

CASE STUDY

# 16-INCH SINGLE MODULE INVISTA™ TOOL

## PROJECT OVERVIEW

Quest Integrity performed a series of in-line inspections utilizing our recently developed single module 16-inch InVista tool and completed LifeQuest™ Pipeline assessments of several 16-inch pipelines for a client in Canada. One of the lines was particularly challenging as it contained 20 bends, with a minimum bend size at 1.5D, and five take-offs.

For the inspection of this line, the 16-inch InVista tool was propelled in diesel and achieved a scan rate of approximately 1.0ft./sec. (0.3m/s). The tool traveled a total of 1,548.0 ft. (471.9m) and was received at the tank farm receiver approximately two hours later. All of the data was collected in one run. Upon retrieval of the tool, the UT measurement data was downloaded and prepared for preliminary analysis.

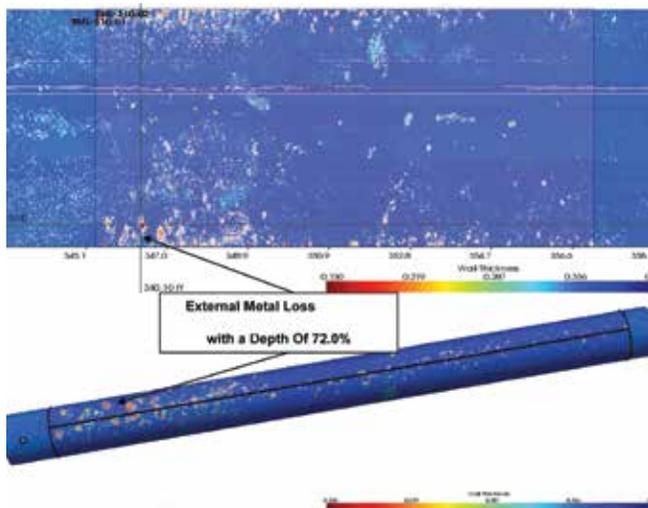


Figure 1. 2D and 3D views of external metal loss.

## RESULTS

An API 579-1 / ASME FFS-1 2007 Fitness-for-Service assessment was performed on the single diameter line. The inspection data was analyzed for wall thinning and anomalies such as corrosion, denting and ovality using the LifeQuest Pipeline software. The Remaining Strength Factor (RSF) and Reduced Maximum Allowable Operating Pressure (MAOPr) for the pipe were also determined. This assessment is based on the longitudinal extent of thinning found in the pipe and in accordance with a Level 2 Assessment found in Part 5 of the API 579 standard.

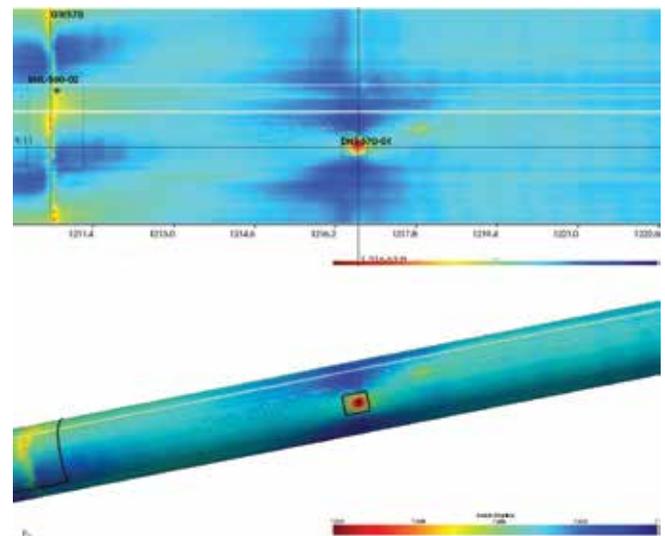


Figure 2. 2D and 3D views of a dent.

- 110 external metal loss anomalies were individually identified. The greatest of these metal loss anomalies was identified, and based on the nominal wall thickness, corresponded to 72.0% wall loss
- Four dents in excess of 0.5% nominal OD were identified. The largest identified dent had a depth of 0.8% nominal OD
- The minimum reduced Maximum Allowable Operating Pressure calculated according to the Part 5 Level 2 assessment methodology in API 579 was 336 psig (4.0 MPa)

### BENEFITS OF THE INVISTA TECHNOLOGY

Overcomes challenges associated with traditionally difficult-to-inspect and unspiggable pipelines.

#### Improved Safety and Flexibility

- Lightweight, self-contained, compact tools are handled easily; no lifting machinery required
- Superb minimum passage and bend capabilities; negotiates damaged or restricted pipe
- Lower pressure differential requirements and bi-directional capability minimize line disruptions

#### Reduced Operational Risk

- Unique design reduces wear, impact and debris collection associated with conventional in-line inspection technology
- Direct high-density UT measurement delivers accurate, repeatable results
- Solutions oriented: analysis of all line data vs. individual flaw locations

#### Cost-Effective

- Single pass combined geometry and metal-loss data provides 100% overlapping coverage
- Linear UT sizing minimize verification digs and improves excavation and repair confidence
- Permanent line modifications not required

#### Time Efficiency

- Efficient inspections minimize offline status
- Onsite turnaround and rapid data analysis allows real-time operating decisions
- UT inspections do not permanently magnetize pipe, thereby eliminating demagnetization repairs

### BENEFITS OF THE SINGLE MODULE TOOL

- Lightweight, hand-held tool is handled and transported easily, reducing safety and environmental concerns
- Longer battery life and faster on-board computing for greater axial flaw resolution and increased inspection velocity, providing accurate results and time savings
- Ideal for space-constrained environments such as terminals, refineries and offshore

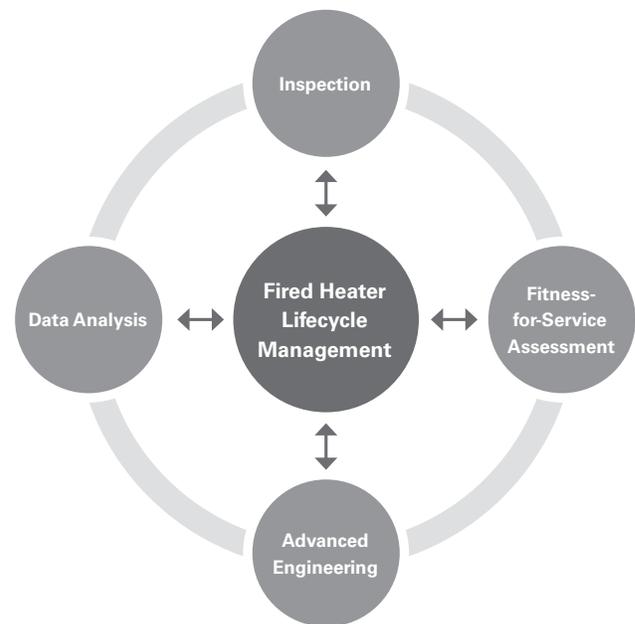


Figure 3. The pipeline integrated solution set.