



Australian Government

MEA323 Perform advanced troubleshooting in aircraft mechanical maintenance

Release: 1

MEA323 Perform advanced troubleshooting in aircraft mechanical maintenance

Modification History

Release 1 - New unit of competency

Application

This unit of competency requires application of system theory knowledge and advanced fault diagnostic skills to identify during the performance of scheduled or unscheduled maintenance the cause of defects in fixed and rotary wing aircraft that are beyond the bounds of maintenance manual fault diagnosis guides. This may be done during individual activities or during supervision of other personnel.

The unit covers competencies required to progress from an Aircraft Maintenance Engineer (AME) at Certificate IV to the granting of a chosen B1 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 CASA Interface.

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.

- | | |
|----------------------|--|
| 1. Verify the defect | 1.1 Available information from flight crew, such as flight phase, aircraft configuration, and so on; maintenance documentation both current and previous history; is 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
- 1.3 Information gained from Central Maintenance Systems is verified against physical integrity and correct operation, where applicable, while observing all relevant work health and safety (WHS) requirements
 - 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 while observing relevant WHS procedures
 - 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.

Troubleshooting

- The competency applies to 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, their engines and all systems (and parts thereof) operated by inherently mechanical or hydro-mechanical 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

Procedures and requirements include:

- Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Applicable systems include:

- Hydro-mechanical systems
- Pneumatic systems
- Flight control systems
- Engines and engine systems
- Propeller and rotor systems

Unit Mapping Information

Release 1 – equivalent to MEA323B Perform advanced troubleshooting in aircraft mechanical 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 MEA323 Perform advanced troubleshooting in aircraft mechanical maintenance

Modification History

Release 1 - New unit of competency

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, and must include:

- applying relevant WHS procedures
- diagnosing 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.

The underlying skills inherent in this unit should be transferable across a range of inspection, testing and troubleshooting applications related to mechanical systems, and where applicable other system interfaces/integration. It is essential that system test procedures take into account all safety precautions applicable to the system being maintained. Ability to interpret inspection procedures and specifications (allowable limits) and ensure that they are applied 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 the applicable systems listed in the Range of Conditions, including system interfaces/integration.

Knowledge Evidence

For systems and components relevant to the scope of the licence/ratings sought knowledge is required 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 systems listed in the Range of Conditions, and related system components.
- 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 and the ability to identify the causes of defects not covered fully by maintenance manual fault diagnosis guides has been demonstrated under supervision without intervention. This shall be established via simulated activities at the CASR Part 147 Maintenance Training Organisation and performance during observed workplace activities.
- The Assessor must meet the criteria specified in the CASR Part 147 Manual of Standards.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>