

**TECHNOLOGY BRIEF**  
(Approved for public release)

**Smart Pipeline Network – Cased Pipe for Monitoring and Sensor System**

Contract # DTRT57-12-C-10048

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Introduction:

This PHMSA SBIR focuses on the development of a new multi-channel cased pipe design with internal support structure that will allow access along its entire axial length while adequately securing the carrier pipe to the containment pipe. When combined with the Smart Pipeline Seal Sensor System and Pipe and Repair Sensor System (separate projects), this technology will allow for a comprehensive Smart Pipeline Grid having integrated sensor networks that provide for continuous real-time monitoring of leaks and system health.

Background:

This SBIR program will develop a novel multi-channel cased pipe design that will allow access along its entire longitudinal axis. Such access will be designed to support monitoring, an integrated sensor system, and wireless transmission of data through the channels. While this new cased pipe will be designed to have *wide application* in both hazardous liquid and natural gas pipeline systems, the initial Phase I feasibility evaluation will be focused on developing a cased pipe system for liquid petroleum-based pipeline systems.

Summary of Work to Be Accomplished:

In this program, concepts and designs will be developed for a multi-channel cased pipe design that improves monitoring and lends itself to the incorporation of networked sensing system capable of sensing the pinpoint location of a leak, as well as monitoring structural health. In Phase I, the scope will include the development of a cased multi-channel pipe for use with petroleum-based liquids, with Phase II expanding the scope to include development of a system for use with natural gas.

Once developed, the new multi-channel cased pipe will be useful for pipeline operators to improve the monitoring of the health of the cased pipes..

Deliverables:

- 1 Technical Brief
- 2 Interim Progress Report 1
- 3 Interim Progress Report 2
- 4 Final Report

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