

NAUI Technical Diver – Technical EANx, Helitrox and Decompression Techniques

OVERVIEW

The **NAUI Technical Diver** program is designed to introduce experienced advanced divers to the techniques and methods employed in diving beyond the traditional recreational diving limits. The course provides training in decompression techniques, the use of technical-enriched air nitrox and oxygen decompression gases, and the fundamentals of using oxygen-enriched helium-based mixed gas (called Helitrox). Candidates entering the program must already have mastered fundamental recreational diving skills such as exact buoyancy control, dive planning protocols, teamwork, and emergency management. Students enrolled in the NAUI Technical Diving program will have the opportunity to cultivate these skills and many new ones while using more sophisticated equipment designed for pursuing technical level diving.

ACADEMIC REQUIREMENTS

Classroom work emphasizes decompression theory and management, diving physics and physiology, oxygen exposure management, equipment, dive planning and emergency procedures. Practical sessions include approximately ten (10) to twelve dives (12) using nitrox and helitrox bottom gas and EAN50 or oxygen decompression gases from 70 fsw and 20 fsw, respectively.

The following texts shall be used (an asterik * denotes recommended but not required texts):

“Technical EANx, Decompression Techniques and Extended Range” by Jan Neal
“Physics, Physiology and Decompression Theory for the Technical and Commercial Diver” by Bruce Wienke*
“NAUI RGBM Tables” by Bruce Wienke and Tim O’Leary *

SCOPE OF COURSE

- The training depths for these dives are 90 to 150 fsw. Maximum PO₂ is 1.2 atm for working portions of the dives and 1.6 atm for decompression.
- No dives may exceed an equivalent narcosis depth of 130 fsw; an END of 100 fsw or less is generally employed on the training dives.

SKILL REQUIREMENTS

- For each dive students will define oxygen limits based on PO₂ of 1.2 atm or less for the working portion of the dive and 1.6 atm or less for decompression stops.
- For each dive students will analyze all gas mixtures and label each accordingly with mix and MOD.
- For each dive students will complete a Technical Diver Plan and a Team Planner
- Set up personal scuba systems for each dive satisfying all training, environmental, and physiological constraints.
- Establish safety and emergency procedures, contingency strategies, abort and bailout plans.
- Demonstrate proper buoyancy control and trim during dives and deco stops.
- Turn around or begin the ascent at the predetermined back gas pressure or bottom time.
- Demonstrate proper underwater communications.
- Shut down failed regulator and isolate for catastrophic gas loss (≤ 15 sec).
- Shutoff and switch over to redundant regulator.
- Gas sharing, simulate out-of-gas scenario over a distance of 30 feet.
- Remove/replace stage bottles in timely fashion.
- Conduct planned gas switches.

- Lost visibility – maintain contact with team and continuous line to the surface.
- Equipment failure management drills.
- Demonstrate team cooperation skills.
- Missing diver search procedures.
- Rescue skills.
- Ascend with reel and lift bag and execute drift decompression.
- Execute staged decompression stops.
- Demonstrate mastery of emergency procedures (abort plan, omitted deco protocols, emergency first aid).
- Demonstrate proper descent and ascent rates and depth, time, and gas management.

EQUIPMENT REQUIREMENTS

Each student must own and be familiar with all of the following equipment. Care should be exercised when purchasing new gear, however, in order to avoid buying inadequate or unsafe equipment. Students should make equipment selections to be consistent with NTEC requirements. Please contact us before making any new gear purchases.

Cylinders:

- Double cylinders with a dual manifold and isolation valve. DIN valves are mandatory. Your cylinders may be steel or aluminum; aluminum cylinders are recommended if diving in a wetsuit. You should be able to physically manage your choice of cylinders.
- At least 1 stage cylinder of 40 ft³ or greater for decompression gas with stage rigging. The cylinder should be oxygen clean. Use of steel stages is prohibited. DIN valves are recommended.
- Argon and/or air inflation systems for drysuit diving are necessary. Helitrox is inappropriate for suit inflation. Six to 13 ft³ aluminum/steel cylinders are acceptable for this purpose.

Regulators:

- Back cylinder configuration: two first stages with each supplying one second stage. The primary regulator's first stage is attached to the right post of the manifold and has a 7-foot hose leading to the second stage. The low-pressure inflator to the BCD wings should come off of the primary first stage (right post). The back up regulator is attached to the left post and supports the one SPG (no consoles).
- Oxygen cleaned regulator and SPG for the stage bottle.
- Argon regulator: first stage must have an over pressure relief valve.

Buoyancy Compensators:

- A buoyancy control device capable of carrying your bottom mix and deco gases is required. Standard single bladder wings of 55-lb lift are adequate for most individuals. NAUI discourages the use of overly large, dual bladder wings and the bungee cord used to control them. A stainless steel or aluminum backplate is recommended.

Instrumentation:

- Each diver needs one depth device and one timing device. A wrist mounted digital bottom timer/depth gauge is the best choice for technical diving.
- Compass

Exposure Suits:

- A dry suit with a separate suit inflation system is required. The inflation first stage must be equipped with an over pressure relief valve.

Other Equipment:

- Mask/fins (no snorkel).
- One cutting device required, with two recommended.
- Underwater writing device such as a slate or wetnotes.
- Two lift bags (50 to 100 lb lift) and one primary reel with at least 200 ft of line.
- One safety reel or spool with at least 100 ft of line.
- Two lights (3 lights if in wreck penetration standards)
- Hardware for rigging stage and decompression bottles.

PREREQUISITES FOR ENTERING THE COURSE

Age. Minimum is 18 years. **Certification:** Introduction to Technical Diving or Equivalent; Nitrox Diver. These requirements can be modified or amended during pre-course interview and/or screening dive. A reasonable amount of the candidate's experience should include advanced recreational dives between 100 – 130 fsw. Additional requirements include:

- Medical clearance and physically fit
- Nonsmoker
- Minimum of 75 logged dives with at least 10 (beyond certification) using EANx.

For pricing see the NAUI Training Rate Sheet.