Best Technology Solutions (BTS)

Pipeline Transportation Systems for Liquid Hydrocarbons & Other Liquids (Conforms to ASME Code B31.4) Training program

Introduction:

Pipelines play a vital role in our economy. They carry, on daily basis, the liquid heating and motor fuels on which we depend. They draw little public attention until they malfunction and release their contents into the environment. Pipeline operators have a duty to preserve public safety and the environment. Responsible employees of a pipeline operator have a duty to thoroughly understand and rigorously adhere to principles of safe pipeline design and operation in order to keep the products flowing and to minimize the chances that any product will ever be released unintentionally into the environment. Basic safe pipelining starts with the ASME B31.4 Code. This course provides the foundation for properly applying the code in the interest of public and employee safety. Its goal is to familiarize pipeline operating personnel, public safety personnel, and state and federal regulators with the important safety-related aspects of ASME B31.4.

Who Should Attend?

Piping engineers and designers, fabricators and erectors, QA/QC personnel, engineers and maintenance personnel who desire a more in depth understanding of the Fabrication and Examination rules of the ASME Codes & Standards, operation, mechanical and maintenance personnel, inspection and quality personnel responsible for specifying, operating, inspecting and maintaining piping systems, code compliance

personnel, regulatory personnel, consulting engineers, design engineers, maintenance engineers, project engineers, maintenance personnel, service engineers, planners and schedulers, M & E foremen, technical assistants & coordinators & technicians, public safety officials, and government regulators

Course Objectives:

By the end of this course delegates will learn about:

- Describe the basic elements of pipeline design, construction and maintenance
- Explain how to apply principles of safe pipeline design and operation

Course Outline:

Scope and Definitions

History of the Piping Code

Overview of the Code

Definitions Used in the Code

Principles of Stress Analysis

Standards of Piping and Components

Design

- The Barlow formula, What is surge?
- Head loss and hydraulic design
- Pipeline size considerations

- Curved pipe, fittings, and flanges, Longitudinal stress
- Stresses in buried pipelines, Expansion and flexibility

Material Selection

- The difference between strength and toughness
- Ductile and brittle fracture
- How toughness is measured
- Line pipe materials and their characteristics
- Line pipe toughness specification
- How fittings and flanges are selected

Construction Welding and Assembly

- Buried pipeline
- Cover requirements for buried pipeline
- Care and handling of line pipe
- Bending of pipe
- Welding procedure specification (PQS)
- Welding procedure qualification records (PQR)
- Standards of welding electrodes
- Welder qualification
- Welded joint design and fit-up considerations Welding problems
- Welding process
- Code requirements on welding of pipes

- Hot tapping principles
- Requirements for tanks, terminals, pump stations, and special components

Hydrostatic Testing

- History of the hydrostatic test
- Test-pressure-to-operating-pressure ratio
- Hold-time/leak test
- Pressure reversals
- Optimum tests for new pipe
- Optimum tests for revalidating existing pipelines

Operations, Maintenance, and Corrosion Control

- Requirements for operating and maintaining a pipeline
- Operation and maintenance procedures
- Defect assessment, Pipeline repair methods
- Remaining life assessment
- Requirements for corrosion control

Corrosion Control of Pipelines

Pipeline Pigging

Pipeline Risks