

## **DIRECTOR'S COMMENTS**

### **G—046-01**

Intelligent Pipeline Integrity Program (iPIPE)

Submitted by: Hess Corp., Statoil ASA, and Oasis Midstream Partners

Principal Investigator: Brent Lohnes, Linda Pitman, Tone Macia

Participants: Hess, Statoil, Oasis, ONEOK, Goodnight Midstream

Request for: \$1,600,000

Total Project Costs \$3,714,000

Duration: 44 months

#### **Description of the Project:**

A core group of pipeline operators proposes an R&D program focused on advancement of emerging technology to prevent and detect pipeline leaks. The proposed work will lead to development and application of new tools that will assist industry's ongoing efforts to continuously improve pipeline integrity, thus reducing leaks and spills. and Madison conventional oil fields in North Dakota.

Multiple field demonstrations of emerging technologies on working pipelines will simultaneously assist technology providers in refining designs, pave a path toward full commercialization in the North Dakota market, prepare pipeline operators for adoption of the new tools, and effectively decrease the number and volume of spills experienced in North Dakota. With demonstrated success, additional consortium members (pipeline operators) will join the effort, thus enabling field testing of more technologies and further proliferating new technology among all pipeline operators.

The goal of this intelligent Pipeline Integrity Program (iPIPE) is to develop and demonstrate cutting-edge technology that can prevent and/or detect gathering pipeline leaks. This goal will be supported by accomplishment of the following objectives:

- Select the most promising emerging (near-commercial) technologies for demonstration
- Demonstrate multiple technologies on working gathering pipelines
- Document results of technology demonstrations
- Facilitate adoption of technologies into North Dakota pipeline operations

#### **Technical Reviewers' Comments**

##### **Reviewer G-46-01A**

There are numerous projects that address pipeline spill detection. The value of this project is that it addresses both prevention and detection of pipeline spills. It forms a consortium of oil pipeline companies with plans to include additional partners. The EERC will manage the project and coordinate reports and communications. By hosting the data the EERC will provide sustainability to the project. It allows companies to participate at various levels. This project will investigate and implement new technologies for prevention and detection. The technologies will be identified by five members of the executive committee. The examples provided: - utilized drone collection machine learning algorithms and novel radiological sensors - use of drones to monitor pipelines in areas that are hard to access - use of neutrally buoyant sensor and acoustic measurements for in-line inspection- - hardware and software to detect small leaks in HCA areas with limited power and communications - artificial intelligence processing from satellites, commercial aircraft, drones and fixed sensors The examples are predominantly focused on detection. A challenge for industry is preventing and predicting pipeline failures. The project refers to pipeline integrity and prevention as per the below quotes: "Ultimately, it is envisioned that development of new tools specifically designed for small-diameter, highly segmented, networked gathering pipelines will result in improved pipeline integrity." - Page 10 "Holistically, the project will be successful if it inspires enthusiasm for new technology application to the challenge of early identification of pipeline issues before they become leaks and if it demonstrates North Dakota leadership in such endeavors." -

Page 11 Spill detection and pipeline monitoring are important. Spill prevention and predictable analysis with health scoring should also be considered.

**Recommendation: Fund**

**Reviewer G-46-01B**

“I would highly recommend the OGRC consider funding this project. The application objectives have the potential to reshape pipeline operations, regulations, and public perception. I am not aware of any similar pipeline integrity research with such broad industry support. As noted above, an engaged industry is key to making this a meaningful endeavor for all stakeholders. Given the high dollar amount, one concern is the lack of influence the OGRC/NDIC will have on the consortium activities and use of matching funds. It will be important for open and frequent communication between the OGRC/NDIC if funds are granted

**Recommendation: Consider Funding**

**Reviewer G-46-01C**

The proposal meets the NDIC-OGRC goals for advancing new technologies not currently in use. Some of the technologies proposed may be in use in other industries, but the applicants are proposing to utilize some of these technologies for the first time in oil and gas pipelines. This proposal will demonstrate and evaluate emerging technologies. The consortium is also willing to share the results of their investigations with non-members. This will benefit the industry as a whole and ultimately benefit North Dakota. Specifically, the NDIC-OGRC goal that relates directly to this proposal is to encourage, and promote the use of new technologies and ideas that will have a positive economic and environmental impact on oil and gas exploration, development, and production in North Dakota.

**Recommendation: Fund**

**Director’s Recommendation:**

- **To further define the term and parameters of confidential reporting.**
- **To provide, at a minimum, annual presentations to the Oil and Gas Research Council and possibly the Industrial Commission.**
- **To fund in the amount of \$1,600,000 with no additional contingency funding. Additional funding could be requested through the regular process.**