The ASME B&PV Code for Nuclear Components Design and Operability Pressure Equipment and Piping

Potential PDH: 24

Description:

A three-day course to understand the ASME Boiler and Pressure Vessel (B&PV) Code for nuclear power plant components: Understand the contents of the Code, their technical basis, their evolution over the years, and the regulatory limitations imposed by the US NRC on their application. The course covers design (ASME III) as well as integrity assessment and operability (ASME XI and NRC regulations) through case studies.

Outline:

Part 1 - Overviews

- Overview of ASME Boiler and Pressure Vessel (B&PV) Code
- Overview of ASME B&PV Section III Div. 1
- Overview of ASME B&PV XI Inservice Inspection
- Overview of ASME B&PV IX Welding qualification
- Overview of ASME B&PV Section V Nondestructive Examination
- Overview of ASME Operation and Maintenance (O&M) Code
- Overview of ASME Qualification of Mechanical Equipment (QME) Code
- Overview of NRC 10CFR50.55(a) Limitations on ASME B&PV Code
- Overview of NRC standard review plan and importance of FSAR
- Overview of NRC Inspection Manual 0326 for operability determination

Part 2 - General Requirements

- ASME III NCA general requirements
- ASME III NCA safety classification
- ASME III NCA Design and procurement Specification and Design Report
- ASME III NCA nuclear quality assurance program
- ASME III NCA nuclear accreditation

Part 3 - Materials, Design, and Fabrication

- Overview of ASME III for Class 1 components
- Class 1 material requirements

- Class 1 design requirements vessels, pumps, valves, and piping
- The design loads for nuclear components
- Design, Service Levels A-D, and Testing Loads
- The qualification requirements for nuclear components
- Primary stress limits
- Secondary stress limits
- Class 1 fatigue analysis
- Life extension and environmental fatigue
- Class 1 fabrication, examination, and testing
- On-going developments in ASME III
- ASME III NF design and qualification of pipe supports

Part 4 - Integrity and Operability Evaluations

- ASME XI Evaluation of degraded and non-conforming conditions
- Evaluation of corrosion wall thinning in accordance with ASME XI and NRC
- Evaluation of crack-like planar flaws in accordance with ASME XI and NRC
- Evaluation of beyond-design loads in accordance with ASME III, ASME XI, and NRC

Subject Matter Expert (SME):

George Antaki, Fellow ASME, has over 40 years of experience in nuclear power plants and process facilities, in the areas of design, safety analysis, startup, operation support, inspection, fitness for services and integrity analysis, retrofits and repairs. George has held engineering and management positions at Westinghouse and Washington Group International, where he has performed work at power and process plants, and consulted for the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC) and the Electric Power Research Institute (EPRI). He also is an instructor of failure prevention, inspection and equipment integrity courses for ASME, and has done teaching assignments for the Department of Energy as well as many other private organizations. Mr. Antaki has authored several articles, publications and two textbooks on design and mechanical integrity of plant systems and components. George serves as a member of several committees including:

- ASME/API Joint Committee on Fitness for Service Member
- B31 Mechanical Design Technical Committee Vice Chair
- Post Construction Subcommittee on Repair and Testing (PCC) Member
- Pressure Technology Post Construction Committee Member
- Pressure Technology Post Construction Executive Committee Member
- Subgroup on Dynamic Qualification Member
- Task Group on Impulsively Loaded Vessels (SC VIII) Member