

PD723

ASME B31.4 and B31.8, Liquids and Gas Pipelines

Day One

Students are provided with an overview of pipelines, and the role of industry standards. The scope and intent of the natural gas and hazardous liquid standards are reviewed. The attendee will learn the design criteria and how to apply the allowable stresses.

- ASME Code introductory concepts
 - What is a transportation pipeline?
 - Intent
 - Scope
- Load categories
 - Sustained, occasional, and cyclical
 - Restrained vs unrestrained piping
 - Operational and environmental loads
- Piping stress analysis
 - How stresses are calculated
 - Allowable stresses
 - Piping flexibility analysis
- Pressure design
 - Pressure design equation for pipe
 - Class location and other design factors
 - Fracture control in pressure design

Day Two

The attendee learns about various grades of line pipe and components, including flanges and wrought fittings. The concepts of location classes and fracture control as part of pressure design requirements are reviewed. The requirements for installation and hydrostatic testing of the completed pipeline are covered.

- Fittings and components
 - Flanges
 - Butt welding components
 - Fabricated branches
 - Valves
- Materials
 - Recognized material specifications
 - Types of pipe, how pipe is made
 - Line pipe metallurgy
- Welding
 - Weld joint details
 - Weld procedure qualification and welding standards
 - Avoidance of weld cracking

- Construction
 - Transmission pipeline installation
 - Facilities (pump stations, compressor stations)
 - Hydrostatic testing
- Operation and maintenance, repairs
 - Plans and procedures
 - Defects and damage
 - Pipeline repairs
 - Inservice welding
 - Qualification of pipeline personnel (B31Q)

Day Three

The last day is devoted to operations and maintenance matters, including evaluating and repairing injurious defects, and the causes and prevention of corrosion. Offshore and other special pipelines are discussed. The attendee learns about Integrity Management Planning.

- Corrosion control
 - Corrosion causes
 - Corrosion control requirements
 - Evaluating strength of corroded pipe (B31G)
- Natural gas distribution systems
 - Plastic pipe
 - Installation
- Offshore systems
 - Exceptions to main standard provisions
- Sour service systems
 - Metallurgical considerations
 - Health and safety hazard
- Carbon dioxide systems
 - Exceptions to main standard provisions
- Integrity management planning
 - B31.8-S and API 1160
 - Potential impact radius concept
 - Pipeline integrity threats
 - Integrity assessment methods