



Australian Government

MEA365 Assess structural repair/modification requirements and evaluate structural repairs and modifications

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Modification History

Release 1 - New unit of competency

Application

This unit of competency requires interpretation of structural repair and modification data to determine required action and to determine the compliance with airworthiness requirements of completed structural repairs or modifications. In addition, the performance of colour contrast dye penetrant non-destructive testing (NDT) on applicable components is included.

Applications include both fixed and rotary wing aircraft.

The unit covers some of the competencies required to progress from an Aircraft Maintenance Engineer (AME) at Certificate IV to the granting of a chosen maintenance certification licence under Civil Aviation Safety Regulation (CASR) Part 66, in accordance with the licensing provisions in the Companion Volume Implementation Guide.

The skills and knowledge covered by the units of competency listed in the MEA Aeroskills Training Package for Aircraft Maintenance Engineer at Certificate IV are prerequisite to the attainment of the elements of competency specified in this unit. This includes full coverage of the CASR Part 66 Syllabus subjects/topics listed in the Companion Volume CASA Interface.

Pre-requisite Unit

Competency Field

Aviation maintenance

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1. Assess structural repair or modification requirements | 1.1 Structural repair requirements are determined from maintenance manuals or approved repair schemes |
| | 1.2 Damage beyond repair scheme limits is referred to relevant personnel/authorities |

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| | 1.3 | Modification requirements are determined from approved drawings and specifications/ instructions or requirements are referred to relevant personnel/authorities |
| | 1.4 | Completed work is evaluated for compliance with airworthiness requirements |
| 2. Perform colour contrast dye penetrant NDT | 2.1 | Inspection requirements are identified from relevant maintenance data or to confirm a visually identified defect |
| | 2.2 | Surfaces to be inspected are prepared for the dye penetrant process |
| | 2.3 | Dye penetrant materials are selected in accordance with standard operating procedures |
| | 2.4 | Penetrant test is performed in accordance with standard operating procedures and while observing all relevant work health and safety (WHS) precautions |
| | 2.5 | Defect indications are checked and identified in accordance with standard operating procedures |
| | 2.6 | Penetrant testing equipment is correctly maintained and stored while observing all relevant WHS requirements, including the use of material safety data sheets (MSDS) and items of personal protective equipment (PPE) |
| | 2.7 | Results are recorded in accordance with standard enterprise and regulatory requirements |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range of tasks and practices • Standard practices for structural repair and modification,

includes:	including damage measurement and assessment against approved repair schemes • The process for referral of damage details and modification requirements to relevant personnel/authorities • Supervision of repair scheme and modification incorporation, including evaluation of work against drawings and specifications • Scheduled or unscheduled maintenance • Individual activities or supervision of other personnel performing maintenance tasks classified in CASR part 145 as specialist maintenance, including: • non-destructive inspection • welding • surface plating • surface finishing • preparing structural repair components • machining
Surface preparation for dye penetrant NDT includes:	• Removal of surface finishes where applicable • Thorough cleaning of the surface • Drying of the surface • Processes included in standard procedures
Dye penetrant materials include:	• Appropriate surface cleaning materials • Emulsifiers • Developers • Materials for surface cleaning after testing
Procedures and requirements include:	• Industry standard procedures specified by manufacturers, regulatory authorities or the enterprise

Unit Mapping Information

Release 1 – equivalent to MEA365A Assess structural repair/modification requirements and evaluate structural repairs and modifications

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=ce216c9c-04d5-4b3b-9bcf-4e81d0950371>

Assessment Requirements for MEA365 Assess structural repair/modification requirements and evaluate structural repairs and modifications

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:

- interpreting damage limits and identifying applicable repair schemes
- interpreting all requirements of modification drawings and assessing work against them
- evaluating completed repairs and modifications for compliance with the applicable data and with airworthiness requirements
- recognising weld defects
- performing colour contrast dye penetrant NDT to confirm defects in applicable aircraft components
- application of relevant WHS practices, including the use of MSDS and PPE.

The underlying skills inherent in this unit should be transferable across a range of repair and modification applications related to the structure of aircraft. It is essential that the repair and modification procedures take into account all applicable safety precautions. The ability to interpret repair scheme and modification requirements, including applicable specifications (allowable limits) and ensure that they are applied in practice is critical.

This must be demonstrated through the correct determination of repair requirements and the determination of compliance with repair schemes and modification drawings.

The ability to assess sound weld repairs must also be demonstrated.

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 at a post-trade level of:

- application of regulatory requirements and of manufacturer's requirements in the determination of structural maintenance needs
- assessment of the extent of damage and an understanding of the need for a professional engineer to develop or extend a repair scheme where damage is beyond the limits of maintenance manual repair schemes, including the identification of relevant personnel and authorities

- assessment of new equipment or component mounting requirements and an understanding of the need to have drawings and specifications developed by a professional engineer, including the identification of relevant personnel and authorities
- the need for shoring and support to maintain aerodynamic shape and for safe performance of structural maintenance
- the need for mensuration checks and the techniques used to perform them
- how to determine welding requirements and the recognition of sound welds
- the correct application of colour contrast dye penetrant NDT and the limitations of the testing method
- dye penetrant test procedures:
 - relevant WHS precautions and how to obtain PPE and MSDS
 - cleaning and preparation processes and materials
 - consequences of incorrect preparation
 - basic concepts and principles of NDT and appropriate use of the colour contrast dye penetrant technique
 - general properties of penetrants (penetrability, removability and visibility)
 - types of emulsifiers and developers
 - established procedures and techniques
 - defect types and their consequences
 - post-test cleaning methods
- aircraft welding regulations
- aircraft welding processes and relevant parent metal groups
- defects applicable to each welding process and parent metal group.

Assessment Conditions

- Competency will be assessed in the training environment using a combination of practical exercises and scenarios. Applicable work plans should take account of applicable safety (including safe handling of heavy components) and quality requirements in accordance with the industry and regulatory standards.
- The following conditions of assessment represent the requirements of CASA 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 elements and performance criteria of the unit of competency are being achieved across the tasks and practices listed in the Range of Conditions under supervision without intervention.
- This shall be established via simulated activities at the CASR Part 147 Maintenance Training Organisation and performance during observed workplace activities.
- The Assessor must meet the criteria specified in the CASR Part 147 Manual of Standards.

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