

Multi-Technology Validation Testing for Cased Pipe Applications

Description: A collective program validating guided wave inspection and demonstrating other available technologies for live cased pipe inspection

Status: Validation of two popular guided wave technologies has been completed.
Demonstrations of other technologies for cased pipe inspection are in progress.

BENEFITS

This program provides supplemental data which, together with the use of seasoned inspection techniques, helps operators meet ECDA or ICDA requirements under the rules of the Pipeline Hazardous Materials Safety Association (PHMSA). It demonstrates to pipeline integrity engineers the performance of cased pipe inspection technologies before formally establishing the technology providers as approved vendors. The program provides field demonstration opportunities to members not funding the development of specific NYSEARCH cased pipe inspection technologies. This program has also proven beneficial when other opportunities for field testing technologies under development are not budgeted in specific projects.

BACKGROUND

The 2002 DOT/PHMSA Pipeline Integrity ruling mandates an integrity assessment of pipes in all high consequence areas. The ruling does not provide an exception for areas such as cased pipeline crossings where the use of traditional assessment technologies is not possible. Circa 2002, pipeline operators began to evaluate an assortment of test methods with initial focus on guided wave ultrasonic inspection in hope that these and other emerging technologies may provide solutions to specialized testing needs. Because the performance of the technologies varies; it was also envisioned that some may be used in combination to provide pipeline integrity assessments. In 2007, members of NYSEARCH agreed that a program was needed to function as

a validation and demonstration platform for a range of technologies applicable to cased pipe assessment.

TECHNICAL APPROACH

The program began with an evaluation of ultrasonic guided wave technology. Specifically, the proprietary technologies of Guided Ultrasonics Limited (GUL) and Teletest™ were used on four live cased pipe sections in New York City (Figure 1).

The cased sections inspected ranged from 16" OD to 30" OD carrier pipes, with lengths of the carrier sections ranging from 40 feet to 120 feet. The sections tested were scheduled for casing removal; this provided an ideal opportunity to compare predicted anomalies with actual defects. The results of the comparison were fully documented in a Phase I report distributed to project funders.

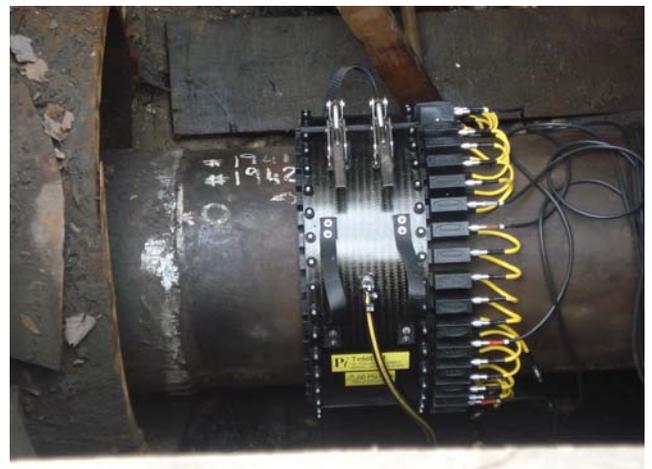


Figure 1: A Popular Guided Wave Technology During Validation Tests in NYC

Phase II of the program functions as a platform to demonstrate various other approaches to cased pipe inspection as they emerge. Technologies demonstrated thus far have been Time Domain Reflectometry of Profile Technologies (Figures 2 and 2a), and the Casing Camera of NYSEARCH/ULC Robotics (Figure 3).

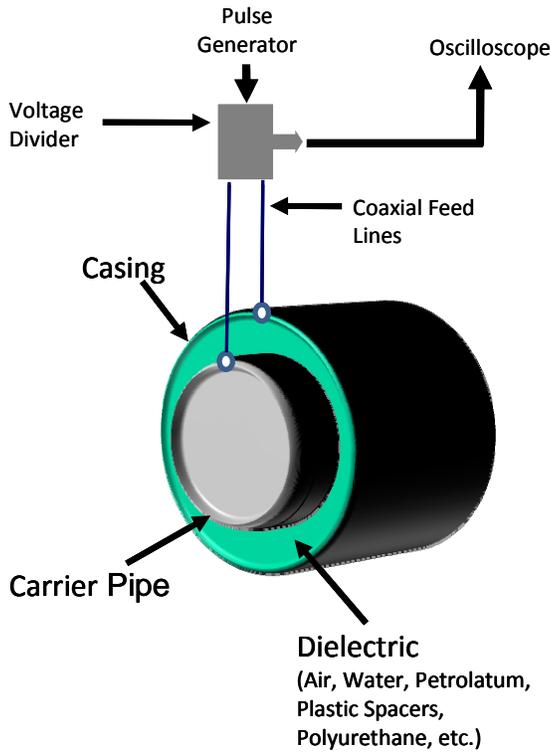


Figure 2: Time Domain Reflectometry Technology



Figure 2a: EMW Injector for Time

PROGRAM STATUS

A report has been issued which illustrated the performance of the guided wave contractors. Since the release of the report, improvements are claimed to have been made to the guided wave technologies' performance on coal tar coated pipe. NYSEARCH is conducting a new study under the project to evaluate these improvements.

Project funders continue to have the ability to request demonstrations of other technologies as new methods for cased pipe testing emerge.



Figure 3: Field Demonstration of the Casing Camera Inspection System

Highlights

- Inspect cased pipe without excavation.
- Gain knowledge of the performance of various cased pipe assessment technologies.

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