

## DEVELOPING SKILLS

### Lesson Objectives

This lesson will further develop skills learned in earlier lessons, and increase the students' confidence in their abilities to perform these skills, by extending the depth at which they can be performed

### Achievement Targets

At the end of this lesson students should:

- Be able to perform controlled descents into deeper water
- Be competent and confident in their ability to clear their mask of water
- Be able to perform an AS ascent as a donor
- Be able to perform an AS ascent as a recipient
- Have experienced breathing from a (simulated) free-flowing demand valve
- Be able to take the necessary action to counter a BC inflator which has stuck open
- Be competent and confident in their ability to maintain true neutral buoyancy
- Be able to perform controlled ascents from deeper water
- Be able to exit deep water using a ladder (as for a boat or jetty)
- Be able to wash/dismantle their equipment with minimal supervision

## Lesson Contents

By this lesson students should be showing a good level of competence at the basic skills of finning and buoyancy control when swimming underwater. These skills should be monitored throughout the lesson and, if necessary, extra practice should be included.

### 1. Briefing

Explain the above objectives and how they build on the exercises performed in the earlier lessons to develop a broader level of competence and confidence. Explain the relevance of the new skills (entry, breathing from a free-flowing demand valve, AS ascent/oral inflation of BC, and exit) to real diving. Ensure that all aspects of a 'SEEDS' brief are covered.

### 2. Preparing SCUBA unit

Build on the previous lesson by guiding students through the assembly and functional checking of their SCUBA unit.

- Assembly  
Fit BC to cylinder, fit regulator to cylinder, connect BC direct feed, secure contents gauges, AS etc
- Functional check  
Slowly turn breathing gas on, check contents, breathe from main and AS demand valves, turn breathing gas off, check for leaks, 'breathe down' check, turn breathing gas back on

### 3. Kit up and buddy check

The students should have developed some competence in doing this by this lesson, so draw what should be done from the students as much as possible. Having done so, supervise the practice of buddies helping each other to kit up and the buddy check.

Once the students are wearing their SCUBA units, but before fitting mask and fins, include a dry run of the action to counter a BC inflator which has failed open, as a lead-in to the subsequent underwater exercise. With the SCUBA unit turned on, each student should disconnect and then reconnect the BC direct feed hose.

### 4. Entry into deeper water using stride entry

This simulates the entry from a large boat which can, where necessary, be simulated from a pool side or jetty.

- Stride entry  
Partially inflate BC, stand at edge of entry point, breathing from demand valve, secure mask and regulator with one hand, strap to back of head with other hand, step forward into water, once surface regained turn to face other divers, give 'OK' signal (unless not OK)

### 5. Controlled descent into deeper water

Building on the previous lesson, this exercise gives additional practice in judging how much air to vent to initiate a descent and then how much to re-inflate to control the descent. The aim is for students to achieve a **gentle** touch-down on the bottom. Rapid descents and heavy landings should be corrected.

### 6. Swim underwater to standing depth

A positioning manoeuvre for the next exercise and also an opportunity to check finning action and buoyancy control.

- Finning action  
Action from the hips, legs slightly flexed
- Buoyancy control  
BC controls located without fuss, buoyancy adjusted by appropriate bursts of venting or inflation, level of buoyancy controlled to just stay clear of bottom

### 7. Mask clearing - recap in standing depth

Recap mask clearing as a means of consolidating the skills learned in the previous lesson before progressing to deeper water.

- Partial flood  
Lift lower skirt of mask from face to partially flood, hold top edge of mask against forehead, breathe out steadily (but not forcibly) through nose, tilt head backwards.
- Full flood  
As for partial flood but lifting mask skirt off face to completely flood the mask
- Remove & replace

Flood mask completely as above, remove mask, identify nose pocket to check mask is correct way up, place strap out of way over front of mask, hold hair etc. clear of face, place mask on face, check skirt clear of entrapped hair, replace strap over head, hold top of mask against forehead, breathe out steadily through nose, tilt head backwards

The above technique may need adapting depending upon the style of mask used although the progressive sequence will remain the same. Masks fitted with drain valves will require the head to be tilted forward rather than back.

### **8. Breathing from a free flowing demand valve - standing depth**

While breathing normally from the demand valve, slowly depress the purge button so that the valve passes breathing gas continuously. Breathe in and out against the flow of breathing gas. Gradually depress the purge button more to increase the rate of flow until the maximum flow rate is achieved. As the flow rate increases more effort will be required to breathe out against the flow.

### **9. Swim to deeper water**

Again a positioning manoeuvre for the next exercise and also a further opportunity to check finning action and buoyancy control as above.

### **10. Mask clearing in deeper water**

A direct repeat of the exercise performed in standing depth water.

- Partial flood  
Perform as above
- Full flood  
Perform as above
- Remove & replace  
Perform as above and then repeat.

Monitor students' performance closely as, at the end of this lesson, they should be **competent and confident** in their abilities to clear their masks of water. Where only a low competence or comfort level is apparent, pass on to other exercises for a break, and then return to this exercise for more practice.

### **11. Use of alternative supply - deeper water**

As in the previous lesson, teach for the more realistic situation of the recipient taking the donor's AS from its stowage, not waiting for the donor to remove it and offer it. Recap the procedure static before introducing the ascent. This latter should include the realistic situation that the recipient will have no gas with which to inflate the BC at the surface.

- Static  
Students should act as both donor (initially) and then recipient. Recipient signals out-of-air, takes donor's AS from stowage, removes own mouthpiece and replaces with donor's AS, recipient and donor make positive contact by holding shoulder strap or other convenient hand-hold.  
The relative positioning of the donor and recipient should be such that, without changing their positions they can, in the subsequent exercise, ascend to the surface without getting in the way of each other's finning action. The flexibility of position offered by the length of the AS hose should be utilised to the full to achieve this
- AS ascent  
Commenced as for the static AS exercise, once the recipient is established breathing from the AS and positive contact is made, donor and recipient ascend at a normal rate to the surface. At the surface donor fully inflates own BC and supports recipient. Recipient inflates BC by mouth or emergency cylinder (if fitted) while treading water

### **12. Buoyancy control**

Students should by this stage be very familiar with the BC controls and adjusting their buoyancy while swimming. This exercise introduces the action to counter a BC inflator which has stuck open, and then goes on to teach finesse in buoyancy control. The latter further consolidates the appreciation of how breathing affects buoyancy.

- BC inflator stuck open  
This exercise repeats the actions of the earlier dry run. Assuming the BC hose comes over the left shoulder, the right hand grips the mouthpiece to steady it, the left hand grips the direct feed hose, thumb and forefinger of left hand operate disconnect collar (Note: initially the direct feed hose may need to be pressed towards the mouthpiece to enable the collar to be moved), direct feed hose

separated from mouthpiece.

The above sequence is then reversed to reconnect the hose. Once connected the inflator should be briefly operated to check that the connection has been correctly made.

The fin pivot technique used previously only approximates neutral buoyancy, as a small part of the student's weight is still supported by the fins touching the bottom. This exercise aims to achieve true neutral buoyancy.

- **Mid water hover**

From a kneeling position inflate BC in short bursts to lift clear of the bottom. Vent/re-inflate in short bursts to achieve a hover in mid water (ie completely clear of the bottom and below the surface), adjust BC inflation so that no further inflation/deflation is required while gently ascending/descending with breathing cycle, remain clear of the bottom and the surface throughout breathing cycle

Note that the objective of this exercise is buoyancy control. Depending upon the configuration of the students' equipment and their individual body build, they may not be able to remain upright in the water while hovering. The actual attitude assumed is unimportant and whatever is stable should be accepted and not allowed to distract from the objective.

At the end of this exercise, students should be **competent and confident** in their abilities to maintain true neutral buoyancy.

### **13. Normal ascent from deeper water**

The controlled ascent in the previous lesson concentrated on the development of buoyancy control. The ascent should be further developed in this lesson to include maintaining buddy pair contact and surfacing drill.

- Buddy pairs face each other, hold BC controls above shoulder, inflate in short bursts until slight positive buoyancy achieved, vent in bursts to maintain controlled rate of ascent, look up towards surface above/behind buddy's head, free hand above head, fully inflate BC at surface, exchange 'OK' signals

### **14. Deep water exit**

Exit from the water as if onto a jetty or large boat.

- **Ladder exit**

Hold on to secure point at side of ladder (not directly behind divers climbing the ladder), BC inflated, to await turn. When ready to exit, hold on to ladder with one hand at all times, remove fins with other, climb ladder maintaining three points of contact (eg two hands, one foot or two feet, one hand at all times), breathe from demand valve throughout until safely away from ladder

### **15. Debriefing**

Using the 'REAP' format, praise good performance and offer constructive criticism where necessary. Explain how they will further develop their skills in the next lesson. Answer any questions that the students have.

### **16. Equipment care**

By this point students should have developed sufficient competency to require little direct supervision. Their performance of this task should however still be closely monitored.

- Equipment washed in fresh water, pressure dissipated from regulator, equipment disassembled, regulator dustcaps dried and fitted, and all items stowed away

## **Skills Performance Standards**

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

**Mask removal and clear** – with their mask removed, students continue to breathe steadily, check correct orientation of the mask before refitting it, expel water by breathing out steadily through the nose and tilting the head either back or forward as appropriate to the type of mask. Completely clearing all the water from the mask in one breath, while desirable, is not essential.

**Mid water hover** – student inflates/vents BC to hover in mid water (completely clear of the bottom and below the surface), mean depth maintain  $\pm 0.5\text{m}$ , variation around depth due to breathing only. Student remains clear of bottom and surface throughout breathing cycle.