Australian Government

Department of Education, Employment and Workplace Relations

MEA278A Inspect, test and troubleshoot instrument display systems and components

Revision Number: 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 to inspect, test and troubleshoot electronic instrument display systems and components. The unit is used in workplaces that operate under the airworthiness regulatory systems of the ADF and CASA.
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, test and troubleshoot electronic instrument display systems and components.
Applications include fixed and rotary wing aircraft that have electronic instrument display systems.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA246C	Fabricate and/or repair aircraft electrical hardware 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 electronic aircraft instrument display systems and components	1.1. Relevant maintenance documentation and modification status, including sy where relevant, are used to identify specific inspection requirements 1.2. Isolation tags are checked and aircraft configured for safe system inspectio accordance with the applicable maintenance manual 1.3. ***Electronic instrument display system*** components are visually or physicall external signs of defects in accordance with applicable maintenance manua 1.4. Defects are correctly identified and reported
2. Test/adjust electronic aircraft instrument display systems and components	2.1. Aircraft and system are prepared in accordance with applicable maintenanc application of power/system operation 2.2. Electronic instrument display system is functionally tested in accordance w manual for evidence of serviceability or malfunction 2.3. System calibration or adjustments are performed in accordance with maint appropriate
3. Troubleshoot electronic aircraft instrument display systems	3.1. Available information from maintenance documentation, inspection and te where necessary, to assist in fault determination 3.2. Maintenance manual fault diagnosis guides and logic processes are used to accurate ***troubleshooting*** 3.3. Specialist advice is obtained, where required, to assist with the troubleshoo 3.4. Electronic instrument display system faults are located and the causes of th identified and correctly recorded in maintenance documentation, where req with standard enterprise procedures 3.5. Rectification requirements are determined

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- using hand skills, tools and test equipment in the testing, adjustment and troubleshooting of instrument display systems
- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) for the range of systems listed in the Range Statement
- interpreting the information presented on instrument display systems
- applying logic processes and using appropriate wiring diagrams and manuals to isolate instrument display system malfunctions
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability
- effectively using maintenance documentation and relevant fault diagnosis guides in the troubleshooting process
- applying standard procedures
- observing all relevant occupational health and safety (OHS) procedures

Required knowledge

Look for evidence that confirms knowledge of:

- standard trade practices relating to tool and test equipment usage and installation/securing of system components
- the basic layout (block diagram level) of the systems listed in the Range Statement
- the operating principles of the systems listed in the Range Statement and associated with:
  - electrical and instrument fundamentals relating to multi-function display systems
  - interpretation of display information and display screen symbol generation
  - the operation of each listed system and system components
- OHS procedures relating to instrument display systems and components
- relevant ARINC specifications
- relevant maintenance manuals
- maintenance requirements and troubleshooting procedures
- relevant regulatory requirements and standard procedures, including software management control

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 a range of electronic instrument display systems and components that is representative of the scope of the listed variables in accordance with relevant maintenance manual instructions while applying all relevant OHS procedures and standard processes.
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 aircraft electronic instrument display systems and their 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. 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 is essential. This may be demonstrated through application across a range of aircraft instrument and display systems (where display systems are applicable to the enterprise) 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 this unit of competency are being achieved under routine supervision on a system and on at least one major system component of each Groups 1 to 4 (Group 4 may be omitted if not applicable to the enterprise), as 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

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
Electronic instrument display systems	Electronic instrument display systems may include: 1. EFIS 2. EICAS 3. ECAM 4. HUD
Troubleshooting	Troubleshooting involves the use of fault-finding charts or similar, to line replacement level
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

MEA207C Remove and install aircraft electronic system components