Australian Government

Department of Education, Employment and Workplace Relations

MEA223D Inspect aircraft electrical systems and components

Release: 1

MEA223D Inspect aircraft electrical systems and components

Modification History

Knowledge statements expanded - equivalent to previous unit.

Unit Descriptor

This unit of competency is part of the Avionic Certificate IV (Aircraft Maintenance Stream) training pathways and is also part of the Mechanical Aircraft Maintenance Engineer licensing pathway. It covers the competencies required to inspect electrical systems and components of fixed and rotary wing aircraft. The unit is used in workplaces that operate under the airworthiness regulatory systems of the ADF and CASA.
Where a CASA licensing outcome is sought this unit forms part of the CASA requirement for the granting of the chosen B1 or the B2 maintenance certification 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 to inspect aircraft electrical systems and components. Applications include fixed and rotary wing aircraft.

Licensing/Regulatory Information

Refer to unit descriptor

Pre-Requisites

MEA246C	Fabricate and/or repair aircraft electrical components or parts

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.

Elements and Performance Criteria

1 Inspect electrical systems and components	1.1 Isolation tags are checked and aircraft configured for safe system inspection and operation in accordance with the applicable maintenance manual
	1.2 ***Electrical system components*** and hardware are visually or physically checked for external signs of defects in accordance with applicable maintenance manual
	1.3 Defects are correctly identified and recorded in accordance with standard enterprise procedures

Required Skills and Knowledge

Look for evidence that confirms knowledge of:

- component attachment methods and connection of hardware
- explaining the basic layout (block diagram level) and operation of:
  - AC and DC power generation systems including regulation, distribution, control and cooling
  - battery installations and inverters
  - flight control and/or electro-hydraulic systems
  - engine ignition, starting, fuel distribution and control systems
  - internal/external lighting systems, including controls
  - doors
  - landing gear systems
  - anti-skid braking systems
  - master caution and warning systems
  - auxiliary systems (including ice/rain protection, fire detection, environmental control and pressurisation, waste and water, equipment and furnishings)
- OHS requirements applicable to the maintenance of aircraft electrical systems, including gas turbine engine high-energy ignition units
- electrical system maintenance requirements
- relevant maintenance manuals
- relevant regulatory requirements and standard procedures

Look for evidence that confirms skills in:

- applying relevant OHS practices
- using approved maintenance documentation and aircraft publications relating to the avionic system being maintained
- recognition of system and electrical component defects/external damage, correct installation, connection of plugs, terminations, and attaching hardware (including cabling/harnesses) and security in:
  - AC and DC power generation systems, including regulation, distribution, control and cooling
  - battery installations and inverters
  - flight control and/or electro-hydraulic systems
  - engine ignition, starting, fuel distribution and control systems
  - internal/external lighting systems, including controls
  - doors
  - landing gear systems
  - anti-skid braking systems
  - master caution and warning systems
  - auxiliary systems (including ice/rain protection, fire detection, environmental control and pressurisation, waste and water, equipment and furnishings)

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 inspect aircraft electrical systems and components while observing all relevant safety precautions.
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 applications (including the timely involvement of supervisors or other trades) associated with aircraft electrical systems and components. It is essential that 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 is essential. This is to be demonstrated through application across a range of aircraft electrical systems, components and hardware listed in the Range Statement. The work plan should take account of applicable safety and quality requirements in accordance with the industry and regulatory standards. A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the relevant elements of the unit of competency are being achieved under routine supervision on a system and related components in each Group 1 to 13 inclusive (Groups 14 to 17 may be omitted where they are not applicable to the enterprise) 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 workplace or simulated workplace using tools and equipment specified in the maintenance manuals. It is also expected that general and special purpose tools, test and ground support equipment would be used where appropriate.
Method of assessment	
Guidance information for	Individuals being assessed who have already attained

assessment	MEA211C Inspect, test and troubleshoot advanced aircraft electrical systems and components, will have covered a significant proportion of the Performance Criteria for Element 1 and will have covered many of the Range Statement variables. Log of Industrial Experience and Achievement records relating to MEA211C Inspect, test and troubleshoot advanced aircraft electrical systems and components may be accepted as also meeting the evidence requirements for this unit in the applicable areas. The relationship between MEA211C Inspect, test and troubleshoot advanced aircraft electrical systems and components and MEA210C Inspect, test and troubleshoot basic aircraft electrical systems and components may also be taken into account where MEA210C Inspect, test and troubleshoot basic aircraft electrical systems and components, has been attained, but not MEA211C Inspect, test and troubleshoot advanced aircraft electrical systems and components. Advice in MEA210C Inspect, test and troubleshoot basic aircraft electrical systems and components regarding the coverage of MEA274A Maintain basic light aircraft electrical systems and components, may also be taken into consideration where applicable.

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
Electrical systems and components	1) Electrical systems and components may include: 1. AC and/or DC power generation, regulation and distribution systems 2. Battery installations and bus ties/interlocks 3. Rotary and static inverters and TR units 4. Air cycle air conditioning and pressurisation

	systems 5. Flight and engine control systems 6. Ignition and starting systems 7. Fire/smoke detection and extinguishing 8. Lighting 9. Master and caution warning systems 10. Equipment and furnishing 11. Equipment cooling and ventilation 12. Position indicating systems 13. Fuel storage and distribution 14. Propeller control systems 15. Landing gear indication and anti-skid 16. Ice and rain protection 17. Wastewater
Application	Application of this unit may relate to: • scheduled or unscheduled maintenance activities • 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

MEA203C Remove and install advanced aircraft electrical system components