



Australian Government

SISOFLD008 Navigate in extremely difficult tracked and untracked environments

Release: 1

SISOFLD008 Navigate in extremely difficult tracked and untracked environments

Modification History

Not applicable.

Application

This unit describes the performance outcomes, skills and knowledge required to navigate in extremely difficult tracked and untracked environments during any type of outdoor recreation activity.

The unit provides skills to navigate in environments where natural and constructed features marked on maps may be very unreliable. Tracks are indistinct, unformed and have no modification to the natural surface. They generally have no signage or route markers at any point. Tracked and untracked areas may feature constant and unpredictable natural obstacles and, along with changes in weather and visibility, significant adjustments to the planned route would be common. Tracks could be graded according to the Australian Walking Track Grading System and might include features of grade 5.

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

It applies to leaders, guides or instructors who use these skills when leading participants during activities where navigation skills are required.

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

Pre-requisite Unit

Nil

Competency Field

Field Operations

Unit Sector

Outdoor Recreation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes

PERFORMANCE CRITERIA

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

1. Plan for navigation.
 - 1.1. Obtain and become familiar with maps, appropriate for the activity, and features that will assist with navigation at the location.
 - 1.2. Interpret map symbols and information to plan an efficient route according to specific activity requirements.
 - 1.3. Select a compass suitable for navigation requirements.
 - 1.4. Calculate grid, magnetic and true north bearings using map, compass and protractor.
 - 1.5. Prepare a navigation data sheet, and identify emergency or contingency escape routes.
2. Navigate a route in extremely difficult tracked and untracked environments.
 - 2.1. Orientate map to surroundings using landmarks and compass and identify factors that affect accuracy.
 - 2.2. Follow the planned route using map, natural features and compass to assist.
 - 2.3. Use global positioning systems (GPS) and altimeters as navigation aids to maintain route.
 - 2.4. Use techniques to estimate distance travelled in the absence of identifying features.
 - 2.5. Utilise a combination of navigation techniques to bypass large obstacles.
 - 2.6. Identify unfamiliar features and hazards in difficult environmental conditions using map and compass to maintain route.
 - 2.7. Utilise a combination of navigation techniques to identify unfamiliar features and fix position when lost.
 - 2.8. Make required adjustments to route according to prevailing conditions, and navigate using map, natural features, compass, GPS and altimeter as required.

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 complex and potentially unfamiliar information from maps - interpret factual activity plan information in familiar formats.
Writing skills to:	develop detailed navigation data sheets using correct

- terminology and symbols.
- Numeracy skills to:
- interpret and calculate detailed numerical data involving, distances, times, altitudes, heights, depths and gradients.
 - interpret and calculate degrees, mils and angles.
- Problem-solving skills to:
- resolve significant problems associated with indistinct tracks and route adjustments
 - resolve problems associated with vague land features and implied mapping features.
- Technology skills to:
- use a range of technologies to access information about routes.

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 SISOFLD008 Navigate in extremely difficult tracked and untracked environments

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:

- plan and document three efficient routes, each different, within extremely difficult tracked or untracked environments
- navigate each of the above three planned routes
- across the three navigation activities, collectively use these techniques to determine location:
 - using map, identifying natural features, and determining distance travelled
 - using map and compass techniques including dead reckoning, back bearings, resections/tri-bearings
 - using GPS devices and altimeter
 - using grid references, estimation and Romer devices
- across the three navigation activities, collectively use these navigation techniques:
 - using linear and point references
 - using terrain features: handrailing, collecting features, catch points
 - using compass techniques: dead reckoning, aiming off
 - using GPS; waypoints, routes
 - using altimeters, peak height, contouring
- for at least one hour during any of the navigation activities, use compass techniques to navigate in conditions where visibility is less than ten metres because of environmental factors such as dense vegetation, whiteout or night time factors
- on two occasions, determine when there is a deviation from a planned route, adjust and resume the planned route after fixing position using:
 - manual techniques on one occasion
 - a GPS device on one occasion
- determine two adjustments to routes in the field and navigate the changed routes using:
 - manual techniques on one occasion
 - a GPS device on one occasion.

Knowledge Evidence

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

- trusted sources of maps for the region or locality
- different technologies used to access maps
- characteristics of different map types, their different uses, advantages and disadvantages, accuracy and sources of error:
 - paper based and digital
 - sketch maps and diagrams
 - guide book maps
 - charts
 - route
 - topographic
 - cadastral
- information found on maps including symbols and what they represent:
 - survey and edition date
 - map legend
 - scale and distance
 - grid lines and numbers
 - cardinal points and bearings
 - contour lines, altitude and water depth
 - topographic features
 - markers and beacons
 - gradient
 - roads, tracks and waterways
 - magnetic variation and annual change
- principal colours used on maps and what they represent
- other information and key features that can assist navigation in extremely difficult tracked environments:
 - satellite imagery
 - aerial photographs
- features, functions and operation of global positioning systems (GPS):
 - when these might be used, advantages and disadvantages
 - reliability of signal, device and battery
 - system structure at fundamental level of understanding
 - how to identify and use different datum grids
 - how to create, enter and transfer waypoints
 - how to create tracks, routes and grid references
 - accuracy and sources of errors
- features, functions and operation of altimeters:
 - when these might be used, advantages and disadvantages
 - accuracy and errors

- these different types of compasses, their features, operation and factors which affect accuracy:
 - baseplate/orienteering
 - sighting/mirror
 - lensatic/prismatic
- for extremely difficult tracked or untracked environments, map and compass techniques used to:
 - calculate and convert between grid, magnetic and true north bearings
 - orientate map to surroundings
 - maintain a designated course including use of dead reckoning and current correction
 - identify unfamiliar features
 - make significant adjustments to routes
- techniques to determine location in unmodified environments:
 - using map, identifying natural features, and determining distance travelled
 - using map and compass techniques including dead reckoning, back bearings, resections/tri-bearings
 - using GPS devices and altimeter
 - using grid references, estimation and Romer devices
- the following navigation techniques, advantages, disadvantages and how a combination can be used to effectively navigate in unmodified environments:
 - using linear and point references
 - using terrain features: handrailing, collecting features, catch points
 - using compass techniques: dead reckoning, aiming off
 - using GPS; waypoints, routes
 - using altimeters, peak height, contouring
 - using celestial bodies to fix position
- how extreme conditions affect navigation and choice of methods used including dead reckoning and leapfrogging
- types of navigation aids found in unmodified environments and how these can assist with navigation in the absence of signage and route markers:
 - creek junctions and crossings
 - beacons
 - cairns
 - landforms and natural features of the landscape
- contents of navigation data sheets and their purpose:
 - grid reference points
 - grid and magnetic bearings
 - distances
 - estimated travelling times
 - height gain or loss
 - gradient

- identifiable features
- escape routes
- factors that affect the adjustment of routes during activities.

Assessment Conditions

Navigation skills must be demonstrated in a setting where outdoor recreation activities are delivered in extremely difficult tracked or untracked environments. The environment must feature the following:

- natural and constructed features are unreliably marked on maps
- tracks are indistinct, unformed and have no modification to the natural surface
- tracks have no signage or route markers at any point.

For activities involving navigation in poor visibility, the environment can feature any relevant factor such as dense vegetation, whiteout and night time conditions.

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

- first aid equipment
- communication equipment for emergency response.

Assessment must ensure use of:

- maps relevant to the activity type
- compasses and protractors
- global positioning system (GPS) devices
- altimeters
- activity plans
- template navigation data sheets.

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

- have a collective period of at least three years' experience with an organisation providing recreational programs 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

Companion Volume Implementation Guides -

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