Post-Inspection Assessment

We provide defect assessment (e.g. in accordance with ASME B31.G) to calculate safe operating pressure and determine the repair factor. Parameters such as Maximum Allowable Operating Pressure (MAOP), pipeline diameter, wall thickness, material specs affect the curve. We plot versus a defect assessment curve with and Estimated Repair Factor (ERF) of 1; anything above requires repair/lowering MAOP. If ERF is ≥ 1, intervention is necessary; if ≤ 1, an anomaly is acceptable.

Fitness for Purpose/Service Assessment (FFP)

FFP assesses the fitness of assets for continued service. It defines flaw acceptance limits and distinguishes between acceptable and unacceptable flaws and damage based on industry standards.

- API 570
- British Standard PD8010
- Metal losses: ASME B31G, ASME B31G Modified, DNV RP F101
- Dents: API 1160, DVGW 473
- Laminations: British Standard PD7910
- POF 2016 or 2021

Remaining Life Assessment (RLA)

RLA is an industry-standard best practice for forecasting corrosion severity. It uses corrosion growth rates to estimate future asset condition, supplementing FFPs. RLA calculates remaining life based on specific criteria and identifies anomalies that may reduce life.

Corrosion Growth Assessment

Intero can perform Corrosion Growth Assessments (CGAs) to help estimate realistic corrosion growth rates. We use data from two inline inspections to calculate yearly growth rate based on change in depth of a corrosion anomaly. CGAs are calculated using two or more inline inspection datasets or a half-life or comparison

Intero Integrity Services
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Elevating the Standard for UT Inline Pipeline Inspection

Intero Integrity Services is the leading specialist for keeping complex oil, gas, and petrochemical facilities clean, safe, well-maintained, and highly productive. Our unique range of industrial, inspection, and environmental services maximizes your asset availability.

Turnkey. Innovative. Optimized. We listen to customers constantly, so we understand what's important to them: the highest possible performance, protection, and predictability.

Ever-evolving solutions

Intero

INSPECTION SERVICES

UT Inline Inspection Services

Intero's Pipeline Surveyor is designed to inspect difficult-to-inspect (DTI) pipelines and can provide real-time data during the inspection. Our Pipeline Surveyor can easily inspect dual diameter pipelines, mitered bends, full-bore unbarred tee pieces, wall thickness changes, and single-entry configurations. Our inspection tools are always bi-directional and able to negotiate 1.5D bends or tighter. Our UT inspection tools provide high quality, highly accurate integrity data from your pipeline and our experienced field crews provide comprehensive solutions to ensure safe, successful passage through difficult-to-inspect pipelines.

Turnkey Inspection of Pipelines

For decades, pipelines have been safely operated to transport a variety of products. However, the planned maintenance of these assets is either based upon a consequence of failure or a time-based inspection program. Inline inspections are a proven method of finding metal loss corrosion and deformations such as dents, to further complement a pipeline operator's pipeline integrity program.

The inspection of difficult-to-inspect or challenging pipelines has become increasingly important due to the need for improved uptime, increased regulatory and environmental scrutiny, as well as rising pipeline replacement costs. For over 35 years, Intero has been at the forefront of this field, providing specialized tools, methods, and equipment to enable inspection of even the most difficult pipelines.

Intero provides turnkey services tailored to each challenge including Corrosion Under Insulation (CUI) inspection of insulated process piping. We utilize cutting-edge technology for our custom tools and equipment and our certified, highly skilled teams deliver creative solutions, applying them globally.

Intero offers a turnkey solution for on-site activities and we can design and fabricate customized equipment to meet your needs. In-house training and testing facilities are available and our field engineers are experienced to provide on-site solutions for difficult-to-inspect pipelines.

Common Components of Difficult-to-Inspect Pipelines:

- Pipeline dimensions (size, length, diameter, wall thickness, dual diameter)
- Pipe material (SS and CRA, exotic materials, internal coatings, plastic linings)
- Bend restrictions (forged bends ≤1.5 D, mitered segment bends, back-to-back bends)
- Offtakes (unbarred tees, reduced tees, spheres, laterals, Y-pieces)
- Offset junctions (diverters, convergence angles, bores)
- Valves (inline block valves, check valves, gate valves)
- No entrance point or single entry (impacts the availability of launchers and receivers)
- Operational restrictions (pressure, low-flow, product type and characteristics, debris, etc.)
- Damaged pipelines with heavy dents/deformations

Examples of such pipelines are:

- Loading lines and Single Buoy Mooring (SBM)
- Off-plot pipelines
- On-plot process piping/rack pipelines
- Tank farm connection lines
- Transfer piping in petrochemical plants
- Flowlines on- and offshore
- Subsea lines to Floating Production Storage and Offloading (FSPO) or Pipeline End Manifold (PLEM)
- Airport fuel loading line and hydrants
- Firefighting water lines

Effective Solutions

Intero's Pipeline Surveyor is a versatile, flow driven (free-swimming) inspection tool that uses a contact-free, ultrasonic measuring head to scan the entirety of the difficult-to-inspect pipeline, providing highly accurate, high-resolution wall thickness data and a full overview of any wall-thickness reductions. The system stores the entire raw A-scan data of each measurement to allow detailed analysis of defects and can be equipped with a tether for real-time data quality monitoring. Additionally, Intero has developed a manual push-pull system for inspecting short pipe sections with minimal downtime and the same real-time monitoring.

Real-Time Inspection Data

Intero's Pipeline Surveyor platform offers real-time monitoring applications using a fiber optic connection to inspect up to 18 miles (29 km) of pipeline. The system is configurable for inspecting wall thickness and pipe geometry, even with challenging features like dual-diameter bore restrictions, unbarred tee pieces, and mitered bends.

Our system allows for free-swimming applications in batches or other situations where an umbilical is impractical or impossible to use. Our technology is fitted with on-board memory to store raw measurements, allowing manual evaluation if needed. Longer lines can also be inspected while keeping full A-scan review capabilities. AGM's make it easy to locate reported defects, eliminating the need for unneeded dig-ups for repairs or replacement.

100% Guarantee

Intero provides a full guarantee on the reported defects in your pipeline assets. We fully support and promote you to execute reporting verification by means of dig-up or other ways of measurement. Please involve us in your verification plans and findings in the field.

A Turnkey Solution Includes:

- Feasibility study
- Project engineering
- Design and supply of:
  - Temporary traps (launcher and receiver)
  - Temporary storage for inspection medium
  - ATEX certified pumping spread (liquid, air, or nitrogen)
- Product displacement
- Pipeline cleaning (mechanically and/or chemically)
- Gauging of pipeline with bidirectional or dummy tools
- Inspection runs (batching bi-directionally and/or dual-diameters,
- De-watering and drying the pipeline after inspection using air or nitrogen
- Pig-tracking including pipeline location and subsea or AGM's
- Pipeline mapping (XYZ), including measurement of Differential Global Positioning System (DGPS) coordinates
- Field reporting and data quality check
- On- and off-site quick reporting (first assessment by Inspection Engineer)
- Final reporting in accordance with latest POF
- Defect assessment ASME B31G, B31 G modified, Advanced (R-streng)
- Post inspection assessment like
  - Run comparison,
  - Corrosion growth calculation
  - Remaining life assessment
  - Fit for service consultancy
- Depth of cover reporting

The Deliverables You Need for Making Informed Pipeline Integrity Decisions

On-site, the data is verified for completeness and quality followed by a first assessment (site report) and prepared for upload to one of our data centers. Our skilled data analysts prepare the final report by analyzing detailed data about features and anomalies with advanced software algorithms as well as using A-, B-, and C-scan data.

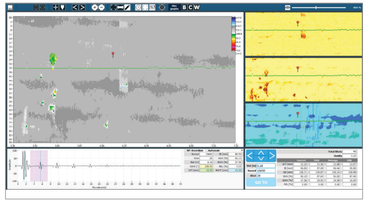

Figure 1: A-scan & C-scan data

Tubeviewer2 is a state-of-the-art software package where the customer has the ability to filter, review, and assess the data provided in the report, including the ability to see C-scan information of the pipeline.

This data analysis software meets Pipeline Operators' Forum (POF) specifications and is improved in-house. After QA-QC by a senior, Level-III analyst, the final report and dataset for the Tubeviewer2 software is compiled and delivered to the customer. All data is backed up for future analysis including the raw A-scan data of your pipeline.

Pipeline Risk and Integrity Management Solution (PRIMS)

Figure 2: Tubeviewer2

In case of an inspection with pipeline mapping (XYZ), the deliverable will include access to the PRIMS web portal. PRIMS Web Lite is an in-house developed, web-based platform to show pipeline information in a Geographic Information System (GIS) based environment after an inline inspection with XYZ module has been conducted. The main purpose of PRIMS Web Lite is to display, analyze and assess the inspection results in a geographic context.

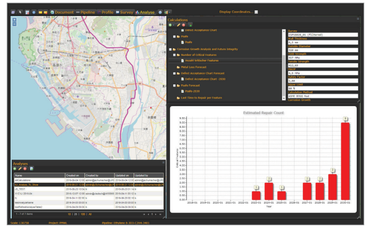

Figure 3: PRIMS-lite