



# ASME Section V Nondestructive Examination (NDE)

HSB, a Munich Re company, is a technology-driven company built on a foundation of specialty insurance, engineering and technology, all working together to drive innovation in a modern world.

**Course Description:** This one-day training course provides an introductory overview of the ASME Code Section V NDE Requirements. The seminar approaches the use of Section V primarily as referenced from an ASME Code Section I - Power Boilers fabrication program, as well as highlighting personnel qualification requirements.

It focuses on the ASME Non-nuclear Certificate Holder engaged in welded construction, and Repair Organizations working on ASME Code pressure retaining items under the National Board Inspection Code (NBIC). Five NDE methods found in ASME and NBIC codes (RT, UT, PT, MT and VT) are covered as well as a review of NDE personnel qualification requirements.

## Topics Covered

### Basics

- History and Book Layout

### Introduction to Construction Codes Written Procedure Requirements

- Who prepares them?
- How they are approved
- Procedure Demonstration
- Contents of the Procedure
  - References
  - Examination Equipment

- Applicability
- Examination Method
- Safety Precautions
- Calibration
- Flaw Detection
- Flaw Evaluation
- Acceptance Criteria
- Documentation
- Construction Code Requirements

### NDE Procedure Qualification (T-150(d))

**Radiographic Examination (RT)**

- Essential Variables
- Surface Preparation
- Backscatter Indicator
- Film Identification
- Location Markers
- Image Quality Indicators (IQI)
  - Hole (Plaque) Type
  - Wire Type
- IQI Selection
- Alternative IQI's
- Equivalent Sensitivity
- IQI Placement
- Shims
- Calibration of Densitometers
- Calibration of Comparison Film Strips
- Film Setups

**Geometric Unsharpness**

**Film Density Variation**

**Evaluation and Documentation**

- Radiographic Technique Sheet
- Radiographic Review Form

**Digital Image Acquisition**

**Digital Image Radiography**

**Phosphor Imaging Plate RT**

**Ultrasonic Examination (UT)**

- Essential Variables
- Nonessential Variables
- Calibration Block Requirements
- Time of Flight Diffraction (TOFD)
- Phased Array Techniques
- Evaluation and Documentation

**Liquid Penetrant Examination (PT)**

- Essential Variables
- Equipment
- Surface Preparation
- Techniques
  - Indication Method
  - Penetrant Removal

**Application Temperature Range**

- Material Applicability
- Calibration
- Dye Application
- Dwell Time
- Excess Dye Removal
- Developer Application
- Developing Time
- Light Levels
- Interpreting Indications
- Evaluation of Flaws
- Acceptance Criteria
- Documentation

**Magnetic Particle Examination (MT)**

- Essential Variables
- Surface Preparation
- Equipment
- Techniques
  - Visible vs. Fluorescent
  - Wet or Dry
  - AC, DC or Permanent Magnet
- Calibration
- Field Strength Indication
- Light Levels
- Interpreting Indications
- Visible, Ultraviolet and Alternative
  - Wavelength Light Sources
- Evaluation of Flaws
- Acceptance Criteria
- Documentation

**Visual Examination (VT)**

- Section V Article 9
- Section I, VIII, Div. 1 & B31.1 Refs.
- Welding Inspection Tools
- Sample Visual Examination Procedure
- Inspection Documentation
- Visual Inspection Acceptance Criteria

**NDE Personnel Qualification Requirements**

- Volumetric Examination Methods
- SNT-TC-1A and CP-189
- Other National /International Standards

**Surface Examination Methods**

**PT Examiner - Section I**

**VT Examiner - ASME 31.1**

For more information, contact [GetInfo@hsb.com](mailto:GetInfo@hsb.com)