the design data is certified within a regulatory system alternate to DASR. (E.g. FAA / USN etc.), or
• the design data is certified using an alternate instrument accepted by DASR. (i.e. the organisation cannot become a DASR 21J but appropriate processes, data, controls etc. are in place to ensure safety)

Modification, Repairs and Inspection

Reference: DASR M.A.301(a)7

The CAMO must establish an embodiment policy for non-mandatory modifications/inspections. Consider:

• Identifying types of non-mandatory information, i.e. Service Bulletins/Service Letters etc.
• Procedures to monitor, assess and implement (e.g. through CCB).
Continuing Airworthiness Record System

Accomplishment of Maintenance
Aircraft Maintenance Program
Management of Defects
Airworthiness Review
Pre-Flight Inspection
Reliability Program
Analysis of AMP

CAMO Tasks

Occurrence Reporting
Aircraft Tech Log
Airworthiness Directives
Maintenance Check Flights
Modification, Repair & Inspection
Coordinate scheduled maintenance
Weight & Balance/Symmetry Checks

Continuing Airworthiness Records


- The aircraft continuing airworthiness record system shall cover the aircraft, engine(s), propeller(s), and service life limited component(s) as appropriate, and shall include an aircraft technical log.

- Some examples of continuing airworthiness record systems used for ADF aircraft include:
  - CAMM2,
  - GO81,
  - ALIS,
  - ASLSMP/ESLMP, etc.
Continuing Airworthiness Records

Reference: DASR M.A.305

• Continuing Airworthiness Records must be incorporated within 30 days from completion of maintenance activity

• Record system shall cover Engines, Propellers, service life limited components, and include an **aircraft technical log**

• Record system will capture aircraft registration, aircraft usage and any other airworthiness data required by DASA

• The aircraft CA record system should contain as a minimum:
  - status of ADs
  - status of modifications and repairs
  - status of compliance with the AMP
  - status of life limited components
  - weight and balance statement
  - list of deferred maintenance
  - symmetry check report (if required)
Continuing Airworthiness Records

Reference: DASR M.A.305

- in addition to authorised release certificates or equivalent, information on installed components (engines etc) are to be entered in the aircraft continuing airworthiness records

- CAMO is to control the records and present to DASA upon request

- all entries in the records are to be clear and accurate, any corrections are to made in a manner that clearly shows the original entry

Continuing Airworthiness Records

Reference: DASR M.A.305

DASR provides specific timeframes for retention of records, however the overarching legislative requirements in Australia (Archives Act 1983) requires longer periods of retention.
Continuing Airworthiness Records

Reference: DASR M.A.307

Transfer of continuing airworthiness records:

- The operating organisation is responsible for the transfer of DASR M.A.305 records
- Timeframe requirements for the retention of records transfers to the new operating organisation
- Procedures must be established for the transfer of aircraft records
- When an operating organisation tasks another CAMO, the record keeping requirements remain (refer derogation clause at DASR M.A.201(k))

CAMO Tasks

Occurrence Reporting
Aircraft Tech Log
Airworthiness Directives
Maintenance Check Flights
Modification, Repair & Inspection
Coordinate scheduled maintenance
Weight & Balance/Symmetry Checks

Accomplishment of Maintenance
Aircraft Maintenance Program
Management of Defects
Airworthiness Review
Pre-Flight Inspection
Reliability Program
Analysis of AMP
Aircraft Technical Log

Reference: DASR M.A. 306

• The operating organisations is to establish a system that records:
  – Information for each flight
  – Current aircraft Certificate of Release to Service
  – Current maintenance statement
  – All outstanding deferred defects
  – All outstanding Command Clearances
  – Any guidance instructions on maintenance support arrangements

• The Tech Log (and any ALs) is to be approved by DASA

• The system can be paper based or electronic or a combination

• The Operating Organisation is to ensure the retention of the Tech Log for 36 months after the last entry

Purpose: to ensure that the true state of the Aircraft is known to the Aircraft Captain.
Aircraft Continuing Airworthiness Record System
Accomplishment of Maintenance
Aircraft Maintenance Program
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Modification, Repair & Inspection
Coordinate scheduled maintenance

Weight & Balance/Symmetry Checks

Aircraft Weight & Balance / Symmetry Checks

Weight & Balance
Reference: DASR M.A.708(b)10
• The CAMO shall ensure that the weight and balance statement reflects the current status of the aircraft

Aircraft Symmetry Checks
Reference: DASR M.A.708(b)11
• The CAMO shall ensure the symmetry check statement reflects the current status of the aircraft (if applicable)
Questions?

Aircraft Continuing Airworthiness Record System
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Airworthiness Review
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Analysis of AMP

CAMO Tasks

Occurrence Reporting
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Weight & Balance/Symmetry Checks
Occurrence Reporting

- The CAMO is required to report to DASA any condition or occurrence that may result in an unsafe condition.
  - The CAMO will typically be informed of occurrences by a DASR
  - The report can be made on a DASR Form 44 or in a manner as described in the CAME

- The intent of occurrence reporting is to:
  - Report any identified condition of an aircraft or component which could have / did endanger flight safety
  - Facilitate investigation
  - Obtain further information as required
  - Ensure parts that are subject to investigation are retained
Occurrence Reporting

- Accidents and Serious Incidents shall be notified to DASA ASAP. All other occurrences shall be reported as soon as practical but within 72 hours.

- The following occurrence reporting 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

Occurrence Reporting Flow
Continuing Airworthiness Flow of Information

- QF32
- Airbus A380 Operated by Qantas (Air Operator)

- Trent 900 Engines
  Manufactured by Rolls Royce
  – Type Certificate Holder

- On 4 Nov 2010, no. 2 Engine suffered uncontained failure (explosion) over Indonesia en route from Sydney to London
Maintenance Check Flights

Reference: DASR M.A.301(a)8

- Maintenance Check Flights are only conducted when required by ICA, issued by the DASR 21J (MTCH/Design Org)

- 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.
Aircraft Continuing Airworthiness Record System
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Airworthiness Review – Content

• Subpart G – CAMO
  – M.A.707 Airworthiness review staff
  – M.A.710 Airworthiness review
  – M.A.711 Privileges of the organisation

• Subpart I – MARC
  – M.A.901 Aircraft airworthiness review
  – M.A.902 Validity of the MARC
  – M.A.905 Findings from an airworthiness review
What Certificates should an aircraft have prior to flight?

- Type Certificate (Certificate)
- Aircraft Statement of Conformity (Form 52)
- Certificate of Airworthiness (Form 25)
- Airworthiness Review Certificate (Form 15a/b)
- Certificate of Release to Service (CRS)

What is an Airworthiness Review?

An AwR consists of (for each individual aircraft tail):
- a Document Review (ICA, records, usage data, etc.), and
- a Physical Survey (sample) of the aircraft.
Airworthiness Review Intent

Reference: DASR M.A.901

- An Airworthiness Review confirms that the aircraft continues to conform to the ‘Certificate of Airworthiness’, i.e. the aircraft is ‘fit to fly’

- An airworthiness review is a periodic survey of the “airworthiness” of each individual aircraft, i.e. a snapshot in time of the airworthiness of the aircraft

- The airworthiness review is a continuing airworthiness task. As such, the focus of the airworthiness review is on individual aircraft ‘tails’ (not ‘type’)

Airworthiness Review Privilege

References: DASR M.A.901, M.A.711

To obtain the privilege from DASA to undertake Airworthiness Reviews, the CAMO must:

- Establish procedures for the review and issue of Military Airworthiness Review Certificates (MARC)

- Have competent, independent and authorised staff (Form 4)
Airworthiness Review Staff

• Only Airworthiness Review Staff who have been authorised via the CAMO’s QMS can issue a MARC. Airworthiness Review Staff must:
  – Be CAMO staff who have the required qualifications and experience;
  – have successfully completed an airworthiness review under supervision; and
  – have been formally accepted by the DASA via a Form 4.

• Anyone (within competency) as deemed by the Airworthiness Review Form 4 holder can assist in an airworthiness review.
  – Note, all Airworthiness Review tasks must be completed/supervised/managed by Airworthiness Review Staff.

Airworthiness Review Staff – QTE

References: DASR M.A.707(a)1

• Qualifications
  – Maintenance licence or Engineering degree
• Formal aeronautical maintenance training
  – Regulations
  – Procedures
  – CAME
  – General familiarisation course for the aircraft
  – Maintenance methods
• Experience
  – 5 years experience in continuing airworthiness
• Position within CAMO with appropriate responsibilities
Airworthiness Review Timeframes

- First airworthiness review is due within **12 months** of the issue date of the aircraft's **initial CoA**.
- Whilst maintained in a **controlled environment**, the CAMO may extend the MARC twice for 1 year each time.
- A review may be anticipated by **90 days** without loss of continuity (from date of last issue).
- Upon issue and/or extension of a MARC, a copy must be sent to DASA within 10 days.

### Indicative Airworthiness Review Cycle

<table>
<thead>
<tr>
<th>CoA</th>
<th>New review due</th>
<th>1 yr</th>
<th>2 yr</th>
<th>3 yr</th>
<th>Next review / Extension due</th>
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<tbody>
<tr>
<td>MARC issued</td>
<td>Review due</td>
<td>Review due</td>
<td>Review due</td>
<td>Review due</td>
<td>Review due</td>
</tr>
<tr>
<td>Up to 90 days</td>
<td>MARC issued</td>
<td>1st extension</td>
<td>2nd extension</td>
<td>New MARC</td>
<td></td>
</tr>
<tr>
<td>Anticipation of review</td>
<td>Anticipation + 1 year</td>
<td>MARC Validity</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The new expiration date is set up one year after the previous expiration day. Therefore the validity of the MARC can be longer than one year (up to 90 days longer).
Key points on Documented Review

**Ensure:**
- Aircraft usage information is correctly recorded (AFHRS, ENHRS, Cycles, Landings, etc.)
- Flight Manual is the correct version and revision
- All maintenance due has been carried out or deferred
- Mandatory AMP tasks have been carried out (ADs, AWLs, CMRs, etc.)
- Sampling of other AMP tasks
  - At least 5% or 50 maintenance tasks (whichever is lower)
- Maintenance has been released IAW DASR

**Note:**
- Only records dating back to the last Airworthiness Review must be reviewed unless there are any findings which require further investigation.

Key points on Physical Survey

- Driven by documented review, no inconsistencies between documented review and physical A/C
- Mandatory placards and markings
- A/C complies with flight manual
- A/C configuration complies with approved data
- No evident defect that could not have been reasonably expected to be addressed
Findings from an Airworthiness Review

- All findings (i.e. non-compliances) against DASR M.A.710 requirements must be recorded. Level 1 findings require corrective action before the issue of the MARC.
- Corrective actions may not always be necessary before the issue of a MARC.
- If any non-compliance is found during the Document Review or Physical Survey, Airworthiness Review Staff must:
  - Conduct further investigation to the extent necessary to identify the extent of the non-compliance, and
  - Ensure such non-compliances are recorded within the organisation’s QMS findings management system.

Airworthiness Review Summary

Following an Airworthiness Review, we have confirmed that:
- The aircraft is:
  - of the correct configuration (IAW MTC/STC), and
  - safe to fly (i.e. airworthy).
- All applicable ADs, SBs etc. have been actioned.
- All Service Life Limited parts are within limits.
- The CoA is valid.
More Information?

- **A DASR Airworthiness Review Practitioner** level course provides in-depth Airworthiness Review knowledge
- 0.5 day course
- Enrol as per this course
- Open for anyone to attend
  - *Essential* for Airworthiness Review Form 4 holders
  - *Highly desirable* for CAMO management types / CAM Service providers / DASR 145 ‘Airworthiness Review assistant staff’
  - *Desirable* for anyone working within DASR Airworthiness

Questions?

[Image of a cutaway of a plane]
Recognition of other Airworthiness Authorities

What is Recognition?

- **Recognition** is an acknowledgement by DASA that another airworthiness authority applies a credible and defensible safety assurance framework.

- Recognition is a means of complying with DASR and applies across multiple DASR clauses.

- **Example for DASR M:** A ‘maintenance organisation accepted by DASA’ (DASR M.A.201(g)) is a maintenance organisation accessed through recognition provisions.
What is Recognition?

DASA issues a recognition certificate for each recognised authority. Each recognition certificate has an underlying set of terms telling the regulated community:

- what is possible through recognition (scope & conditions); and

- how to ensure the suitability of arrangements (caveats).

Community exploits recognition provisions  DASA establishes recognition

Benefits and examples of recognition

Benefits of recognition:
- Avoids duplication of work, reducing costs
- Promotes operational flexibility
- Leverages other authorities’ expertise
- Extends safety assurance across orgs/facilities DASA can’t access due to security restrictions etc.
- Keeps DASA in touch with international best-practice in military aviation safety assurance.

Examples relevant to CAMOs/CAM Service Providers
- Consumption of data for repairs and minor modifications
- Aircraft maintenance and Certificate of Release to Service (CRS)
- Acceptance of components from production or maintenance
Aircraft and component maintenance through Recognition

- Recognition may allow a CAMO to task a maintenance organisation holding a recognised approval* to perform maintenance on Defence aircraft and fulfil CRS requirements under M.A.201(g).

- DASR M.A.801 describes how the CAMO can obtain an aircraft CRS through recognition.

* or organisations working within a recognised framework, in the case of US DoD.
Artefacts equivalent to a DASA Form 1

- DASA may recognise another authority’s artefact as being equivalent to a DASA Form 1. This will only be done where:
  - The artefact is issued under a privilege granted by a recognised airworthiness authority
  - The artefact fills the CRS function in the recognised framework
  - The artefact contains the same information as a DASA Form 1.

- Examples of a Form 1 equivalent are (see AMC DASR 145.A.42):
  - EASA Form 1 (where competent authority is recognised for maintenance/production)
  - FAA Form 8130-3
  - CAA-UK Form One

Where are recognition artefacts available?

<table>
<thead>
<tr>
<th>Authority</th>
<th>Design &amp; Certification</th>
<th>Production Aircraft</th>
<th>Production Components</th>
<th>Maintenance Aircraft</th>
<th>Maintenance Components</th>
<th>Operations</th>
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</table>

Assessment reports are available from DASA on request.
Process to use Recognition

• Identify the organisation you wish to use and relevant airworthiness authority approvals (or equivalent).

• Visit DASA website for list of recognised authorities
  – If the authority is on the list, ensure that recognition arrangements address the recognition certificate scope/conditions/caveats. For example:
    • Product/services are within organisation’s scope and level
    • The services consumed will be subject to oversight by the recognised authority
    • The service sought is within the scope and expertise of the organisation
    • The service will be rendered with appropriate understanding of, and access to, relevant maintenance data
    • Any parts and consumables to be used are appropriate
    • Any other activities necessary to ensure safety have been carried out

Products/Services not covered by DASA Approval or Recognition

• Recognition is not applicable where a service provider’s personnel, processes and products are not oversighted by an airworthiness authority.

• Where a CAMO wishes to use products/services that are not covered by DASA Approval or Recognition, the CAM is responsible for:
  – assessing the suitability of the product/services for Australian Defence application, and
  – Obtain DASA approval of the arrangement (via updating the CAME).
Advisory Circular 004/2018

Defence Aviation Safety Authority

Advisory Circulars (ACs)

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Questions?
Quality Management System

Quality Management System

DASA – Defence Aviation Safety Authority

DoSA

MDOA/21J (Defence)

DASR 145 (Defence)

DASR 145 (Contractor)

MDOA/21J (Contractor)

Operations

Quality & Safety

CAMO
Quality Management System

References: DASR M.A.712, M.A.716

• The intent of a CAMO’s QMS is to:
  – Establish a quality system, with a ‘nominated’ Quality Manager to monitor compliance with, and the adequacy of, procedures required to ensure airworthiness.
  – Compliance monitoring shall include a feedback system to the Accountable Manager to ensure corrective action as necessary

• The QMS also supplements the conduct of the Airworthiness Reviews and the issue of MARCs

Quality Management System – Scope

• Internal
  – CAMO processes and procedures
  – Airworthiness Review and issue of MARCs

• External
  – Contracted CAM functions
Quality Management System – Oversight Program

- As a minimum a QMS should monitor:
  - that all **DASR M.A Subpart G activities** are being performed in accordance with the approved procedures; and
  - that all contracted/tasked maintenance is carried out in accordance with the contract/tasking; and
  - the continued compliance with the requirements of the DASR.
- The CAMO shall establish continuing airworthiness quality policy, plans and audit processes (acceptable to DASA)

External Quality Oversight

**MAO**

- Accountable Manager (FEG CDR)
- CAMO (CAM-DLC)
- Operations (XO/WG)
- Q & S (Quality Manager)
- Org. A
- Org. B

Approved Organisation

CAMO, 145, 21J

Non-approved Organisation with QMS

Org. A

Non-approved Organisation without QMS

Org. B
Findings by the NMAA (DASA)

Levels of findings:

- **Level 1** – any non-compliance with the DASR requirements which lowers the safety standard and seriously hazards flight safety.
- **Level 2** – any non-compliance with the DASR requirements which lowers the safety standard and possibly hazards flight safety.
- **Level 3 (Observations)** – Where it has been identified, by objective evidence, to contain potential problems that could lower the safety standard and possibly hazards flight safety. Observations do not require corrective action however if left unaddressed may result in subsequent findings.
- **Level 4 (Note)** – Where it has been identified, by subjective evidence, to contain potential problems that could lower the safety standard and possibly hazards flight safety. Notes are recorded internally by DASA and investigated.

After receipt of notification of a level 1 or 2 finding, the CAMO shall:

- identify the root cause of the non-compliance;
- define a corrective action plan; and
- demonstrate corrective action implementation to the satisfaction of DASA within a period required by DASA.

A CAMO’s non-compliance with the actions above leads to a full or partial suspension of the approval by DASA.
DASA Enforcement Methodology

DASA Oversight and Enforcement Process

- Approved organisations are required to grant access to DASA for conduct of Oversight and Enforcement (O&E) activities
  - In most cases, DASA will coordinate with the organisation to arrange the visit
  - Discoveries made during the O&E activity will be made known to the organisation and formally reported in the post visit assessment
  - Post visit, DASA personnel will internally consult to agree on the level of enforcement action required (e.g. observation, etc.)
Questions?

Safety Management System
Process regulations are only so effective...

- Process regulation provides minimum protection against hazards, with overall effectiveness limited by technical, organisational, environmental and human factors.

- A safety management system provides a higher level of safety by supporting and extending the protection afforded through process regulation alone.

A mature SMS will complement the regulatory controls...

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Only common hazards are mitigated.
What is ‘DASR SMS’?

**Definition:**

‘A systematic approach to managing aviation safety, including the necessary organisational structures, accountabilities, policies and procedures’.

*ICAO Annex 19, DASR Glossary*

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**SMS Components and Elements**

1. **Safety policy and objectives**
   1.1. Management commitment
   1.2. Safety accountability and responsibilities
   1.3. Appointment of key safety personnel
   1.4. Coordination of emergency response planning
   1.5. SMS documentation

2. **Safety risk management**
   2.1. Hazard identification
   2.2. Safety risk assessment and mitigation

3. **Safety oversight and improvement**
   3.1. Safety performance monitoring and measurement
   3.2. The management of change
   3.3. Continuous improvement of the SMS

4. **Safety promotion**
   4.1. Training and education
   4.2. Safety communication
For more information

DASA conducts the following ASMS specific education and engagement activities in 2020:

**ASMS Practitioner Course – Enrolment through DASA Training**

ASMS Practitioner Course: Online delivery in the virtual classroom.

Enquiries related to the Aviation Safety Management Systems (ASMS) can be submitted to the DASA ASMS Mailbox dasa.asms@defence.gov.au.
DASR M Summary

1. The operating organisation holds the Military Air Operators Certificate (MAOC)
2. The CAMO resides within the operating organisation
3. The CAMO is responsible for (but does not have to perform) all CAM functions and tasks
4. The Accountable Manager (AM) for the CAMO should also be the AM for the MAO
5. The CAM should have sufficient influence/control over all organisations that contribute to continuing airworthiness
6. The QM should have sufficient influence/control to fulfil responsibilities and provide feedback to the AM
7. Only CAMO airworthiness review staff can issue a MARC (but can be assisted by other personnel/organisations)
8. The size of a CAMO will depend on the number/complexity/age of the aircraft it manages
9. The CAMO’s quality system must establish procedures for the management and control of sub-contracted organisations and independently monitor sub-contracted tasks.
10. The CAMO and operating organisation’s quality and safety management system must be integrated (and can be combined with subordinate organisations)
11. The DASA compliance assurance program of a Defence CAMO also encompasses sub-contractor organisations
12. The operator is responsible for addressing DASA findings of non-compliance of sub-contractors.
A Possible MAO Structure and Relationships

**Military Air Operator (FEG or Equity)**
- Accountable Manager (FEG CDR)
- Operations (XO)
- QMS & SMS (QM) (SM)
- CAMO (CAM-DLC)
- Part 21*/Contractor
- Part 145* Contractor
- SPO* CAMO Functions

**Wing or equiv**
- SQN - CO
- Operations (XO)
- Pt 145 (Resp M)
- CAMO Functions

**Minimlist Structure**

**QUESTIONS**