



Australian Government

Department of Education, Employment and Workplace Relations

MEA365A Assess structural repair/modification requirements and evaluate structural repairs and modifications

Release: 2

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Modification History

Minor formatting and editorial changes made.

Unit Descriptor

This unit of competency covers the competencies required to progress from an Aircraft Maintenance Engineer at Certificate IV to the granting of a chosen Aircraft Maintenance Engineer Licence under CASR Part 66, in accordance with the licensing provisions in the Assessment Guidelines. The unit replaces MEA324B Perform structural repair/modification assessment and evaluation.

The skills and knowledge covered by the units of competency listed in the MEA11 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 Assessment Guidelines.

Application of the Unit

This unit 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 NDT on applicable components is included. Applications include both fixed and rotary wing aircraft.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable

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.
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Elements and Performance Criteria

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| 1. Assess structural repair or modification requirements | 1.1. Structural repair requirements are determined from maintenance manuals or schemes
1.2. Damage beyond repair scheme limits is referred to relevant personnel/authorities
1.3. Modification requirements are determined from approved drawings and specifications/instructions or requirements are referred to relevant personnel
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 visually identified defect
2.2. <i>Surfaces to be inspected are prepared</i> for the dye penetrant process
2.3. <i>Dye penetrant materials</i> are selected in accordance with standard operating procedures
2.4. Penetrant test is performed in accordance with standard operating procedures observing applicable OHS 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 OHS precautions
2.7. Results are recorded in accordance with standard enterprise and regulatory requirements |

Required Skills and Knowledge

Required skills

Look for evidence that confirms skills in:

- 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
- applying relevant OHS practices, including the use of MSDS and PPE

Required knowledge

Look for evidence that confirms a post trade level of knowledge 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 OHS precautions and how to obtain MSDS and PPE
 - 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

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.

<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to determine structural repair and modification requirements using maintenance manuals, modification instructions and applicable drawings, and must be able to assess the soundness of weld repairs while identifying all safety precautions relevant to specified structural repair or modification tasks and must also be able to perform colour contrast dye penetrant NDT on relevant aircraft components.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>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. Evidence of transferability of skills and knowledge related to structural maintenance is essential. 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. 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. A person cannot be assessed as competent until it can be demonstrated to the satisfaction of the workplace assessor that the elements of the unit of competency are being achieved under supervision without intervention. This shall be established via simulated activities at the CASR Part 147 MTO and performance during observed workplace activities.</p>
<p>Context of and specific resources for assessment</p>	<p>Competency will be assessed in the training environment using a combination of practical exercises and scenarios.</p>
<p>Method of assessment</p>	
<p>Guidance information for</p>	

assessment	
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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.

<p>Application</p>	<p>Application of this unit may relate to:</p> <ul style="list-style-type: none"> • standard practices for structural repair and modification, 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 which may include: <ul style="list-style-type: none"> • non-destructive inspection • welding • surface plating • surface finishing • preparing structural repair components • machining
<p>Dye penetrant NDT procedures</p>	<p>Surfaces to be inspected are prepared by:</p> <ul style="list-style-type: none"> • removal of surface finishes where applicable • thorough cleaning of the surface • drying of the surface • processes included in standard procedures
<p>Dye penetrant materials</p>	<p>Dye penetrant materials may include:</p> <ul style="list-style-type: none"> • appropriate surface cleaning materials • emulsifiers • developers • materials for surface cleaning after testing
<p>Procedures and requirements</p>	<p>Refer to industry standard procedures specified by manufacturers, regulatory authorities or the enterprise</p>

Unit Sector(s)

Aviation maintenance

Competency field

Co-requisite units

Not applicable