Australian Government

Assessment Requirements for MEA275 Maintain basic light aircraft instrument systems and components

Release: 3

Assessment Requirements for MEA275 Maintain basic light aircraft instrument systems and components

Modification History

Release 3. Equivalent to MEA275 Maintain basic light aircraft instrument 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:

- using approved maintenance documentation and aircraft publications relating to basic instrument systems
- locating and identifying flight instrument system components comprising:
  - engine system temperature and speed, including mechanical and electrical tachometers
  - auxiliary direct reading systems, including vacuum, fuel storage quantities
  - flight systems, including attitude, altitude, air speed and OAT
- locating and identifying direct reading compasses
- correct handling and observance of maintenance precautions relating to gyroscopes, gimbals and pitot/static systems (connections, heating and protrusions)
- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware, including cabling/harnesses, and security in:
  - flight instruments
  - pitot/static systems
  - direct reading compasses
  - piston engine and gas turbine engine indication systems
  - electrical systems indication
  - basic fuel quantity indication systems
  - vacuum indication systems
- applying logic processes, taking and interpreting system 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
- applying WHS requirements relevant to instrument system maintenance.

Where relevant to the enterprise:

- locating and identifying:
  - electronic flight instrument system (EFIS)

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- engine indicating and crew alerting system (EICAS)
- electronic central aircraft monitoring (ECAM)
- data linkage and transmission systems

- recognising system and component defects/external damage, correct installation, connection of plugs, terminations, attaching hardware (including cabling/harnesses)
- interpreting the information presented on instrument display systems
- performing system functional tests and checks to confirm post-maintenance serviceability

It is essential that system testing procedures, cleanliness requirements and safety precautions applicable to the instrument 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 is essential. This is to be demonstrated through application across a range of basic aircraft instrument 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
- handling precautions for electrostatic sensitive devices
- relevant WHS practices
- the basic layout (block diagram level), function and operation of the following systems as listed in the Range of Conditions:
  - pitot/static systems
  - piston engine and gas turbine engine direct reading indication systems
  - basic fuel quantity measurement systems
- the operating principles of the above systems and associated with:
  - atmospheric conditions; properties and effects on aircraft instruments and systems
  - pressure and temperature sensing elements and their use in aircraft instruments
  - gyroscopes and their use in aircraft instrument systems
  - electrical fundamentals
- instrument construction and operation:
  - instrument groupings, panel layout and construction
  - pitot static instruments (ASI, VSI and counter-pointer altimeters), their operation, calibration, safe handling and related terminology
  - pitot pressure
  - static pressure
  - altimeter Q code settings:
    - QNH

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    - QNE
    - QFE
  - indicated airspeed (IAS)
  - true airspeed (TAS)
  - vacuum system indication component construction and operation
  - air and electrically powered artificial horizon construction and operation
  - DG construction and operation
  - construction and operation of direct reading engine instruments
  - turn and bank and slip/turn coordinator construction and operation
  - direct reading compass construction and compass calibration
  - piston and gas turbine engine direct reading measuring instruments and temperature indication instruments construction and operation
  - voltage and current measuring instrument construction and operation
  - volumetric fluid quantity system components, construction and operation
- instrument system maintenance requirements and troubleshooting procedures, including pitot/static system leak testing
- relevant maintenance documentation and maintenance publications
- relevant regulatory requirements and standard procedures
- for electronic flight and engine instrument systems:
  - the layout and operation (to block diagram level) of EFIS, EICAS and ECAM systems and related data linkage and transmission systems
  - interpretation of display data
  - component removal and installation procedures
  - testing of system operation using on-board testing procedures and/or simple external test equipment with a go or no go outcome
  - software management control requirements.
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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 applicable 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.

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- 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 a system and at least one major system component/line replaceable unit (LRU) from each of the following groups:
  - pitot/static systems and components, ASI, VSI and counter-pointer altimeters
  - DGs and AHs (air and electrically driven)
  - turn and bank and slip/turn coordinators
  - direct reading compasses
  - piston engine and gas turbine engine indication system components (direct reading measuring instruments and temperature indication)
  - electronic flight and engine instrument system components (may be omitted if not relevant to the enterprise)
  - electrical systems indication (voltage and current)
  - basic fuel quantity indication systems and components
  - vacuum indication components.
- 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

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