Nomination of iPIPE for the IOGCC Chairman's Stewardship Award

Because iPIPE is essentially a company of companies, we choose to submit this nomination under the "Large Company" award category.

Project Description

During a May 2017 meeting with pipeline operators, North Dakota Governor Doug Burgum challenged pipeline operators to apply advanced technologies to eliminate pipeline leaks across the nation, but especially in North Dakota where the North Dakota Industrial Commission is the ultimate regulator of liquids gathering pipelines. In response to the Governor's challenge, a forward-thinking group of pipeline operators chose a proactive path and engaged in a 3½-year program designed to assist in the development of multiple emerging technologies to prevent and detect pipeline leaks by engaging with technology providers to refine not-yet-commercial products.

iPIPE, the Intelligent Pipeline Integrity Program, began in May 2018 as a program to promote the development of new tools for the challenging, small-diameter liquids gathering pipeline space. Because many of the explored technologies have crossover to nongathering pipelines, the program has grown in membership and scope of work in just its first year. iPIPE is a consortium program, currently actively directed by nine members and one cost-match partner, including Andeavor, DCP Midstream, Enbridge, Equinor, Goodnight Midstream, Hess Corp., Oasis Midstream Partners, ONEOK, Whiting Petroleum, and the North Dakota Industrial Commission (cost-match partner).

Purpose of the Project

iPIPE is truly an industry-led effort to accomplish the following:

- Foster innovation of new tools for pipeline leak prevention and pipeline leak detection
    - Offer cash investment in promising emerging technologies
    - Offer operating pipelines upon which to develop and demonstrate these technologies
    - Offer valuable feedback to technology providers that will assist in maturing these technologies to a commercially ready state
- Put new tools into the toolbelts of pipeline operators
- Demonstrate that pipeline operators are applying every available tool, and some not-yet-available tools, to achieve safe pipeline operations

The Process

iPIPE is primarily a technology development program. Technology selection is based on a model similar to one used by a popular television show in the United States called "Shark Tank." Each year, providers of promising emerging technologies are selectively recruited to propose projects and make 40-minute presentations to a panel of experts comprised of one representative from each member company. This program selects technologies in which it wishes to invest, commits pipeline assets to these development efforts, and funds the projects.

To date, iPIPE has evaluated 60+ potential emerging technologies and brought 16 forth to be presented at two separate technology selection events. From these events, iPIPE has selected six projects for contracting:

- 2018
    - Satelytics – pipeline leak and encroachment alerts derived from machine learning-based processing of satellite data
    - Ingu Solutions – golf ball-sized inline inspection and leak detection sensors for non-piggable pipelines
- 2019
    - Satelytics, Phase II – additional development of brine leak detection algorithms and mobile platform development
    - Direct-C – nanocomposite sensors for leak detection
    - Insitu (a Boeing Company) – beyond-visual-line-of-sight drone operations for leak detection
    - Southwest Research Institute – commercial-off-the-shelf hardware combined with machine learning to instantly identify and classify hydrocarbon leaks

Contributions to a Positive Impact on the Environment

Early results of 2018 efforts have already resulted in development of previously immature products to a maturity sufficient for commercial deployment with two member companies. Thus, the mission of iPIPE to create new tools and put them into the toolbelt of industry has already proven successful. It is anticipated that this cycle will be repeated in coming years. iPIPE is already improving the safety of pipeline operations.

iPIPE has not only served as a technology development program but has also become an effective information exchange program. The program has become a forum for the exchange of lessons learned on challenges facing all members of the pipeline operator community. Participating members have remarked that they have no other forum in which trust and common, focused mission facilitate such an open exchange on critical operational issues of a noncompetitive nature. This results in improved pipeline operations nationwide and dissemination of best practices in a manner that does not jeopardize competitive advantage.

Accomplishments to Date

1. Two emerging technologies have been matured to a commercially viable state. Select iPIPE members are currently contracting with these technology providers for new commercial services as a result of the program.
2. Early success has resulted in three new program members since its founding. Several more potential members are in discussions with the program.
3. One of the 2018 projects discovered early-phase leaks before existing systems detected them.
4. Increased awareness of the program has resulted in a deluge of new emerging technologies coming forth. The program, itself, is creating a market for these technologies, and this, in turn, is driving an explosion of new technologies.
5. The unique nature of the program has resulted in 45+ media mentions, which is advancing the goal of communicating advances made in pipeline safety.