



Direct Assessment



A structured four-stage analysis of data from indirect examinations of the protective coating systems and surrounding environment, coupled with analysis of results from targeted direct examinations of the pipewall to determine the current and future integrity of a pipeline.

PEOPLE | TECHNOLOGY | SERVICES | PACKAGES | EXECUTION EXCELLENCE

DETERMINING THE EXTERIOR CONDITION OF YOUR PIPELINE

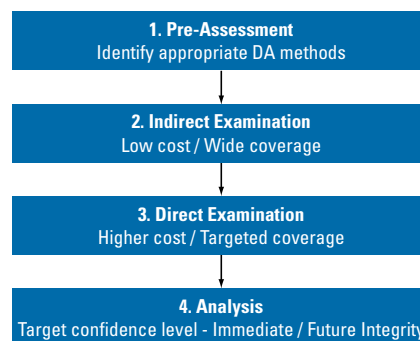
OBJECTIVE

Integrity assessment of pipelines as an alternative to hydrostatic pressure testing (HPT) or in-line inspection (ILI).

THE VIEW FROM THE OUTSIDE

Direct Assessment (DA) is a structured process that defines locations where a pipeline is to be physically examined to provide an assessment of pipeline integrity. The process includes collection, analysis, assessment and integration of data, along with the collection of Indirect Examination (Above Ground Survey Data) and Direct Examinations of the pipe wall.

The Structured Process for Direct Assessment has become defined in the Industry (NACE Recommended Practice RP0502 and ASME B31.8S) as the four steps shown below.



FEATURES OF THE SERVICE

- A turnkey approach – all services are delivered and managed from a single source
- Equivalent safety to a Hydrostatic Pressure Test
- Applicable to gas or liquid pipelines
- Conducted in accordance with Pipeline Integrity Safety Rules, critical defect criteria and the respective Discovery timelines

BENEFITS OF THE SERVICE

- On-time presentation to regulatory agencies of high quality reports of assessment and statistical validation
- PII's Direct Assessment approach is uniquely validated against an extensive database of ILI MFL results
- Provides flexibility in conducting integrity assessments for candidate pipelines
- Results of Direct Assessment findings form the basis for future integrity management programs



SERVICES THAT CAN BE INCLUDED IN THE PACKAGE

All PII Integrity Packages are adaptable and capable of addressing the specific needs of each pipeline operator. Not all services will be necessary in every case. For more information about services, see separate Integrity Services data sheets.

Project Management

Experienced professionals take responsibility for the success of the Direct Assessment Program, from beginning to end.

Pipeline Surveys

Collection of pipeline data using techniques other than in-line inspection.

Integrity Evaluation

Level 2 – A re-evaluation of the locations under study in the light of field-acquired data. The key deliverables under the Discovery process are a prioritised action plan and a plan for future inspection and assessment.

Field Services

Repair and rehabilitation activities, carried out in the field by PII or under PII supervision.

Case History



Direct Assessment (DA) is a structured process for establishing the integrity of pipelines through the application of indirect examinations, with subsequent confirmation by direct examination of the pipe wall.

Direct Assessment – A Proven Equivalent to Hydrostatic Testing for a Gas Transmission Pipeline

The structured method for External Corrosion Direct Assessment (ECDA) detailed in Industry Standard ASME B31.8S and in the proposed NACE TG 041 Committee Recommended Practice for ECDA was applied to an 8-in Natural Gas Pipeline to demonstrate the capability of DA in the determination of pipeline integrity.

The applicability of indirect examination techniques, such as Close Interval Survey, Pipeline Current Mapper, C-Scan, Direct Current Voltage Gradient, Guided Wave Ultrasonic and others, to high consequence areas was investigated. The objective of the indirect examinations was to detect instances of coating damage, which is a necessary precursor to External Corrosion Metal Loss. Conclusions were drawn regarding the relative advantages and sensitivity of the various methods in detecting coating damage.

Wall metal loss condition in pipelines is classified by the Integrity Rules in accordance with two criteria: 50% and 80% wall loss, each requiring a different level of response by an operator. Hydrostatic testing is an accepted condition assessment method within the Integrity Rules. A study of external metal loss pit depth was made

from a library of PII in-line MFL tool runs to determine what fraction of defects could be expected to be falsely accepted by hydrostatic testing.

Indirect examination methods, within the ECDA process, are expected to return a population of coating defects. ASME B31.8S provides for differing re-inspection intervals depending upon wall stress and the level of direct examination applied (full examination of all indications or sampling). Depending on age and other factors, the number of indirect examination indications can vary greatly; large numbers of indirect examination indications may make full direct examination impractical when compared with the cost of hydrostatic testing. This ECDA validation study demonstrated the extent of direct examination sampling required to provide an equivalent level of safety when compared with the fraction of defects that could potentially be falsely accepted by a hydrostatic pressure test.

A fully structured ECDA process was found to be an effective and economically viable method for screening gas pipeline HCAs when compared with hydrostatic pressure testing.