

# **1. TDI – Advanced Gas Blender Course**

## **1.1 Introduction**

This course enables the successful candidate to engage in the blending of oxygen and helium based gasses. The objective of this course is to train candidates in the proper procedures needed for the preparation and blending of high quality Nitrox and Trimix gases for use in technical diving.

## **1.2 Qualifications of Graduates**

Upon successful completion of this course candidates will be able to prepare high quality scuba gases.

## **1.3 Who May Teach**

Who may teach this course:

1. Any active TDI Advanced Gas Blending Instructor may teach this course.

## **1.4 Student – Instructor Ratio**

Academic:

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

Confined Water (Swimming pool-like conditions):

1. N/A.

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

1. N/A.

## **1.5 Student Pre-Requisites**

The student must:

1. Be a minimum age of eighteen (18).
2. Show proof of certification of TDI Nitrox Gas Blender or equivalent.

## **1.6 Course Structure and Duration**

Open Water Execution:

1. N/A.

Course Structure:

1. TDI allows instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The minimum number of classroom and briefing hours is six (6).

## **1.7 Administrative Requirements**

The following is 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 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 HQ.
2. Award Card.

## **1.8 Required Equipment**

The following are required for this course:

1. TDI Advanced Gas Blender Manual.
2. TDI Overheads / Power Point Presentation (optional).
3. Helium analyzer (recommended)

## **1.9 Required Subject Areas**

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

1. The Responsibility of the Gas Blender.
2. Gases of Diving
  - A. Oxygen.
  - B. Nitrogen.
  - C. Helium.
  - D. Other gases.
3. Oxygen Handling
  - A. Oxygen hazards.
  - B. Causes and prevention of oxygen fire.
  - C. Oxygen system design.
  - D. Local regulations for gas blending and handling.
  - E. Oxygen compatible systems components.
4. Gas Production Equipment
  - A. Compressors.

- B. Cylinders.
- C. Filtration systems.
- D. Gauges.
- 5. Mixing Techniques
  - A. General considerations.
  - B. Continuous blending systems.
  - C. Membrane separation systems.
  - D. Pre-mix systems.
  - E. Partial pressure blending
    - I. Mathematics of partial pressure.
    - II. Mixing by weight (optional).
- 6. Oxygen analysis
  - A. Procedures.
  - B. Oxygen analyzers.
- 7. Cylinder Handling and Sign Out.

### **1.10 Required Skill Performance And Graduation Requirements**

In order to complete this course, students must:

1. Candidates must successfully blend and analyze a minimum of five (5) cylinders of Nitrox and three (3) cylinders of Trimix.
2. Satisfactorily completes the TDI Advanced Gas Blender written examination.
3. Demonstrate proficiency in blending and analysis of Nitrox and Trimix gases.