

PD389

ASME BPV Code, Section V: Nondestructive Examination Requirements

Day One

- Introduction; Program overview/ Course objectives
 - History and development of NDE
 - Development of the new NDE methods (i.e. Phased Array UT, Digital RT)
 - Terminology: Key definitions used in NDE
 - Conditions necessary for effective NDE
 - NDE variables
 - Codes / specifications and procedures
 - Personnel considerations: Levels of qualifications and certifications
 - Certification programs: ASNT SNT-TC-1A, CP-189, NAS 410, ISO 9712
 - Origin, types, severity and characteristics of material discontinuities
 - Classification and interpretation of discontinuities
- Visual Testing (VT)
 - Basic principles; Advantages and limitations
 - Examination techniques - direct / indirect / translucent
 - Equipment - optical aids, mirrors, fiberscope, videoprobes
 - Procedures and evaluation
 - Importance of complete / accurate reporting
 - Applications – welds, vessels, components
 - Typical examination nonconformance's
 - Visual examinations of welds

Day Two

- Penetrant Testing (PT)
 - Basic principles; Advantages and limitations
 - Different examination techniques - solvent removable, fluorescent, post-emulsification)
 - Equipment - portable, systems, accessories
 - Process variables
 - Procedures and evaluation
 - Importance of complete / accurate reporting
 - Applications – welds, vessels, components
 - Typical examination nonconformance's
- Magnetic Particle (MT)
 - Basic principles; Advantages and limitations
 - Different examination techniques (direct and indirect)
 - Equipment (permanent magnets, yokes, prods, wet horizontal)
 - Process variables
 - Procedures and evaluation
 - Importance of complete / accurate reporting
 - Applications – welds, vessels, components
 - Typical examination nonconformance's
- Radiographic Testing (RT)

- Basic principles; Advantages and limitations
- Nature and characteristics of radiation
- Safety considerations
- Equipment - stationary / portable)
- Examination techniques - gamma, x-ray
- RT procedures
- Film processing considerations: quality levels, film density, viewing considerations
- Interpretation and evaluation of radiographs
- Importance of complete / accurate reporting
- Applications – welds, pressure vessels, castings
- Typical examination nonconformance's
- Review of radiographic images

Day Three

- Ultrasonic Testing (UT)
 - Basic principles; Advantages and limitations
 - Nature and characteristics of sound generation
 - Wave modes
 - Different examination techniques - contact, immersion, thickness
 - Equipment (instrumentation, transducers)
 - Variables – material structure, surface, configuration
 - Procedures and evaluation
 - Importance of complete / accurate reporting
 - Applications – welds, pressure vessels, components
 - Typical examination nonconformance's

- Eddy Current Testing (ET)
 - Basic principles; Advantages and limitations
 - Nature and characteristics of electromagnetic induction
 - Conductivity, permeability and other key terms
 - Different examination techniques
 - Equipment - instrumentation, probes, standards
 - Variables – materials, frequency, surface, etc.
 - Procedures and evaluation
 - Importance of complete / accurate reporting
 - Applications - weld inspection, coating measurements, tubing inspection, sorting
 - Typical examination nonconformance's