Australian Government

Assessment Requirements for MEA421 Fabricate advanced structural components for aircraft

Release: 3

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Modification History

Release 3. Equivalent to MEA421 Fabricate advanced structural components for aircraft with amended prerequisite codes.

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 include:

- applying relevant WHS procedures, including the use of MSDS and applicable items of PPE
- using approved maintenance documentation and aircraft publications relating to aircraft structure
- identifying various aircraft metals and their basic metallurgy properties by interpretation of markings, numbering systems or visual, chemical or mechanical means
- handling and storing aircraft metals to industry standards
- identifying aircraft structural assembly fasteners by interpretation of markings, numbering systems, size, shape and colour
- fabrication of aircraft structural components and parts by:
  - correctly interpreting drawings, including third angle projection, isometric, sectional formats and hand sketches
  - developing component flat pattern using basic drawing tools, geometric drawing processes, calculating and applying bend allowance/deduction/setback Undertake component flat pattern development utilising:
    - parallel line
    - radial line
    - triangulation
  - using appropriate hand tools, machines (stretching, shrinking, bending, cutting, drilling, rolling, wheeling and folding), forming blocks, templates and presses to form/produce dished, domed, curved components, bent/angled (L, Z, U, hat) sections and lightening holes, flanges and joggles
  - assembling component parts using appropriate hand and machine tools and standard aircraft fasteners to industry standards
- applying appropriate metal heat treatment processes
- applying appropriate metal surface treatments.

The underlying skills inherent in this unit should be transferable across a range of aircraft applications. Evidence of knowledge and skills associated with the broad range of structural fabrication techniques and their application to different materials used in aircraft manufacture will be required to supplement evidence of ability to fabricate components.

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:

- aircraft construction principles
- causes of structural fatigue and preventative measures
- structural corrosion and preventative measures
- aircraft structural drawings and repair scheme drawings
- material specifications for aluminium alloys and steel alloys used in aircraft structure
- structural material identification by markings and numbering systems
- material identification by chemical, electrical and mechanical methods
- material storage requirements
- hardware types and specifications
- identification of hardware
- sealants used in aircraft structure
- chemical surface treatments
- electroplating
- paints and finishes
- flat pattern development and terminology
- design and manufacture of templates
- design and manufacture of press tools
- methods for folding complex and nested sections
- machinery used for stretching, shrinking, bending, cutting, drilling and rolling, use of forming blocks, templates and press tools to form components
- use of forming blocks, templates and press tools to form components
- WHS precautions associated with fabrication of aircraft structural components
- MSDS
- PPE.

Assessment Conditions

- Competency should be assessed in the work environment, or simulated work environment, using tools and equipment specified by aircraft maintenance manuals. It is expected that general-purpose tools and test equipment found in most routine situations would be used where appropriate.
- 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 a representative range of structural fabrication tasks.
- 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).

Links

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