

# Sports Diver Theory Lesson – ST6

## GOING DIVING

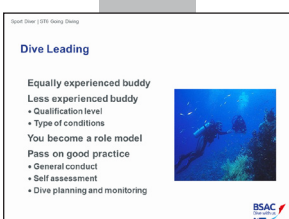
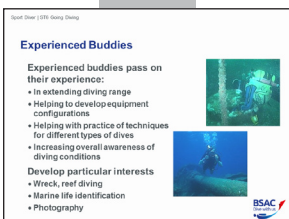
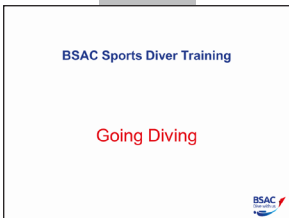
### Lesson Objectives

The main objective of the lesson is to promote the understanding that, following qualification as a Sports Diver, the gaining of experience is important in broadening diving knowledge. At this level of diver, not only can they learn from other divers but also they will be gaining more dive leading experience. In broadening their diving experience, students may become involved with divers using Nitrox or Rebreathers, so part of the lesson is a basic introduction to both and their associated buddy considerations. Also, once qualified, Sports Divers become part of the surface support team and they can assist the Dive Manager. To round off the Sports Diver Theory lessons, consideration is given as to what happens next. For students, promoting going diving and gaining experience is re-iterated as well as continued training and, if they are so interested, beginning instructor training through the BSAC

### Achievement Targets

At the end of this lesson students will:

- Understand that to broaden diving knowledge and experience they need to go diving
- Understand that doing so will encompass a wider range of conditions and dive buddies
- Understand the role of dive leading and planning considerations appropriate to Sports Diver level
- Understand that, whether diving or leading dives, personal limitations should always be considered
- Understand the concepts of Rebreather diving and associated buddy considerations
- Understand that, in extending their rescue skills they will become part of the surface support team when diving takes place
- Understand that they can assist the Dive Manager
- Have gained appreciation of further training opportunities open to them with the BSAC as a diver and, if they so wish, as an instructor



# GOING DIVING

## GOING DIVING AS A SPORT DIVER

The only way a diver can broaden their experience and awareness is, quite simply by:

### Going and enjoying diving

- This introduces the diver to a broader variety of diving conditions as well as a variety of buddies
- Some of those buddies may be less experienced Sports Divers so students will become involved with more dive leading
- Whether diving or leading a dive, understanding personal limitations must always be considered
- In broadening their diving experience, students may come across Rebreather divers and this lesson introduces a basic understanding of the concepts and associated buddy considerations
- The Sports Diver can play a wider role during diving activities and assist the Dive Manager
- Having extended their rescue skills during Sports Diver training, a Sports Diver can take a wider role in the surface support team when any diving takes place.
- And to round off this lesson, advice is given on what to consider next having qualified as a Sports Diver. Going diving and gaining more experience is the most important but also guidance is given on developing diving knowledge and skills by further training

## EXPERIENCED BUDDIES

As more experienced divers will have helped the Sports Diver to develop their diving, they in turn can do the same for other divers.

### Experienced buddies pass on their experience

- In supporting the less experienced Sports Diver to extend their diving range, whether it be depth or condition related
- Helping and giving advice on equipment configuration and deployment
- Helping with the practising of techniques for different types of dive
- Helping to increase overall awareness of the variability in diving conditions

Going diving and broadening experience may also:

### Begin to develop areas of particular interest

- For example wreck diving. It might not just be diving wrecks but finding out more about their history and researching new sites to dive. Reef diving may become a favourite type of dive and involve planning diving holidays around the world
- Reefs and wrecks generally support an abundance of marine life so marine life identification is another interest that may develop
- Marine life and underwater forms and shapes offer those interested in photography a very wide diversity of choice

## DIVE LEADING

### Equally experienced buddy

Within a group of diver friends, there are buddy pairs that often do a lot of diving together and work very much as a pair, but there still is a need for one of them to be designated as the leader of a particular dive. Someone has to take on the role if any underwater decisions need to be made, otherwise underwater 'domestics'

could detract from a good dive. If diving in a regular buddy pair with a friend, taking it in turn to dive lead is often a good way of building dive leading skills, as honesty between friends is good method of debriefing after a dive.

**Less experienced buddy**

There may be occasions when the Dive Manager/Diving Officer, who knows your training and diving record, asks you to lead another diver.

- This could be a qualified Ocean Diver, or equivalent, needing to build on their own diving experience within the limitations of their qualification
- Or it could be a diver less experienced in the diving conditions that the Sports diver is used to. For example it may be an Advanced diver new to the dive site, but a site which is well known to the Sports Diver

**Role Model**

The dive leader, will be a role model and it is their responsibility to pass on good diving practice in:

- General conduct on the dive site and with other divers
- Showing that self assessment prior to any dive is important in planning the dive so that it is as safe and as enjoyable as possible
- Their dive planning and monitoring during the dive

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**Dive Leading - Planning**

Self & Buddy risk assessment

**Conditions**

- Suitable for level of experience

**Depth**



- Within previous experience

**Breathing Gas**

- Adequate supply and back up for type of dive

**Equipment**

- Buddy check
- Practiced?

**DIVE MANAGEMENT**  
**DIVE LEADING - PLANNING**

**Self and buddy risk assessment**

The dive leader assesses both their own and the buddy's limitations and listens to how their buddy feels about the forthcoming dive. Combining this assessment with all other pertinent information, then allows them to plan the dive by considering the following:

**Conditions**

- Are they suitable for the level of not just the buddy's experience, but also the dive leader's?

**Depth**

- Is it within the buddy's previous experience? Are they pushing for something they are not ready for? Is it within the dive leader's recent experience? In leading the dive, the maximum depth to reach must be the dive leader's decision

**Breathing Gas**

- Do both divers have an adequate supply and back up for the type of dive being planned? If Nitrox is used, has the gas been analysed and MOD established?

**Equipment**



- A buddy check is necessary before any dive, even with divers who often dive together. Remember that it is not just for checking that equipment is present, but that it is properly connected and functions correctly. When diving with unknown buddies, the buddy check should also pick up on any different configurations, deployment of AS and differences in suit or BC inflators
- If using additional equipment, such as SMB, DSMB or distance lines on the dive, is it working and practiced? Remember the role model - deployment should demonstrate competence to give a buddy confidence in their leader's ability

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**Dive Leading - the Brief**

Clear Brief - SEEDS

- Safety
  - Fit to dive
  - Underwater hazards
- Exercise/Dive Objective
  - Depth, Time, Breathing Gas
- Equipment
  - Buddy Check
  - Other equipment for the dive
- Discipline on the dive
  - Positioning, particularly when equipment being employed
- Signals
  - Normal and any special ones

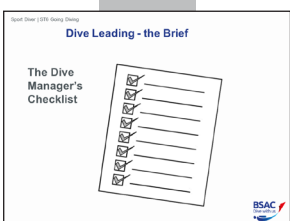
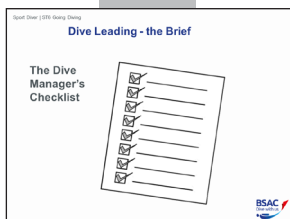



**DIVE LEADING - THE BRIEF**

The acronym SEEDS is an excellent basis to use for the dive brief. It doesn't necessarily have to follow that order, but as long as it covers the areas that each

letter represents, it will help the dive leader give a clear brief to their buddy

- **Exercise/Dive Objective**
  - The "exercise" is the objective of the dive. It could be diving on a specific site such as a wreck or reef, or going for an exploration around a particular area. The dive objective includes the plan, depth, time and breathing gas.
- **Safety**
  - Includes a check on diver fitness - any problems with ear clearing; arranging to do an underwater check for narcosis if deeper diving is involved
  - Are there any possible hazards on the dive? For example when wreck diving both divers should keep a sharp lookout for any lines or nets to prevent entanglement
- **Equipment**
  - Buddy check
  - Familiarise the buddy with any extra equipment being used on the dive, such as DSMB or distance line before getting in the water
- **Dive Discipline**
  - Establishing the role as the dive leader and decision maker is part of dive discipline. Also included is determining the positioning of the buddy in relation to the leader during the dive, not in a dictatorial fashion but from the point of view of which side AS regulators are placed for easy access if necessary. Also, if deploying and controlling lines, which side of the leader is best for the buddy to avoid entanglement
- **Signals**
  - As well as normal diving signals, the dive leader needs to establish any special signals that they may use, for example a signal for safety stops. Don't assume the buddy will automatically understand underwater if they have not been briefed on the surface. They may have dived with another diver who gives slightly different signals for 'stops'



## DIVE MANAGER'S CHECKLIST

This is a useful 'aide memoir' that Dive Managers can use to provide a structured brief.

*Note: Instructors should make copies freely available for students to use.*

## DIVE LEADING - THE DIVE

The role of the dive leader is to make the dive a safe and enjoyable experience for the buddy and themselves by:

- Assisting each other on kit up and entry
- Monitoring
  - Depth, time and breathing gas throughout the dive without it being oppressive for the buddy. Remember that they know, from the brief, the signals they should give the leader on breathing gas remaining or depth
  - If deeper diving, buddy and self reactions should be monitored for the effects of narcosis
- Navigating a route on the dive, this could be using pilotage, a compass, or a combination of both
- Providing interest



There is nothing worse for a buddy than being trawled around by a disinterested dive leader. Most dives will have points of interest, and by highlighting them to a less experienced buddy, the leader may actually find more than they thought were there

Small Diver (ST6) Going Diving

**Dive Leading - the Dive**

Making the dive a safe and enjoyable experience

- Assisting on kit up and entry
- Monitoring
  - Depth, time and breathing gas
  - Self and buddy reactions
- Points of interest
- Assisting on exit, de-kit
- Debriefing the experience
- Recording the dive
  - Signing logbooks
  - Details to the Dive Manager

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- Assisting each other on exit and dekit
- Debriefing the dive is always important, not only in comparing notes of what was jointly experienced and enjoyed but, from the dive leader's point of view, also analysing whether there were areas of dive leading that could be improved next time
- Recording the dive
  - Details given to the Dive Manager promptly on exit from the water
  - In diving logbooks

## DIVE LEADING = ROLE MODEL

As discussed earlier, those who have led them on dives in the past helped in developing their experience, and now the reverse will happen when they begin to dive lead the less experienced. They will be looked upon as a role model and dive practices will be copied. It is therefore important that as part of dive leading the overall approach to diving is considered.

### Equipment

Diving with new or infrequently used equipment requires careful consideration:

- Worries about equipment or appropriate configuration will only be a distraction when leading the less experienced and may increase the task loading. The leader should be comfortable with their kit configurations and any equipment deployment and operation, particularly if any problems should arise and quick decisions needs to be made
- It is therefore common sense that practising with new equipment or configurations should be done with more experienced divers before taking on the role of dive leader.
- One practice is to ensure that buoyancy is trimmed correctly as buoyancy problems are a potential safety hazard and will undermine the buddy's confidence in the dive leader's ability. If other problems then arise, the task loading on the dive leader increases further
- Keeping equipment tidy and neatly stowed not only gives a good impression, but is also demonstrates safety considerations. Dangling equipment creates a greater risk of entanglement and damage, not only to the equipment but also to marine life on reefs or the seabed

### Deploying equipment underwater

- Although a diver should be proficient in self deployment of any equipment underwater, remember to involve the buddy, whether it be by ensuring that they understand positioning, clearance of any lines or, if appropriate, that they can help. Sometimes two pairs of hands are better than one

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**Dive Leading = Role model**

Equipment

- Task loading
- Practised in use
- Buoyancy trimmed
  - Tidy, neat stowage

Underwater deployment

- Involve buddy when appropriate



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## ROLE MODEL - PROTECTION OF THE ENVIRONMENT

As part of good dive practice, demonstrating care and protection of the marine environment is an important part of the dive leader's role.

### Marine Conservation

- Good buoyancy and careful finning need to be demonstrated to prevent damage to reefs and other marine life
- Looking but not touching is also critical in demonstrating reef conservation

### Wreck Protection

- Looking at wrecks and not removing parts of them is the best policy, it leaves the wreck in a condition for others to enjoy
- However, if any wreckage is recovered, it must be reported to the Receiver of Wreck - all wreck belongs to someone and to remove it without declaration has legal implication which may result in prosecution
- If divers discover anything of interest or concern on the seabed, it should be reported to the Receiver of Wreck (If diving outside the UK, report to the local appropriate authorities). Recreational divers have discovered


new wrecks of historical importance. They have also identified potential contamination of the marine environment by finding containers or canisters illegally dumped in the sea

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**Role Model - Protection of the Environment**


**Reef Conservation**

- Buoyancy and finning
- Look but don't touch



**Wreck Protection**

- Look but don't remove
- Report recovered finds to the Receiver of Wreck
- Report finds of interest or concern to the Receiver of Wreck




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**Personal Limits**

Your own comfort factor to enjoy diving

- Do the type of diving you want to do
- Avoid pressures to extend experience or depth too quickly
- Challenge of diving tempered by being prepared for the challenge
- Don't rush - gradually consolidate experience



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## PERSONAL LIMITS

Whether diving as a buddy or dive leading a dive, remember your personal limits.

### Your own comfort factor to enjoy diving

- Do the type of diving you want to do
- Avoid any pressure to extend experience or depth too quickly either from other divers or from those being dive led
- Remember the challenge of diving must be tempered by being prepared for the challenge
- And above all, don't rush - gradually consolidating experience makes for safer diving and divers

## NITROX FOR SPORTS DIVERS

Working to a partial pressure of oxygen of 1.4 bar, the calculated MOD for Nitrox 32 is 33.7m (rounding down for safety, the MOD is 33m). Applying the same arithmetic for Nitrox 36, the MOD is 28m.

However, where **NO-STOP** diving is planned the MOD are:

**35m for Nitrox 32 and 30m for Nitrox 36**

Cylinders containing breathing gases in excess of 21% O<sub>2</sub> must carry labels indicating the name of the mix (for example: NITROX) and the gas percentage mix.

### Dive planning

If diving on a breathing gas of 21% O<sub>2</sub> (Air) and buddied with a diver on a gas mix greater than 21% O<sub>2</sub> (Nitrox), then the decompression schedule is dictated by:

- The 'Air' Diver
- The MOD of the diver's Nitrox mix

In such circumstances, this must become part of the dive plan.

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**Nitrox for Sports Divers**

**Do not exceed the MOD of any gas**

- includes gas carried for decompression

**Exception for NO-STOP Dives Only**

- Nitrox 32 can be used to 35 metres
- Nitrox 36 can be used to 30 metres

**Equipment**

- Cylinders labelled with gas % and MOD

**Dive Planning**

- Plan for MOD of Nitrox diver and dive time of air (21%O<sub>2</sub>) diver
- All other procedures the same



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## REBREATHER DIVERS

This section of the lesson is not intended as a Rebreather course but to give an appreciation of what they are as in broadening their diving experience and range of buddies, Sports Divers may dive with buddies using Rebreathers.

This next part of the lesson introduces the student to

### Rebreathers


- What they are
- Buddy considerations

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**Rebreather Divers**

**Rebreathers**

- What are Rebreathers
- Buddy considerations when diving with Rebreather divers



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## WHAT IS A REBREATHING?

A rebreather is a self-contained unit that, unlike open circuit equipment, retains the exhaled gas to utilise the unused oxygen content (17% oxygen and 4% carbon dioxide) by re-circulating it to the diver for their use.

### The unit is a continuous breathing loop

- The diver's lungs connect by a mouthpiece to the external (rebreather unit) loop
- The inhalation/exhalation of the diver moves the gas through the loop where one way valves maintain the gas flow



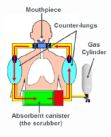
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**What is a Rebreather**

A continuous breathing loop

- Divers lungs and mouthpiece
- Breathing bags (counter-lungs)
- Recycles gas through 'loop' using one way valves to maintain gas flow
- Carbon dioxide (CO<sub>2</sub>) removal - absorbent or 'scrubber' canister
- Requires small gas supply connected into loop to replenish oxygen consumed by respiration

Delivers nitrox mixes



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- The unit has its own 'lungs', known as counter lungs. Rebreathers may have one or two, depending on their design
- Rebreathers have a method of removing or 'scrubbing' exhaled carbon dioxide from the gas in the loop, using absorbent material contained in a canister - quite often referred to as 'the scrubber'
- The loop has a gas supply, connected into the system, to replenish gas consumed from the loop by respiration

**The rebreather gives the diver a balanced delivery of nitrox mixes**

- Either by delivering a predetermined Nitrox mix, or by mixing being carried out in the loop

**TYPES OF REBREATHER**

**There are two types of rebreather**

- Semi-closed Circuit Rebreather (SCR)
  - Uses a supply of premixed gas at a pre-set flow rate
  - The dive is planned on the MOD of the mix being used
  - Excess gas is vented off periodically so there will be some bubbles from the system
- Closed Circuit Rebreather (CCR)
  - Utilises two small cylinders, one of oxygen and one of diluent
  - The introduction of oxygen into the loop is controlled by electronics within the unit to give a constant partial pressure of oxygen, set by the user, irrespective of depth.
  - There are no bubbles when using the unit, except on an ascent when venting occurs to offset gas expansion

Both systems should have an adequate independent bailout gas supply for the type of diving being undertaken.

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**Types of Rebreather**


**Semi-closed Circuit Rebreather (SCR)**

- Cylinder of pre-selected gas mix
- Maximum operating depth (MOD) determined by mix being used
- Excess gas vented off periodically, bubbles

**Closed Circuit Rebreather (CCR)**

- 2 cylinders, oxygen and air
- Electronically controlled - optimum Nitrox mix to depth
- No bubbles, except for venting on ascent

Both systems should have an adequate bailout that can be used as an AS



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**DIVING WITH REBREATHERS**

**Advantages**

- Extends dive duration by the gas recycling process
- Extends no-stop dive time appropriate to the gas mix being breathed
- No, or hardly any bubbles, depending on the unit used, so the diver can get much closer to marine life than on open circuit

**Disadvantages**

- Rigorous monitoring
- Rigorous maintenance and preparation

To dive any rebreather requires additional training by a recognised training agency and lots of practice following training.

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**Diving with Rebreathers**


**Diving on rebreathers requires additional training and practice**

**Advantages**

- Extends dive duration by the gas recycling process
- Extends no-stop dive times appropriate to gas mixed being breathed
- No or hardly any bubbles - get much closer to marine life

**Disadvantages**

- Rigorous monitoring
- Rigorous maintenance and preparation



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**DIVING WITH REBREATHING DIVERS**

The Diving Officer, or the Dive Manager acting on behalf of the Diving Officer, will ensure that if an open circuit diver buddies a rebreather diver.

- The dive is planned to
  - The most conservative decompression schedule of the gases being used. For example, if an open circuit diver using air, dives with a rebreather diver, then the decompression schedule for air will be used
  - The most conservative maximum operating depth determined by either of the gases being used, the divers' qualification limit (35m for Sports Divers), or the CCR limit of 40m on air diluent
- Both divers are experienced in the type of diving conditions for the

planned dive

- The buddy can recognise underwater problems pertinent to rebreather divers
- The buddy is capable of performing a rescue - CBL and surface support - on the rebreather diver

**Rebreather Try Dives**

If there are rebreather divers in a branch, the BSAC can stage Rebreather try dives to introduce potential buddies of rebreather divers to the recognition of problems and rescue considerations

**Rescue Techniques**

Before diving with any rebreather diver, rescue techniques must be practiced.

**WIDER BRANCH ROLE**

In gaining more experience, the Sports Diver can take on a wider branch role. One area, dive leading less experienced divers, has already been covered. There are however, two other areas where Sports Divers can play an important role by using their skills and experience to support the branch:

**Assistant Dive Manager**

Working alongside a Dive Manager as an assistant (ADM):

- Contributes to the smooth running of diving operations by taking on tasks delegated by the Dive Manager, e.g. logging dive details
- Helps to increase the a diver's knowledge and understanding of dive site conditions and procedures
- Can help with own dive planning considerations

The second important role is being part of:

**The surface support team**

A Sports Diver can offer invaluable help to the Dive Manager and other divers with their

- increased diving experience
- Increased rescue skills

They can contribute support to diving operations which can include surface cover and assisting should a rescue be necessary.

**WHERE TO GO FROM HERE?**

**Go Diving**

- The diving world is your oyster and a Sports diver will gain a wider variety of experience by just going and enjoying their diving
- Variety of experience helps to develop personal skills and techniques in varying conditions
- This will not only increase confidence but also broaden understanding and awareness of diving in general

**Further diver training**

Further training should be considered to support your diving development, or any particular diving interest you may have. These can include:

- The next grade in diver training, the Dive Leader course. This offers a further broadening in diving and dive leading experience over a much wider range of diving conditions, depth and techniques
- Sports Divers who have additionally completed a further 20 dives may attend an Advanced Nitrox Course (classroom and practical) which will enable the use of Nitrox mixes up to 50%
- There are also many other SDCs that cater for particular diving interests. The Branch/Centre may run SDCs but if not, the BSAC publishes an



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**Diving with Rebreather Divers**

If Sport Diver buddies a Rebreather diver

- Dive is planned to
  - The most conservative decompression schedule of the gases being used
  - The most conservative operating MDD determined by either of the gases used
- Must be experienced in the type of diving conditions for the dive
- Must be able to recognise underwater problems pertinent to rebreather diver
- Must be able to perform CBL and surface support on rebreather diver

Rebreather Try Dive, Practice

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**Wider Branch Role**

Assistant Dive Manager

- Helps increase diver's knowledge and understanding of dive sites and conditions
- Can help with own dive planning considerations

Being part of surface support team

- Increased diving experience
- Increased rescue skills



Small image (100x100) showing a diver underwater.

**Where to go from here?**

**Go Diving**

- Gain wide variety of experience
- Develop skills and techniques
- Increase confidence and awareness

**Further training**

- Dive Leader course
- Adv. Nitrox and other SDCs - BSAC Programme of Events (POE)

**Interested in Instructing?**

- Attend the BSAC Instructor Foundation Course

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annual Programme of Events (POE) available from HQ that list all the SDCs being run in the UK by the Regional Coaching teams and BSAC Centres. For overseas branches, the local Coaching Team or BSAC Centre will run/can arrange SDC events

### Interested in becoming an Instructor?

As a Sports Diver and if you are interested in instructing, you can begin training as a BSAC Instructor by attending the Instructor Foundation Course.

## SUMMARY

This lesson has looked at going diving as a Sport Diver including:

- The choice of a broader range of diving and diving buddies
- Taking the role of the dive leader and its associated considerations including that of a role model
- Consideration of both your own and buddy's personal limitations
- The implications of diving with Rebreather divers
- Taking a wider role in the Branch diving by
  - Acting as an Assistant Dive Manager
  - Contributing support to diving operations

And finally, in considering where to go from here, this lesson looked at further training opportunities to extend and broaden your diving skills and interests even further and, if interested, how to begin to develop diving instructor skills.