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Quarterly Report – Public Page

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Contract Number: DTPH56-07-T-000006

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

Project Title: “Validation of Assessment Methods for Production Scale Girth Welding
of High Strength Pipelines with Multiple Pipe Sources, #275”

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Project Summary

This project addresses gaps in the understanding of girth welding of X100 grade high strength steel pipelines. The objectives of the project are:

1. To test a large set of girth welds produced under realistic conditions by a state of the art high productivity GMAW system;
2. To demonstrate the effect of material variability between pipes, between heats and between pipe manufacturers; and
3. To validate current and proposed new weld defect assessment methods against the performance of a large set of welds made under field production conditions.

The project will test girth welds made during the construction of the BP X100 Operational Trial to determine their properties and defect tolerance. The activities will include: a) Review of construction records and selection of welds for examination; b) Test program design; c) Weld testing and examination; d) Evaluation of defect tolerance of welds using fitness for purpose assessment criteria; and e) Reporting and dissemination of results.

Technical Status

Pressure cycling of the Operational Trial has continued satisfactorily with minor hardware and software issues being resolved as necessary. As of 27 June 2008, a total of 8,800 pressure cycles have been accumulated.

A technical report summarizing the issues in weld selection was prepared and submitted to the project team for review and approval. The project team is developing test plans for Section A and Section B of the Operational Trial and is currently verifying that selected welds from A and B will be made available for testing. There is a possibility that Section A may not be available for weld testing due to other test requirements. The weld selection report is being updated to reflect the selection of welds from Section B, with an additional table in an appendix in the report considering Sections A and B, should Section A be released for weld testing. The project team will not know the final availability of Section A welds until nearer to the end of the trial.

Issues being considered include:

- Strength overmatch – this is being quantified by determining the strengths of the pipes at each weld from the pipe production test data.
- Pipe mill, heat number and plate supplier at each weld are being identified to ensure a range of sources is sampled.
- Weld defects identified during construction may be tested, or it may be more beneficial to focus on those welds with defects deliberately built in.

Data such as pipe mill, pipe strength etc. have been being compiled into an Excel spreadsheet so that quantities such as weld strength mismatch can be calculated and used in weld selection.

Plans for Future Activity

Continue pressure cycling of X100 Operational Trial and other activity as per project plan.

Advantica will complete work on Task 2, specifically the identification of welds from the X100 trial that meet the selection criteria.

Following the completion of Task 2, Advantica will continue work on the mechanical test plan for the project.