

Quarterly Report – Public Page

Date of Report: 1st Quarterly Report-March 31, 2016

Contract Number: DTPH5615T00004

Prepared for: DOT PHMSA

Project Title: Framework for Verifying and Validating the Performance and Viability of Leak Detection Systems for Liquid and Natural Gas Pipelines

Prepared by: C-FER

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For quarterly period ending: March 31, 2016

Public Page Section - During this quarterly period, a technical advisory panel (TAP) was formed by soliciting representatives of major pipeline operating companies. The participating operating companies have gas and liquid transmission pipeline installations in both the US and Canada. A TAP kickoff meeting to review the project objectives, the Framework requirements and preliminary Framework outline was held. Documents summarizing the outcome of the TAP meeting, the agreed upon Framework requirements and the Framework outline were submitted in fulfilment of Items No. 1 and No. 2 of the payable milestone schedule. Based on the project proposal and on guidance from the TAP, work has begun on the Release Scenario Definition section of the Framework and a detailed outline describing the Release Scenario Definition section was submitted in fulfilment of Item number 3 of the payable milestones schedule.

General Information required on all Public Quarterly Reports

Results and Conclusions:

TAP

The TAP consists of the following individuals and operating companies:

- Ray Philipenko – Enbridge
- Yue Cheng – TransCanada
- Lorne Daniels – Kinder Morgan
- Jon Van Reet – Plains All American Pipeline

Framework Requirements

The developed framework is intended to assist pipeline operators verify the performance of External Leak Detection (ELD) technologies for use on transmission pipelines. The following framework requirements form the basis of the framework outline:

1. Describe the purpose of the framework
2. Review current leak detection classification a. Explain the fundamental differences between internal and external methods
 - a. Highlight the challenges faced by operators in verifying external methods compared to internal ones
3. Provide guidelines to assist operators identify and characterize the range of leak scenarios that can be expected for a particular pipeline.
4. Provide guidelines to assist operators accurately model the selected leak scenarios. The developed models should provide information about the following:
 - a. Leak propagation patterns
 - a. Thermal distribution
 - b. Acoustic transmission
 - c. Surface VOC concentrations
 - d. Leak driven ground movement (subsidence and heave)
5. Provide guidelines to assist operators search for capable External Leak Detection (ELD) technologies based on the selected leak scenarios and modeling results
6. Provide guidelines to assist operators gather and interpret information about various ELD technologies so that they may ultimately rank them and recommend one or more for participation in an experimental test.
7. Provide guidelines to assist operators design and execute an experimental test for evaluating select ELD technologies
8. Provide a procedure for quantifying several aspects of technology performance based on test results, numerical modeling results, and other information gathered while following the framework.

Framework Outline

The flowchart illustrated in Figure 1 shows the various sections of the framework, the desired outcome of each section as well as their relation to one another.

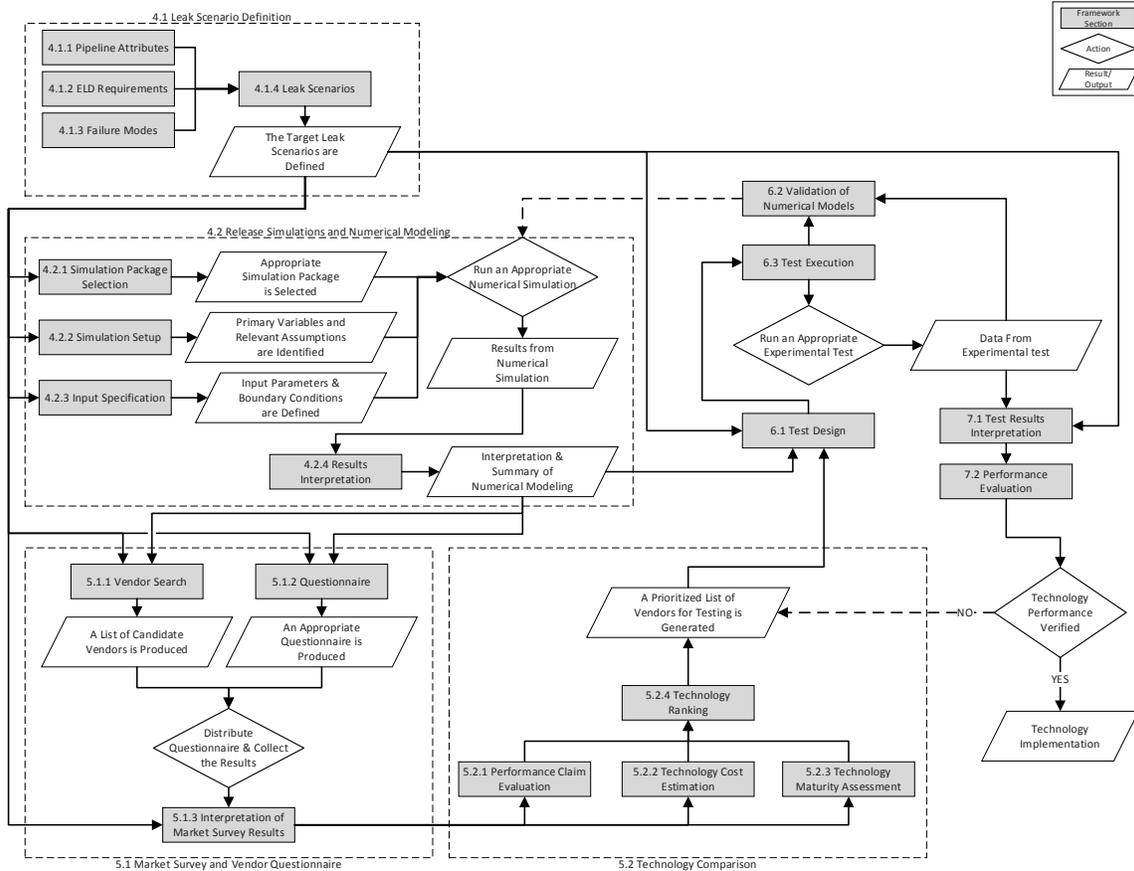


Figure 1: Framework Organizational Flowchart

Plans for Future Activity: Future activity for the next quarter includes development of: the vendor questionnaire, the technology comparison, the technology cost estimation, the test design, the test execution and the weighting assignment (Including public meetings, open tests, and/or demonstrations scheduled over the next quarter.)