



Australian Government

Department of Education, Employment and Workplace Relations

MEA280A Inspect, test and troubleshoot flight management systems and components

Revision Number: 2

MEA280A Inspect, test and troubleshoot flight management 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 to inspect, test and troubleshoot flight management systems and components.

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 flight management system computers, control display units, database units and the interface with flight control and navigation systems.

Applications include fixed and rotary wing aircraft that have flight management systems.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MEA246C	Fabricate and/or repair aircraft electrical hardware or parts
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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.
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Elements and Performance Criteria

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| <ol style="list-style-type: none"> 1. Inspect flight management systems and components | <ol style="list-style-type: none"> 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. <i>Flight management system</i> components are visually or physically checked for defects in accordance with applicable maintenance manual 1.4. Defects are correctly identified and reported |
| <ol style="list-style-type: none"> 2. Test flight management systems and components | <ol style="list-style-type: none"> 2.1. Aircraft and system are prepared in accordance with applicable maintenance application of power/system operation 2.2. Flight management system is functionally tested in accordance with maintenance evidence of serviceability or malfunction |
| <ol style="list-style-type: none"> 3. Troubleshoot flight management systems | <ol style="list-style-type: none"> 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 and accurate <i>troubleshooting</i> 3.3. Specialist advice is obtained, where required, to assist with the troubleshooting 3.4. Flight management system faults are located and the causes of the faults are identified and correctly recorded in maintenance documentation, where required, in accordance 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 and troubleshooting of flight management systems
- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) for the system components listed in the Range Statement
- interpreting the information presented on control display units
- applying logic processes and using appropriate wiring diagrams and manuals to isolate flight management 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 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
- electrical principles and digital electronic theory
- the basic layout (block diagram level) of flight management systems
- the operating principles of flight management computers, control display units and database units, including the interface with flight control, engine control and navigation systems
- the interface with Aircraft Communication Addressing and Reporting System and relevant ARINC specifications
- the operation of integral GPS sensors
- OHS procedures relating to flight management systems and components
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures, including software management control
- maintenance requirements and troubleshooting 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 test and troubleshoot a flight management system 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 flight management 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 the components of a flight management system as 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 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, including software management control.

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 Group 1 to 5 (Groups 4 and 5 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	Where the flight management system includes integral GPS, consideration may be given to concurrent assessment of MEA234C Inspect, test and troubleshoot aircraft global navigation systems and components.
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
Flight management systems	Flight management systems may include: 1. Flight management computer 2. Control display unit 3. Database unit 4. GPS sensor (where applicable to enterprise) 5. GPS antenna (where applicable to enterprise)
Troubleshooting	Troubleshooting involves the use of test sets, downloaded maintenance data and 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