Australian Government

Assessment Requirements for MEA277 Maintain twin engine aircraft electrical systems and components

Release: 1

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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 practices
- using approved maintenance documentation and aircraft publications relating to twin engine aircraft electrical systems
- identifying/locating:
  - DC multi-generator power generation, regulation, distribution and control systems and components, i.e. regulators and bus bars
  - electrical propeller control systems and components, such as feathering and synchronising systems
  - batteries in dual battery installations and associated mounting equipment, including related anti-vibration aids
  - fire warning and extinguishing systems and components
  - identification of halogen (e.g. BCF) fire extinguishers
  - combustion heating systems
  - equipment cooling and ventilation
  - fuel storage and distribution system electrical components
  - master and central warning systems
- correctly connecting DC generators and alternator/rectifier generators in multi-generator systems and paralleling generator output
- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) and security in the above systems and system components
- applying logic processes, taking and interpreting electrical measurements, using test equipment and appropriate wiring diagrams and manuals to isolate malfunctions in the above systems
- performing system functional tests and checks to isolate system faults and assess post-maintenance serviceability.

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the electrical system being maintained are fully observed, understood and complied with. Ability to interpret inspection procedures and specifications (allowable limits) and apply them in practice across a range of inspection, testing and troubleshooting applications (including the timely involvement of supervisors or other trades) 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 aircraft electrical systems and components listed in the Assessment Conditions.

Knowledge 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 and include knowledge of:

- system testing procedures and paralleling of generator output
- the basic layout (block diagram level), function and operation of:
  - DC multi-generator and alternator/rectifier generator regulation and distribution systems and components
  - electrical propeller control systems, such as feathering and synchronising systems and system components
  - dual battery systems and associated mounting equipment, including related anti-vibration aids
  - fire warning and extinguishing systems and system components, including regulatory requirements relating to halogen (e.g. BCF) fire extinguishers
  - combustion heating systems and system components
  - equipment cooling and ventilation systems and system components
  - fuel storage and distribution systems and system components
  - master and central warning systems and system components
- maintenance requirements and troubleshooting procedures for the above electrical systems
- relevant WHS practices
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures.

Assessment Conditions

- 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.
- 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.
- The following conditions of assessment represent the requirements of the Regulators (ADF and CASA) and maintenance stakeholders 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 routine supervision on electrical looms, cables and connection hardware, and on each following system and on at least one (1) major component/line replaceable unit (LRU) in each case:
  - DC multi-generator and alternator/rectifier generator regulation and distribution systems and components
  - electrical propeller control systems, such as feathering systems (where applicable to the enterprise)
  - batteries in dual battery installations and associated mounting equipment, including related anti-vibration aids (competency may be demonstrated through the performance of a battery check)
  - fire warning and extinguishing systems, including handling of halogen fire extinguishers (where applicable to the enterprise)
  - combustion heating systems (where applicable to the enterprise)
  - equipment cooling and ventilation
  - fuel storage and distribution systems
  - master and central warning systems (where applicable to the enterprise).
- Component removal and installation competencies are to be demonstrated on at least one (1) component from each of the following groups:
  - components of multi-generator regulation and distribution systems
  - electrical propeller control system components (where applicable to the enterprise)
  - batteries in dual battery installations and associated mounting equipment, including related anti-vibration aids
  - fire warning and extinguishing system components (where applicable to the enterprise)
  - combustion heaters and associated components (where applicable to the enterprise)
  - equipment cooling and ventilation components
  - fuel storage and distribution system electrical components
  - master and central warning system components (where applicable to the enterprise).
- This shall be established via the records in the Log of Industrial Experience and Achievement or, where appropriate, an equivalent Industry Evidence Guide (for details refer to the Companion Volume Assessment Guidelines).
- Assessors must satisfy the requirements of the National Vocational Education and Training Regulator (Australian Skills Quality Authority, or its successors).
- Where the unit is to be used for CASA licensing purposes the Assessor must also meet the criteria specified in the CASR Part 147 Manual of Standards.
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Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371