

## **6. Air Fill Station Technician Course**

### **6.1 Introduction**

This course is designed to promote safety in the filling of compressed gas cylinders with air. The objective of this course is to train and test candidates in the proper procedures for filling compressed gas cylinders with air.

### **6.2 Qualifications of Graduates needs to be added**

1. Upon successful completion of this course graduates may handle, transport, externally inspect and fill compressed gas cylinders with air.

### **6.3 Who May Teach**

1. Any active SDI Assistant Instructor or Instructor that has been certified to teach this specialty by SDI

### **6.4 Student to Instructor Ratio**

#### **Academic**

1. Unlimited, so long as adequate facility, supplies and time are provided to ensure comprehensive and complete training of subject material

### **6.5 Student Prerequisites**

1. Minimum age 18

### **6.6 Course Structure and Duration**

#### **Course Structure**

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

#### **Duration**

1. The recommended number of classroom and briefing hours is 2

## 6.7 Administrative Requirements

### **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:
  - a. *SDI Non-Scuba General Liability Release*
5. The instructor must maintain all course records including fill logs for a minimum of seven years.

### **Upon successful completion of this specialty the Instructor must:**

1. Issue the appropriate SDI Certification by submitting the *SDI Diver Registration Form* to SDI Headquarters or registering the students online through the member's area of the SDI website

## 6.8 Required Equipment

1. *Visual Inspection Procedures* student manual or eLearning
2. *Air Fill Station Technician KQ*
3. *SDI Air Fill Station Technician PowerPoint*
4. Air Fill Station and/or Fill Compressor
5. Scuba Cylinders for filling

## 6.9 Approved Outline

**Instructors may use any additional text or materials that they feel help present these topics.**

### **The following topics must be covered:**

1. The Responsibility of the Fill Station Technician
2. Main Cause of Accidents
3. Risks and Hazards
  - a. Cylinder failure
  - b. Fill Whip Failure
4. Safe Operating Basics
5. Breathing Grade Air definition
6. Air Quality Factors and Contaminants
  - a. Carbon dioxide
  - b. Carbon monoxide
  - c. Hydrocarbons/Oil mist
  - d. Water vapor

- 7. Air Analysis
  - a. Procedures
  - b. Testing systems
  - c. Local requirements
- 8. Air Fill Production Equipment
  - a. Compressors
  - b. Storage cylinders
  - c. Filtration systems
  - d. Valves
  - e. Fill adapters
  - f. Analog and digital gauges
  - g. Fill whips
- 9. Safety Systems
  - a. Fill whip restraints
  - b. Cylinder valve burst disks
  - c. Pressure limiting master valves
  - d. Air panel overpressure relief valves
  - e. Flow limiting devices
  - f. Cylinder restraint systems
  - g. Cylinder filling tubs
  - h. Cylinder filling containment systems
- 10. Fill Station Systems
  - a. Direct from compressor
  - b. Fill panels
  - c. Fill station design
  - d. Testing and certification
- 11. Proper Cylinder Handling
  - a. Fill station technician rules and recommendations
  - b. Cylinder construction
  - c. Identification of the various cylinder markings
  - d. Testing requirements
    - i. Hydrostatic
    - ii. VIP and similar stickers/markings
    - iii. Eddy current
  - e. Inspection of cylinders
  - f. Inspection of valves
  - g. Banned and failed cylinders

12. Air Filling Procedures
  - a. General considerations
  - b. Maintaining safe filling conditions
  - c. Filling from pre-filled banks
  - d. Filling direct from compressor
  - e. Storage
  - f. Fill technician safety
  - g. Record keeping
    - i. Compressor hours
    - ii. Filtration hours
    - iii. Fill logs
  - h. What to do if you get bad air
13. What's Next?
  - a. TDI Nitrox Gas Blender
  - b. TDI Advanced Gas Blender
  - c. TDI Oxygen Service Technician
  - d. SDI VIP Inspector

## **6.10 Required Skill Performance and Graduation Requirements**

**Students are required to successfully complete the following:**

1. Candidates must successfully fill 5 cylinders with air following safety practices covered in the course.
2. Candidates must log fills in an air fill log.
3. Demonstrate an understanding of air filling techniques, contaminated air identification and safe cylinder handling
4. Successfully pass the SDI Air Fill Station Technician knowledge quest with a minimum score of 80%.