Australian Government

Department of Education, Employment and Workplace Relations

MEA289A Maintain basic light aircraft avionic systems and components

Revision Number: 2

MEA289A Maintain basic light aircraft avionic systems and components

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 maintenance of avionic 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 maintenance documentation/publications in the maintenance of basic aircraft avionic systems and components involving inspection, testing and troubleshooting and component removal and installation.

Applications include basic fixed wing and rotary wing aircraft where the avionic systems are limited to VHF communications, basic audio system, ADF and VOR radio navigation systems, stand-alone GNS and ATC transponder.

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

Elements describe the essential outcomes of a unit of competency.	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.

Elements and Performance Criteria

1. Inspect basic aircraft avionic systems and components	1.1. Relevant maintenance documentation and modification status, including system defect reports, 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
	1.3. ***Avionic systems*** 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. Test/adjust basic aircraft avionic systems	2.1. Aircraft and systems are prepared in accordance with applicable maintenance manual for the application of power/system operation
	2.2. Avionic systems are functionally tested in accordance with maintenance manual for evidence of serviceability or malfunction
	2.3. System calibration or adjustments are performed in accordance with maintenance manual, as appropriate
3. Troubleshoot basic aircraft avionic systems	3.1. Available information from maintenance documentation and 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***
	3.3. Specialist advice is obtained, where required, to assist with the troubleshooting process
	3.4. System faults are located and the causes of the faults are clearly identified and correctly recorded in maintenance documentation, where required and in accordance with standard enterprise procedures
	3.5. Rectification requirements are determined
4. Remove and install basic aircraft avionic 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. ***Avionic 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 specified procedures
	4.5. Avionic components to be installed are checked to

confirm correct part numbers, modification status, serviceability and shelf life

4.6. Physical installation of avionic components is performed in accordance with the applicable maintenance manual

4.7. System is reinstated to correct operational condition in preparation for testing and calibration or adjustment, as necessary

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 avionic system being maintained
- locating and identifying avionic system components comprising:
  - VHF communications systems
  - VOR and ADF navigation systems
  - basic audio systems
  - stand-alone GNS systems
  - ATC transponders
  - ELT systems
- locating and identifying applicable antennas
- recognising system and component defects/external damage, correct installation, attaching hardware (including cabling/harnesses/transmission lines) and security in the systems listed above
- applying logic processes, taking and interpreting system measurements to accurately and effectively isolate malfunctions within the above systems
- testing listed systems to isolate system faults and assess post-maintenance serviceability

Required knowledge

Look for evidence that confirms knowledge of:

- component attachment methods
- connection of hardware, and plugs
- handling precautions for electrostatic sensitive devices
- the 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
  - ELT systems
- basic principles/functions, relating to the 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
- maintenance requirements and troubleshooting procedures
- applicable maintenance data and manuals
- relevant OHS practices
- 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, test and troubleshoot basic aircraft avionic systems and remove and install system 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, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) associated with basic aircraft avionic systems and components. It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the system being maintained are fully observed, understood and complied with, as well as work practices associated with electrostatic sensitive devices. 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, testing and troubleshooting and component removal and installation is essential. This is to be demonstrated through application across a range of avionic 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 each system in Range Statement Groups 1 to 7 and on at least one major component/LRU in each case. Component removal and installation competencies are to be demonstrated on at least one component from each of Groups 8 to 12. 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

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.	
Note	Range statements listed below are numbered to facilitate specification of the assessment requirements included in the Evidence Guide
Avionic systems	Avionic systems may include: 1. VHF communication 2. Basic audio systems, such as intercom and audio selection 3. ADF 4. VOR 5. Stand-alone GPS 6. ATC transponder 7. ELT
Troubleshooting	Troubleshooting involves the use of test sets, maintenance data and fault-finding charts or similar, to line replacement level
Avionic components	Avionic components include: 8. Transmitters and receivers 9. Antennas and antenna cables 10. Control boxes and frequency selectors 11. Speakers 12. Switches
Application	Application of this unit may relate to: • 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