



Australian Government

Department of Education, Employment and Workplace Relations

SISOCVE521A Apply advanced cave 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 advanced cave diving skills, including diving in extended cave systems, or exploring new sections of cave.

Application of the Unit

This unit applies to those working as specialist advanced cave divers, advanced cave diving adventure guides, instructors or program managers who are required to dive in extended cave systems and or explore new sections of a cave.

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 cave dive. | <p>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>.</p> <p>1.2. Identify and plan for potential <i>hazards</i> and <i>risks</i> associated with diving in extended cave systems, or exploring new sections of a cave.</p> <p>1.3. Identify possible <i>sources of stress</i> associated with cave diving.</p> <p>1.4. Convey the dive plan to the rest of the dive team.</p> <p>1.5. Establish a <i>communication system</i> to use with buddy and other participants while cave diving.</p> |
| 2. Select, fit and use cave diving equipment. | <p>2.1. Select and fit <i>personal equipment</i> avoid snagging points.</p> <p>2.2. Check personal equipment for safety and serviceability according to organisational policies and procedures and manufacturer's specifications.</p> <p>2.3. Identify, fit and use <i>group equipment</i> according to manufacturer's specifications.</p> <p>2.4. Use <i>underwater breathing systems</i> for extended exploration of cave systems.</p> |
| 3. Perform cave dives. | <p>3.1. Apply <i>cave diving techniques</i>, demonstrating correct posture.</p> <p>3.2. Demonstrate <i>buoyancy control</i> and <i>anti-silting techniques</i>.</p> <p>3.3. Apply appropriate <i>minimal impact techniques</i> to minimise damage to the environment while cave diving.</p> <p>3.4. Use a range of cave diving techniques to negotiate <i>features</i> of a water-filled extended cave system.</p> <p>3.5. Negotiate hazards and apply <i>strategies to reduce risk</i> while cave diving.</p> <p>3.6. Apply <i>buddy diving procedures</i> and communication</p> |

ELEMENT	PERFORMANCE CRITERIA
	techniques throughout cave dive.
	3.7. Apply <i>techniques to deal with stress</i> where required.
4. Use cave diving specific navigation skills.	4.1. Apply cave diving <i>navigation aids</i> to navigate through the cave.
	4.2. Demonstrate line placement and <i>use of a cave reel</i> and jump reel.
	4.3. Undertake navigation in a cave system with numerous lines.
5. Apply cave diving skills for extended cave systems or exploration.	5.1. Determine under water cave <i>exploration techniques</i> to be used according to cave system.
	5.2. Perform under water cave exploration techniques according to relevant legislation and organisational policies and procedures.
6. Evaluate cave diving activity.	6.1. Evaluate <i>relevant aspects</i> of the cave diving activity.
	6.2. Identify improvements for future cave diving experiences for extended cave systems or exploration.

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 and stressful situations
 - apply cave diving navigation and anti-silting techniques
 - maintain buoyancy control in extended cave systems
- planning and organising skills to:
 - access information on cave diving site
 - prepare a dive plan
 - select and fit equipment
 - apply minimal impact and underwater cave exploration techniques
- communication skills to:
 - convey information regarding dive to other participants
 - inform progress and interact with buddy through established communication systems
- teamwork skills to safely monitor and assist buddy throughout cave dive
- 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 advanced cave diving activities
- types and characteristics of equipment to enable selection, use and maintenance
- features of a water-filled extended cave system and how to safely negotiate and explore these
- factors affecting buoyancy to control sinking and floating
- hazards, risks and sources of stress commonly associated with cave diving and exploring new sections of a cave
- exploration techniques used for diving in extended cave systems or exploring new sections of a cave
- communication systems and buddy diving procedures suitable for cave diving
- cave 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 dive equipment for the specific cave dive
- negotiates hazards, risks and features of a water-filled extended cave system using various techniques, causing minimal environmental impact
- applies navigation techniques to move through the water-filled cave efficiently, and communicates with and monitors buddy's progress
- evaluates and reflects on own cave diving performance to identify strengths, weaknesses and areas that need improvement.

Context of and specific resources for assessment

Assessment must ensure participation in advanced cave diving activities in extended cave systems 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 cave dive site to plan a cave dive and select equipment
- suitable locations, including at least one fresh water, for the conduct of advanced or extended cave diving activities
- a suitable buddy to participate in dive process
- 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:

- oral or written questioning to assess knowledge of cave diving techniques, hazards and risks, and techniques to minimise environmental impact
- observation of safe participation and communication with buddy throughout diving process
- 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.

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
- staging cylinders.

Relevant legislation may include:

- occupational health and safety
- cave 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
- changing surface weather conditions
- phobias
- darkness
- water depth
- decompression
- entanglement
- current.

Risks may include:

- near drowning
- hypothermia
- injury

- separation from group or buddy
 - cramps
 - exhaustion
 - Decompression Illness (DCI).
- Sources of stress** may include:
- light failure
 - lost buddy
 - out of air situation
 - silt out
 - lost line
 - cold water
 - narcosis
 - dislodged mask.
- Communication system** may include:
- hand signals
 - light signals
 - line signals
 - torch signals
 - written notes.
- Personal equipment** may include:
- diving equipment
 - safety and rescue equipment
 - communication equipment
 - navigation equipment.
- Group equipment** may include, but not be limited to:
- shot-lines
 - decompression or safety tanks
 - emergency first aid equipment.
- Underwater breathing systems** may include:
- multiple redundant SCUBA
 - staged SCUBA cylinders rigged and placed within the cave
 - re-breather systems
 - mixed gas SCUBA.
- Cave diving skills** may include:
- anti-silting
 - buoyancy control
 - propulsion
 - navigation.
- 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
 - current.
- Strategies to reduce risk*** may include:
- pre-dive checks
 - low silting propulsion
 - continuous guidelines to the surface
 - redundant breathing gas and regulator supplies
 - use of backup lights.
- Buddy diving procedures*** may include:
- monitoring buddy
 - providing emergency gas to buddy where required.
- Techniques to deal with stress*** may include:
- use of backup light or breathing supply
 - buddy or octopus breathing with buddy
 - line search
 - controlled exit from the dive
 - relaxation or breathing techniques.
- Navigation aids*** may include:
- 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.

Exploration techniques may include:

- mapping the cave
- pushing leads, at the extent of the known cave
- use of a Diver Propulsion Vehicle (DPV) in a cave.

Relevant aspects may include:

- planning processes
- communication systems
- cave diving skills and minimal impact techniques
- buoyancy control, anti-silting and exploration techniques.

Unit Sector(s)

Outdoor Recreation

Competency Field

Caving