TDI Decompression Procedure Instructor Course

Introduction

This course examines the theory, methods and procedures of planned stage decompression diving. This program is designed as a stand-alone course or it may be taught in conjunction with such TDI courses as TDI Advanced Nitrox Instructor, TDI Advanced Wreck Instructor, or TDI Extended Range Instructor. The objective of this course is to train Instructors how to plan and conduct a standard decompression procedures course not to exceed a maximum depth of forty five (45) msw / one hundred fifty (150) fsw. The most common equipment requirements, gear set-ups, deco-techniques and decompression mixtures are covered. Students are permitted to utilize Enriched Air Nitrox mixes or oxygen for decompression provided the gas mix is within their current certification level.

Student Pre-Requisites

The student must:
Be a minimum age of eighteen (18).
Have a minimum certification of TDI Advanced Nitrox Instructor or equivalent.
Have a minimum certification of TDI Decompression Procedures Diver or equivalent
Have a minimum of one hundred fifty (150) logged dives.
Must have certified ten (10) students in SDI Deep Diver or Advanced Nitrox diver or equivalent.

Course Structure and Duration

Open Water Execution:
Four (4) decompression dives with a minimum accumulated bottom time of one hundred (100) minutes.
If Advanced Nitrox is taught in conjunction with Decompression Procedures only a total of six (6) dives are required.
TDI allows instructors to structure courses according to the number of students participating and their skill level.
The minimum number of classroom and briefing hours is six (6).

Required Equipment

The following are required for this course:
Decompression Procedures Instructor guide
TDI Standard and Procedures Instructor Manual.
The following equipment is required for each candidate:
Primary Cylinder(s).
Cylinder volume appropriate for planned dive and student gas consumption.
Decompression Mix Cylinder(s).
ACylinder volume appropriate for the planned dive and student gas consumption with submersible pressure gauge.
BLabeled in accordance with TDI Standards.
Regulator(s)
APrimary and alternate 2nd stage required on all primary cylinders.
BSubmersible pressure gauges are required on all primary cylinders.
Buoyancy Compensator(s) adequate for equipment configuration.
Jon-line and other rigging lines as dictated by site conditions.
Ascent Reel with lift bag / surface marker buoy
AAdequate for maximum planned depth.
BMinimum of twenty three (23) kg / fifty (50) lb lift bag.
Depth gauge and automatic bottom timer and / or dive computer.
Exposure Suit adequate for the open water environment.
Oxygen Analyzer.
Underwater Slate.
Submersible dive tables – if desired.

Subject Areas Covered

Overview of decompression “safety stops” compared to required stops

Physics
A Pressure review.

Physiology
A Mechanisms of bubble formation.
B Advantage of hyperoxic mixes for decompression.
C Nitrogen Absorption and Elimination.
D Carbon Dioxide Toxicity.
E Ascent / descent rates.
F Hyperthermia.
G Hypothermia.
H Psychological aspects: task loading, stress, panic, time management.

Decompression Options
A Air.
B Nitrox.
C Oxygen.

Equipment Considerations
A Twin cylinders or single cylinder options, valve options.
B Stage cylinder options.
C Harness / BC Option.
D Computer, depth gauge, bottom timer options
E Ascent and navigation reels.
F Lift bags/surface marker buoys for drifting or free decompression.
G Jon-line or Garvin clips.
H Proper weighting and buoyancy control during dive phase and deco.

Dive Tables
A Introduction and review of different models (DCIEM, U.S. Navy, etc).

Dive Computers
A Mix adjustable.
B 0_2 integrated.

Dive Planning
A Standard Operation
    I.Gas requirements.
    II.Oxygen limitations.
    III.Nitrogen limitations.
B Emergency Planning
    I.Omitted deco.
    II.Decompression sickness.
    III.Equipment failure.

Procedures
A Primary and Decompression gas
    I.Normal operations.
    II.Failure, loss or inadequate emergency procedures.
    III.Analysis and logging.
    IV.Safeguards on deco supply regulators.
    V.Rigging and deployment of deco gear.
B Descent
    I.Methods of entry, down lines or free decent.
    II.Organization of equipment carried on diver.
C Ascent
    I.Variable rates.
    II.Trim and compensation.
D Fixed or Drifting Deco methods.
    I.Up lines fixed to bottom.
    II.Reels and lift bags/surface marker buoys
    III.Free drifting stages or boat supply.
    IV.Self-contained versus surface supply / rendezvous gas cylinders.
E Support
    I.From shore.
    II.From descent line or fixed platform.
    III.From live aboard boat.

Administration Procedures
A Medical Form.
B Waiver Forms.
C Risk Management.
D Registration forms.
E Standards and Procedures.

Required Skill Performance

The following skills must be completed by the Instructor candidate:

Prior to the dive, analyze the gas mixture in each cylinder, fill out the contents tag and facility Nitrox log.

Perform an advanced pre-dive plan and dive analysis (including risk assessment)
A Predetermine the appropriate depth and time limits for the dive based upon personal ability, environmental conditions, and gas consumptions (personal and team).
B Predetermine the limits associated with nitrogen, including NDLs and EAD.
C Assembly of diver carried equipment.

Properly execute the planned dive within all pre-determined limits
A Proper descent and ascent rates.
B Proper staged deco stop procedures.
C Monitoring the status of staged deco equipment, (tables, computers, bottles, regulators, etc).

Contingency Situations and Problems Solving (as appropriate by instructor)
A Omitted decompression.
B Extended bottom time profile with increased deco and recalculation.
C Failure to deploy lift bag / surface marker buoy and reel.
D Missed up-line or missed boat anchor.
E Loss of deco gas.

A proper stop of at least three (3) minutes shall be conducted on all dives and proper staged decompression stops whenever and wherever required.

Demonstrate the correct deployment of a lift a bag / surface marker buoy using a dive reel and / or up-line.

Demonstrate (simulated) emergency gas sharing at a stationary depth not to exceed thirty (30) msw / one hundred (100) fsw.

Demonstrate emergency deployment of a backup regulator or bail-out scuba system containing bottom mix at a depth not exceeding thirty (30) msw / one hundred (100) fsw.

Demonstrate the proper deployment, management and use of the bottom mix, deco-mix and travel mix (if used), including but not limited to:
A Conservative gas management.
B Depth control to avoid descending too deep for mix.
C Demonstrate buoyancy control and awareness throughout the dive