



Australian Government

DEFWDV031 Employ thermal cutting and welding tools (non-load bearing) in an underwater environment

Release: 1

DEFWDV031 Employ thermal cutting and welding tools (non-load bearing) in an underwater environment

Modification History

Release 1. This is the first release of this unit of competency in the DEF Defence Training Package.

Application

This unit describes the performance outcomes, skills and knowledge required to use thermal cutting and welding tools in an underwater environment.

It includes preparing underwater cutting and welding tools, operating the generator, selecting appropriate work task tools and inspecting them for serviceability, and securing tools on own body throughout dive. It also includes the surface operation of the electrical generator or gas cylinders supplying the tools, recovering waste, and post-dive activity serviceability checks and re-stowing of equipment.

This unit applies to persons working as Defence divers or to others working in this field.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies, dive plan and procedures must be consulted and adhered to.

Persons undertaking this unit would work independently performing specific tasks in a range of contexts that could be unpredictable.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Not applicable.

Competency Field

Defence Work Diving.

Unit Sector

Not applicable.

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 Prepare for cutting and welding under water

- 1.1** Identify and analyse work task, worksite data and work object to determine task requirements
- 1.2** Identify obstructions and other cutting/welding hazards to determine risk and to manage risk control measures in accordance with dive plan
- 1.3** Develop work plan consistent with dive plan in accordance with organisational procedures and task requirements
- 1.4** Determine underwater thermal cutting and welding task equipment requirements
- 1.5** Select and undertake serviceability inspections of required thermal cutting and welding tools for the given underwater environment in accordance with manufacturer specifications and organisational procedures
- 1.6** Secure equipment for transport to and from dive site

2 Operate thermal cutting and welding tools under water

- 2.1** Determine safe routes for leads and hoses to worksite in accordance with dive plan and operational safety procedures
- 2.2** Determine safe work area and confirm location of other divers prior to commencing cutting/welding work tasks in accordance with work plan
- 2.3** Secure thermal cutting and welding tools on self during dive
- 2.4** Manage cutting and welding tool hazards in accordance with dive plan and operational safety procedures
- 2.5** Use thermal equipment to cut steel plate up to 12 mm
- 2.6** Disconnect and render tools safe in accordance with dive plan and operational safety procedures

3 Operate generator

- 3.1** Conduct routine operational and pre-start checks and diagnose and address warning signs in accordance with

		manufacturer specifications
	3.2	Shut down and/or conduct emergency shutdown drills in accordance with dive plan
4	Complete underwater cutting and welding operations	4.1 Minimise environmental impact arising from use of thermal cutting and welding tools, and recover waste products
	4.2	Complete post-dive equipment serviceability checks in accordance with manufacturer specifications, report defects, as required, and store equipment in accordance with organisational procedures.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the DEF Defence Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to DEFWDV017 Employ thermal cutting and welding tools (non-load bearing) in an underwater environment.

Links

Companion Volume Implementation Guides are found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6bdbab1e-11ed-4bc9-9cba-9e1a55d4e4a9>

Assessment Requirements for DEFWDV031 Employ thermal cutting and welding tools (non-load bearing) in an underwater environment

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant legislation, standards, and organisational policies and procedures
- completing underwater cutting and welding operations safely
- cutting 12 mm steel plates
- identifying and addressing relevant cutting/welding workplace hazards and problems
- maintaining records according to organisational policies and procedures.
- operating generator to support welding tasks in an underwater environment
- operating thermal cutting and welding tools under water
- planning for cutting and welding under water
- stabilising a generator
- undertaking underwater welding activities, including:
 - adjusting ratios of oxygen and acetylene
 - controlling pressure of oxyacetylene torch
 - controlling voltage and amperage of arc welding equipment
 - developing power gradually without surging
 - inspecting and cleaning cuts and welds
 - making cuts and welds ensuring minimal distortion to object
 - preparing surface of work object for cut or weld
 - turning on gas supplies
- underwater tools, including but not limited to:
 - electrical generator and associated leads
 - oxyacetylene gas cylinders and associated hose
 - thermal cutting tools
 - welding tools
- using a number of thermal cutting and welding tools (non-load bearing) in an underwater environment:
 - at depths between 5 metres and 20 metres

- on at least one night work task
- welding manual metal arc using electric welding equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements and performance criteria and include knowledge of:

- dive equipment
- dive physics
- dive physiology and medicine, including:
 - compression illnesses
 - decompression illnesses
 - heat and cold illnesses
- diving descent and ascent techniques
- general diving safety awareness, including:
 - diving in harbours
 - diving in tidal waters, currents and tides
 - diving on and/or near a ship's bottom
 - entrapment/foul lines
 - lost/separated
 - marine animal threats
 - pollution/weeds
 - working in confined spaces
- oceanography
- organisational policies and procedures
- relevant cutting/welding workplace hazards and problems
- relevant legislation and standards
- self-contained underwater breathing apparatus (SCUBA), surface-supplied and/or closed-circuit breathing apparatus (CCBA) operating techniques
- thermal cutting and welding principles and techniques.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- applicable documentation, including legislation, regulations, codes of practice, workplace procedures and operation manuals
- documentation specific to the dive operation, including dive plan and risk assessment
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6bdbab1e-11ed-4bc9-9cba-9e1a55d4e4a9>