

CAAP Quarterly Report

Date of Report: *November 18, 2016*

Contract Number: *DTPH5615HCAP02*

Prepared for: *US DOT - PHMSA*

Project Title: *"Understanding and Mitigating the Threat of AC Induced Corrosion on Buried Pipelines"*

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For quarterly period ending: *September 30, 2016*

Business and Activity Section

(a) Generated Commitments –

Materials and supplies – chemicals, small parts, machine shop work to fabricate samples

(b) Status Update of Past Quarter Activities –

Summary:

This quarter, graduate student Elmira Ghanbari successfully defended her PhD:

“Corrosion behavior of buried pipeline in presence of AC stray current in controlled environment,” September 2016

We have also finished a paper for the NACE Corrosion17 conference:

“The Influence of Scale Formation on the AC Corrosion of API Grade X65 Pipeline Steel Under Cathodic Protection,” E. Ghanbari, R.S. Lillard.

These two milestones complete the laboratory phase on the effect of capacitance on AC corrosion and we will begin planning for our field studies with Mears Group and Marathon Pipeline LLC this fall. Finally, two new graduate students have started working on the project: Andrew Moran and Lizeth Sanchez. Andrew Moran spent most of the summer training with Dr. Ghanbari on the instrumentation we use to perform AC corrosion measurements to insure a seamless transition. Lizeth Sanchez will be working on AC and stress corrosion cracking with Prof. Cong and has been planning for those experiments.

Experimental details:

- Completed AC corrosion experiments on API X65 carbon steel with carbonaceous deposits :
 - Long-term weight loss data at cathodic potentials including the CP potential of -0.85 V vs. copper sulfate.
 - Rates for calcium carbonate coated steel at CP where more than an order of magnitude lower than untreated steel. The result goes to show the importance of soil properties.

Description of any Problems/Challenges –

- None to report

(c) Planned Activities for the Next Quarter –

- Planning and exploratory experiments: Field studies and SCC.