



CASE STUDY

Pipeline Inspection When Buried Features are Unknown

Background

When a customer in Kansas needed 2-mile-long liquefied petroleum gas (LPG) pipelines cleaned, inspected, hydrostatically tested, and dewatered, they turned to Quest Integrity for our turnkey pipeline inspection and integrity services. The catch: the customer lacked any pigging, inspection, or hydrostatic testing history on the buried pipelines that serve as the main trunk line for its propane well production. The line segments were deeply buried in most areas, which made pig tracking very difficult.

The pipeline also did not contain permanent launching and receiving facilities, did not transport an ultrasonic testing (UT)-compatible liquid medium, and had to be taken offline for pigging and inspection activities as well as for any pipeline repair or replacement techniques. Although detailed documentation was lacking, it was known that the line contained challenging pigging features such as short radius back-to-back elbows, mitered 45-degree bends, and unbarred tees.

Solution

Because the customer had worked with Quest Integrity before, they recognized them as the only business to offer in-house, small-diameter combination UT tools and turnkey pipeline services. Quest Integrity's asset integrity solutions include InVista® in-line inspection (ILI) services, which detect, characterize, locate, and size anomalies in the wall of a pipeline that potentially might compromise its integrity, as well as Pipeline Integrity Management Services (PIMS). Quest Integrity relied on its progressive pigging approach to prove and clean the system and used bi-directional pumping when it came upon an unknown restriction.

Creating a temporary loop

First, the PIMS team decommissioned two 6-inch propane pipelines and temporarily looped them for one continuous pipeline cleaning and inspection project. With the lines running parallel to each other, a temporary containment, pumping, filtration, and purging equipment layout was staged in one location. This allowed for closed loop filtration and recycling of the same water medium to support continuous cleaning and InVista inspection efforts. In addition, applying the temporary loop allowed Quest Integrity to reduce the amount of equipment, jobsites, and scheduling while also facilitating the bi-directional pumping capabilities.

Identifying an unknown feature

During the pigging operations, the PIMS team encountered an unknown pipeline feature at an unknown location. The unique features of the InVista inspection tool and on-site presence of the PIMS team instilled confidence within the field crew to continue pigging and inspection operations even after the unknown feature/obstruction was identified.

Using the unique characteristics of the InVista inspection tool, the team was able to clean and inspect up to the unknown feature bi-directionally, successfully obtaining total pipeline valid data wall coverage and an accurate odometer reading of the buried feature location from both sides.

Provided with the exact location to support a hydro excavation activity, the customer uncovered a buried flanged tee fitting that did not allow for typical pigging navigation. The team still managed to clean the pipe segment and collect full pipeline wall coverage up to the buried tee from each side. The customer will replace the tee fitting with a manufactured elbow to facilitate future pigging and ILI activities.

Following the successful hydrostatic test, the pipeline was dewatered and dried to touch to remove any freestanding water, allowing for safe return to service facility requirements.

Result

The InVista inspection tool and PIMS support services provided the customer with pipeline cleaning services and full inspection data on schedule, without safety incidents, and on budget. With its ability to offer in-house, small-diameter combination UT tools and turnkey pipeline services, Quest Integrity successfully cleaned, inspected, hydrostatically tested, and dewatered two LPG pipelines with no pigging history and unknown buried features.

