



Australian Government

Department of Education, Employment and Workplace Relations

SISOCVE520A Apply sump diving skills

Release: 2

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Modification History

Not Applicable

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to apply specific sump diving skills used in flooded cave systems where independent negotiation of underwater restrictions is required.

Application of the Unit

This unit applies to those working as specialist sump divers, sump diving adventure guides, instructors or program managers who are required to sump dive independently, in situations where there is no access to a buddy due to cave features, visibility or communication difficulties.

This unit may also apply to leaders working for outdoor education or adventure providers; volunteer groups; not-for-profit organisations or government agencies.

Licensing/Regulatory Information

No licensing, regulatory or certification requirements apply to this unit at the time of endorsement.

Pre-Requisites

SISOCVE518A Apply cave diving skills
SISOCVE416A Apply cavern diving skills
SISOSCB302A Complete night dives

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

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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|---|---|
| 1. Plan a sump dive. | 1.1. Access information on the site and formulate a <i>dive plan</i> according to <i>relevant legislation</i> and <i>organisational policies and procedures</i> .
1.2. Identify and plan for potential <i>hazards</i> and <i>risks</i> associated with the sump dive.
1.3. Identify possible <i>sources of stress</i> associated with sump diving.
1.4. Convey the dive plan to the rest of the <i>dive team</i> . |
| 2. Select, fit and use sump diving equipment. | 2.1. Select and fit <i>personal equipment</i> according to <i>contextual issues</i> .
2.2. Check personal equipment for safety and serviceability prior to the dive according to organisational policies and procedures and manufacturer's specifications.
2.3. Identify, fit and use <i>group equipment</i> according to manufacturer's specifications.
2.4. Use <i>underwater breathing systems</i> appropriately.
2.5. Demonstrate appropriate techniques to transport equipment through the dry cave with minimal impact. |
| 3. Perform sump dives. | 3.1. Apply <i>sump diving techniques</i> , demonstrating correct posture.
3.2. Demonstrate <i>buoyancy control</i> and <i>anti-silting techniques</i> .
3.3. Apply <i>minimal impact techniques</i> to minimise damage to the environment while sump diving.
3.4. Use a range of sump diving techniques to negotiate <i>features</i> of a water-filled sump within a cave.
3.5. Negotiate hazards and apply communication techniques and <i>strategies to reduce risk</i> while sump diving. |

ELEMENT	PERFORMANCE CRITERIA
	3.6. Apply techniques to deal with stress where required.
	3.7. Demonstrate gas consumption according to gas rules and organisational policies and procedures.
	3.8. Apply techniques to manage a casualty of a sump diving or caving accident.
4. Use sump diving specific navigation skills	4.1. Apply sump diving navigation aids to navigate through the sump.
	4.2. Demonstrate line placement and use of a cave reel .
5. Apply independent or solo diving procedures.	5.1. Monitor personal equipment, including access to emergency gas.
	5.2. Apply techniques to negotiate and escape from restrictions.
6. Evaluate sump diving activity.	6.1. Evaluate relevant aspects of the sump diving activity.
	6.2. Identify improvements for future sump diving experiences.

Required Skills and Knowledge

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

Required skills

- problem-solving skills to:
 - check equipment serviceability prior to use
 - identify and negotiate potential hazards, risks, restrictions and stressful situations
 - apply sump diving specific navigation and anti-silting techniques
 - maintain buoyancy control
- planning and organising skills to:
 - access information on sump diving site
 - prepare a dive plan
 - select and fit equipment
 - apply minimal impact techniques
 - apply independent or solo diving procedures
- communication skills to convey information regarding dive to other participants and to implement safety systems
- first aid and emergency response skills appropriate to the site to enable initial response to emergencies and personal health care.

Required knowledge

- legislation and organisational policies and procedures to enable safe conduct of all sump diving activities
- types and characteristics of equipment to enable its safe and efficient selection, use and maintenance
- features of a water-filled sump and safe negotiation methods
- factors affecting buoyancy to control sinking and floating
- hazards, risks, restrictions and sources of stress commonly associated with sump diving
- communication systems commonly used in a sump diving environment
- sump diving specific navigation techniques, including line placement and use of a cave reel, to avoid getting lost under water
- emergency, first aid and rescue procedures appropriate to the location to ensure risk minimisation to self and group.

Evidence Guide

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.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- applies processes to devise a suitable dive plan and select, maintain and fit equipment for the specific sump dive
- negotiates hazards, risks, restrictions and features using various techniques, causing minimal environmental impact
- applies sump diving specific navigation techniques to move through the water-filled sump efficiently
- evaluates and reflects on own sump diving performance to identify strengths, weaknesses and areas that need improvement.

Context of and specific resources for assessment

Assessment must ensure participation in sump diving activities in sumps that reflect local conditions and are of sufficient breadth and duration to demonstrate competency and consistency of performance.

Assessment must also ensure access to:

- information on the sump dive site to plan a sump dive and select appropriate equipment
- suitable locations, including fresh water, for the conduct of sump diving activities
- diving, safety and rescue, communication and navigation equipment.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- observation of the planning and review process
- oral or written questioning to assess knowledge of sump diving techniques, and techniques to minimise environmental impact
- observation of safe participation and negotiation of sump restrictions, hazards and risks
- copy of dive plans
- third-party reports from a supervisor detailing performance.

Holistic assessment with other units relevant to the industry

sector, workplace and job role is recommended, for example.

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.

Dive plan may include:

- objectives
- maximum time and depth
- gas consumption and rules
- planned turn around
- roles and sequence of divers within the group
- communication signals
- decompression requirements.

Relevant legislation may include:

- occupational health and safety
- sump access and permit requirements
- environmental regulations.

Organisational policies and procedures may include:

- occupational health and safety
- risk management and emergency procedures
- communication protocols
- manufacturer's design specifications and recommendations for equipment use
- Australian Speleological Federation Codes and Guidelines:
 - Cave Safety Guidelines
 - Code of Ethics and Conservation
 - Minimal Impact Caving Code
 - Cave Diving Code of Practice.

Hazards may include:

- rock piles
- unstable roof
- low visibility water
- changed surface weather conditions
- phobias
- restrictions
- darkness
- water depth
- decompression
- entanglement
- current.

Risks may include:

- near drowning
- hypothermia

- injury
 - separation from group
 - cramps
 - exhaustion
 - Decompression Illness (DCI).
- Sources of stress** may include:
- light failure
 - out of air situation
 - silt out
 - lost line
 - cold water
 - narcosis
 - dislodged mask.
- Dive team** may include:
- other sump divers
 - cavers in support roles to the sump exploration
 - other surface based personnel.
- Personal equipment** may include:
- diving equipment
 - safety and rescue equipment
 - communication equipment
 - navigation equipment.
- Contextual issues** may include:
- cylinder weight
 - isolation of the sump
 - size and shape of the passage
 - water and air temperature
 - length of dive
 - jaggedness of the cave walls
 - visibility
 - activity to be conducted on other side of sump
 - non-diving support team members to carry heavy equipment
 - elevated carbon dioxide (foul air)
 - conditions and restrictions
 - time of day.
- Group equipment** may include:
- shot-lines
 - decompression or safety tanks
 - emergency first aid equipment.
- Underwater breathing systems** may include:
- redundant side mounted SCUBA
 - redundant back mounted SCUBA
 - manifolded SCUBA systems
 - re-breather systems.
- Sump diving skills** may include:
- anti-silting
 - buoyancy control

- propulsion
 - digging
 - navigation
 - walking or crawling on the floor of a flooded passage.
- Buoyancy control*** may include:
- correct weighting
 - hovering
 - controlled descent and ascent
 - level swimming
 - positive or negative buoyancy for specific circumstances.
- Anti-silting techniques*** may include:
- buoyancy control
 - propulsion techniques
 - gear management
 - body trim.
- Minimal impact techniques*** may include:
- avoiding sensitive areas
 - keeping to marked routes.
- Features*** may include:
- squeezes
 - rock-piles
 - sumps
 - streams
 - water pools
 - thermoclines
 - haloclines
 - silty floors
 - loose roofs
 - speleothems
 - bones
 - fossils
 - fixed lines
 - survey stations
 - dumped rubbish in the cave
 - current.
- Strategies to reduce risk*** may include:
- pre-dive checks
 - low silting propulsion
 - continuous guidelines to the surface
 - redundant breathing gas and regulator supplies.
- Techniques to deal with stress*** may include:
- use of backup light or breathing supply
 - line search
 - controlled exit from the dive

- Navigation aids*** may include:
- relaxation or breathing techniques.
 - sump and cave map
 - survey markers
 - compass
 - water flow
 - trogged paths
 - fixed guidelines and markers.
- Use of a cave reel*** may include:
- deploying and retrieving the line
 - maintaining tension
 - locking or unlocking the reel.
- Relevant aspects*** may include:
- planning processes
 - sump diving skills and minimal impact techniques
 - buoyancy control and anti-silting techniques.

Unit Sector(s)

Outdoor Recreation

Competency Field

Caving