

SIMULATED DECOMPRESSION DIVE

Lesson Objectives

This lesson introduces the planning and conduct of a decompression dive, including the use of a distance line

Achievement Targets

At the end of this lesson students should:

- Be competent and confident in their ability to plan a dive involving a decompression stop with regards to depth/time and breathing gas management
- Be competent and confident in their ability to descend a shot line
- Be competent and confident in their ability to manage depth, time and breathing gas in accordance with the dive plan
- Be competent and confident in their ability to use a distance line to return to the shot line
- Be competent and confident in their ability to ascend a shot line and to conduct a decompression stop in accordance with the dive plan

Lesson Contents

This lesson is the simulation of a complete decompression dive. Descent and ascent will require the use of a shot line, or other fixed line. Maximum depth should not exceed 20m and the lesson should be planned with an adequate safety margin so that a real decompression requirement is not incurred.

It is essential that all participants are equipped with a means of monitoring depth and time. Where all participants are equipped with decompression computers, these should be used to plan and conduct the dive. Where this is not the case, the BSAC decompression tables should be used. Each student should also be equipped with a waterproof slate or notebook on which the dive profile and timings can be noted.

A suitable distance line and reel is required. The line should have adequate length (50m minimum) to enable realistic distances to be swum, and hence adequate practice given. The dive plan should allow for a demonstration use of the distance line underwater, and then for each student to practice its use in complete legs out from, and back to, the shot line, including changes in direction during the leg. Each student should also take responsibility for monitoring time/gas so that they arrive back at the shot at the planned time.

As this lesson involves the use of line underwater, all divers must be equipped with an adequate and easily accessible knife or other line cutting tool.

1. Briefing

Explain the above objectives and include all the elements of a SEEDS brief. Describe how the lesson will be conducted as a complete decompression dive, including all the appropriate pre-dive decompression and breathing gas management planning and relate this to a real decompression dive. Point out how the buoyancy skills that students have already learned are crucial to the conduct of this dive in terms of depth keeping, both at the planned dive depth and at the decompression stop.

2. Dive planning

Plan the dive profile using either the BSAC Nitrox or BSAC '88 decompression tables or the planning function of a decompression computer. Base the plan on a depth greater than that which will actually be achieved (for instance 30m) so that a real time profile is planned, although the dive will actually be performed at a shallower depth. Ensure that all students have fully understood the timings and to what point in the dive they relate.

As the demonstration and the student practice will involve multiple out and back swims, each should be planned with it's own 'turn round' time and time to be back at the shot line. Where more than one student is involved, ensure that each student has fully understood the leg timings and which each will take responsibility for.

Explain the importance of a contingency plan in case dive time/depth are inadvertently exceeded.

Using the timings determined, establish breathing gas consumption requirements (for the genuine depth planned), including 'turn round', minimum value for commencing the ascent, decompression stop and reserve requirements. Check that the available breathing gas matches these requirements, including the contingency plan, otherwise adjust the dive plan accordingly.

Once the plan is finalised, ensure that each student has an accurate note of the dive profile and gas management information that they will take on the dive with them. Stress that this is not information that should be trusted to memory.

At the end of this exercise, the students should be fully **competent and confident** in their abilities to plan a dive involving a decompression stop.

3. Dry practice of distance line use

Although students will have previously used a reel in the SMB lesson, conduct a dry run of the new aspects that this lesson introduces such as securing the line to the shot weight, securing the line at points where changes in direction are made. Include any special signals needed for management of the line, direction or time.

Report dive plan to Dive Manager.

4. Kit up and buddy check

Once fully kitted and normal buddy check have been completed, explain how the distance reel can be carried. Identify suitable means by which students could carry a reel, secured in such a way that it is accessible but so that it will not dangle free and become a snag hazard.

5. Entry into deep water

A deep water entry, via either a stride or roll, as appropriate to a decompression dive.

6. Descent down shot line

At surface exchange 'OK' signals, when all divers respond commence descent down shot line. One hand looped around shot line, allowing line to run freely through encircling fingers, no pulling on shot line, leader continually

checks following divers.

At the end of this exercise the students should be fully **competent and confident** in their abilities to descend following a shot line.

7. Exploratory dive using distance line

Once grouped on the bottom and all divers are checked 'OK', the following elements should be performed in line with the dive plan. Where conditions dictate, each out and back swim should be carried out in different directions to minimise the impact on visibility, and to add more interest to the dive.

- Securing line to shot weight
Reel removed from stowage, detached from diver. Line adequately secured to shot weight so that it cannot inadvertently become detached or ride up the shot line
- Outbound swim
Line held well clear of body and fins, with catch released to allow line to run out as required while swimming. Roughly straight line direction maintained to avoid line being curved around, and tangling on, obstructions. Buddy maintains position on opposite side of line
Include some practice of simulating use in reduced visibility. Buddy encircles line loosely with fingers, allowing hand to run freely along line but maintaining secure contact. Lead diver makes more frequent checks of buddy, as appropriate to reduced visibility
- Securing line at turning points
At change of direction, lead diver signals 'stop', attaches line to suitable anchor point, indicates new direction and continues, again in a generally straight line
- Time/ depth/gas management
Time, depth and breathing gas consumption monitored against plan. When appropriate 'turn around' time or gas state (which ever occurs first) is reached, lead diver uses agreed signals to reverse direction
- Inbound swim
Line reeled in, maintaining slight tension to avoid entanglement on obstructions or on the reel. Swim back follows the direction of the line. Line fed evenly onto reel to avoid jamming. Line detached from anchor points as necessary, using agreed signals to pause swim and change direction. Time/gas status monitored to reach shot at planned time/gas status
- Prepare for ascent
Line detached from shot weight and reel stowed. Time/gas status checked in line with plan

At the end of this exercise the students should be fully **competent and confident** in their abilities to use a distance line to swim out from, and return to, a shot line.

At the end of this exercise the students should also be fully **competent and confident** in their abilities to manage their time, depth and breathing gas in accordance with a pre-determined plan.

8. Ascent up shot line to 6m

Ascent up shot line at appropriate rate to arrive at the 6m decompression stop at the appropriate time.

9. Simulated decompression stop for 3 mins.

Time of arrival at stop noted. Buoyancy adjusted to maintain accurate depth, shot line held to maintain position (not to compensate for bad buoyancy control). Time and breathing gas status monitored.

10. Ascent to surface

On completion of stop, 'go up' signals exchanged, normal ascent to surface. BC inflated at surface.

At the end of this exercise the students should be fully **competent and confident** in their abilities ascend following a shot line and in their buoyancy control and time/gas monitoring abilities needed to conduct a decompression stop.

11. Exit from deep water

Exit from deep water, as appropriate to local conditions.

Report back to Dive Manager.

12. Debrief

Review the students' performance, highlighting areas of good performance and offering constructive criticism where necessary. Remind students of the importance of adequate pre-dive planning of dive profile, breathing gas consumption and contingencies. Maintaining good buoyancy skills and periodic practice of the less

frequently used skills will enable them to get more enjoyment out of such dives and maximise dive safety.

Adapting this Lesson

The content of this lesson is not dependant upon equipment or previous training and hence the lesson content is applicable to all students.

Skill Performance Standards

At the end of this lesson, the students should be sufficiently **competent and confident** to be able to achieve the following skill performance standards, without supervision, in the water conditions experienced:

Dive Planning - safe dive profile and accurate times/gas states determined for turn around point, commencing the ascent, arriving at the required decompression stop depth, leaving the decompression stop depth for the surface and reserve breathing gas.

Descend shot line - All divers confirmed 'OK' before descent commenced, contact with the line maintained but line allowed to run freely through hand, no pulling on line during descent.

Distance line use - line securely attached to shot weight, deployment managed to remain clear of body and equipment. Direction maintained straight and appropriate tension maintained on line to avoid entanglement in surroundings while swimming outbound. At changes of direction appropriate signals given to buddy and line fastened to suitable anchor point. Return swim follows direction of line maintaining appropriate line tension. At changes of direction appropriate signals given to buddy and line detached from anchorage.

Time, depth and gas management - Underwater dive profile managed to observe maximum planned depth and time/gas state (whichever occurred first) at turn-around and commencing ascent points.

Ascent and decompression stop - Ascent managed to arrive at decompression stop at correct time. Stop depth maintained to within 1m and correctly timed.