



Australian Government

Assessment Requirements for MEA274 Maintain basic light aircraft electrical systems and components

Release: 2

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Modification History

Release 2. Equivalent to MEA274 Maintain basic light aircraft electrical systems and components with amended prerequisite unit name.

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, including those relating to gas turbine engine high energy ignition units
- using approved maintenance documentation and aircraft publications relating to DC electrical systems
- identifying/locating:
 - DC power generation, regulation, distribution and control systems and components:
 - generators and starter/generators
 - regulators
 - bus bars
 - circuit breakers and fuses
 - wiring
 - piston engine ignition and starting systems and components
 - magnetos or coils
 - starter motors
 - ignition switches/start switches
 - ignition harnesses
 - low tension wiring
 - spark plugs
 - auxiliary starting devices
 - gas turbine engine ignition and starting systems (where applicable to the enterprise):
 - starter motors and starter/generators
 - high energy ignition units
 - control units
 - switches
 - batteries and associated mounting equipment, including related anti-vibration aids
 - motors and actuators in basic DC electrical systems
- correctly connecting DC generators, alternator/rectifier generators and starter/generators

- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses) and security in:
 - DC power generation systems including regulation, distribution and control
 - battery installations
 - piston engine ignition and starting systems
 - gas turbine engine ignition and starting systems (where applicable to the enterprise)
 - internal/external lighting systems, including controls
 - motors and actuators in basic DC electrical systems
- 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:

- component attachment methods
- connection of hardware and plugs
- DC electrical principles:
 - properties of permanent magnets
 - precautions for the care and storage of permanent magnets
 - properties of electromagnets
 - primary and secondary cells
 - aircraft battery types, construction, care and safety
 - resistor characteristics
 - fuses and circuit breakers
 - fundamental DC circuits
 - inductive circuits
 - capacitive circuits
 - basic fault-finding principles

- general construction, operating characteristics and applications for aircraft:
 - DC generators
 - alternator/rectifier generators
 - DC motors including starter motors
 - starter/generators
 - DC actuators (linear and rotary)
 - gas turbine high energy ignition system components and related safety precautions
 - lighting systems
- the basic layout (block diagram level), function and operation of the systems listed in the Range of Conditions
- electrical system maintenance requirements and troubleshooting procedures
- relevant WHS practices, including those relating to gas turbine engine high energy ignition units
- 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 of the following systems and on at least one (1) major component/line replaceable unit (LRU) in each case:
 - DC power generation, regulation and distribution systems
 - piston engine and gas turbine engine ignition and starting systems (gas turbine may be omitted where not applicable to the enterprise)
 - DC electrical systems, such as flaps, including related motors and actuators
 - aircraft lighting
 - aircraft main battery (competency may be demonstrated through the performance of a battery check).
- Component removal and installation competencies are to be demonstrated on at least one (1) component from each of:

- DC generators, and alternator/rectifier generators, and components of related single generator regulation and distribution systems
- motors
- actuators
- piston engine and gas turbine engine ignition and starting system components (gas turbine may be omitted where not applicable to the enterprise)
- aircraft batteries
- aircraft lighting components such as bulbs, lenses, switches and rheostats .
- 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>