



# INSTRUCTOR PLAYBOOK

GUIDE FOR CONFINED AND OPEN WATER TRAINING

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# ABOUT THIS MANUAL

The Instructor Playbook has been designed as a resource to help you run both the confined water and open water sessions for RAID Open Water 20, Explorer 30, Advanced 35 and Master Rescue.

It contains information, broken into several sections, starting with:

- An overall introduction.
- A detailed look at skills and drills common to almost all training programs (pointing out how and why RAID does things a little differently).
- An overview of common mistakes (critical and not so critical) that students will make sooner or later in your classes.
- Your role as an instructor at all levels of training – even during technical programs.
- Some tips on using tools, assistants.
- The environment to develop a supportive learning environment.
- The specific take-home messages, skills, and fundamental deliverables of each of the programs covered in this document.

Good luck in your personal development and we hope this manual is helpful to you as a RAID Instructor, certifying the best, most confident, and safest divers possible

RAID Product Development Team.

# INTRODUCTION

Let's assume that you are a new instructor about to take your first batch of "bright-eyed" students on a journey to another world. They will be excited and nervous, and the odds are good that you are too. Don't worry, you ARE going to do just fine; simply follow the guidelines and procedures your IE covered in your IDP and demonstrate the mastery of presentation and in-water briefings, skills demonstrations and post-dive debriefing you demonstrated to your RAID examiner during your IE.

Your challenge is not to control yourself – that will come instinctively as you log more and more classes completed – your challenge will be to "discipline" your students and to make thinking, safe and controlled divers out of them. This manual was designed to help you to do that.

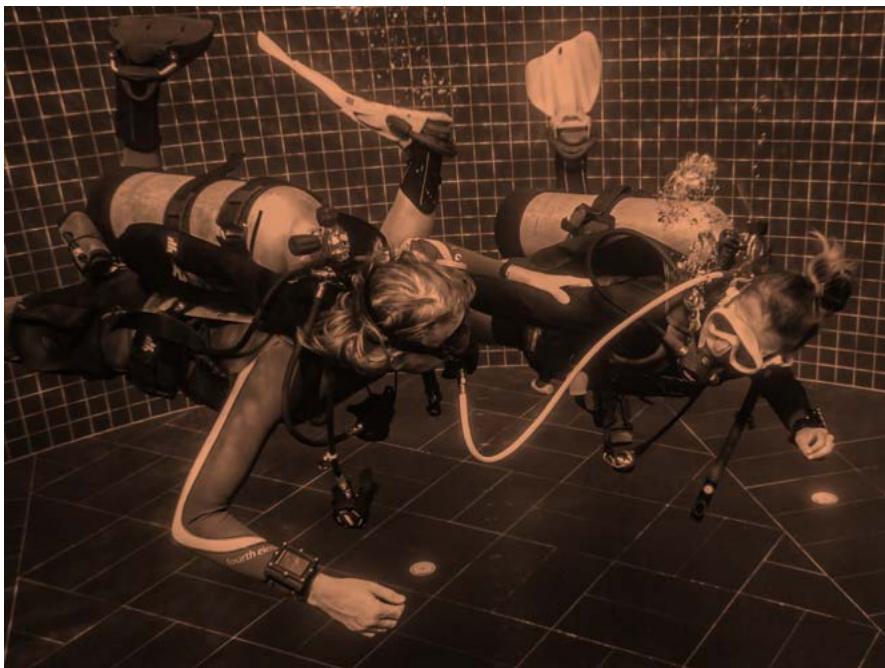
When new divers first climb into dive gear and venture into the water, they are usually totally preoccupied with the sensations associated



## PREPARING TO TEACH

with the new equipment they are wearing, its function and management, whether or not it's going to work properly, and if they are going to make a fool of themselves. Listening to you and any assistants you may have working with you, will not be their primary concern. For many of them, what you're saying will not even be their secondary focus. Be patient. REPEAT critical instructions. Confirm they understand what it is you need them to do. Pay attention to your student's responses and take the time to listen. This is the best first step in risk management.

By working through the online manuals, quizzes and exams, your students have proven enough familiarity with the academics, and associated book learning to be able to learn to dive. They need to build confidence, competence, muscle-memory, and comfort, and they need to create a strong sense of being in control and building trust in their buddy and the team system. Focus their attention on these things from the very start.



Finally, never take for granted that your primary role – outside of protecting their well-being – is to set a good example, to be aspirational if you will, and to guide your students in how to dive the best way possible. This isn't something learned in a book; it's a completely practical skill which every single student will acquire in their own fashion and at their own pace. And quite possibly while doing so, each student's behavior is going to be slightly different from their neighbor's, and each of them will adapt to the completely strange circumstances of scuba diving in their own unique way.

Set the ground rules. Give them room. Be empathetic. Be safe.

## PREPARING TO TEACH

### INSTRUCTOR DEMOS AND POSITION

When you are demonstrating skills or drills, position yourself so that every student has a clear view of you and your demonstration. Work slowly and deliberately. If there are several distinct steps, and usually there are, make it clear when you transition from step one, to step two and so on. When teaching, position yourself between students and "danger." That may simply mean that you are between them and the pool's deep end. But be mindful of drop-offs, anything that can entangle, marine life, sharp objects such as corroded metal or broken wooden spars, and so on. It is also very important to ensure that you and your student divers are not having a negative impact of the fragile marine environment. If in doubt, move to a better location.

When students demonstrate to you, position yourself so you can see their eyes and their facial expression. Be ready to donate gas, be prepared to react quickly to prevent someone from bolting for the surface, be ready to gently control a student's position in the water column. Remember too, that while working face-to-face with one student, you also must be mindful of the other class members. This is one area where a qualified assistant helps. When teaching under direct supervision, ensure that you or your assistant can see all of your students and lend assistance where needed. If the environment of other factors has an effect on being able to see students or for them to see you, consider reducing ratios as per the RGDS.

**RAID NOTE:** Maximum student to instructor ratios are based on perfect conditions and are not suggested default class sizes.

**RAID NOTE:** Never work with students when conditions like currents, tides, swell or poor visibility etc. make conditions dangerous.

### INSTRUCTOR STUDENT AGREEMENT

The relationship between you, your students, and the dive center must be based on good relations and sound business practice. In most cases, when you are working through a RAID DC as an instructor on staff, there will be safeguards in place to protect you, the DC and your student. This contact may be all you need but be sure that your students fully understand what they can expect from you and what you expect from them. This would include being punctual, professional and everyone's responsibility to show up for classroom sessions and dives; and what happens if someone is late or doesn't show. You might also make sure that students understand that many students require more than the minimum numbers of dives shown in standards. For example, OW20 takes four or more, so you should explain if 'make up' dive sessions are covered in their fees or not. If a student requires more, you should be clear to discuss extra costs.

### PASS OR FAIL

It is important that as an instructor you understand that it is possible for a student to fail a RAID class – even a basic class. The truth is that diving simply isn't for everyone, and as much as we might like to share it with everyone, some people unfortunately, simply do not have what it takes to become a diver.

RAID divers earn their certifications, and those certifications have no price associated with them. One of the first things you should explain to your students is that they are paying for your time, experience, guidance, and support... but their certifications are free and cannot be bought.

With that said, you need to be fair and objective, in all your assessments at every level you teach.

Fairness and objectivity are interrelated and have to be part of all student evaluations, for skills, competency, and behavior in the water and around the dive site. Your instructor slates and the related evaluation sheets are designed to help you keep your assessments on target, but you should always ask yourself if an assessment you've made reflects or is influenced by personal chemistry you may have with the candidate; positive or negative. As instructors (ITs and Examiners too), we have to be careful to avoid any leeway in assessments and evaluations because we like or dislike, agree with or disagree with the personal values, lifestyle or political views of a student. Always refer back to what the student needs to achieve, whether this is academic understanding or a particular skill. RAID training materials provide measurable and achievable objectives that need to be achieved.

As importantly, it would be unreasonable to expect your students to understand what constitutes a passing grade, unless you have clearly demonstrated how things should be done and that you have made clear in pre-dive briefings, in-water demonstrations, and post-dive debriefings, the steps you expect to see





them do when mastering/demonstrating the skill, and the outcome (the result) they have to arrive at. This is particularly true of the skills you are going to run through with them in confined and open water, but there are some social and behavioral skills that you many also have to consider.

One of the most difficult decisions you are going to make as an instructor is determining when a student is or is not going to make the grade.

### **Let's define our terms.**

A pass is the easiest of course. The student performs each stage of a skill correctly, without hesitation on command, while maintaining situational and buddy awareness. And of course, when assessing students, the criterion for an Open Water 20 Diver, for example, by default will be less strict than for a divemaster candidate. The divemaster candidate is called on to show their skill level at "demonstration level." In other words, it could be put on social media under the RAID Banner with a caption that says: "This is how it's done." If you have Junior OW students who can perform at that level, you have done an amazing job.

Unfortunately, a fail is a fail. But fail carries such a pejorative aura which is often a disincentive for a student who's trying hard but not quite there to put in a little extra effort. RAID does not have degrees of passing such as provisional passes or the like. The assessment process is black and white; however, you may occasionally find yourself hesitating when deciding whether a student has earned a pass or not. There may be just one skill demo that was not performed adequately. If you have hesitation, your student has not earned a pass, but on the other hand, they haven't really failed. They simply need more time. Perhaps one or two dives. So, when you talk to them about their performance, rather than being a fail, they simply have not passed yet.

At RAID, we set the bar high, but we do not do so to make sure more students don't pass our courses. We set it high because we want to make sure RAID students become above-average divers, and as one of our instructors we want you to reject the notion of "Good Enough." Ninety-nine percent of the difference is time. When you have students, who are not at a passing grade and you have not given them enough time to practice. The "failure" is actually yours. Meeting RAID standards for Open Water 20 in four confined and four open water dives can be tough for some students. Plan for at least one, possibly two contingency dives for some students on every course.

**Failure has so many negative connotations related to it, yet success without challenge has even more.**

Which brings us to the definition of a real failure. Perhaps a logical starting place is to determine if there is such a thing as a critical skill, and there is. Take a look at your instructor slates. Every one of the skills printed there is deemed to be critical, because each is a required skill and "mastery" of them is required for the student to pass and move on. Therefore, a critical failure is a student's failure to do ANY skill correctly and at a passing grade after exhaustive attempts. A critical failure may mean you have to schedule remedial work with them, even to the point of making space for them in a later class. (No adjustment of ratios in that event, by the way.) As for adjustments in your remuneration, that is something you must discuss with the student.

You'll read about critical drills later in this document but now, finally, we arrive at the type of critical failure that isn't going to be fixed with more practice or more time. You will set your personal standards for what is acceptable in your classes and what is not. This may vary somewhat from region to region, country to country, but there are certain types of behavior that RAID suggests strongly should never be tolerated and that may require you to expel a student. A universal example is bullying. Students who resort to any behavior that threatens a supportive and comfortable learning environment, should be warned and if that doesn't stop it, must be expelled from the group. Obviously, social mores, local guidelines and laws take precedence but check the RGDS for the agency's stance.

## TEACHING SKILLS

### THE ART OF TEACHING NEUTRAL BUOYANCY (AND TRIM)

From this dive on, you must coach your students to begin the process of mastering neutral buoyancy and to demonstrate skills and drills in mid-water and off the pool bottom. You may already have a method of teaching these critical and interrelated skills, but the following short document goes into some detail about a way to teach them that's simple and that seems to work for the majority of new students.

#### STAGE ONE

Although when we talk about a diver's buoyancy and her trim, we're describing different "states of being" – in essence, a diver's position and attitude in the water – it's difficult to understand one without understanding the other. Moreover, when teaching Buoyancy and Trim to a new diver, it's easier to do so as a combined phenomenon.

Neutral buoyancy is relatively easy concept to grasp – something heavy sinks, something light floats, something in between stays midway between the two – and with minimum coaching even a new diver can very quickly grasp the concept of using lung volume to move themselves up and down in the water column. With just a little practice (and direction and time) a new diver can learn very quickly how to moderate their inhalations and exhalations to fine-tune buoyancy.

Teaching neutral buoyancy can be part of the first confined water session or the beginning of session two. The steps are reasonably simple to follow.

Make sure the student is correctly weighted – partially filled cylinder (70 bar/1,000 PSI) – able to float with just the top of the head on the surface with a full lung of air and an empty BCD. Correct weighting is critical in regard to success with teaching buoyancy.

Swap tanks with one that's full (this is a great opportunity to explain that 'gas has mass' and that there are several KG / pounds difference in the weight of a full tank in the water and an empty one). Now have students lie on the bottom of the pool and gradually add gas to their buoyancy cell until they are able to hang in the water more or less motionless.

When they can do this, and when they can feel the difference made by inhaling and exhaling, it's time to move on to trim.

#### STAGE TWO

Trim is a key concept that coupled with buoyancy can unlock one of the real joys of scuba diving: the sensation of weightless flight underwater. However, if it's not clearly understood that lack of knowledge will prevent a diver from hovering completely stationary regardless of how well her buoyancy is controlled.

The goal of getting a diver in trim can be likened to getting a ruler to balance on a straightedge. To make that happen, we need to move the ruler until it's exactly in the correct position; half its weight on one side of the straightedge, the other half on the other side. The analogy with a diver is perfect. However, as a diver we have to balance (and move) weights, tanks, fins, and so on until we can balance in the water on a "straight edge" (somewhere around our navel usually) without falling over. A diver "in trim" can hover without standing on fin tips or having to put a finger down to stop standing on their head.





Working with students patiently, it is possible to arrive as a completely acceptable trim and balance within minutes. Put time aside to work individually with each student. Have spare weights which can be clipped to a diver's harness. Emphasize working slowly and keeping hands and feet still. Have them in control of buoyancy and trim before moving into deeper water. Explain that small changes – wetsuit thickness, thicker thermal undies, different fins, different cylinders – can have an enormous effect.

## SKILLS AND DRILLS

We should start by explaining the difference between a skill and a drill.

In the simplest terms possible, skill is a diver's ability to choose and successfully perform the correct technique in a timely fashion and with minimal effort in response to a demand, whether that demand is anticipated or ad hoc. For example, taking your primary regulator out of your mouth and offering it to a buddy in the correct orientation (ready to breathe) for an out of air diver is a skill, a basic and critical one. The demand in most cases could be a flashcard held up by an instructor, or the standard slash across the throat hand-signal from a diving companion, or a buddy simulating panic and grabbing the second stage regulator from their buddy's mouth.

A skill is intended to achieve a specific objective. In the example above, delivering life-support to a team-member. A skill is acquired and must be learned. And almost without exception, a skill is perishable, and must be practiced regularly for a diver to be confident their ability to perform it at an acceptable level.

Related but different is a drill. Drills are repetitive training activities which may involve several inter-related skills deployed in a well-defined order or sequence. They are intended to stimulate all or part of a complex set of movements and may involve the use of specific pieces of equipment. For example, a long hose gas-sharing drill as a response to the slashing hand-signal would involve a related set of skills from each diver involved:

1. Diver one signals "Out of Air" OOA
2. Both divers close the gap between them
3. Diver two offers diver one their primary second stage
4. Diver two makes physical contact with diver one as a control move
5. Diver one takes the offered second stage and begins to breathe from it
6. Diver two frees up their long hose
7. Diver two puts their backup regulator into their mouth and breathes
8. Diver one orientates the offered long hose and controls its routing
9. Divers signal "Okay"
10. Divers call dive and point to safe exit
11. Divers get into exit sharing air position and ascend
12. Throughout exercise, both divers maintain position in water column and maintain situational awareness



Very similar to a skill, a drill is intended to achieve specific objectives; however, a drill usually has a complex set of inter-related objectives. In the example above, delivering life-support to a team-member, but additionally following a set procedure that has a proven track record and has the highest possible chance of a successful and organized outcome. In this case, that both divers make it safely to the surface in a controlled fashion.

A drill is the thoughtful application of a complex set of acquired skills. In most cases, the skills associated with a drill are demonstrated in a specific order, to build muscle memory and fluidity. Drills are used in RAID training to help reinforce muscle memory and in-water competence for students.

## SKILLS EXPLAINED

For each of the RAID programs covered in this instructor guideline, every dive has at least one specific goal and one or more related skill or drill. Your slates and wetnotes are great tools to help you identify what they are. But there are also many skills that are common to every program. These are the skills and drills that divers should do as a matter of course, and at this stage in your student's transition into certified divers, now's the time to make them a habit. For example, gear assembly, pressure check, buddy check, S-Drill, and so on are things that happen before or during every dive.

For each skill – in each of the three course sections (Scuba Diver & Open Water 20, Explorer 30 & Advanced 35 and Master Rescue) – there is a stated **objective**, a **value**, a brief outline of **how it's done** and **training notes** to you as the instructor on the common problems you may encounter and what to prepare for when teaching so that you can avoid potential problems.

Integrate these into your pre-dive briefings with students so that they begin to look at skills with these things in mind: What exactly am I doing: Why am I doing it: How can I do it the best way. You might want to introduce the concept of “best practice” to your students at this point, especially if you're asked why a skill or a drill is done a certain way with specific steps in a specific order.

Best Practice boils down to a tried and true method. Thousands of divers have decided to do it this way and following that proven method will save time and generally get predictable results.



In most cases, the objective and value have been written in a “voice” directed at the student themselves. This has been done so that you could read these sections out loud to your students during the pre-dive briefing. You might also find it useful to explain to them that an **objective** is a measurable outcome, literally: “when you demonstrate this skill, this is what you should have achieved or accomplished or mastered”.

A **value** is why a student should work at achieving, accomplishing or mastering the skill. You can explain in essence: “being competent and comfortable doing this skill, will help you avoid this. In many cases “this” carries a negative outcome that can range from a leaky mask to having nothing to breathe.

It is important to note that the **How it's Done** step is not definitive, it is just a guideline as to how the performance requirement can be met. Equipment, environmental as well as personal variations will decide how to best demonstrate and perform a skill to your students and how they will demonstrate it to you.

The training notes section often contains tips directed at you, the instructor, pointing out things to make you aware of potential student problems, little tweaks or suggestions that can make a skill easier for a student, and things for you to pay attention to during your assessment of a student's performance and when setting up the dive.

## BRIEFINGS AND DEBRIEFINGS

### CONFINED WATER BRIEFING

As explained in the IDP Guide, you must brief your students on the following:

- What they will be doing: state the skills they will be learning (Objective).
- Why they are doing it (Real world value).
- How they will be doing it and signals associated with the skill and sub steps (Demonstration).
- Where they will be doing it (Organization).
- Relevant safety aspects for the skill.
- Reinforce with your students that they are preparing for their open water dives.

It is a great idea to start defining protocols that even when using a pool, can prepare divers for the open water environment, for example:

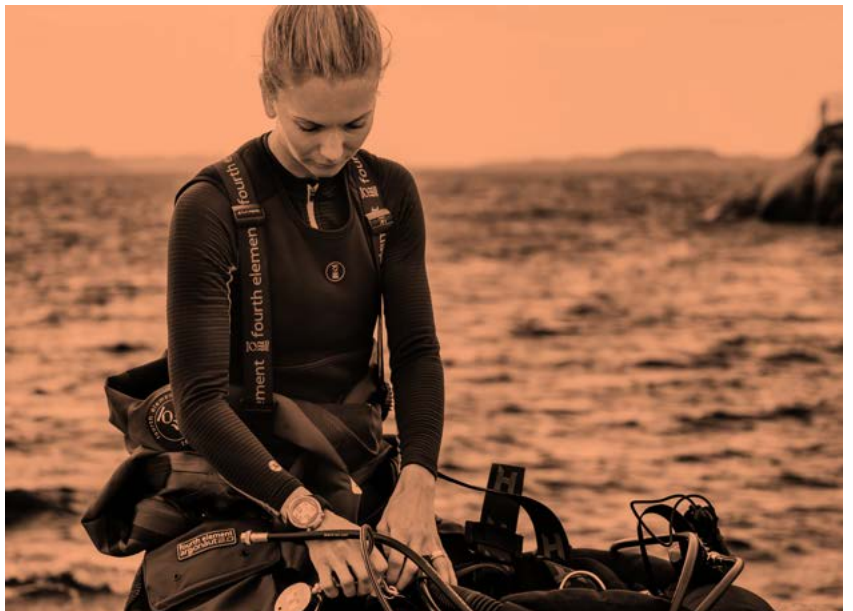
- Students should work in buddy teams.
- An area should be demarcated to work in which could simulate the deck of a boat.
- One of the pool sides is appointed as the side of the boat, and only that side can be used for support.
- No entry into the water without supervision.
- In water, have a float with a line down to a weight on the bottom.
- Advise that, in water, the mask must remain on the face.
- Students must wait for your directions before attempting any skill.

You must have all relevant skills available to you so that referring to them is easy, and so that you can show these to the students when necessary. The RAID wet notes are a great tool for this

### GENERAL DIVE DEBRIEF

Perhaps the most important task for both your students and for you is the debriefing. It is an opportunity for you and your students to look back on the dive and agree on what went to plan, what was a surprise (good or bad), and what was learned or gained on the dive.

All divers – whether one buddy pair, a three-person team, or multiple divers working together for a common goal such as a wreck survey or photo session – benefit from a constructive discussion about “how it went” after their dive. The real value is that the habit of debriefing every dive helps divers understand of their personal limits, their progress as a diver and their value as a trusted dive buddy.



It is often better to deliver the debriefing soon after surfacing. If water conditions and circumstances allow, you could begin debriefing sessions floating on the surface. Often though, this is either impractical or potentially dangerous, so best to find a spot where everyone can see each other and where everyone is comfortable and warm.



## GENERAL COMMENTS

Some instructors have students “run” a general debriefing session and they simply guide the discussions and prompt students to follow a logical flow, for Example: “How were the surface checks?” “How did the S-Drill go?” “How was your buddy awareness and communications at depth?” “Did the dive go as planned?” “What was learned?”

Once your students have had their say, comment and correct any wrong assumptions, encourage, and support. Overall, promote the habit of detailed debrief that promote a positive learning exchange, and if necessary, take notes.

**RAID NOTE:** The debriefing above details a general group dive debriefing and does not remove the need for a structured individual skill debriefing as outlined in the IDP Guide and practiced with your IT on your IDP.

## GENERAL COMMENTS

You will not find the following list of skills on your instructor slates or in the student materials, and so they are not obligatory and therefore have no bearing on pass/fail evaluations. However, they have been included here because you may find them helpful when structuring student sessions. Some of these are “advanced” skills, nevertheless, they are included here for YOUR knowledge and education.

### LONGHOSE ADDITION TO ITP

In some quarters, RAID is known as “the longhose agency.” We earned that nickname because we have promoted the use of a longhose in recreational training programs using single-tank kit since we started teaching at that level.

While it is certainly not a requirement in our recreational level programs, it is recommended, and students have the option to have their primary second stage attached to longhose in place of the traditional length LP regulator hose.

The primary reason for RAID to do this is that a longhose facilitates gas sharing. This is evident when practicing S-Drills and OOA scenarios; but more importantly, in the event of a real gas sharing event outside of training, it has been shown that gas sharing with the recipient breathing from a longhose regulator is more practical, allows divers to maintain the correct orientation and trim in the water, and is more likely to result in a safe ascent and more controlled at a time of increased diver stress.

The following configuration “tip” and skills explanation has been lifted from RAID’s Advanced Wreck manual. If you choose to work with your students to encourage longhose use, please note, that discussions on the pros and cons, and safe deployment of a longhose can easily be included as part of the Equipment Workshop. There are also excellent videos in the RAID TV channel on YouTube.

#### Single Tank Long Hose Configuration

The single tank, long hose configuration is essentially the same as the single tank recreation configuration; however, the primary second stage hose has a longer hose of approximately 2 m / 6 ft 6 inches. (For single-tank use, and especially for smaller divers, a hose approximately 1.5 m / 5 feet is perfectly acceptable.)

As discussed in the previous section. Using this configuration, the primary regulator is routed from the first stage down the right-hand side behind your shoulder, under your right arm and across your chest over your left shoulder, around behind your neck and over your right shoulder into your mouth. Any excess hose is stowed underneath a canister style housing, special pocket or under a waist strap.

The backup regulator (Octo) is on a shorter hose (approximately 560 mm / 1 foot 10 inches) routed from the first stage over the right shoulder and sits below the diver’s chin by way of bungie cord attached to the second stage mouthpiece.

## GENERAL COMMENTS

Using this configuration in an out-of-gas situation, the donor supplies their long hose primary regulator to the out-of-gas diver and transfers to the Octo around their neck for their own gas supply. For wreck diving and other more advanced types of diving, this configuration is far more streamlined through the water and reduces the chance of hoses getting snagged or caught on part of the wreck. If correctly managed it provides a longer hose when donating the primary regulator to another diver in an out-of-gas scenario. It also ensures the donning diver can locate their alternate air source easily and quickly.

In more advance forms of wreck diving, where there is a need to pass through a restriction while sharing gas, the choice of a 2 m / 6- 7 ft long primary hose will give you enough length for the diver sharing gas to pass through restrictions while the donor follows single file behind. This configuration is not only used in advanced wreck diving, but possibly for use if you were intending to take training for cave and deep diving in the future.

Additionally, in this configuration, the low-pressure inflator length is matched so it routes to the inflator mechanism without any extra length looping out from the diver presenting a catch hazard. The high-pressure hose with your dive computer and / or gas pressure gauge is often shortened to between 610 mm / 2 ft to 2 ft 2 inches so it runs cleanly down the divers left side and is clipped onto or near a D-ring at the left hip on the BCD.

**RAID NOTE:** When penetrating a wreck on single cylinder or using twins or sidemount the 2 m / 6.5-foot hose is a mandatory piece of equipment.

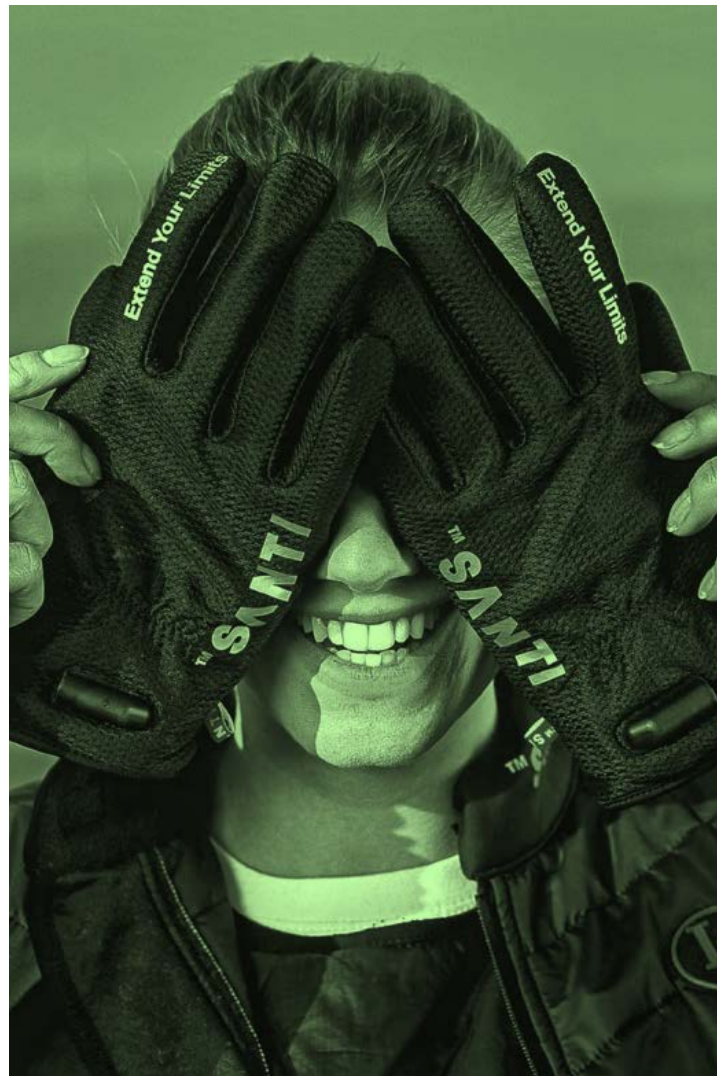
## GAS SHARE PROCEDURES (OPTIONAL)

**Objective:** Complete a gas share with the buddy using the long hose.

**Value:** This skill is the primary response in the unlikely event that a diver suffers a catastrophic gas loss or terminal regulator failure and is unable to breath from their own gas supply.

### How It's Done:

1. Diver one signals "Out of Air" OOA
2. Both divers close the gap between them
3. Diver two offers diver one their primary second stage
4. Diver two makes physical contact with diver one as a control move
5. Diver one takes the offered second stage and begins to breathe from it
6. Diver two frees up their long hose
7. Diver two puts their backup regulator into their mouth and breathes
8. Diver one orientates the offered long hose and controls its routing
9. Divers signal "Okay"
10. Divers call dive and point to safe exit
11. Divers get into exit sharing air position and ascend
12. Throughout exercise, both divers maintain position in water column and maintain situational awareness



### PICKING AN ENTRY AND AN EXIT (APPROPRIATE TO THE CONDITIONS AND ENVIRONMENT)

**Objective:** You will be able to identify a safe spot to get into and out of the water.

**Value:** Choosing a safe entry free of obstructions, such as rocks and weeds, that is deep enough to enter without hurting oneself, and that is not swept by strong current will help keep you and your buddy safe and ready to begin a stress-free dive. Similarly, before you start your dive, you should identify a spot that will be easy for you and your buddy to exit the water.

**How it's Done:** Make no assumptions. Check your entry point, even in a pool, even from a boat platform or gunnel, especially when entering from a dock or jetty. Also make sure there are no currents and no other boats nearby.

Look for spots that are clear of entanglement from weeds and kelp, that have room for you to wait for your buddy to enter, and that will not obstruct entry for other dive teams. Most of all, be safe.

Although this process was originally created as part of the Dive Site Evaluation process, there is nothing to prevent you from introducing this in a swimming pool to prepare students for open water dive site evaluation. The most common diver injuries are slipping and falling when fully kitted up or dropping equipment on a foot when walking to and from the water's edge because of loose gravel or mud or a wet pool deck. A close second in terms of avoidable injuries is jumping into shallow water.

Reinforce the idea that part of a good pre-dive check includes your students being sure their buddy agrees where to get into the water and where to get out. And, as a backup, to always have an alternative exit just in case conditions change.

### EXITING THE WATER

Exiting the water will depend on the environment where your students will be practicing. You will demonstrate the various methods to your students. You can:

- When exiting the water using a ladder, remove fins, keeping the equipment on, and walk or climb up the stairs.
- If you are on a boat with a lift, brief divers on protocols for being lifted out of the water.
- For pool and RIB exits, remove your equipment in the water (starting with your weight belt), hand it up to the divemaster, and use fin propulsion to exit.
- Walk up to the shore.

Remind students that once out of the water, their equipment is now "full weight," and to walk carefully.

Much like entering the water, it is vitally important that the buddy teams are safe. Falling from a ladder onto another diver can cause serious injury, so the exit area needs to be clear. When exiting, divers must keep their regulator in their mouth and should have their BCD's inflated so that they will float should they fall back into the water.

When boat diving, the skipper decides when divers may exit the water. Only begin exiting on the skipper's command.

**TRAINING TIPS:** To maintain control, have your Divemaster exit first to assist divers with moving in full equipment on dry land. As the instructor, it is good practice to remain in the water and vigilant in case there are any problems prior to exiting the water.



### LOGGING DIVES USING THE RAID ONLINE LOGBOOK

**Objective:** Using the online logbook, create a record of training dives made during a RAID scuba diving course.

**Value:** Logging the dives that students make during their RAID training programs is an essential part of the quality assurance process. Primarily a dive log is for the benefit of the diver giving them a tangible reminder of past dives, and a convenient way to track their personal progress as a diver. However, it also forms part of the audit trail for the student, instructor, DC and headquarters staff to make sure standards were followed and met.

**How it's Done:** You must log your training dives. The preferred method is to register them into your personal profile on [www.diveraid.com](http://www.diveraid.com). To do so, navigate to the appropriate area (My Dive Logbook), choose the <Log A New Dive> option, and complete the form found there.

**TRAINING NOTES:** Your students MUST log their dives. It is part of RAID's QA process and certification should not be issued until this is done. If the online logbook is not used, then an alternative method must be used (a paper logbook or the log feature of a PDC) and those data uploaded to the student's RAID profile. You can also explain that students can also log training dives using the RAID App under the logbook section.



### SAFETY STOP

**Objective:** You will perform a safety stop at 5 meters/15 feet for at least three minutes while maintaining buddy contact and demonstrating good buoyancy control.

**Value:** Primarily the value of this skill is to develop control over buoyancy and trim, but it has the added benefit of helping to assist your body to eliminate inert gas (nitrogen or helium) before surfacing.

**How it's Done:** Begin to slow your ascent speed from 9 meters a minute (about 30 feet per minute) as you and your buddy approach the 5 meters/ 15-foot mark. Signal hold depth when you get to the safety stop at approximately 5 meters / 15 feet and hold position for a minimum of three minutes. The optimal position for the divers in horizontal trim, facing each other, within arm's length.

Explain the importance of a diver to be able to pause their ascent in still open water (or a mild current) without holding on to an anchor line of other aid, such as a rock. (An obvious exception being holding a spool/reel attached to an SMB.) Start to coach them to think of every dive being a "decompression" dive and that every dive should end with a safety stop.

## POST DIVE CARE - EQUIPMENT DISASSEMBLY

**Objective:** Perform an equipment disassembly, clean (and store) equipment appropriately.

**Value:** Taking the time and making the effort to disassemble, clean and store dive equipment with care and attention to detail, protects it and makes it more likely to be fit for use for the next dive.

**How it's Done:** Equipment certainly needs to be rinsed with fresh water each day after a saltwater dive. But it also needs to be cared for after every dive. Here's a list of steps that may help to illustrate one way to get it done.

- Disassemble the scuba unit.
  - Turn off the valve on the cylinder.
  - Release all the pressure (purge a second stage.)
  - Remove the low-pressure inflator hose.
  - Loosen the regulator connecting point (DIN or Yoke)
  - Loosen the low pressure inflator hose from BCD.
  - Remove the entire regulator, dry the dust cap with a dry cloth or towel, and securely fit the dust cap to the first stage. Do not let water enter the first stage of the regulator.
- Rinse the entire regulator (first stage, primary and alternative air sources, all hoses, and the gauges).
- Rinse the BCD both inside and outside the bladder and hang it up to dry.
- Refill the cylinder after every dive to be ready for the next dive. For storage, leave cylinders partially filled.
- Allow the equipment to dry thoroughly out of the sun.
- Review the readings from the dive computer.



## OPEN WATER 20 – OVERVIEW

RAID's Open Water 20 program covers several different courses.

**These include:**

- Try Dive
- Junior Scuba Diver
- Scuba Diver
- Junior Open Water
- Open Water 20

Be familiar with these definitions and how they related to standards and skills.

### SWIM TEST

In order to make sure that candidates for open-water training are comfortable in the water and have reasonable cardio-vascular fitness, there is a swim test. However, students can have multiple attempts to get this test “right.” This test must be completed successfully before Open Water Dive 2. The most important thing for you to judge as their instructor is that the candidate is happy and safe to be in the water, and not that their swimming skills are a competitive level.

Students must swim 200 meters/200 yards using any stroke or combination of strokes or swim 300 meters/300 yards using a mask, fins, and snorkel. There is no time limit to this part of the test. They must also tread water for 10 minutes.

### NITROX TRY DIVE - OPTIONAL

You may offer students a NITROX try dive during their Open Water 20 program. To do this you must following:

- Ratios and age limits must adhere to the RGDS.
- You must personally analyze all student cylinders with the student present, watching and taking part. The Student must write the mix, MOD and name onto a decal or tape adhered to their cylinder where it is visible.
- The Nitrox fill log must be completed.
- Explain what is meant by the terms MOD and TOD and why they are so important.
- Basic oxygen toxicity and depth limitations due to CNS must be discussed.
- The planned depth must NOT exceed 18m / 60ft and the nitrox mix must not exceed 34% fraction of oxygen.
- Demonstrate to students how to adjust the NITROX dive computer and load the correct gas mix that is being used and how the depth (PO<sub>2</sub>) alarms work.
- Show students how to find out the adjusted NDL and CNS limits in their nitrox personal dive computer.
- Ensure student know the limitations and the requirement to control their depths.

It is recommended that you conduct the Nitrox Try Dive at a dive site which has a bottom no greater than the planned depth. Not a wall dive for example where depth is more difficult to control with a group.

### CONFINED WATER DIVE 1 – SKILLS LIST

Appropriate for Try Dive, Junior Scuba Diver, Scuba Diver, Junior Open Water and Open Water 20 students.

- Gear assembly – First time\*
- Weighting for snorkeling\*
- Weighting for Scuba\*
- Pre dive buddy checks\*
- Shallow water entry\*
- BCD and LPI Introduction\*
- Breathing underwater\*
- Monitoring Instruments\*
- Regulator clearing\*
- Regulator recovery and clear\*
- Gas sharing stationary\*



- Gas sharing swimming
- Partial mask flood and clear\*
- Mask remove, replace and clear
- Descending while equalizing
- Swimming and trim underwater
- Ascent
- Snorkel skills

Confined water dive 1 is one of the most important dives in a diver's career. This for many is their first ever experience underwater and as an instructor, it is important that you approach this dive as such. Use as much caution as you would for a Try Dive.

Although confined water skills are extremely flexible as to when you demonstrate and evaluate each skill, there are some skills that must be completed prior to swimming into deeper water or starting to teach divers neutral buoyancy.

**These skills are identified with an asterisk (\*) in the confined water dive 1 skills list above.**



### EQUIPMENT WORKSHOP

This will be the first time the students get hands-on-experience with their equipment.

Gather your students around you so they can clearly see your SCUBA equipment. Advise them that they will be starting with disassembled SCUBA equipment and it'll be their first task to assemble it.

Start by showing them all the points and unique features of the gear they'll be using. Name all the components and identify the role each part plays. Show them the gas flow route and the process of gas within the SCUBA equipment to the diver. Have a unit stripped down and another assembled for easy reference.

Ask the students to identify the parts on their own unit as they assemble their gear.

**The following items need to be included and emphasized:**

- Describe the component parts of a regulator in detail and describe how it works (an overview).
- First stage.
- Hoses including:
  - Routing.
  - Different hoses and their uses.
  - Checking hoses for damage.
- Second stage.
  - Orientation.
  - Purge.
  - Mouthpiece.
- Backup regulator. (role, placement, function)
- Describe the SPG (console).
- Demonstrate how a pillar valve and hand wheel work.
- Show how the SPG behaves when the valve is not fully open.
- BCD including:

- Inflator and deflator mechanisms.
  - Dumps valves.
  - Overall features.
- Weight system.
  - Integrated.
  - Weight belt.

### CONFINED WATER DIVE 2 – SKILLS LIST

**Appropriate for Junior Scuba Diver, Scuba Diver, Junior Open Water and Open Water 20 students.**

- Pre dive buddy checks.
- Appropriate entry.
- S-Drill.
- Descent.
- Monitor Instruments.
- Neutral buoyancy hovering for 30 seconds.
- Neutral buoyancy swim.
- No mask swim, replace and clear – 15m / 50ft.
- Disconnect LPI hose – underwater.
- BCD oral inflation - surface and underwater.
- Free flow regulator for a minimum of 15 seconds.
- Gas sharing ascent.
- Weight removal and replacement on the surface.

### CONFINED WATER DIVE 3 – SKILLS LIST

**Appropriate for Junior Open Water and Open Water 20 students.**

- Pre-dive buddy checks.
- Cramp relief.
- Tired diver Tow.
- Deep water descent.
- S-Drill.
- Monitoring Instruments.
- Failure scenarios:
  - Failed Instruments.
  - Feeling uncomfortable / unwell.
  - Out of gas (gas share ascent).
- Swimming for trim and fun.
- Ascent.
- Remove and replace scuba unit on the surface.

### CONFINED WATER DIVE 4 – SKILLS LIST

**Appropriate for Junior Open Water and Open Water 20 students**

- Pre dive buddy checks – High Five for example. Be aware of potential language difficulties when teaching students whose first language is not English... the sense of an English-language mnemonic may be entirely lost on them.
- Entry.

- S-Drill. (within 3-5 meters of the surface)
- Descent deep water
- Monitor Instruments.
- Gas sharing swimming 15m / 50ft
- Weights remove and replace underwater.
- Scuba unit remove and replace underwater
- Swimming for trim and fun.
- Ascent.
- SMB use on the surface.
- SMB deploy underwater (if required in your area).

Flexible Skill.

- Controlled Emergency Swimming Ascent.

### OPEN WATER DIVE 1 - SKILL LIST

Appropriate for Try Dive, Junior Scuba Diver, Scuba Diver, Junior Open Water and Open Water 20 students.

Maximum depth of 12 meters / 40 feet

1. Correct weighting.
2. Snorkel remove and replace while stationary or while swimming.
3. S-drill.
4. Controlled Descent with reference.
5. Monitor Instruments.
6. Regulator clearing.
7. Regulator recovery and clear.
- 8.



### OPEN WATER DIVE 2 – SKILL LIST

Appropriate for Junior Scuba Diver?, Scuba Diver, Junior Open Water and Open Water 20 students.

Maximum depth of 12 meters / 40 feet.

1. Buoyancy check at the surface.
2. Descent with reference.
3. S-Drill.
4. Monitor Instruments.
5. Mask full flood and clear.
6. Mask remove, replace and clear.
7. Regulator recovery and clear.
8. Neutral buoyancy, Swimming and Trim
9. Gas sharing ascent.

## OPEN WATER DIVE 3 – SKILL LIST

Appropriate for Junior Open Water and Open Water 20 students.

For Open Water 20 divers the maximum depth is 18 meters / 60 feet.

For Junior Open Water divers the maximum depth is 15 meters / 50 feet.

1. Complete all assembly check.
2. Buoyancy check at surface.
3. Controlled Descent without reference.
4. S-Drill.
5. Monitor Instruments.
6. Failure scenarios:
  - a. Instruments not working.
  - b. Feeling uncomfortable / unwell.
  - c. Missing Buddy.
  - d. Oral inflation of BCD underwater.
7. Swimming and trim.
8. Ascent with safety stop.

### RAID NOTE:

Dive Flexible Skills. These skills are listed after dive 4 and must be considered by you and incorporated into the various dives, taking into account the dive site and environmental conditions etc.

## OPEN WATER DIVE 4 – SKILL LIST

Appropriate for Junior Open Water, Open Water 20 students.

For Open Water 20 divers the maximum depth is 18 meters / 60 feet.

For Junior Open Water divers, the maximum depth is 15 meters / 50 feet.

1. Buoyancy check at surface
2. Controlled Descent without reference
3. S-Drill
4. Obtain neutral buoyancy near the bottom
5. Monitor Instruments
6. Failure scenarios:
  - a. Instruments not working
  - b. Feeling uncomfortable / unwell
  - c. Low on air
  - d. Out of air
7. Swimming and trim
8. SMB Deployment on the surface
9. Compass navigation underwater

### OPTIONAL SKILLS

1. Cramp relief on the surface
2. Tired diver tow on the surface



3. Remove and replace scuba unit - surface
4. Remove and replace weight system – surface
5. SMB deployment underwater
6. Controlled emergency swim ascent

**RAID NOTE:** For Scuba Diver, skills 1, 2, 4 must be done on dive 2.

Optional skills must be mastered in confined water before being demonstrated in open water.



## OPEN WATER 20 SKILL DESCRIPTIONS

### ASCENT

**Objective:** Perform a controlled, safe ascent and establish positive buoyancy on the surface.

**Value:** Ascending safely is of vital importance, and following proper procedures increases safety. Rapid ascents can lead to serious injury and decompression issues.

**How It's Done:**

1. Signal your buddy that you are ready to ascend.
2. Check all of your instruments, especially the computers and depth timers which will measure your ascent rate.
3. Extend the BCD hose above your head. This will allow expanding gas to easily escape and will also protect your head.
4. Look up to ensure you can safely ascend without obstruction.
5. Ascend slowly to the surface no faster than 9 meters/30 feet per minute and maintain visual contact with your buddy.
6. After you are on the surface, fully inflate your BCD to achieve positive buoyancy.

**TRAINING NOTE:** Ascents can be one of the most dangerous phases of any dive, especially for new divers or divers using new equipment configurations or diving deeper. Control is paramount. Not only do you need to control your own ascent but that of your student as well.

### BCD AND LPI INTRODUCTION (SHALLOW WATER)

**Objective:** Inflate and deflate your BCD on the surface using both the LPI and oral methods.

**Value:** Knowing two ways to inflate your BCD on the surface, allows you to float effortlessly, and relax because there's no need to tread water. Knowing how to deflate it, will allow you to control your descent rate during your descent.

**How It's Done:**

**Your instructor will demonstrate how to inflate:**

- With the LPI and Orally.
- When using the LPI method:  
Press the BCD inflation button to add air into your BCD in short bursts in a controlled manner until you can float comfortably. You will seldom fully inflate your BCD.
- To deflate, hold the LPI hose above your head and depress the exhaust valve. As you deflate the BCD, you will start to sink, and the surrounding water pressure will help deflate the BCD.

Once you have finished deflating, inflate the BCD, and see how it lifts you up in the water.

**TRAINING NOTE:** Emphasize students want to be ready to inflate the BCD as soon as they are on the surface, before they do anything else, including removing the second stage mouthpiece.

**RAID NOTE:** Students should seldom fully inflate the BCD, unless they are over weighted or the BCD does not provide enough lift, in which case they must get a BCD that is adequate.

### BCD ORAL INFLATION – SURFACE AND UNDERWATER

**Objective:** Respond to a simulated BCD failure by orally inflating the BCD while you are on the surface and while underwater.

**Value:** In the event of an LPI failure, you can easily orally inflate your BCD while you are underwater and on the surface.

#### How It's Done:

**Follow these steps if you are on the surface.**

1. Before you go underwater, take a breath of fresh air.
2. Blow about one-half of your air into the small BCD hose mouthpiece while depressing the dump button.
3. Release the button.
4. Repeat these steps until you are floating.

**Follow these steps if you are underwater.**

1. Take a breath from your regulator.
2. Blow about one-third of your air into the small BCD hose mouthpiece while depressing the dump button.
3. Release the button.
4. Repeat these steps until you are neutrally buoyant.

### BREATHING UNDERWATER

**Objective:** Master breathing slowly and deeply underwater using a scuba regulator without holding your breath and without holding onto the regulator.

**Value:** It is important to become comfortable with the sensation of breathing underwater and you need to be able to keep the regulator in place without using your hands, to fully enjoy scuba diving.

#### How it's Done:

1. At first it may seem unusual and many new divers take some time to become comfortable with it.
2. Hold the regulator mouthpiece firmly in place using your lips and gently place your teeth around the “bite plate.”
3. Do not hold onto the regulator second stage with your hands
4. After a few minutes, you'll start to relax.
5. Remember to breathe deeply and slowly and do not hold your breath.

**TRAINING NOTES:** The first time your students use a regulator underwater some will take to it immediately and others will not.

Remember to remind them to breathe slowly, deeply, and continuously. And repeat as often as possible “Never hold your breath.”

Breathing through a regulator is an odd experience and for people unused to “mouth breathing,” which is most of us, the sensation of breathing underwater may take some students several minutes to get comfortable with. Give them time. Coach them not to hold onto

the second stage with their hands. Watch out for students who bite through the rubber bite plate. Explain the correct way to keep the mouthpiece in is to be firm but gentle.

### CLEAR FULLY FLOODED MASK

**Objective:** Clear a fully flooded mask underwater.

**Value:** If you have a fully flooded mask this skill will show you that you can clear it underwater and be safe on the dive.

**How It's Done:**

1. Slowly flood your mask by pinching the mask skirt.
2. Allow the water to fully fill the mask.
3. Clear the mask exactly as you learned in the "Partially Flooding Your Mask and Clearing It" skill.
4. If you don't have enough breath to do it in one go, breathe in from your regulator and have another go.

### COMPASS NAVIGATION UNDERWATER

**Objective:** You will learn how to use a compass for a simple outbound setting and a 180-degree reciprocal course

**Value:** By setting a course on your compass you'll learn how to stay on course and will begin the leaning process to run search-pattern basics

**How It's Done:**

1. Begin on land with a simple North, East, South and West (cardinal points) orientation of the planned dive site. Help orient the students with the surroundings
2. Underwater, orientate the compass and ensure it is level.

**Teaching Tips:**

- Ask students to check it is level by moving the compass in a horizontal plane from side to side.
- The compass needle should hold position pointing to North and rotate as the student turns from side to side.
- Either the instructor or student sets a bearing with the compass bezel and the student navigates out for a predetermined kick cycle and then follows the reciprocal (180o) home. The buddy may be used to count kick cycles.
- Reciprocal: Swim a reciprocal along the bottom by heading the compass off the bearing.

### CONTROLLED DESCENT WITH REFERENCE

**Objective:** Perform a controlled descent while using a decent line as a visual reference, while keeping track of your dive buddy and remembering to equalize early and often while descending.

**Value:** A safe descent is of vital importance to your safety and comfort. Following proper procedures means you are prepared for the dive before you leave the surface, and you remain in control during the descent. During the descent, you will need to equalize. Equalizing your ears, sinus air spaces, and mask will make your descent comfortable and safe. Failure to equalize may cause injury or barotrauma.

**How It's Done:**



**Descending is done in combination with equalization.**

**On every descent, you will need to equalize your ears.**

1. Assume a vertical position while floating in deep water.
2. Signal to your buddy that you are ready to descend.
3. Orient yourself to the reference line tied to the buoy.
4. Confirm that the regulator is in your mouth and breathing efficiently.
5. Check that your instruments (computer, depth timer, and SPG) are all set correctly and functioning properly.
6. Hold the BCD power inflator above your head, and gently release air from the BCD bladder in a controlled manner.
7. Start to equalize using one of the methods and techniques you learned from your instructor. Don't forget to equalize your mask's air space by gently blowing through your nose.

**As you descend:**

1. Breathe normally.
2. Equalize every 1 meter/3 feet.
3. Signal that you are OK and confirm with your buddy.
4. Move into horizontal trim but maintain visual contact with your buddy and the line.
5. On the bottom make yourself neutrally buoyant so you don't hit the bottom.

**TEACHING NOTES** You must use an ASCENT AND DESCENT LINE (for control) down to a maximum depth of 12 meters / 40 feet. The students must be within reach for the entire descent.

**PROTECT THE MARINE ENVIRONMENT** – don't allow them to crash to the bottom!

## CONTROLLED DESCENT WITHOUT REFERENCE

**Objective:** Perform a controlled safe descent without a visual reference, equalizing early and often while descending under control and while keeping in contact with buddy.

**Value:** A safe descent is of vital importance to your safety and comfort. Following proper procedures means you are prepared for the dive before you leave the surface, and you remain in control during the descent. During the descent, you will need to equalize. Equalizing your ears, sinus air spaces, and mask will make your descent comfortable and safe. Failure to equalize may cause injury or barotrauma.

**How It's Done:**

1. Assume a vertical position while floating in deep water.
2. Signal to your buddy that you are ready to descend.
3. Orient yourself to the reference line tied to the buoy. (This is WITHOUT reference???)
4. Confirm that the regulator is in your mouth and breathing efficiently.
5. Check that your instruments (computer, depth timer, and SPG) are all set correctly and functioning properly.
6. Hold the BCD power inflator above your head, and gently release air from the BCD bladder in a controlled manner.
7. Start to equalize using one of the methods and techniques you learned from your instructor. Don't forget to equalize your mask's air space by gently blowing through your nose.

**As you descend:**

1. Breathe normally.

2. Equalize every 1 meter/3 feet.
3. Signal that you are OK and confirm with your buddy.
4. Move into horizontal trim, but maintain visual contact with your buddy
5. On the bottom make yourself neutrally buoyant so you don't hit the bottom.

**TEACHING NOTE:** You must have an ASCENT AND DESCENT LINE handy, but your students should not be able to see it. The students must be within your reach for the entire descent.

**PROTECT THE MARINE ENVIRONMENT** – don't allow them to crash to the bottom! Environmental protection is even more of importance during non-reference descents!

### CONTROLLED EMERGENCY SWIMMING ASCENT (CESA) – FLEXIBLE SKILL

For Scuba divers, this skill can be performed in dive 2. For OW20, this skill can be performed in dives 2 to 4.

**Objective:** Perform a simulated controlled emergency swimming ascent (CESA) for a distance of 9 meters/30 feet.

**Objective for confined water:** Perform a simulated Controlled Emergency Swimming Ascent for a distance of 9 meters/30 feet while emitting a continuous aaaah sound.

**Value:** in the unlikely event that you find yourself in an out-of-gas situation and your buddy is too far away to lend assistance, you will need to make an emergency ascent to the surface.

**How It's Done:** Performing a CESA can be done in any of the confined water dives after your first one. This skill can only be demonstrated between 9–12 meters/30–40 feet.

1. Simulate taking a final breath from the cylinder.
2. Elevate the BCD hose to release the expanding gas during ascent. Elevating the hose also protects your head.
3. Swim diagonally (to the surface) for 9 meters/30 feet, while slowly exhaling all the way, keeping an open airway, and emitting a continuous aaah sound.
4. Do not swim faster than 9 meters/30 feet per minute.
5. Orally inflate the BCD upon arrival at the surface and establish positive buoyancy.

**TRAINING NOTE:** In open water, this skill is optional and is not a required skill to be completed for certification. It is mandatory that the CESA be mastered in confined water only.

- If completed in open water, students must perform the skill as practiced in confined water, completing a vertical ascent from a depth of no deeper than 9 meters / 30 feet and not less than 6 meters / 18 feet.
- It is necessary that an ascent line be **firmly** attached to the bottom **secure** enough to stay put if a diver tugs on it. The line must be a sturdy (12 mm is suggested) and the surface float should have sufficient buoyancy that a diver cannot pull it below the surface.
- You must have control of the student and be in physical contact with the ascent line and the student so that at any time you can either slow the student's ascent or stop the ascent, to prevent injury.
- Ensure the student maintains an open airway throughout this skill.
- Ensure the ascent is controlled and NO faster than 18 meters / 60 feet a minute.

**REMEMBER...** The preferred option is to avoid an out-of-air situation altogether. However, in the event it does happen to you, it is best to use an alternate air source that is supplied by your buddy or another diver. But if your buddy or another diver is not close to you, a CESA maybe your last resort.

### CRAMP RELIEF (SURFACE)

**Objective:** Respond to a simulated cramp for either you or your buddy.

**Value:** Cramp can occur easily when SCUBA diving and knowing how to respond will allow you to continue your dive in comfort.

**How it's done:**

You may experience this in your leg, and if you do, stop, relax and pull the tip of the fin towards you, thus stretching out the leg muscles.

If your buddy has leg cramp, place their heel on your shoulder, lock their knee down and massage the affected area.

Continue to swim slowly and the muscle will recover. If cramps are persistent consult a medical doctor.

Muscle cramps can be a sign of dehydration. Explain to students that good hydration is a function of a healthy diet/lifestyle and drinking a bottle of water immediately before a dive is NOT the correct way to hydrate. Proper hydration means drinking the recommended volume of water EVERY day.

Some divers also find eating a banana before diving helps prevent muscle cramps. Bananas are a good source of potassium. But they'll also give you magnesium and calcium. That's three out of four nutrients you need to ease muscle cramps. Key nutrients to avoid cramps are potassium, sodium, calcium, and magnesium. They're called electrolytes. Research the topic or better yet, ask a nutritionist for their opinion and advice.



## DESCENDING WHILE EQUALIZING

**Objective:** Students must perform a controlled and safe descent from the surface to the dive's target depth while equalizing early and often.

**Value:** To dive, we have to descend safely and comfortably while paying attention to our buddy, our instruments, our surroundings and the feedback for our ears and other air spaces to prevent personal injury. Failure to attend to these things may result in, buddy separation, going too deep too fast, becoming disoriented, and, most critically, suffering barotrauma (damaging your eardrums for instance).

**How it's Done:** Descending properly is a combination of control and equalization.

**Here are the steps you should follow.**

1. Assume a vertical position while floating in deep water.
2. Signal to your buddy that you are ready to descend.
3. Orient yourself to the entry/exit point and also to where you will descend.
4. Confirm that the regulator is in your mouth and breathing efficiently.
5. Check that your instruments (computer, depth timer, and SPG) are all set correctly and functioning properly.
6. Signal "OK" to start descent to your buddy and wait for their response.
7. Hold the BCD power inflator above your head, and gently release air from the BCD bladder in a controlled manner.
8. Start to equalize using one of the methods and techniques you learned from your instructor. Don't forget to equalize your mask's air space by gently blowing through your nose.

**As you descend:**

1. Breathe normally.
2. Equalize "early and often" (at least every 1 meter/3 feet and certainly before any discomfort).
3. Change attitude from upright to horizontal.
4. Signal that you are OK and confirm with your buddy.

**TRAINING NOTE:** The advice to students to "equalize early and often" can never be overstated. Emphasize that any level of pain is unacceptable and totally unnecessary; discomfort and pain is a sign the diver has descended without adequate equalization. Tell students that if they feel discomfort, they must halt their descent, ascend a little, equalize, and try again. In the event that someone is unable to equalize, they must signal "abort dive" and ascend with you and their buddy.

Descents, especially for new divers can be dangerous. It is vitally important to stay in control of all your divers. Consider putting in descent lines or using the bottom contour to control your divers. Uncontrolled descents can lead to barotrauma, loss of buddy, loss of reference and of course injury due to impacting the bottom.

## DISCONNECT LOW-PRESSURE INFLATOR UNDERWATER

**Objective:** Respond to a simulated BCD low-pressure inflator (LPI) failure by disconnecting and reconnecting the BCD feed while underwater.



**Value:** If an inflator hose should malfunction or leak and let air uncontrollably into the BCD causing it to inflate, the diver can easily disconnect the hose and dump the excess volume in the BCD to establish neutral buoyancy.

### How It's Done:

1. Pull the BCD connector backward to release the LPI hose from the BCD inflator.
2. Establish neutral buoyancy.
3. Let your buddy know what is happening and prepare to simulate an ascent.
4. If directed to do so by your instructor, orally inflate the BCD as a response to disconnecting the LPI.
5. Reattach the LPI hose.

**TRAINING NOTE:** It's not unusual for students to have problems reconnecting their LPI (low-pressure inflator) hose. The trick of course is to have the bayonet fitting's collar fully open (pulled back completely). There are small rubber flanges available as a third-party add-on. These fit over the standard collar and make the process much easier. Intended for use with cold-water drygloves they are a boon even in warm water.

## ENTRY (APPROPRIATE TO THE CONDITIONS AND ENVIRONMENT)

**Objective:** Perform an entry appropriate to the conditions, your experience and your dive plan. This skill should familiarize you with the steps required to safely perform a sitting entry, a giant stride, a backward roll, and shore entry.

**Value:** Different circumstances and environmental conditions (such as deep water, shallow water, current, or waves) each require a different approach. and it's critical that your dives begin with you and your equipment under control, so that you will not injure yourself or your buddy.

**How it's Done:** Your instructor will demonstrate various entries during your course. Each of the main techniques has its place and advantages depending on the conditions. **In each case, the most important things to remember are:**

1. Check the surroundings for other divers and obstacles
2. Secure loose gear such as hoses, consoles, and spare regulators
3. Hold your mask and second stage in place
4. Make sure you have sufficient air in your BCD or buoyancy cell to float on the surface with your head above water

**TRAINING NOTE:** Demonstrate to your students a seated entry, a giant stride and a backward roll, and explain the appropriate time for each. As a bonus and if conditions allow, also show them a surf entry.

Make sure that when doing a giant stride, your students check area is clear of other divers, rocks and other obstacles, and that when they take the stride, they are looking forward and not down at the water. Tempered glass is strong, but a mask could shatter if it hits the water with the full force of the entry.

## SHALLOW WATER ENTRY

**Objective:** Enter the water appropriately and safely in shallow water.

**Value:** Since this will be your first water entry, a shallow water entry ensures you have maximum control and safety.

## OPEN WATER 20 SKILL

**How It's Done:** In water where you can stand up in (the shallow end of a swimming pool for example):

1. Have your buddy pass you your equipment.
2. Put on your equipment and adjust it so that you are comfortable.

**TRAINING NOTE:** Avoid a common mistake with any entry but especially a slow Shallow Water Entry, and show your students a FREE-FLOWING regulator in the water and how to simply turn it down or place the finger over the rubber bite in order to create back pressure and stop the free flow.

## FAILURE SCENARIOS

**Objective:** Respond correctly to various failure scenarios while underwater.

**Value:** In the unlikely event you experience a failure while underwater, you will be able to respond appropriately and make a decisive decision to maintain your safety.

**How It's Done:**

- Instruments not working.
  - Identify the instrument that not working.
  - Initiate ascent procedures
  - If the depth gauge or computer is not working, then you need to monitor your buddy's depth gauge.
- Feeling uncomfortable or unwell.
  - If you experience light-headedness, shortness of breath, nausea, visual disturbance, twitching, dizziness, and/or irritability.
  - Check the depth and gas pressure.
  - Take two or three full, deep breaths.
  - Advise your buddy.
  - Ascend.
- Missing buddy.
  - The buddy will ascend 2m/6ft.
  - Complete a 360 degree turn while looking for the buddy.
  - If not located, then initiate ascent procedures
- Low on air
  - Signal low on air to your buddy.
  - Signal ascent.
  - Ascend together while monitoring the instruments.
- Out of air
  - Signal out of air to your buddy.
  - Initiate gas sharing protocol.
  - Initiate ascent.
  - Monitor donor's gas supply during ascent

## FREEFLOW REGULATOR (SHALLOW WATER)

**Objective:** Breathe from a free-flowing regulator for at least 15 seconds.



**Value:** Regulators are designed to free flow if they fail. This means they will provide gas rather than shut down. If a regulator free flows, there is a simple method to breathe the flowing gas without breathing in water.

**RAID NOTE:** If your regulator begins to free flow, make contact with your buddy, secure their alternate air source, and ascend immediately. Gas sharing is practiced separately.

### How It's Done:

1. Tilt your head to the right. This ensures the regulator is not pulled from your mouth. This also minimizes the chances of your mask flooding during the activity.
2. Remove the left-hand side of the regulator mouthpiece from your mouth and rest it on your cheek.
3. Press the purge button for 15 seconds to simulate the free flow of gas.
4. Breathe normally. The flowing gas will not allow water to enter.
5. Check your console.
6. Ascend in one of two ways.
  - a. Signal to your buddy and follow normal ascent procedures if you have enough gas.
  - b. Signal to your buddy that you are out of air, share gas with your buddy, and follow the ascent procedures.

**Remember that your buddy must check his or her console during the ascent.**

## GAS PRESSURE AND CONTENTS CHECK

**Objective:** Confirm adequate cylinder pressure for the planned dive, and that the gas is safe for the target depth of the planned dive (especially when using nitrox).

**Value:** Running low on gas signals the end of a dive, so to get the most enjoyment, start with a fully charged scuba cylinder. Also, make sure what is in your tank is what the dive plan calls.

**How it's Done:** Hold the SPG with its face away from you and open the valve handwheel slowly and completely. (Do NOT turn the handwheel back from fully open.)

1. Check the pressure. It should be close to the working pressure of the cylinder. Look at the SPG and confirm that you have an adequate starting volume of breathing gas. The minimum pressure should be between 170–200 bar/2500–3000 psi. Make sure the air pressure is at least 170–200 bar/2500–3000 psi.
2. Check the battery life of the dive computer
3. Follow the procedures from the first dive to complete all assembly checks.
4. Follow the procedures from the first dive to complete the pre-dive buddy safety check.

**TRAINING NOTE:** Coach your students to develop the habit to confirm the pressure of the gas in their cylinder is at or close to the cylinder's working pressure and that the pillar valve handwheel is fully open. Have them check any labels for gas analysis (Nitrox dives especially), and that they always confirm gas content as well as pressure. Your task as an instructor is to explain the difference between compressed AIR cylinders and NITROX and how to identify them. For non-nitrox certified divers, you will explain that NITROX cylinders have a higher percentage of oxygen in them and that these cylinders have to be analyzed before each dive. To dive with a NITROX gas without correct training could be extremely hazardous.

Make sure buddy pairs communicate pressure and content with each other. Remind them that a portion (around one-third) of the gas they are carrying, is for their buddy's use and not for theirs.

### GAS DEPLETION – OPTIONAL SKILL

**Objective:** To experience the sensation of increased work-of-breathing from a scuba regulator as it begins to run out of gas and progresses to the point where it delivers no gas at all.

**Value:** Although RAID divers are taught gas management techniques to ensure they do not actually arrive at an out-of-air (OOA) situation, experiencing the sensation immediately prior to a regulator delivering zero gas can be very instructive. The feeling of increased work-of-breathing at depth is something you may also experience if a scuba cylinder's valve is not fully open. Your reaction then would of course be to get your buddy's attention as you reach back and open it fully.

**How It's Done:**

1. Begin in water shallow enough to put your head well above water when standing.
2. Your instructor will face you and ask if you're Okay and Ready?
3. Return the okay hand sign and watch your SPG.
4. Your instructor will gradually turn off your tank valve.
5. Watch as the pressure indicated by your SPG falls to zero.
6. Stay calm as your gas supply is depleted.
7. Signal OOA to your instructor, and they will turn your air back on. (You may find this skill more comfortable without fins on your feet but try it with before moving on to the next drill).

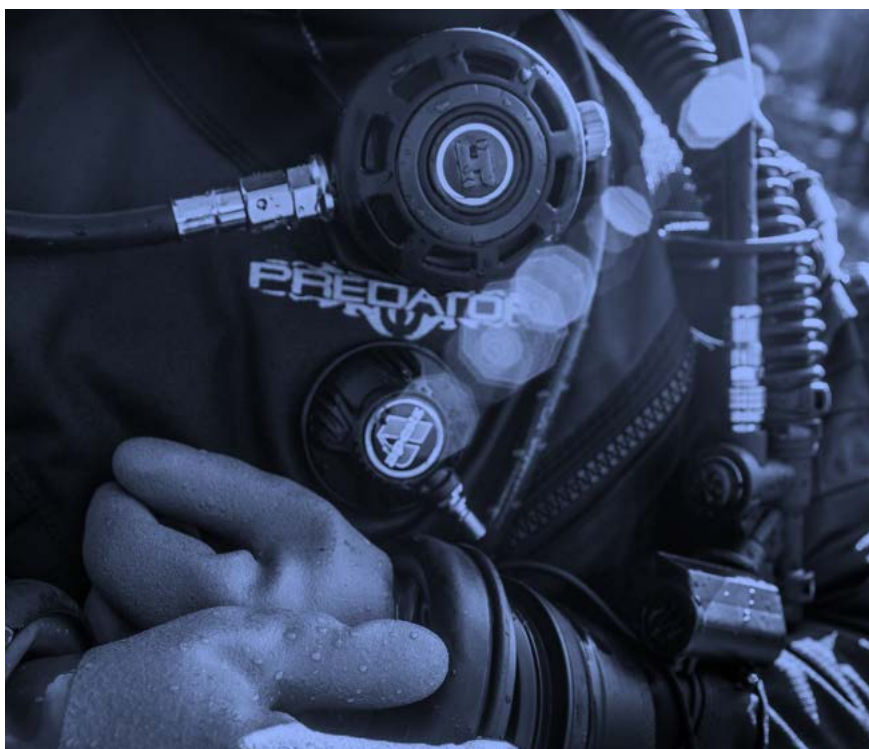
### GAS SHARING ASCENT

**Objective:** You will share gas with your buddy while ascending safely to the surface.

**Value:** In the unlikely event that you run out of gas, you can safely share gas with your buddy and make a safe ascent together to the surface.

**How It's Done: Follow the steps below with your students.**

1. Make sure you are familiar with your buddy's equipment.
2. Signal to your buddy that you are out of air.
3. Retrieve your buddy's primary regulator.  
Long-hose divers need to remove the long hose from around the neck.
4. Orient, clear, and breathe from your buddy's regulator.
5. Remember to blow bubbles when the regulator is out of your mouth. Meanwhile, your buddy will locate, secure, clear, and breathe from their alternate air supply. Divers using a long hose must free up the entire hose length.
6. Once you are comfortably breathing, establish contact with your buddy and signal to begin ascending to the surface. Your





buddy must check their SPG with an emphasis on the remaining air supply and depth.

7. Signal when you are OK.
8. Begin the ascent maintaining contact.
9. Once on the surface, the out of air diver must orally inflate their BCD to achieve positive buoyancy.

You will have a chance to act as both a receiver and a donor.

Remember that the donor must keep a careful watch on the console

Be careful not to leave any students unattended either at the surface or on the bottom.

## GAS SHARING STATIONARY

**Objective:** Respond to a simulated out of gas situation and breathe from your buddy's regulator.

**Value:** In the unlikely event that you run out of gas due to a catastrophic gas loss or gas system failure, you can safely share gas with your buddy.

### How It's Done:

1. Make sure you are familiar with your buddy's equipment.
2. Signal to your buddy that you are out of air.
3. Secure your buddy's primary regulator. Long-hose divers need to remove the long hose from around their neck when it is donated.
4. Orient, clear, and breathe from your buddy's regulator.
5. Remember to blow bubbles when your regulator is out of your mouth. Meanwhile, your buddy will locate, secure, clear, and breathe from their alternate air supply. Divers using a long hose must free up the entire hose length.
6. Once you are comfortably breathing, establish contact with your buddy. Your buddy must check his or her SPG with an emphasis on the remaining air supply and depth.
7. Signal when you are OK.
8. After the activity is completed:
9. You switch back to your own primary regulator.
10. Your buddy switches back to his or her primary air source and secures the AAS.
11. Divers who have had a long hose donated to them must help tidy up the hose to avoid it becoming entangled.
12. Your students should have a chance to act as both a receiver and a donor. Remember that the donor must keep a careful watch on the air supply.

### NOTE: Modified procedure for COVID-19

Drill follows normal steps with the following exception. OOA diver takes the offered alternate, switches from his/her primary regulator to his/her backup second stage, while gently purging the donated second stage to check it is working. When the drill is completed (after horizontal swim, ascent, etc.) Diver one returns the donated regulator to his/her buddy

This method adequately demonstrates all the component skills of an OOA/air sharing drill including having the OOA diver switching regulators without exposing either diver to elevated risk of cross-contamination.

## GAS SHARING SWIMMING (DEEP WATER)

**Objective:** Swim a distance of 15 meters/50 feet slowly and while simulating an out-of-gas situation by breathing from your buddy's regulator.

**Value:** In the unlikely event that you run out of gas due to a catastrophic gas loss or gas system failure, you can safely share gas with your buddy while swimming together.

**How It's Done:** You have learned to locate, secure, and breathe from an air source supplied by your buddy. Now you will learn how to swim while sharing gas with your buddy. You will do this skill twice, once as the person who is out of air and once as the person sharing your air.

1. Signal to your buddy that you are out of air.
2. After your buddy supplies his or her primary air source to you, secure, clear, and breathe from it. Divers with a long hose need to remove the long hose from around their neck.
3. Remember to blow bubbles while the regulator is out of your mouth.
4. Wait for your buddy to locate, secure, clear, and breathe from his or her alternate air supply. Divers using a long hose must free up the entire hose length.
5. When you are both breathing comfortably, link arms with your buddy.
6. Remember that your buddy must check the SPG, especially the remaining air supply and depth.
7. Signal with your buddy when you both are OK.
8. Begin to swim for 15 meters/50 feet. As the out-of-gas diver, you must:
9. Be slightly in front of your buddy whose gas you are sharing and...
10. Manage the excess hose if you are using a long hose.
11. Make sure your buddy is holding onto you.

### Once the skill is completed:

- You switch back to your own primary regulator.
- Your buddy switches back to their primary air source and secures their AAS.
- If your buddy has a long hose, help him or her tidy up the hose to avoid it becoming entangled.
- Repeat the steps to practice sharing your air. Remember to keep a careful watch on your air supply.

### NOTE: Modified procedure for COVID-19

1. Signal to your buddy that you are out of air.
2. Diver one takes the offered alternate, switches from his/her primary regulator to his/her backup second stage, while gently purging the donated second stage to check it is working. N.B. she does not put the donated second stage in her mouth at any time, but simply holds it.
3. Remember to blow bubbles while the regulator is out of your mouth.
4. Wait for your buddy to locate, secure, clear, and breathe from his or her alternate air supply. Divers using a long hose must free up the entire hose length.
5. When you are both breathing comfortably, link arms with your buddy.
6. Remember that your buddy must check the SPG, especially the remaining air supply and depth.
7. Signal with your buddy when you both are OK.
8. Begin to swim for 15 meters/50 feet. As the out-of-gas diver, you must:
9. Be slightly in front of your buddy whose gas you are sharing and...
10. Manage the excess hose if you are using a long hose.
11. Make sure your buddy is holding onto you.

**Once the skill is completed:**

1. You switch back to your primary regulator.
2. Your buddy switches back to their primary air source and secures their AAS.
3. If your buddy has a long hose, help him or her tidy up the hose to avoid it becoming entangled.
4. Repeat the steps to practice sharing your air. Remember to keep a careful watch on your air supply.

### GEARING UP

**Objective:** To show confidence putting on dive equipment in preparation for diving, and ensuring that all components fit properly, are safely attached, properly connected, controls are accessible and functioning correctly.

**Value:** This skill's value is for you to gain familiarity with your dive gear (what goes where, how it's stowed ready for access, streamlining, etc.) and to begin to develop muscle-memory with regards its operation and function.

Diving is equipment intensive and because of this, task-loading can result. Being unfamiliar with dive gear – especially controls such as inflators, clips and buttons – will distract you, and can easily lead to loss of buddy awareness and general discomfort. You need to learn to avoid this.

**How it's Done:** Work with your buddy, take your time, focus on one step at a time. Be careful not to lose your footing and on a dive boat or platform be mindful of any sudden movement: waves, wake, wind.

Once again as with assembly, RAID does not prescribe a set method because there are several “standard” gear configurations. We do



recommend that all students use a checklist wherever practical or head-to-toe confirmation that gear is in place and functioning as it should. Students should pay particular attention to second stages working when in water, weight belt releases being accessible, buoyancy cell inflator and deflator working as they should.

Situational awareness and familiarity with gear will result in a diver's skill performance much cleaner and more enjoyable and repeatable.

### KIT/GEAR ASSEMBLY AND INSPECTION

**Objective:** Prior to entering the water, you will assemble equipment and inspect hoses, O-rings, hose crimps, and component function following proper procedures to ensure the equipment is safe to use in water.

**Value:** You want to go diving without distractions and feeling comfortable. To do so you need working equipment, and time spent checking your gear will save you calling a dive early. When you have made sure everything is working the way it should and there's nothing broken, frayed or missing, you can begin diving with confidence.

**How it's Done:** Inspect connections, make sure hoses are not frayed or leaking or distorted. Test regulators work and breathe dry, and make sure air can be added to and released from buoyancy cells. Also, make sure you have all your equipment, and your PDC (personal dive computer) has a full battery.

**RAID** doesn't mandate specifics for its instructors. You know how to do this, so pass your good habits on to your students. One point, if in any doubt about a piece of gear, an O-ring, a hose, etc. being fit for purpose, it isn't.

### MASK REMOVE, REPLACE, AND CLEAR

**Objective:** Fully remove, replace, and clear your mask underwater.

**Value:** If you should need to adjust the mask strap, or remove or replace a hood, you will need to master removing the mask, replacing it, and clearing it of water.

**How It's Done:**

1. Slowly flood your mask by pinching the mask skirt.
2. Allow the water to fully fill the mask.
3. Hold your mask with the other hand and lift it off your face and head.
4. Tilt your head to the right to keep bubbles from going up your nose.
5. Hold the mask firmly in front of you. For orientation, locate the nose pocket of the mask with your fingers.
6. After one minute, replace the mask on your face. Then pull the mask strap over your head to secure it.
7. Once the mask is in place, clear the mask exactly as you learned in the "Partially Flooding Your Mask and Clearing It" skill.
8. If you don't have enough breath to do it in one go, breathe in from your regulator and have another go.

### MONITOR BUDDY TEAMS

The instructor must assess students' ability to maintain a buddy distance of no more than 3 meters / 10 feet from each other.

### MONITORING INSTRUMENTS

**Objective:** For you to develop the habit of checking that your depth, elapsed dive time, decompression status (well within the NDL), and gas supply are all within the limits of the dive plan.

**Value:** You **MUST** be careful not to go too deep (you may feel increased effects of narcosis, and you will consume your air supply more quickly) and not to stay too long (you must stay well within the limits of your dive plan and your experience). Ignoring these limits is dangerous and can result in severe narcosis at depth, running low on gas, disorientation and exceeding no decompression limits.

**How It's Done:** At regular intervals during the dive, check the SPG and PDC (Personal Dive Computer).

Also Check and confirm:

- Gas supply
- Depth
- Allowable dive time.

Monitoring the SPG will ensure that there is always enough gas to complete the dive and comfortably ascend to the surface. Monitoring the PDC or depth timer will ensure that no decompression limits are followed.



**Training Note:** tell your students to learn the dive plan and understand its limits. Remind them to look at their gauges every few minutes or whenever they reach a waypoint. Also have them check with their buddy at regular intervals to confirm they too agree that everything is going well.

Remind them that once underwater, our perception of the passage of time and how deep we have travelled become distorted. Divers cannot and should not rely on guesswork and rough estimates. Divers need “primary data,” actual real values.

You can test student awareness at any time by asking them to write down their depth, current bottom time, and gas pressure, without checking their instruments. They should be within a small margin on all counts.

### NEUTRAL BUOYANCY HOVERING FOR 30 SECONDS (DEEP WATER)

**Objective:** Using your BCD (and drysuit if worn) and breath control, hover neutrally buoyant in the water for 30 seconds with minimal arm and leg movement.

**Value:** Neutral buoyancy is the singular most important skill you can learn as a diver. Having good buoyancy will save you energy, streamline you, protect the environment, and protect your equipment. Once mastered, it is one of the most enjoyable diving skills since it will give you complete interaction with the underwater world.

**How It's Done:** Some people think that buoyancy control is the most difficult skill to master. However, by following a few simple steps, you can easily achieve neutral buoyancy while also maintaining trim. While actually diving, hovering while in a standing or sitting position is unrealistic.

1. Empty all the air from your BCD.
2. Lie face down on the bottom.
3. Add small amounts of air to your BCD until taking a full breath of air lifts your chest off the bottom. When you exhale, you'll descend because your lung volume is reduced.
4. Add a little more air to the BCD and lift completely off the bottom. Then reduce the size of breaths you take, thus reducing the movement in the water column, and hover.
5. If needed, adjust the position of the weights and cylinder to achieve trim while hovering.
6. Practice hovering with and without fins.

### NO MASK SWIM, REPLACE AND CLEAR

**Objective:** Swim a distance of 15 meters/50 feet without a mask, and then replace and clear it while you are underwater.

**Value:** In the unlikely event that a mask strap breaks, or the mask is rendered inoperable, it is vitally important that you can swim to a buddy for assistance with the ascent or initiate the ascent immediately. Being able to swim without a mask is vital for your safety.

**How It's Done:**

1. Fully flood and remove the mask as you did during the first confined dive. Be sure to keep a good grip on the mask.
2. Attain neutral buoyancy and swim a distance of 15 meters/50 feet.
- a. Do not hold your nose closed while the mask is off. Instead, you may exhale either out your mouth or your nose. However, it is recommended that you exhale through your mouth into the second stage regulator since exhaling through the nose has a tendency to make you inhale automatically.
- b. Try to swim with your eyes open. However, if you wear contacts, you may keep your eyes shut while your mask is off.
3. Upon completing the swim, locate the nose pocket on the mask.
4. Replace and clear the mask as you learned to do during the first confined dive.

### OBTAIN NEUTRAL BUOYANCY NEAR THE BOTTOM

**Objective:** Obtain neutral buoyancy near the bottom.

**Value:** You will do this without touch the bottom, this is because we want RAID divers to be neutrally buoyant near the bottom and not touching any corals, marine life or any bottom structure... including mud and silt.

**How It's Done:**

- You should be inflating the BCD on the way down to control the descent.
- At the bottom you should inflate the BCD to obtain neutral buoyancy so that you can hover.



- Check the console with your buddy, make sure all readings are within parameters.

### ORAL INFLATION OF BCD UNDERWATER

Follow these steps...

1. Take a breath from your regulator.
2. Blow about one-third of your air into the small BCD hose mouthpiece while depressing the dump button.
3. Release the button.
4. Repeat until there is enough air in your buoyancy cell for you to achieve neutral buoyancy.

**TRAINING NOTES:** This skill, while unlikely to be required unless the LP inflator malfunctions, is a good confidence builder since it requires students to remove and replace their second stage regulator repeatedly, and at the same time, to coordinate their movements. It's a skill best first practiced in confined water and in controlled conditions and shallow water if it's practiced in open water. If the student empties their buoyancy cell first, **MAKE SURE THE BOTTOM IS HARD** (i.e. a swimming pool or sandy bottom).

### PARTIAL MASK FLOOD AND CLEAR (SHALLOW WATER)

**Objective:** You will partially flood your mask and clear it while you are underwater.

**Value:** If your mask fogs up or water trickles into it while underwater, there is little point in ascending to the surface to remedy the problem. Simply partially flooding the mask will allow you to clear the fogged mask easily. The advantage of a partial flood is that you do not lose vision as you would with a fully flooded mask.

**How It's Done:**

1. Pinch the skirt of the mask to allow water to enter.
2. Fill the mask to just below eye level.
3. To clear the mask and prevent water from entering your nose, simply hold the top of the mask firmly against your forehead, take a deep breath, begin exhaling through your nose.
4. Tip your head back to look up slightly while continuing to exhale gently through your nose. You should be able to clear your mask easily on a very small breath and without letting out many bubbles from the mask.

**TRAINING NOTE:** The most common mistake student make is completely flooding their mask rather than only partially flooding it.

### PRE-DIVE BUDDY CHECKS

**Objective:** To inspect your own and your buddy's equipment to ensure that all components are operating properly.

**Value:** Completing a pre-dive check will familiarize the buddy team with how each other's equipment works and how different equipment designs work. Also, a pre-dive check catches any small mistakes you may have made – such as failing to properly connect the LP inflator to your BCD. This is an essential step towards starting a dive without being stressed.

**How it's Done:** You should confirm by sight, touch and in conversation that your buddy is ready to begin the dive. Scuba diving is a team activity, and the buddy system is core to making the activity fun and as safe as possible. Also, during a dive it may be necessary

for one buddy to assist the other (think of an air-sharing exercise as an example). Being familiar with the position and function of each other's kit is essential for smooth operations.

### RAID HAS TWO MNEMONICS TO HELP.



This is the HIGH-FIVE method.

1. Gas on
2. Regulators working and gas check
3. Cylinder secure
4. Buoyancy device and weights
5. Final OK—gauges, fins, mask, lights, etc.

An alternative is the BRAID mnemonic for an equipment check where:

1. B stands for buoyancy and weights.
2. R stands for regulators and releases.
3. A stands for air or gas checks (pressure and MOD).
4. I stands for instruments.
5. D stands for “diver is OK to dive.”

**RAID NOTE:** Remind students that any diver, can call any dive, at any time, without fear of criticism or reproach.

## REGULATOR CLEARING: BLAST METHOD

**Objective:** You will remove, replace, and clear a regulator underwater using the blast method.

**Value:** If you should need to remove the regulator from your mouth, or if it somehow becomes dislodged, you will need to be able to replace and clear it while you are underwater. By blasting the remaining breath in your lungs through the regulator, you will remove all the water from the second stage.

### How It's Done:

1. Remove the regulator from your mouth, ensuring that the regulator mouthpiece faces down. This will minimize the chances of a free flow. If you do accidentally forget and it does start to free flow, simply turn the mouthpiece face down and the free flow should stop.
2. Maintain control of your airway by blowing small bubbles. Remember: Never hold your breath!
3. Replace the regulator.
4. Using the remaining air in your lungs, forcefully exhale (blow) into the regulator to clear it.



**TRAINING NOTE:** Look for students not blowing a stream of small bubbles when the regulator is out of their mouth. Explain the reason for blowing bubbles. Practice at first in water shallow enough to stand in with one's face out of water

### REGULATOR CLEARING: PURGE METHOD

**Objective:** You will remove, replace, and clear a regulator underwater using the purge method.

**Value:** If you should need to remove the regulator from your mouth, or if it should become dislodged, you will need to be able to replace and clear it while you are underwater. The purge button method is used to remove all the water from the regulator if you have insufficient breath left to clear it with the blast method.

#### How It's Done:

1. Remove the regulator from your mouth, ensuring that the regulator mouthpiece faces down. This will minimize the chances of a free flow. If you do accidentally forget and it does start to free flow, simply turn the mouthpiece face down and the free flow should stop.
2. Maintain control of your airway by blowing small bubbles. Remember: Never hold your breath!
3. Replace the regulator and use the purge button to clear the excess water from the regulator.
4. Push your tongue up to the roof of your mouth to prevent water from being blasted into your throat

**TRAINING NOTE:** Remind your students to blow bubbles and to cover the mouthpiece with their tongue. The RAID difference here of course is to use the alternate air source to breathe from while reaching for the primary.

### REGULATOR RECOVERY: ARM SWEEP METHOD

**Objective:** You will recover a displaced regulator from behind the shoulder using the sweep method, and resume breathing from it.

**Value:** If you were to drop your primary regulator while underwater, either due to it being accidentally knocked out of your mouth or snagged, you can easily and safely recover the regulator and resume breathing from it.

#### How It's Done:

1. Remove your regulator with mouthpiece down and drop it behind your shoulder.
2. Make sure your airway is open by blowing small bubbles while the regulator is out of your mouth.
3. Retrieve your alternate air source.
4. Place the alternate air source in your mouth and clear it.
5. Breathe from your alternate air source during the activity.
6. Lean to the right at a 45° angle.
7. Extend your right arm straight out in front of you.
8. Sweep your arm down close to your body to touch your knee, thigh, and tank base.
9. Bring your arm out until it is horizontal to your body.
10. With your left hand, feel along your right arm until you feel the regulator hose hanging over the arm. You need to do it this way since the mask can interrupt your field of vision and you may only be able to find the hose by touch.
11. Secure the regulator, clear it, and breathe.
12. Re-stow your alternate air source.



## REGULATOR RECOVERY: REACH METHOD

**Objective:** You will recover a regulator from behind your shoulder using the reach method, and then resume breathing from it.

**Value:** If you were to drop your primary regulator while underwater, either due to it being accidentally knocked out of your mouth or snagged, you can easily and safely recover the regulator and resume breathing from it. The reach method is used when the regulator is snagged behind you and the sweep method is ineffective.

### How It's Done:

1. Remove your regulator with mouthpiece down and drop it behind your shoulder.
2. Make sure your airway is open by blowing small bubbles while the regulator is out of your mouth.
3. Retrieve your alternate air source.
4. Place the alternate air source in your mouth and clear it.
5. Breathe from your alternate air source during the activity.
6. Move into an upright position.
7. Place your left hand between the cylinder and your lower back.
8. With your left hand, push the cylinder up from your back.
9. With your right hand, reach over your right shoulder and secure the regulator hose.
10. Slide your hand along the hose until you find the regulator.
11. Secure the regulator, clear it, and breathe.
12. Re-stow your alternate air source.

**TRAINING NOTES:** Remind your students to blow bubbles whenever the second stage is out of their mouth. The RAID difference here of course is to use the alternate air source to breathe from while reaching for the primary.

## REMOVE AND REPLACE SCUBA UNIT ON THE SURFACE

**Objective:** Remove and replace your scuba equipment while on the surface.

**Value:** When diving from boats, especially RIBs, you may have to hand all your equipment to the boat crew before boarding the boat. Not only will you learn to remove and replace your scuba gear, but you will also build familiarity with your equipment.

### How It's Done:

1. To remove your scuba unit:
  - a. Establish positive buoyancy.
  - b. Release all clips.
  - c. Remove your left arm from the shoulder strap.
  - d. Swim out of the unit twisting clockwise as you do so (twist to your right).
  - e. Use your scuba unit as a buoyancy aid by holding it in front of you or sitting on it.
2. To replace your scuba unit:
  - a. Arrange your equipment on the surface with the harness system up.
  - b. Open up the harness and move all items to the sides.
  - c. To put your arms through the straps on the harness:
    - i. Put your right arm through the right side of the harness, turn, and put your left arm through the shoulder harness or...
    - ii. When sitting on the BCD, slide into both shoulder straps simultaneously.
  - d. Attach the waist straps.

- e. Check the power inflator, alternate air source, and regulator.
- f. Check all releases and tighten them.
- g. Make sure the weight belt and releases are clear of entanglements.
- h. When wearing a wing-style BCD, make sure the crotch strap is secured.

### REMOVE AND REPLACE SCUBA UNIT UNDERWATER

**Objective:** With minimal assistance, remove and replace the scuba unit while you are underwater.

**Value:** If you should become entangled while you are underwater and your buddy is nowhere to be found, you may need to remove your scuba unit to free the entanglement and then replace the unit.

**How It's Done:** Although this is rarely done in open water, you can practice removing and replacing the unit while in confined water.

1. Dump air from the BCD to become negatively buoyant.
2. Undo the front clips and waist straps on the BCD.
3. Remove your left arm by sliding it out or undoing the shoulder clip.
4. Make sure you have a firm grip on the BCD.
5. Move the scuba unit around to the right-hand side and slide it off your shoulder, leaving only the regulator in your mouth.
6. Make sure the straps are clear and in place.
7. Reverse the procedure by putting your right arm through the right shoulder hole.
8. Slide the scuba unit around your back and put your left arm through.
9. Secure and adjust all clips.
10. Establish neutral buoyancy

### REMOVE AND REPLACE WEIGHT SYSTEM ON THE SURFACE

**Objective:** Remove and replace the weight system while you are on the surface.

**Value:** When boat diving, especially from RIBs, all dive gear will be handed up to the boat crew before you climb on board.

**How It's Done: (weight belt method)**

Since there are so many different weight systems available on the market today, your instructor will demonstrate the most appropriate method for this skill and your weighting system in the confined water.

1. Check positive buoyancy.
2. Open the weight belt release / system and pull clear.
3. Hold it above the water.

**To replace:**

1. Pass weight belt behind the back and grip
2. Assume horizontal position, face down on the surface with the snorkel in your mouth. Pull the weight belt into position and fasten.
3. If there is a crotch strap, adjust the strap to fit under the weight belt if possible.
4. Check that nothing is trapped, and all equipment is accounted for.

**RAID NOTE:** In the case of an integrated weight system; ensure positive buoyancy, remove one side at a time and replace before removing the other.

### REMOVE AND REPLACE WEIGHT SYSTEM UNDERWATER

**Objective:** With minimal assistance, remove and replace the weight system while you are underwater.

**Value:** You may remove your weight system while you are underwater to adjust your weight without returning to the surface.

**How It's Done:**

**If you are using a weight belt, follow these steps.**

► **To release the belt:**

1. Make sure you are in a comfortable position and in control of your buoyancy.
2. Release the weight belt buckle and grasp the free end so that the weights don't slide off.
3. Pull the belt away from your body but keep it close so that you do not topple over. Do not drop the weight belt.

► **To replace the belt:**

1. Hold an end in one hand, pass the belt around you and below your equipment, and grasp the other end with your other hand.
2. Lie forward with your face down and secure the belt. Remember that you need to use "right-hand release," so make sure the belt is around you correctly.

**RAID NOTE:** If you are using integrated weights, remove one side at a time and replace it before removing the other one. This will keep you from losing a weight.

### SAC/RMV RATE CALCULATION

**Objective:** Calculate a SAC or RMV rate at static depth for a preset amount of time underwater following an open-water dive.

**Value:** Divers who run out of gas stand a fair to good chance of injury or death from embolism or from drowning. Even with a well-trained buddy pair who have recently practiced OOA drills and are well-skilled may have problems. Because of this reality, a RAID certified diver knows that running out of gas or low on gas is unacceptable and you will learn to treat your SPG as backup and confirmation of the gas consumption estimates calculated in your dive plan.

**How it's Done:** Take note of your starting pressure, bottom time, average depth, ending pressure, and overall workload (assume a factor of 1.5 times normal SAC Rate). When you and your buddy are out of the water and your gear is disassembled, use the simple calculations shown in the manual (and with help from your instructor) to arrive at a personal value for SAC and RMV.

**TEACHING NOTES:** Help each of your students work through the process to arrive at a personal consumption rate in liters or cubic feet per minute. Mention to them that an average SAC of 14 liters or 0.5 cubic feet per minute is 'standard,' but their personal figure may be higher. This is due to "workload" which for a new diver is almost always high. That consumption rate will drop as they gain more experience. Finally, show them how to convert that into useable data to plan their next dive. You can offer a "prize" to student's who can estimate their consumption rate on the next dive and estimate the closest to their actual ending pressure.

**Alternative Method:** If your students need an alternative approach the following explanation might help. Start with getting them to write out **SAC L/min** and explain that this means Liters divided by time in Minutes. Explain that this will guide them in the steps. First establish the number of Liters used (BAR x Cylinder Size) and divide this by the time in Minutes. Now remind them to correct for the depth and do so by dividing the number obtained above by the pressure of the average depth or measurement depth in the example you give them. This method sometimes helps those visually oriented as it simply follows what is written.

### S-DRILL

**Objective:** Perform a full S-Drill and bubble/regulator check underwater before descending to begin the dive

**Value:** An S-Drill is an essential safety drill. It is important to check that equipment is bubble free and functioning properly. Also, that the longhose or the backup second stage is ready to deploy freely, and that it works correctly.

**How it's Done:** Ideally an S-Drill is performed at around 5 meters/15 feet; however, it can be performed in shallower water just below the surface or on the surface itself. You and your buddy must be neutrally buoyant and able to hold position in the water column. Take it in turns to check your buddy's equipment for streams of air/nitrox bubbles. Most important that you check both second stages are breathing correctly, and that your SPGs are registering correctly. As an alternative and for a traditional technical diver S-Drill, each diver in turn signals OOA to their buddy who then offers their primary (long hose) to begin the air share process.

**The full OW diver drill goes like this:**

1. Make an S signal.
2. Signal your buddy to check you for bubbles.



3. Lean forward so that your buddy can see your cylinder valve.
4. Wait while your buddy checks for bubbles.
5. Dip your head slightly so that your buddy can see your 1<sup>st</sup> stage and bubble check your BCD hose, regulator hoses, and SPG in order to confirm they are bubble free.
6. Signal to your buddy that you are going to switch to your alternate air source.
7. Retrieve your alternate air source and breathe through it. Divers using a long hose must deploy the entire hose to confirm it is tangle free.
8. Switch back to your primary regulator. Divers using a long-hose setup must re-stow and secure the excess hose.
9. Check your console.
10. Signal OK to your buddy.

**TRAINING NOTE:** The S-Drill should be a pre-dive habit for all divers on every dive because it is an opportunity to check that each diver is ready to share their primary regulator on demand, that its hose is free to be deployed fully, and that nothing on the gear (hoses, crimps, O-rings, clamps, etc.) are leaking. If something is not right, the dive must be aborted right then. Make sure your students understand and agree that RAID divers do not dive with equipment they know is faulty, because injury or worse may result.

### SMB DEPLOYMENT ON THE SURFACE

**Objective:** Deploy a surface marker buoy (SMB) while on the surface

**Value:** An SMB is a signaling device. It lets those on the surface know your location (on and below the surface). It is frequently used to increase diver safety.

**How It's Done:**

1. Get out your SMB.
2. Inflate the SMB by one of the following methods:
  - a. If enclosed SMB find the blow tube and push it in, blow through your mouth.
  - b. If open SMB, fill the SMB by pushing the purge button on your alternate.
3. The edge of the SMB should be underwater so that the air does not come out.

If you are diving in an area that requires deployment of the SMB while you are underwater, your instructor will teach you **How it's Done**.

### SMB DEPLOYMENT UNDERWATER - OPTIONAL

In some areas of the world underwater SMB use is mandatory. If this is the case, you need to make sure that it was tested in confined water first as part of the confined water sessions. If you decide to do this skill it can be performed from 5m/15ft as an extra skill for the safety stop. You can perform this skills during safety stops for practice. t

### SNORKEL SKILLS – SNORKEL REMOVE AND REPLACE

**Objective:** You will switch from your snorkel to your regulator, and demonstrate removing your snorkel using the quick release, and stowing it. Then you will retrieve your snorkel, reattach it, and resume breathing from it after switching from your regulator.

**Value:** Mastering this skill allows you to dive with the snorkel stowed rather than attached to the mask where it serves no purpose. For other dives, you may prefer to remove the snorkel and stow it in your pocket.



### How It's Done:

1. Attach the snorkel to the mask strap and breathe from it.
2. Take a deep breath, switch to your regulator, and clear it.
3. Unclip the snorkel from your mask.

**NOTE:** For temporary use, it's perfectly acceptable to tuck your snorkel under your mask strap which will hold it against the side of your head.

4. Securely stow the snorkel either in a pocket or through the waist strap.
5. Retrieve the snorkel and reattach it to the mask.
6. Take a deep breath, and switch to your snorkel.
7. Blow to clear the snorkel.
8. Blow bubbles whenever the snorkel or regulator is out of your mouth. Never hold your breath.

**TRAINING NOTE:** If students put their face too far below the surface, the snorkel may dip into the water and fill with water. Students may also not retain enough breath to clear the snorkel. The best tip you can give them is to use their tongue as a splashguard.

## SNORKEL REMOVE AND REPLACE WHILE SWIMMING

**Objective:** While swimming a distance of 20m/66ft, switch from your snorkel to your regulator, remove the snorkel using the quick release, and stow the snorkel, all while swimming. Then retrieve the snorkel, reattach it, and resume breathing from the snorkel.

**Value:** Mastering this skill allows you to dive with the snorkel stowed rather than attached to the mask where it serves no purpose. For other dives, you may prefer to remove the snorkel and stow it in your pocket.

### How It's Done:

1. Swim 20m/66ft while changing from snorkel to regulator and back again.
2. Attach the snorkel to the mask strap and breathe from it.
3. Take a deep breath, switch to your regulator, and clear it.
4. Unclip the snorkel from your mask.
5. Securely stow the snorkel either in a pocket or through the waist strap.
6. Retrieve the snorkel and reattach it to the mask.
7. Take a deep breath, and switch to your snorkel.
8. Blow to clear the snorkel.
9. Blow bubbles whenever the snorkel or regulator is out of your mouth. Never hold your breath.
10. Repeat at least three times without lifting face from water.

## SWIMMING AND UNDERWATER TRIM

**Objective:** Perform an underwater swim while finning effectively and while in trim.

**Value:** Using the appropriate swimming/finning technique and trim position will best direct your energy into forward motion. You will use less gas, your horizontal attitude will help prevent damage to bottom structure if you and your buddy are swimming close to anything but the bottom of a pool, and your finning technique will help to conserve visibility because you will disturb the least amount of silt and mung.

**How it's Done:** At first, swimming with fins may seem odd. Watch your instructor demonstrate the proper technique(s). When it's your turn:

- Kick with your fins and not your hands. Kick slowly and from the hip for the flutter kick.
- Stay streamlined with your arms out front of you and keep your equipment tucked in and not dangling where it can get snagged.
- Swim slowly to conserve air and energy.
- Spend some time swimming around, getting familiar with using the equipment and being underwater. Play games and have fun!

### TIRED DIVER TOW - FLEXIBLE

**Objective:** Tow a simulated tired diver on the surface, to an exit point or until they have enough energy to resume swimming by themselves.

**Value:** If your buddy is tired or out of breath, you can easily assist them to safety.

**How it's done:**

#### ► Under Arm Tow

- Good for a responsive and unresponsive diver/victim.
- With a responsive diver/victim you may wish to remain face to face to monitor and reassure.
- The diver lies on the back in the water (positive buoyancy) and the rescuer will grip the diver under the arm closest to the rescuer and facing the diver, swims forward.
- This is an effective method for short distance tows.

#### ► Scuba Unit Tow

- Good for a responsive and unresponsive diver/victim. This is possibly the most common tow.
- The victim and rescuer both lie on their backs. The rescuer holds the scuba unit with one hand whilst swimming backwards.
- It is more comfortable for the rescuer to swim alongside the victim, with one hand holding the scuba unit at the top behind the victim's head and the other hand holding the victim's arm across the torso of the rescuer, whilst finning alongside.

#### ► Push Tow

- Good for a responsive diver/victim, with one rescuer or with two rescuers for an unresponsive diver/victim (push).
- The victim lies on their back.
- The rescuer swims, horizontally facing forward, in the water, whilst pushing the victim, ahead with victim's feet on each shoulder.
- This is a good tow if there are two rescuers as one can push and the other can use any other technique and support the victim's head.

### WEIGHTING WITHOUT YOUR SCUBA GEAR – SNORKELING

**Objective:** You will learn to weight yourself correctly in order to offset the natural buoyancy of your body, plus the buoyancy of your exposure suit. You will do this before using scuba gear.

**Value:** Correct weighting will allow you to dive comfortably. Diving when over weighted will force you to overinflate your BCD to offset the negative buoyancy. This increases drag and makes swimming harder. Diving over weighted or underweighted can lead to serious injury.

**How It's Done:** Without using any scuba gear, you will need to:

- Add small weights gradually, without wearing fins but with your exposure suit. Float unaided in a vertical position with the top of your head breaking the surface while holding a full breath and using only your exposure suit, weights, mask, and snorkel.
- Exhale and you should sink. EQUALIZE.
- Once you are weighted correctly, when you exhale through your nose, dumping air from your lungs you should have no trouble sinking.

**TRAINING NOTE:** Time spent here will pay big dividends later and help your students understand the aspect of buoyancy and control. Be ready to assist at all times and be ready to assist them back to the surface directly.

### WEIGHTING WITH YOUR SCUBA GEAR

**Objective:** Correctly weight yourself in order to offset the buoyancy of your body, your exposure suit, and your scuba equipment. With an empty BCD and while holding a full breath, you should float with only the top of your head on the surface.

**Value:** Correct weighting will allow you to dive comfortably. Diving over weighted will force you to overinflate your BCD to offset the negative buoyancy. Diving underweighted will force you to swim while underwater. Diving over weighted or underweighted can lead to serious injury.

**How It's Done:** To get your weighting correct:

- While breathing from your regulator, take a full breath and do not exhale.
- Deflate your BCD.
- Adjust your weight until you are properly weighted and are floating with the top of your head on the surface.
- Once you are weighted correctly, exhale and you will gently descend. Remember to equalize.
- As you relax more, your total lung volume will reduce.
- Your buoyancy should be checked each time you start a confined water session.
- It is worthwhile to complete a buoyancy check again at the end of the dive to ensure that you can sink with reduced pressure in your cylinder. Remember the air you breathe from your scuba cylinder has weight (several kilos/pounds worth in a full tank).



**TRAINING NOTE:** It is paramount that you spend time getting your students correctly weighted. Do not let them dive with too much lead. They will not be successful in trying to demonstrate trim and buoyancy control if they are over weighted. Also coach them in the positioning of ballast and in how to dump it in an emergency.



## EXPLORER 30 AND ADVANCED 35

### INTRODUCTION

Welcome to teaching RAID Core Programs: Explorer 30, Advanced 35. You have earned the ability to teach these more advanced programs as a part of the RAID core instructor remit. To do so safely and effectively, your role as a RAID instructor does not change, and your responsibilities remain the same; however, your overall approach may be different. Students enrolled in these classes are certified divers. Some may have many logged dives and experience in a variety of conditions, others may only have logged the minimums to meet the prerequisites for the course. Nevertheless, they should know the basics. Confirm they do and move on to the course work.

Each course has been carefully designed to make the instructor's job as straightforward as possible. RAID courses are deliberately planned in a way that presents the best opportunities for you to teach and for your students to gain experience and learn. Each dive in each of the following core programs has associated skills and clearly defined goals.

The outlines of the dives in this playbook are structured to give you the freedom to focus on your students' comfort, competence, performance and whatever deficiencies you need to help them with. The courses have been structured to allow you to relax, teach and make it a fun and instructive experience for your students.

Many experienced instructors enjoy teaching these programs more than anything else, and here are a handful of tips they've shared that may be helpful to you.

1. Wherever possible, do the teaching in confined water. That's where it's supposed to happen.
2. Guide, coach and mentor your students in open water.
3. Never assume, take the time to confirm... see point one (above).
4. Understand the goals of each class... precisely. Write that (those) down if necessary.
5. Understand how each dive contributes to reaching that goal. Write that down too, if you like.
6. Never forget your primary responsibility is safety. If in doubt, don't dive.
7. Students are all different, so the courses were created to have as few variables as possible.
8. Follow the standards and if you are going to err, err on the side of conservatism.

The clearest advice, regardless of how experienced you are, and especially for newer instructors, is READ THE Student manual in tandem with the instructor guide and slates. Reading the student manual, will help to give you a better understanding of your student's expectations, and a better chance of meeting and exceeding them.

**RAID NOTE:** To teach the related Divemaster core program, you are required to meet certain prerequisites and you are required to take additional instructor training.





## THE COURSES AND THEIR RELATIONSHIP TO EACH OTHER

The RAID Advanced 35 and Explorer 30 are linked. There are common dives throughout the two programs.

The Explorer 30 program involves three mandatory dives (Buoyancy, Navigation, and Deep) and two electives. While there are no mandated confined water sessions for Explorer 30 you may wish to include a confined water session for divers joining you who are not RAID OW divers or any diver who hasn't dived in a while. The confined water session's focus in most cases would be on buoyancy and trim. That said, if students are using drysuits, there is a mandated confined water session for skills involving drysuits. (Consult the drysuit manual and evaluate a student on all the skills listed there. It is recommended that students using drysuits for core programs are certified RAID drysuit divers or equivalent.)

The Advanced 35 program involves one confined water session and six OW dives consisting of five mandatory dives (Buoyancy, Navigation, Rescue and two Deep) as well as one elective. The confined water training is intended to provide time in controlled conditions for advanced skills development. For divers certified with other agencies, these sessions will introduce them to "The RAID Way" of diving and certain skills and techniques will be unfamiliar to them. In any case, some skills in this program are taken to a higher standard than on an OW 20. In addition, some new skills are introduced. These new skills are fundamental and a solid foundation to diving at a greater depth and with more proficiency than an Open Water diver.

**RAID NOTE:** Explorer 30 is NOT a prerequisite to Advanced 35, and in terms of progression on to further training (Master Rescue for example) both are seen as equal.

The core skill throughout is buoyancy control – especially on deeper dives that venture below 20 meters / 70 feet – and you're encouraged to focus additional time on this to allow your students to become very comfortable holding position in the water column without effort. (See THE ART OF TEACHING NEUTRAL BUOYANCY AND TRIM above.)

These confined water sessions also allow Advanced 35 or Explorer 30 students who may not have been in the water for some time to "brush up" on skills perhaps forgotten. For the "fresh student" who is newly qualified and just meeting minimum requirements, they provide the opportunity to step back and re-look at the equipment, the trim and the body positioning required to be a complete diver and a thoughtful attentive buddy.

Advanced 35 students are introduced to one of the many skills covered in the Master Rescue program, which provides some insight in the skills and presence of mind needed to handle diving emergencies.

As with all RAID programs, you must demonstrate the various skills above and in water clearly and slowly. Students will be encouraged to repeat skills until they are comfortable with it and understand its purpose have some competency and fluidity when demonstrating it.

**From the start, even in the pool, you must reinforce that the students are preparing for open water dives, for example:**

- Students should work with a buddy as part of a team.
- During confined water, designate an "working area" and limit surface activities to that area. (You can use it to simulate a deck of a boat.)
- Following on from that point, you can appoint one side of the pool as the side of the boat, and only that side can be used for support. Make it fun!
- No students in the water without supervision.
- In water have a float with a line down to a weight on the bottom as a decent (and ascent) reference.
- Students must wait for the instructor's directions before attempting any skill.
- Once back on the surface, students MUST always establish positive buoyancy first.

You must be careful to train within the course curriculum and any student who is not demonstrating proficiency or understanding and mastery of the skills, may not progress to the next session and / or level within this program.

It is the instructor's responsibility to work with the student to obtain proficiency, understanding and mastery of the skills. Remember: a good instructor will find the balance for each student.

**The open water section introduces the students to a range of different diving activities which are covered during the following dives:**

- |                                  |                   |
|----------------------------------|-------------------|
| • Diver Buoyancy Control         | (EXP30 AND ADV35) |
| • Navigation                     | (EXP30 AND ADV35) |
| • Rescue                         | (ADV35 only)      |
| • Deep 1 (limited 30 m / 100 ft) | (EXP30 AND ADV35) |
| • Deep 2 (limited 35 m / 115 ft) | (ADV35 only)      |
| • Elective Dive 1                | (EXP30 AND ADV35) |
| • Elective Dive 2                | (EXP30 only)      |

There are **"Dive Flexible Skills"** which may be conducted in addition to and during any one of the activities at your discretion during the required time for open water training.

The students must be advised before the dive if they are to perform one or all of the flexible skills and you will ensure the students are fully briefed on the skill with hand signals etc., and when the students will be required to perform the skill.

It is not the intention to surprise the student with one of the flexible skills. If conditions allow, then it is recommended to complete at least one of the **"Dive Flexible"** skills in the dedicated Rescue dive.

The RAID Instructor has the discretion of whether the student has mastered a skill or not and decide if further training may be needed to meet mastery of the skill.

Certification is upon the student meeting all prerequisite and mastery of the required skills. Discuss this with the RAID Dive Centre and students. If further time for in water training is required, this may be provided at the discretion of the RAID Instructor and Dive Centre.

During the open water dives, you will not be demonstrating the skills for students, but rather acting as an assessor and assisting where necessary. You may at any time present a "Failure / Alarm" and the student must take the appropriate action. Before each dive, you will brief the students on the activity and what skills are to be completed. These at no time override the safety aspects and precautions needed by a thinking diver. If a student does not want to dive for whatever reason, then they must not dive. Neither you nor your Dive Centre should push any student to do so.

► Ensure that weighting has been adjusted for the open water environment (salt / fresh water).

Either Advanced program (Explorer 30 or Advanced 35) is acceptable as a prerequisite for any program requiring an Advanced certification. The Explorer 30 program is a less theory rich program requiring only 5 dives where the Advanced 35 program has more theory content and requires 6 dives including 2 Deep dives. There are three common core dives and an elective dive that can be used as a credit in the Advanced 35 program if a student decides to upgrade their Advanced certification. The table below shows the common dives.

### DIVES CREDITED FROM THE EXPLORER 30 TO ADVANCED 35

Dives	1	2	3	4	5	6
<b>Explorer 30</b>	Buoyancy	Navigation	Deep 1	Elective 1	Elective 2	None
<b>Advanced 35</b>	Buoyancy	Navigation	Deep 1	Elective 1	Rescue	Deep 2

**Note: The Buoyancy, Navigation, Deep Dive 1 and the first Elective dive from Explorer 30 may be credited. This means that a diver advancing from Explorer 30 to Advanced 35 only needs to do two additional dives – the Rescue dive and the second Deep dive.**

Students that complete Explorer 30 can have dives 1 to 4 credited to the Advanced 35 Program. It is up to you to determine what will be credited. It may be that students have completed equivalent dives in another agency. This is accepted as long as you can verify what was completed. In most cases with divers from other agencies the Buoyancy session will need to be completed along with any dives not matching the RAID program.

Instructors should also look at the length of time since completing Explorer 30 and the diver's experience. As you may decide it is best to complete more dives if the student has not dived for some time.

**RAID NOTE:** Before each dive, the RAID Instructor will ask students to complete the "Dive Evaluation Check List" as discussed during the confined water training.

A RAID assistant or surface support is subject to the requirements of RAID General Diving Standards.

**REMEMBER:** Textbooks tell us that "student attention and retention is a function of engagement." In simple English RAID takes that to mean that part of your task is to show your enthusiasm for diving to your students. Be safe, but have fun, and let them enjoy their time with you and the experiences you share.

## CADET EXPLORER

This is a relatively new course in the RAID curriculum and allows youngsters 10 to 11 years old to experience all the advantages of the Explorer 30 program with the exception of the Deep Dive. Running classes for young divers is a special challenge for an instructor. Refer to the most up-to-date standards regarding ratios and course limits and be conservative. ALWAYS when dealing with Juniors, be respectful of them and their parent or guardian. Maintain control at all times, and communicate clearly, empathetically, and gently. It may take them a few extra tries to master the more advanced skills required of the Explorer program. The experiences that young divers take from your classes with them will shape their future as an underwater explorer.



### CONFINED WATER DIVE

Mandatory for Advanced 35 and recommended for Explorer 30

### CONFINED WATER SKILLS DRYSUIT (REQUIRED FOR EXPLORER 30 AND ADVANCED 35)

- Neutral Buoyancy.
- Inflator stuck open.
- Air in feet, making them buoyant.

### CONFINED WATER SKILLS (ADVANCED 35)

- Buoyancy and trim workshop.
- Entries and forward descents.
- Neutral buoyancy and hovering.
- Finning techniques:
  - Full flutter kick.
  - Modified flutter kick.
  - Frog kick.
- Weighting for high tidal volume.
- Negative entry and forward descents.
- Compass work:
  - Reciprocal course.
  - Square.
- Dive light use and signals.
- Gas depleted – gas sharing ascents SMB deployment underwater.
- S-Drill
- SAC rate.
- No mask swim.
- Unresponsive diver underwater (lift) Basic Life Support review (on land).

## OPENWATER DIVES FOR EXPLORER 30 AND ADVANCED 35

### SKILLS COMMON TO ALL DIVES

- Dive Planning.
- Dive Brief.
- Gearing up.
- Pre-Dive Buddy Check.
- Entry.
- Exit.
- Dive Debrief.
- Post Dive Equipment Care.
- SAC rate calculation.
- Dive Logging.

### BUOYANCY DIVE (DIVE 1)

Max 15m / 50ft (Exp30 / Adv35)

- Finning techniques.
- Flexible skill – if appropriate.
- Ascent & Buoyancy skill:
  - Stop at 10m / 33ft for 3 minutes.
  - Stop at 5m / 15ft for 3 minutes.
- Final ascent more than 1 minute.

### NAVIGATION DIVE: (DIVE 2)

Max 20m / 66ft (Exp30 / Adv35)

- Navigation skills.
- Distance measurement.
- Straight and Reciprocal course.
- Tour with natural & compass navigation.
- Flexible skill – if appropriate.
- Ascent & Buoyancy skill: as per buoyancy dive.

### RESCUE DIVE:

Max 25m / 80ft (Adv35 only)

- Rescue skills:
  - Exceeded NDL problem.
  - Missing diver.
  - Out of gas problem.
  - Gas share to 5m / 15ft safety stop.
- Flexible skill – if appropriate.
- Ascent & Buoyancy skill: similar to buoyancy dive.

### DEEP DIVE 1:

Max 30m / 100ft (Exp30 / Adv35) (Exp30 Juniors: Max depth 24m / 80ft)

- Timed task for narcosis.
- Test Effects on colors.
- Effects of pressure.
- Monitor gas consumption.
- Failure or alarm skill – flexible.
- Ascent & Buoyancy skill: as per buoyancy dive.





### DEEP DIVE 2:

Max 35m / 115ft (Adv35 only)

- Record gas, depth & time at bottom.
- Narcosis test.
- Buddies signal ascent at correct plan time.
- Navigation to ascent point.
- Failure or alarm skill – flexible.
- Ascent & Buoyancy skill: as per buoyancy dive.

**RAID NOTE:** Students will run this entirely with you there to advise on any planning issues and to ensure safe completion of the dive with the plan. You should try to let the students complete all planning without intervention, if possible. All that needs to be done is to set the training objectives that the plan will be built around.

### ELECTIVE DIVES:

Max 25m / 80ft (Exp30 / Adv35)

- Underwater tour.
- Elective specific skills.
- Ascent & Buoyancy skill: as per buoyancy dive.
- Flexible Skills for any dive.
- Deployment of surface marker buoy.
  - Underwater from 5m / 15ft.
  - On 2 separate dives.
- Exceeded NDL limit.
- Out of gas - alternate gas supply ascent, provided by donor.

### RESCUE OVERVIEW

Before the dive, you must discuss with your students the real issue regarding “rescue”. A safe dive is a dive without the need for a rescue. There are many dives where people and divers are assisted, and this is what the students should focus on and build awareness of.

Most problems can be prevented if divers are more aware of other divers having problems, such as exhaustion, over breathing, low on gas, short of allowable dive time, getting cold or overheating.

Sometimes small issues lead to big problems requiring the diver to be rescued, which may not have been necessary if other divers or people had been more aware. The Advanced 35 diver should concentrate on the small things and stop problems becoming large.

One important discussion point with your students is the topic of “self-preservation.” The first question we must ask ourselves when faced with a real rescue situation is: “Can I help, or will I just make the situation worse?” Explain to your students that they must be mindful not to endanger themselves, the victim and other divers.

### DEEP DIVE REVIEW

Discuss with the students when planning a deep dive that there must be an appropriate objective; some end result that makes the added risks and responsibilities of going deeper, worth it.

The objective must be singular and simple as depth has many limiting factors. However, the safety parameters of the dive (gas limitation, non-decompression times) determine and have priority over the objective.

The objective must be reasonable and not just for the thrill of diving deep and the risks associated with it. Deep diving is about the diver's own personal limits and training; it has nothing to do about the depths what other divers may dive to.

Advise students not to dive deeper than the training received, and skills mastered and to be a responsible thinking diver.

### SKILLS SPECIFIC TO THE ADVANCED PROGRAMS

#### BUOYANCY CONTROL

##### EXPLORER 30 AND ADVANCED 35

**Objective:** Improve your buoyancy skills and demonstrate your readiness to complete the deeper dives.

**Value:** This skill is an important dive for the student and Instructor, as it is the foundation for the students' future diving experience.

**How It's Done:** You will hold position in the water column (hover) at various depths without moving up or down more than one meter, three feet.

**TRAINING NOTE:** Have your students ascend slowly (9m/30ft per minute) from their diving depth in a controlled manner so that they can stop and establish neutral buoyancy at 10 meters / 33 feet for three minutes.

After three minutes with minimal loss of buoyancy or control; students need to slowly move up to 5 meters / 15 feet and again establish neutral buoyancy and hover for another three minutes with minimal loss of buoyancy or control.

#### FINNING TECHNIQUES

##### EXPLORER 30 AND ADVANCED 35

**Objective:** You will perform the following three propulsion techniques while neutrally buoyant.

**Value:** Using the appropriate finning technique will allow you to choose a method of movement appropriate to the environment. Correct finning demonstrates control and the ability to concentrate on issues such as photography, data logging or maneuvering closer to look at small subjects.

These techniques are important to develop as they reduce the chance of kicking the bottom where there is fragile aquatic life and / or silt which would ruin the visibility.

#### How it's done:

##### ► Standard flutter kick:

- Legs up and down and finning from the hip.
- This method tends to push propulsion forwards and down.

- In silty areas you can sometimes stir up the silt.

► **Modified flutter kick:** (The modified flutter kick is similar to the standard flutter kick.)

- Legs up and down and finning from the hip with the exception that the stroke is not continued beyond the midline of the diver.
- This method keeps the propulsion up and away from silty areas.

► **Frog Kick:**

- This is the most effective fin kick. Propulsion is maximized, and gas use is minimized.
- The diver should be neutrally buoyant in a flat position with the knees bent and the fins flat in the water.
- The legs should not drop at the hips.
- Rotate the ankles out and thrust the legs out straight (or partially straight in some environments) bringing the soles of the feet together in a clapping motion.
- This pushes water directly behind the diver and not towards the bottom.
- Once the diver is in motion, they should glide briefly and repeat.

Divers will practice these kicks and demonstrate their use while swimming at least 50 meters / 165 feet for each technique.

### WEIGHTING FOR A HIGH TIDAL VOLUME DIVER EXPLORER 30 AND ADVANCED 35

**Objective:** This exercise shows how high-volume breathing effects the buoyancy of a diver.

**Value:** The tidal volume of a diver increases when the diver has to struggle against a current or just swimming too fast. The CO<sub>2</sub> buildup from over breathing at depth can have dangerous effects and the diver must know when to STOP, BREATHE, THINK and ACT.

**How it's done:** In shallow water no deeper than 3 meters / 10 feet, swim for 10 minutes at a constant fast pace.

**TRAINING NOTE:** Advise students to try and not slow down.

If students get to the stage where they are breathing hard and cannot catch their breath, signal them to STOP, BREATHE, THINK and ACT (get control).

If they bob up to the surface - the reason for this is that the tidal volume increase is so large it has brought them to the surface due to the increased (lung) positive buoyancy.

At the end of this fast pace swim, alert student how the increase drawing of breath will increase the lung volume. Have a few weights placed along the route they are swimming so that they may collect these to maintain neutral buoyancy. The diver who can complete this skill with no weights is a cardio fit person.

**Explain to students that this exercise is important because**

Firstly, this is a good practical example of buoyancy effects and the increase tidal volume has with each breath taken, while under higher physical exertion and / or anxiety.

## OPENWATER DIVES FOR

The second and most important reason for this exercise is that it will show the effect that “OVER BREATHING” has on our body’s ability to reduce CO<sub>2</sub> build up in our lungs, which may be compounded at depth. This build up can quickly lead to panic, unless the student knows to STOP, BREATHE, THINK and ACT.

### Do you add additional weight to compensate for this problem?

- The answer is not quite so simple. The reason for performing this skill in shallow water is because of the rapid change in pressure and buoyancy, in such a shallow depth. If you were planning a dive within 10 meters / 33 feet and know that it may involve higher physical exertion, then the answer is yes, add the extra amount of weight which was collected during the exercise.
- Alternatively, the loss of buoyancy from the neoprene wet suit below 10–15 meters / 33–49 feet would be generally enough to handle the excess buoyancy and there are not many people exerting themselves on ascent, especially between 10 meters / 33 feet and the surface in sport recreational diving. When diving in a dry suit, you may have to consider adjusting weight to compensate for the increase tidal volume and buoyancy even at depth, as buoyancy is not lost due to compression of the dry suit.
- The answer is to slow the breathing rate down, exhale completely and take slow deep breaths reducing the CO<sub>2</sub> levels.

**NOTE:** Remind students that over breathing can become a vicious circle - don't let it happen.

## COMPASS WORK AND NAVIGATION EXPLORER 30 AND ADVANCED 35

**Objective:** You will use a compass, to set and follow a reciprocal course and in addition, will learn the correct technique to swim a square pattern arriving back at their starting point.

**Value:** Skill with basic underwater navigation will also aid to lower diver anxiety and boost confidence. Being able to conduct an underwater tour and arrive safely at the intended exit point... and to visit points of interest on the way... is fun and exciting.

### How It's Done:

1. Hover above the bottom and orientate the compass and ensure it is level.
2. Check the compass is level by moving it in a horizontal plane from side to side.
3. The compass card / needle should hold position pointing to North and rotate as you turn from side to side.
4. Reciprocal: Swim a reciprocal along the bottom by heading the compass 180-degrees off the bearing. Once the buddy pair arrives at the designated distance, they are to set a reciprocal course and return. The objective is to return as close as possible to the starting point. Council the students on effects of current so that they are able to make adjustments on future attempts.
5. The buddy should be counting kick cycles.
- 6.



7. Swim a square by setting 90-degree bearings at every corner.

### TRAINING NOTES:

- Before the dive, you can orientate the students at the dive site by confirming the cardinal points of the compass. This will help student familiarize themselves with the surroundings and they can then draw a simple map on their slate or wetnotes to use as a reference and to overlay bearings when underwater.
- You can tell the students that while underwater you will ask them to orientate themselves and then you will ask each of them to indicate where the shore or the boat is, or deep water, etc.
- At depth have students orientate themselves and then indicate: the cardinal points of the compass. Once the students are orientated have them set a bearing and swim a course of about 30m / 100ft. One buddy will be navigating with the compass and one will be measuring the distance.
- You should run a line out for students to measure distance. Kick cycles and arm spans will be used. The students will write their kick cycles and arm spans on their slate. Students will use the distance measuring techniques you taught them in the confined water session. (If this dive is for the Explorer 30 course and a confined water session was not conducted, make sure to explain, demonstrate and practice on land before students perform this underwater.)
- While hovering in a horizontal, stationary position and holding the compass level, complete a 360° horizontal turn keeping the compass level and student maintaining their horizontal position in the water
- Make each buddy pair has an opportunity to try the navigation skills and the distance measuring skills.
- Once all exercises are complete you can have the group start the underwater tour while combining natural and compass navigation. At this point you become an observer and later council the group on their navigation points and provide tips for improvement. The objective of this exercise is to complete a dive tour and navigate to the planned exit point.
- Students can decide the best route to follow.
- The emphasis is to let the students plan the dive and then dive the plan, and you and assistant are there to ensure safety and to observe.
- Surface supervision and Instructor assistance is still necessary and possibly more so to ensure this dive is conducted safely and well within all parameters.
- It is up to you to make this as interesting as possible. With innovation this may prove to be the most exciting of all the dives in this Level. Keep it safe and FUN.
- Tracking varying environmental conditions when planning this dive is very important. The open water environment is highly changeable and can differ from site to site, even when they are close to each other.
- Also, speak to your students about "Natural Navigation." There are usually underwater features that can help divers orient themselves and find their way especially with the aid of a compass. Examples of this could be specific plants or coral features underwater or even the ripples created in the sand near the shallows which can show which direction heads towards shore



### DIVE LIGHT USE AND SIGNALS EXPLORER 30 AND ADVANCED 35

**Objective:** You will learn and demonstrate proper dive light use and the light signals used when diving at night and in low visibility. You will be able to communicate basic messages to your buddy(ies)

**Value:** Using a dive light allows a diver to see their surroundings in low viz conditions or at night, and at depth, in true color. There are several light signals that divers use to communicate with their buddy and other team members.

#### How It's Done:

You can use regular hand signals by shining light on your hand.

#### True light signals are:

- Quick side-to-side movement underwater = attention, look this way.
- Quick up and down movement underwater = I have a problem.
- Slow large circle = OK (like finger and thumb circle).

Be careful not to shine the dive light in your buddy's eyes.

**TRAINING NOTE:** Let your students know that if a light is required on a dive, then divers should also carry a backup light. Backup lights are an emergency measure and therefore they should be carried in a spot that's easily accessible, and a diver must be able to find it with their eyes closed to simulate black out.

### TIMED SKILL AT DEPTH EXPLORER 30 AND ADVANCED 35

**Objective:** You will be aware of the effects that narcosis has on us at depth, even when we think we are fine.

**Value:** By becoming more aware of narcosis we can better identify its effects and mitigate those effects with careful planning and preparation.

#### How It's Done:

Your instructor will assign increasingly complex mental or physical tasks for you to try on the surface and again at depth. You'll take note if it takes longer to "think through the tasks" at depth.

**TRAINING NOTES:** You can ask students to write down on the slate their full name from left to right backwards. Or you can ask math questions. You can have fun and decide on different timed tasks appropriate and safe for your area. An interesting exercise is, every few minutes, hold up a number of fingers to your students (say, three fingers), and they have to respond with the same number plus one (four fingers).

### EFFECT OF COLOUR LOSS AT DEPTH EXPLORER 30 AND ADVANCED 35

**Objective:** You will become aware of and witness the dramatic loss in color divers experience as their depth increases.

**Value:** You need to understand that your eyes can play tricks on you underwater. The colors of your buddy's gear change (it can be more difficult to distinguish them from other divers), and wildlife will take on a different complexion too. Carrying a light on your dives is a great visual aid at all times.

#### How It's Done:

You will use a dive light to bring out the true colors of various objects at depth. Your light should be secured to you (lanyards and goodman handles are helpful), and it should be simple to deploy.

**TRAINING NOTES** You can make a color chart or gather some colored items students can study and shine lights on underwater.

Whatever you decide to make or use, ensure you are not littering the environment and that it is safe for your student to use in your environment.

### EFFECT OF PRESSURE EXPLORER 30 AND ADVANCED 35

**Objective:** Observe the dramatic effect that pressure has on airspaces at depth

**Value:** By observing the effects of pressure on an inanimate object with airspaces you will have a better understanding of what happens to the airspaces in our body while we are underwater and have a greater appreciation of why we need to manage these airspaces – especially, our ears, mask and lungs – and why a diver never holds their breath.

#### How It's Done:

- You can take any flexible item that has air spaces underwater and the pressure will affect it.
- You can take a plastic water/juice bottle down and it will crumple dramatically, however remember that you have to manage this bottle so that you don't lose it. Carrying it in your hand is not an option.
- Other ideas are foam coffee cups, table-tennis balls, or any item that demonstrates the effects of pressure and collapses under pressure and expands on ascent. A child's balloon is also an option.

**TRAINING NOTE:** There are many objects that will deform when taken to depth. Be wary of anything that might deform explosively. Do not take glass and be careful with some hard plastics. And ALWAYS bring up what you take down. Set a good example for your students and show respect for the environment.

### EXCEEDED NDL LIMIT EXPLORER 30 AND ADVANCED 35

**Objective:** You will know how to react if you have accidentally exceeded your NDL on your computer.

## OPENWATER DIVES FOR

**Value:** By doing a simulation of a required decompression stop you will have a better understanding of how to complete a required decompression stop in the event of falling into required decompression because of inattention, or something else beyond your control. You will also get an idea of the additional risks for you and your buddy, and the value of being correctly trained for staged deco and for carrying the additional gas required for decompression diving.

### How It's Done:

- You may simulate with a predetermined signal that you and your buddy have exceeded the NDL time limit and that a required emergency decompression stop is required at 5 m / 15 ft for 5 minutes.
- Students will signal their buddy and follow ascent procedures while performing the required decompression stops at depths and times indicated by you.

## SMB DEPLOYMENT UNDERWATER EXPLORER 30 AND ADVANCED 35

**Objective:** Deploy an SMB and use it as a reference and ascent line.

**Value:** Having a reference line to the surface will make the ascent easier, more controlled and safer than attempting a free ascent, especially where visibility is limited or where there are no other references available. An additional value is that a correctly deployed SMB signals your team's whereabouts to surface support and can offer some extra buoyancy in an emergency.

### How It's Done:

1. Make sure that you are neutrally buoyant and comfortably holding your depth.
2. Signal to your buddy that you are going to send an SMB up.
3. Attach the SMB to the reel/spool.
4. Keep the line short between the SMB and the spool.
5. Deploy a SMB using the most appropriate method.
  - a. Methods may include: oral inflation,
  - b. second stage exhaust bubbles,
  - c. BCD exhaust,
  - d. or low-pressure inflator hose inflate.
6. Before deploying the SMB look up and around to make sure there are no other divers above you.
7. Stay in trim and horizontal.
8. When the SMB reaches the surface tighten the line with the spool and keep the SMB directly above you.

## UNRESPONSIVE DIVER LIFT ADVANCED 35

**Objective:** Safely lift an unconscious diver to the surface

**Value:** This is a good skill to have in the event you come across an unconscious diver. Knowing the right sequence of events will get you to the surface

**How It's Done:** This skill shall be practiced in water no deeper than 3 meters / 10 feet.



The instructor will demonstrate, and the student will practice.

**The suggested method to ascend with an unresponsive victim is as follows:**

1. Rescuer must establish neutral buoyancy and check console.
2. Secure victim from behind.
3. Establish victim's neutral buoyancy.
4. Check victim's console / parameters.
5. Do not attempt to replace the mouthpiece if it is out the victim's mouth.
6. If it is in the mouth then hold the mouthpiece in the mouth, while lifting the chin from behind.
7. Open / check victim's dry suit over pressure valve: otherwise over pressure may cause uncontrolled positive buoyancy. A controlled ascent would be better though.
8. While starting to fin up, release air from rescuer's BCD first, even dump all of it if the victim's BCD can handle the lift.
9. Control ascent with victim's BCD, releasing air with rescuer's left hand, and the right hand supporting the mouthpiece in the victim's mouth.
10. When the victim has a dry suit, the rescuer's left arm is supporting the victim's left arm in a vertical position to help vent air from the victim's dry suit. The rescuer's right hand is over the top of the victim's right shoulder, supporting the victim's mouthpiece and chin.
11. On the surface establish positive buoyancy for the victim, drop the weights, and inflate BCD and dry suit, if applicable.
12. The rescuer must establish buoyancy; whistle / call for help and maintain the victim's open airway. Someone may have to do rescue breathing on the surface in shallow water, but only if it will take some time to get the victim out the water,
13. It is preferable to get the victim out the water as soon as possible before initiating rescue breathing.
14. Remove equipment in shallow water before attempting to remove the victim from the water.
15. Remove the victim out the water onto a hard surface and if no other more qualified personnel are in attendance, check for airway breathing and circulation.
16. If there is no breathing, then give rescue breaths as described below (BLS).
17. If there is no pulse / circulation, then initiate CPR. The student need not master this skill nor the BLS as it is an introduction to rescue.

**TRAINING NOTE:** The reasoning to utilize the victim's BCD to control the ascent is that in the event the rescuer has to release the victim for whatever reason, the victim will float to the surface and not sink. The rescuer, who may be negatively buoyant, has the ability to prevent themselves from sinking and can ascend to the surface following the victim up.

The simulated victim must continue to breathe normally throughout the exercise and must monitor their console.

Ascent rates must be maintained even when attempting a rescue.

## BASIC LIFE SUPPORT OVERVIEW (ON LAND)

### ADVANCED 35

**Objective:** Basic life support overview on land includes BLS, CPR and AED

**Value:** This is a great skill to have when something goes wrong with a diver. Knowing this skill may be the difference between life and death.

#### How It's Done:

**Your instructor will discuss the following:**

- How to deal with an unconscious breathing casualty
- How to deal with a casualty that is conscious but struggling to breath
- How to deal with an unconscious non breathing casualty
- When and how to call for help
- How to perform ventilations for a non-breathing casualty
- Review on how to perform CPR
- Review on when and how to deliver oxygen to an injured diver
- How to deal with a confused or disorientated casualty or a casualty with lowered alertness
- How to deal with a casualty who has become paralyzed or is having chest pain
- Explain what to do with dive gear if there has been an accident or incident with a diver while diving.

### ELECTIVE DIVE 1 (AND DIVE 2)

#### EXPLORER 30 AND ADVANCED 35

(ELECTIVE DIVE 2 IS THE SAME FOR EXP 30 ONLY)

**RAID NOTE:** This dive may be credited from the RAID EXPLORER 30 COURSE. Maximum Depth: 25 meters / 82 feet

This dive is chosen based on logistics of your area and the interests of the students on your program. It is best to direct this training based on appropriate dives for your area. Elective dives can be chosen from any specialty area that does not require Advanced 35 (or higher?) as a prerequisite. For example, Dive 1 of the Night program would be acceptable but dive 1 from Ice Diving would not. Ice Diving requires the higher skill sets from Advanced 35 before commencement.

The specialty area chosen is to have its first dive and skill sets used for the Advanced 35 program. This way your students will get a taste of that style of diving.

#### Examples of dives acceptable for electives:

- Night
- Wreck
- Search and recovery
- Naturalist or environment
- Photography
- Drift
- Nitrox
- Boat
- Dry suit

**TRAINING NOTE::** The RAID Instructor must be certified as a diver in the particular specialty as a minimum to direct these elective dives. However, they do have to be an instructor in this specialty to teach the stand alone course.

### ELECTIVE DIVE SKILLS

Students are to be briefed and perform the skills from Dive 1 of the Specialty Elective chosen. This needs to be to the satisfaction of the RAID Instructor.



## OPENWATER DIVES FOR

### DIVE FLEXIBLE SKILLS

**RAID NOTE:** The stops may be ignored by students performing the “Flexible skills”. The students who did not perform the required stops for this dive must do so later in another dive.

Remember this dive is all about buoyancy so try not to overload the students with skills. Their primary focus should be the understanding of buoyancy and how their diving is affected by changes made in the confined water session.

The Flexible Skills may not be attempted on a Night or Low Visibility Dive or Deep Dive.

**RAID NOTE:** This skill may be credited from the RAID EXPLORER 30 COURSE



OXYGEN PARTIAL PRESSURE AND EXPOSURE TIME LIMITS FOR NITROGEN-OXYGEN MIXED-GAS WORKING DIVES		
Normal Operations		
Oxygen Partial Pressure (ATA or BAR)	Maximum Duration for a Single Exposure (min.)	Maximum Total Duration for any 24- Hour Day (min.)
1.6	45	150
1.5	120	180
1.4	150	180
1.3	180	210
1.2	210	240
1.1	240	270
1.0	300	300
0.9	360	360
0.8	450	450
0.7	570	570
0.6	720	720
From NOAA 1991 Diving Manual		

## MASTER RESCUE

### INTRODUCTION

The real purpose of this section is to help you to deliver a creative, safe and “RAID Appropriate” Master Rescue course. Use it in conjunction to the student manual and your instructor slates and instructor wetnotes. This will give you a clear idea of not only what you need to do, and what your students are expecting, but it will also give you some tips on how to do it and some creative ideas how to make the program engaging and informative for those students.

### CONFINED WATER SKILLS LIST

#### Review:

- O2 kit and delivery.
- AED unit and use.
- Basic Life Support procedures.

#### Swimming requirements:

- Swim 300m / 300 yards no swim aids.
- Tread water 15 minutes.
- 10m / 33ft U/W swim full gear after exhaling.

#### Confined Water Dive 1

- Neutral buoyancy and hovering 2 minutes.
- No mask breathing.
- Oral inflation of BCD underwater.
- Failure scenarios:
  - Feeling unwell.
  - Low or out of gas.
  - Out of gas swim.
- SMB Deployment while hovering.

#### Confined Water Dive 2

- Rescue Buoy throw.
- Reach rescue.
- Exits and carries.
  - One rescuer – pack, fireman, saddleback, underarm, lifeguard, ladder.
  - Two rescuers – Dual underarm support and carry, roll up, RIB.
- Tired diver on surface.
- Panic diver on surface.
- Unresponsive diver on surface.

#### Confined Water Dive 3

- Surface tows.
  - Underarm



- scuba unit
  - push.
- Equipment removal during rescue.
- In water rescue breathing.

### Confined Water Dive 4

- Underwater response for:
  - Tired diver.
  - Fearful diver.
  - Panic diver.
  - Passive panic diver – unresponsive.
- Non breathing diver lift:
  - Victims BCD (gas in cylinder).
  - Rescuers BCD (no gas in cylinder).
- Diver feeling unwell or shows symptoms of narcosis, hyperoxia or hypercapnia
- Suspected hyperoxia or seizures
- Missing and lost diver review.
- Practice – unresponsive diver underwater.

### Flexible skills Confined Water

- SAC rate.
- Out of Air/No mask swim plus ascent.
- Diver tow for 50 meters/165feet.
- Kit removal and replacement in deeper water (This is an optional skill maximum depth 3meters/10 feet).
- Deploy SMB

## OPEN WATER SKILLS LIST

### Open Water Dive 1:

Max 15m / 50ft

- Dry assists:
  - Throw assist
  - Reach assist
- Diver in need of assistance – on surface
  - Tired diver including towing methods
  - Stressed diver
  - Panicked Diver
- Optional Scenarios
- Missing or lost diver search I
- Ascent and buoyancy skills
- Emergency weight system release
- Exiting methods appropriate for area

## Open Water Dive 2:

Max 18m / 60ft

- Optional scenarios:
  - Blank computer screen/dead battery.
  - Failure to monitor console/SPG or Depth.
  - Maximum allowable no deco warning limit reached.
- Unresponsive non breathing on the surface.
- Diver in need of assistance – underwater.
  - Tired diver.
  - Stressed Diver.
  - Panicked Diver.
- Unconscious diver lift.
- Victim buoyancy or rescuer buoyancy.
- OOA stationary

## Open Water Dive 3:

Max 18m / 60ft

- Optional scenarios missing
  - bad buoyancy control
  - Unwell, tired, out of breath
  - leaking mask forces panic
  - any simulated equipment problems
- Gas sharing ascent.
- Unresponsive diver on surface.
  - Rescue breaths.
  - Remove gear both divers.
  - Exit.
- SMB deployment while hovering.
- Missing / lost diver search II.

## Open Water Dive 4:

Max 18m / 60ft

- Final Scenario I - Lost diver:
  - Panicked when found
  - Assist to surface and exit
- Final Scenario II - Lost diver:
  - Unresponsive when found
  - Lift, buoyancy, breaths protocol
  - Remove gear, tow, exit
    - Management including CPR, O2



## MASTER RESCUE SKILL DESCRIPTION

### RESCUE BUOY THROW AND RETRIEVE WITH DIVER/VICTIM WHILST WEARING FULL EQUIPMENT AND EXIT

**Objective:** Demonstrate the ability to correctly identify and respond to a distressed/panicking diver at the surface using a rescue buoy.

**Value:** Using a rescue buoy can save crucial time as well as improve safety on behalf of the rescuer if they do not have to get in the water to conduct the rescue. It also allows easier access to additional rescuers who can help pull the rope and the diver back in.

This sometimes presents interesting problems to overcome; for example, how does a small person attempt to extract a larger person from the water?

Your instructor will guide you through the thought process to come up with workable solution.

#### How It's Done:

- The class will be separated into rescuers and victims.
- Coach the victim on what signs of distress to show and what type of victim you would like them to be.
- Acknowledge the victim in the water and advise him/her that you will be able to provide assistance.
- Keep eye contact with the victim as they may suddenly sink.
- Secure the end of the throw line (throw rescue buoy) to a fixed strong point and advise the victim that you will throw the rescue buoy.

**TEACHING NOTES:** Use realistic scenarios and ensure all participants get a chance to be the rescuer as well as the victim. Simulate situations where the diver/victim is unable to remove their own equipment, or exit without aid/assistance etc.

Teach your students to throw the line/flotation device past the victim instead of at the victim or in front of them. It is much easier to pull the float back to the victim and they will have a higher chance at successfully retrieving it than if you come up short and they have to swim for it. They may not be responsive to your commands as well as too tired.

### REACH RESCUE:

**Objective:** Demonstrate the ability to identify and conduct a surface rescue for a distressed/panicking diver using the reach and extension methods.

**Value:** A reach rescue gives added safety measures to the rescuer as it keeps them out of the water or in shallow water with the ability to break contact with the victim when needed. It also saves time since rescuer do not need to kit up.

#### How It's Done:

- You will be asked to simulate situations where the diver/victim is unable to remove their own equipment, or exit without aid/assistance etc.
- Acknowledge the victim in the water and advise him/her that you will be able to provide assistance.
- Keep eye contact with the victim as they may suddenly sink.

- Ensure the victim has established positive buoyancy. If you can reach them, ensure that you, the rescuer, are holding firmly to a secure point before reaching out to the victim, as you might be pulled into the water.
- If using a pole, inform the victim that they must grab/secure it as soon as possible and hold on whilst being pulled in. If the rescuer needs to for their safety, they can always let go of the pole and attempt another type of rescue including a throw buoy or in-water rescue.

## EXITS AND CARRIES

**Objective:** Safely demonstrate several one and two-person exit techniques and carries

**Value:** Some divers may need assistance getting out of the water. Knowing proper methods helps ensure safety and can help prevent unnecessary injuries in different environments.

**How It's Done:**

### One Rescuer Exit Techniques:

All of these techniques need a certain amount of strength and careful consideration. In your practice and training you will realize your limitations and the need to consider these when planning.

#### ► Back Pack Carry

- This is for a sloping exit which allows for walking in and out.
- The injured diver is face forward over the rescuer's back with both arms over the rescuer's shoulders.
- It is advisable to get the injured diver's arms up over the rescuer's shoulders as far as possible.
- The rescuer will hold each arm against their chest.
- With this type of carry, it is not too difficult to lower the injured diver to the ground when safely out the water.

#### ► Fireman's Carry

- This is for a sloping exit which allows for walking in and out.
- The rescuer carries the injured diver across their shoulders, whilst holding one leg and one arm.
- This type of carry, although it may be easier to do, provides some difficulty when lowering the injured diver to the ground.

#### ► Saddleback Carry

- This is for a sloping exit which allows for walking in and out.
- The rescuer carries the injured diver across the lower back, whilst holding the shoulders and thigh of the injured diver.
- This allows the injured diver to be lowered to the ground quite easily.

#### ► Under Arm Carry/drag

- This is for a sloping exit which allows for walking in and out.
- The rescuer, from behind the injured diver, wraps their arms under the injured diver's arms and locks their hands together on the injured diver's chest.
- Then whilst walking backwards pulls/drag the injured diver out the water.

#### ► Life Guard Exit on a low dock/quay

- The rescuer exits the water whilst holding the injured diver's hands on the side.

- The rescuer pulls the diver out the water.

### ► Ladder Exit up to a high dock/quay

- A strong rescuer walks up a strong ladder whilst holding the injured diver who is straddled on their chest, shoulders and thigh.
- This is only for the very strong rescuer and a light weight injured diver!

## Two Rescuers Exit Techniques:

### ► Dual Under Arm Support

- This is for a sloping exit which allows for walking in and out.
- The rescuers, on each side of the injured diver, hold them in an upright position, with one of their arms under the injured diver's arm and over the injured diver's shoulder.
- The injured diver's arms are across the rescuer's shoulders whilst exiting the water.

### ► Dual Under Arm Carry/drag

- This is for a sloping exit which allows for walking in and out.
- The rescuers, on each side of the injured diver, hold under each of their arms whilst they are facing down/forward, not backwards.
- The rescuers carry the injured diver out the water (legs drag behind).
- The reason the injured diver is facing down/forward is that in the event they cough up water or get sick, they do not swallow it again!

### ► Roll Up Exit

- The rescuers need a net/tarp/canvas sheet, secured onto a dock/quay/ boat deck, with the other end in the water, rolled around the injured diver and back to the dock with ropes/lines to the rescuers.

- The rescuers then pull/roll the injured diver up out the water.
- This exit can also be used by one rescuer with a large towel/sheet.
  - Whilst the rescuer stands on the end of the towel/sheet, the other end goes down, between the 'hard side' and the injured diver, into the water, around the injured diver and back to the rescuer.
  - The rescuer then pulls up on the ends and rolls the injured diver out the water.

### ► RIB Quick Lift

- This involves one rescuer and two surface supports.
- Lie the victim horizontally alongside the RIB, whilst keeping the head above water.
- Two persons standing in the RIB, whilst holding one arm and one leg (right arm and leg or left arm and leg), quickly pull up the victim onto the top of the pontoon.



- The rescuer in the water will assist by pushing (up) the victim at the hips. The victim will lie face up on the RIB pontoon, after which they can be moved to a safer location on the RIB.
- This lift can be practiced on the side of the pool or any other similar platform.
- When you add the support of a third person to help extraction, the physical limitations are improved and the quicker the injured diver will get to a safer environment.

## IN WATER RESCUE – SURFACE

**Objective:** Demonstrate proper in-water rescue techniques including the approach, evaluation and contact for tired, distressed, panicking and unresponsive victims on the surface

**Value:** The method of approach and evaluation towards all victims at the surface remains the same so becoming proficient in this skill will allow divers to assist in a wide variety of situations.

### How it's done:

- **Assessment**
  - STOP, BREATHE, THINK AND THEN ACT.
  - Call for help and ensure that you get a favorable response
  - Now you know you have surface support before entering the water.
- **Response**
  - If the response, with a swimming assist, is from the shore/boat, you may need surface support to keep visual contact and direct you to the distressed diver, as it is possible to lose sight when swimming out.
  - Response by a rescuer in the water; blow your whistle and call for help before swimming towards the victim on the surface.
  - The rescuer needs to judge the situation and evaluate the correct approach.
  - Blowing your whistle and calling for help is not the correct response to take for a tired diver who only needs a tow back to the boat/shore.
  - On the other hand, a diver holding the chest and then rolling over in the water face down, showing no movement, needs the rescuer to respond with a loud blast on the whistle/call for help.
- **Evaluation**
  - Stop well away from the diver/victim, so if panicking starts, they cannot reach you to try to climb on top of you.
  - Announce yourself and ask if assistance is needed.
  - Evaluate the response and determine the physical and psychological level of the diver.
  - Verbally try to get the diver to establish positive buoyancy (inflate BCD and/or drop weights) if not done so already. Do this whilst trying to identify the diver's BCD inflator/weight system.
  - Be prepared to fin away from the diver if panicking starts and they try to swim at you. Do this by positioning your body, so that you are leaning back on your BCD (if wearing your scuba unit) with your legs/fins towards the diver, ready to kick away.
  - At the same time, if wearing your scuba unit hold the BCD dump valve ready to release air and mouthpiece for a quick descent.
  - It is important to judge the situation and use common sense when evaluating your need to make physical contact sooner rather than later. Common sense is needed; for example, a diver/victim whom you know may be having a heart attack and requires assistance quickly.
  - If the rescuer is responding and has some sort of flotation, it must be able to provide ample flotation to the diver. If not, and the device sinks as soon as the diver uses it for support, the negative physiological impact on the diver may push the diver into full Panic.
- **Contact**
  - If the diver/victim responds favorably by responding to instructions or calming down on receipt of a flotation device, for instance, then make physical contact (preferably from behind) and follow through ensuring the BCD is

fully inflated and the weights have been dropped, whilst talking to the diver and reassuring that you are there to help.

- Never let your guard down as absolute fear or panic can easily surface. Watch the diver's/victim's eyes as they are a good indicator. Try as soon as possible to ascertain the diver's problem and then assure them it will be resolved. If panic does surface, push yourself down underwater and away. Keep your regulator and BCD dump valve close, if you have one.

## TIRED DIVER – SURFACE

A diver needing help may or may not ask for help.

- Assess the situation and ask if the diver needs assistance, which could be a simple act from taking a camera and passing it up to the boat crew, or a swim assist/tow back to the boat.
- Frequently the problem is fatigue.
- Assure the diver that you can help.
- Make you assist as low key as possible, reassure the tired diver and push, pull or tow them to safety.

## PANIC DIVER – SURFACE

The signs to look out for are:

- The diver's head is well above water.
  - Swimming strongly, arms and legs thrashing.
  - No recognition or response to verbal contact.
1. Stay outside their reach and keep attempting to break through verbally to establish positive buoyancy and offer a floatation device, but not your BCD (if you have one) as you will need this later.
  2. Watch for exhaustion and be aware that this may be sudden and without warning, causing the victim to sink quickly.
  3. Move behind the victim and be able to quickly respond to this possible scenario. When you see exhaustion taking hold, move in from behind the victim, take a firm hold of the scuba unit, establish positive buoyancy (inflate BCD/drop weights) reassure them that you are there to help and tow from behind, back to the shore/boat.
  4. Another effective method is 'the carrot and the donkey' trick. If the strongly panicking diver moves towards you in the attempt to climb on top of you, whilst keeping just out of reach, entice the diver to move towards the area where you wish them to go. This saves you quite some work.
  5. Remember use your head not brawn! There are drawbacks to this in that the diver may become suddenly exhausted and sink and you will have to quickly respond to this.
  6. There is another approach that can be used, and that is to descend underwater with scuba and hover directly under the victim who is on the surface and monitor. Identify the weight system to see if it is released or not. If not, and only if it is safe to do so, release the weights from underwater. Be very careful of the diver's legs hitting you, so try to approach from behind.
  7. Positioned directly beneath the diver underwater also enables you to respond quickly if the diver should suddenly sink.
  8. When you deem it safe and the diver has reached near exhaustion, ascend behind the diver, hold on to the back of the diver's scuba/CCR unit (do not pull him/her under) and establish buoyancy with the diver's and your own BCD's.
  9. You may have to orally inflate the diver's BCD if there is not enough gas in the cylinder.
  10. Drop the weights, if required, and tow back to shore/boat, whilst monitoring air way (breathing) and reassuring the diver. Getting the diver to talk will confirm breathing.



### UNRESPONSIVE DIVER – SURFACE

1. After evaluating the diver/victim and getting no response to verbal communication, approach the diver with caution to see if physical contact will have a better response (tap and shout).
2. If there is no response, ensure the diver is face up, by rolling him/her over, face up and establishing positive buoyancy, dropping weights and inflating the BCD.
3. Whistle/call and signal for help and as soon as possible, then remove the diver from the water.
4. On the surface, the rescuer must make sure the victim has an open airway, to enable breathing. Due to the nature and conditions of the environment it may be difficult determining if the diver is breathing and trying to identify circulation is almost impossible. There is nothing that can be done, in water, for a victim with no pulse.
5. The rescuer must make decisions as to what is the best course of action regarding ventilating the diver/victim if breathing has stopped.

Ventilating the diver as soon as possible is obviously the best decision, but if surface conditions make this difficult and/or the shore/boat is close then it has been suggested that it is better to get the non-breathing diver out the water, directly, and not to worry about rescue breaths, as more often than not, the rescuer blows air into the stomach rather than the lungs, when attempting in water resuscitation.

### TOWS

**Objective:** Demonstrate the following tows while ensuring the victim maintains an open airway and positive buoyancy is established for both victim and rescuer.

**Value:** Knowing the different types of tows will help rescuers choose the type that will be most efficient based on conditions to get the victim out of the water as soon as possible in the safest manner.

#### How it's done:

- **Under Arm Tow**
  - Good for a responsive and unresponsive diver/victim.
  - With a responsive diver/victim you may wish to remain face to face to monitor and reassure.
  - The diver lies on the back in the water (positive buoyancy) and the rescuer will grip the diver under the arm closest to the rescuer and facing the diver, swims forward.
  - This is an effective method for short distance tows.
- **Scuba Unit Tow**
  - Good for a responsive and unresponsive diver/victim. This is possibly the most common tow.
  - The victim and rescuer both lie on their backs. The rescuer holds the scuba unit with one hand whilst swimming backwards.
  - It is more comfortable for the rescuer to swim alongside the victim, with one hand holding the scuba unit at the top behind the victim's head and the other hand holding the victim's arm across the torso of the rescuer, whilst finning alongside.
- **Push Tow**
  - Good for a responsive diver/victim, with one rescuer or with two rescuers for an unresponsive diver/victim (push).
  - The victim lies on their back.

- The rescuer swims, horizontally facing forward, in the water, whilst pushing the victim, ahead with victim's feet on each shoulder.
- This is a good tow if there are two rescuers as one can push and the other can use any other technique and support the victim's head.

## EQUIPMENT REMOVAL

**Objective:** Demonstrate proper techniques for removing equipment from rescuer and victim while stationary and while towing.

**Value:** This skill will help rescuers evaluate when and how they should remove equipment, if necessary, from both rescuer and victim.

### How It's Done:

#### 1. BuoyancyFIRST

- Evaluate when will be the best time to remove equipment for the victim and rescuer.
- Buoyancy must be established and call for HELP.
- After dropping the weights and inflating the BCD and dry suit (if the victim is using one), decide if the victim requires the BCD to maintain buoyancy.

#### 2. AirwaysSECOND

- Open the victim's airway and protect against water egress.
- Keep the victim's head and face above water and endeavor to keep an open airway. Start by assessing the equipment configuration. Hence, the reason, to study and understand equipment assembly and configuration, before a dive and during buddy checks.

#### 3. Victim's EquipmentTHIRD

- . When appropriate, start removing the scuba equipment, whilst keeping the victim's face above water and an open airway.
- Remember to start with all the releases first, work through the task and do not push the victim underwater.
- It is important to keep in mind that extraction of the victim from the water is the priority, followed with equipment removal to aid exiting the water and then breathing! If help has not responded keep calling. When the victim is out the water "ABCD's" are the priority.
- If help has not responded by now, keep calling.
- Begin BLS as soon as victim is on land according to RAID First Aid

#### 4. Safety FOURTH

- "More haste, less speed" – watch for rescuer's anxiety!

#### 5. Rescuer's Equipment FIFTH

- The decision of when to remove your personal equipment is decided by – 'when necessary!' The rescuer may be able to comfortably tow the diver to the boat/shore and help the responsive diver exit, whilst wearing equipment, if strong enough to do so.

### IN WATER RESCUE BREATHING

**Objective:** Demonstrate the following In-Water Rescue Breathing techniques:

**Value:** While getting the victim out of the water is priority, in-water rescue breathing can be effective for long surface swims in calm water conditions. Even though it has been stated that rescue breathing a victim in water is not the priority, it still must be considered in context to the length of time and conditions for the rescuer to exit the water with a victim.

**How it's done:**

Establish if the victim is breathing by placing your ear as close to the victim's nose and mouth, whilst looking down to the chest of the victim. Pull the victim up to your ear, whilst holding the back of the neck and opening the airway. If you are not strong enough to do this then take a close long look and try to decide if the victim is breathing.

- The first and most important treatment for the drowning victim is alleviation of hypoxia. Prompt initiation of rescue breathing, or positive pressure ventilation increases survival.
- If possible, supplement rescue breaths/ventilations with oxygen. Give five initial ventilations/rescue breaths as soon as possible.
- Rescue breathing can be initiated whilst the victim is still in shallow water provided the safety of the rescuer is not compromised.
- It is likely to be difficult to pinch the victim's nose, so mouth-to-nose ventilation may be used as an alternative to mouth-to-mouth ventilation.
- If the victim is in deep water, open their airway and if there is no spontaneous breathing start in-water rescue breathing.

**RAID NOTE:** In-water resuscitation is possible but should ideally be performed with the support of a buoyant rescue aid. Give 10–15 rescue breaths over approximately 1 min. If normal breathing does not start spontaneously, and the victim is less than 5 minutes from land/boat, continue rescue breaths while towing. If more than an estimated 5 minutes from land/boat, give further rescue breaths over 1 min, then bring the victim to land/boat as quickly as possible without further attempts at ventilation.

► **Mouth to Pocket Mask** (It is highly recommended that in a real emergency, a pocket mask is used.)

Place the pocket mask over the victim's nose and mouth, secure with the strap. The best position is to have the victim's head on your chest, with the legs in front. Both hands hold the victim's head back, on chest, with your fingers lifting the jawbone and the thumbs and fore fingers holding the pocket mask down on the victim's face to create a seal. You can then blow directly into the pocket mask.

► **Mouth to Mouth**

Place yourself alongside the victim near the head. Support the head, with one hand behind the back of the victim's neck, pushing up and the other hand, (closest to the head) on the victim's forehead, tilting the head back and the fingers pinching closed the nose. The upward force will open the victim's mouth enabling rescue breaths to be given by mouth to mouth.

A slight variation is to position oneself as above, except one's hand pushing up the back of the neck is routed underneath the victim's arm and up to the base of the victim's neck. The victim's arm is then locked between your arm and body. This gives you more control over the body of the victim.

► **Mouth to Nose**

This is the same as mouth to mouth except the victim's mouth is closed or blocked. Therefore, you blow air into the victim's nose.

N.B. It must be noted that there is more probability that air will go into the victim's stomach and not into the lungs, as it is difficult to maintain an open airway whilst in water.

There again, if there is a small chance that air does get into the lungs, and that it will be sometime before the victim is out the water, then it is worth trying rescue breathing. Do not stress if you are unable to perform rescue breathing in water.

Once rescue breaths are mastered in a stationary position, in water too deep to stand, then you will demonstrate the combination of a diver tow, equipment removal, rescue breathing and then exit, all at the same time. This skill will be considered against the time taken to tow a diver, remove equipment and exit the water without rescue breathing.

It is very important to remember that simulated skills in confined water are one aspect but applying those skills to open water demands a high level of competence. PRACTICE – PRACTICE

## UNDERWATER RESPONSE / RESCUE

**Objective:** Demonstrate the appropriate approach and response for the following underwater scenarios:

**Value:** Responding correctly to an underwater situation is extremely important for the safety of both the victim and the rescuer. This skill builds valuable experience regarding evaluation and reacting to different underwater situations effectively.

### How It's Done:

#### ► Tired Diver

- Get the diver to stop what they are doing, breath, think and then act.

#### ► Fearful Diver

- Get visual contact with the diver's eyes and signal: Stop, breathe, think and then act.
- Try to resolve the problem.

#### ► Panic Diver heading for the surface

- With an active panic diver who is heading for the surface, at a dangerous rate of ascent:
- DO NOT try and hold onto the panic diver to slow ascent. Follow ascent procedures and ascend. Look up to find the diver as they may be sinking after falling unconscious.
- Upon arrival on the surface, establish positive buoyancy and call for help.
- Look for the panic victim and follow skills learnt for surface support.
- If the diver is not on the surface and cannot be seen, activate missing diver procedures.
- Do not descend without activating the missing diver procedures first.
- Only descend if there is no risk to yourself and that you have adequate breathing gas remaining and the surface support has agreed.

#### ► A panic diver underwater - trapped/or not ascending:

- Ensure the diver has enough air supply.
- Try get the victim to STOP, BREATHE, THINK AND ACT.
- Call for additional help by signaling other divers.
- Wait for exhaustion to show signs, make visual contact with the victim/diver's eyes and signal: Stop, breathe, and think.
- Then act. Monitor the console and displays of both rescuer and victim, to confirm resources and parameters.

- If there is any doubt and there is enough gas, then offer an alternative air source such as the Octo.
- Attempt to remove victim from entrapment if they appear stuck.
- DO NOT enter an overhead environment.
- If there is no immediate visible problem, calm the diver.
- Follow ascent procedures, for a panic diver.

### ► Passive Panic Diver

- With a diver who has “switched off”, so to speak, and does not see you or react to anything.
- Approach diver from behind and secure.
- Monitor the diver as well as the console. Check displays to confirm resources and parameters are OK for both the diver and the rescuer.
- IF there is enough gas hold the mouthpiece in the victim/diver’s mouth, follow unresponsive breathing diver/victim ascent procedures.
- If not, enough gas offer an alternative air source such as the Octo, from behind the diver to maintain safe control and follow ascent procedures.
- Ascent rate must be max. 9 meters/30 feet per minute

## UNRESPONSIVE NON-BREATHING DIVER / VICTIM

### WITH AIR / GAS PRESSURE IN THE CYLINDER

**Objective:** Demonstrate the proper technique for bringing an unresponsive non-breathing diver with air pressure in the cylinder to the surface while maintaining buoyancy control. Once on the surface, establish positive buoyancy for both the rescuer and victim.

**Value:** Proper technique with assisting an unresponsive diver to the surface can help avoid injury to both the victim and rescuer. This skill helps divers identify important information regarding equipment control and ascent techniques.

### How It’s Done:

It may be difficult to determine when the mouthpiece is in the mouth. For practice you will assume the mouthpiece has fallen out the mouth. If the mouthpiece is still in the mouth, then students would follow the same response for an Unresponsive Breathing Diver/Victim. (We will practice this with our mouthpiece in place make this parenthesis a clearly visible note (orange). This is damn important).

. (yes I know, title already states it!)

- Rescuer must establish neutral buoyancy and check console.
- Secure victim from behind.
- Establish victim’s neutral buoyancy / orally inflate the BCD / use victim’s power inflator etc.
- If neutral buoyancy cannot be established, then remove some weight from the victim to obtain neutral or even positive buoyancy.
- Check rescuers console.
- DO NOT try to replace the mouthpiece (second stage).
- Open/check victim’s dry suit release valve (dry suit diver only).
- Check rescuer’s console/parameters.
- Lift the head up and try to maintain the victim’s body in a vertical position.
- Whilst starting to fin up, add or release air from rescuer’s BCD as required for a safe ascent.
- Control ascent with victim’s BCD, releasing air with rescuer’s left hand, and the right hand supporting the victim’s head up.



## Master Rescue Skill

- When the victim has a dry suit, the rescuer's left arm is supporting the victim's left arm in a vertical position to help vent air from the victim's dry suit. The rescuer's right hand is over the top of the victim's right shoulder, supporting the victim's head.
- IF the victim becomes uncontrollably buoyant release the victim and follow at a safe ascent rate.
- Check rescuer's console/parameters.
- On the surface establish positive buoyancy for the victim, drop all the weights if not already done so, and inflate BCD and dry suit, if applicable.
- The rescuer must establish buoyancy; whistle/call for help and maintain the diver's open airway.

### WITHOUT AIR / GAS (NO) PRESSURE IN THE CYLINDER

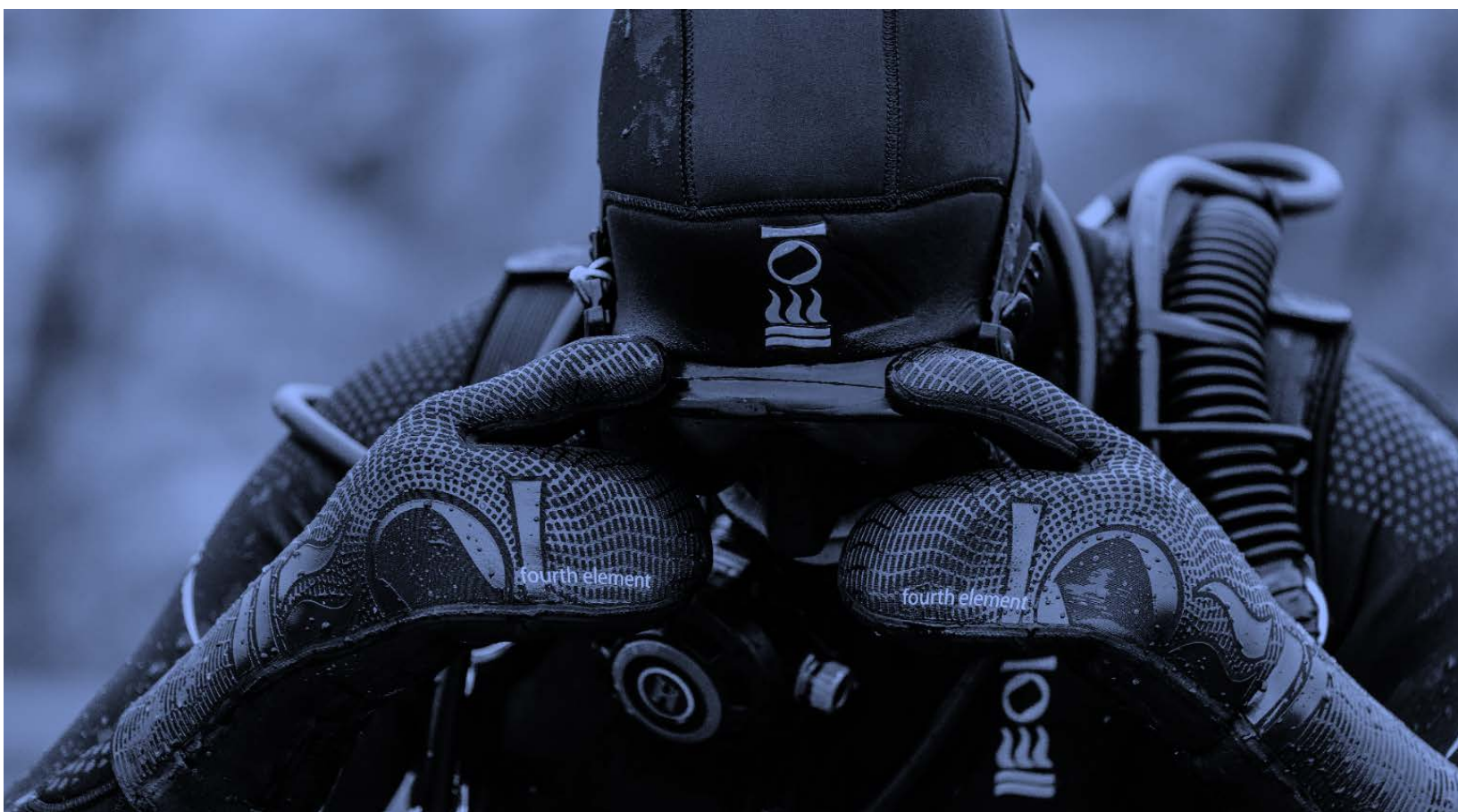
**Objective:** Demonstrate the proper technique for bringing an unresponsive non breathing diver with no air in the cylinder to the surface while maintaining buoyancy control. Once at the surface, establish positive buoyancy for the rescuer and victim.

**Value:** Proper technique with assisting an unresponsive diver to the surface can help avoid injury to both the victim and rescuer. This skill helps divers identify important information regarding equipment control and ascent techniques.

#### How It's Done:

The victim in these cases is generally negative on the bottom and the mouthpiece is out the mouth. In this possible situation, emphasis is for you to take your time and work slowly.

- Rescuer must establish neutral buoyancy and check console.
- Secure victim from behind.
- Establish victim's neutral buoyancy / orally inflate the BCD / use rescuer's power inflator etc.
- If neutral buoyancy cannot be established, then remove some weight from the victim to obtain neutral or even positive buoyancy.
- Check rescuers console.
- DO NOT try to replace the mouthpiece.



- Open/check victim's dry suit release valve (dry suit diver only).
- Check rescuer's console/parameters.
- Lift the head up and try to maintain the victim's body in a vertical position.
- Whilst starting to fin up, add or release air from rescuer's BCD as required for a safe ascent.
- Control ascent with victim's BCD, releasing air with rescuer's left hand, and the right hand supporting the victim's head up.
- When the victim has a dry suit, the rescuer's left arm is supporting the victim's left arm in a vertical position to help vent air from the victim's dry suit. The rescuer's right hand is over the top of the victim's right shoulder, supporting the victim's head.
- IF the victim becomes uncontrollably buoyant release the victim and follow at a safe ascent rate.
- Check rescue's console/parameters.
- On the surface establish positive buoyancy for the victim, drop all the weights if not already done so, and inflate BCD and dry suit, if applicable.
- The rescuer must establish buoyancy; whistle/call for help and maintain the diver's open airway.

### DIVER NOT FEELING WELL AND/OR NON-CONVULSIVE SYMPTOMS (NARCOSIS, HYPEROXIA AND/OR HYPERCAPNIA)

**Objective:** Demonstrate the ability to identify and react appropriately to a diver not feeling well and/or showing non-convulsive symptoms.

**Value:** It is important to know some of the different problems and symptoms divers may show underwater before it gets to the point of a diver becoming unresponsive or beginning a panicked ascent to the surface.

#### How It's Done:

- These procedures can be equally applied to a fearful diver wanting to ascend.
- Signal to the buddy that something is wrong.
- Check the console and ensure there is adequate gas.
- If not enough gas, then signal "need air" and follow alternate air procedures.
- Signal if OK and take 3 full deep breaths and then follow ascent procedures. The breathes help flush any buildup of CO<sub>2</sub> in the lungs
- Buddy must monitor, even after exiting the water.

### OXYGEN TOXICITY OR A CONVULSION

**Objective:** Demonstrate the ability to identify and react appropriately to a diver simulating an oxygen toxicity convulsion underwater.

**Value:** Your reaction to this rare emergency could very likely save a diver's life.

#### How It's Done:

Even though very rare in open circuit recreational diving, managing a diver who is suffering an oxygen toxicity convulsion underwater can be a physiological challenge for the rescuer.

- Check the console and ensure there is adequate gas.
- If not enough gas, then follow alternate air procedures.
- If unresponsive follow the procedures for an Unresponsive Diver.

### MISSING DIVER AND LOST DIVER

**Objective:** Demonstrate the ability to coordinate, search for and locate a missing and/or lost diver using the resources available.

**Value:** Missing/Lost diver situations can be very stressful. Being prepared with a management plan as well as knowing how to coordinate or fit into different roles of a search team are very important when it comes to locating a missing diver successfully.

#### How It's Done:

You will be asked to participate in as many roles as possible (Coordinator, underwater leader, search team member and lost diver). The first step in a stressful situation is to FOLLOW A PLAN and this rule is critical in the case of a missing (a temporary situation) or a lost diver (one that has not been found following an initial search/investigation).

- **STOP, BREATHE, THINK AND ACT**
- **TAKE NOTES... Keep track of elapsed time, environment, visibility above and below the surface, and who does what, when it was done and what the outcome was.**
- Assess the situation after review of 'the dive plan.'
  - Who last saw the missing diver, where and when?
  - Could they have surfaced but be out of sight? (A common situation.)
  - Has a surface search been exhausted? (Are you certain there is no sign of an SMB or other signaling device?)
  - If an underwater search is called for, is there a team with experience, training, gas and equipment to conduct it safely
  - What action should be taken in the event the missing diver is in fact lost?

#### TEACHING NOTES:

It is not possible to provide a detailed plan that would cover every circumstance in which a diver could be missing or lost. The real objective and goal of this exercise is to reinforce the need for a structured controlled initial response, and if that does not deliver a result, what are the logical and lawful next steps?

Apply this information to the local dive sites where training will be conducted

## FLEXIBLE SKILLS

### SURFACE AIR CONSUMPTION RATE (SAC)

**Objective:** Complete a 10-minute SAC swim to be used for open water dive planning

**Value:** Knowing a diver's SAC rate is essential to being able to properly conduct dive planning and gas management.

#### How It's Done:

1. Swim with full equipment at a reasonably fast continuous rate while breathing air or nitrox for a period of 10 minutes at a fixed depth.
2. Write down the starting and ending gas pressure and depth.
3. Use the appropriate SAC rate formula (imperial or metric) to review with your student for use in the open water dives.

### UW DOFF AND DON (TO MAX DEPTH OF 3 M/10 FT)

**\*This is an Optional skill**

**Objective:** While kneeling on the bottom, remove BCD and safely ascend to the surface. Descend, replace scuba kit and ensure nothing is tangled.

**Value:** This skill develops the divers comfort level and ability to handle equipment underwater as well as promotes thinking

#### How It's Done:

1. Kneel (negative buoyancy) on the bottom, check console and signal buddy.
2. Loosen and undo all releases.
3. Remove left arm and pull unit around to right side, then give unit to buddy.
4. While blowing bubbles and making an ahhh sound, ascend safely to the surface.
5. Once at the surface, take a few breaths and descend down to retrieve kit.
6. Locate the second stage (not buddies), blast clear and replace.
7. Check console and that there are no obstructions to replacing kit.
8. Replace the kit in the opposite direction as it was taken off (right arm first).
9. Once kit is back on and straps/releases are tightened, check octo, hoses etc. to ensure nothing is caught up.
10. Check console and signal if ok.

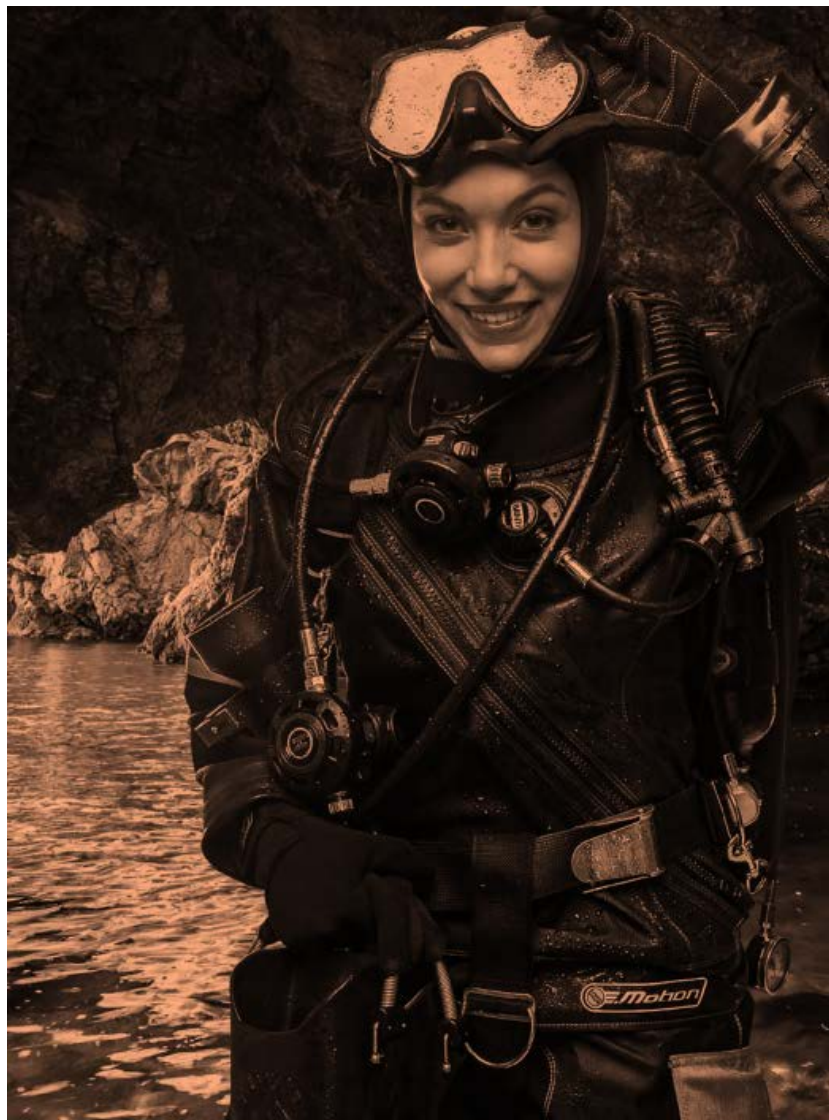
### NEED AIR (TWO IN ONE)

**Objective:** While simulating out of air with no mask, swim to a buddy, establish contact and ascend safely to the surface. Once on the surface, establish positive buoyancy for both donor and receiver.

**Value:** This skill develops the divers comfort level and ability to handle low/out of air situations

#### How It's Done:

1. Swim 12 m/40 ft underwater with full equipment and no mask, simulating "need air"
2. Locate, retrieve and clear buddy's primary second stage (donor switches to octo)
3. Initiate breathing, donor checks console and establish buddy contact
4. Signal if ok and follow ascent procedures to the surface with buddy
5. At the surface, donor establishes buoyancy and helps maintain out of air diver's buoyancy while they orally inflate
6. Perform this skill as donor and receiver





### DIVER TOW

**Objective:** You will demonstrate the ability to conduct a swim under a heavy workload at depth.

**Value:** This skill develops techniques and understanding of the problems with unresponsive diver tows.

**How It's Done:**

- Complete a diver tow over a distance of 50 m/ 165 ft with the rescuer and victim both in full scuba equipment as required for open water dives.
- Rescue breaths must be initiated at the start of the tow and full equipment removal completed at the end of the tow.
- The rescuer must also extract the victim from the water without assistance while maintaining rescue breaths.

### GENERAL RESCUE TIPS SECTION

#### In Water Alert - Calling for Help

When you have made contact and control; blow the whistle and call for help as soon as possible. A whistle sound will travel further than a voice. Verbally calling for help will also work when conditions allow. Signaling for help can be seen from some distance and should be maintained as long as reasonably possible or acknowledged.

**RAID NOTE:** Advise other instructors, boat captains, divers etc. in the area that you will be conducting rescue training to help avoid any issues with role play scenarios.



# OPENWATER SECTION

## INTRODUCTION

The students have now completed all academic and confined water training. They are ready to showcase what they have learnt in the open water environment

The next step is to have students apply the skills mastered, to simulated scenarios in the Open Water Environment, under the review and control of a RAID Instructor.

The open water is a dynamic environment, and you shall apply a duty of care to the student's that a reasonably prudent scuba instructor would do or not do, under a similar circumstance.

It is the instructor's duty to take into account all the conditions, including, environmental conditions; student capabilities; student safety, the recent experience and capabilities of assistants or the instructor him or herself, when determining whether or not to commit to an open water training dive.

In this part of the student's development, you will emphasize the need to be a "thinking diver", one who takes responsibility for their own actions.

You must keep the atmosphere fun but at the same time emphasize the thinking diver philosophy in both attitude and action.

During the Open Water section, the RAID Instructor will be reviewing the student's application and adaptation of the skills mastered in confined water to simulated scenarios.

You are there only as a guide and may only intervene if at any stage there may arise a situation in which there could possibly be injury to any diver or person.

Emphasize that you, you, will only make suggestions and recommendations at the de-briefing and counselling after each training dive.

You are there to observe, possibly control and will only participate if a real situation arises.

## GENERAL DIVING STANDARDS

Ensure that you have reviewed and understood the latest General Diving Standards and the specific standards for the relevant training program online through the RAID web site. You are under obligation to do so and stay updated.

You may complete more dives / time underwater, if mastery has not been obtained on the required training dives.

It must be noted that this aspect must be discussed with the students before starting any in water training and the students are aware of this possibility, prior to certification. This additional training must not be used to support or be associated with any personal disputes, monetary grievances or any other disputes.

## ASSIGNED PROBLEMS

One of the most important tasks when teaching Master Rescue is the assigning of tasks and problems that the students need to deal with and learn from. This must be done in a way that shares the load across the course group and generates solution thinking within the students. This means the assigning of problems needs to be a realistic reflection of things that could happen in real world diving.

- You may assign one or more of the flexible problems according to logistical needs. You shall carry a list of the skills, and the relative assigned student's name (written down) for each training dive for referral purposes. This could be done on a wrist slate or wet notes so that there is a reference point of the skills assigned.

- You must exercise caution when assigning problems, be aware of individual student capabilities.
- The assignment of too many problems will not provide the correct learning environment.

**RAID NOTE:** Surface flexible dive skills can be completed before or after a dive, or on their own as an independent session. The best is to incorporate them in a flowing sequence throughout a training dive.

## STUDENT RAID RESCUE MANAGEMENT PLAN (RRMP)

The Management and Rescue Sections required the student to formulate a RAID Rescue Management Plan (RRMP) for the open water dive site, where the qualifying dives are to take place.

## ASSIGNMENT

RAID Rescue Management Plan (RRMP) is to be submitted to the certifying RAID instructor by the end of open water training dive 2.

The RAID instructor shall provide as much information, as requested by the student, simply answer the question, do not expand on it or provide suggestions. This allows for and promotes original thinking and development by the student. The students must be encouraged to investigate and consider the local resources, facilities and EMS for the dive site.

On completion of the students RRMP, you must discuss and compare the students plan with the RAID instructors or RAID Dive Centre's plan. It goes without saying, therefore, that the RAID instructor or RAID Dive Centre has to have an up to date Rescue Management Plan completed and in accordance with the Rescue and Management Section of this program.

This plan must be the actual plan that would be implemented in the event of a real accident. The students must appreciate that what they are learning is applicable to the real world.

## COUNSELLING

- Complete your Skill Assessment for Students form.
- You will provide an overall briefing and de-briefing, to the students as a group all together, after which each student will receive individual counselling on their development. This will provide you the chance to approach and discuss particular development and progress with each student privately.
- It is a time for students to ask questions they do not want to ask in front of the other students and or divers. In view of this you must ensure an atmosphere and attitude of listening and being nonjudgmental.
- This time will also provide an opportunity to assign students tasks / problems, advising them that they must not divulge their individual assignment to the others.
- The timing of the assignments / problems will depend on the actual problem and whether you need to signal the student to initiate.
- You must review which simulated problems can be assigned and the timing for each.
- Suggested problems will be given under the appropriate headings. You can utilize these or assign, within reason, unique problems of their own. It must always be a consideration that safety for all divers, assistants and instructors is of paramount importance.
- You may be responsible and legally liable for any injury or death of any student, assistant or persons while participating in this program if due care and responsibility is not undertaken by you or you are found negligent.
- This sounds hard but it is reality, unlike other programs, this type of training needs to simulate and present various problems / risks for the students to learn from, but it must not put them into real danger and that is the job of you.
- So, when planning a simulated problem, consider what could really go wrong and how can you, you, prevent this? If you decide that there is too much risk, then do not do it or look for a safer alternative.

## SOME FINAL WORDS

- There must be a clear understanding, by all persons, of the hand signal “STOP”. That means that all simulated assignments are to stop and that no more assignments will be initiated, and that standard diving practices and general conduct are to be resumed for that particular session / dive / event or until advised otherwise. This hand signal can be given by any person involved in the training whether it is, a student, assistant or instructor.

This program requires the utmost in planning and attention to detail. Apply prudent instruction, foresight and common sense when assigning problems to students and remember you, you, must be able to immediately respond to potential situations and prevent situations which may lead to injury or death.

## SOME FINAL WORDS

Your students always deserve your best efforts and complete attention, but most of all they deserve to know about your experience as a diver. Newer divers will benefit from you sharing your passion for this sport, what keeps you diving, what diving has to offer in terms of life experience. You know local conditions where you teach and dive. There is diveable water from the far north of Canada to the extreme southern oceans off South Africa, Australia and New Zealand, and diving in every spot in between has its own appeal and its own special vagaries. A textbook and an uninspired instructor cannot get those points across.

Know your dive sites and use their special conditions to your student's advantage. Regardless of whether you are teaching at a resort on a tropical island in the Pacific or for a dive center somewhere on the shores of a massive inland lake, you can add something special to your classes for your students that no manual is able to.

Stay within the limits but please feel free to add local flavor and local color to your RAID programs.

In addition, although RAID learning and teaching materials are created to be easy for students to learn from and efficient for instructors to teach from, your personal “interpretation” of a task such as dive planning or dive site evaluations is critical and a vital part of running a safe dive. In particular, student-to-instructor ratios, and the employment of certified assistants, cited in our standards often make some mild assumptions, including perfect conditions, attentive students and experienced helpers. Never fall into the trap of thinking that maximums are the way to teach. They are not, and it is far less stressful on everyone – most of all you – to keep class sizes small. Often, this results in the best possible outcome.

Thank you.

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