3RD QUARTERLY REPORT
DOT Project Number: 729 (GTI 22428)
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Validating Non-Destructive Tools for Surface to Bulk Correlations of Yield Strength, Toughness, and Chemistry

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Prepared For
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PUBLIC 3RD QUARTERLY REPORT

Project Objectives

The deliverables of this project will facilitate the use of non-destructive surface testing: micro-indentation, micro-machining, in situ chemistry, and replicate microscopy analysis as accurate, efficient, and cost-effective tools for material property confirmation.

This work will provide benefits to pipeline safety, energy continuity, and integrity assessment programs since the developed techniques and models and validated testing technology will not require a line to be taken out of service or destructively cut out samples from the in-service pipeline.

The results of this project will also be applicable to pending DOT/PHMSA regulations that require operators to backfill their material property records for grandfathered pipeline segments and/or those that do not have adequate material records.

Completed Work this Quarter

1. Enhanced lab to handle increase pipe sample receipt and testing.
2. Redesigned project database to facilitate parametric analysis.
3. Finalized project samples set.
4. Firmed up testing matrix.
5. Commenced NDE testing.
6. Continued with lab testing.
7. Conducted data analysis and modeling of calibration set of data.
8. Completed Bayesian Model Averaging (BMA) analysis of calibration data.

Planned Work for Next Quarter

1. Continue bulk benchmark/lab testing of samples for mechanical and physical properties.
2. Continue NDE testing
3. Continue model development.
4. Present DOT/PHMSA Peer Review for the project.

End of Quarterly Update