



Case Study

Aviation Jet Fuel Pipeline Supply Line Cleaning & Inspection with XYZ Mapping

Introduction

An East Asian client awarded Intero a pipeline cleaning and inspection project for an aviation fuel supply line. The client needed detailed information regarding the pipeline's location and possible anomalies, so Intero included XYZ mapping and placed aboveground markers for integrated mapping references.

Project Scope:

- Cleaning, gauging, internal metal loss inspection
- XYZ coordinate mapping

Pipeline Details:

- Piggable
- 6" Aviation fuel
- 7509 meters

Location: East Asia

The Challenge

The client's aviation fuel supply line started at their aboveground storage tank terminal, followed through the city, and ended at their airport. They designated the pipeline critical infrastructure due to its importance to both their national economy and security. They needed to maintain safe and continuous operations.

The client requested that Intero provide high resolution inspection data to assist their ability to make accurate decisions. This high-risk pipeline crosses densely populated urban areas. Additionally, due to its criticality, the client required a limited time window to clean and inspect the pipeline.



The Solution

The client selected Intero's high resolution, bidirectional, free swimming, ultrasonic (UT), in-line inspection (ILI) tool, with XYZ mapping to ensure the best resolution and maximum sizing and location accuracy.

Intero's well-trained team of engineers arrived, and began cleaning and piggability proving operations. They culminated by launching a dummy tool as a final verification of pipeline piggability. Simultaneously, the aboveground survey crew placed and surveyed the reference markers for the XYZ data collection.

Additionally, for this inspection, Intero connected a "hair thin" fiber optic wire to the ILI tool. This gave the client and Intero a live connection to the tool, and provided real-time monitoring of the inspection data. Intero optimized the data quality through real-time settings adjustments and optimized flow characteristics.

Above Ground Marker Locations

Shortly before the ILI commenced, Intero performed a final test and synchronized the pig tracking tool. Intero launched the ILI tool and monitored the data quality through the fiber optic wire. This real-time data allowed Intero engineers to make adjustments and improve inspection results. At 2 kilometers, after consultation with the client, Intero reversed flow and pumped the ILI tool back to the launcher. Intero then adjusted the settings and prepared for a relaunch with optimized configuration and data settings.

Real-Time Data During Inspection

The adjustments worked. During the second inspection, the ILI tool recorded optimal data to meet the highest possible resolution for the ILI tool. At the end of the successful inspection, Intero engineers completed a comprehensive Site Report and presented the results to the client.

The Result

With Intero's innovative fiber optic technology, the Intero engineers monitored the data quality in real time. This allowed optimization and improvement of the ILI tool settings to achieve maximum data quality with the highest resolution and accuracy possible.

The correlation between the UT data and the XYZ coordinates with marker references provided extremely accurate locations for the verification and repair digs, throughout the entire pipeline route, in densely populated areas.

This inspection allowed the early identification of anomalies. The client reduced the chance of unwanted events, improved maintenance planning, and accurately estimated remaining life of the aviation pipeline.

Advantages

- Certified inspection specialists on site
- Recorded high-resolution UT wall measurement data
- Monitored data real-time to optimize results
- Reported extremely, accurate decision-making results
- Assessed remaining life of aviation pipeline
- Reported accurate XYZ position of all anomalies and features