



Australian Government

Department of Education, Employment and Workplace Relations

MEM24009B Perform basic radiographic testing

Release: 1

MEM24009B Perform basic radiographic testing

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing basic radiographic testing procedures in a range of industrial applications. Knowledge of metallurgy associated with the level of application in this unit is required.
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Application of the Unit

Application of the unit	<p>This unit applies to working with ionizing radiation in open or closed sites; on fabrications, structures and components across a wide range of industries. The work can relate to scheduled and unscheduled maintenance activities using general tools and specific radiographic testing equipment as specified in maintenance documentation, testing procedures or operators instructions. All testing must be completed with particular attention to personal and OH&S regulations. Ionizing radiation equipment materials and chemicals, which are subject to codes and regulations, must be stored, used, and transported in accordance with safe work practices. Certification against Australian 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.</p> <p>This unit should not be selected when Unit MEM24010B (Perform radiographic testing) has already been selected.</p> <p>Where power tools are required, Unit MEM18002B (Use power tools/hand held operations) should also be selected.</p> <p>Where tests require the interpretation of drawings, Unit MEM09002B (Interpret technical drawings) should also be selected.</p> <p>Band: A</p> <p>Unit Weight: 2</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM13013B	Work safely with ionizing radiation
	MEM18001C	Use hand tools

Employability Skills Information

Employability skills	This unit contains employability skills.
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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

ELEMENT	PERFORMANCE CRITERIA
1. Prepare inspection areas ready for basic radiographic testing	1.1. Radiographic specimens are cleaned and prepared for testing using appropriate procedures and materials. 1.2. Preparation processes are carried out in accordance with the relevant procedures and OH&S requirements. 1.3. Inspection areas are visually assessed and obvious discontinuities are identified.
2. Set up radiographic test equipment	2.1. Nominated test is identified from standard operating procedures. 2.2. Radiation testing and processing equipment is set up in accordance with standard operating procedures.
3. Carry out basic radiographic tests	3.1. Basic properties of X-rays and gamma rays are identified. 3.2. Safety practices and controls for minimising radiation exposure are applied. 3.3. Radiographic testing and safety equipment is operated in accordance with relevant work instructions and OH&S requirements. 3.4. Films are processed to achieve optimum results.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- interpreting and following procedures
- identifying inspection areas
- identifying discontinuities and defects
- selecting appropriate testing techniques, equipment and procedures
- calculating and producing optimum quality radiographs
- effectively designing exposure and storage areas
- calculating shielding thicknesses
- reading, interpreting and applying relative testing standards

REQUIRED SKILLS AND KNOWLEDGE

- reading, interpreting and applying relative conformance standards
- documenting and reporting
- assessing risk

Required knowledge

Look for evidence that confirms knowledge of:

- cleaning and preparation processes for a range of test surfaces
- cleaning and preparation processes for a range of test surfaces
- assessment procedures and techniques
- types of discontinuities and their consequences/effect on the material
- procedure for carrying out each radiographic test
- principal types of X-ray generators and radioisotopes and their effect on radiographic sensitivity
- tools, equipment, techniques and system verification checks
- relevant standards, regulations and codes
- hazards associated with radiographic testing
- procedures for specialised radiographic applications
- principles of image formation, film and chemical properties and processing techniques
- various types of films and screens, their properties and effects on image quality
- maintenance and storage procedures for test equipment
- common faults and damage
- safety features of radioisotope cameras and X-ray equipment
- production of X-rays and gamma rays
- absorption of ionizing radiation by matter and the biological effects on living
- X-ray equipment
- gamma ray sources
- comparison of X-ray and gamma ray sources on basis of energy and intensity
- shielding thickness
- exposure calculations
- reciprocity law
- preparation and use of exposure charts, radiographic equivalence charts
- exposure techniques
- equipment types
- recording and reporting
- safety aspects
- types of materials
- industrial applications
- set-up procedures
- methods/procedures for reporting test results

REQUIRED SKILLS AND KNOWLEDGE

- implications of test results for the particular material/application
- any applicable industry standards, national/Australian standards, NOHSC guides, State/Territory regulatory codes of practice/standards
- use and application of personal protective equipment
- safe work practices and procedures
- relevant hazards and control measures related to the competency

Evidence Guide

EVIDENCE GUIDE	
<p>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>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to perform basic radiographic testing. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.</p>
<p>Context of and specific resources for assessment</p>	<p>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.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing basic radiographic testing procedures in a range of industrial applications, or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p>Method of assessment</p>	<p>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.</p>

EVIDENCE GUIDE

Guidance information for assessment	
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Range Statement**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.

Preparation processes

Surface cleaning and drying

Obvious discontinuities

Observed changes in material homogeneity

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units	

Competency field

Competency field	Non-destructive testing
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