

126-Mile In-Service Crude Oil Pipeline Integrity Test

A pipeline operator required a full line hydrostatic test of a 22-inch crude oil pipeline. The line would be tested in 4 segments. During initial line fill, the pig got hung up and bypassed nearly the entire line fill volume. Once the decision to move forward was made, BlueFin sourced equipment and refilled the line with an alternative water source within 3 days. One segment failed initial test. After repairs, all four segments were successfully tested using electronic data to justify pressure changes.

PLAN OF EXECUTION

1. Project Pre-Planning
 - a. Stakeholder planning meetings
 - b. Site Visit
 - c. Review project drawings and specifications.
 - d. Identify equipment layout, connections, isolation, and temperature probe locations.
 - e. Schedule coordination
 - f. Creation of technical procedures.
 - g. Install electronic temperature probes.
2. Project Execution
 - a. Provide line fill pumps, 1.4-mile 12" temporary hose, filter, and injection for line fill after initial line fill failed due to pig being bypassed.
 - b. Execute hydrotest.
 - c. Provide electronic test results for test acceptance prior to bleed off
 - d. Relocate test equipment for subsequent tests.
 - e. Support operations in preparation for retest after rupture occurred on one test segment.
 - f. Reinject test water into pipeline to eliminate water transport to treatment facility.

TECHNICAL ACHIEVEMENTS & BENEFITS

- Project completed safely with no environmental impact.
- Provided a secondary line fill within 3 days of decision to proceed; sourced equipment, set up, filled line, and executed project as originally planned.
- Provided technical support to analyze pressure changes from temperature stabilization due to warm product preceding line fill.
- Provided technical support to analyze data during rupture to determine line failure pressure.
- Provided on-site support for project execution to ensure line was safely isolated during testing and water movement.

LOCATION

Texas

SPECIFICATIONS

Diameter: 22 inch
Length: 126 miles
Test Segments: 4

SCOPE OF WORK

Perform hydrostatic pressure testing in order to verify system compliance with Federal regulations.

CHALLENGES

- **Line fill pig lodged & water bypassed. Required line fill equipment to be identified, sourced, and set up in 48 hours to fill (approximately 110,000 BBL).**
- **In-service crude oil pipeline originally displaced with water; product temperature was warmer than ground temperature.**
- **Electronic temperature and pressure recorders required to justify pressure changes.**