

PD615

Nuclear Piping Systems BPV Code Section III and B31.1: Design, Integrity-Operability Assessment, and Repairs

Day One

- Overview of ASME III requirements for piping systems
- Overview of B31.1 requirements for nuclear plant piping systems
- Historical perspective and key changes to codes of record 1960's-current
- Overview of regulatory requirements
- Design loads and load combinations
- Design qualification requirements
- Pressure design
- Sustained loads design
- Flexibility analysis and fatigue
- Pipe stress modeling guidance

Day Two

- Dynamic loads in nuclear plant piping
- Seismic OBE and SSE
- Hydraulic transient loads
- Flow-induced vibration
- Pipe break
- Wind and tornado loads
- Primary stress equations Class 2-3 and B31.1
- Class 1 equations and difference with Class 2-3
- Class 1 fatigue, life extension, and environmental fatigue effects

Day Three

- Operability assessment in accordance with NRC Inspection Manual
- Case study accidental over-pressure
- Case study locked snubber
- Corrosion-erosion assessment using Section XI code cases
- Assessment of crack-like flaws, fracture mechanics using Section XI Ap.H
- Repair options for safety-related piping systems per ASME XI and NRC
- Repair options for non-safety-related piping systems per ASME PCC-2