Pipeline Research Council International, Inc.

Technical Committee Overview Presentation

Underground Storage Committee

Committee Chair: John Jackson, Spectra Energy
PRCI Support Staff: Laurie Perry

PRCI – PHMSA R&D Forum
November 16, 2016

Committee Overview

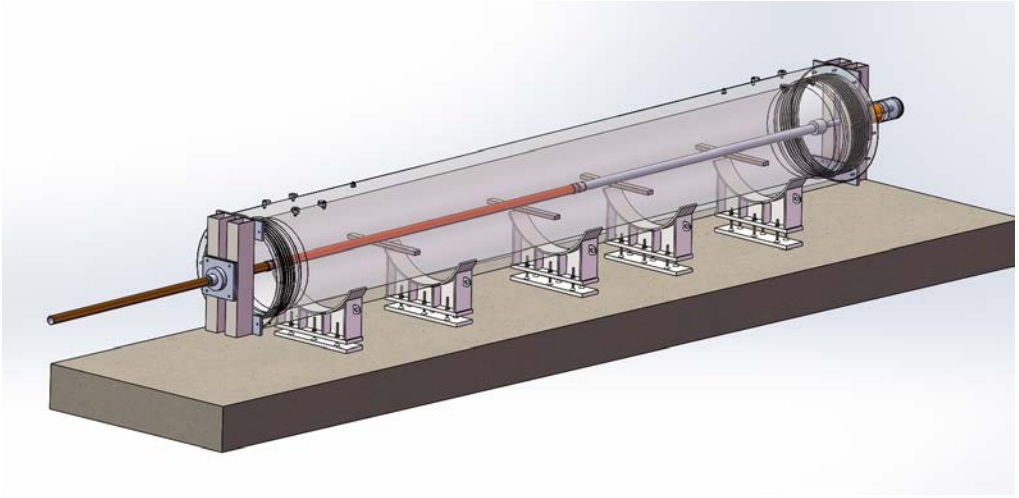
- **Primary Emphasis Areas**
  - Operation and Maintenance of Cavern Storage (US-2)
  - Underground Storage Field Integrity (US-3*)
  - Asset Integrity and Risk Assessment (US-4)

Ongoing Work – US-2

- **Understanding Flow-Induced Vibrations & Instabilities of Brine Strings for Various Flow Configurations (US-2-1)**
  - Objective: As stated in title
  - Status: McGill University
    - Collaboration with SMRI (co-funding) – experiments supplement the field test study through modeling validation.
    - Configuration with variations
      - Variable ratio of confined length to free length
      - Variable ratio of annulus area to tubing area
    - Phase 2 – Awaiting the availability of a storage field for testing – Q2 2017
  - Availability: Q2 2018

Ongoing Work – US-3

- **Magnitude of Stress Effects on the Characterization of Real and Manufactured Corrosion Defects – Phase II (US-3B)**
  - Objective: Compare in-well MFL log data to other measurements (lab MFL, ExaScan Laser profiling)
  - Status: Testing complete. Analysis of data underway.
  - Availability: Q2 2017



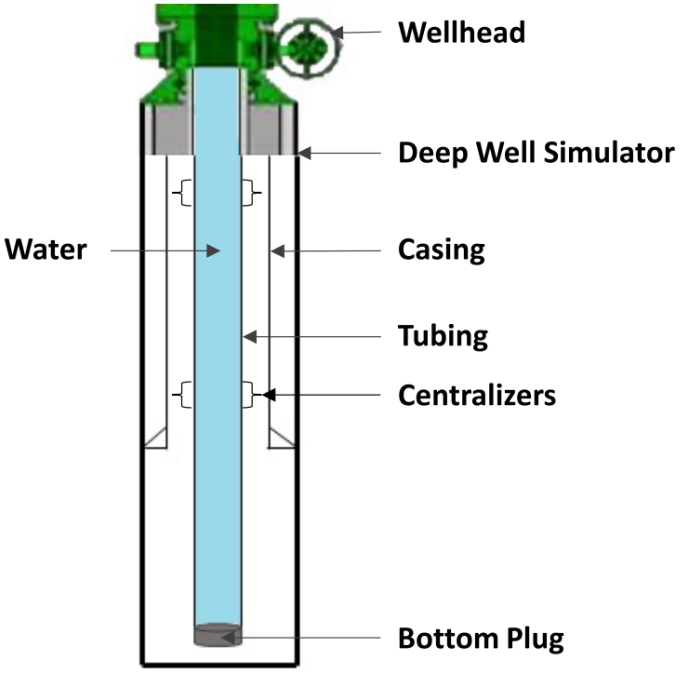
Ongoing Work – US-3

- **Defect Characterization of Well Casing Pipe (US-3H)**

  - Objectives:
    - *Validate the performance of an ILI MFL tool in well casing pipe.*
    - *Develop a collection of tubulars with known defects*
  - Status: Pulled casing joints from a well and fully characterized prior to being measured with MFL. Data analysis nearly complete.
  - Availability: Q2 2017

Ongoing Work – US-3

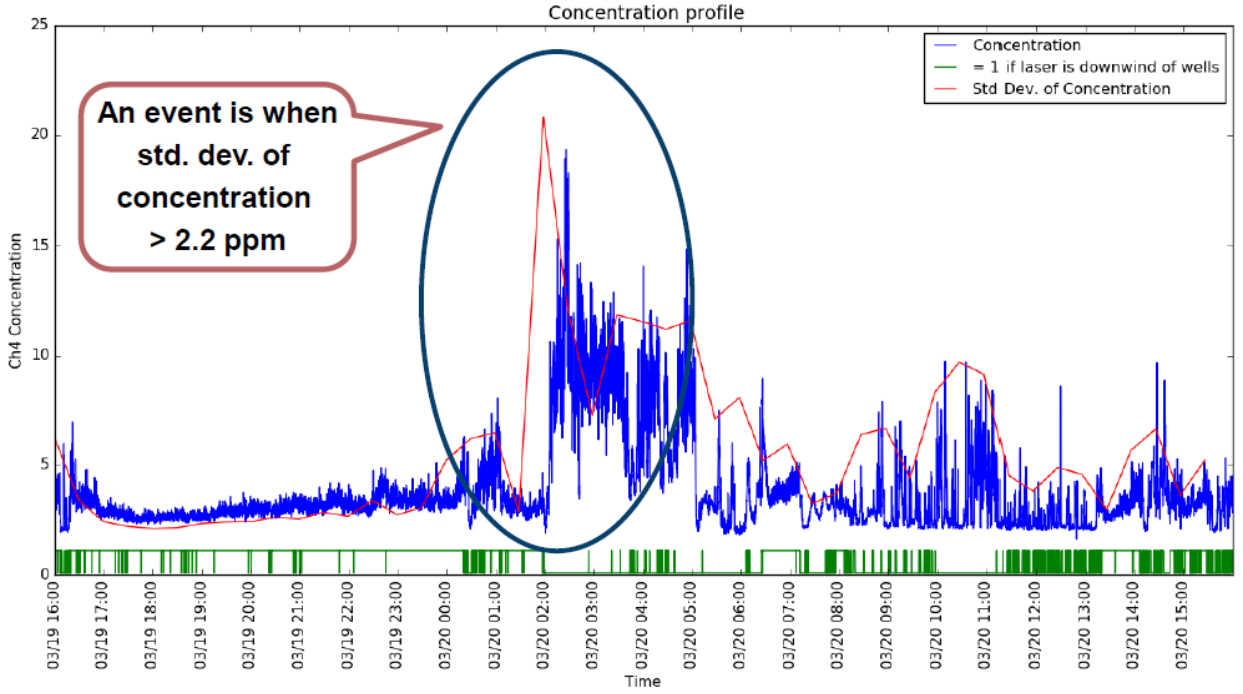
- **ILI Technology Comparative Testing (US-3J/K)**
  - Objective: Run multiple ILI tools (UT, MFL, and Eddy Current) in the lab on pipe joints and compare the results from each tool to the NDT scans (US-3H)
  - Status: Finalizing test plan. Testing to begin December 2016
  - Availability: Q4 2017



Conceptual Design of the Corrosion Logging Tool Test Well Completion

Ongoing work – US-4

- **Review & Demonstration of Methane Emission Quantification Techniques for Storage Facilities (US-4-2 & 4-2A)**
  - Objective: Evaluate new technologies and integrate with operations.
  - Status: Evaluation in progress. Additional devices in 2017 (US-4-2A)
  - Availability: Q2 2017 & Q2 2018



Underground Storage, Top Concerns & Needs

- **Discussion During the November 1, 2016 Committee Meeting**
- **Consistent Risk Assessment methodology**
- **Cementing**
  - Look at the added strength afforded to casing by cement
  - Advance the state-of-the-art on cement bond logging
- **Comparative testing (MFL, UT, EDMS, Eddy Current, other)**
- **Evaluate through tubing tools**
- **Burst Strength Testing of API Casing**
  - PRCI Report as part of the DOE Gas Technology Consortium.
  - Report "*Extension of a Method to Validate the Remaining Strength of Corroded Casing to Additional Cases*" can be found on the PRCI Store: http://prci.org/index.php/store/pubs_store/ Catalog # PR-218-08702-R01.
  - This report is a follow up to: *"Effects of Tensile Loading on the Remaining Strength of Corroded Casing"* DOE Award No.DE-FC26-03NT41779 December 2008