

Pressure Testing Implementation Challenges

PHMSA Research Forum

Working Group # 3 Anomaly Detection and Characterization

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PG&E's Strength Test Program Summary (2011-July 2014)

Strength Tests Summary 2011-2014

- **Total Miles Tested: 578 miles**
- **Total # of Strength Tests: 310 tests**
- **Water Tests: 290**
- **Nitrogen Tests: 40 (overlaps w/water tests)**
- **Gas Tests: 2**
- **Total Spend: approx. \$700 million**
- **Average time pipeline is out of service: 3 weeks**
- **Leaks: 9**
- **Ruptures: 8**

PG&E Strength Tests 2011-2014



Research Opportunity

Strength test failure leak detection

The Challenges

Small leaks/failures during strength testing are:

- Time consuming to find (up to 2 weeks)
- Increases cost
- Lengthens pipeline outages
- Affects communities
- Extends use of LNG/CNG



What We Need

Methods to quickly locate test failure locations:

- Potential solutions include;
- Improved tracer gas detection
 - Test isolation tools to split tests
 - Methods to monitor small flows in the pipeline
 - Detection methods to locate water saturating the soil, etc.
 - Acoustics



Research Opportunity

In-Line pre-strength test inspection tools

The Challenges

Strength testing provides limited information on overall condition of pipeline. In addition, strength test failures are expensive and problematic (same challenges as “leak detection” above).



What We Need

In-Line inspection (ILI) tools that can be run efficiently and cost effectively through a pipeline prior to strength testing that can provide “immediate dig” results in 24-48 hours.



Research Opportunity

Quantify and minimize risks associated with using inert gas as a test medium

The Challenges

Cleaning, water management and making the pipeline “pigable” extend clearance schedules by approx. 1 week and increase costs by up to 30% (using water as medium Vs. inert gas).



What We Need

Research on the effect of a compressible gas strength test failure and development of risk mitigation criteria. Potential to expand use of inert gas as a test medium and to make changes to testing limitations in 49 CFR 192.503



Research Opportunity

Hydrocarbons, elemental mercury and other contaminate from pipelines.

The Challenges

Contaminates in pipelines contaminate strength test water, extending project schedules and increasing project costs.



What We Need

Cost effective technologies and processes to remove/clean hydrocarbons, elemental mercury and other hazardous materials from the pipeline and inner pipe wall prior to filling the pipeline with water.



Research Opportunity

Alternate gas supplies for pipelines, distribution systems and individual customers.

The Challenges

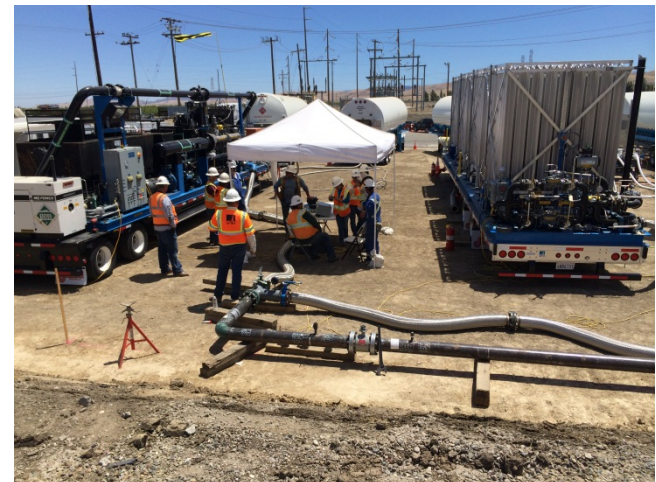
Strength testing radial pipeline systems serving large gas loads result large scale customer outages or extensive use of alternate gas supplies.



What We Need

ID and/or develop technologies that enable operators to maintain service to customers/distribution systems during extended strength test clearances.

Potential solutions include re-usable temporary piping approved for above ground natural gas applications and improved portable LNG equipment



Thank You

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