



Summary of PHMSA's Recent R&D Awards for FY 2022

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Research Division

PHMSA Pipeline Public Meeting

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

PHMSA: Your Safety is Our Mission



Overview

- General program background
- Summary of the FY 2022 portfolio of research awards
- R&D Website links for additional project information:

<https://primis.phmsa.dot.gov/matrix/>



PHMSA's Safety Research Program



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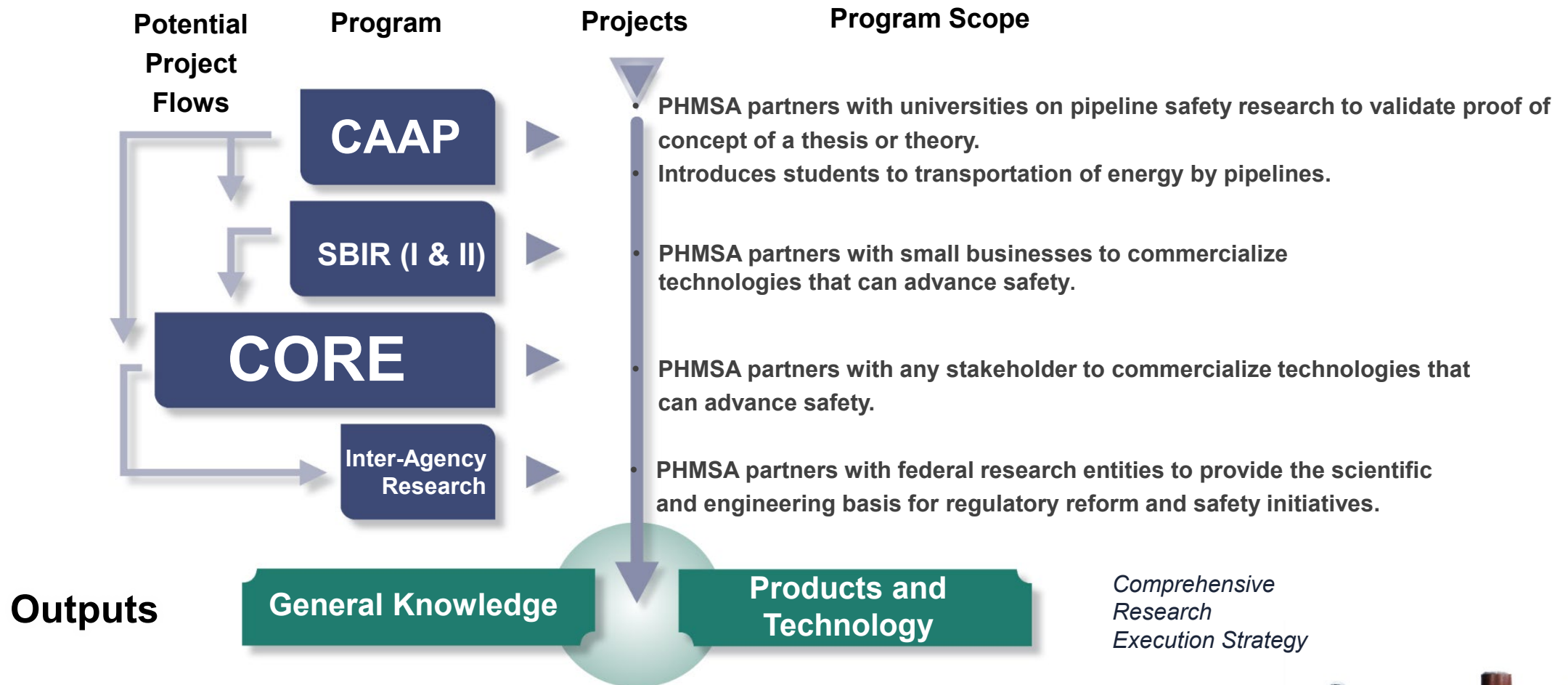


Safety Research Program Mission

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



Research Program Execution



Performance History Since 2002

Technology

Category	Technology Projects	Technology Demonstrations	Patent Applications (U.S. + Other)	Patents Granted (U.S. + Other)	Tech-Transfer/ Commercialized Technologies	PHMSA (\$M)	Cost Share (\$M)
Threat Prevention	28	18	4	3	6	\$12.95M	\$12.89M
Leak Detection	18	12	2	1	6	\$ 9.39M	\$ 7.02M
Anomaly Detection	44	33	24	14	17	\$30.28M	\$30.87M
Anomaly Characterization	9	3	0	0	1	\$ 4.32M	\$ 2.80M
Anomaly Repair	1	0	0	0	0	\$ 0.99M	\$0.00M
Pipe Remediation/ Rehabilitation	1	0	0	0	0	\$ 0.91M	\$0.91M
Materials	9	1	2	2	1	\$10.84M	\$ 7.91M
Welding/Joining	10	7	1	1	2	\$6.27M	\$7.48M
Alternative Fuels	3	2	1	1	2	\$1.09M	\$0.56M
Underground Natural Gas Storage	2	1	0	0	0	\$0.99M	\$0.99M
Totals:	125	77	34	22	35	\$79.13M	\$72.51M

Data as of 11/1/2022



Performance History Since 2002

General Knowledge/Knowledge Dissemination

Website Metric	Measure
Total Hits	42,226,035
Average Hits/Month	180,453
Downloads Since 2008	2,163,343



Library of Knowledge



Knowledge Promotion Metric	Count
Final Reports	287
Conference or Journal Papers	284
Public Events	45

Data as of 11/1/2022



FY 2022 CAAP Project Awards



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CAAP Projects (\$4.8 M)

	Pro #	Project ID and Title	Contractor	PHMSA
1.	977	693JK32250008CAAP, Performance Evaluation and Risk Assessment of Excessive Cathodic Protection on Vintage Pipeline Coatings	The University of Akron	\$513,800
2.	987	693JK32250011CAAP, Determination of Potential Impact Radius for CO2 Pipelines using Machine Learning Approach	Texas A&M Engineering Experiment Station	\$279,754
3.	988	693JK32250004CAAP, Development of Compatibility Assessment Model for Existing Pipelines for Handling Hydrogen-Containing Natural Gas	University of Oklahoma	\$1,000,000
4.	989	693JK32250001CAAP, Selection and Development of Safer Polymer and Composite Pipeline Liners through Microstructural and Macroscopic Study of Materials and Designs	Brown University	\$1,000,000
5.	990	693JK32250009CAAP, All-in-One Multifunctional Cured-In-Place Structural Liner for Rehabilitating of Aging Cast Iron Pipelines	North Dakota State University	\$1,000,000
6.	991	693JK32250007CAAP, Accelerating Transition towards Sustainable, Precise, Reliable Hydrogen Infrastructure (Super-H2): Holistic Risk Assessment, Mitigation Measures, and Decision Support Platforms	North Dakota State University	\$1,000,000



FY 2022 Core Project Awards



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Core Projects (\$7.54 M)

	Pro #	Project ID and Title	Contractor	PHMSA
1.	978	693JK32210003POTA, Determining the Required Modifications to Safely Repurpose Existing Pipelines to Transport Pure Hydrogen and Hydrogen-Blends	Engineering Mechanics Corporation of Columbus	\$800,000
2.	979	693JK32210004POTA, Advancing Hydrogen Leak Detection and Quantification Technologies Compatible with Hydrogen Blends	Texas A&M Engineering Experiment Station	\$749,446
3.	980	693JK32210005POTA, Determine the Maximum Permissible Temperature Drops for Steel when Exposed to Cryogenic Liquid	Simpson Gumpertz & Heger	\$350,574
4.	981	693JK32210008POTA, Best Purging Practices for Minimizing Methane Emissions	Gas Technology Institute	\$358,577
5.	982	693JK32210010POTA, Risk-Based Decision Support for Rehabilitation of Natural Gas Distribution Pipelines	Gas Technology Institute	\$400,000
6.	984	693JK32210012POTA, Expanding Hydrogen Storage to Porous Rock Formations: A Framework for Estimating Feasibility & Operational Considerations	Gas Technology Institute	\$298,000
7.	985	693JK32210013POTA, Review of Integrity Threat Characterization Resulting from Hydrogen Gas Pipeline Service	Engineering Mechanics Corporation of Columbus	\$240,000
8.	986	693JK32210015POTA, Dynamic Geohazard Risk and Decision Support Platform	Boston Geospatial, Inc.	\$398,750



Core Projects cont. (\$7.54 M)

	Pro #	Project ID and Title	Contractor	PHMSA
9.	991	693JK32210011POTA, Rapid Ultraviolet (UV) Cured Adhesive for Gas Main Cured-in-Place-Lining (CIPL)	Progressive Pipeline Management	\$919,628
10.	992	693JK32210006POTA, Accelerating Pipeline Leak Detection Quantification Solutions Through Transparent and Rigorous Scientific Validation	Colorado State University	\$600,000
11.	993	693JK32210001POTA, Developing Corrosion Control Monitoring Technology for Hazardous Liquid Breakout Tanks	Pipeline Research Council International	\$250,001
12.	994	693JK32210002POTA, Monitoring the Long-Term Compatibility of VCI and CP Associated Components	Pipeline Research Council International	\$400,015
13.	995	693JK32210009POTA, Innovative Leak Detection Methods for Gas and Liquid Pipelines	Pipeline Research Council International	\$384,268
14.	996	693JK32210007POTA, Developing Design and Welding Requirements Including Material Testing and Qualification of New and Existing Pipelines for Transporting CO ₂	BMT Fleet Technology Limited	\$1,200,000
15.	997	693JK32210014POTA, Field Validation Demonstrations to Advance Pipeline Leak Detection Beyond Current Capabilities	Siemens Energy, Inc	\$193,628



FY 2022 SBIR Project Awards



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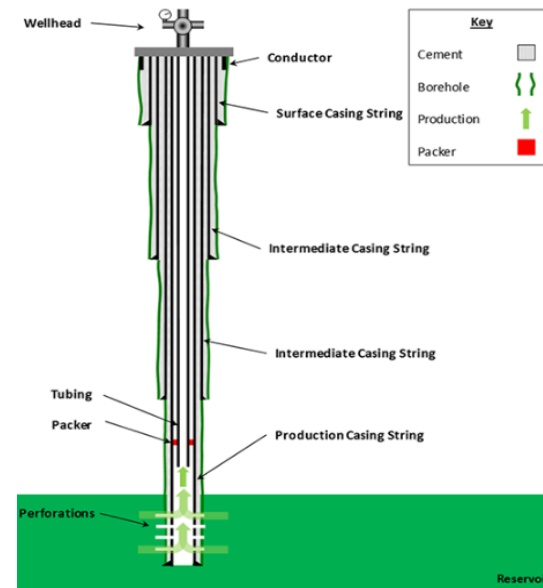


SBIR Projects (\$2.36 M)

	Pro #	Project ID and Title	Contractor	PHMSA
1.	974	6913G622P800030, Fiber-Optic Excavation Monitoring Sensor (FOCOS) System	Intellisense Systems, Inc.	\$149,997
2.	975	6913G622P800027, Smart Well Assessment and Reservoir Management System (SWARMS)	Oceanit Laboratories, Inc.	\$149,990



Picture courtesy:
Pipeline
Technology
Journal



Picture courtesy:
Penn State



FY 2022 IAA Project Awards



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IAA Projects (\$2 M)

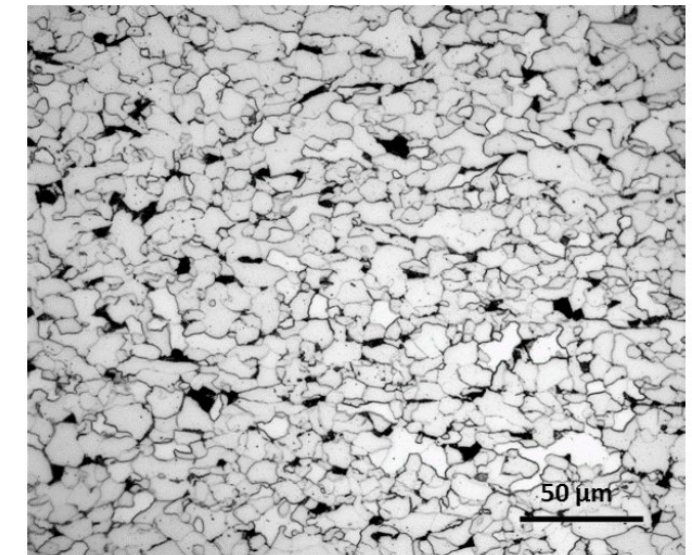
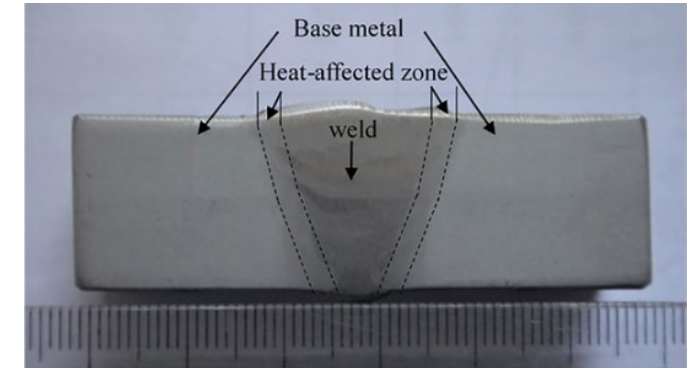
Researcher: National Institute of Standards and Technology (NIST)

Public Page: <https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=976>

Project Objective: To review current codes and standards for gaps in qualification requirements for welds in pipelines intended for hydrogen transportation and to provide: (1) weld qualification requirements for new steel pipeline assets, including seam, girth, and repair welds; (2) performance evaluations for varying modern steel grades; and (3) assessment parameters for evaluating the integrity of existing and vintage (pre-Code) assets.

Project End Date: 9/29/2024

Potential Impact on Safety: An effective weld qualification procedure will support safe operation and design limits for hydrogen pipeline construction and operation.



Research Outputs/Outcomes/Impacts

■ Outputs:

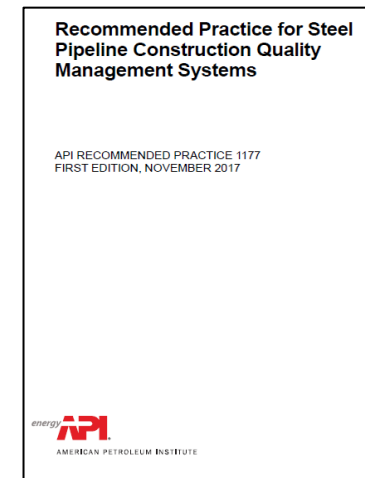
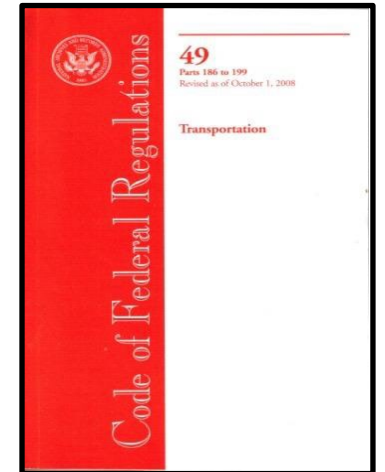
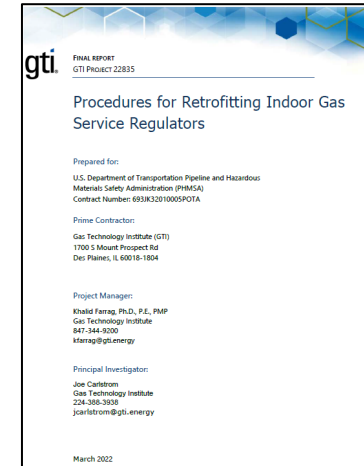
- Growing portfolio of informative project reporting

■ Outcomes

- Technology adoption into commercialization. Knowledge to inform policy development, rulemaking, and standards revisions.

■ Impacts:

- Research contributions in coordination with PHMSA's other programs drive safety performance improvements.



R&D Links

[About Research and Development](#)

[Congressional Mandates](#)

[Meeting and Events](#)

[Program Performance](#)

[Technology Success Stories](#)

[University Partnerships](#)

[Submit Research Ideas](#)

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About Pipeline Research & Development

The mission of PHMSA's Pipeline Safety Research & Development Program is to sponsor projects focused on providing technical solutions that will improve pipeline safety, reduce the environmental impact of failures, and enhance the reliability of the Nation's pipeline transportation system.

The research program has the following objectives:

- Employ a coordinated and collaborative approach to address mutual pipeline challenges with a wide set of stakeholders.
- Help remove technical and sometimes regulatory barriers on a given challenge.
- Tell the research story by measuring our research results, outputs, and impacts.
- Promote transparency by posting online R&D program/project actions and products.

R&D Program Website: <https://www.phmsa.dot.gov/research-and-development/pipeline/about-pipeline-research-development>

R&D program awards and sortable features: <https://primis.phmsa.dot.gov/matrix/>

Submit a research gap suggestion: <https://primis.phmsa.dot.gov/rd/gapsuggestions.htm>

Join the R&D Program Alerts Distribution List: <https://service.govdelivery.com/accounts/USDOTPHMSA/subscriber/new>



Thank You

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