

2008. TDI - INTERMEDIATE TECHNICAL DIVER

2008.1 Introduction

This course is designed to transition students from the world of recreational, single tank diving to the world of technical diving via the use of multiple tanks. As such, it is a logical stepping-stone between TDI's "Introduction to Technical Diving" and the TDI "Advanced Nitrox/Decompression Procedures" combined courses. The focus of the TDI "Intermediate Technical Diver" course is on the practical application of technical equipment configuration for each individual, based on their short-term and intermediate diving goals. As such, emphasis is on the actual setting-up of the student's technical diving rig and their diving with it. It is recommended that the instructor focus primarily on the student's tank and BC configuration. Accessory gear, e.g., reel, liftbag, jonline, can be added only if the student has shown good control and comfort with the new tank configuration. The skills portion of this course is limited to proper technical diving equipment rigging and safety checks, correct trim and positioning in the water column, good buoyancy, and proper propulsion techniques.

2008.2 Qualification of Graduates

Upon successful completion of this course, graduates may engage in activities utilizing multiple tank gear configurations within the realm of their training as long as:

1. The diving activities approximate those of the training.
2. The areas of activities approximate those of training.
3. Environmental conditions approximate those of training.
4. The gear configuration and tanks worn approximate those of training.

Upon successful completion of this course, graduates are qualified to enroll in:

1. TDI Advanced Nitrox course.
2. TDI Decompression Procedures course.

2008.3 Who May Teach

Who may teach this course:

1. Any active TDI Decompression Procedures Instructor.

2008.4 Student – Instructor Ratio

Academic:

1. Unlimited, as long as adequate facility, supplies and time are provided to insure comprehensive and complete training.

Confined Water (Swimming pool-like conditions):

1. N/A. (It is at the instructor's discretion to include a training session or sessions in a swimming pool, but time spent in the pool does NOT count toward required course time.)

Open Water (Ocean, lake, quarry, spring, river or estuary):

1. A maximum of four (4) students per Instructor. However, it is at the instructor's discretion to reduce this number as conditions dictate.

2008.5 Student Prerequisites

The student must:

1. Be at least 18 years old at the start of the course.
2. Have at least 25 logged dives.
3. Have successfully completed the TDI "Introduction to Technical Diving" course, or the equivalent. At the instructor's discretion, a diver's previous experience and logged dives may be used to satisfy this requirement.
4. This course may be combined with the TDI "Introduction to Technical Diving" course.

2008.6 Course Structure and Duration

Duration:

1. This course shall consist of at least eight (8) hours of instruction over at least two (2) days, including lecture(s), gear set-up, briefing, de-briefing, and dives.

Course Structure:

1. TDI allows instructors to structure courses according to the number of students participating and their skill level.
2. Actual set-up of the student's technical diving gear in an acceptable tank configuration with appropriate first and second stages and hose lengths (see "Required Equipment" and "Acceptable Equipment Configurations," below) is required.

Academic:

1. If the student has not already been exposed to the "Technical Diving Equipment and Gear Configuration" presentation, then this presentation must be given as part of this TDI "Intermediate Technical Diver" course. However, it is at the instructor's discretion to give the "Technical Diving Equipment and Gear Configuration" presentation even if the student has already been exposed to it as a way to reinforce learning.

Open Water Execution:

1. Four (4) dives are required with a minimum accumulated bottom time of one hundred (100) minutes.
2. Diving depth shall not exceed eighty (80) feet.
3. All dives are to be conducted within no-decompression limits.
4. The student may use breathing gases for which they are already qualified to dive.

ACCEPTABLE EQUIPMENT CONFIGURATIONS

One of several technical diving configurations is acceptable, as follows:

- Single tank with a solitary first stage attachment, and a pony bottle with identical back gas, e.g., as a completely redundant gas source. The pony bottle can be work attached to the single tank, or as a stage bottle, at the discretion of the instructor. This rig can be achieved with an individual's current buoyancy compensator if it provides enough lift for the tanks being carried, or with a wings style BC, single tank adaptor, and harness.
- Single tank with "H" or "Y" valve and dual first stages with a regulator attached to each first stage. A secondary tank is to be worn as either a pony bottle or as a stage bottle. This rig can be achieved with an individual's current buoyancy compensator if it provides enough lift for the tanks being carried, or with a wings style BC, single tank adaptor, and harness. A third tank is to be carried as a stage bottle, regardless of how the pony bottle is worn.
- Double tanks, configured either with a dual valve manifold, or as "independents". A stage bottle is also to be worn.

2009.7 ADMINISTRATIVE REQUIREMENTS

The Following are the administrative tasks:

1. Collect the course fees from all the students.
2. Ensure that the students have the required equipment.
3. Communicate the training schedule to the students.
4. Have the students complete the Liability Release and Medical History forms.
5. The instructor must review the Liability Release and Medical History forms before starting on the course.

Upon Successful completion of the course the Instructor must:

1. Complete the Student Registration Form and send the Registration Form to TDI.
2. Award the Certification Card.

2009.8 TRAINING MATERIAL

Required Material

1. TDI Introduction to Technical Diving Student Manual.

Optional Material

2. "Technical Gear and Configuration" PowerPoint.
3. Instructor's technical diving tank and BC gear configuration.

2009.9 REQUIRED EQUIPMENT

The following are required for this course:

The following equipment is required for each student. It should be noted that each cylinder should only contain breathing gas(es) for which the student is already certified to dive.

1. Primary cylinder(s). Cylinder volume appropriate for planned dive and student gas consumption.
2. Secondary/safety cylinder(s). The volume of secondary/safety cylinder(s) should be appropriate to provide an adequate volume of reserve gas in the event of catastrophic equipment failure for the planned dive.
3. Additional cylinder(s) to simulate the student carrying a decompression cylinder(s).
4. All breathing cylinders are to be analyzed and labeled in accordance with TDI Standards.
5. Submersible pressure gauge (SPG) required on each primary cylinder (one SPG required for a set of double tanks with dual valve manifold) and each simulated decompression cylinder(s).
6. Depth gauge and automatic bottom timer and / or dive computer. It is recommended but not required for students have two (2) depth and time calculators, which may be two (2) depth gauge/bottom timers, OR two (2) dive computers OR one (1) depth gauge/bottom timer and one (1) computer.
7. Regulator on each cylinder.
8. Buoyancy Compensator(s) adequate for the equipment configuration.
9. Jon-line and other rigging lines as dictated by site conditions must be worn on at least one dive.
10. Ascent Reel with Life Bag/Surface Marker Buoy must be worn on at least one dive.
 - a. Adequate for maximum planned depth.
 - b. Minimum of eleven (11) kg / twenty-five (25) lb lift bag.
11. Oxygen Analyzer (may be supplied by the Instructor).
12. Exposure Suit adequate for the open water environment.
13. Underwater Slate.
14. Line cutting instrument.

2009.10 REQUIRED SUBJECT AREAS

The TDI Introduction to Technical Diving Student Manual is mandatory for use during this course. Instructors may use additional text or materials that they think help present the topics. The following topics must be covered during this course. It should be noted that this material should already have been covered in the TDI Introduction to Technical Diving course. However, a review of all subjects listed below is still required.

1. Overview of tank valves, including A-yoke, DIN, H-valves, burst disks.
2. Overview of Dual Valve Manifold with Isolator Valve and remote knob assembly.
3. Overview of hard bands and also travel bands.
4. Overview of tank markings, including VIP and hydrostatic testing requirements.
5. Overview of tank materials and pressure ratings.
6. Overview of regulator first stages, including A-yoke, DIN, and yoke to DIN adaptors.
7. Overview of technical diving Buoyancy Compensators (BC) and options.
8. Overview of gear configuration options, including double cylinders worn either manifolded or as independent singles, hard banded, or with travel bands; a single cylinder with pony cylinder attached; single cylinder with H-valve; single cylinders worn with stage cylinders; double tanks worn with stage cylinders.
9. Maintaining proper trim while dumping air from the BC.
10. Proper weighting with different cylinder configuration options, and weighting options, e.g. V-weights for double cylinders.
11. Wearing accessory equipment, e.g. ascent/guideline reel, liftbag/surface marker, jon-line.
12. Configuration of the long hose.
13. Rigging options for stage/decompression cylinders.
14. Gas planning and buddy gas matching.
15. Issues when diving with a buddy whose equipment is differently configured.

2009.11 REQUIRED SKILL PERFORMANCE AND GRADUATION REQUIREMENTS

The following open water skills must be completed by the student during open water dives:

1. Skills review from the TDI Introduction to Technical Diving course.

Land drills

2. Selection and preparation (configuration) of equipment suitable for the planned dive.
3. Conduct team oriented drills to familiarize both buddies with each other's diving configuration.
4. Demonstrate familiarity with basic hand signals.
5. Gas matching among buddy teams.
6. Demonstrate adequate pre-dive planning.
 - a. Limits based on personal and team gas consumption.
 - b. Exact dive profile, including safety stop.

Pre-dive Drills

1. Use START before every dive.
2. Stress analysis and mitigation.

In-water Drills

1. Demonstrate controlled descent, both on a line, and free descent. (It is recommended that the free descent be done with a visual reference such as a down line, or along the side of a rock wall.)
2. Demonstrate frog kick, pull 'n glide, modified flutter kick, back kick.
3. Demonstrate good buoyancy control (ability to hover in fixed position in the water column).
4. Show good awareness of buddy and other team members through communication, proximity, and team oriented dive practices.
5. Demonstrate comfort swimming at the surface and underwater while wearing a total of three (s) cylinders.
6. Demonstrate ability to drop and retrieve a single stage cylinder while maintaining position in the water column. This drill should be done with the student resting on the bottom/dive platform, and also while free floating.
7. Demonstrate proper reaction to primary regulator failure through proper gas valve shut off sequence and regulator switching.
8. Remove and replace mask.
9. Demonstrate ability to deploy lift bag as part of a team.
10. React appropriately to BC inflator malfunction (disconnect LP inflator hose, dump BC, orally inflate BC to neutral buoyancy).

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11. Buddy breathe for at least one minute while maintaining position in the water column. (This skill can be conducted while breathing from the buddy's long hose.)
12. Demonstrate a tired diver tow on the surface for at least 30 meters / 90 feet laterally and underwater for at least 30 meters / 90 feet laterally.
13. Properly execute the planned dive within all predetermined limits.
 - a. Assembly of diver carried equipment.
 - b. Proper descent / ascent rates
 - c. Proper safety stop procedures.
 - d. Monitoring of gas consumption, dive depth, and dive time equipment (tables, computers, equipment).
14. Demonstrate emergency deployment of a backup regulator or bail-out scuba system.
15. Show appropriate and timely responses to instruction / signals from the instructor and demonstrate buoyancy control and awareness throughout the dive.

In order to complete this course, the student must:

1. Complete all open water requirements safely and efficiently.
2. Demonstrate mature, sound judgment concerning dive gear selection and configuration, dive planning and execution.