



Energy & Environmental Research Center

15 North 23rd Street, Stop 9018 • Grand Forks, ND 58202-9018 • P. 701.777.5000 • F. 701.777.5181
www.undeerc.org

April 29, 2021

Ms. Karlene Fine
Executive Director
North Dakota Industrial Commission
State Capitol, 14th Floor
600 East Boulevard Avenue, Department 405
Bismarck, ND 58505-0840

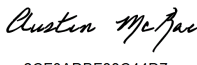
Dear Ms. Fine:

Subject: Quarterly Progress Report Entitled "iPIPE – Intelligent Pipeline Integrity Program,"
Contract No. G-046-88; UND Project – Fund 43500-UND0022445
EERC Funds 23121 and 23211

Attached is the quarterly progress on the subject project for the period of January 1 –
March 31, 2021.

If you have any questions, please contact me by phone at (701) 777-5402 or by e-mail at
amcrae@undeerc.org.

Sincerely,

DocuSigned by:

2CF0ADBFB8C44D7...
T. Austin McRae
Research Engineer
Integrated Petroleum Systems

TAM/rlo

Attachment



iPIPE – INTELLIGENT PIPELINE INTEGRITY PROGRAM

Quarterly Progress Report

(for the period of January 1, 2021 – March 31, 2021)

Prepared for:

Karlene Fine

North Dakota Industrial Commission
State Capitol, 14th Floor
600 East Boulevard Avenue, Department 405
Bismarck, ND 58505-0840

Contract No. G-046-88

Prepared by:

T. Austin McRae

Energy & Environmental Research Center
University of North Dakota
15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018

April 2021

EERC DISCLAIMER

LEGAL NOTICE This research report was prepared by the Energy & Environmental Research Center (EERC), an agency of the University of North Dakota, as an account of work sponsored by the North Dakota Industrial Commission (NDIC). Because of the research nature of the work performed, neither the EERC nor any of its employees makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement or recommendation by the EERC.

NDIC DISCLAIMER

This report was prepared by the EERC pursuant to an agreement partially funded by the Industrial Commission of North Dakota, and neither the EERC nor any of its subcontractors nor the North Dakota Industrial Commission nor any person acting on behalf of either:

- Makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or
- Assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method, or process disclosed in this report.

Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the North Dakota Industrial Commission. The views and opinions of authors expressed herein do not necessarily state or reflect those of the North Dakota Industrial Commission.

TABLE OF CONTENTS

LIST OF FIGURES i

LIST OF TABLES i

EXECUTIVE SUMMARY ii

BACKGROUND 1

ACCOMPLISHMENTS DURING REPORTING PERIOD..... 2

MEMBERSHIP AND FINANCIAL INFORMATION 3

FUTURE ACTIVITIES 5

PARTIAL LISTING OF iPIPE MEDIA MENTIONS.....Appendix A

LIST OF FIGURES

1 Project progress. 5

LIST OF TABLES

1 iPIPE Original Budget..... 4

2 iPIPE Updated Budget 4

3 iPIPE Expected Budget and Expenses to Date..... 4

iPIPE – INTELLIGENT PIPELINE INTEGRITY PROGRAM

Quarterly Progress Report January 1, 2021 – March 31, 2021

EXECUTIVE SUMMARY

This document is a quarterly report on the North Dakota Industrial Commission (NDIC)-funded Intelligent Pipeline Integrity Program (iPIPE), managed by the Energy & Environmental Research Center (EERC). The goal of iPIPE is to develop and demonstrate cutting-edge technology that can prevent and/or detect gathering pipeline leaks. This goal is supported by accomplishment of the following objectives:

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

During this reporting period, the program achieved the following highlights:

- On January 11, February 8, and March 8, 2021, iPIPE held monthly member meetings to update all members on program status.
- On February 9, Satelytics held a virtual Phase III wrap-up with the members. Contracting is ongoing for the Satelytics Phase III, land changes and rip rap movement monitoring, and add-on work. This add-on is denoted as Satelytics Phase IV.
- Direct-C submitted its final report and held a wrap-up meeting with the iPIPE members on January 12, 2021.
- On January 14 and March 30, 2021, iPIPE members met virtually with Orbital Sidekick (OSK) to get an update on the flight paths. This allowed for direct communication and discussion between project specialists and interested members. The new launch date of OSK's sensor package is June 15, 2021.

Darren Schmidt joined the EERC in February 2021 and is comanaging the iPIPE program. There have been no resulting delays in project execution nor are any anticipated. The direction and goals of the program remain the same. The EERC remains dedicated to managing iPIPE as it continues providing value to stakeholders.

The EERC holds an unwavering commitment to the health and well-being of its employees, partners and clients, and the global community. As such, precautionary measures have been implemented in response to COVID-19. Staff continue to carry out project-related activities remotely, and personnel supporting essential on-site laboratory and testing

activities are proceeding under firm safety guidelines. Travel has been minimized, and protective measures are being undertaken for those who are required to travel. At this time, work conducted by EERC employees is anticipated to progress with minimal disruption. Challenges posed by economic variability will be met with open discussion between the EERC and project partners to identify solutions. The EERC is monitoring developments across the nation and abroad to minimize risks, achieve project goals, and ensure the success of our partners and clients. In the event any potential impacts to reporting, scope of work, schedule or cost are identified, they will be discussed and addressed in cooperation with the project partners.

iPIPE – INTELLIGENT PIPELINE INTEGRITY PROGRAM

QUARTERLY PROGRESS REPORT

(January 1, 2021 – March 31, 2021)

BACKGROUND

During a May 2017 meeting with North Dakota pipeline operators, Governor Doug Burgum challenged industry to apply advanced technologies to eliminate pipeline leaks in North Dakota. In response to the Governor's challenge, industry chose a proactive path and engaged in a 3½-year program to advance development and application of emerging technologies that will prevent and detect pipeline leaks. The North Dakota Industrial Commission (NDIC)-funded Intelligent Pipeline Integrity Program (iPIPE) intends 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 specifically for buried gathering pipelines in North Dakota and then demonstrate the technology's application on working gathering pipelines.

The goal of this project is to develop and demonstrate cutting-edge technology that can prevent and/or detect gathering pipeline leaks. This goal is supported by accomplishment of the following objectives:

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

Multiple 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 improve the performance and economics of gathering pipeline operations 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.

Members of the industry-led consortium include Dakota Access Pipeline, DCP Midstream, Enbridge, Equinor, Goodnight Midstream, Hess Corporation, Marathon Petroleum, ONEOK, and TC Energy. The Energy & Environmental Research Center (EERC) has contracted with NDIC and the industrial partners to manage the program. As such, the EERC submits a quarterly report and an annual report to provide updates to NDIC on the progress of the iPIPE consortium.

The following quarterly report summarizes program activities from January 1 through March 31, 2021.

ACCOMPLISHMENTS DURING REPORTING PERIOD

With iPIPE in its final year of the original contract with NDIC and the continued logistical constraints due to the global COVID-19 pandemic, iPIPE has continued to follow the conscious and purposeful decision made by the Executive Committee in 2020 to slow program promotion. Scheduled technology development activities were executed as scheduled, but aggressive outreach and new member recruitment efforts remained slowed for much of the quarter. This began to change back toward a more active effort at the end of the quarter as iPIPE looks toward continuing to build upon program success beyond 2021.

- Program-level activities
 - Program management
 - ♦ Darren Schmidt joined the EERC and iPIPE as program comanager.
 - ♦ The EERC surveyed iPIPE industry members to gauge satisfaction to date and where interest lay for iPIPE beyond 2021.
 - Program meetings
 - ♦ On January 11, February 8, and March 8, 2021, iPIPE held monthly member meetings to update all members on program status. The goal of these meetings is to keep members apprised on a variety of program topics, including recruitment, finances, strategic direction, and technology development project status.
 - ♦ Direct-C submitted its final report and held a wrap-up meeting with the iPIPE members on January 12, 2021.
 - ♦ On January 14 and March 30, 2021, iPIPE members met virtually with OSK to get an update on the flight paths. This allowed for direct communication and discussion between project specialists and interested members.
 - ♦ On February 9, Sateytics held a virtual Phase III wrap-up with the members.
 - Member recruitment
 - ♦ The program continued discussion with a number of companies regarding membership in the consortium. Some of these companies have approached the program regarding membership requirements and benefits, while others have been previously approached by the program and/or existing consortium members.
 - ♦ A meeting was held January 7 with representatives from NuStar Energy L.P. regarding membership. NuStar has a strong interest in joining the next iteration of iPIPE.
 - ♦ Epic Midstream expressed interested in joining as a member. It originally reached out as a potential technology provider through its subsidiary Blackstar Fiber.
 - ♦ During this reporting period, iPIPE revived communication with Phillips 66 regarding interest in joining iPIPE.
 - Program media mentions
 - ♦ Since its inception, iPIPE has been highlighted in more than 80 public multimedia and printed articles. A partial listing of known media mentions is provided in Appendix A.
- Technology selection
 - The EERC continues to engage with companies from around the globe offering emerging (not yet commercial) technologies as they discover or are directed toward iPIPE. With time and resources put toward recruitment and defining program direction beyond 2021 as well

as having no Technology Selection Event scheduled for 2021, technology providers are not currently being actively sought for 2022.

- Demonstration execution – Satelytics Phase III
 - On February 9, Satelytics held a virtual Phase III wrap-up meeting with the members.
 - The draft EERC independent evaluation report was completed and is going through internal review.
- Demonstration execution – Satelytics Phase IV
 - iPIPE and Satelytics reached an agreement on scope and budget for the work focused on land movement and erosion of rip rap.
- Demonstration execution – Orbital Sidekick (OSK)
 - The EERC has completed contracting with OSK.
 - The new launch date of OSK’s sensor package was set for June 15, 2021.
 - Preliminary work has been conducted to facilitate the needed transfer of data between iPIPE members and OSK for the upcoming project.
- Demonstration execution – Direct-C
 - Direct-C established an agreement with participating members to remove Direct-C equipment in the spring of 2021.
 - The final report was received in January 2021.
 - The draft EERC independent evaluation report was completed and is going through internal review.
- Demonstration execution – Pipeline-Risk
 - iPIPE and Pipeline-Risk reached an agreement on scope, budget, and contractual obligations for the work selected in October 2020.
- Demonstration execution – Toku Systems, Inc.
 - iPIPE and Toku reached an agreement on scope, budget, and contractual obligations for the work selected in October 2020.

MEMBERSHIP AND FINANCIAL INFORMATION

The original budget proposed to the NDIC Oil and Gas Research Program (OGRP) totaled \$3,714,000, as shown in Table 1. To demonstrate additional resources provided by new members, additional financial commitment from NDIC, and significantly increased in-kind cost share provided by technology providers and program members, an updated budget is presented in Table 2. Table 2 demonstrates the rapid growth of this program. Table 3 presents greater detail on expected budget and actual expenses incurred by the program to date.

Table 1. iPIPE Original Budget

Sponsors	2018	2019	2020	2021	Total
NDIC – Cash	\$403,320	\$405,226	\$393,454	\$398,000	\$1,600,000
Industry – Cash	\$264,000	\$450,000	\$450,000	\$450,000	\$1,614,000
Industry and Technology Provider – In-Kind	\$125,000	\$125,000	\$125,000	\$125,000	\$500,000
Total	\$792,320	\$980,226	\$968,454	\$973,000	\$3,714,000

Table 2. iPIPE Updated Budget

Sponsors	2018	2019	2020	2021	Total
NDIC – Cash	\$565,909*	\$735,730*	\$438,772*	\$859,589	\$2,600,000
Industry – Cash	\$352,000*	\$700,000*	\$850,000*	\$675,000	\$2,577,000
Industry and Technology Provider – In-Kind	\$525,878*	\$1,074,077*	\$949,051	\$500,000	\$3,049,006
Total	\$1,443,787	\$2,509,807	\$2,237,823	\$2,034,589	\$8,226,006

* Reflects actuals for these years.

Table 3. iPIPE Expected Budget and Expenses to Date

Sponsors	Expected Budget	Actual Expenses as of 3/31/21	Balance Remaining of Expected Budget
NDIC Share – Cash	\$2,600,000	\$1,923,939	\$676,061
Industry Share – Cash	\$2,577,000	\$1,874,046	\$702,954
Industry – In-Kind	\$375,000	<i>DCP</i> \$46,800 <i>Enbridge</i> \$106,137 <i>Equinor</i> \$153,230 <i>Goodnight</i> \$24,320 <i>Hess</i> \$183,657 <i>MPLx</i> \$17,936 <i>Oasis</i> \$40,069 <i>ONEOK</i> \$5,000 <i>TransCanada</i> \$0 <i>Whiting</i> <u>\$9,042</u> <i>Dakota Access</i> <u>\$0</u> TOTAL \$586,191	\$0
Technology Providers – In-Kind	\$3,076,597*	<i>Satellytics</i> \$1,713,450 <i>Direct-C</i> \$185,867 <i>Ingu</i> \$88,266 TOTAL \$1,987,583	\$1,089,914
Total	\$8,628,597	\$6,371,759	\$2,468,029**

* Includes budget estimates from proposals for 2020 technology development projects and an estimate of anticipated 2021 in-kind from as-yet-unknown technology providers.

** This amount does not include industry in-kind contributions provided in excess of the expected budget.

All invoices for CY2021 membership dues have been paid from all nine members.

The program continues to solicit additional members to contribute to this program. As additional members join the program, Tables 2 and 3 will be updated to show the additional financial resources brought to the program.

Project progress, as represented by the project schedule presented in the original NDIC OGRP proposal, is shown in Figure 1.

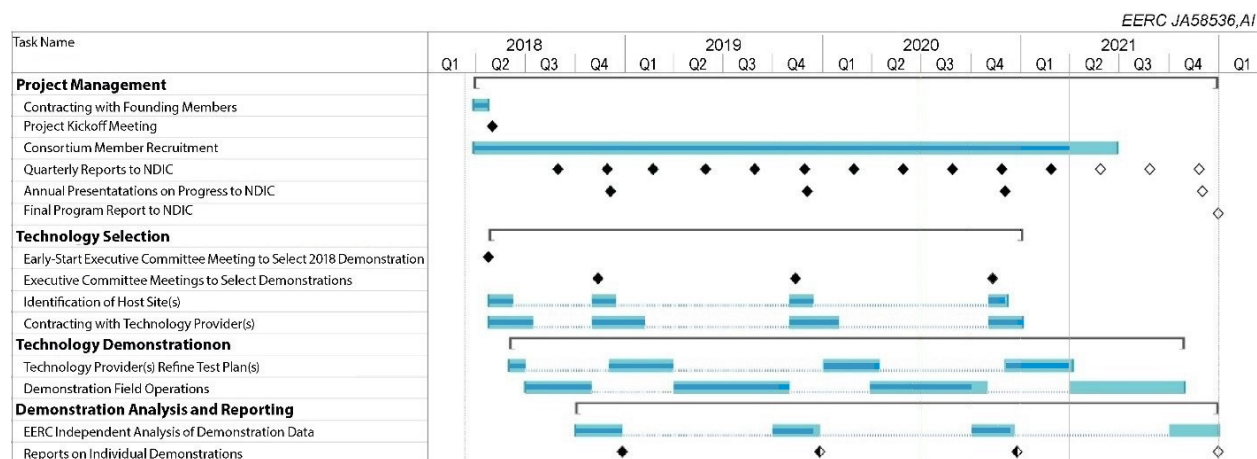


Figure 1. Project progress.

FUTURE ACTIVITIES

The planned activities for the next quarter are detailed below:

- Program-level activities
 - Josh Stanislawski is going to give an overview of iPIPE at the Williston Basin Petroleum Council meeting in Bismarck on May 11–13, 2021. Austin McRae will staff a booth for iPIPE donated by Hess.
 - The EERC will work with consortium members and stakeholders to continue iPIPE on its successful path beyond the original 2018–2021 timeline.
 - iPIPE will continue ongoing and start new discussions with potential new program members during the upcoming reporting period.
- Technology selection
 - The EERC will remain engaged with and on the lookout for providers of relevant, promising, emerging technology with the anticipation of iPIPE continuing beyond its original 3½-year timeline.
 - The EERC will finalize contracts with technology providers selected at the Technology Selection Event held in October 2020 by the outset of the next quarter.

- Demonstration execution – Satelytics Phase III
 - The EERC will finalize and distribute its independent analysis of the Satelytics Phase III project in second-quarter 2021.
- Demonstration execution – Satelytics Phase IV
 - The EERC will finalize the contract at the outset of the next quarter and initiate project activities, including kick-off meetings and technology deployment.
- Demonstration execution – OSK
 - The program will continue engagement on data exchange between OSK and iPIPE members to facilitate early development tasks in the scope of work.
 - OSK will conduct multiple manned aerial overflights for both the Permian and North Dakota areas of interest to further prepare for satellite monitoring and develop data pathways.
 - Pending a successful launch in the second quarter of 2021, the program will begin monitoring efforts with OSK.
- Demonstration execution – Direct-C
 - The EERC will finalize and distribute its independent analysis of the Direct-C project.
- Demonstration execution – Pipeline-Risk
 - The EERC will finalize the contract at the outset of the next quarter and initiate project activities, including kick-off meetings, asset selection, and technology deployment.
- Demonstration execution – Toku Systems, Inc.
 - The EERC will finalize the contract at the outset of the next quarter and initiate project activities, including kick-off meetings, site selection, and technology deployment.



APPENDIX A

PARTIAL LISTING OF iPIPE MEDIA MENTIONS

Partial List of Articles Highlighting iPIPE:

Updated April 19, 2021

Title	Date	URL
Industry Responds to Governor's Initiative to Improve Pipeline Technology; Program Funding Approved by North Dakota Industrial Commission		https://www.ndoil.org/industry-responds-to-governors-initiative-to-improve-pipeline-technology-program-funding-approved-by-north-dakota-industrial-commission/
Satelytics Selected to Participate in the Intelligent Pipeline Integrity Program (iPIPE)	5/18/2018	https://mailchi.mp/satelytics/satelytics-chosen-to-participate-in-iPIPE-project?e=922473135e
ND Implements Intelligent Pipeline Project	5/22/2018	http://northamericanshalemagazine.com/articles/2380/nd-implements-intelligent-pipeline-project
North Dakota Governor Doug Burgum Provides Remarks This Morning at the Williston Basin Petroleum Conference in Bismarck, Thanks Hess and the Industry for Innovation Through iPIPE Program.	5/23/2018	https://twitter.com/HessCorporation/statuses/999315208261853185
North Dakota Pipeline Leak Detection Initiative Announced	5/25/2018	https://extension.psu.edu/north-dakota-pipeline-leak-detection-initiative-announced
New Consortium Sets Goal of Improving Pipelines	5/26/2018	https://www.mrt.com/business/oil/article/New-consortium-sets-goal-of-improving-pipelines-12941971.php
Industry Responds to Governor's Initiative to Improve Pipeline Technology; Program Funding Approved by North Dakota Industrial Commission	5/26/2018	https://www.oilandgasonline.com/doc/industry-governors-initiative-pipeline-program-north-dakota-industrial-commission-0001
New Consortium Sets Goal of Improving Pipelines	5/27/2018	https://www.timesunion.com/business/oil/article/New-consortium-sets-goal-of-improving-pipelines-12941971.php
Principal Engineer Jay Almlie Discusses the iPIPE Program on Energy Matters Radio	5/31/2018	https://www.youtube.com/watch?v=ZQuwsK0z2aM
North Dakota Selects Ingu Solutions for Demonstration of Cutting-Edge Leak Detection and Prevention Technology for Oil and Gas Pipelines	5/31/2018	https://ingu.co/iPIPE/
Leak Detection Project Kicks Off This Summer	6/1/2018	https://myemail.constantcontact.com/Here-are-the-week-s-top-North-Dakota-energy-stories-.html?soid=1102657032033&aid=NpwT2Ynl17c
How a Canadian Solution to Detecting Pipeline Leaks Is Being Used in North Dakota	6/5/2018	https://www.bnnbloomberg.ca/video/how-a-canadian-solution-to-detecting-pipeline-leaks-is-being-used-in-north-dakota~1410402
iPIPE Program Helps Solve Pipeline Leaks in ND	6/6/2018	http://www.kfyrvtv.com/content/news/iPIPE-Program-helps-solve-pipeline-leaks-in-ND--484747291.html
Startup Uses Small Sensors to Check North Dakota Oil Pipes	6/10/2018	https://www.alvareviewcourier.com/story/2018/06/10/interesting-items/startup-uses-small-sensors-to-check-north-dakota-oil-pipes/37406.html
Sensors to Monitor Oil, Brine Gathering Lines Coming to ND	6/12/2018	https://www.westfargopioneer.com/news/science-and-nature/4459638-sensors-monitor-oil-brine-gathering-lines-coming-nd
Pipe Sensors to Monitor Gathering Lines	6/12/2018	https://bismarcktribune.com/business/local/pipe-sensors-to-monitor-gathering-lines/article_cd64586c-1d52-52df-83e6-b661d3b95f0a.html
Startup Uses Small Sensors to Check North Dakota Oil Pipes	6/21/2018	https://www.apnews.com/9d65538034a24711a4a84d4e2bb38efe
Startup Uses Small Sensors to Check North Dakota Oil Pipes	6/21/2018	https://www.usnews.com/news/best-states/north-dakota/articles/2018-06-21/startup-uses-small-sensors-to-check-north-dakota-oil-pipes
Startup Uses Small Sensors to Check North Dakota Oil Pipes	6/21/2018	https://m.washingtontimes.com/news/2018/jun/21/startup-uses-small-sensors-to-check-north-dakota-o/
iPIPE: Taking a Bite Out of Leaks	6/25/2018	http://blogs.und.edu/und-today/2018/06/taking-a-bite-out-of-leaks/
iPIPE: Taking a Bite Out of Leaks	6/29/2018	http://www.northdakotaagconnection.com/story-state.php?Id=688&yr=2018
Industry Demonstrates Commitment to Stopping Pipeline Leaks	7/17/2018	http://northamericanshalemagazine.com/articles/2444/industry-demonstrates-commitment-to-stopping-pipeline-leaks

Title	Date	URL
Testing of New Pipeline Inspection Device Begins in Bakken	7/18/2018	https://www.spe.org/en/ogf/ogf-article-detail/?art=4404
Testing of New Pipeline Inspection Device Begins in Bakken (Link Not Active)	7/18/2018	https://www.spe.org/en/print-article/?art=4404
6 Companies Collaborating on Pipeline Leak Detection	8/15/2018	https://www.willistonherald.com/news/companies-collaborating-on-pipeline-leak-detection/article_bbce3194-a098-11e8-8bac-1b765123019e.html
More Skin in the Game: New Technology to Find, Fix Leaks	8/20/2018	https://pgjonline.com/magazine/2018/august-2018-vol-245-no-8/features/more-skin-in-the-game-new-technology-to-find-fix-leaks
Burgum Highlights Oil Industry's Progress, Challenges at ND Petroleum Council's Annual Meeting in Fargo	9/25/2018	https://www.governor.nd.gov/news/burgum-highlights-oil-industry%E2%80%99s-progress-challenges-nd-petroleum-council%E2%80%99s-annual-meeting
Burgum Highlights Oil Industry's Progress, Challenges at ND Petroleum Council's Annual Meeting in Fargo	9/25/2018	https://votesmart.org/public-statement/1287849/burgum-highlights-oil-industrys-progress-challenges-at-nd-petroleum-councils-annual-meeting-in-fargo#.XDz9tVxKjE
The Digital Oilfield: How Digital Technologies Are Changing the Oil Industry in ND and Nationwide	9/30/2018	http://www.prairiebusinessmagazine.com/business/energy-and-mining/4506605-digital-oilfield-how-digital-technologies-are-changing-oil
Progress for Partners Key to Energy & Environmental Research Center		https://www.ndliving.com/content/progress-partners-key-energy-environmental-research-center
API Banquet Salutes Stars of Bakken Oil and Gas	11/19/2018	https://www.willistonherald.com/news/api-banquet-salutes-stars-of-bakken-oil-and-gas/article_a006f78e-eb98-11e8-a353-abe9fc1170fc.html
Energy Matters: iPIPE Receives Industry Innovation Award	12/3/2018	https://www.youtube.com/watch?v=L2lEr2Xu4aw
Energy Matters with iPIPE	12/12/2018	https://www.satelytics.com/blog/oil-gas-solutions/2018-energy-matters-with-iPIPE/
Developing Technology to Prevent Pipeline Leaks	1/3/2019	https://mydigitalpublication.com/publication/?i=547462&p=&pn=#{%22issue_id%22:547462,%22page%22:34}
Innovative Pipeline Consortium Marks New Highlights	1/8/2019	http://undeerc.blogspot.com/2018/12/innovative-pipeline-consortium-marks.html
2018 State of the State Address	1/23/2019	https://www.governor.nd.gov/events/2018-state-state-address
North Dakota Eyes Expanded Use of Drones for Oil and Natural Gas Operations	2/8/2019	https://www.naturalgasintel.com/articles/117347-north-dakota-eyes-expanded-use-of-drones-for-oil-and-natural-gas-operations
The Crude Life Interview: Joe Dancy, Energy Expert & Educator	5/18/2019	http://www.thecrudelife.com/podcast/the-crude-life-interview-joe-dancy-energy-expert-educator/
The Big Data Revolution: Detecting Pipeline Leaks, Encroachments and More Using Satellites	6/15/2019	https://www.pipeline-journal.net/journal/pipeline-technology-journal-32019
Energy Matters Radio: iPIPE	9/6/19	https://youtu.be/4tTA_WEsMI8
iPIPE Program Assisting in Detection of Pipeline Leaks in the Pipeline & Gas Journal September Edition (Page 50-52)	9/10/2019	https://www.nxtbook.com/nxtbooks/gulfpub/pgj_201909/
iPIPE Receives IOGCC Chairman's Stewardship Award for Environmental Partnership	9/10/2019	https://www.am1100theflag.com/news/10755-iPIPE-receives-iogcc-chairman%E2%80%99s-stewardship-award-environmental-partnership
iPIPE Receives Chairman's Stewardship Award	9/10/2019	http://undeerc.blogspot.com/2019/09/iPIPE-receives-chairmans-stewardship.html
iPIPE Receives Chairman's Stewardship Award	9/13/2019	https://www.willistonherald.com/news/business/iPIPE-receives-stewardship-award/article_e7c45bf0-d636-11e9-b069-739139b5d75b.html
API Award Winner Shares What Recognition Has Meant	10/14/2019	https://www.willistonherald.com/news/oil_and_energy/api-award-winner-shares-what-recognition-has-meant/article_ec10b56a-eecc-11e9-a94a-0f17a0778d95.html
AI Raising Drone Game in Oil, Gas but FAA Challenges Remain	10/15/19	https://www.naturalgasintel.com/articles/119892-ai-raising-drone-game-in-oil-gas-but-faa-challenges-remain
Almlie and Helms: Where Innovation Leads, Regulation Follows	10/18/19	https://trib.com/opinion/columns/almlie-and-helms-where-innovation-leads-regulation-follows/article_ee198ef8-05aa-599f-9df9-67bfd8492bc0.html
Shared on Drilling Info's Social Media Site: Almlie, Helms: Innovation Leads, Regs Follow	10/20/19	https://www.grandforksherald.com/opinion/columns/4728897-Almlie-Helms-Innovation-leads-regs-follow
Almlie, Helms: Innovation Leads, Regs Follow	10/20/19	https://www.grandforksherald.com/opinion/columns/4728897-Almlie-Helms-Innovation-leads-regs-follow

Title	Date	URL
Where Innovation Leads, Regulation Follows	10/21/19	https://bismarcktribune.com/opinion/letters/where-innovation-leads-regulation-follows/article_6018311c-49fd-5744-b815-2a485b881e59.html
Bakken Backers E-Mail: Almlie, Helms: Innovation Leads, Regs Follow	10/25/19	https://www.grandforksherald.com/opinion/columns/4728897-Almlie-Helms-Innovation-leads-regs-follow
Cleanup Continues after Keystone Pipeline Oil Spill near Edinburg, ND	11/4/19	https://www.grandforksherald.com/news/accidents/4754456-Nearly-half-of-the-oil-has-been-recovered-in-Keystone-Pipeline-incident-says-TC-Energy
ND Keystone Spill about Half Recovered, Official Says	11/4/19	https://www.bemidjipioneer.com/business/energy-and-mining/4755069-ND-Keystone-spill-about-half-recovered-official-says
DAPL 2.0 Pipeline – Doug Burgum, North Dakota Governor (governor mentioning iPIPE on “what’s on your mind”)	11/7/2019	https://www.am1100theflag.com/news/12229-11719-dapl-20-pipeline-doug-burgum-north-dakota-governor
Previewing the PSC’s DAPL 2.0 Expansion Hearing	11/11/2019	https://www.am1100theflag.com/news/12320-previewing-psc%E2%80%99s-dapl-20-expansion-hearing
Oasis Petroleum’s Jared Iverson Talks about the Next 20 years in the Bakken	12/4/2019	https://www.willistonherald.com/news/oil_and_energy/oasis-petroleum-s-jared-iverson-talks-about-the-next-years/article_2368a346-16f1-11ea-81ad-d3443353be3e.html
DCP Midstream LinkedIn Mention	~Sept 2019	https://www.linkedin.com/posts/dcp-midstream_dcp-wearcdcp-transformation-activity-6577940399116038144-orkP/
iPIPE Looks to Enhance Pipeline Safety	12/17/2019	https://www.kfyrtv.com/content/news/iPipe-looks-to-enhance-pipeline-safety-566298741.html
Burgum, Sanford Reflect on Significant Progress Made During Administration’s Third Year	12/19/2019	https://www.thedickinsonpress.com/incoming/4830773-Burgum-Sanford-reflect-on-significant-progress-made-during-administration%E2%80%99s-third-year-Site-and-date-announced-for-2020-State-of-the-State-address
Burgum, Sanford Reflect on Significant Progress Made During Administration’s Third Year	12/19/2019	https://www.nd.gov/news/burgum-sanford-reflect-significant-progress-made-during-administrations-third-year
Companies Aim to Prevent, Detect Pipeline Leaks with New Technologies	1/5/2020	https://bismarcktribune.com/bakken/companies-aim-to-prevent-detect-pipeline-leaks-with-new-technologies/article_0cac7e82-c49a-5c86-9267-ad8beb5b9799.html
Podcast: iPIPE with Jay Almlie — Real Technology, Real Pipelines, Real Progress	1/7/2020	https://pipelinerspodcast.com/episode-109-iPIPE-jay-almalie/
iPIPE Welcomes New Consortium Member	1/10/2020	https://mailchi.mp/undeerc/news-release-iPIPE-receives-chairmans-stewardship-award-585605
DAPL Owner Joining North Dakota’s iPIPE Consortium to Help Advance Leak Detection Technology	1/13/2020	https://www.willistonherald.com/news/regional/dapl-owner-joining-north-dakota-s-iPIPE-consortium-to-help/article_ab8d13a8-3652-11ea-9117-ef358444f87f.html
Energy Transfer Joins Pipeline Spill Consortium	1/14/2020	https://bismarcktribune.com/bakken/energy-transfer-joins-pipeline-spill-consortium/article_5f983ae5-109c-596e-a254-f09974b1f8c1.html
iPIPE Welcomes New Consortium Member: Dakota Access Pipeline	1/16/2020	http://undeerc.blogspot.com/2020/01/iPIPE-partnership-welcomes-new-member.html
TC Energy Will Join North Dakota’s iPIPE Consortium to Help Advance Leak Detection	1/16/2020	https://www.willistonherald.com/news/oil_and_energy/tc-energy-will-join-north-dakota-s-iPIPE-consortium-to/article_2a52fa3e-38b7-11ea-aca2-23bfb860113c.html
iPIPE Partnership Welcomes New Member: TC Energy	1/16/2020	http://undeerc.blogspot.com/2020/01/iPIPE-partnership-welcomes-new-member.html
Podcast: iPIPE — Inside the Tech Pitch with Jay Almlie	1/21/2020	https://pipelinerspodcast.com/episode-111-iPIPE-tech-pitch-jay-almalie/
Enbridge Joins Consortium Evaluating Next-Generation Technology in the Pipeline Industry	1/27/2020	https://www.enbridge.com/stories/2020/january/iPIPE-consortium-evaluating-next-generation-pipeline-technology
Monique Roberts LinkedIn Post	1/29/2020	https://www.linkedin.com/posts/monique-roberts-81a84527_pipelinesafety-iPIPE-pipelineintegrity-activity-6628411257315741697-cUBx/
iPIPE Mentioned in 2019 State of the State Address	1/29/2020	https://www.youtube.com/watch?v=5vkkqT6DaE Link to 1:02 time: https://youtu.be/5vkkqT6DaE?t=3731
Bakken Oil, Gas to Energize North Dakota’s Global Impact, Governor Says	2/3/2020	https://www.naturalgasintel.com/articles/120930-bakken-oil-gas-to-energize-north-dakotas-global-impact-governor-says
iPIPE with Jay Almlie on the Pipeliners Podcast: Episode 111	2/4/2020	https://pipelinerspodcast.com/episode-113-iPIPE-operators-perspective-brian-epperson-greg-tilley/
iPIPE on Energy Matters Radio (beginning at 9:15)	2/15/2020	https://www.am1100theflag.com/news/14840-2-15-20-energy-matters-hour-1#volume

Title	Date	URL
iPIPE on the Pipeliners Podcast: Episode 115	2/18/2020	https://pipelinerspodcast.com/episode-115-iPIPE-vendor-perspective-john-van-pol-sean-donegan/
On the Path to Zero Pipeline Spills	2/27/2020	http://blogs.und.edu/und-today/2020/02/on-the-path-to-zero-pipeline-spills/
iPIPE with Jay Almlie on the Pipeliners Podcast: Episode 117	3/2/2020	https://pipelinerspodcast.com/episode-117-iPIPE-high-tide-floats-all-boats-jay-almalie/
iPIPE with Jay Almlie on the Pipeliners Podcast: Episode 119	3/17/2020	https://pipelinerspodcast.com/episode-119-future-technology-today-jay-almalie/
Pipelines Take on Their Biggest Enemy	3/30/2020	https://www.hartenergy.com/exclusives/pipelines-take-their-biggest-enemy-186778?mkt_tok=eyJpIjoiTjJFek5UUmI0ekEzTW1WbSIsInQiOiJUNINxSmdiOHAwN081ZFdrTjRZRG0yK2FvdEIIUXM3TnFpSndSbnE5NUhjZ0NlakxVNfFdwM0NUVfVwcmM5UW9hd0g0Rfc5T3ROc3JlR0xWXC9uckFnQ3RFRUpNTW1oQlcreFBPQnRDb1BBZFhLU0F5bVE4Nk92WHhock1wS1lrRut5In0%3D
UND Today: Engineering Students Team Up with Industry	4/2/2020	http://blogs.und.edu/und-today/2020/04/engineering-students-team-up-with-industry/
iPIPE Selects Orbital Sidekick as Partner for Pipeline Monitoring Project	11/19/2020	https://www.prnewswire.com/news-releases/ipipe-selects-orbital-sidekick-as-partner-for-pipeline-monitoring-project-301177019.html
Orbital Sidekick Secures \$16 Million Series A to Commercialize Hyperspectral Satellite Monitoring Solutions for Energy and Defense Sectors	4/13/2021	https://www.prnewswire.com/news-releases/orbital-sidekick-secures-16-million-series-a-to-commercialize-hyperspectral-satellite-monitoring-solutions-for-energy-and-defense-sectors-301267276.html