



Client Success Story - 2017

Sheri Baucom

Senior Advisor II



Overview

The following is a description of an actual project completed in 2016 where RCP was deployed onsite to validate a pressure test using TestOp. This case study was presented in conjunction with the Operator representative at the AGA Transmission Integrity Management Workshop in Pittsburg this past May 2017.

If you would like further information or a copy of the actual presentation, please contact Sheri Baucom at sbaucom@rcp.com.

Pressure Test Details

Pipe Specs

- 8-inch, 0.188 w.t.
- Grade B
- Seam type: ERW-LF
- Vintage: 1950's
- ~1.55 miles
- Incomplete material records

Goal: Re-establish MAOP at 400 psig

- 8 hour test
- Target test pressure: 765, 26% SMYS
- 113 feet of elevation change
- Part of a much larger hydrotest project.
- Ran a caliper + axial-MFL tool
 - Repaired one defect that ILI tool provider determined would fail during pressure test.
 - Company wanted to run a circumferential MFL tool to assess potential seam weld anomalies due to low-frequency ERW, but caliper tool showed fittings that would not allow this crack detection tool to pass.

Events Leading up to the Pressure Test

Day 1 – ILI Crack Detection Tool Run

ILI vendor wanted to utilize this project to prove that their technology was effective in finding susceptible seam defects

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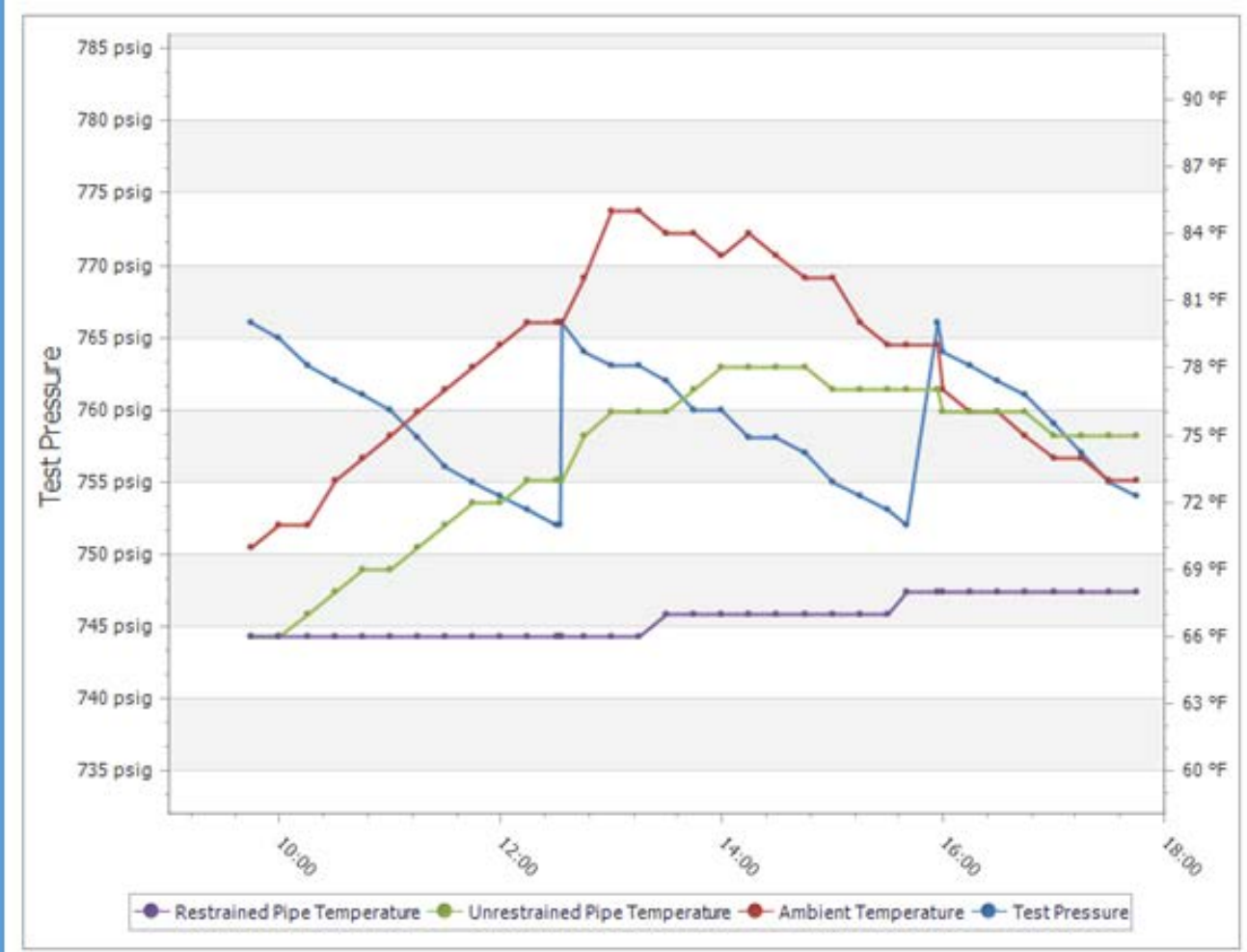
Day 7 - Operator repaired the most severe defect identified by the ILI and the only defect the ILI provider recommended for repair

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Day 8 - Hydrotest attempt #1

TEST LOG

TEST STATUS | TEST SUMMARY | **TEMPERATURE PRESSURE GRAPH**



Hydrotest Attempt #1

0 Hours: 766 psig, 66°
 8 Hours: 754 psig, 68°
 Injected water 2 times to maintain test pressure

	Allowable Loss	Predicted Loss	Test Good?
<u>TestOp</u>	1.91 gal	9.34 gal	NO
CSFM	10.31 gal	6.35 gal	YES

CSFM = California State Fire Marshal Model, a publicly available mass balance model.

Post-Test Analysis

Onsite PT Company

- “Pressure drop was due to a change in temperature.
- When the pressure was lowered from 765 to 600, the pressure held for several hours.
- Maybe accurate temps weren’t recorded and the probes are in the wrong spot?”



RCP

- “Per TestOp, the test was an obvious failure.
- The temperature went up... so pressure should have also gone up, NOT down.
- It’s common for small defects to only leak at higher pressures.”

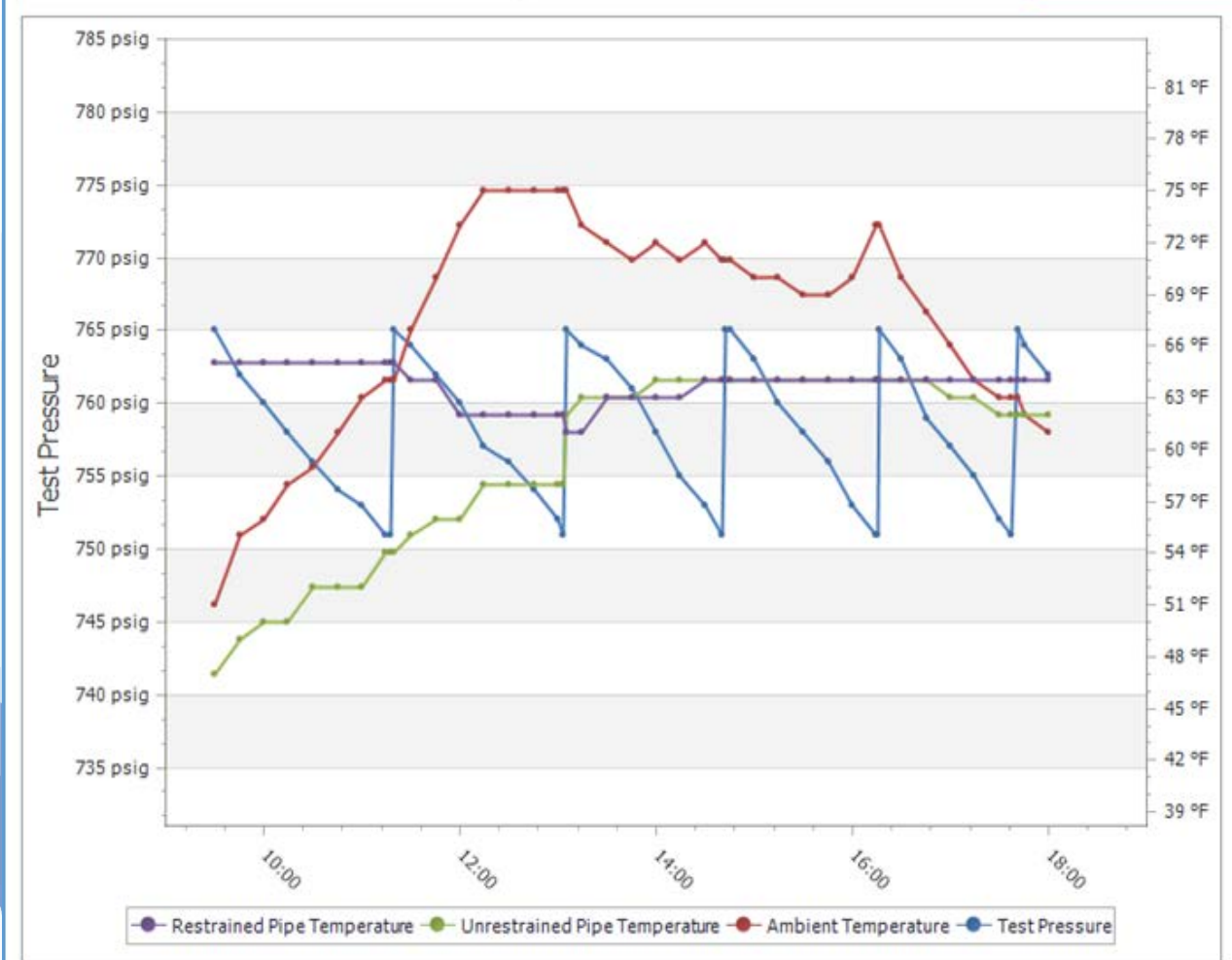
Test #1: What should we do?

- Operator was also concerned about retesting, as they had heard about the potential dangers of pressuring the pipe multiple times.
- Praxair could not detect any leaks.

➔ RCP was able to convince Operator to retest.



TEST LOG



Hydrotest Attempt #2

0 Hours: 765 psig, 65°
 8 Hours: 762 psig, 64°
 Injected water 5 times!

	Allowable Loss	Predicted Loss	Test Good?
<u>TestOp</u>	1.75 gal	7.64 gal	NO
CSFM	10.31 gal	6.63 gal	YES

Post-Test Analysis

Operator Engineer

“If we fail this test and don’t find a leak, we will need to dewater and move on to start work on next section. We are behind schedule.”

ILI Vendor: “If there was a defect that would fail at this pressure, we would have detected it with our tool.”



RCP

“TestOp clearly shows there is a leak. Let’s leave the pipe at target pressure overnight. Hopefully this will cause enough water to leak from the line that Praxair will be able to detect the leak.”

Leak found!

- Test segment lost 125 psi overnight.
- Praxair detected a leak.
- RCP: “Even after the line was exposed there was not a lot of evidence of water. Under low pressure the leak location was not observed until some coating was removed...then you could see the defect location in the long seam with water spraying out of the pipe.”



Questions for You, the Operator

- What would you do in this situation?
 - How would the engineers at your company handle this scenario?
 - Who has the authority to call a test “good”?
- Have you ever had a “post-pressure test leak”?
 - Was that pressure test data analyzed by a mass balance model?
 - Consider the possibility this leak happened during the pressure test and was only detected once the pipeline was put back in-service.
- What is your procedure for certifying that you have a leak-free pressure test? How is the data being analyzed or is it?
- How are you mitigating the low-frequency ERW threat that you may have for your pipelines?

Lessons Learned

- The CSFM (California State Fire Marshal) model passed hydrotest attempt #1 and #2. Unless TestOp was deployed, this anomaly would not have been identified during the test.
- Axial MFL is not adequate to detect seam weld defects.
- 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 their pipeline safety risks.



Questions?

Like more information?

Request a demonstration or field pilot

Sheri Baucom

sbaucom@rcp.com