



Australian Government

MEASTR0018 Evaluate aircraft non-destructive tests

Release: 1

MEASTR0018 Evaluate aircraft non-destructive tests

Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Assessment Requirements clarified. Supersedes and is equivalent to MEA424 Evaluate aircraft non-destructive tests.

Application

This unit describes the skills and knowledge required to apply non-destructive testing (NDT) techniques and related metallurgical knowledge to research, analyse, develop and evaluate 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. 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.

The unit is used in workplaces that operate under the airworthiness regulatory systems of the Civil Aviation Safety Authority (CASA) and the Defence Aviation Safety Authority (DASA).

Any other relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

MEACOM0032 Communicate aviation technical and maintenance management knowledge

MEA158 Perform basic hand skills, standard trade practices and fundamentals in aviation maintenance

MEM13013 Work safely with ionizing radiation

MEM16010 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

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Assess requirements for NDT	1.1 Assess the inspection area for testing and identify all possible failure sites using metallurgical analysis 1.2 Collect, analyse and interpret information relevant to test development from available sources using accepted techniques 1.4 Determine test requirements from maintenance documentation, standards and specifications
2. Evaluate NDT techniques and procedures	2.1 Specify test methods, techniques and procedures for specific NDT tasks in accordance with standard enterprise procedures 2.2 Interpret codes, standards, specifications and procedures to determine testing procedure to be used to meet testing requirements 2.3 Develop test procedures in accordance with established techniques and metallurgical principles
3. Validate and confirm NDT tasks	3.1 Validate general and specific test procedures in accordance with established techniques 3.2 Interpret inspection results in accordance with existing codes, standards and specifications
4. Evaluate NDT test procedures	4.1 Evaluate procedures are evaluated for effectiveness 4.2 Document and report on evaluation results in accordance with standard enterprise procedures 4.3 Make changes or amendments to NDT procedures and distribute in accordance with standard enterprise procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

- Reading skills to interpret specifications.

- Writing skills to document and report on test procedures.
- Numeracy skills to interpret technical information.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

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

Unit Mapping Information

Release 3. Supersedes and is 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 MEASTR0018 Evaluate aircraft non-destructive tests

Modification History

Release 1. Application changed. Elements and Performance Criteria changed. Foundation Skills made explicit. Assessment Requirements clarified. Supersedes and is equivalent to MEA424 Evaluate aircraft non-destructive tests.

Performance Evidence

There must be evidence the candidate has completed all the tasks outlined in the elements and performance criteria in this unit, and demonstrated the ability to:

- evaluate aircraft non-destructive tests (NDT) from the list below three times:
 - penetrant testing
 - magnetic particle testing
 - eddy current testing
 - ultrasonic testing
 - radiographic testing
- conduct metallurgical assessment of inspection areas and identify potential failure sites and modes to inform techniques and procedures
- designate most appropriate method, technique or procedure
- apply safety procedures, standard operating procedures and legislative requirements to all work
- read, interpret and apply relevant testing standards
- read and interpret applied relative conformance standards.
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Knowledge Evidence

There must be evidence the candidate has knowledge of:

- definitions of structural terms, including 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 Australian Defence Force (ADF) and Civil Aviation Safety Authority (CASA) for using 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
- Australian Standards, National Occupational Health and Safety Council (NOHSC) guides, and state and territory regulatory codes of practice and standards, including:
 - Defence Aviation Safety Authority (DASA) 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
- use and application of personal protective equipment (PPE)
- safe work practices and procedures
- relevant hazards and control measures related to the competency.
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Assessment Conditions

The following conditions of assessment represent the requirements of the regulators (DASA and CASA) and maintenance stakeholders and must be rigorously observed.

Skills must have been demonstrated under routine supervision in the workplace or in a simulated environment that reflects workplace conditions and contingencies encountered in evaluating aircraft non-destructive tests (NDT), or a combination of both. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - workplace procedures, product and manufacturing specifications, codes, standards, manuals, and reference materials relevant to evaluating aircraft non-destructive tests
 - tools, equipment and materials required.

Evidence of tasks demonstrating competency must be recorded in a log of industrial experience and achievement.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors and must be qualified at AS 3669-2006 Non-destructive testing – Qualification and approval of personnel – Aerospace Level 3.

Links

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