



Australian Government

MEA235 Perform advanced troubleshooting in aircraft avionic maintenance

Release: 1

MEA235 Perform advanced troubleshooting in aircraft avionic maintenance

Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of hand skills and the use of fundamental system/component knowledge and applicable maintenance publications and test equipment to troubleshoot faults in avionic systems of fixed and rotary wing aircraft that are beyond the bounds of maintenance manual fault diagnosis guides during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The unit covers competencies required to progress from an Aircraft Maintenance Engineer at Certificate IV to the granting of a B2 maintenance certification licence under Civil Aviation Safety Regulation (CASR) Part 66, in accordance with the licensing provisions in the Companion Volume Implementation Guide and the Companion Volume CASA Interface.

The skills and knowledge covered by the units of competency listed in the MEA Aeroskills Training Package for Aircraft Maintenance Engineer (Avionics or Mechanical as applicable) at Certificate IV are prerequisite to the attainment of the elements of competency specified in this unit. This includes full coverage of the CASR Part 66 Avionics or Mechanical Syllabus subjects/topics listed in the Companion Volume Implementation Guide.

Pre-requisite Unit

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. Verify the defect | 1.1 Available information from flight crew, such as flight phase, aircraft configuration etc., and maintenance documentation both current and previous history, are used as necessary, to assist in fault determination |
| | 1.2 Inspection of the affected system is carried out to check both physical integrity and correct operation |

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| | 1.3 | Information gained from Central Maintenance Systems is verified against physical integrity and correct operation, where applicable |
| | 1.4 | The effects on a system from interfaces/integration with other systems are taken into account |
| 2. Isolate the defect | 2.1 | Logical processes, including the application of basic principles and system knowledge and known facts, are used to augment maintenance manual fault diagnosis guides to ensure efficient and accurate troubleshooting |
| | 2.2 | Specialist advice is obtained, where required and/or available, to assist with the troubleshooting process |
| | 2.3 | Faults are located and the causes of the defects are clearly identified and correctly recorded in maintenance documentation, including any other systems disturbed, where required |
| 3. Determine defect rectification requirements | 3.1 | Defect rectification requirements are determined and the necessary repair action initiated once verification and isolation of the defect are confirmed |
| 4. Verify defect rectification | 4.1 | Defect is rectified in accordance with approved maintenance data |
| | 4.2 | All systems disturbed or accessed during troubleshooting are restored as applicable using maintenance manuals, repair schemes or approved maintenance data |
| | 4.3 | All checks required by approved maintenance data to ensure correct operation of all disturbed systems are performed |

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.

Systems and related components include:

- Electrical systems
- Electronic systems
- Instrument systems
- Radio communication and navigation systems
- Autoflight systems

Troubleshooting

Troubleshooting, for the purpose of this unit, is defined as:

- the troubleshooting from first principles, of defects beyond available maintenance data in the systems of fixed or rotary wing aircraft types. Troubleshooting must be demonstrated across a range of typical systems and system components that includes but is not limited to airframes, engine(s) and other systems (and parts thereof) operated by inherently electrical, electronic, instrument or radio principles or means. Coverage is not required of specific type systems that are included in type training and practical consolidation of training (PCT) activities leading to a specific type licence rating
- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Procedures and requirements include:

Unit Mapping Information

Release 1 – equivalent to MEA235B Perform advanced troubleshooting in aircraft avionic maintenance

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 MEA235 Perform advanced troubleshooting in aircraft avionic maintenance

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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.

- Skill must be demonstrated in the diagnosis of faults that are beyond the coverage of maintenance manual fault diagnosis guides in simulated applications in the training environment and/or in the workplace across a representative range of systems and components as specified in the Assessment Conditions.
- The underlying skills inherent in this unit should be transferable across a range of inspection, testing and troubleshooting applications related to avionic systems, and where applicable other system interfaces/integration. 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, as is the demonstrated ability to apply fundamental system theory in the logical diagnosis of complex faults.
- Evidence of transferability of skills and knowledge related to performance and supervision of inspection, testing and troubleshooting is essential. This must be demonstrated through application across a number of aircraft avionic systems, including system interfaces/integration.
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Knowledge Evidence

For systems and components relevant to the scope of the licence/ratings sought as per CASR Parts 42, 66 and 145 Manuals of Standards, look for evidence that confirms knowledge of:

- theory related to system operation and interfaces between systems and with electrical/electronic control media to a level that will facilitate the diagnosis of faults beyond the level of maintenance manual fault diagnosis guides using reported symptoms and functional test results
- component construction and theory of operation to a level that will facilitate the diagnosis of faults beyond the level of maintenance manual fault diagnosis guides using reported symptoms and functional test results
- advanced fault diagnostic techniques
- condition monitoring and trend analysis techniques.

Assessment Conditions

- Competency is assessed in the workplace or simulated workplace and shall involve successfully dealing with a number of maintenance and fault scenarios across a range of avionic systems and related system components of:
 - electrical systems
 - electronic systems
 - instrument systems
 - radio communication and navigation systems
 - autoflight systems
- The troubleshooting approach should clearly demonstrate an in-depth knowledge of underpinning theory of a system, with this knowledge being used in a logical process to augment and extend the scope of the aircraft/system fault-finding guide. The fault rectification work plan should take account of applicable safety (including safe handling of heavy components) and quality requirements in accordance with the industry and regulatory standards.
- The following conditions of assessment represent the requirements of CASA 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 supervision without intervention and the ability has been demonstrated to identify the causes of defects not covered fully by maintenance manual fault diagnosis guides. Competency shall be assessed via simulated activities at the CASR Part 147 Maintenance Training Organisation and through performance during observed workplace activities.
- The Assessor must meet the criteria specified in the CASR Part 147 Manual of Standards.
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