



Australian Government

SISOCAY005 Establish ropes and belays for abseils in intermediate to advanced canyons

Release: 1

SISOCAY005 Establish ropes and belays for abseils in intermediate to advanced canyons

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to select and set up belay systems and ropes suitable for abseils in intermediate to advanced canyons, and according to current conditions. It requires the ability to select the abseil route and to select and utilise fixed artificial, naturally occurring or artificial removable anchors.

It applies to rigging staff and activity leaders who work independently or with limited guidance from others.

This unit applies to any type of organisation that delivers outdoor recreation activities including commercial, not-for-profit and government organisations.

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

Pre-requisite Unit

Nil

Competency Field

Canyoning

Unit Sector

Outdoor Recreation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes

1. Select route and equipment suitable for the canyon abseil.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1. Identify safe access to and egress from the pitch.
- 1.2. Determine descent and ascent route appropriate for conditions.
- 1.3. Select an abseiling and belay system suitable for the abseil, environmental conditions and participant.

- 1.4. Choose a belay device suitable for the canyon conditions and belayer.
 - 1.5. Select other equipment to suit abseil requirements participants.
 - 1.6. Complete safety and serviceability checks on equipment and tag faulty equipment according to organisational procedures.
2. Set up belay system for abseils in intermediate to advanced canyons.
 - 2.1. Select anchors and assess condition, including performance under likely load and stability of surroundings.
 - 2.2. Rig or establish multiple anchors, ensuring equalisation and minimise potential for shock loading.
 - 2.3. Select and tie appropriate knots, and rig ropes suitable for load and function within the belay system.
 - 2.4. Establish a belay from which belayer is independent of the system.
 - 2.5. Establish a belay that maintains safety of belayer and abseiler.
 - 2.6. Position top rope or bottom brake belay away from hazards, or remove as able.
 - 2.7. Determine need for, and establish, back up belay systems.
 - 2.8. Complete safety checks according to organisational procedures.
3. Rig rope pitches for canyon abseils.
 - 3.1. Rig ropes to minimise effects of rope stretch and rub points and to allow efficient descent and ascent.
 - 3.2. Rig retrievable abseil systems suitable for the top rope or bottom brake belay requirements.
 - 3.3. Set up anchors and ropes to allow for a rescue.
 - 3.4. Select and tie knots suitable for system type established.
 - 3.5. Minimise the risk of cross loading and mis-alignment of carabiners.
 - 3.6. Verify manufacturers' recommendations, equipment limitations and safety margins, and rig equipment accordingly.
 - 3.7. Rig to minimise impact on the natural environment.
 - 3.8. Complete safety checks according to organisational procedures.

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here, along with a brief context statement.

SKILLS	DESCRIPTION
Reading skills to:	• interpret detailed familiar organisational procedures for completing safety checks.
Writing skills to:	• use fundamental sentence structure to complete safety and serviceability forms and fault tags that require factual information.
Numeracy skills to:	• calculate loads for anchors and ropes under normal conditions and in the event of a fall • visually estimate distances to calculate lengths for ropes.
Planning and organising skills to:	• follow a logical equipment selection, rigging and checking process.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume Implementation Guides -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1ca50016-24d2-4161-a044-d3faa200268b>

Assessment Requirements for SISOCAY005 Establish ropes and belays for abseils in intermediate to advanced canyons

Modification History

Not applicable.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- select and set up belay systems and ropes for abseils at four different canyon pitches, with at least two in a wet canyon
- collectively set up the following types of systems:
 - doubled rope technique
 - single rope
 - releasable abseil line
 - rope systems suitable for single rope techniques
 - retrievable rope systems for:
 - top rope top belay
 - bottom brake belay
 - self-belay
- collectively select and use these different types of anchors:
 - fixed artificial
 - naturally occurring
 - artificial removable
- collectively select and tie at least four different types of knots suitable for the system type established, and appropriate for the intended load and function
- identify and tag three different types of faulty equipment.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- organisational procedures for safety and serviceability checks
- how the following factors affect selection of descent and ascent routes for canyoning environments:
 - season of operation, weather and environmental conditions
 - participant characteristics including age, size, weight, fitness and abseiling skill level
 - group objectives and size
- environmental hazards specific to abseiling in canyons and how these affect:

- safe access to and egress from the pitch
- choice of descent and ascent routes for safety of abseiler
- positioning of top or bottom belay systems for safety of belayer
- features, functions, advantages and disadvantages of different types of anchors used in canyons:
 - fixed artificial:
 - threads
 - bolts
 - chains
 - concrete bollards
 - naturally occurring:
 - trees
 - boulders
 - artificial removable:
 - spring loaded camming devices
 - nuts, wires and hexes
 - pitons
- issues that are assessed when selecting anchors and likely impacts of poor condition on performance under load:
 - wear and abrasion due to age and use
 - corrosion
 - decay
 - dislodgment
 - underlying stability of structural features and presence of:
 - cracks
 - deformities
 - fissures
- meaning of the following terms, and principles which apply when rigging anchors and ropes:
 - equalisation of load
 - single point of failure
 - anchor redundancy
 - angle of separation
 - shock loading
 - cross loading and cyclical loading of carabiners
 - mis-alignment of carabiners
 - closing the system, including advantages, disadvantages and methods used
- types of forces (upwards, downwards) generated during abseiling and belaying, and how to calculate load on anchors and ropes for these circumstances:
 - top rope top belay

- bottom brake belay
- self-belay
- abseiler descending under control
- abseiler fall
- belayer arresting falls
- the effects of rope stretch during operations and implications if not minimised:
 - abrasions
 - rope bounce
 - undue stress on the anchor system
 - potential for abseiler to impact with hazards, or become entangled
- features, functions, advantages and disadvantages of the following abseiling and belay equipment used in canyons:
 - abseiling and belay systems for:
 - doubled rope technique
 - single rope
 - releasable abseil line
 - rope systems suitable for single rope techniques
 - top rope top belay
 - bottom brake belay
 - self-belay
 - descending devices:
 - assisted locking
 - inline
 - plate
 - figure 8
 - tubular
 - improvised
 - belay devices:
 - assisted locking
 - inline
 - plate
 - figure 8
 - tubular
 - improvised
 - carabiners
 - harnesses of different types
 - static and dynamic rope and when each might be used
 - rope protectors
 - tape
 - sewn sling

- personal attachment systems, including cow's tails
- Prusik cord
- how the following factors affect the selection and rigging of above equipment:
 - site characteristics including position of rub points
 - weather and environmental conditions
 - participant size, weight, and abseiling ability
 - cumulative load for group size and number of abseils
 - abseiling techniques to be used
 - distance, height and angle of anchor relative to top edge of abseil
- manufacturers' specifications for equipment use
- techniques used to establish belay systems for safety of belayer:
 - rigging belays for performance of rescues
 - attaching to anchor or self belay safety system
- situations requiring back up belay systems
- when different knots are used, advantages and disadvantages, and how to tie them:
 - fixed eye
 - mid line tied in the bight
 - end to end joining
 - termination
 - load control hitches
 - slide and grip hitches
- types of safety checks completed for rigging of equipment
- how to care for abseiling equipment when rigging to avoid damage, and promote long lifespan
- potential environmental impacts of rigging for abseils in a canyoning environment and techniques used to minimise damage.

Assessment Conditions

Skills must be demonstrated in intermediate to advanced canyons which may feature the following:

- pitches greater than 30 metres high
- anchors that can be difficult to reach
- pitches with obscure sections and or landing pools
- limited standing areas for multi pitch abseils or for hanging re-belay stations
- canyon escapes can take 2 to 4 hours.

Wet canyons may feature:

- moderate to high vertical flow
- landing pools with a current
- pools that require jumps between 5 to 10 metres

- jumps that have a difficult trajectory
- current strong enough to affect swimmer's path
- siphons
- white water features up to white water Grade 2 for short periods of time.

The following resources must be available to replicate industry conditions of operation:

- first aid equipment
- communication equipment for emergency response
- rescue equipment.

Assessment must ensure use of:

- personal protective equipment to include:
 - abseiling or climbing helmets
 - harnesses
 - gloves, as required
- anchors to include:
 - fixed artificial
 - naturally occurring
 - artificial removable
- abseiling equipment to include:
 - carabiners
 - rope which can include static and or dynamic rope
 - rope protectors
 - personal attachment systems, including cow's tails
 - Prusik cords
 - descending devices
 - belay devices
- template safety checklists
- organisational procedures for safety and serviceability checks.

Assessors must satisfy the Standards for Registered Training Organisations requirements for assessors, and:

- have a collective period of at least three years' experience as a canyoning activity leader or rigger where they have applied the skills and knowledge covered in this unit of competency; the three years' experience can incorporate full and or part time experience.

Links

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