ENTEGRA® UHR ILI Systems

ASSESSING THE LONG SEAM: GOING TO GREAT LENGTHS TO DELIVER.

Metal loss or gain that interacts with a pipe's long seam can pose imminent integrity threats. Especially considering that the long seam is one of the most consequential areas of a pipe, yet among the most difficult to accurately assess.

The ability to inspect the seam and then correctly assess metal loss and metal gain anomalies is essential. Variations in pipe thickness and seam type, the age of the pipe, and different manufacturers all impact the pipeline's integrity.

Differentiating metal loss coincidental, preferential or selective to the seam, while adding to the complexity of the analysis, allows the pipeline operator to more efficiently prioritize their dig program. Finally, the inherent susceptibility of pipe to manufacturing and mill anomalies, when combined with the challenges posed by the long seam itself, can mean false calls and costly unnecessary digs.

The ENTEGRA difference.

Detecting the seam, characterizing it, and then assessing the depth, length, width, orientation, and origin of the associated metal loss or metal gain should all be accomplished before shovel one goes in the ground.

Our Ultra-High-Resolution (UHR) ILI System provides the detailed detection, identification and sizing of metal loss that's required in the exacting inspection of the long seam. UHR can also help detect changes in the metallurgical properties of the pipe itself stemming from manufacturing (heating) to installation (welding) issues.

MFL Long Seam Detection and Analysis

Seam welds are difficult for other axial MFL tools to reliably detect due to the seam's characteristic parallel alignment to the direction of the magnetic flux.

ENTEGRA's UHR/MFL/CAL combination tools are the first in the world to provide truly ultra-high-resolution imaging of the long seam.

Key benefits:

- Accurate POD, POI, and sizing of long-seam corrosion
- Helps prioritize dig programs
- Eliminate false calls
- Eliminate unnecessary digs

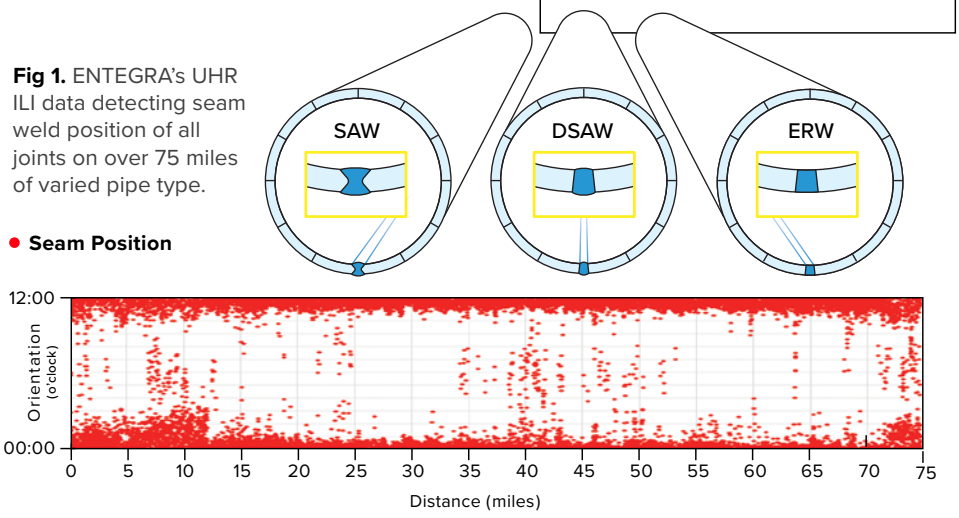
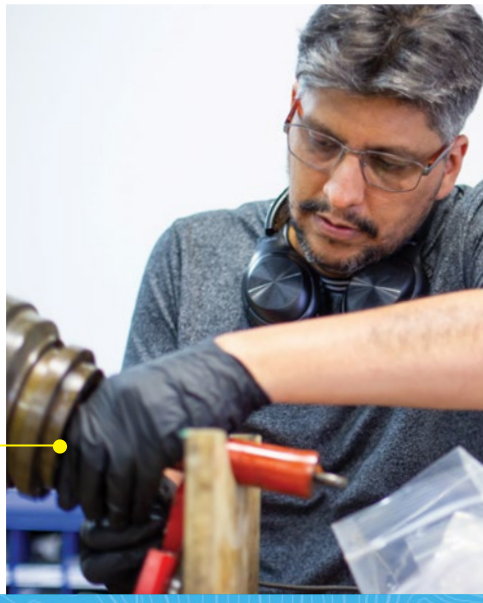


Fig 1. ENTEGRA's UHR ILI data detecting seam weld position of all joints on over 75 miles of varied pipe type.

DISCLAIMER: *Entegra does not claim to be able to detect, characterize, or size axial crack-like or linear indications in pre-1970's low frequency ERW or flash welded pipe.*

Built on experience –designed to serve the needs of pipeline operators



CASE STUDY:
MFL LONG SEAM ASSESSMENT

LONG SEAM ILI ASSESSMENT AND PIPE-GRADE CLASSIFICATION FOR CALIFORNIA OPERATOR.

Overview

- In-Line Inspection
- 30" MFL/CAL/IMU combo tool
- 75 mile, 30" gas pipeline
- X52 – X65 with 8 different wall thicknesses

Challenge

Single Submerged Arc Welded pipe (SSAW) was constructed in the 1950s featuring a backing plate that does not influence the integrity of the seam and will deteriorate and fall off in pieces over time. The breakdown of this material will lead to voids and crack-like features on the inside of the pipe. These volumetric features will frequently lead competing ILI systems to mis-identify these features as metal loss at the seam.

In this case, historical surveys had resulted in many digs along this pipeline to explore and remediate identified metal loss on the long seam. Often, and by a large margin, the findings have proven to be non-injurious manufacturing type features. Their most recent survey led them to expect similar metal loss anomalies at the seam, with the pipe itself consisting mainly of 40-year-old SSAW pipe.

The operator wanted an accurate ILI run that could not only determine Pipe Grade but provide a comprehensive Material Classification profile of the pipe including Weld Type and Wall Thickness verification.

Solution

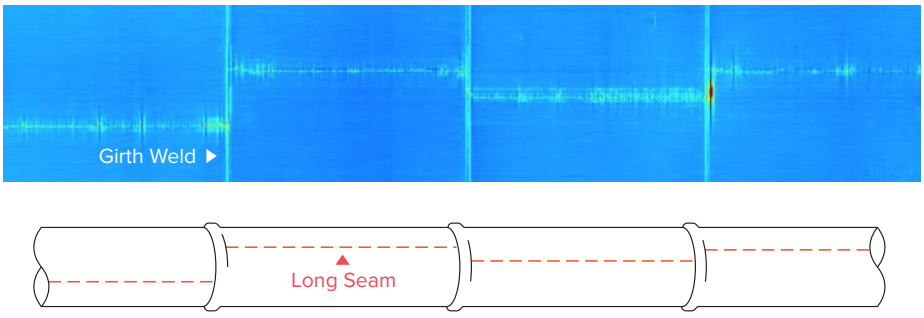
We employed our standard 30” MFL/CAL/IMU combo tools to assess this 75-mile, 30” natural gas pipeline. Navigating multiple 1.5D bends, wall thickness changes, weld types and restrictive installation features, the tool was able to complete the inspection in one run, at an acceptable speed and well within the tool’s API 1163 qualified system performance specification.

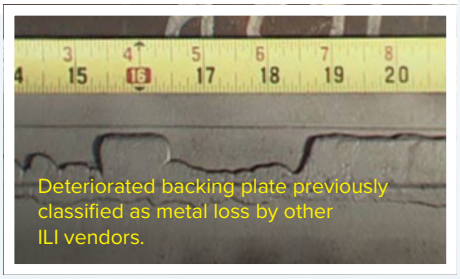
Outcome

Appropriate metal loss calls were correctly identified at the seam and other volumetric features were detected, identified, and classified. Furthermore, our assessment corrected misidentified metal loss features resulting in the correction of a false positive that would have otherwise resulted in an unnecessary dig, providing significant savings that more than paid for the ILI operation.

In addition, there were other types of seams present on the line which were accurately classified versus the original surveys.

UHR Data: Long Seam Corrosion





TIMELINE

75-mile run completed in three days, Immediate Conditions report delivered in five days, final report in 60 days

VALUE

Accurate POD & POI, pipe-grade classification, and elimination of unnecessary digs

EFFICIENCIES

First-run success and a successful long-seam inspection

2X SENSOR DENSITY

2X SAMPLING RATE

DUAL DIAMETER

1.5 DIAMETER/ BACK-TO-BACK BENDS

The ENTEGRA UHR ILI System: A fusion of technology and people.

It starts with the technology – a fleet of innovative UHR tools boasting double the number of MFL sensors, double the number of caliper (CAL) sensors, and double the sampling rate delivering four times the resolution of other top-level, high-res tools.

A range of UHR MFL/CAL/IMU in-line inspection tools, from 3” to 36” in diameter, are the workhorses of a technology platform that far exceeds the demands of pipeline operators and traditional MFL deliverables. They’re lighter. Compact. More collapsible. And more capable. Our latest technology release is an array of Cathodic Protection Current Mapping (CPCM) ILI tools which collect both AC and DC voltage data in a single run and can be correlated into our UHR MFL/CAL/IMU data, telling a more complete corrosion story.

What’s behind that technology? Industry-leading experience laser focused on customer service. At ENTEGRA, project managers, engineers, subject matter experts, data scientists, Level III Analysts, and former pipeline operators work together to form the heart of our UHR ILI System.

Bottom Line

When compared to the impact and cost of a pipeline failure, the cost of an ILI run is insignificant. ENTEGRA’s UHR ILI System - paradigm shifting ILI technology backed by the insight of our experienced team - helps operators to see more, know more, and do more when it comes to managing metal loss. We’re setting the bar, worldwide, for first-run success, increased throughput, reduced run costs, risk-mitigation and ROI. That’s the ENTEGRA difference.

For More Information

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For our latest API 1163 spec, talk to your ENTEGRA rep.

ENTEGRA® UHR ILI Systems

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