



**Australian Government**

# **SISOSCB004 Navigate prescribed routes underwater**

**Release: 1**

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## Modification History

Not applicable.

## Application

This unit describes the performance outcomes, skills and knowledge required to utilise a range of techniques to navigate underwater during any type of SCUBA diving activity.

It applies to dive leaders, usually known as divemasters, or instructors and to assistant instructors who use these skills when leading participants in SCUBA diving activities. Leadership skills are provided in complementary units.

This unit applies to any type of organisation that delivers SCUBA diving activities and dive instruction 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

SCUBA Diving

## Unit Sector

Outdoor Recreation

## Elements and Performance Criteria

### ELEMENTS

*Elements describe the essential outcomes*

1. Prepare for underwater navigation.

### PERFORMANCE CRITERIA

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

- 1.1. Interpret any available waterway charts and publications, appropriate for the dive site.
- 1.2. Complete surface observations to assist with navigation throughout the dive.
- 1.3. Select navigation equipment, set compass bearing and determine navigation roles with dive buddy.
- 1.4. Descend facing toward direction of initial underwater travel to orientate position.

2. Navigate underwater.
  - 2.1. Use compass and other instruments to track and maintain underwater direction and course.
  - 2.2. Follow underwater patterns of travel to maintain course.
  - 2.3. Utilise underwater features to fix position and maintain direction and course.
  - 2.4. Utilise techniques to measure distance travelled to fix position and maintain course.
  - 2.5. Surface if necessary to verify location and reset direction of travel.
  - 2.6. Log dive site locations for future dives.

## 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:            | <ul style="list-style-type: none"><li>interpret detailed and potentially unfamiliar information on nautical charts and publications.</li></ul>                    |
| Writing skills to:            | <ul style="list-style-type: none"><li>log basic factual data using fundamental sentence structure and navigational jargon.</li></ul>                              |
| Oral communication skills to: | <ul style="list-style-type: none"><li>use clear and unambiguous verbal and non-verbal communications to make intent known with diving buddy.</li></ul>            |
| Numeracy skills to:           | <ul style="list-style-type: none"><li>interpret and calculate numerical data involving, distances, times and speeds, basic multiplication and division.</li></ul> |

## 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 SISOSCB004 Navigate prescribed routes underwater

## 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:

- navigate during three SCUBA dives
- before each dive, complete surface observations to assist with underwater navigation using two aids chosen from the following list:
  - wind, current and tidal movement
  - angle of the sun and direction of travel across the sky in relation to planned underwater movement
  - position of natural offshore landmarks or constructed features
  - use of waterway charts or depth finders on boats to identify underwater topography
- across the three dives, collectively use these techniques to navigate:
  - use of compass, course plotters and heading calculators
  - use of two natural underwater features
  - use of two patterns for underwater navigation
  - use of distance travelled by:
    - measuring kick cycles
    - determining time elapsed using a timing device
  - surfacing on one occasion to verify location on map
- log two dive site locations for future dives:
  - one using compass bearings as a reference
  - one using permanent landmarks as a reference.

## Knowledge Evidence

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

- trusted sources of waterway charts and tide tables for the region or locality
- different technologies used to access charts and tide tables
- information found on waterway charts relevant to dive navigation:
  - depth
  - underwater topography
  - topographic features of surrounding land

- buoyage
- constructed features – bridges, piers, wrecks
- pre-dive observations that can be made to assist with navigating when diving:
  - wind, current and tidal movement
  - angle of the sun and direction of travel across the sky in relation to planned underwater movement
  - position of natural offshore landmarks and constructed features – rocks, reefs, sand bars, kelp beds, piers, navigation buoyage, wrecks
  - use of waterway charts and depth finders on boats to identify underwater topography
- navigation roles that can be shared between buddy divers
- common patterns for underwater navigation, advantages and disadvantages of each:
  - out and back along a straight line
  - squares and rectangles
  - triangles
  - circles
- features functions and operation of underwater compasses
- correct position for holding an underwater compass to maintain an accurate heading
- how to set a compass for the following:
  - a heading
  - reciprocal course
  - square or rectangle pattern
  - triangle pattern
- techniques used to avoid errors when navigating with a compass underwater
- features and functions of course plotters and heading calculators used to navigate multi heading courses underwater and:
  - techniques used to track a multi heading course , return to start point and navigate from one point to another using a course plotter
  - techniques used to determine pattern headings using a heading calculator
- natural features and references commonly used by divers to fix position and navigate underwater:
  - light and shadows cast by the sun or moon
  - direction of currents and water surge
  - bottom composition and contours
  - position of plants and animals
- techniques used to estimate travelled distance underwater, advantages and disadvantages of each:
  - measuring kick cycles
  - determining lapsed time using a timing device
  - using cylinder pressure readings
  - measuring and counting arm spans
  - using underwater lines and reels

- techniques used to fix and relocate an underwater site for future dives:
  - using permanent landmarks, sketching and logging
  - using and logging compass bearings
  - using a global positioning system (GPS) on the surface.

## Assessment Conditions

Skills must be demonstrated in an open water site. Dives can be completed from either a boat or from the shore.

During assessment:

- direct vertical access to the surface must be possible; aquatic plants are not considered an overhead obstruction
- the following resources must be available to replicate industry conditions of operation:
  - first aid equipment
  - oxygen equipment
  - communication equipment for emergency response
  - diver flags of a type and size that meet local maritime regulator requirements.

Assessment must ensure use of:

- a diving buddy with whom the candidate can dive
- fins
- masks
- snorkels
- cylinders and valves
- buoyancy control devices with low pressure inflators
- regulators with submersible pressure gauges
- alternative air source
- weight ballast systems
- exposure suits suitable for conditions
- timing devices
- depth gauges
- slates
- underwater navigation equipment:
  - compasses
  - course plotters
  - heading calculators
  - underwater reels with lines for distance measurement
- waterway, wind, tide and current charts relevant to the dive site.

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

- be an individual who is currently certified and sanctioned by an industry authorised organisation to teach and assess underwater navigation.

## **Links**

Companion Volume Implementation Guides -

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