Technical Safe Diving

Introduction

The contents of this document are not to be interpreted as a set of rigid rules but as recommendations for technical safe diving by the British Sub-Aqua Club (BSAC).

BSAC Technical Diving is basically identified as additional diver specific training that enhances the diver's skills and experience beyond that scoped within the BSAC Diver Training program.

Technical Diving is quantified for documentation purposes into three distinct categories of:

1. Generic Technical Dive Practices
2. Open Circuit Diving (O/C)
3. Rebreathers
    a. Semi-Closed Rebreathers (SCR)
    b. Closed Circuit Rebreathers (CCR)
    c. Rebreathers in BSAC Training

To prevent duplicity of information the generic recommendations apply to all modes of technical diving and should be read in conjunction with your particular method of technical diving. Specific issues are highlighted under the appropriate sub heading.

Although the majority of divers are interested in developing technology, it must be clearly understood that a meticulous approach to both diving equipment and diving practices must be taken when diving with any form of equipment.

In order to promote the safe integration of technical diving within recreational branch diving, this BSAC publication, Technical Safe Diving, has been produced and represents the BSAC recommended practices for safe technical diving. Further copies of this publication are available from BSAC HQ or from the BSAC Web site.

1 Generic Technical Dive Practices

This section identifies with the generic areas of technical diving that all technical divers should adhere to irrespective of what equipment they use.

Adverse diving conditions

Due to the extra discipline and precision required when diving deeper or involved in wreck or cave penetration, adverse diving conditions should be avoided. Examples are heavy seas or strong tidal currents.

Alternative Air Source / Bailout

It is recommended that all divers should carry an alternative gas supply with its own regulator assembly, to provide the following:

- An adequate bailout breathing system in the event that the diver's primary supply suffers a catastrophic failure
- A breathing system to support an assisted ascent to the surface in the event that their buddy's breathing system suffers a catastrophic failure

Divers should satisfy themselves that:

- The system contains sufficient gas to provide for the above capabilities in addition to any planned gas consumption and any likely consumption due to changes in depth, mask clearing etc.
- The gas supply can be isolated in the event of a malfunction.

The capacity of an independent bailout system and the gas mix it contains should be adequate to enable an ascent to be made to the surface from any point during the dive, including any decompression requirements. It is recommended that the capacity allows a significant margin to cater for the significantly increased breathing rate inherent in the stress of a bailout. Incidents have indicated that a breathing rate of between 50 and 70 l/min is not unusual under the stress of a bailout situation. Ideally, the calculations should allow for one third of the bailout gas to be available on surfacing. It is the diver's obligation to ensure that bailout is calculated in the dive planning process and gas is safely managed throughout the dive.

Buddy Diving

It is important all technical divers are self sufficient in the water. However it is recommended all divers be partnered with a diver who could offer assistance in case of an emergency. A full buddy check should be carried out prior to entering the water.

Building Experience

The BSAC strongly recommends that newly qualified technical divers undertake a structured series of dives to progressively build their experience. Subsequent to completing a mixed gas-training course, the BSAC recommends that dive experience using mixed gases should be built up progressively.

Build-up dives

As with all forms of sport diving, when a technical diver has had a lay-off from diving for a period of time, or is planning a dive to a depth significantly deeper than that to which they have recently dived, a planned program of dives

progressively building up to the target depth is recommended. A diver must be physically and mentally dive fit for the depth he or she plans to dive.

This is particularly true of self and buddy rescue skills, which by their nature, are the least regularly used. They should also be revised whenever any change is made to the equipment configuration, such as when additional cylinders are to be carried to cater for mixed gas diving.

Buoyancy

Buoyancy is statistically one of the key issues contributing to DCI. All technical divers should ensure they:

a) Have sufficient buoyancy to be supported on the surface
b) Are practiced and confident at performing decompression stops within +/- 0.5m
c) Are able to maintain neutral buoyancy at all stages of the planned dive
d) Are proficient in managing emergency buoyancy control scenarios, e.g., over inflation, loss of primary gas, faulty equipment, etc.

Checklist

The BSAC recommends that the technical diver prepare their equipment by devising and using a checklist.

Cylinder Pressures

The dive should commence with sufficient gas to conduct the planned dive in all cylinders including bailout gas.

Cylinder pressures should be regularly monitored throughout the dive and it is recommended that

a) O/C divers return to the surface before pressures have fallen to one third of remaining capacity
b) Rebreather divers should return to the surface before the pressure falls below 30bar in any supply cylinder directly connected to the breathing loop. Rebreather bailout cylinders should be capable of allowing the diver to return to the surface with one third of gas remaining in the cylinders.

Decompression

All decompression stops should be carried out using a suitable decompression system, static line, decompression trapeze or a minimum of a delayed SMB.

For the longer decompression schedules the use of a decompression station is recommended as spare gas can be attached to the system and the entire

dive team are together. It also assists the surface team, who only have to monitor one decompression station.

Decompression planning

All dives must be planned using a decompression tool the diver has been trained to use. These could include hard copy tables, PC generated tables or a dive computer. Whatever primary decompression plan is being used the diver must also have a back up plan.

Depth limits

The BSAC recommends:

a) For Oxygen / Nitrogen gas mixes a maximum depth the lesser of 50 metres or the depth at which the partial pressure of oxygen in the mix reaches 1.4bar

b) For Oxygen / Nitrogen / Helium or Oxygen / Helium gas mixes a maximum of 80 metres (see also Equivalent Narcotic Depth)

Dives deeper than 80 metres poses far more complex equipment problems and is outside the recreational mixed gas diving environment. Gas consumption levels at these greater depths means larger and more cylinder requirements. Dives in excess of 80 metres requires a far longer decompression schedule than a recreational mixed gas dive. Dives in excess of 80 metres demand very serious dive planning and logistical requirements including support diver teams, etc. There is also the added potential risk for these deeper dives.

Dive Marshal

The Dive Marshal should be an appropriately qualified technical diver or have an assistant who is for the dive(s) to be undertaken.

The Dive Marshal must know and document:

- Divers gas mixes for bottom, travel and decompression
- Divers Maximum Operating Depth (MOD)
- Divers cylinder sizes for all gases
- Divers planned decompression schedule
- Divers planned decompression technique
- Divers back up plan in case of an emergency
- Rebreather divers absorbent material life and primary set-points
- The Dive Marshal should complete a full dive log

Dive Planning

Technical diving is a complex exercise. It must take into account the various gases to be used at different depths: dive, decompression and run time management, back up plans in case of a gas loss and all this alongside the normal dive planning procedures. This requires a very disciplined diver who has extensive knowledge and excellent in water diving skills to maintain depth and time schedules.

The technical dive plan should consider:

- The 80 metre depth limit
- The MOD (maximum operating depth) of the gases being used
- The divers experience
- The divers current fitness to dive
- A suitable dive platform and experienced skipper
- A safety backup plan for all aspects of the dive in case of an emergency

Diving cylinders

It is vital all gases are analysed prior to the dive and cylinders clearly labelled to show the mixes and maximum operating depths. This practice should ensure divers do not confuse cylinders and that they breathe the correct gas at the correct time and depth.

BSAC recommends the convention of configuring the richest oxygen mix gas to the right hand side to assist gas recognition.

Emergency bail out plans

If a diver loses his travel or decompression gases due to any of a number of reasons (equipment failure, gas loss, etc), the decompression schedule may become very punitive. This is especially true of ineffective off gassing of helium. The decompression schedule would become very long and the diver may not have enough gas to finish the dive or in Northern European waters not able to cope with the cold conditions.

It is vital back up gases are available to avoid this situation. All divers must plan decompression schedules to cover all potential gas failure options and how they can set up spare cylinders in case they need them. These include:

- Written or pre-programmed decompression schedules for longer bottom time than planned
- Written or pre-programmed decompression schedules if the diver is unable to use travel or decompression gases in case of a gas loss or equipment failure
- Spare decompression gas available to the diver in case of a gas loss or equipment failure
- How the divers would access the spare gas in an emergency (spare cylinders on decompression line or cylinders lowered to divers from diving platform)

- Overall duration of emergency decompression considered relative to the expected water temperature
- A diver to surface signalling protocol to facilitate requesting gas or assistance in an emergency

Equivalent Narcotic Depth (END)

The BSAC recommend a suitable Equivalent Narcotic Depth (END) with regard to the dive conditions and a personal narcotic tolerance. One of the major benefits of diving mixed gas is to have a clear head whilst at the maximum depth. 30 metres is generally accepted as a narcosis level a diver can cope with in an emergency situation. Some divers are happy to increase this depth if the diving conditions are better, such as warmer water, better visibility, etc. However good the conditions are, the BSAC recommendation is not to exceed 40 metres but by preference to keep END equal to or less than 30m.

First Aid

If a technical diver is suffering from DCI treat them exactly the same, as you would do for an air diver. Administer oxygen and get the diver to a recompression chamber for treatment.

Always consider the role of the rebreather in First Aid following a DCI incident within the diving party. A rebreather allows prolonged oxygen enriched air to be made available to the conscious casualty.

However, the use of the rebreather should be considered a back-up measure. The first preference would be dedicated oxygen administration equipment using an oro-nasal mask); then the rebreather (high oxygen content but via a mouthpiece) and finally using Nitrox (lower oxygen content and via a mouthpiece). The only time oxygen should not be given is when the casualty is actually showing signs or symptoms of oxygen toxicity.

Gas analysing

All gases must be analysed prior to the dive.

All cylinders must be clearly marked with their oxygen and helium percentages and MOD (Maximum Operating Depth).

The partial pressures of oxygen (PO_2) should not exceed 1.4bar.

The BSAC recommend a suitable Equivalent Narcotic Depth (END) with regard to the dive conditions and a personal narcotic tolerance.

When gas mixes involving helium are used in technical diving, wherever practicable the helium content of the mix should also be analysed by an

appropriate instrument (e.g. helium analyser) as a confirmation of the precise mix.

Gas Mixtures

Technical divers should only use gas mixes for which they hold a recognised qualification:

- Entry level qualifications – Nitrox mixes
- Advanced level qualifications - Normoxic or Full Mixed Gas qualifications

Appropriate safeguards should be put in place to avoid premature gas loss and to ensure that the respective Maximum Operating Depths of all open circuit gases carried are observed.

Gas Requirements

All technical divers should carry the gas they need to complete the dive safely. They should also have a plan to access back up cylinders in case of a gas failure.

Mixed gas

The terminology “mixed gas” can encompass many types of gases a diver could breathe during a dive. However, it is generally accepted that the main gas used is tri-mix. Tri-mix contains oxygen, helium and nitrogen in various percentages. The amount of oxygen in the mix is reduced the deeper the dive. This is to reduce the effects of high partial pressures of oxygen and to ensure the diver does not suffer from oxygen toxicity. The nitrogen percentage is also lowered to reduce the effect of nitrogen narcosis. Once the percentages of the oxygen and nitrogen have been calculated the balance gas added is helium.

Tri-mix containing less the 17% oxygen percentage at the surface, i.e., a hypoxic mix should not be breathed on the surface or in the shallows. Divers using mixtures unable to support life are required to carry additional travel & decompression mixes and switch mixes at the appropriate depth.

Multiple Dives

Technical divers should always track their oxygen uptake. When completing multi-day diving, it is essential to ensure that the NOAA oxygen exposure table recommendations for both CNS and UPTDs are followed.

As with all diving, the BSAC recommendation is one deep dive in a 24-hour period.

Pairing Divers

The best option is to pair technical divers planning the same dive, equipment and decompression schedule.

If pairing air and mixed gas divers together. Both divers must carry out the same decompression schedule to ensure they remain together at all times. This means both divers follow the most conservative schedule, likely to be that of the mixed gas diver.

As with all diving, a thorough buddy check should take place prior to the dive.

Partial Pressure of Oxygen (PO_2)

All gases being used (mixed gas and Nitrox) should not exceed a PO_2 of 1.4bar at the planned maximum depth for each mix.

Safe Diving Practices

All technical divers should be aware that mixed gas diving increases the element of risk. To minimise this risk the mixed gas diver should adhere to the BSAC safe diving practices as well as those of the training agency that they qualified under.

Skills practice

Technical diving requires the diver to be a skilful and competent diver. These skill levels can only be maintained and improved with constant practice.

Surface detection aid

Many divers now carry two DSMBs, often one yellow and one red. The purpose here is to have the red one for general use when making a normal ascent. When a problem arises and they wish to notify the surface cover that they need assistance the yellow and red ones will be sent up together. For dives where a direct ascent to the surface is inadvisable (e.g. dives involving planned decompression stops), BSAC recommends this as a good practice.

It is also recommended that divers carry at least one additional surface detection aid. This could be a signalling flag, stainless steel signalling mirror, personal flares, surface dye, torch, strobe, Emergency Position Indicating Radio Beacon (EPIRB), whistle or audible signalling device.

Training prerequisites

All divers wishing to participate in technical diving should hold a minimum qualification of Sport Diver.

Training and Qualification

All divers must have completed a technical training course with one of the BSAC recognised agencies:

- British Sub Aqua Club (BSAC)
- Technical Diving International (TDI)
- International Association of Nitrox and Technical Divers (IANTD)
- International Technical Diving Association (ITDA)
- American Nitrox Divers International (ANDI)

Wreck Diving

Additional care should be taken if considering the penetration of a wreck to ensure that the hoses are not snagged in confined spaces or damaged by sharp edges.

2 Open Circuit Diving (O/C)

This section highlights specific issues pertinent to technical open circuit diving:

Gas Requirements

All technical divers should carry the gas they need to complete the dive safely. This includes bottom gas, travel gas and decompression gas. They should also have a plan to access back up cylinders in case of a gas failure.

Reserve requirements for bottom gas should be run on the rule of thirds.

Reserve gas for decompression should be calculated as 1.5 times the amount of gas required for the decompression schedule.

Nitrox

A mixed gas diver will be breathing a certain amount of helium at the maximum depth and would have loaded his tissues with this inert gas. For this reason he needs to off gas during the ascent (decompress) and switching to a Nitrox mix (which does not contain helium) will speed up this process. The mixed gas diver will normally be using two Nitrox gases, one weaker oxygen mix as a travel gas and one stronger mix for the shallower but longer decompression stops.

3 Rebreathers

This section examines key areas pertinent to the diving of rebreathers:

Ascent

A rebreather diver should ascend slowly to allow proper venting of the breathing loop and to avoid becoming positively buoyant.

Boats

Increased care must be taken when manoeuvring a boat in the vicinity of rebreather divers as they may produce no, or very few, obvious bubbles. Boathandlers should be aware that a rebreather diver may surface unexpectedly, especially just after the initial descent. The boathandler should therefore patrol the dive site at a safe distance to enable an unplanned ascent by the rebreather diver.

The rebreather diver should deploy a delayed SMB before surfacing unless they are returning up a fixed datum.

The suitability of a boat as a diving platform and also the stowage possibilities for the rebreather to ensure adequate protection of rebreather units (e.g. hoses and cylinder valves) should be considered.

Breathing

It is recommended that rebreather divers make a conscious effort to breathe freely and normally. Many open circuit divers skip breathe, whether consciously or unconsciously. This practice will lead to carbon dioxide retention and is highly dangerous when applied to rebreathers.

Pre-dive breathing checks should be conducted prior to entering the water.

Bubble Check

As early in the descent as possible but preferably no deeper than 6m, a bubble check should be performed to identify potential leakage.

Buddy Diving

It is important to ensure the rebreather diver is partnered with a buddy who can assist them in the event of a problem. Therefore, the BSAC recommends that, in order of preference, the buddy of a rebreather diver should be:

To 40 m maximum;

- Another rebreather diver using the same type of rebreather (i.e., CCR with CCR or SCR with SCR)
- Another rebreather diver using a different type of rebreather (i.e., SCR/CCR mix)
- An open circuit diver.

From 40 m to 80 m;

Within this depth range rebreather dives will involve the use of gas mixes including helium and hence the above order of preference is modified to:

- Another rebreather diver with an appropriate mixed gas qualification using the same type of rebreather.
- Another rebreather diver with an appropriate mixed gas qualification using a different type of rebreather.
- An open circuit diver. Note: If diving below 50m the open circuit diver will also require an appropriate mixed gas qualification.

If the buddy is not to be a rebreather qualified diver then:

- The buddy of a rebreather diver (whether SCR or CCR) should be, as a minimum, a qualified Ocean Diver with their DO's consent.
- For dives to greater than 20m but less than 35m, the buddy should be a minimum of Sport Diver
- For dives to greater than 35m, the buddy should be either a minimum of Dive Leader or a qualified Sport Diver holding an appropriate deep diving certificate, e.g., normoxic tri-mix and diving on appropriate gas mixes and being suitable equipped.
- For dives to greater than 50m the buddy should additionally hold an appropriate mixed gas qualification from a recognised Training Agency.
- The DO (or DM acting on behalf of DO) should ensure that the diver who will buddy a rebreather diver is;
    - Experienced under the current diving conditions (i.e. depth, site and weather)
    - Capable of recognising the conditions of hyperoxia, hypoxia and hypercapnia
    - Capable of performing a rescue (CBL and surface support) on the rebreather diver in the case of an emergency
- The buddy of any rebreather diver should carry an independent bailout (i.e. redundant) breathing system. The capacity of this independent system (e.g. pony or twin set) should suit the dive profile of the dive being undertaken.
- The buddy should carry a DSMB (or SMB as appropriate) and at least one other surface detection aid
- The buddy check procedure should be modified to accommodate the rebreather layout and any controls the buddy may need to operate.

CO_2 Absorbent Material

It is imperative that for all rebreather diving the manufacturer's recommendations regarding both the type of absorbent material(s) and its effective duration are followed.

Absorbent material should be stored and disposed of according to the manufacturer's instructions.

Its important to note that long car journeys, bumpy boats trips, airplane flights and anywhere where there is vibration can have an effect on the packing of the absorbent material, possibly causing settling or ‘channelling’. Both of

these effects can adversely affect the performance of the absorbent material. This impact can be minimised by packing of the absorbent material as late as is practicable before the dive commences.

Decompression

The available entry-level training for rebreather diving incorporates limited decompression using Nitrox as the breathing gas in rebreathers. Normoxic and Full Mixed Gas rebreather training courses, available from recognized Training Agencies, provide qualifications involving more extended decompression diving.

The BSAC recommends that when diving a rebreather for dives involving decompression, the maximum planned decompression requirement should not exceed that permitted by the unit manufacturer and/or the Training Agency Certification held by the Rebreather diver.

For the decompression phase of the dive, the maximum PO_2 should be limited to 1.4bar.

Equipment Standard

Each model of rebreather is designed by its manufacturer to operate under a specific set of conditions and using specific gas mixes. These conditions may differ not just from manufacturer to manufacturer, but also from model to model. Rebreather divers should ensure that they fully understand and observe the performance limits of their particular equipment. There is a growing range of independently produced modifications for rebreathers. Before applying any such modifications to their rebreathers, divers should understand that any such modification extends the equipment beyond the design parameters envisioned by the manufacturer. Any such modification is therefore entirely at the discretion of user who needs to satisfy themself that the modification is not detrimental to the performance of the equipment.

As part of the buddy check, the buddy of the rebreather diver should clearly understand the implications of the particular configuration of rebreather being used.

Hygiene

Rebreather divers should always disinfect the breathing loop in accordance with the manufacturer's recommendations.

Maintaining Breathing Loop Volume

The BSAC firmly believes that all rebreathers should be designed and manufactured as standard with an automatic means of maintaining an adequate breathing loop volume during the descent, to minimise the task loading to the rebreather diver.

The manual addition of gas to maintain the breathing loop volume is required when an automatic diluent addition valve is not fitted, isolated or fails. Under such circumstances a slow descent is recommended so that gas addition and buoyancy control can be managed without excessive task loading. The PO_2 in the breathing loop should be monitored to avoid excessive values during descent.

Monitoring PO_2 or FO_2

The BSAC firmly believes that all rebreathers should be designed and manufactured with a facility for monitoring the PO_2 or FO_2 within the breathing loop as standard. Where such a system is fitted to a rebreather, the PO_2 or FO_2 reading should be checked regularly and appropriate action taken if it is not at the expected value.

Oxygen Cells

Oxygen cells fitted to rebreathers should be changed at the interval recommended by the manufacturer.

Pre-dive checks

Pre-dive checks should be conducted in accordance with unit specific training including pre-breathing the unit prior to entering the water.

Rebreather Diver Rescue

Rebreather divers should ensure that their buddy understands the operation of their rebreather. The provision of adequate buoyancy to recover the casualty to / support the casualty at the surface in the event of a rescue should be emphasised. This may involve the need to close off the rebreather mouthpiece to counter the negative buoyancy incurred by loss of gas from the breathing loop.

Rebreather Divers

Divers wishing to use rebreathers should complete a training course provided by a recognised Training Agency. The training course should be specific to the particular rebreather that they wish to use and should be recognised by the manufacturer of that equipment.

Divers wishing to extend their use of rebreathers to include gas mixes other than Nitrox should complete a further unit specific training course, provided by a recognised Training Agency, covering the use of such gas mixes.

For diving within the BSAC, qualified rebreather divers should register a copy of their highest rebreather qualification (entry level initially and, if subsequently upgraded, for mixed gas also) with BSAC Headquarters.

Recognition will be sent in the form of a BSAC Qualification Record Book certificate.

a) Semi-Closed Rebreathers (SCR)

Ascent

A slow controlled ascent is important to avoid a drop in the Partial Pressure of Oxygen (PO_2) in the breathing loop to hypoxic levels. It is therefore recommended that whenever possible ascents are made via a shot line or some other fixed datum.

A SCR diver should flush the breathing loop before commencing an ascent, to ensure that the PO_2 is at a maximum and try to maintain this PO_2 during the ascent profile.

Flow Rate

When using a Semi-Closed Rebreather (SCR) the flow rate and gas mix recommended by the manufacturer for the planned dive should always be used.

The flow rate should be tested prior to every dive to ensure it is within the manufacturers prescribed limits.

Surface Swims

If a semi-closed circuit rebreather diver has to make a surface swim, the BSAC strongly recommends that, in order to avoid the potential of hypoxia, the swim is completed using an open circuit regulator. If the gas within the bailout cylinder is planned to be used for a surface swim, then the pre-dive gas planning should take this into account when selecting the bailout cylinder.

b) Closed Circuit Rebreathers (CCR)

Batteries

Any batteries in a rebreather should be changed or charged at the recommended intervals.

Partial Pressure of Oxygen (PO_2) / Set Point

The BSAC recommends the following maximum partial pressures of oxygen / set points for the breathing mix for CCR diving:

- 1.3 bar set point during the dive
- 1.4 bar set point during decompression.

When diving using gas mixes other than Nitrox, the depth exposure and decompression obligations can result in significant exposure to high partial pressures of oxygen and its attendant CNS toxicity. For such diving use of a partial pressure / set point lower than 1.4bar / 1.3bar should be considered.

c) Rebreathers in BSAC Training

The help understand the relevant use of rebreathers by either students, divers or instructors the following tables have been developed:

- Table 1 - General diver training
- Table 2 - Use on Skill Development Courses (SDCs)
- Table 3 - Use on Instructor Training Scheme (ITS) events

Each table by row examines a course or training level in the portfolio, if the rebreather is appropriate for use by a student, a diver or candidate and concludes with an associated remark.

Table 1 – Rebreather use in General Diver Training.

Training Level	Use of Rebreather		Remarks
	Trainee / Diver Grade	Instructor	
Ocean Diver trainee	Student not qualified for rebreather use.	Instructor to use O/C for instructional dives.	Limited by Ocean Diver standards
Agency crossover to Ocean Diver	Student not qualified for rebreather use.	Instructor to use O/C for instructional dives.	Limited by Ocean Diver standards
Ocean Diver	A qualified rebreather diver must ensure that they fully brief Ocean Diver on basics of operation and method of rescue	N/A	Limited to Ocean Diver standards
Sports Diver trainee	Student not qualified for rebreather use.	Instructor to use O/C for instructional dives. An instructor may use a rebreather for assessment dives.	Limited by Sport Diver standards
Agency crossover to Sport Diver	Agency crossovers must be able to demonstrate competency in the basic rescue techniques of CBL and AV prior to being allowed to dive with a rebreather diver.	Instructor to use O/C for instructional dives. An instructor may use a rebreather for assessment dives.	Review agency standards
Sport Diver + Nitrox Qualification	Minimum entry-level requirement for rebreather courses. Certified rebreather divers enabled to dive up to level of their qualification.	N/A	40m or 80m limit applies depending on unit and qualifications
Dive Leader trainee	If trainee uses an approved rebreather as their preferred dive equipment, then the rescue assessments and experience dives can be made using a rebreather.	Instructor/ assessor can wear a rebreather.	40m or 80m limit applies depending on unit and qualifications
Advanced Diver trainee	If AD trainee uses a rebreather as preferred dive equipment, then qualifying dives, rescue scenarios and experience dives can be made using unit.	Instructor/ assessor can wear a rebreather.	40m or 80m limit applies depending on unit and qualifications
First Class Diver candidate	Freedom of choice on FCD exam	Instructor/ assessor can wear a rebreather.	40m or 80m limit applies depending on Unit and qualifications

Table 2 – Rebreather use on Skill Development Courses (SDCs).

Course	Attendee		Staff Instructor or Boss		Remarks
	Min Entry Qualification	Rebreather Use	Qualification Level	Rebreather Use	
Lifesaver	Ocean Diver	Yes – if qualified user, i.e., SD with rebreather certification	OWI	Yes – provided students are SD or higher	The students should be taught on their primary diving equipment
Advanced Lifesaver	Sports Diver	Yes	OWI	Yes	Candidates should dive on primary dive equipment
Practical Rescue Mgt	Sports Diver	Yes	OWI	Yes	Useful to observe that the principles of rescue management are equally applicable irrespective of dive equipment used
Dive Planning & Marshalling	Sport Diver	Yes	OWI	Yes	Useful to learn to Marshal different group pairings
Search & Recovery	Sports Diver	Yes – if experienced rebreather user	OWI	Yes – if experienced rebreather user	Experienced user: 25 hours rebreather experience
Advanced Diving Techniques	Sports Diver	Yes	OWI	Yes	Techniques taught are applicable to all
Basic Nitrox	Ocean Diver	No - entry level to SCR training	OWI	No	No in-water practical
Advanced Nitrox	Sports Diver	No - entry level to CCR training	OWI	No	O/C course only
Extended Range Diver	Sports Diver & Nitrox	No	OWI	No	O/C course only
Full Face Mask	Sports Diver	No	OWI	No	Course does not accommodate rebreather full face masks
Disability Awareness	Sports Diver	No	OWI	No	O/C course only
Marine Life Identification	Ocean Diver	Yes	OWI	Yes	Rebreather benefits of being closer to marine life
Marine Biology	Sports Diver	Yes	OWI	Yes	Rebreather benefits of being closer to marine life
Underwater Photography	Sports Diver	Yes	OWI	Yes	Rebreather benefits of being closer to marine life
Marine Archaeology	Sports Diver	Yes – if experienced rebreather user	NAS qualified instructor	Yes	Experienced user: 25 hours rebreather experience

Table 3 –Rebreather use on Instructor Training Scheme (ITS) events.

Course	Attendee	Staff (Including Boss)	Remarks
Instructor Foundation Course	No	No	Preparing students to teach O/C
Open Water Instructor Course	No	No	Preparing candidates to teach O/C up to DL level
Practical Instructor Exam	No	Yes – Boss No – Instructor	Instructors may be required to perform remedial teaching on open circuit
Advanced Instructor Course	Yes	Yes	Advanced level teaching – students should be confident to teach using a rebreather
Advanced Instructor Exam	Yes	Yes	Advanced level exam - candidates should be confident and competent to instruct using a rebreather
National Instructor Exam	Yes	Yes	Candidates should be confident and competent to teach at the Instructor Trainer level using a rebreather