FINAL PROJECT SUMMARY REPORT

PROJECT IDENTIFICATION INFORMATION:

Senslytics Corporation
107 Technology Pkwy NW, Suite 212
Peachtree Corners, GA 30092-2909

DOT SBIR PROGRAM
PHMSA, DOT, and SBIR PROGRAM

DOT CONTRACT
6913G62P800054

PERIOD OF PERFORMANCE
8/26/2024 - 3/7/2025

PROJECT TITLE
24-PH1: Innovative Solutions for Internal Corrosion Control of Hazardous Liquid Pipelines

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SUMMARY OF COMPLETED PROJECT:

Phase I successfully developed CorroSim, a causal AI-driven situational model capable of predicting corrosion behavior under varying environmental and operational conditions. This work established a proof of concept for a data-driven pipeline integrity management system, leveraging key influencer variables such as O_2, CO_2, H_2S, pipeline material, and the current state of pipeline sections.

The simulator enables precise situationally specific estimation of corrosion growth trends, projection of remaining life, and evaluation of mitigation strategies, allowing pipeline operators to make informed, proactive decisions. By modeling complex cause-and-effect relationships, CorroSim enhances predictive accuracy beyond conventional assessment techniques, positioning it as a transformative tool for pipeline integrity management.

Although full validation remains challenging due to limited real-world data, Phase I establisheds a strong predictive foundation, paving the way for further refinement, validation, and industry collaboration in Phase II.

Projected impact of CorroSim development includes:

- 75% reduction in pipeline leaks/failures
- 20%+ reduction in biocide and corrosion inhibitor usage through precise classification of corrosion types
- 20%+ reduction in unnecessary digs by improving criticality assessment accuracy
- More informed decision-making through explainable, AI-driven conclusions
- Increased efficiency, allowing engineers to focus on critical operational challenges rather than reactive maintenance