



Australian Government

MEA297 Maintain basic avionic systems and components

Release: 1

MEA297 Maintain basic avionic systems and components

Modification History

Release 1. Equivalent to MEA289 Maintain basic light aircraft avionic systems and components. Code changes due to changed titles.

Application

This unit of competency describes the skills and knowledge required to maintain basic avionic systems and components. It involves inspecting, testing and troubleshooting systems; and removing and installing components. The unit requires the application of hand skills and the use of maintenance documentation and publications. Work may be performed individually or as part of a team.

The unit applies to the scheduled and unscheduled maintenance of basic fixed wing and rotary wing aircraft where the avionic systems are limited to very high frequency (VHF) communications, basic audio systems, automatic direction finding (ADF) and very high frequency omni-range (VOR) radio navigation systems, stand-alone global navigation systems (GNS), air traffic control (ATC) transponders, and automatic dependent surveillance-broadcast (ADS-B).

This unit forms part of the Civil Aviation Safety Authority (CASA) requirement for maintenance certification licences under Civil Aviation Safety Regulation (CASR) Part 66. Where a CASA licensing outcome is sought, users must refer to the licensing provisions in the MEA Aeroskills Companion Volume Implementation Guide.

Pre-requisite Unit

MEA246 Fabricate and/or repair aircraft electrical hardware or parts

Competency Field

Aviation maintenance

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1. Inspect basic aircraft avionic systems and components

PERFORMANCE CRITERIA

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

- 1.1 Use maintenance documentation and modification status, including system defect reports where relevant, to identify specific inspection requirements

ELEMENTS**PERFORMANCE CRITERIA**

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| | 1.2 Check isolation tags and configure aircraft for safe system inspection and operation according to applicable maintenance manual |
| | 1.3 Visually or physically check avionic systems for external signs of defects according to applicable maintenance manual and work health and safety (WHS) requirements |
| | 1.4 Correctly identify and report defects |
| 2. Test and adjust basic aircraft avionic systems | 2.1 Prepare aircraft and systems according to applicable maintenance manual for the application of power/system operation |
| | 2.2 Functionally test avionic systems for evidence of serviceability or malfunction according to maintenance manual |
| | 2.3 Calibrate or adjust system according to maintenance manual and as appropriate |
| 3. Troubleshoot basic aircraft avionic systems | 3.1 Use available information from maintenance documentation and inspection and test results, where necessary, to assist in fault determination |
| | 3.2 Use maintenance manual fault diagnosis guides and logic processes to ensure efficient and accurate troubleshooting using test sets, maintenance data, and fault-finding charts or similar, to line replacement level |
| | 3.3 Obtain specialist advice where required to assist with the troubleshooting process |
| | 3.4 Locate system faults and clearly identify and correctly record their causes in maintenance documentation where required and according to standard organisational procedures |
| | 3.5 Determine rectification requirements |
| 4. Remove and install basic aircraft avionic system components | 4.1 Render system safe and prepared according to applicable maintenance manual and fit isolation tags where necessary to ensure personnel safety |
| | 4.2 Remove avionic component according to applicable maintenance manual while observing WHS requirements |
| | 4.3 Complete and process required maintenance documentation |

ELEMENTS**PERFORMANCE CRITERIA**

according to standard organisational procedures

- 4.4 Tag and package removed components according to specified procedures
- 4.5 Check avionic components to be installed to confirm correct part numbers, modification status, serviceability, and shelf life
- 4.6 Perform physical installation of avionic components according to applicable maintenance manual
- 4.7 Reinstall system to correct operational condition in preparation for testing and calibration or adjustment, as necessary
- 4.8 Complete and process required maintenance documentation according to standard organisational procedures

Foundation Skills

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

Unit Mapping Information

Release 1. Equivalent to MEA289 Maintain basic light aircraft avionic 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 MEA297 Maintain basic avionic systems and components

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, which must include the ability to:

- locate and identify avionic system components comprising:
 - very high frequency (VHF) communications system
 - very high frequency omni-range (VOR) radio navigation system
 - basic audio system, such as intercom and audio selection
 - stand-alone global navigation system (GNS)
 - air traffic control (ATC) transponder
 - automatic dependent surveillance-broadcast (ADS-B)
 - emergency locator transmitter (ELT) system
 - automatic direction finding (ADF) navigation system, which may be omitted if not relevant to the organisation
- remove and install at least one from each of the following basic avionic system components:
 - transmitters and receivers
 - antennas and antenna cables
 - control boxes and frequency selectors
 - speakers
 - switches.

In the course of the above work, the candidate must:

- use approved maintenance documentation and aircraft publications relating to the avionic system being maintained
- interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications
- apply required work health and safety (WHS) practices
- locate and identify applicable antennas
- identify system and component defects and external damage, correct installation, attaching hardware (including cabling, harnesses and transmission lines), and security in the systems listed above

- apply logic processes, taking and interpreting system measurements to accurately and effectively isolate malfunctions within the above systems
- test listed systems to isolate system faults and assess post-maintenance serviceability
- comply with system testing procedures, cleanliness requirements, and safety precautions applicable to avionic system being maintained
- complete and process maintenance documentation.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- industry, regulatory and organisational requirements, procedures, practices and methods required for the tasks described in the performance evidence relating to maintaining basic avionic systems and components, including:
 - WHS requirements relating to:
 - checking avionic systems for defects
 - attaching components
 - connecting hardware and plugs
 - handling precautions for electrostatic sensitive devices
 - procedures for:
 - identifying maintenance requirements
 - applying troubleshooting procedures
 - tagging and packaging removed components
 - applying maintenance data
 - completing and processing maintenance documentation
- maintenance manual requirements relating to:
 - rendering systems safe for removal
 - checking isolation tags and configuring aircraft
 - visually and physically checking avionic systems for defects
 - preparing aircraft and systems for power and system operation
 - conducting functionally tests of avionic systems
 - calibrating and adjusting avionic systems
 - fault diagnosis guides
 - removing avionic system components
 - performing physical installation of avionic system components
- basic layout (block diagram level), function and operation of:
 - VHF communications systems
 - VOR and ADF navigation systems
 - basic audio systems
 - stand-alone GPS systems
 - ATC transponders
 - ADS-B

- ELT systems
- basic principles and functions relating to above systems and associated with:
 - electromagnetic radiation and propagation
 - basic AC and DC circuit theory
 - printed circuit boards
 - digital fundamentals
 - analogue fundamentals
 - transmitter and receiver principles
 - pulse
 - antenna characteristics
 - transmission line characteristics
 - fibre optic communications
- sources of specialist advice to assist with troubleshooting processes of the tasks described in the performance evidence.

Assessment Conditions

The following conditions of assessment represent the requirements of the regulators (Australian Defence Force [ADF] and Civil Aviation Safety Authority [CASA]) and maintenance stakeholders, and must be rigorously observed.

Competency must be assessed in the work environment, or simulated work environment, using tools and equipment specified in maintenance documentation.

The candidate must have access to general-purpose tools and test equipment required to demonstrate the performance evidence above.

Candidate capability must 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 of this unit must satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Where the unit is to be used for CASA licensing purposes the assessor must also meet the criteria specified in the Civil Aviation Safety Regulation (CASR) Part 147 Manual of Standards.

Links

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