



Pigging and In-Line Inspection



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Introduction:

The use of in-line tools for inspection and cleaning is accepted as essential for the safe and profitable operation of all pipelines. Regulations require internal inspections using geometry pigs for detecting changes in circumference and MFL, ultrasonic pigs and/or EMAT tools for determining wall anomalies, metal loss and flaws in the pipe or the welded segments. To keep the pipelines flowing properly, operators wage a constant battle for flow assurance against paraffin, black powder and, offshore, hydrates and asphaltenes, in this battle pigging technology combined with chemical treatment is their primary weapon.

This training course is designed to provide a comprehensive introduction to all aspects of utility and in-line inspection pigging. The course content is set to be fully illustrated, with actual pigs and models being used to aid understanding and help overcome any difficulties.

Targeted Groups:

- Project managers
- Engineers
- Maintenance and technical personnel
- Personnel responsible for pipeline integrity assurance, flow assurance, corrosion control, and safety

Course Content:

Unit 1: Pigging for Operation and Maintenance

- Pigging during construction
- Pigging during operation
- Utility Pigs
- Cleaning pigs
- Sealing pigs
- Gauging pigs
- Dual diameter pigs
- Magnetic cleaning pigs
- Designing a Pipeline for Pigging
- Pig traps and pigging stations
- Location and tracking devices

Unit 2: Designing and Implementing an In-line Inspection ILI Program

- Selecting an ILI Tool
- Specific Design Considerations for Running ILI Tools
- Launch and Receive trap design
- Bends, tees, and valves

- Issuing an Inquiry
- Schedule requirements

Unit 3: Preparation for ILI

- Controlling Operational Parameters During the Inspection Run
- Strategy for Contract Development and Negotiations
- Developing a good specification
- Contingency Planning for a Stuck Pig
- Offshore risers
- Onshore flowlines, gathering system main sections or laterals

Unit 4: In-line Inspection ILI Tools - Theory, Performance, and Detection Limits

- Metal loss In-line Inspection
- Other In-Line Inspection Tools
- Crack detection pigs
- Mapping
- Geometry and bend-detection pigs
- Wax deposition measurement
- Spanning pigs
- Semi-intelligent pigs

Unit 5: Post In-line Inspection Issues

- Quality Assurance Check of the Data
- Development of Protocols for Response
- Prioritization of the Dig Plan
- US regulatory requirements
- Criteria for corrosion-caused metal loss
- Criteria for dents

Unit 6: Validation of Results

- Planning and preparation for field NDE
- Comparison between ILI, field NDE and actual:
- Corrosion
- Dents - effects of re-rounding
- Establish level of confidence

Unit 7: Fitness for Purpose: Assessment

- Assessment of defects
- Establish long-term integrity management program
- Incorporation of results in risk programs
- Potential Repair Consideration