



**6<sup>th</sup> QUARTERLY REPORT – PUBLIC PAGE  
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**"Full Scale Testing of Interactive Features for Improved Models"**

**SUBMITTED BY:** **Team Project Manager**  
Deborah Jelen  
Electricore, Inc  
27943 Smyth Drive, Suite 105  
Valencia, CA 91355  
Telephone: (661) 607-0260  
E-mail: [jelen@electricore.org](mailto:jelen@electricore.org)

**TEAM TECHNICAL COORDINATOR:** **Team Technical Coordinator**  
Aaron Dinovitzer  
BMT Fleet Technology  
311 Legget Drive  
Kanata, Ontario K2K 1Z8 Canada  
Telephone: (613) 592-2830  
E-mail: [adinovitzer@fleetech.com](mailto:adinovitzer@fleetech.com)

**Team Technical Coordinator**  
Mures Zarea  
GDF SUEZ, R&I Department  
361 Ave du President Wilson  
B.P. 33, 93211 Saint-Denis, France  
Telephone: +3 (366) 413.5637  
Email: [mures.zarea@gdfsuez.com](mailto:mures.zarea@gdfsuez.com)

**TEAM PARTICIPANTS:** Electricore, Inc.  
BMT Fleet Technology  
GDF Suez  
Pipeline Research Council International (PRCI)

**SUBMITTED TO:** U. S. Department of Transportation  
Pipeline and Hazardous Materials Safety  
Administration  
Mr. Warren D. Osterberg  
Agreement Officer  
[warren.osterberg@dot.gov](mailto:warren.osterberg@dot.gov)

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## **1.0 Results and Conclusions**

### **Task 2: Material Selection, Acquisition, and Characterization**

GDF SUEZ has identified, purchased, and shipped Pipe 6 and 12” end caps to their laboratory facilities for Task 5a. Its main characteristics are: OD 323 mm, Thickness 6 mm, Grade L360 MB. Calculations were done to evaluate its suitability for the scheduled complex loading test, i.e. internal pressure fatigue tests combined with axial loading, before purchasing the pipe. The team has set aside a ring for material characterization, and has started the manufacturing of the first vessel.

### **Task 5a: Dent and Gouge Severity**

GDF SUEZ manufactured three vessels from Pipe 5 in preparation for tests on defects 5.5.X. The excavator tooth was adapted to be less aggressive than the previous one used to create defects 5.4.X. While these 5.4.X defects correspond well to the expected combination of dent depth and gouge depth, in terms of filling the existing gap on the dent depth vs. gouge depth chart, they have a shape with a sharp transition. This leads to short fatigue life and low burst strength.

### **Task 5b: Interaction between Defects**

This task will be launched based on the results expected from the burst test of defect 5.5.2. Depending on the burst pressure, the other dent and gouge defects would be created and interaction between defects would be full scale tested, otherwise new mechanical damage must be created and tested to get the defects required by the task 5b scope of work.

### **Task 5c: Dent and Gouge Defects Removed from Service**

GDF SUEZ CRIGEN is still looking for a suitable second dent and gouge defect removed from service. Pipe 8 has not been identified yet in order to be submitted to fatigue tests.

### **Task 6: SCC Colonies and SDO Modeling Coordination**

Work on SCC colonies is waiting for the official decision from DOT (acceptance or rejection) on the proposed additional work to check / challenge the recent modeling of near neutral pH stress corrosion crack growth rate because this impacts directly the initial SCC program (see plans for future activities).

### **Task 8: Dissemination of Results**

The team has completed the following in the dissemination of the results.

- The project team held monthly internal meetings with the Technical Advisory Committee (TAC).
- Electricore distributed the Quarterly Report to the Technical Advisory Committee (TAC).
- The project team presented to PHMSA and the selected Peer Review Panel on May 27, 2015 during the Annual 2015 Peer Reviews.

### **Task 9: Project Management and Reporting**

The team has completed the following project management and reporting sub-tasks:

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

- The project team completed and submitted the required monthly and quarterly report.
- The project team prepared and participated in the 2015 PHMSA Annual Peer Review.
- Electricore submitted a six (6) month proposed modification to expand the SCC work and address delays associated with obtaining the vintage pipe.

### **1.1 Problems, Technical Issues or Major Developments**

Electricore submitted a six (6) month proposed modification to expand the SCC work and address delays associated with obtaining the vintage pipe. Electricore is awaiting formal notification from DOT on this request.

Pipe 8 with dent and gouge defects removed from service has not been identified yet by GDF SUEZ.

## **2.0 Plans for Future Activity**

Over the next 30-60 days, the following activities will be conducted:

### **Task 3: Baseline Existing Features**

Corrosion features will be identified on the Pipe E and dimensional measurements will be carried out. The activity is behind schedule and time extension sought in the request for contract modification addresses the concern.

### **Task 4: Full Scale Testing of Complex Dents**

Comparison of experimental and modeling data will be continued and any changes, if required to the testing and instrumentation plan will be identified and implemented. The activity is behind schedule and time extension sought in the request for contract modification addresses the concern.

### **Task 5b: Interaction between Defects**

Defect 5.5.2 will be instrumented and the pipe vessel will be burst tested. Analysis of burst pressure of defect 5.5.2 will help determine the way forward in terms of defect type, without speaking about the choice of adequate distance (either pursue with the normally scheduled task or need to create new dent and gouge defects with other shapes).

### **Task 5c: Dent and Gouge Defects Removed from Service**

GDF SUEZ will continue their search for Pipe 8.

### **Task 6: SCC Colonies and SDO Modeling Coordination**

If the modification is accepted, the team will need to decide on the characteristics of the machined defects in pipe SCC1 pressure vessel where SCC colonies removed from service are located. Part of the expanded work will include full scale testing near neutral pH stress corrosion crack growth modeling.

### **Task 9: Project Management and Reporting**

The team will complete the following sub-tasks:

- The project team will hold regular teleconference meetings to track performance, schedule and budget.
- The project team will complete the required monthly and quarterly reporting.
- The project team anticipates executing the additional scope of work request.