PRCI Project Ref: MD-1-2

QUARTERLY REPORT – PUBLIC PAGE

Investigate Fundamentals and Performance Improvements of Current In-Line Inspection Technologies for Mechanical Damage Detection

Date of Report: October 31, 2008

Contract No: DTPH56-06-T-000016

Prepared For: United States Department of Transportation
Pipeline and Hazardous Materials Safety Administration
Office of Pipeline Safety

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For Period Ending: October 31, 2008

Technical Status

The research continues into Phase II; the testing in this phase is intended to provide additional understanding of the capabilities for current mechanical damage technologies improving on the quantity and quality of data. Phase I primarily used data from in-line inspection vendors, and the research concluded that the available validation data provided limited understanding of the capability of the technologies with regard to dents with metal loss (DML) or with cracks. The limitations were due to small validation sample sizes, and incomplete and insufficient validation measurement data, as detailed below:

- Limitations related to historical data
  - Small data sets with respect to DML
  - Operator data may not have been "current technology"
  - Method of validation often not recorded
    - Error or bias suspected but could not be quantified
  - Dent lengths and widths not typically recorded
    - Generally only the maximum dent depth (Dmax) is available
  - Coincident metal loss features
    - Location within dents not recorded
    - Depth, length, orientation not recorded
    - Use of MT to inspect for cracks often not recorded

The detailed scope for Phase II focuses on improved data input from participating pipeline operators as detailed below:

- Obtain validation performance baseline
  - Identify the current in-ditch inspection protocols; bridge bar, pit gauges, laser
  - Document performance baseline
    - Not necessarily to require the most accurate validation protocol but to at least know what was employed and have an idea of its performance
- Obtain current operator dig data
  - Recent reliable dig data or new digs using consistent data protocol to insure
    - We know the validation method and its errors
    - Dents depth/length/width recorded
    - Metal loss protocol; at least: discrimination, grind depth, length, orientation, position and crack inspection results
    - Operating pressure at time of measurement
  - Use historical data if adequate quality
  - Target population of 150 Mechanical Damage (MD) features desired
  - Coordinate for 2008 and 2009 digs to obtain data
- 2 Gas pipeline operators, 1 liquid operator (so far)
  - Questionnaire issued to PRCI members in July
  - Following up on survey with direct contact to Project Team member companies
  - Direct solicitation planned to continue through 2008
  - Wrap up data gathering in late spring/early summer 2009

The field data will be compared against the predictions made by the 6 technologies identified in Phase I to compare capability to detect and discriminate mechanical damage.

Results and Conclusions

An improved database of ILI Mechanical Damage predictions and direct assessment validations is being compiled.

Operator A (Gas Transmission):	15 MD Features, 2 Validations available, 9 scheduled excavations for 2008/2009
Operator B (Liquid Transmission):	142 MD Features, 6-12 Validations scheduled for 2008/2009; historical 2007/2008 data may be available
Operator C (Gas Transmission):	14 MD Features with 14 historic validations

Data gathering is 24% complete with 35 MD features predicted by two of the current ILI MD technologies having been committed thus far. Two additional gas transmission operators with a significant MD data population have volunteered to participate and will be contacted at the beginning of the next quarter. Additional pipeline operators will also be contacted.

A project update was presented to the PRCI Technical Committee in San Diego in October 2008.

Issues, Problems or Challenges

Data response from pipeline operators and timing for validation excavations is a significant schedule challenge and is being actively managed. Direct solicitation of PRCI membership is proving to be successful in identifying and delivering data. Substantial coordination with the participating pipeline operators and their contractors will be required for the field verification activities.

PRCI continues to evaluate the timing for completing the Phase II work relative to the current project schedule. Modifications to the milestone schedule and the OTA for the project may be required. A determination will be made on the need for a schedule extension after completing all planning with the identified member companies participating in the Phase II work.

Plans for Future Activity

The results of the Phase I report and any work completed for the Phase II portion of the project will be presented at PRCI's Research Exchange Meeting, scheduled for February 3-5, 2009, in Atlanta, GA. In addition, a technical paper will be prepared and the project results will be presented at the APIA-EPRG-PRCI Joint Technical Meeting, scheduled for May 11-15, 2009 in Milan, Italy.