



Australian Government

MEA276 Maintain basic aircraft communication and radio navigation systems and components

Release: 2

MEA276 Maintain basic aircraft communication and radio navigation systems and components

Modification History

Release 2. Equivalent to MEA276 Maintain basic aircraft communication and radio navigation systems and components with amended prerequisite unit name.

Application

This unit of competency 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 during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

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.

The unit is part of the small aircraft maintenance Certificate III and IV Mechatronics training pathways.

Where a Civil Aviation Safety Authority (CASA) licensing outcome is sought this unit forms part of the CASA requirement for the granting of the chosen maintenance certification licence under Civil Aviation Safety Regulation (CASR) Part 66, in accordance with the licensing provisions in the Companion Volume Implementation Guide.

Pre-requisite Unit

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1. Inspect basic communication and | 1.1 Relevant maintenance documentation and modification status, including system defect reports, |
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	radio navigation systems and components		where relevant, are used to identify specific inspection requirements
		1.2	Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual while observing all relevant work health and safety (WHS) requirements
		1.3	Communication and radio navigation systems and components are visually or physically 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 the application of power/system operation
		2.2	Communication and radio navigation systems are functionally tested in accordance with 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 is used, where necessary, to assist in fault determination
		3.2	Maintenance manual fault diagnosis guides and logic processes are used to ensure efficient and accurate troubleshooting to line replacement level
		3.3	Specialist advice is obtained, where required, to assist with the troubleshooting process
		3.4	Communication and radio navigation system faults are located and are correctly recorded in 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 while observing all

relevant WHS requirements

- 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 specified procedures
- 4.5 Communication and navigation system components to be installed are checked to confirm 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/alignment is carried out
- 4.7 System is reinstated to correct operational condition in preparation for testing, as necessary
- 4.8 Required maintenance documentation is completed and processed in accordance with standard enterprise procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Applicable communication and radio navigation systems and components include:

- High frequency (HF) and very high frequency (VHF) communication line replaceable units (LRUs), transmission lines and antennas
- Automatic direction finding (ADF), very high frequency omni-directional range (VOR) and global navigation system (GNS) navigation system LRUs, transmission lines and antennas
- Air traffic control (ATC) transponders, transmission lines and antennas

Procedures and requirements include:

- Automatic dependent surveillance-broadcast (ADS-B)
- Emergency location transmitter (ELT)
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 2. Equivalent to MEA276 Maintain basic aircraft communication and radio navigation systems and components.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEA276 Maintain basic aircraft communication and radio navigation systems and components

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Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria under the specified conditions of assessment, and must include:

- applying relevant WHS 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
 - ADS-B
 - ELT systems
- locating and identifying applicable radio system antennas
- recognition of 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
 - ATC transponders
 - ADS-B
 - 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.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the basic communication or radio navigation system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) 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 Assessment Conditions.

Knowledge Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- component attachment methods
- connection of hardware and plugs
- printed circuit boards
- semiconductors
- fibre optics
- handling precautions for electrostatic sensitive devices
- relevant WHS 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
 - ADS-B systems
- radio frequency and communication system maintenance requirements and basic troubleshooting procedures
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- 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.
- 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.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders and must be rigorously observed.

- A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements and performance criteria of the unit of competency are being achieved under routine supervision on a system and at least one (1) major system component/LRU from each of the following groups:
 - HF and VHF communication LRUs, transmission lines and antennas
 - ADF, VOR and GNS navigation system LRUs, transmission lines and antennas
 - ATC transponders, transmission lines and antennas
 - ELT
 - ADS-B.
- This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).
- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.
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