

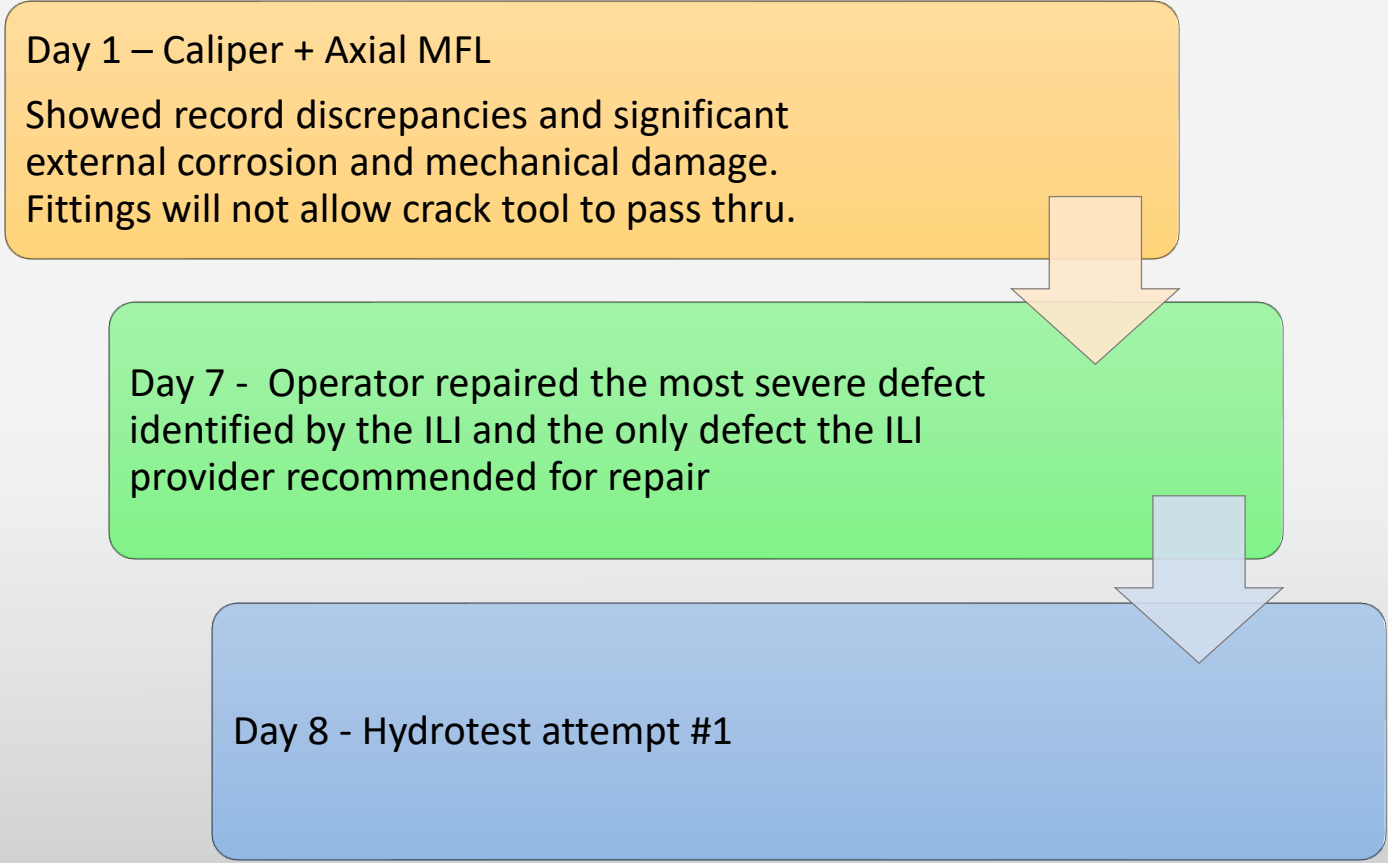
# TestOp Case Study 1

How TestOp helped an operator detect a leak which was missed by another pressure test validation model and initial tracer gas test

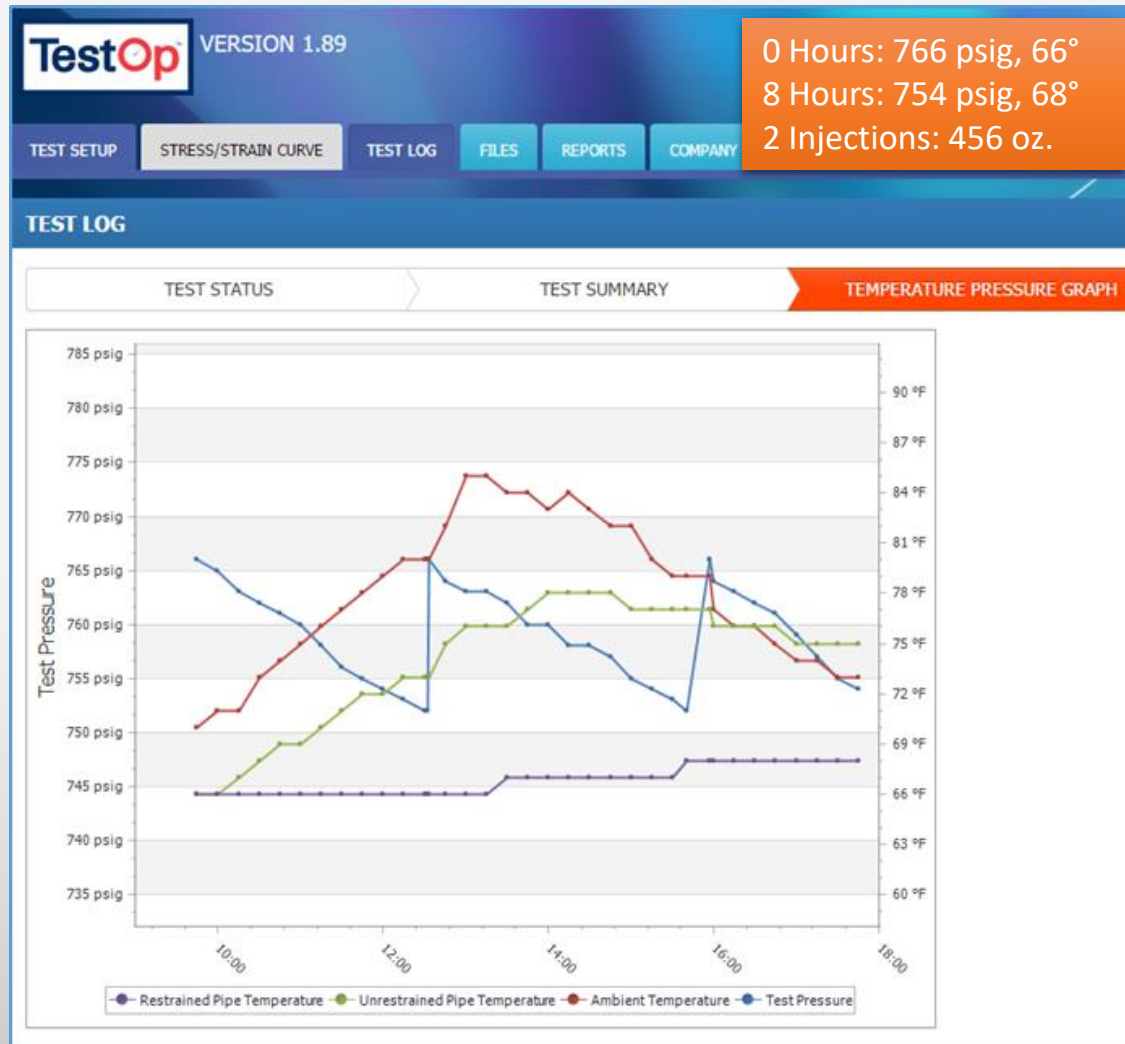
# Test Info

- Pipe specs:
  - 8-inch, Grade B, 0.188 wt.
  - Seam type: ERW
  - 1950s vintage
- Test Details:
  - Goal: Re-establish MAOP at 400 psig; incomplete material records
  - Duration: 8 hours
  - Target test pressure: 765 psig
  - 26% SMYS
  - 113 feet of elevation change
  - ~1.55 miles, all 8-inch
  - Part of a much larger hydrotest project

# Events Leading up to First Test Attempt



# Test Attempt No. 1 (Day 8)



| Validation Model | Allowable Loss | Predicted Loss | Test Good? |
|------------------|----------------|----------------|------------|
| TestOp           | 1.91 gal       | 9.34 gal       | NO         |
| CSFM*            | 10.31 gal      | 6.35 gal       | YES        |

\*CSFM: California State Fire Marshall

RCP:

- Test failed
- "It's common for small defects to leak at higher pressures."

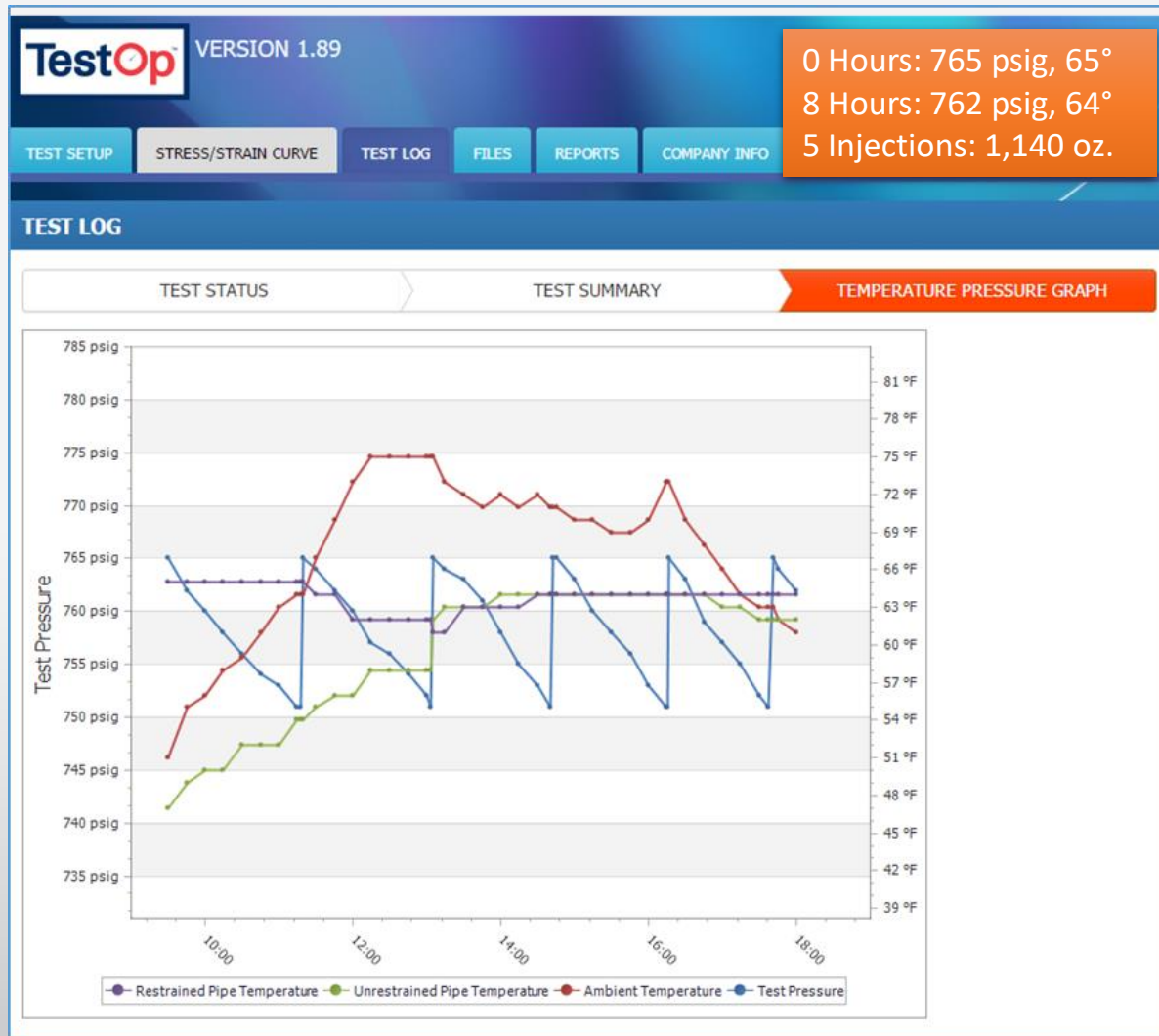
Onsite Supervisor:

- "When the pressure was lowered from 765 to 600, the pressure held for several hours, maybe the temperature probes are in the wrong spot?"
- Field was concerned about retesting, had heard about the potential dangers of pressuring the pipe multiple times.

Results:

- Tracer gas could not be detected.
- RCP convinces operator engineer for retest.

# Test Attempt No. 2 (Day 15)



| Validation Model | Allowable Loss | Predicted Loss | Test Good? |
|------------------|----------------|----------------|------------|
| TestOp           | 1.75 gal       | 7.64 gal       | NO         |
| CSFM             | 10.31 gal      | 6.63 gal       | YES        |

Field Engineer:

- “If RCP fails this test and don’t find a leak, we will dewater and move on to start work on next section.”

RCP:

- Test failed
- “Let’s leave the pipe at target pressure overnight. Hopefully this will cause enough water to leak from the line that will be able to detect the tracer gas.”

Day 16:

- Lost 125 psi overnight.
- Tracer gas gets a hit (i.e. leak?)

## Results (Day 16)

- Lost 125 psi overnight.
- **Tracer gas gets a hit**

### RCP:

- “Even after the line was exposed there was not a lot of evidence of water, with the conditions being so dry, the water had been absorbed by the soil. Under low pressure the leak location was not observed until some coating was removed and with a slight pressure increase you could see the defect location in the long seam with water spraying out of the pipe.”



SEAM WELD DEFECT NOT  
IDENTIFIED BY ILI TOOL

# Questions for You

- What would have happened if this test was deemed successful, as the ILI vendor AND company wanted to do?
  - Have you experienced this situation before?
- Have you ever had a “post-hydrotest leak”?
  - There’s a definite possibility this leak happened during the hydrotest and was only detected once the pipeline was put back in service.
- How are mitigating the low-frequency ERW threat your pipelines?
- Are you taking the proper steps to certify that you have a leak-free test?

# Lessons Learned

- ILI gathered intelligence, identified certain types of anomalies, but was not adequate for identifying seam material defect / lack of fusion / crack anomaly.
- The CSFM model passed the 1<sup>st</sup> two tests, even though there was 7-9+ gallon leak present. Unless TestOp was deployed, this anomaly would not have been identified during the test.
- Lab analysis gathered intelligence regarding material properties and cause of failure
- The combination of ILI, advanced pressure testing technology and material lab sampling of repair cut-outs resulted in integrity verification and provided the necessary assurances to re-establish MAOP on this line and enable the operator to better manage the pipeline safety risks



# Contact Us

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