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Robotic crawlers help solve unpiggable pipeline puzzle

Thirty years ago, Williams' Transco pipeline helped pioneer the use of modern "smart pig" inline inspection technology.

Today, the pipeline finds itself on the cutting edge once again. This time, Transco pipeline is piloting an innovative new tool that may help the industry finally solve the 'unpiggable' pipeline puzzle.

Williams partnered with Diakont Advanced Technologies to deploy a robotic crawler to inspect a previously unpiggable section of the Transco pipeline under the Hudson River in New York.

The robotic crawler uses rugged track systems to move through difficult pipe geometries, inspecting lines inaccessible to traditional smart pig tools.

According to James Harrison, manager, Asset Integrity, the robotic tool helps solve a problem that has been plaguing the pipeline industry for decades.

"The smart pig is one of the most crucial tools we have to ensure pipeline integrity. Unfortunately, not all pipes are piggable," James says.

"This new robotic crawler tool gives us access to pipe sections which had never before been candidates for inline inspection."

Smart pigs are highly-sophisticated, large, torpedo-shaped tools which travel inside the pipeline, using thousands of electromagnetic sensors to collect data on the condition of the pipe's steel wall.

Pipes may be considered unpiggable because they have tight bends or consist of varying diameters of pipe. They also may lack sufficient launching or receiving traps, or feature just one point of entry. This was the case with the two 24-inch sections of Transco pipe that extend under the

Hudson River. With access to the pipelines on just one side of the Hudson River, the inspection tool would have to enter and exit the pipelines from the same location, ruling out traditional smart pigs.

Diakont's bi-directional robotic crawler employs three tank-like tracks; two at the bottom of the tool for primary propulsion, and a third upper track that extends out as necessary to stabilize the tool in difficult geometries such as bends and inclined pipes.

"In order to access both river crossings, the 24-inch pipelines were excavated at the river shoreline and temporally brought above grade," says Missie Hills, project manager. "Working in a densely populated area required a high level of coordination between Williams, the City of New York, Hudson County, New Jersey, and Williams' customers. In addition, the crew was required to work in an extremely tight construction workspace, requiring additional safety measures to ensure safe excavation practices."

The robotic crawlers were then simultaneously hand-loaded into the pipelines and driven through the entire inspection length while taking video of the pipe interior.

Technicians then reversed the crawlers back to the launch point and exchanged the high-definition video modules for electromagnetic sensors to inspect the pipelines. The entire inspection process lasted approximately six days.

James says the pipeline inspections went smoothly and showed the Transco pipeline sections under the Hudson to be in excellent condition.

"The industry has needed a tool like this for a long time," he says. "Once again, it is very exciting for us to be on the front end of such a ground-breaking technology."

GULFSTAR 3-20

Speed to market just got faster

While the Gulf of Mexico Lower Tertiary play holds great potential, it also presents many challenges. These reservoirs are typically located at extreme depths with high pressures resulting in wells that are expensive and difficult to drill. As such, multiple appraisal wells may be required over a period of several years, requiring a significant capital commitment, which can be risky in the current market.

Williams' Gulfstar 3-20 provides producers the flexibility to monetize appraisal wells earlier in the life of the project. Effectively an early production/extended well test FPS, Gulfstar 3-20 can start generating revenue within 24 months dramatically increasing the project's net present value — and, more importantly, providing actual reservoir data from which the producer can evaluate the field and establish a future longterm development strategy.

Why Gulfstar 3-20?

- 3-year commitment
- 20,000 psi rating
- 20,000 psi rating
 20,000 b/d nameplate
- 20,000 b/d hamepia
 20 people on board

Gulfstar 3-20 at a glance

- Simplified topside facilities rated for 20K
- Hull structure based on proven design for ease and speed of construction
- System designed for optimal motions and ease of access
- Low-risk installation and integration — well within capabilities of existing fleet

Production capacities

- 20,000 b/d oil
- 20 million scf/d gas
- 5,000 b/d water



The Geismar Olefins plant is now once again hitting the mark with safe and sustainable operations for the benefit of our olefins customers

The rebuilt and expanded Geismar Olefins plant, located in Geismar, Louisiana, is now setting plant ethylene production records on a regular basis, producing more than 5.4 million pounds of ethylene on some days at this south Louisiana facility.

"After being down so long and the amount of work we put into this place, and to safely bring it back up to where we are reliable again, and to have our customers now being back on board with us being back in operation; it's really been overwhelming," says Parker Tucker, Geismar Olefins plant senior operations manager. "We're back to the point where we're breaking production records on a daily basis, so it's a great thrill."

Instead of celebrating, the Geismar team is working harder than ever to get even better.

"Over the last two years, we've really taken on a lot of initiatives, a lot of studies, a lot of things and ways we can improve," explains Jason Fuselier, Geismar Olefins plant supervisor, Environment, Health & Safety. "Just because we're back up and running doesn't mean we get to slow down; it's still very active and very busy regarding all those things we're trying to improve on as we continue our efforts to get better each and every day."

Capacity at the expanded Geismar plant is now 1.95 billion pounds of ethylene per year. Williams Partners' share of the total capacity of the expanded plant is approximately 1.7 billion pounds per year.

In addition, the plant, located just south of Baton Rouge, Louisiana, also produces 90 million pounds of polymer-grade propylene, 13 million gallons per year of crude butadiene and 14 million gallons year of Debutanized Aromatic Concentrate (DAC). The expansion, fully operational, is about 57,000 barrels per day (BPD) of ethane for 100 percent feed to the plant. The expanded capacity of the plant increases our share of the plant's ethylene production by approximately 50 percent. "Our entire team is filled with great pride at seeing how our safety-focused hard work has paid off with a rebuilt and expanded plant that is delivering safe and sustainable operations for the benefit of our olefins customers," says Larry Bayer, Geismar Olefins plant director of Operations and Technical Services. "After all of the various challenges that we faced over the past several months, to be able to now see our plant establish new records for ethylene production on a regular basis is a wonderful feeling for the entire Geismar team."

Parker points to the plant's teamwork and Williams' organizational support as the keys to the plant's being able to move from its lengthy rebuild and expansion mode into today's successful and record-setting operational success.

"There were challenges along the way, but we succeeded as we worked together to find good solutions, and the plant's safe and sustainable excellent operations are the result of our team's incredible effort," Parker says. "We can always get better, but we sure have come a long way over the last two-and-a-half years."



High-Tech Solutions for Heavy-Duty Industry

IM team enhances tools for *pipeline technicians*

When Brian Letzkus became chief information officer of Williams, he had a vision for helping manage thousands of miles of pipelines with the swipe of a finger. That vision is starting to become a reality.

Today, instead of driving long distances to pinpoint an issue, technicians can use a mobile app on a smartphone or tablet to securely pull data on gas pressures and volumes from the



corporate intranet. This is important when your system includes more than 33,000 miles of pipelines that touch approximately 30 percent of U.S. natural gas.

As Williams' new CIO in 2013, Brian

Brian Letzkus, Chief Information Officer

immediately began fielding questions from executives and employees about mobile solutions. Brian quickly realized that Williams needed to define its mobile strategy and that

mobile apps, content, and devices could be transformative for the company.

He implemented the "Anytime, Anywhere, Any Device" initiative to identify and define the technologies, security framework, application development processes, business processes, and policies needed for a successful mobile rollout.

The next stage was to find a security and management solution that would enable Williams to secure the devices and the data on them, separate personal and corporate data, know who was connected to their environment, and deploy mobile apps.

"We have people using all sorts of devices on every network which is why 'Any Device' is a key component of our mobile strategy," says Brian.

Williams now has more than 6,000 corporate and personallyowned, iOS and Android devices connecting to the network daily. In keeping with Williams' culture of safety, Brian's team has focused on building mobile apps designed to improve operational efficiency and safety.

The first app the team deployed, called Pi, has enhanced how Williams monitors and maintains assets. Pi shows the pressure and flow of gas through the pipelines and provides the

geographic location of the assets. When the flow is right, the pipeline is green. When there is a problem or if the meter is not registering correctly, it turns red. The technician can see on a map exactly where the issue is and efficiently resolve it.

For their second app, Brian's team wanted to build something that would touch every employee in the company. The ViewPaycheck app allows access to paycheck information formatted in a mobile friendly way for employees. Williams is piloting several other apps and has also rolled out MobileIron Web@Work to give employees access to all of the company's safety, maintenance and procedural content stored on Williams' intranet.

Williams has also written an application named PinPoint to map its numerous office sites, compressor stations, meter stations and other assets – complete with contact information, facility specs and driving directions.

One surprise benefit of Williams' mobile strategy has been the level of employee enthusiasm and engagement.

"Now that they've heard of our app store, employees are really excited and are coming up with all sorts of ideas for new apps," says Brian. 🗖



The Williams app "Pi" running on an iPhone

Proposed Merger

A message to our customers about **Energy Transfer Equity and Williams**

Williams and Energy Transfer Equity (ETE) have entered into an agreement under which ETE will acquire Williams. Our board determined that combining with ETE will deliver significant benefits to our shareholders while maintaining Williams Partners' ability to serve its customers in a mutually beneficial manner. Williams Partners will retain its current name and remain a publicly traded partnership headquartered in Tulsa.

We will continue our strategy to connect the best supplies of natural gas and natural gas products to the best markets. We expect to be an even more valuable partner to you, as Williams will be part of a larger and more diversified family of companies, operating in different geographies and businesses.

Upon closing the transaction, which we expect to occur in the first half of 2016, we will be better positioned to help address the current market challenges that we are all facing in today's environment.



Until this transaction closes, we will continue to operate as an independent company and our relationship with you remains one of our top priorities. This announcement will not have any impact on day-to-day operations and it remains business as usual at Williams. Your Williams contacts will remain the same, and because Williams and ETE already know each other well, we are confident that it will be a smooth integration upon closing the transaction. As we work to complete this transaction and combine our two companies, we want you to know that our number one objective is to continue to provide safe and reliable solutions.

In the meantime, if you have any questions, please do not hesitate to reach out to your regular Williams representative. As always, thank you for your business and continued partnership. Williams looks forward to continuing to serve you for years to come.



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Check out our new Pipe Up blog at: <u>https://blog.williams.com/</u>





2015 PLATTS GLOBAL ENERGY AWARDS WINNER

Williams Wins Platts 2015 Global Energy Award for Industry Leadership

For the second straight year, Williams received major recognition at the Platts Global Energy Awards, winning the 2015 "Industry Leader Midstream" award at the annual event in New York. CEO Alan Armstrong accepted the award, which recognizes Williams for executing on its strategy to connect the best natural gas supplies to the best markets while helping break new ground in such areas as technology, operational excellence and methane emission research.