ITDA TRIMIX (MODULE 1) COURSE

INTRODUCTION

The ITDA Trimix (Module1)Course provides the training required to competently and safely utilize breathing gases containing a maximum helium content of 45% and a minimum oxygen content of 18% for dives that require staged decompression, utilizing nitrox and/or oxygen mixtures during decompression to a maximum depth of 60 msw

COURSE OBJECTIVES

The objective of this course is to train divers in the benefits, hazards and proper procedures of utilizing custom oxygen/helium/nitrogen mixtures as breathing gases

QUALIFICATIONS OF GRADUATES

Upon successful completion of this course, graduates may engage in technical diving activities utilizing custom trimix mixtures without direct supervision so long as:

1. The diving activities approximate those of training
2. The area of activities approximate those of training
3. Environmental conditions approximate those of training

WHO MAY TEACH

This course may be taught by any active ITDA Trimix (Mod1) Instructor

STUDENT / INSTRUCTOR RATIO

1. CLASSROOM
   Unlimited, so long as adequate facility, supplies and additional time are provided to ensure comprehensive and complete training
2. OPEN-WATER
   A maximum of 4 students per active ITDA Instructor is allowed. The ratio should be reduced as requires due to environmental or operational constraints. All dives must be carried out in accordance with the HSE ACOPS

STUDENT PRE-REQUISITES

1. Minimum age of 18
2. Minimum certification as an ITDA Decompression Nitrox Diver and ITDA Technical Nitrox (or equivalent)
3. Minimum of 60 logged dives of which 25 must be deeper than 30 msw, 25 on EAN.

REQUIRED COURSE MINIMUMS

1. Classroom/briefing hours – 8
2. Open-water dives:
   a) 6 with a minimum accumulated bottom time of 120 minutes, with at least 3 dives deeper than 45 msw
   b) The dives must be made progressively deeper.
   c) A first dive must be made in the 25-30 metre range as an assessment dive.
   d) One dive must be made to 50 metres.

REQUIRED EQUIPMENT

The following equipment is required for each student:

1. Bottom mix cylinder (s)
    a) Cylinder volume appropriate for planned dive and student gas consumption
    b) Dual outlet valve, double manifold or independent doubles
    c) Labeled in accordance with ITDA standards
2. Decompression mix cylinder (s)
    a) Cylinder volume appropriate for planned dive and student gas consumption
    b) Labeled in accordance with ITDA standards
3. Suit inflation cylinder (required for drysuit divers only)
4. Regulators
    a) Primary and primary redundant required on all bottom mix cylinder (s)
    b) Submersible pressure gauges are required on all primary/bottom mix cylinders
    c) A contingency use long hose second stage should be designated and appropriately rigged to facilitate air sharing at depth if necessary
    d) It is strongly recommended that ***ALL*** 4 required regulators be DIN or ***ALL*** 4 regulators be A-clamp
5. Buoyancy compensator (s) adequate for equipment configuration
6. Redundant depth and timing devices
7. Redundant light system ***if required by site***
8. Ascent reel with lift bag/surface marker buoy
    a) Adequate for maximum planned depth
    b) Minimum of 25kg lift bag (a dump valve highly recommended)
9. Exposure suit adequate for the open-water environment
10. Line cutting device
11. Underwater slate (for decompression/contingency tables)

REQUIRED SUBJECT AREAS

The following topics must be covered during this course. The ITDA Trimix Manual is mandatory for use during this course but instructors may use any additional text or materials that they feel help present these topics.

1. PHYSICS
    a) Pressure review
2. PHYSIOLOGY
    a) Hypoxia
    b) Oxygen toxicity

    Central nervous system
    c) Nitrogen narcosis
    d) Nitrogen and helium absorption and elimination
    e) Carbon dioxide toxicity
    f) Carbon monoxide toxicity
    g) Helium
        HPNS
        Effects on respiration
        Effects as an insulator
    h) Counter diffusion
    i) Hyperthermia
    j) Hypothermia
3. DECOMPRESSION OPTIONS
    a) Air
    b) Nitrox
    c) Helium
4. EQUIPMENT CONSIDERATIONS
    a) Cylinder options
    b) Stage cylinder options
    c) Suit inflation options
    d) Regulator options
    e) Harness/BC options
    f) Computer/depth gauge/bottom timer options

g) Ascent and navigation reels
h) Lift bags/surface marker buoys
i) Lights
j) Redundant mask and knife
k) Jon-line

5. DIVE TABLES
   a) Computer generated tables
   b) DCIEM heliox tables and/or other published tables
6. DIVE PLANNING
   a) Operational planning
      Support
      Teams
   b) Team planning
      Gas requirements
      Oxygen limitations
      Inert gas limitations
   c) Emergency planning
      Omitted decompression
      Oxygen toxicity
      Analysis and logging
      General
7. PROCEDURES
   a) Bottom, travel and decompression gas
   b) Normal operations
   c) Failure, loss or inadequate emergency procedures
   d) Analysis and logging

REQUIRED OPEN-WATER SKILLS

The following open-water skill must be completed by the student during open-water dives. It is recommended that all dives be conducted between 30 msw and 60 msw

1. Properly analyse all gas mixtures to be used
2. Demonstrate adequate pre-dive planning
   a) Limits based on personal and team gas consumption
   b) Limits based on oxygen exposure at planned depths for actual mixes
   c) Limits based on inert gas absorption at planned depths with actual mixes
3. Properly execute the planned dive within all pre-determined limits
4. Demonstrate the proper navigational techniques for the specific dive
5. On 2 of the dives, demonstrate an ascent with ascent reel and lift bag and perform staged decompression
6. Demonstrate the proper procedures for switching and isolating a malfunctioning primary regulator (this exercise should not be practised deeper than 40 msw)
7. On onee of the dives, tow a simulated unconscious diver while at depth, 9 meters to ascent line and simulate an emergency rescue ascent technique

GRADUATION REQUIREMENTS

In order to complete this course students must:

1. Satisfactorily complete the ITDA Trimix Course written examination with a minimum mark of 80%
2. Complete all open-water requirements safely and efficiently
3. Demonstrate mature, sound judgement concerning dive planning and execution

SUPPORT MATERIALS

1. ITDA Student Registration
2. ITDA Trimix Manual
3. ITDA Power Point Presentaion