

# Operator Uses Pressure Wave Technology to Accurately Locate Stuck Tool in High-Risk Pipeline

## INNERVUE™ PIPESUITE DIAGNOSTICS SERVICE ACCURATELY LOCATES PIPELINE BLOCKAGE WITHIN 9 FEET

UNITED STATES

### CHALLENGE

- » Determine the accurate location of an intelligent tool stuck in a 6-in x 20.21-mile-long pipeline between refinery and metering site
- » Short notice to efficiently resolve the problem and restore pipeline to production

### SOLUTION

- » Calibration survey (in a system containing the same fluid) – to ensure accurate acoustic velocity was known prior to stuck tool survey
- » InnerVue™ PipeSuite diagnostics service – to assess location of stuck tool in pipeline

### RESULT

- » Predicted location of tool to within 9-ft of its actual verified location
- » Provided client with accurate information to successfully engineer a remediation solution

### OVERVIEW

An operator in South Texas was losing valuable production uptime due to an intelligent inspection tool being stuck in one of its pipelines transporting ‘supercritical’ ethylene—at a temperature and pressure above its critical point. This 6-inch ethylene pipeline system connects a 20.21-mile stretch between a Beaumont refinery and a Chevron Texaco meter site. To mitigate potential chemical hazards and minimize costly NPT, it was important to remediate the problem as soon as possible. But, before doing so, it was necessary to first determine the acoustic velocity of the pipeline contents and then survey the pipeline to locate the stuck tool.



Ethylene Pipeline System

### PROJECT DETAILS

After conducting a calibration survey of a nearby producing system carrying the same type of fluid, Halliburton’s unique InnerVue™ PipeSuite diagnostics service was implemented to determine the tool’s location within the actual pipeline. Proprietary software analyzed the “pressure wave” signal response and calculated the distance to the location of the stuck tool. This solution enabled fast, accurate location of the stuck tool within 9 feet, verified by caliper data recovered from the tool, and, thus, successful retrieval.

### RIGHT-FIRST-TIME EXECUTION

Halliburton’s pre-engineering and preparations team collaborated with the client to ensure ‘right-first-time’ execution. The experience of Halliburton Engineering and Project Management team was integral to the end result, as they helped develop a viable, data-driven remediation plan to safely and efficiently clear the pipeline of its obstruction upon first try—meeting the customer’s expectations and solidifying confidence in the technology.

### DID YOU KNOW

The InnerVue PipeSuite diagnostics service is a low risk, fast and accurate technique used to map the quantity and distribution of what may be limiting the throughput of the pipeline

system, such as wax, hydrate, stuck pig or tool. A pressure wave is created at one end of the pipeline and travels through its entire length at the speed of sound. A reflected signature wave is returned, which corresponds to actual conditions within the pipeline, including:

- » Changes in flow velocity from deposits/debris
- » Changes in medium properties, such as density, viscosity and phase

Analysis of critical data collected by the “pressure wave” technology will increase your understanding of a given pipeline transportation system—from end to end—and provide valuable insight for decisive asset performance management. The InnerVue PipeSuite service locates pipeline blockages to high accuracies within 0.3% of pipeline length.

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