



**Pipeline and Hazardous Materials Safety Administration  
Office of Pipeline Safety**

**Pipeline Safety Research & Development Program**

**ARPA-E REPAIR Annual Meeting**  
January 13, 2022



# Pipeline Safety Research Program Mission

To sponsor research and development projects focused on providing **near-term solutions** for the Nation's pipeline transportation system that will improve **safety**, reduce **environmental impact**, and enhance **reliability**.



# PHMSA Funded Research



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration

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**PHMSA: Your Safety is Our Mission**





# PHMSA Related Research

Project Title	Summary
Above-ground Detection Tools Including Disbondment and Metal Loss for all Metals Including Cast-Iron Graphitization (\$415,121)	Project developed/tested a mobile platform for detecting coating disbondment and external corrosion by measuring magnetic fields from above ground. Alternating current is injected into the pipe being tested and creates magnetic fields around the pipe. These fields are affected by corrosion and disbondment.
Characterization and Fitness for Service of Corroded Cast Iron Pipe (\$514,140)	The project developed a Fitness-For-Service model and method for operators to characterize and grade graphitic corrosion defects on cast iron natural gas pipe.
Broadband Electromagnetic Technology Sensor to Assess Ferrous Pipes without Removing Coatings in Both Traditional and Keyhole Excavations (\$293,403)	The project enhanced/tested a portable, cost effective, and reliable direct-assessment tool capable of detecting metal loss, pits, and cracks in ferrous pipes without coating removal and can be used through keyhole and traditional excavations.

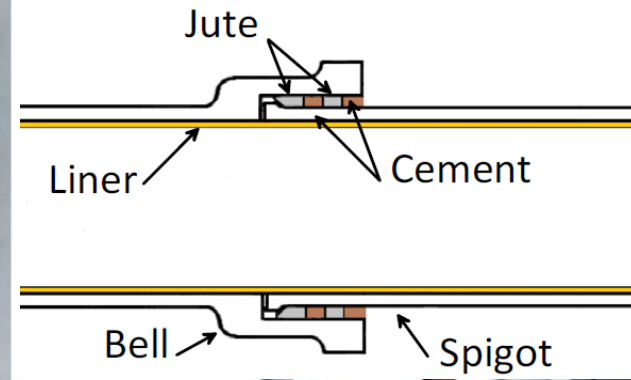


# PHMSA Related Research (cont.)

Project Title	Summary
Technology Transfer, Demonstrations and Post-Mortem Testing of Cast Iron and Steel Pipe Lined with Cured-in-Place Pipe Liners (\$477,571)	The project reviewed CIPP performance information and tested extracted field-aged CIPP lined pipe to extremes. A demonstration assessed the full planning, installation and post-installation process that can be evaluated by present-day standards and concerns
Evaluation of Structural Liners for the Rehabilitation of Liquid and Natural Gas Piping Systems (\$425,650)	Project conducted an assessment of structural liners and composites and their interaction with the pipe to demonstrate their capability to carry the loads of a degraded host pipe.



Structural Liner Installation



# Notable Research Impacts

- Project final reporting provide very useful information about the issues covered
  - Several papers have been published
- No Technology Transfer yet registered to a vendor
- No Knowledge Transfer yet registered to standards bodies



Graphitic Corrosion



Aboveground Assessment



# 2021 R&D Forum Output:

## Rehabilitation of Aging Cast Iron Pipelines

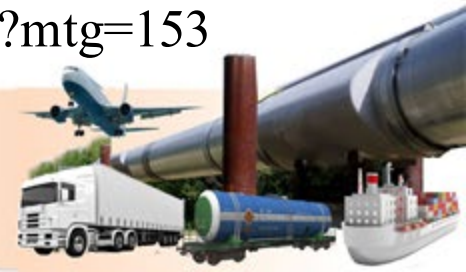


# Working Group #1: Rehabilitation of Aging Cast Iron Pipelines

<b>Topic Title</b>	<b>Main Objective</b>
Technology Development – Rapid Cure Process for Cured In-Place Liners	The main objective for this project is to develop a rapid cure process enabling the lining of natural gas mains so service reinstatement can occur successfully within 24 hrs. of this operation.
General Knowledge – Decision Tool for Replacement/ Rehabilitation Considerations of Natural Gas Distribution Pipelines	The main objective for this project is to develop a risk informed tool that can support decisions for replacement or rehabilitation considerations.
Technology Development – Development of Structural Liner Material	The main objective for the project is to develop and test an improved internal structural liner material for cast iron and steel pipelines in need of rehabilitation.

Link to all event files and reports:

<https://primis.phmsa.dot.gov/meetings/MtgHome.mtg?mtg=153>





# Other Items



# Thank You!



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