



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **UEPMNT409A Conduct Welding Inspection/Supervision**

**Release: 1**

## UEPMNT409A Conduct Welding Inspection/Supervision

### Modification History

Not Applicable

### Unit Descriptor

#### Unit Descriptor

1)

This unit deals with the skills and knowledge required to satisfy the code requirements relating to welding and supervision procedures including Australian and/or International Standards Codes of Practice enterprise procedures and Manufacturer's specifications.

### Application of the Unit

#### Application of the Unit

3)

This unit is intended to augment formally acquired competencies. It is suitable for employment-based programs under an approved contract of training.

#### License to practise

3.1)

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to Occupational Health and Safety and where applicable contracts of training such as apprenticeships and the like.

### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

**Prerequisite Unit(s)** 2)

**Competencies** 2.1)

Entry to this unit will require completion of a Certificate III from this Training Package or be a recognised tradesperson with a Certificate III Fabrication from the National Metals and Engineering Training Package or equivalent.

There are no prerequisite units.

## Employability Skills Information

Refer to the Evidence Guide

## Elements and Performance Criteria Pre-Content

5) Elements describe the essential outcomes of a competency standard unit. Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Plan and prepare for welding inspections and supervision	1.1 Occupational Health and Safety standards, statutory requirements, relevant Australian standards, codes of practice, environmental requirements and enterprise procedures are identified, applied and monitored throughout the procedures
	1.2 Work requirements are identified and clarified/confirmed with appropriate parties
	1.3 All inspections are planned in conjunction with others involved in, or affected by the work in accordance with the job requirements

ELEMENT	PERFORMANCE CRITERIA
	1.4 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
	1.5 Responsibilities and duties in regard to the work are identified
	1.6 Materials and consumables composition are confirmed in accordance with requirements
	1.7 The traceability of materials and consumables is ensured and movements of materials documented.
	1.8 All aspects of the work are identified and relevant Australian or International Standards are applied
	1.9 The sequence of work is planned in accordance with requirements
	1.10 Materials and processes are analysed for their suitability and factors affecting weld ability are identified
	1.11 The work is costed and estimated in accordance with requirements
2 Perform welding supervision	2.1 Welding procedures are established and validated
	2.2 The characteristics and application of welding, cutting and gouging processes are determined
	2.3 Welders are trained and qualified in the required procedures
	2.4 Deviations from procedures are identified and appropriate actions are taken according to requirements
	2.5 The progress of the welding is monitored to confirm it meets industry and enterprise procedures
	2.6 Test results are analysed, documented and verified in accordance with the prescribed

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
	procedures
	2.7 Required action following results of test welds and analysis of previous test procedures is identified and reported
3 Perform welding inspections	3.1 Monitor QA procedures are being followed in accordance with work requirements
	3.2 Testing requirements are identified and implemented to meet the required standard
	3.3 Calibration of test equipment is verified in accordance with work requirements
	3.4 Deviations from work requirements are investigated and reported in accordance with requirements
	3.5 Testing, inspection and verification data is viewed and interpreted
	3.6 Final inspection(s) against specifications are performed in accordance with prescribed procedures
4 Co-ordinate, repair and modify welding work	4.1 Discontinuities in inspection and test data are identified in accordance with job requirements and specification
	4.2 Repairs and/or modifications are co-ordinated in accordance with requirements
	4.3 Requirements for personnel and equipment to conduct the work are identified to meet the required standard
	4.4 Retesting of repairs and/or modifications are confirmed and carried out in accordance with prescribed procedures and standards
5 Complete the work	5.1 Test results are documented and stored in accordance with prescribed procedures
	5.2 Recommendations for procedural changes are documented in accordance with prescribed procedures

**ELEMENT****PERFORMANCE CRITERIA**

- 5.3 Plant/equipment availability is authorised in accordance with prescribed procedures

**Required Skills and Knowledge****REQUIRED SKILLS AND KNOWLEDGE**

6) This describes the Essential Skills and Knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired conducting welding inspection/supervision.

The extent of the Essential Knowledge and Associated Skills required follows:

Evidence shall show that knowledge has been acquired for safe working practices of:

- Occupational Health and Safety standards;
- Relevant statutory requirements and codes of practice;
- Welding science and parameters;
- Relevant standards of weld;
- Inspection techniques and procedures;
- Metallurgy;
- Welding hardware;
- Welding practice;
- Mechanical properties of welded joints;
- Heat treatment procedures;
- Welding consumables and materials;
- Fabrication techniques;
- Engineering techniques;
- Characteristics of welding, cutting and gouging;
- Support systems (pipe work and duct work);
- Structural steel work and tanks;
- Pressure retaining equipment and pipe work;
- Non-destructive testing methods

Specific skills needed to achieve the Performance Criteria:

**REQUIRED SKILLS AND KNOWLEDGE**

- Apply Occupational Health and Safety standards;
- Observe relevant statutory requirements and codes of practice;
- Recognise welding faults;
- Use drawings and plans;
- Use relevant standards and codes of practice;
- Apply inspection techniques, procedures and processes;
- Inspect welding and materials;
- Communicate effectively;
- Identify welding consumables;
- Apply welding, cutting and gouging;
- Apply supervision/inspection techniques and practices;
- Produce formal reports of a technical nature;
- Co-ordinate staff;
- Oversee and/or conduct non-destructive testing processes.

## Evidence Guide

### EVIDENCE GUIDE

8) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this competency standard unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

#### Overview of Assessment

##### 8.1)

Longitude competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry's preferred model for apprenticeships. However, where summative (or final) assessment is used it must include the application of the competency in the normal work environment or in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with Industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Hence, sources of evidence need to be 'rich' in nature so as to minimise error in judgment.

Activities associated with normal every day work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments.



## EVIDENCE GUIDE

Sample assessment instruments are included in the Assessment Guidelines of this Training Package.

### **Critical aspects of evidence required to demonstrate competency in this unit**

#### **8.2)**

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the "Assessment Guidelines - UEP06". Evidence shall also comprise:

- A representative body of Performance Criteria demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:

## EVIDENCE GUIDE

- Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement
- Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement
- Demonstrate an understanding of the essential knowledge and associated skills as described in 6) of this unit
- Demonstrate an appropriate level of skills enabling employment
- Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
  - The knowledge and application of relevant sections of: OH&S legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures
  - Preparation and planning for inspection and testing
  - Inspection and testing procedures
  - Establishing and validating procedures
  - Relevant standards and procedures
  - Perform welding supervision
  - Perform welding inspection
  - Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.

### Context of and specific resources for assessment

#### 8.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace

**EVIDENCE GUIDE**

conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

**Method of assessment****8.4)**

This unit shall be assessed by methods given in Volume 1, Part 3 Assessment Guidelines.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent assessment and relationship with other units****8.5)**

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

Nil

**Key competencies****8.6)**

Evidence that particular key competencies have been achieved within this unit is in the context of the following Performance Criteria of evidence. See Volume 2, Part 4 for an explanation of Key competencies and levels of this Training Package.

<b>Key competencies</b>	<b>Example of Application</b>	<b>Performance Level</b>
How are ideas and information communicated within this	Refer to the following example of application: Explain ideas and actions, make suggestions for alternative actions and deal with contingencies	2

**EVIDENCE GUIDE**

competency?	and non-routine situations.	
How can information be collected, analysed and organised?	Refer to the following example of application:  Information with regard to operations, faults and maintenance may be observed and monitored for analysis and organised into records and reports.	2
How are activities planned and organised?	Refer to the following example of application:  Planning the required activity, to include co-ordination and use of equipment, materials and tools to avoid backtracking and rework.	2
How is team work used within this competency?	Refer to the following example of application:  Co-ordinate activities of the team and provide appropriate support to other team members in completion of work tasks to meet the team's goals.	2
How are mathematical ideas and techniques used?	Refer to the following example of application:  Calculation of time to complete routine projects, operations, tasks, estimation of distances, levels, loads and material requirements.	2
How are problem solving skills applied?	Refer to the following example of application:  Determine solutions which focus on long and short-term resolution of work task problems.	2
How is use of technology applied?	Refer to the following example of application:  Access, communicate, measure and provide information to monitor operations and performance of plant and equipment.	2

**EVIDENCE GUIDE****Skills Enabling  
Employment****8.7)**

Evidence that competency in this unit incorporates skills enabling employment is in the context of the following performance. See Volume 2, Part 5 for definitions and an explanation of skills enabling employment.

<b>Skills for Employment</b>		<b>Example of Application</b>
1	Developing and using skills within a real workplace	Refer to the following example of application:  Completion of tasks within an acceptable timeframe and performance with some supervision.
2	Learning to learn in the workplace	Refer to the following example of application:  Comprehension and application of theoretical knowledge to well-developed skills.
3	Reflecting on the outcome and process of work task	Refer to the following example of application:  Focused on improvement in own and other team member's performance in the workplace.
4	Interacting and understanding of the context of the work task	Refer to the following example of application:  Working understanding of the processes and systems which apply to the workplace.
5	Planning and organising the meaningful work task	Refer to the following example of application:  Achieving work tasks in a timely manner and ensuring that the work team achieves its stated work goals.
6	Performing the work task in non-routine or contingent situations	Refer to the following example of application:  Seek advice and apply solutions to problems relevant to the workplace environment.

**UEPMNT410A****Diagnose and repair faults in electronic equipment****Range Statement****RANGE STATEMENT**

7) This relates to the competency standard unit as a whole providing the range of contexts and conditions to which the Performance Criteria apply. It allows for different work environments and situations that will affect performance.

Test procedures may include dye penetrant, magnetic particle, thickness testing, radiographic, ultrasonic and pressure tests.

Welding inspection/supervision procedures may include Australian and/or International standards, codes of practice, enterprise procedures and manufacturer specifications.

Determine consumables which may include gases, welding rods, fluxes and tips.

Determine use of processes and materials as defined by Standards.

Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Volume 2, Part 1.

**Unit Sector(s)**

Not Applicable

**Literacy and numeracy skills****Literacy and numeracy skills 2.2)**

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 Literacy and Numeracy.

Reading 4      Writing 4      Numeracy 4

## Competency Field

Competency Field      4)  
Maintenance.