



**3rd QUARTERLY REPORT – PUBLIC PAGE
DTPH56-14-H-00002
"Full Scale Testing of Interactive Features for Improved Models"**

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1.0 Results and Conclusions

Task 1 – Project Kickoff

This task is complete and was reported on in the first quarterly report.

Task 2: Material Selection, Acquisition, and Characterization

GDF SUEZ is continuing their characterization work for Tasks 5a, 5c and 6. This includes measuring the transverse and longitudinal tensile properties of Pipe 5, 7 and, SCC-1.

BMT has acquired and started material characterization work on 24 inch diameter, 0.375 inch wall thickness, Grade X-70, 1998 vintage pipe (Pipe D). Table 4.1 provides the results of the chemical analysis for Pipe D. Tensile properties were measured in both the longitudinal and transverse orientation. Base material Charpy tests were performed on specimens in transverse orientation. Two thirds size specimens were machined following guidelines in CSA 245.1-07. Table 4.3 shows the Charpy test results.

Task 3: Baseline Existing Features

There is no work to report during this reporting period on Task 3.

Task 4: Full Scale Testing of Complex Dents

Selection of indenter shapes and development of the initial dent fatigue test matrix is in progress. Two test specimens, from Pipe D, have also been fabricated.

Task 5a: Dent and Gouge Severity

For Task 5a, GDF SUEZ has created three dent and gouge defects. The defects are created with a slower dynamic aggression consisting in simultaneously pushing the tooth down onto the pipe with a vertical force and pulling the pipe with a hydraulic ram to produce a deeper dent. The pipe was under an internal pressure of 10 bar (145 psi) corresponding to load factor of 0.11 based on the measured Actual Yield Strength of 406 MPa (58.9 ksi).

Task 5b: Interaction between Defects

There is no work to report during this reporting period on Task 5b.

Task 5c: Dent and Gouge Defects Removed from Service

The Pipe 7 material characterization by GDF SUEZ is in progress.

Task 6: SCC Colonies and SDO Modeling Coordination

There is no work to report during this reporting period on Task 6.

Task 8: Dissemination of Results

The project team held monthly internal meetings with the Technical Advisory Committee (TAC).

The project team held a TAC meeting on June 18, 2014 to present questions on Task 5 –Full Scale Testing of Dent and Gouge Defects as discussed above under Task 2.

Task 9: Project Management and Reporting

The project team held regular teleconference meetings to track performance, schedule and budget.

2.0 Plans for Future Activity

Task 2: Material Selection, Acquisition, and Characterization

GDF SUEZ will complete the material characterizations for selected samples from:

- A vintage 24 inch diameter pipe provided by an US transmission pipeline operator for Task 5.
- Two (2) 18 inch diameter pipe sections containing SCC colonies for Task 6.
- One (1) 16 inch diameter pipe that will be used for Task 4.

BMT plans to finalize the selection of their pipe and begin characterization.

Task 3: Baseline Existing Features

GDF SUEZ will continue searching for pipe sections retrieved from service containing in-service created dents and gouges.

Task 4: Full Scale Testing of Complex Dents

BMT will continue work on selection of indenter shapes and development of the initial dent fatigue test matrix.

Task 5a: Dent and Gouge Severity

GDF SUEZ will perform the burst test on the defect 5.4.2 and the fatigue test on the defect 5.4.3.

Task 6: SCC Colonies and SDO Modeling Coordination

GDF SUEZ will continue to work on the vessel preparation.