



Australian Government

Department of Education, Employment and Workplace Relations

MEA276A Maintain basic aircraft communication and radio navigation systems and components

Release: 2

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Modification History

Minor formatting and editorial changes made.

Unit Descriptor

This unit of competency is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathway. It covers the competencies required for the limited maintenance of communication and radio navigation systems of the more basic types of both fixed and rotary wing aircraft. Where a CASA licensing outcome is sought this unit forms part of the CASA requirement for the granting of the applicable Aircraft Maintenance Engineer Licence under CASR Part 66, in accordance with the licensing provisions in Section 3, Assessment Guidelines.

Application of the Unit

This unit requires application of hand skills and the use of system/component knowledge and applicable maintenance publications and test equipment to inspect, functionally test and troubleshoot basic communication and radio navigation systems and to remove and install components.

Applications include communication and radio navigation systems of fixed wing aircraft with fixed undercarriage and basic rotary wing aircraft with skids or floats and no powered flight controls powered by either a normally aspirated piston engine or small gas turbine.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA246C Fabricate and/or repair aircraft electrical components or parts

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</p>
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Elements and Performance Criteria

1. Inspect basic communication and radio navigation systems and components
 - 1.1. Relevant maintenance documentation and modification status, including system reports, where relevant, are used to identify specific inspection requirements
 - 1.2. Isolation tags are checked and aircraft configured for safe system inspection in accordance with the applicable maintenance manual
 - 1.3. **Communication and radio navigation systems and components** are visually checked for external signs of defects in accordance with applicable maintenance manual
 - 1.4. Defects are correctly identified and reported
2. Functionally test basic communication and radio navigation systems and components
 - 2.1. Aircraft and system are prepared in accordance with applicable maintenance manual for application of power/system operation
 - 2.2. Communication and radio navigation systems are functionally tested, in accordance with the applicable maintenance manual, for evidence of serviceability or malfunction
 - 2.3. Deficiencies are correctly identified and reported
3. Troubleshoot basic communication and radio navigation systems
 - 3.1. Available information from maintenance documentation, inspection and test results, where necessary, to assist in fault determination
 - 3.2. Maintenance manual fault diagnosis guides and logic processes are used to identify faults and accurate **troubleshooting**
 - 3.3. Specialist advice is obtained, where required, to assist with the troubleshooting
 - 3.4. Communication and radio navigation system faults are located and are corrected in accordance with maintenance documentation in accordance with standard operating procedures
4. Remove and install basic radio communication and navigation system components
 - 4.1. System is rendered safe and prepared in accordance with the applicable maintenance manual and isolation tags are fitted, where necessary, to ensure personnel safety
 - 4.2. Communication and navigation system component removal is carried out in accordance with the applicable maintenance manual
 - 4.3. Required maintenance documentation is completed and processed in accordance with standard enterprise procedures
 - 4.4. Removed components are tagged and packaged in accordance with specific requirements
 - 4.5. Communication and navigation system components to be installed are checked for correct part numbers, modification status, serviceability and shelf life
 - 4.6. Physical installation of components is performed in accordance with the applicable maintenance manual and regulatory requirements, ensuring appropriate adjustment is carried out
 - 4.7. System is reinstated to correct operational condition in preparation for testing
 - 4.8. Required maintenance documentation is completed and processed in accordance with standard enterprise procedures

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- applying relevant OHS practices
- using approved maintenance documentation and aircraft publications relating to the radio frequency and communications system being maintained
- locating and identifying radio communication and navigation system components comprising:
 - HF and VHF communications
 - VOR, ADF and GNS
 - ATC transponders
 - ELT systems
- locating and identifying applicable radio system antennas
- recognising system and component defects/external damage, correct installation, attaching hardware (including cabling/harnesses/transmission lines) and security in:
 - HF and VHF communications systems
 - VOR, ADF and GNS navigation systems
 - air traffic control (ATC) transponders
 - ELT systems
- applying logic processes, functional testing and visual inspections to isolate malfunctions within the above systems
- functionally testing listed systems to assess post-maintenance serviceability

Required knowledge

Look for evidence that confirms knowledge of:

- component attachment methods
- connection of hardware and plugs
- printed circuit boards
- semiconductors
- fibre optics
- handling precautions for electrostatic sensitive devices
- relevant OHS practices
- the use of approved maintenance documentation and aircraft publications relating to radio communication and navigation systems and components
- the general working principles of communication and navigation systems
- explaining the basic system layout (block diagram level), function and operation of:
 - HF and VHF communications systems
 - VOR, ADF and GNS navigation systems

- ATC transponders
- ELT systems
- radio frequency and communication system maintenance requirements and basic troubleshooting procedures
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to inspect, functionally test and visually troubleshoot basic communication and radio navigation systems and remove and install components while observing all relevant safety precautions.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The underlying skills inherent in this unit should be transferable across a range of inspection, functional testing and visual troubleshooting applications (including the timely involvement of supervisors or other trades) associated with aircraft basic communication and radio navigation systems and components. It is essential that system functional testing procedures, cleanliness requirements and safety precautions applicable to the system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice is critical.

Evidence of transferability of skills and knowledge related to inspection, functional testing and visual troubleshooting is essential. This is to be demonstrated through application across a range of basic aircraft communication and radio navigation systems and components listed in the Range Statement. The application of testing procedures should clearly indicate knowledge of system operation, the relationship of individual components and the links with other systems (if applicable) within the limits of the aircraft/system fault-finding guide before undertaking any action. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards.

A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the unit of competency are being achieved under routine supervision on a system and at least one major system component/LRU from each of Groups 1 to 4 listed in the Range Statement. This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide.

Context of and specific resources for assessment	Competency should be assessed in the work environment or simulated work environment using tools and equipment specified in maintenance documentation. It is also expected that general purpose tools and test equipment found in most routine situations would be used where appropriate.
Method of assessment	
Guidance information for assessment	

Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
Applicable systems and components	<p>Communication and radio navigation systems and components include:</p> <ol style="list-style-type: none"> 1. HF and VHF communication system LRUs, transmission lines and antennas 2. ADF, VOR and GNS navigation system LRUs, transmission lines and antennas 3. ATC transponders, transmission lines and antennas 4. ELT
Troubleshooting	Troubleshooting involves the use of fault-finding charts or similar, to line replacement level
Application	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> • scheduled or unscheduled maintenance • individual or team-related activities
Procedures and requirements	Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Sector(s)

Aviation maintenance

Competency field

Co-requisite units

Not applicable