



Australian Government

MEA424 Evaluate aircraft non-destructive tests

Release: 2

MEA424 Evaluate aircraft non-destructive tests

Modification History

Release 2. Equivalent to MEA424 Evaluate aircraft non-destructive tests with amended prerequisite codes.

Application

This unit of competency requires application of competencies relating to non-destructive testing (NDT) techniques and related metallurgical knowledge in the research, analysis, development and evaluation of NDT tests for aircraft structure and components to Level 3 (*AS 3669-2006 Non-destructive testing – Qualification and approval of personnel – Aerospace*) during scheduled or unscheduled maintenance. Work may be performed individually or as part of a team.

The work can relate to scheduled and unscheduled maintenance activities on the metallic and composite structure of aircraft and aircraft components

Certification against applicable standards may be achieved where assessment in this unit of competency is carried out in conjunction with an examining authority as described in ISO 9712:2005 Non-destructive testing – Qualification and certification of personnel.

The unit is part of the Diploma and Advanced Diplomas of Aeroskills (Non-Destructive Testing). The unit is similar to unit MEM24011B Establish non-destructive tests but observes the requirements of *AS 3669-2006 Non-destructive testing – Qualification and approval of personnel – Aerospace* and of the Regulators; the Australian Defence Force (ADF) and the Civil Aviation Safety Authority (CASA); for the approval of procedures and the performance of NDT on aircraft and aircraft components.

Pre-requisite Unit

MEA153	Communicate aviation technical and maintenance management knowledge
MEA158	Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance
MEM13013B	Work safely with ionising radiation
MEM16010A	Write reports
MEM24002B	Perform penetrant testing
MEM24004B	Perform magnetic particle testing
MEM24006B	Perform eddy current testing
MEM24008B	Perform ultrasonic testing

MEM24010B Perform radiographic testing

MEM24012C Apply metallurgy principles

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 requirements for NDT | 1.1 The inspection area is assessed for testing and all possible failure sites identified using metallurgical analysis |
| | 1.2 Information relevant to test development is collected from available sources using accepted techniques |
| | 1.3 Information is analysed and interpreted |
| | 1.4 Test requirements are determined |
| 2. Evaluate NDT techniques and procedures | 2.1 Test methods, techniques and procedures for specific NDT tasks are specified |
| | 2.2 Applicable codes, standards, specifications and procedures are interpreted |
| | 2.3 Test procedures are developed in accordance with established techniques and metallurgical principles |
| 3. Validate/confirm NDT tasks | 3.1 General and specific test procedures are validated in accordance with established techniques |
| | 3.2 Inspection results are interpreted in accordance with existing codes, standards and specifications |
| 4. Evaluate NDT test procedures | 4.1 Procedures are evaluated for effectiveness |
| | 4.2 Evaluation results are documented and reported in accordance with standard enterprise procedures |

- 4.3 Changes/amendments to NDT procedures are made and distributed in accordance with standard enterprise procedures

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.

Test methods, techniques and procedures refer to:

- Standard techniques and procedures associated with:
 - penetrant testing
 - magnetic particle testing
 - eddy current testing
 - ultrasonic testing
 - radiographic testing

Codes, standards and specifications include:

- AAP7002.053 Technical airworthiness Management Manual
- Civil aviation Safety Regulations (CASR)
- overseas airworthiness regulators, such as the Federal Aviation Authority (FAA), European Aviation Safety Authority (EASA) and Transport Canada
- AS 3669-2006 Non-destructive testing – Qualification and approval of personnel – Aerospace
- NAS410 Revision 2 Certification and qualification of non-destructive testing personnel (February 2003)
- BS EN 4179:2009 Aerospace series. Qualification and approval of personnel for non-destructive testing
- BS EN 473:2008 Non-destructive testing. Qualification and certification of NDT personnel. General principles
- ISO 9712:2005 Non-destructive testing – Qualification and certification of personnel
- Applicable materials and equipment specifications

Unit Mapping Information

Release 2. Equivalent to MEA424 Evaluate aircraft non-destructive tests.

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 MEA424 Evaluate aircraft non-destructive tests

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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:

- conducting metallurgical assessment of inspection areas and identifying potential failure sites and modes
- designating most appropriate method, technique or procedure
- referencing aircraft maintenance information and regulatory requirements for inspection
- developing and validating test procedures
- applying safety procedures, standard operating procedures and legislative requirements to all work
- reading/interpreting/applying relative testing standards
- reading/interpreting/applying relative conformance standards
- documenting procedure and results
- submitting reports in accordance with standard enterprise procedures.
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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:

- definition of structural terms, i.e. safe life, damage tolerant, failsafe, stress, strain, shear and cycles
- inspection requirements for metal and composite structure, including:
 - ageing aircraft inspection requirements
 - safe life structure
 - damage tolerant structure
 - fail safe structure
- potential causes of structural failure
- metallurgical analysis to assess inspection areas and potential failure sites and modes
- NDT methods, techniques and procedures
- meaning and validity of relevant codes, standards, specifications and procedures
- regulatory requirements of the ADF and CASA relating to the use of NDT for inspection of aircraft structure and components

- test procedures for testing techniques and specimens
- validation processes
- process for approval of procedures
- process for documentation/distribution of procedures
- evaluation procedures
- process for documentation of evaluation results
- process for amending tests and distributing amendments
- national/Australian Standards, NOHSC guides, state/territory regulatory codes of practice/standards
- use and application of personal protective equipment (PPE)
- safe work practices and procedures
- relevant hazards and control measures related to the competency.

Assessment Conditions

- This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
- Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.
- The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.
- Assessors must be satisfied that the candidate can competently and consistently perform all elements and performance criteria of the unit of competency, including required knowledge, and be capable of applying the competency in new and different situations and contexts.
- This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the research, analysis, development, approval and evaluation of non-destructive tests, or other units requiring the exercise of the skills and knowledge covered by this unit.
- Assessors must be qualified at *AS 3669-2006 Non-destructive testing – Qualification and approval of personnel – Aerospace Level 3*.

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