



# Airpower – Maintaining the Capability

Group Captain Graeme Davies, Director Maintenance – Air Command

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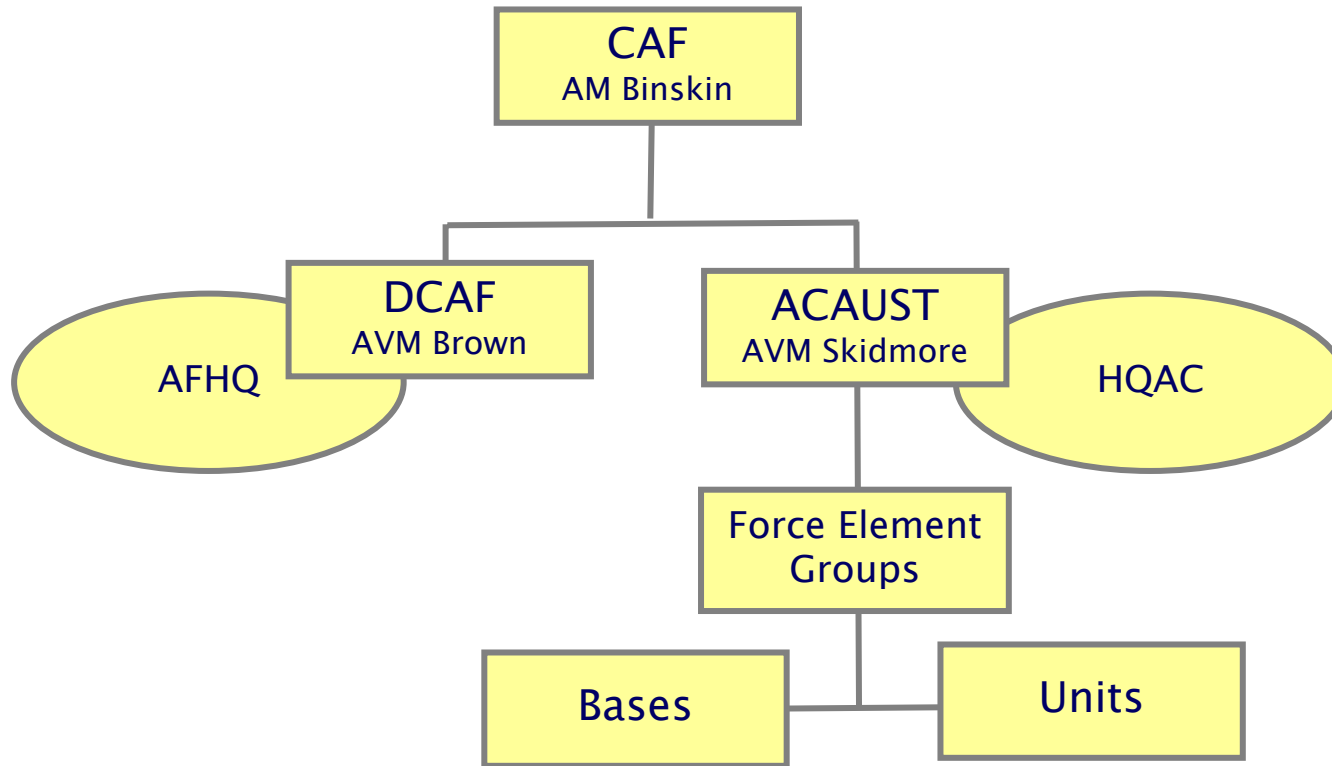
# Scope

- Structure of the RAAF.
- Australian Defence Force Airworthiness Management System.
- Technical Training.



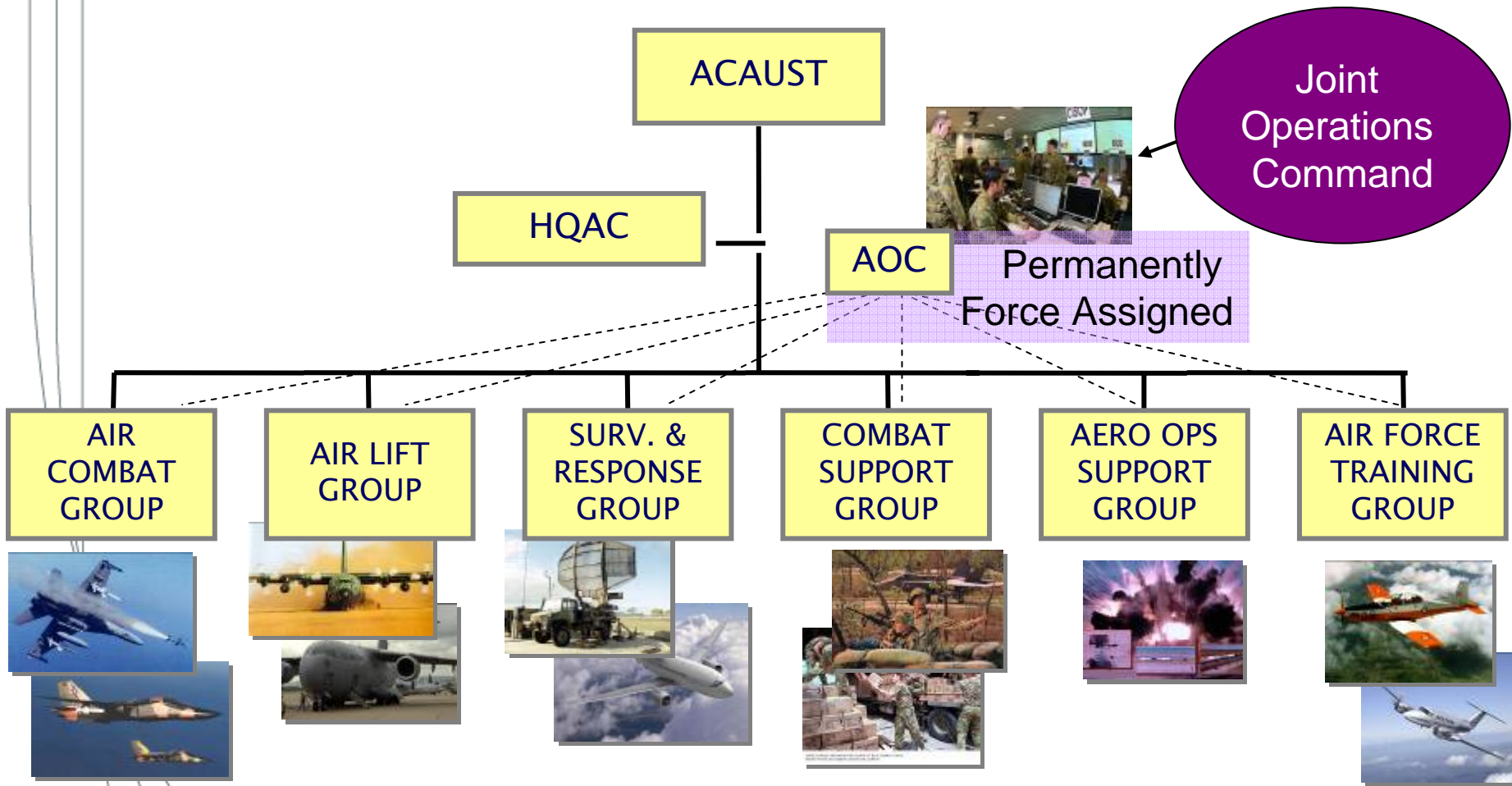
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# Air Force Command Structure



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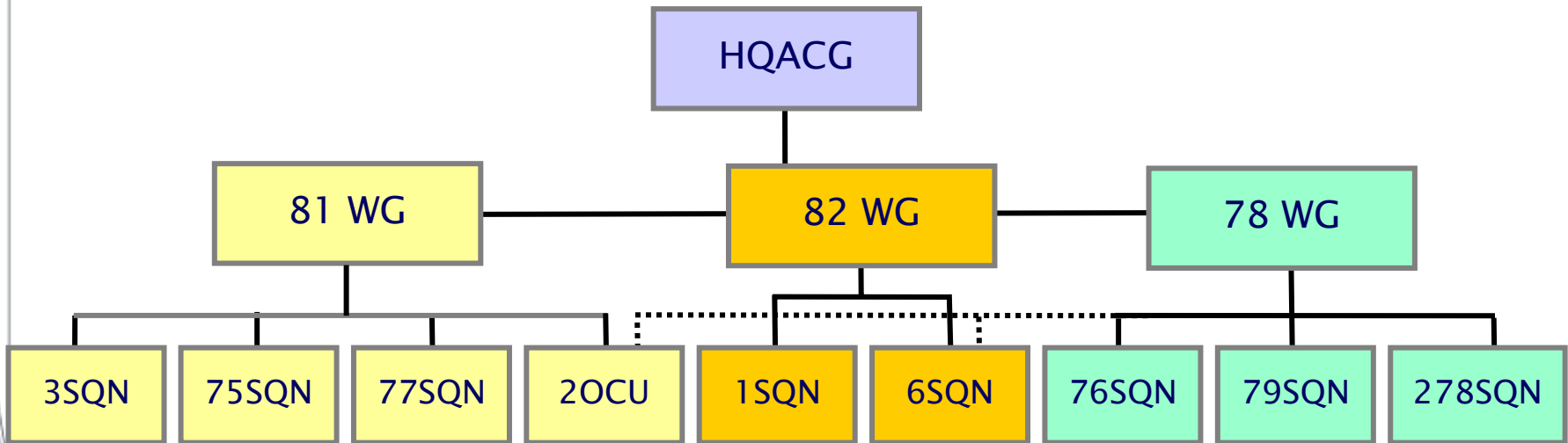
# Air Command Structure



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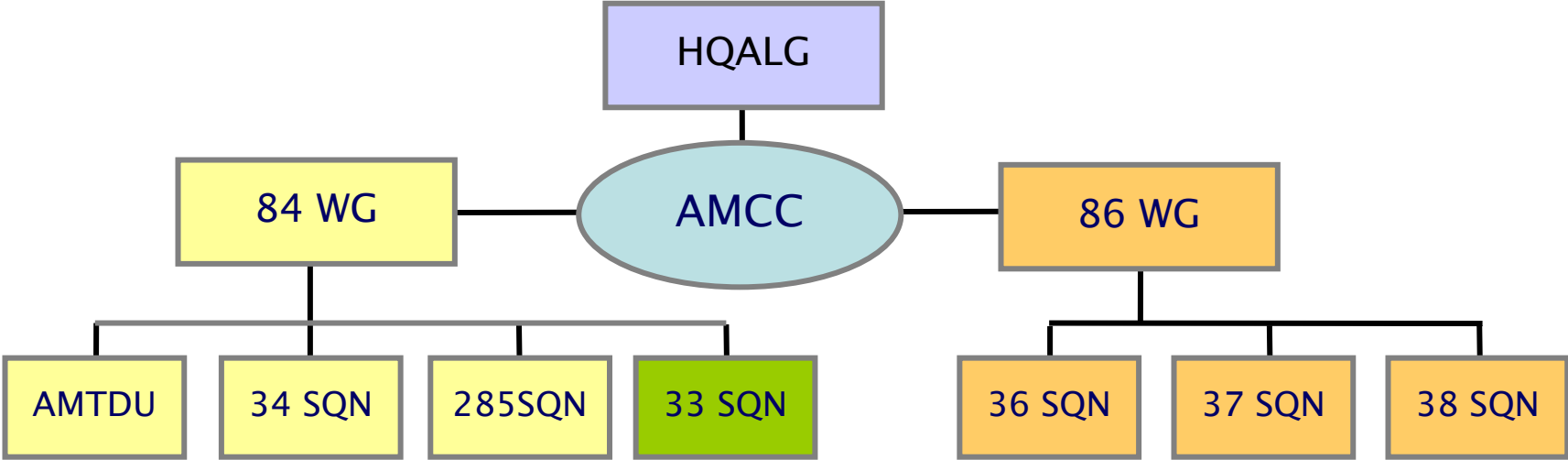


# Air Combat Group



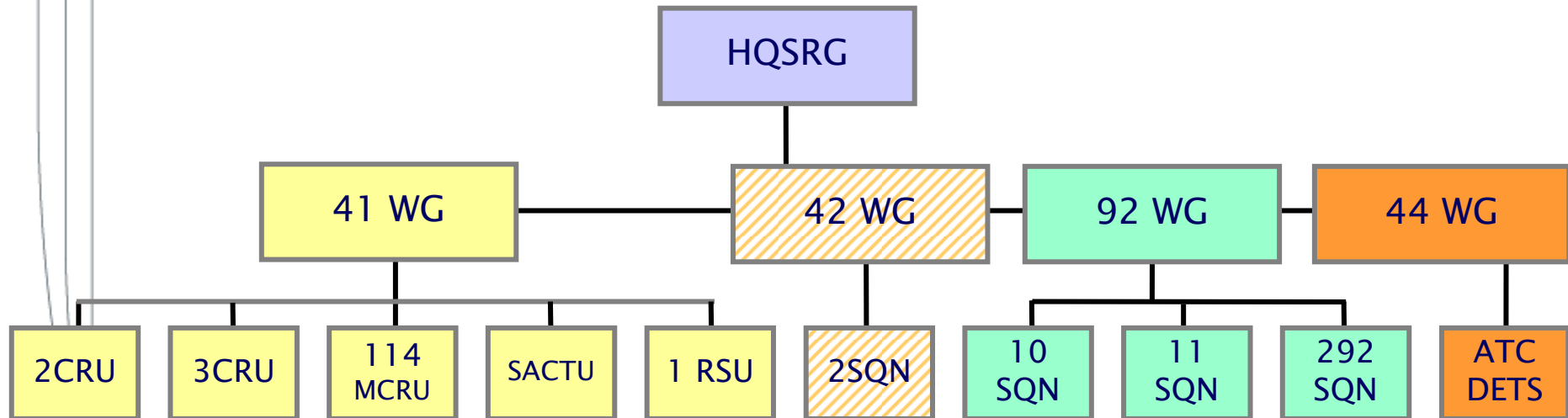
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# Air Lift Group



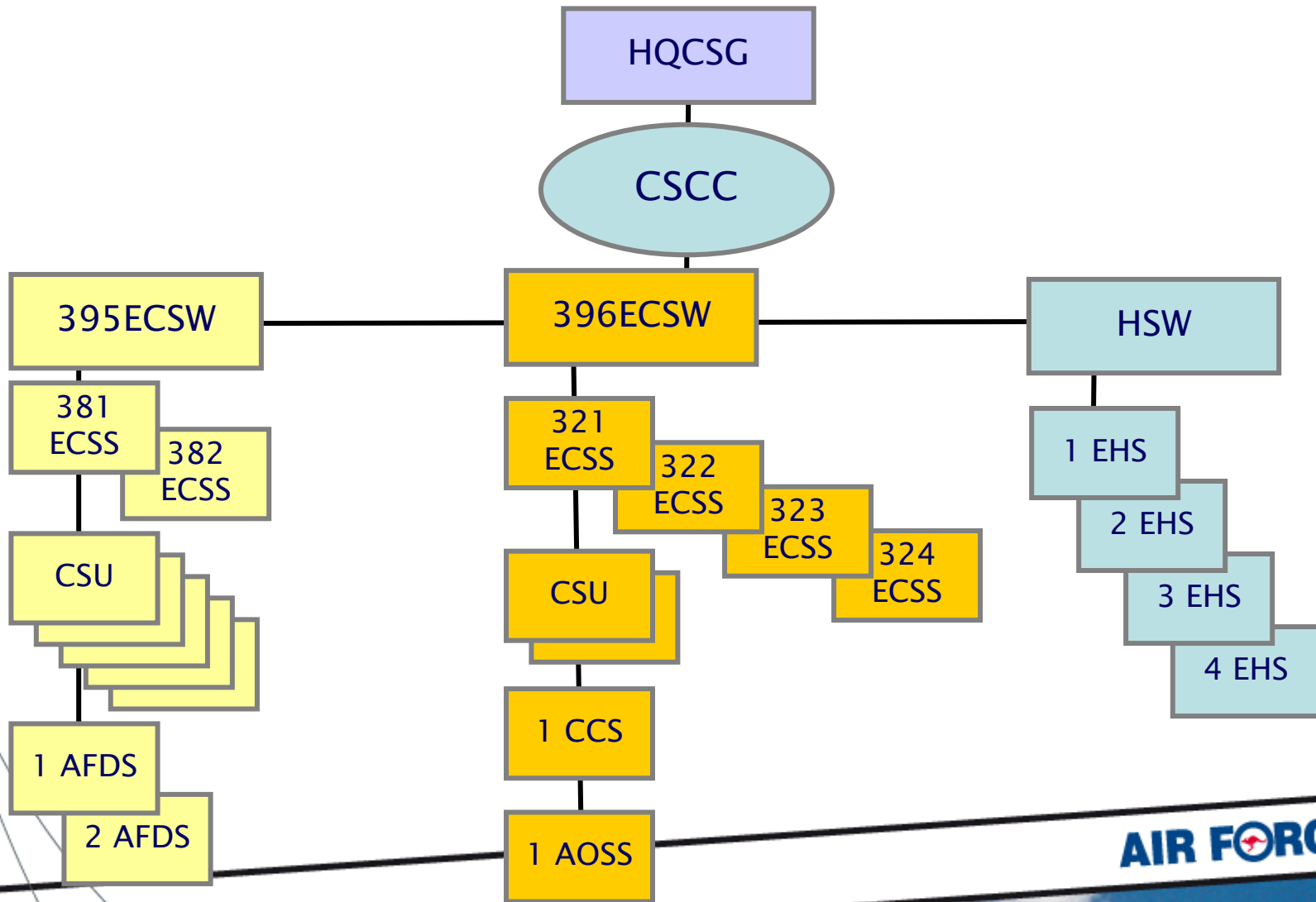
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# Surveillance & Response Group



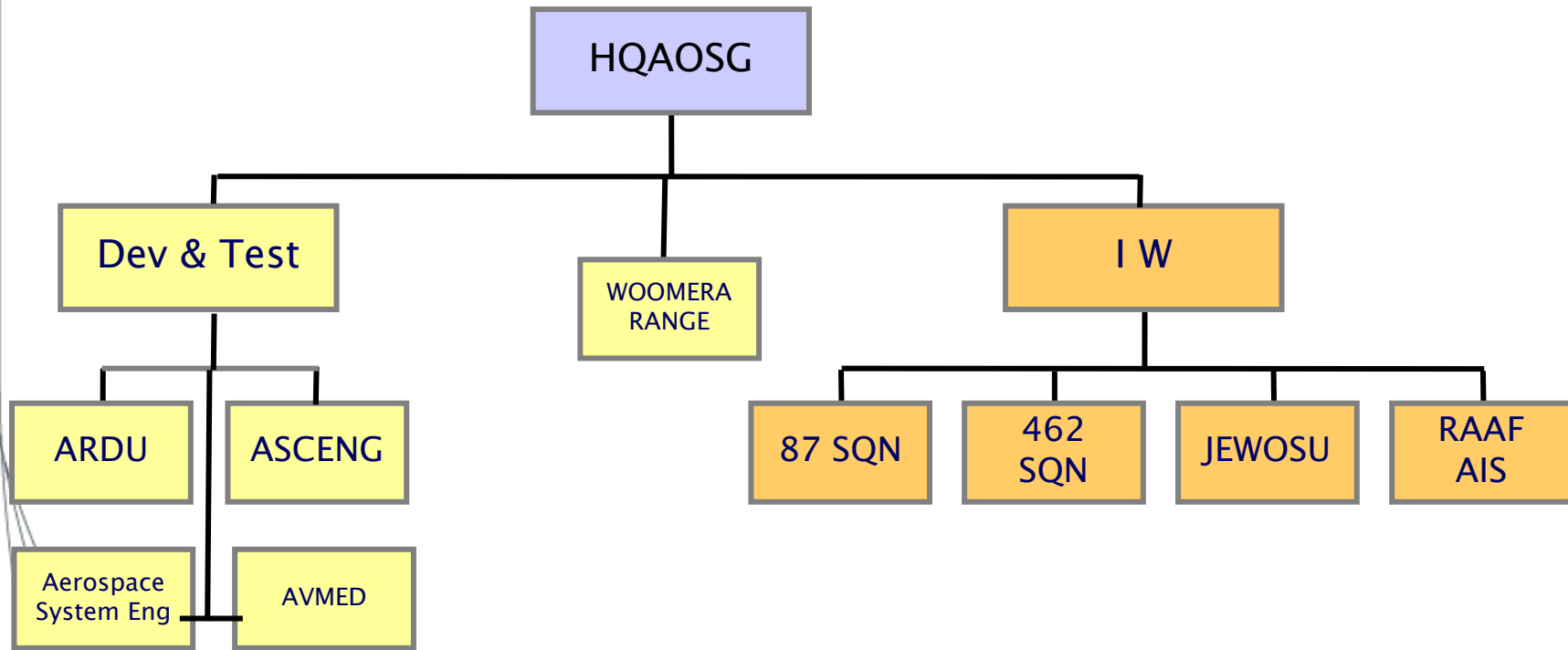
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# Combat Support Group



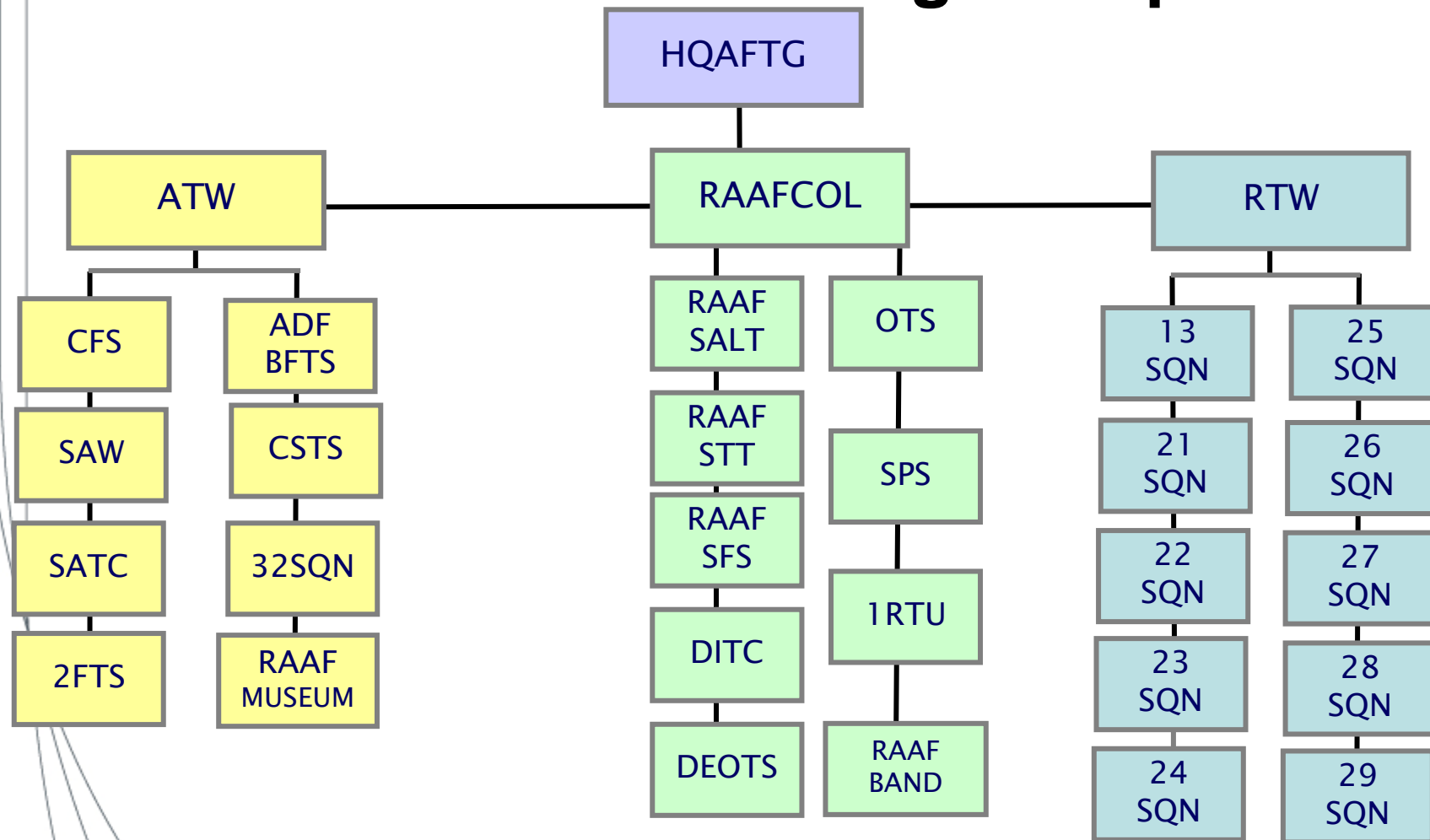
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# Aerospace Operational Support Group



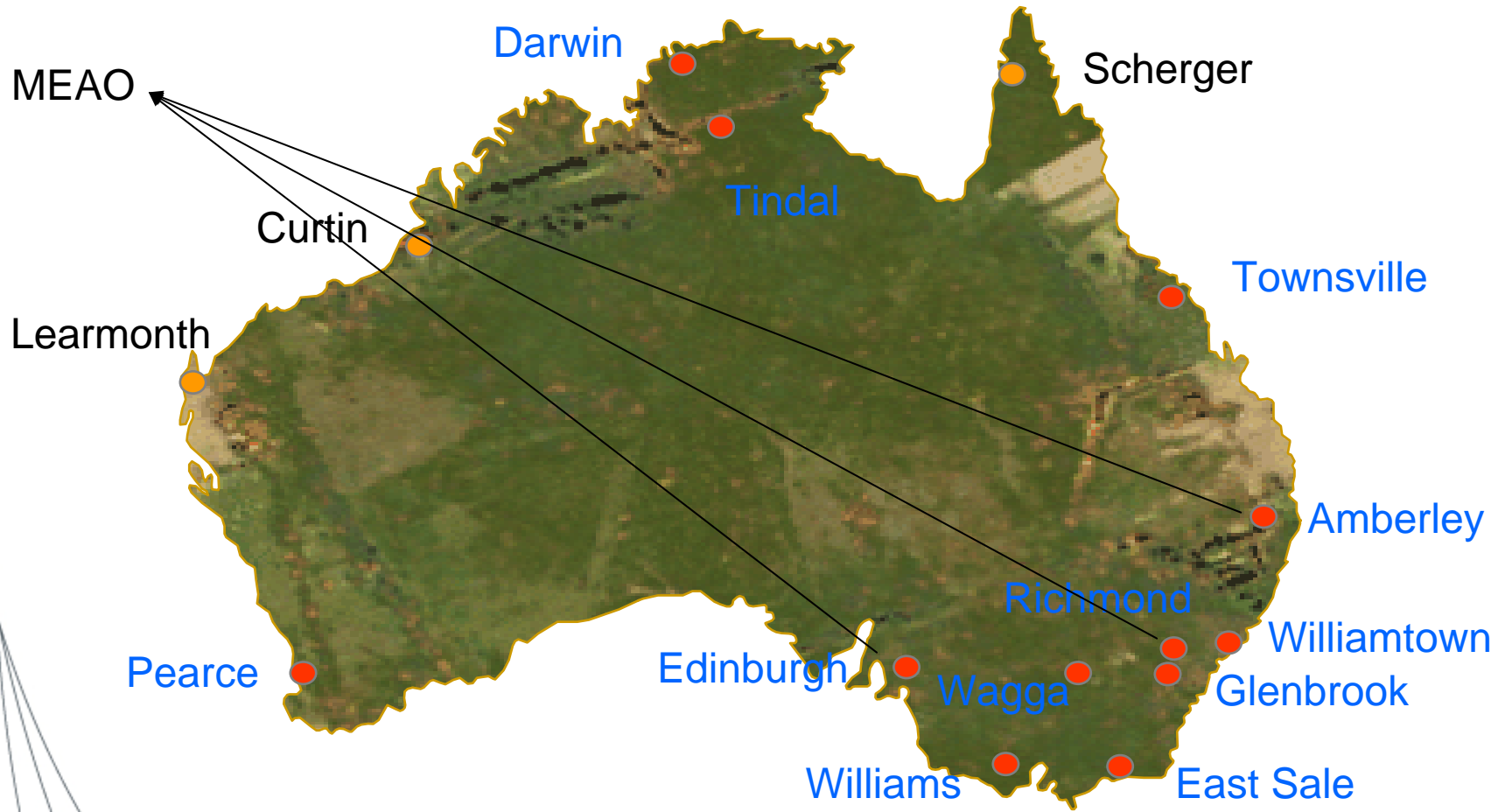
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# Air Force Training Group



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# Air Command Bases



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# Airworthiness

- A management concept that facilitates judgements that aircraft are suitable for flight.
- To ensure continued airworthiness, the
  - design,
  - manufacture,
  - maintenance and
  - operational elementsmust be matched to the approved operating environment, role and missions of the aircraft.

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# Airworthiness Responsibility

- ADF is responsible for the airworthiness management and self regulation of 'state aircraft'. 'State aircraft' are:
  - aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force); and
  - aircraft used in the military, customs or police services of a foreign country.

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# ADF Airworthiness Management System

- focuses on airworthiness certification and continuing airworthiness management.

Military aviation differs from civil aviation in that the ADF is the owner, operator, maintainer and regulator of its aircraft and, at times, also the designer of modifications.

- based on a system of Regulation, Operation and Review.

A graphic element consisting of two parallel black lines that create a banner shape. The banner is white and contains the text "AIR FORCE" in blue, bold, sans-serif capital letters. To the right of the text is a small red and white Air Force crest. The banner is set against a background of a blue sky with white clouds.

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# Operational Airworthiness Management

- Ensure suitability of flight of State aircraft...
  - through implementation of regulations and processes...
  - so that aircraft are operated in approved roles with correct mission and equipment matching...
  - by competent and authorised operators...
  - according to approved procedures and instructions under a system of checking.



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# Technical Airworthiness Management

- Procedural framework for continuing airworthiness management including:
  - design,
  - maintenance,
  - quality assurance regulation and
  - risk management.



# Technical Airworthiness Management

- Framework is regulated to preserve the safety of aircraft and personnel.
- Framework sets criteria against which
  - people,
  - processes,
  - Products, and
  - organisationscan be judged; and
- monitors and audits compliance.



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# Is it Airworthy?

- To be considered airworthy from a technical perspective, an aircraft (and aeronautical product) shall be designed, constructed and maintained:
  - To approved standards
  - By competent and approved individuals
  - Acting as members of an approved organisation
  - Whose work is certified as correct and accepted by the ADF.



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## Is it Airworthy?

- .....to approved ***standards***
- .....by ***competent*** and ***approved individuals***
- .....acting as members of an ***approved organisation***
- .....whose work is ***certified*** as correct and ***accepted*** by the ADF.



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## ....Approved Standards

- Military Aviation Regulations
- Technical Airworthiness Framework.
- Engineering Authority.
- Design Engineers.
- Regulator audits of Authorised Engineering Organisations.



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## ....Competent Individuals

- Technical training standards:
  - Alignment with the Australian Quality Training Framework and national Training Packages.
  - Registered Training Organisations.
  - Aeroskills Training Package MEA07 (covers the Aviation Maintenance Sector of the Australian Aerospace Industry).



## ....Competent Individuals

- Initial technical training:
  - conducted at the RAAF School of Technical Training in Wagga.
  - Trainees graduate from RAAFSTT as Fitters, having attained eight national competencies.
  - Remaining competencies attained on the job via formal CBTA.
  - Fitters complete an on-the job Skills Log over two years to formally attain a CERT IV qualification and thereby become a Technician.



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## ....Competent Individuals

- Technical trade structure:
  - Avionics Technician.
  - Aircraft Technician.
  - Armament Technician.
  - Life Support Fitter.
  - Aircraft Structural Technology Fitter.
  - Comms Electronics Technician.
  - Ground Support Equipment Fitter.



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## ....Competent Individuals

- Engineering specialisation structure:
  - Electronics Engineer.
  - Aeronautical Engineer.
  - Armament Engineer.
  - Airfield Engineer.



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## ....Approved Individuals

- Task/trade proficiency is the combination of the attainment of a prescribed level of:
  - underpinning knowledge (training/qualification),
  - skills (competency) and
  - attitudes,but does not authorise personnel to perform or certify the work indicated by the task/trade proficiency.
- Personnel must be authorised, or mentored by an authorised person, to perform work on an aircraft and aeronautical product.



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## ....Approved Individuals

- Successful formal assessment leads to Task Authorisation which approves the individual to conduct the task having proven the ability to reliably, consistently and competently perform the task.
- A structured and rigorous supervisory mechanism ensures appropriate oversight and quality check of maintenance activities.



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## ....Approved Individuals

- Independent Maintenance Inspections are conducted on safety critical items or systems where an inspection, independent of the maintenance task, is carried out by a suitably authorised supervisor.
- Examples of safety critical items/systems:
  - Flight/engine controls.
  - Undercarriage controls.
  - Escape and survival equipment.
  - Explosive ordnance.



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## .....Approved Organisation

- Squadrons and contractors must be certified as an Authorised Maintenance Organisation (AMO) by the Regulator.
- Initial certifications subject to a systems audit followed by a compliance audit.



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## .....Approved Organisation

- AMOs must have a compliant Maintenance Management Plan (MMP) describes:
  - the role of the maintenance organisation,
  - the level and scope of maintenance authority assigned, and
  - provides a baseline to enable subsequent evaluation and audit of the MMP for verification of its effectiveness and conformance to regulations.



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## .....Approved Organisation

- Compliance audits conducted to assure the Regulator that AMOs are maintaining compliance with regulatory requirements.
- Corrective action notifications are issued where compliance issues are identified.
- Heightened levels of surveillance can be employed where compliance concerns warrant.



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## ....Certified as correct & accepted by ADF

- A maintenance recording and certification system is used to:
  - ensure traceability and accountability for all maintenance carried out.
  - identify the current serviceability state of the aircraft and forecasts when maintenance will become due.
  - record the technical history of the aircraft and
  - provide the means of recording and certifying the maintenance that has been carried out.



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## ....Certified as correct & accepted by ADF

- Maintenance supervisory processes are also documented in the recording and certification system.
- The ADF uses a computer based maintenance recording and certification system.



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# Putting it all together....

- Engineering and logistics responsibilities held by AEOs that are either an element of Defence, or can be a contractor.
- AEO is responsible:
  - Link with OEM.
  - Configuration control & management.
  - Maintaining technical publications & standards.
  - Defect investigation & modification development.
  - Logistic Support.



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# Putting it all together....

- Maintenance and logistics responsibilities held by AMOs that are either an ADF unit, or can be a contractor.
- AMO is responsible for:
  - Maintaining regulatory compliance.
  - Conducting maintenance IAW AEO standards etc.
  - Development, maintenance and growth of technical workforce.
  - Logistic support.



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## Putting it all together....

- Suitably competent and authorised personnel conduct maintenance activities.
- Suitably competent and authorised personnel provide supervision and independent inspection.
- All conducted IAW authorised processes and procedures.
- Using approved tools and test equipment.
- Within a regulated environment.



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A professional, highly  
motivated and dedicated team  
Defending Australia's people security and interests

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# AIRPOWER: MAINTAINING THE CAPABILITY

- Introduction

- Responsible for technical governance across Air Command (all aircraft systems, ground systems incl radars, vehicles, support equipment).
- Any good military campaign includes the use of propaganda. Play Video #1.

[Click](#)

- Scope

- Structure of RAAF.
- Australian Defence Force Airworthiness Management System.
- Technical training.

[Click](#)

- Air Force Command structure. CAF is Airworthiness Authority for ADF.

[Click](#)

- Air Command structure.

[Click](#)

- FEGs . AFTG last.

[6 x Click](#)

- Base locations.

[Click](#)

- Airpower: Projection of military power via aerospace medium. Not just warheads on foreheads, but also includes airlift, surveillance, air control, combat support etc.

- Airworthiness:

- a management concept that facilitates judgements that aircraft are suitable for flight.
- To ensure continued airworthiness, the design, manufacture, maintenance and operational element must be matched to the approved operating environment, role and missions of the aircraft.
- Capability assurance.
- Safety of system, aircrew, passengers and public.
- Asset preservation.

[Click](#)

- **Airworthiness Responsibility.** In observance of the Civil Aviation Act, the ADF is responsible for the airworthiness management and self regulation of 'state aircraft'. In accordance with Section 3 of Part I of the Act, 'state aircraft' are:
  - aircraft of any part of the Defence Force (including any aircraft that is commanded by a member of that Force in the course of duties as such a member); and
  - aircraft used in the military, customs or police services of a foreign country.

**Click**

- **ADF Airworthiness Management System**
  - focuses on airworthiness certification and continuing airworthiness management. However, military aviation differs from civil aviation in that the ADF is the owner, operator, maintainer and regulator of its aircraft and, at times, also the designer of modifications.
  - based on a system of Regulation, Operation and Review.

**Click**

- **Operational airworthiness management.**
  - ensure suitability of flight of State aircraft, through implementation of regulations and processes so that aircraft are operated in approved roles with correct mission and equipment matching, by competent and authorised operators according to approved procedures and instructions under a system of checking

**Click**

- **Technical airworthiness management.**
  - procedural framework for management of the technical aspects of continuing airworthiness management including design, maintenance and quality assurance regulation, together with a robust systematic approach to risk management.

**Click**

- **Technical Airworthiness Management.**
  - Technical airworthiness framework is regulated based upon recognition of the need to have a single framework to preserve the safety of those aircraft.
  - Framework sets criteria against which people, processes, products and organisations can be judged; and monitors and audits compliance.

**Click**

- Is it airworthy?
  - To be considered airworthy from a technical perspective, an aircraft or aeronautical product shall be designed, constructed and maintained:
    - To approved standards
    - By competent and approved individuals
    - Acting as members of an approved organisation
    - Whose work is certified as correct and accepted by the ADF.

**Click**

- So we will now focus on each of these elements: Standards, Competent & Approved individuals, approved organisation, certified as correct.

**Click**

- Approved Standards.
  - Military Aviation Regulations are established to implement and control the ADF airworthiness system. They provide a framework through which all military aviation activities by state aircraft, supporting aviation systems, and members of the ADF are managed.
  - Technical airworthiness framework provides general technical regulations, as well as guidance for regulations relating to design, engineering and maintenance.
  - Engineering authorities with Defence consist (in part) of suitably competent and authorised personnel undertaking Senior Design Engineer and Design Engineer responsibilities.
  - Senior Design Engineer is responsible for ensuring the quality of the engineering system and its outputs.
  - Regulator audits are conducted to maintain certification of Authorised Engineering Organisations.
  - Australian Military Type Certificates and Service Releases are issued to authorise an aircraft type for flight.
  - Annual Airworthiness Boards sit for each aircraft type to formally review operational and technical airworthiness issues and certify continued operation.

**Click**

- Competent individuals
  - Defence's technical workforce is skilled through a system of Competency Based Training and Assessment.
  - Air Force, Navy and Army are Registered Training Organisations.
  - Alignment with the Australian Quality Training Framework and national Training Packages.
  - Technical training conducted IAW the national Aeroskills Training Package MEA07 (covers the Aviation Maintenance Sector of the Australian Aerospace Industry).

**Click**

- Initial technical training is conducted at the RAAF School of Technical Training in Wagga.
  - Trainees graduate from RAAFSTT as Fitters, having attained eight national competencies.
  - Remaining competencies are attained on the job via CBTA.
  - Once posted to a squadron, Fitters complete an on-the job Skills Log over a two year period to formally attain a CERT IV qualification and thereby become a Technician.
  - While the Skills Log facilitates attainment of the qualification, it also has another role that I will cover a little later.

**Click**

- Technical trade structure:
  - Avionics Technician.
  - Aircraft Technician.
  - Armament Technician.
  - Life Support Fitter.
  - Aircraft Structural Technology Fitter.
  - Comms Electronics Technician.
  - Ground Support Equipment Fitter.
  
- Engineer specialisation structure:
  - Electronics Engineer.
  - Aircraft Engineer.
  - Armament Engineer.
  - Airfield Engineer.

**Click**

- Approved individuals
  - Task/trade proficiency is the combination of the attainment of:
    - a prescribed level of underpinning knowledge (training/qualification),
    - skills (competency) and attitudes,
  - but does not authorise personnel to perform or certify the work indicated by the task/trade proficiency.
  - Personnel must be authorised, or mentored by an authorised person, to perform work on an aircraft and aeronautical product.

**Click**

- As elements of the Skills Log are completed, successful formal assessment leads to Task Authorisation which approves the individual to conduct the task having proven the ability to reliably, consistently and competently perform the task.
  - A structured and rigorous supervisory mechanism ensures appropriate oversight and quality check of maintenance activities.

**Click**

- Independent Maintenance Inspections are conducted on safety critical items or systems where an inspection, independent of the maintenance task, is carried out by a suitably authorised supervisor.
  - Examples of safety critical items/systems:
    - Flight/engine controls.
    - Undercarriage controls.
    - Escape and survival equipment.
    - Explosive ordnance.

**Click**

- Acting as members of an approved organisation
  - Maintenance organisations must attain and maintain certification from the Regulator as being an Authorised Maintenance Organisation (AMO).
  - Maintenance organisations seeking initial certification are subject to a systems audit followed by a compliance audit.

**Click**

- A maintenance quality management system includes the development of a compliant Maintenance Management Plan (MMP) that describes:
  - the role of the maintenance organisation,
  - the level and scope of maintenance authority assigned,
  - provides a baseline to enable subsequent evaluation and audit of the MMP for verification of its effectiveness and conformance to regulations.

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- Regular AMO compliance audits are conducted to assure the Regulator that organisations with existing authority are maintaining compliance with regulatory requirements.
  - Corrective Action Requests.
  - Heightened surveillance options.

**Click**

- Whose work is certified as correct and accepted by the ADF.
  - A maintenance recording and certification system is used to:
    - ensure traceability and accountability for all maintenance carried out.
    - identify the current serviceability state of the aircraft and forecasts when maintenance will become due.
    - record the technical history of the aircraft and
    - provide the means of recording and certifying the maintenance that has been carried out.

**Click**

- The maintenance supervisory processes are also documented in the recording and certification system.
  - The ADF uses a computer based maintenance recording and certification system.

**Click**

- Putting it all together. Engineering and logistics responsibilities held by AEOs that are either an element of Defence, or can be a contractor. AEO is responsible:
  - Link with OEM.
  - Configuration control.
  - Maintenance requirements determination and standards.
  - Maintaining technical publications.
  - Logistic Support.
  - Defect investigation and modification development.

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- Maintenance and logistics responsibilities held by AMOs that are either an ADF unit, or can be a contractor. AMO is responsible for:
  - Remaining compliant.
  - Conducting maintenance IAW AEO standards etc.
  - Maintaining standards of technical workforce.
  - Logistic support.

**Click**

- Suitably competent and authorised personnel conduct maintenance activities.
- Suitably competent and authorised personnel provide supervision and independent inspection.
- All conducted IAW authorised processes and procedures.
- Using approved tools and test equipment.
- Within a regulated engineering and technical environment.

Thank you.

**Click**