ASME Section V
Nondestructive Examination (NDE)
(1-day presentation)

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. The course is geared for first time users of Section V, as well as those with more extensive experience. It provides information for 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

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