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## 28. Visual Inspection Procedure (VIP)

### Introduction

This course is designed to promote safety in the care and maintenance of high-pressure scuba cylinders. The VIP program is intended to demonstrate to the scuba industry, a need to meet and exceed the minimum standards established by the *Code of Federal Regulations*. In addition, it is intended to train inspectors in the proper handling, filling, and inspection techniques, including the identification of the various defective conditions that can lead to cylinder rejection or condemnation.

Upon successful completion of this course graduates may:

1. Visually inspect high-pressure scuba cylinders for defective conditions that could cause a cylinder failure
2. Train fill station operators (FSO) in the safe methods of handling, transporting and filling of high-pressure scuba cylinders

### 28.1 Who May Teach

Any active SDI/TDI Visual Inspector Procedure Instructor

### 28.2 Student to Instructor Ratio

#### Academic

1. No more than 5 students per demonstration setup; tools and cylinders for the practical exercises
2. No more than 25 students per active SDI VIP Instructor

### 28.3 Student Prerequisites

1. Minimum age 18
2. Affiliated with an organization that has a high pressure air compressor and fill station

### 28.4 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. Classroom lecture and demonstrations is 5 hours

### 28.5 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 schedule to the students



4. Have the students complete the:
  - a. *SDI Liability Release and Express Assumption of Risk Form*
  - b. *SDI Medical Statement Form*

**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 member's area of the SDI website

## 28.6 Required Materials

1. *SDI Visual Inspection Procedures Student Manual*
2. *SDI Visual Inspection Procedures PowerPoint Presentation*
3. *CGA publication C6-1993*
4. *CGA publication C6.1-1995*
5. *CFR 49 – parts 171 - 179*

## 28.7 Required Equipment

**The following equipment is the minimum required per inspection group while performing the visual inspection procedure.**

1. A right angle mirror (dental mirror) with a magnification of 2 times, and having a diameter small enough to enter the cylinder neck
2. An inspection light of sufficient size and intensity to illuminate the mirror and threads being inspected
3. A light wand or other light source to illuminate the interior surfaces of the cylinder being inspected
4. A right angle, 1 times, power mirror and light source to enable the inspection of the interior crown area of the cylinder being inspected
5. A straight and right angle pick and some gauging method to estimate the depth of any pitting noted on the cylinder walls

## 28.8 Approved Outline

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

**Recommended text includes CGA C6-1993 and C6.1-1995, or country specific equivalent. The following topics must be covered. The SDI Visual Inspection Procedures Student Manual is mandatory for use during this course.**

1. Purpose
  - a. Legal requirements, standards of the community
2. Safe Handling of Cylinders
  - a. Fill station operator rules and recommendations
  - b. Identification of the various cylinder markings
  - c. Legal / illegal filling requirements
  - d. Filling procedures
  - e. Use of and interpretation of EOI stickers



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3. Tools and their uses
    - a. Use of eddy current technology in assisting the detection of thread cracks in 6351-T6 aluminum cylinders
  4. Visual inspection indications
    - a. Proper identification of the various defect conditions
  5. Criteria for rejection and condemnation of a cylinder
    - a. Define the criteria for cylinder rejection
    - b. Define the criteria for condemning a cylinder
    - c. Cover when to mark a cylinder "With notation"
  6. Other services
    - a. Valve inspection and cleaning
  7. The basis for cylinder cleaning
  8. Visual Inspection Procedure
    - a. Step by step walkthrough of the inspection process

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

**The student is required to display a degree of competency in the identification of various defect conditions presented to him by the instructor using actual cylinders with known defective conditions**

1. Inspect 3 cylinders with at least 1 having a defective condition
2. Satisfactorily complete the SDI Visual Inspection written examination
3. Demonstrate the ability to identify those conditions in a cylinder that would reject or condemn it