

Cave Diver and Technical Cave Diver and Rebreather Cave diver

Who may teach this course. A Technical Cave diver Instructor may teach this course. To teach Rebreather Cave, the Instructor must be an IANTD Cave Rebreather Instructor or higher. The instructor may teach only the category Rebreather CCR, SCR, or PSCR their Rebreather Caver instructor qualification is on. Once qualified as a Rebreather Cave instructor the instructor may use any rebreather they are at least diver qualified on to teach Cave Rebreather diver programs. For example: A Rebreather Cave instructor who trained as a Rebreather cave on a CCR Titan may teach a Cave Diver-level course while using any other CCR that the instructor, at minimum, is a qualified diver on. The Rebreather Expedition Trimix instructor may teach students on all rebreather the instructor is diver qualified on, provided they are Rebreather Expedition Trimix instructor that category CCR, SCR, PSCR. The same applies to PSCR and SCR.

A. Purpose

1. This Program is designed to train divers in safe cave diving and, if doing Technical Cave, the technical utilization of EANx for cave exploration, and the use of EANx and oxygen for decompression.

B. Prerequisites

1. If entering through modular route, must be qualified as Introductory Cave Diver, with proof of a minimum of 50 logged dives. If not qualified as Introductory Cave Diver must have proof of 100 dives or sufficient experience doing technical dives to satisfy the instructor that the student has the ability and knowledge to continue into this level of training.
2. If taking the course on a Rebreather must have 20 dives with 35 hours of dive time on the Rebreather.
3. To enter Technical Cave (Technical Diver) in addition to #1, student must be qualified as an Advanced EANx Diver, or Advanced Recreational Trimix Diver or equivalent experience or training as determined by the Instructor.
4. Must be a minimum of 18 years of age.

C. Program Content

1. All lectures completed with IANTD Course-specific Slides pertaining to the theory in the IANTD Cave, Rebreather Cave or Technical Cave Diver Student Kit.
2. OC, SCR and PSCR Divers already qualified as an IANTD Technical Diver need only complete the cave portion of the Program to be qualified as Technical Cave Diver. Divers taking an Air Cave Program do not need EANx training.
3. (OC) This Program must include a minimum of 500 minutes of in cave bottom time completed and there must be a minimum of 12 cave dives performed even if the time requirements are completed earlier (dive time for cavern or limited wreck or limited mine diver may not be credited).
4. (RB) Diver doing the course on CCR must do 600 minutes of in cave bottom time and a minimum of 10 dives. CCR Wreck or may have 100 minutes and two (2) dives credited at the instructor's discretion.
5. For those who are already OC Cave Divers crossing over to CCR Cave, this Program must include a confined water session and a minimum of 200 minutes of cave bottom time, completed within at least two (2) cave dives. All CCR cave specific skills must be completed.
6. (OC) For students already qualified as Introductory Cave Diver or this Program must include a minimum of 400 minutes of cave bottom time within a minimum of 8 cave dives.
7. IANTD Technical or Advanced Wreck Diver, or IANTD Mine Diver must complete 350 minutes in cave bottom time and a minimum of 6 cave dives.

NOTE: The combined cave bottom time from Introductory Cave Diver, Advanced Wreck or Mine and Cave Diver Programs must total at least 500 minutes, even if the bottom time is met first. A minimum of 10 cave, Wreck or Mine dives using double cylinders must be logged. Instructors are not required to give credit for experience or other qualification levels and should do so only if the skill level of the diver meets the Instructor's satisfaction.

8. It is recommended that Instructors allow crediting of dive time only for extremely competent divers.
9. Environmental conditions allowing, a minimum of three (3) different caves must be included in a Cave Program. In event of flooding and other special circumstances, the three-cave requirement may be waived if approved by IAND, Inc. dba IANTD World Headquarters or the local Licensee of the Region the Program is conducted in.
10. Instructors who have been authorized to teach Stage Diving have the option of performing Staged Cave Dives if they are comfortable with the abilities of the diver. All divers will be taught with a stage cylinder of bottom mix or with a stage cylinder of decompression mix if the Instructor elects not to incorporate stage dives into the Program.

11. To complete the course within the minimum specified dives, students must have an average of 80% on the watermanship evaluations. With 2 or more additional dives, the student may graduate from the course with an overall average score of 60 points.
12. Land drills:
 - a. Use of lines / line arrows.
 - b. Blacked out drills.
 - c. Lost diver drills / broken lines / line gaps.

E. Text & Equipment Requirements

1. IANTD Cave Diver Student Kit **OR** IANTD Technical Cave Diver Student Kit **OR** if on CCR, IANTD Cave Diver Student Kit **and** IANTD CCR Normoxic Trimix Diver Student Kit.
2. (RB) IANTD "S" drill chart C-3401.
3. (RB) Rebreathers Bailout adequate to allow 1 ½ divers to exit the cave on OC must be carried by the dive team. Bailout stages must be configured to ensure easy hand off to an out-of-gas diver.
4. All students must be taught the concept of gas matching. And on SCR, PSCR and CCR the correct bailout management.
5. (OC) All bottom mix tanks must be equipped with dual-outlet manifold valves. Independent cylinders may be used when configured as side mounts.
6. (RB) Rebreather must be equipped with adequate bailout, including out-of-air emergency.
7. A stage decompression cylinder containing oxygen or an EAN mixture with at least 50% oxygen, and appropriately labeled. (Technical Cave Diver Program and Rebreather cave only.)
8. (OC) Two (2) Primary regulators must provide ample gas flow. One second-stage hose must be at least five (5) feet (1.5 meters) in length; longer hoses are recommended.
9. Each gas source must have its own dedicated submersible pressure gauge.
10. A primary BCD is required. Back flotation is recommended. A backup BCD is required if the student cannot maintain buoyancy in the event of a bladder failure. If a dry suit is used, it may serve as the backup BCD.
11. A primary and backup dive planning/monitoring device such as bottom timer or computer or decompression-capable rebreather controller. IANTD dive tables must be carried on all dives as a form of backup.
12. One primary reel, one (1) safety reel and at least one (1) gap reel or spool.
13. One (1) primary light and two (2) secondary lights (flashlight type).
14. Three (3) line arrows.
15. Dive slate or note pad.
16. A cutting tool is required, a backup cutting tool is recommended.

F. Program Limits

1. There may be no more than three (3) students per Instructor on any dives and no more than two (2) students per Instructor on dives conducted to depths greater than 130 fsw (39 msw).
2. In most cases, no dives may be conducted to depths greater than 130 fsw (39 msw). When conditions warrant it, (such as areas without access to caves suitable for training at depths of 130 fsw (39 msw) or more shallow) Cave Diver Programs may be conducted to a maximum depth of 160 fsw (48 msw), provided the students are qualified as Advanced Recreational Trimix Diver or Technical Diver.
3. When appropriate conditions are available (i.e., depths between 130 fsw [39 msw] and 200 fsw [60 msw]), the Cave Diver and Normoxic Trimix Diver Program may be taught as a combined course, provided all of the Cave Diver qualifications are completed first and then followed by the Normoxic Trimix Diver qualifications.
4. Qualified Normoxic Trimix Divers may be trained in caves at depths between 100 fsw (30 msw) and 200 fsw (60 msw). And Qualified Trimix Divers may be trained in caves on Trimix at depths between 130 fsw (39 msw) and 300 fsw / 91 msw provided there are no alternative locations, that allow the cave program to be taught in depths more shallow than 130 fsw (39 msw) .
5. (OC) Oxygen partial pressure may not exceed 1.4 ATA during the working portion of the dives, nor exceed 1.6 ATA during the decompression portion of the dives.
6. (RB) CCR Oxygen partial pressure may not exceed 1.3 ATA during the working portion of the dives, nor exceed 1.4 ATA during the decompression portion of the dives. At 20 fsw (6 msw) a flush to 1.6 may be used to check cell performance.
7. Decompression Gas mixtures:
 - a. On non-Technical Cave Program, or with divers not certified in EANx, students may decompress using EANx mixtures with between 40 and 100% oxygen to a maximum depth of 15 fsw (4.5 msw), provided the concept of oxygen decompression is taught. Technical divers or students enrolled in the Technical Cave Diver Program may breathe any EANx mixture or oxygen during decompression and use accelerated decompression schedules accordingly.

- b. On non-Technical cave dives or with students not qualified in EANx, the student may breathe EANx mixtures with oxygen concentrations ranging from 40% to 100% at depths not to exceed 15 fsw (4.5 msw), provided the concept of oxygen decompression is taught.
- 8. All dives must be completed within both the IANTD oxygen CNS% and OTU limits.
- 9. All appropriate safety or required decompression stops must be performed.

F. Water Skills Development

1. A confined water session must be completed before conducting any cave dives. This session may be in OW in-depths up to 60 feet provided decompression stops are not required.
2. Swim with equipment to be used in Program until comfortable with it.
3. Perform a pre-dive "S" (safety) drill prior to starting dive. Check all equipment for proper function. Check equipment of each dive buddy. Ascertain each team member is familiar with use and location of dive system components.
4. (OC) Perform an in-water "S" (safety) drill.
 - a. Leak-check each team member's equipment.
 - b. Breathe underwater from both / all regulators to ensure proper functioning.
 - c. Perform light checks.
 - d. Perform valve shutdowns combined with regulator switches, including shutting both regulators.
 - e. If isolator valves are used, these are also to be closed and then re-opened.
 - f. Buddies should check that all valves are back in proper position at end of drill.
 - g. On a first dive with a new partner, perform a gas sharing drill.
5. (RB) Perform an in-water "S" (safety) drill. Use IANTD CCR "S" Drill Chart C-3401.
 - a. Leak-check each team member's equipment.
 - b. Breathe underwater from the CCR and the bailout stage(s) / all regulators to ensure proper functioning.
 - c. Perform light checks.
 - d. Perform valve shutdowns combined with switches to bailout cylinder, including handing off bailout cylinders at least once each day as part of the "S" drills.
 - e. Buddies should check that all valves are back in proper position at end of drill.
 - f. On a first dive with a new partner, perform a gas sharing drill by handing off stages.
6. (OC) Communicate the gas turn around point in psig, and if the divers are wearing different cylinder sizes, match gas per the SRF tables or per dissimilar tank volumes.
7. (OC) Confined or OW: Swim 60 feet (18 meters) while simulating an out-of-gas situation, then commence gas sharing via the long hose, remain at rest for three (3) breaths, and swim for 10 minutes at a normal swim rate of approximately 75 feet (23 meters) a minute (static water swim rate).
8. (RB) Confined or OW: Swim 60 feet (18 meters) while simulating an out-of-gas situation, then switch to bailout cylinder, remain at rest for three (3) breaths, and swim for 10 minutes at a normal swim rate of approximately 75 feet (23 meters) a minute (static water swim rate).
9. (OC) Confined or OW: Two divers 50 feet (15 meters) apart must swim along a line circuit with eyes closed not taking a breath, while slowly exhaling until they meet. Upon meeting gas sharing via the long hose combined use bump and go technique is to be performed until the line circuit is completed.
10. (RB) Confined or OW: Two divers 50 feet (15 meters) apart must swim along a line circuit with eyes closed not taking a breath, while slowly exhaling until they meet. Upon meeting switch to the bailout stage combined with a bump and go technique is to be performed until the line circuit is completed. Repeat above with diver handing off bailout cylinder
11. Develop proficiency in a variety of propulsion techniques including cave frog kick, modified flutter kick, shuffle kick, and pull and glide technique.
12. Demonstrate proficiency in use of reels and lines.
13. (OC) During a cave dive, at a point after turning the dive, perform a gas sharing drill exiting the cave for a reasonable distance / time. Exercise is to commence with Instructor at some point randomly selecting the out-of-gas diver, who must then go to the buddy and share gas. The out-of-gas diver is to keep the regulator in his or her mouth (leaving the airway open) but not breathe from it if at all possible. This drill is to be repeated on different dives until all students have been both a donor and a recipient of gas.
14. On a cave dive, exit cave with eyes closed or lights off maintaining contact with buddy and dive line using touch communications. On a later dive repeat using bump and go technique rather than touch contact
15. (OC) Repeat previous drill, except at some point the Instructor will choose one (1) of the divers to simulate being out-of-gas. The out-of-gas diver must communicate the problem to a buddy, and gas sharing is to be performed for a reasonable distance. Repeat this skill until all students have been both a donor and recipient of gas.
16. Perform lost diver drills.
17. Perform lost line drills.

18. Demonstrate either on a cave dive or confined water the ability to drop and recover a stage cylinder. This may be the tank used as a decompression tank or an actual penetration stage cylinder.
19. Conduct a traverse, gap and circuit dive. If conditions do not allow this possibility then it is to be simulated.
20. It is recommended that the student attempt to exit the cave with eyes closed or lights off without the use of a line. Instructor must prevent the student from getting into a silt-out away from the line or any other adverse situation during this drill.
21. (OC) On at least three (3) dives, the student must simulate a regulator failure and, while swimming, shut off the valve for the primary regulator and switch to the secondary regulator. Upon completion, the diver is to turn on the valve for the primary regulator and switch back to it. A buddy should act as safety diver during this drill.
22. (RB) Perform all skills other than direct ascents from the CCR Normoxic water skills all CCR emergency skills must be preformed in cave in addition to confined water.
23. (RB) During a cave dive, at a point after turning the dive, perform a gas bailout drill exiting the cave for a reasonable distance / time. Exercise is to commence with Instructor at some point randomly selecting the out-of-gas diver, who must then go to his bailout stage cylinder, then at some point have the buddies exchange bailout cylinders simulating that the diver who had bailed out had used 50% of the bailout stage cylinder. This drill is to be repeated on different dives until all students have performed the drill.
24. (RB) On a cave dive, with eyes closed or lights off simulate blacked out cave conditions maintaining contact with buddy and dive line using touch communications. Repeat this drill but use bump and go technique instead of buddy contact.
25. (RB) Repeat previous drill, except at some point the Instructor will choose one (1) of the divers to simulate a loop failure. The diver with the failed loop must communicate the problem to a buddy via touch contact, and switch to his/her bailout cylinder. This skill must be performed for a reasonable distance. Repeat this skill until all students have been the diver with the loop failure. Repeat this drill but use bump and go technique instead of buddy contact.
26. (RB) On at least three (3) dives, the student must simulate a solenoid or orifice or addition failure and, take corrective action.
27. (RB) On at least three (3) occasions, a loop failure drill must be completed and on at least one (1) drill the diver must remain on the bailout stage cylinder for a minimum of 10 minutes. The student is to note the bailout gas used and distance covered. At the end of the dive compute how far under the same conditions could the diver have traveled on the bailout cylinder. Also how much total gas it would take to bailout to the exit point of the cave. Then compute how much oxygen and or other gas would be needed to complete the decompression
28. (RB) Perform a SCR bailout for at least five (5) minutes while on a cave dive.
29. (RB) Repeat all drills and skills from the CCR Skills tables while on cave dives.