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: April 30, 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: April 30, 2008

Technical Status

The Phase I report is complete and comments have been received from several members of the Project Team. A review of the report was conducted during the 26 March project team meeting. In addition, options for further testing and data evaluation during the Phase II scope of MD1-2 were presented and discussed. The Phase II testing is intended to provide additional understanding of the capabilities for current mechanical damage technologies based on the data used in measurement of technology performance within Phase I.

The project team identified 6 mechanical damage technologies from the Phase I research demonstrating some capability to detect and discriminate dents with coincident metal loss or cracks. The Phase I research concluded the available validation data provided limited understanding of capability with regard to dents with metal loss or with cracks. The limitations were due to small validation sample sizes, and incomplete and insufficient validation measurement data.

The options reviewed for Phase II work included laboratory level pull testing and in-ditch validation measurement of dent with metal loss/crack features. The in-ditch measurements would be coordinated with participating pipeline operators integrity assessments that are conducted using the 6 current mechanical damage technologies identified during the Phase I portion of the project that. A combined approach could also be performed, where both pull tests and field inspection/verification studies were performed.

Results and Conclusions

The results and findings detailed in the Phase I report describe the current mechanical damage in-line inspection technologies and utilized statistically based performance measures based on available validation data to characterize capability to detect and discriminate mechanical damage.

The Phase II work may consist of laboratory pull tests on single test piece with well documented mechanical damage features. The same specimen would be circulated for pull test among the participating in-line inspection vendors and evaluations would be made on tool/technology performance relative to the detailed measurement of the mechanical damage features. Phase II may also involve employing a validated in-ditch protocol at the operator 2008 excavations and evaluate the direct measurement data against the in-line technology predictions. The transmission operators on the project team identified candidate mechanical damage excavations planned for excavation and examination in 2008. Detailed direct examination measurements of the mechanical damage features would provide data used in development of an in-ditch protocol for the purpose of reducing or managing possible errors. The objective is to obtain a sufficiently large data population with controlled validation measurement errors. The results are anticipated to provide high confidence performance measures that can be used for critical comparisons of capability to detect and discriminate dents with coincident metal loss and/or cracks.

Issues, Problems or Challenges

No significant issues, problems or challenges are identified at this time.

Plans for Future Activity

Project MD1-2 will make a presentation at the DOT Peer Review scheduled for 1 May 2008.