Enhancing Damage Prevention thru the Development of Intrinsically Locatable Pipe

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GTI Overview
Serving the Industry Since 1941

> Independent, not-for-profit established by the natural gas industry

> GTI tackles tough energy challenges turning raw technology into practical solutions

> Downhole to the burner tip including energy conversion technologies

> Working for the industry to help advance the industry
Excavation Damage

Excavation damage is a serious threat to public safety and pipeline integrity and the leading cause of gas distribution incidents.

Natural Gas Distribution Pipelines:

- Over 2,000,000 miles of natural gas distribution pipes in the U.S.
- Because gas distribution pipelines are located in densely populated communities, there is a higher risk of a pipeline failure resulting in a serious incident (injury, life, and damage to property).
Excavation Damage and Un-locatable PE Pipe

Unlocatable plastic pipe is a great risk for natural gas operators. Tracer wire that is broken or missing, never installed, inaccessible, and distorted signals from nearby utility lines are all causes for un-locatable PE pipe.
Intrinsically Locatable Plastic Pipe (ILPP)

- Collaborative effort between OTD, 3M & GTI
- Co-funded by DOT PHMSA and OTD

**The goal of this effort is to develop and test a viable solution for intrinsically locatable PE materials with an integral electronic marking system.**

**Key Success Factors**
- Meets industry’s damage prevention initiatives
- Is consistent with 3M’s Flex Pipe & Super Tag technology
- Brings all stakeholders to the table
Intrinsically Locatable Plastic Pipe (ILPP)

LOCATABLE PLASTIC PIPE

Addresses a critical pain point for gas industry

- Significant improvement to worker & area safety
- Higher life expectancy
- Higher productivity in installation

Robust

- Continuity not required, if a cluster of tags is removed, the other sections continue to function uninterrupted.
- Does not provide a path for lightning
- Corrosion resistant, maintenance free

Simple

- Replaces tracer wire, access points and connections
- Reduced complexity of locate – No transmitter connection needed
- Utility identification by frequency
Locating Platform Integration

*This program builds on the technology currently used for Path Marking, which consists of Material Resonators and leverages the existing EMS ball marker locator technology.*

The primary goal is to apply path marking technology directly to the plastic pipe for better accuracy, ease of use and system integrity.

- **EMS Caution Tape**
- **EMS Rope**
- **EMS Locator**
- **EMS Marker Balls**
  - Telephone
  - Gas
  - CATV
  - Power
  - Water
  - Wastewater
  - GP/Rec Wtr
Intrinsically Locatable PE Pipe (ILPP) – Field Testing
Intrinsically Locatable PE Pipe (ILPP) – Utility Installations
Utility Installations (continued)
Utility Installations (continued)
Key areas to advance technology, development, and adoption.

> Working with pipe manuf. to optimize the attachment of the tags
> Process understanding to ensure manufacturability
> Additional demonstration pilots to critical gas utilities and stakeholders
> Deployment projects nationally to build understanding and adoption to enhance pipeline safety for our communities and utility workers
Research Gaps and Industry Needs

> Next generational programs and investments should be around the ability to hold and write data on pipes and piping components.

> Modular sensing for environmental threats (i.e., methane sensing).

> Effective excavation best practices (i.e., trenchless installation best practices) and outreach programs to disseminate knowledge/practices – consider national excavation practices for all stakeholders.

> Broad awareness and education programs (pilot programs) to promote pipeline safety and new technology adaptation for gas utilities.

> Require all newly installed underground facilities to be locatable
Turning Raw Technology into Practical Solutions

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