



Pigging Industry News

the newsletter of the Pigging Products & Services Association

THE PRESIDENT’S LETTER

By Dr. Mike Kirkwood, T.D. Williamson, UK

As COVID restrictions start to lift, we see pipeliner’s returning to the workplace, the start of travel and the possibility of face-to-face events taking place. It has been great to witness the commitment and resilience of our industry to make sure we have kept energy flowing over these difficult months - I congratulate you all. As we hop from one global pandemic, the next event horizon is just looming. Because of the re-opening of the world economies, post COVID, the demand for energy and in particular gas has soared. Also, and I am told an Englishman favorite conversation piece, the weather has had an adverse impact on the world’s gas capacity. So, we see gas prices are rising and given many supply companies buy at fixed rates, they face hard economic times ahead if they even survive at all. So, it is imperative we keep our pipelines efficiently operational as we enter another challenging period in our industry.

On to more PPSA focused issues. The PPSA Pigging Seminar will be online on Tuesday 9th and 10th November 2021. Details and registration are at www.ppsa-online.com/seminar. There is a new printed edition of the PPSA Directory of Members & Buyers’ Guide now available. Please email ppsa@ppsa-online.com for a copy. It can also be downloaded at <https://ppsa-online.com/publications>. Our webinar series has continued with a presentation from Christopher De Leon, formerly with Rosen, on the

subject of “How RoMat PGS ILI Saves Digs” and Jan Frowijn, Rosen and David Madero Suárez, Independent Energy Consultant on “Future of Natural Gas from an Economic Point of View”. Future webinars can be found at www.ppsa-online.com/webinars.

We are looking forward to holding the annual golf tournament in Houston on Monday 31st January 2022. We are looking for sponsors and players to make up teams. This is an informal fun event and all standards of player are welcome - in my experience of trying golf, I have to agree with Twain in that “golf is a good walk spoiled” but please do not let me put you off. The golf tournament takes place on the Monday of the PPIM Conference where will be representing our members at the exhibition and engaging with pipeline operators and other specialists in the industry. We will also be holding our Annual General Meeting on Tuesday 1st February 2022.

NEW Members

Full

Global Process and Pipeline Services Limited, Nigeria

Transpipe Integrity Solutions Middle East, FZE

Individual

Richard Espiner, UK

The PTC Conference is back in Berlin from 7-10 March 2022 and we are proud to support the event and look forward to exhibiting there. We are also pleased to support the Technology for Future and Ageing Pipelines (TFAP) Conference that is taking place in Belgium from 29-31 March 2022.

On board matters, we will soon be calling for new Director nominations for the Eastern Hemisphere to fill two forthcoming vacancies so please, if you feel you can help in managing the future of PPSA, step up to the plate.

As always, please keep up the great work you do and stay safe. ●



STATS Group simultaneously supports six North Sea pipeline shutdowns

STATS Group, has successfully completed the largest number of simultaneous pipeline isolation projects in its 23 year history.

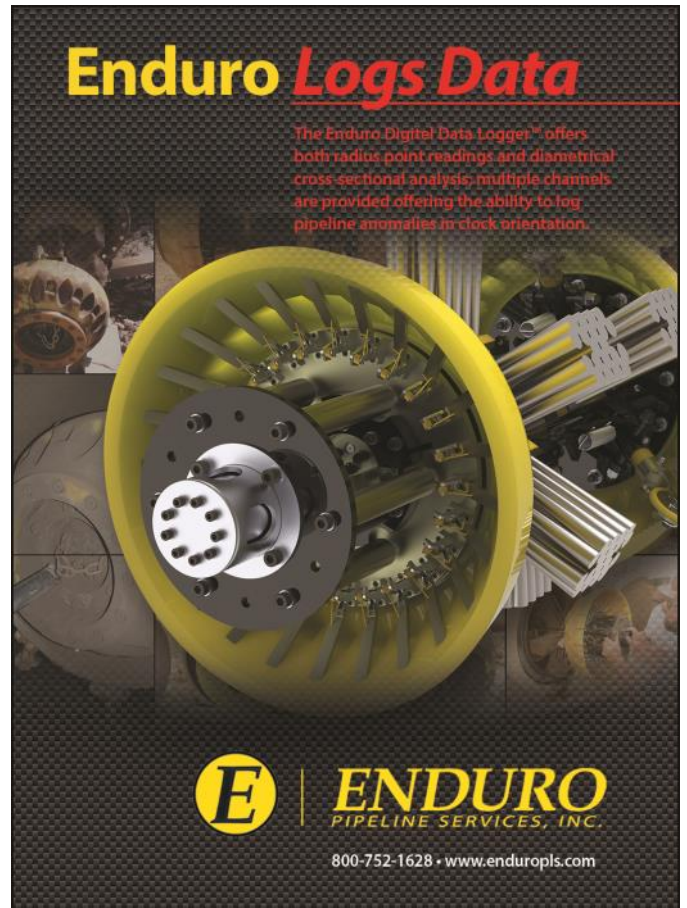
During the 2021 summer shutdown season, STATS supported six separate Tecno Plug isolation deployments in the UK North Sea, on pipelines ranging from 20” to 36” diameter. The projects were on critical pipeline systems on behalf of multiple clients, with the isolation periods ranging from 10 to 45 days.

Isolation activities were carried out on and offshore at various locations and included the use of STATS Remote Monitoring System, which allowed Tecno Plug isolation tools to be monitored continuously via satellite from STATS Remote Monitoring Centre in Kintore, Aberdeenshire. The satellite monitoring technology enables customers to reduce site Personnel on Board (POB) requirements on their oil and gas installations during breaking of containment activities, whilst still ensuring that the isolation status is continually monitored.

The majority of Tecno Plugs deployed as part of the shutdown campaigns incorporated Leak Test Modules, which allowed operators to perform reinstatement testing of new valves and pipework without disturbing the integrity of line isolations.

Each isolation scope was carried out with design, manufacturing, testing and project support being provided locally from STATS Group’s Kintore headquarters. Factory Acceptance Testing was also live streamed remotely to clients, ensuring the client had full participation and oversight during the testing phase, despite the logistical restrictions necessitated by the Covid-19 pandemic.

The summer shutdown period saw a surge in demand for STATS Process Plant Solutions which supported both North Sea and international clients with the provision of vapour barrier and localised weld testing services, with many requirements being delivered in quick turnaround times, due to the inevitability of unforeseen scopes that appear. In addition, STATS worked closely with multiple North Sea Operators in the manufacture and installation of its Topside Mechanical Pipe Connectors. These units were provided in sizes ranging from 2” to 20” as a safe and permanent cold-work solution, removing the associated risks of welding and were installed on several key platform systems, including instrument air, diesel and the larger of the units on flare systems. STATS Group sales director, Ron James, said: “This



has been our busiest period in terms of simultaneous isolation worksopes, but careful planning meant we were able to build and test in advance the necessary tools and equipment, so that everything was in place to be deployed during the optimum shutdown window.

“Our Remote Monitoring Centre means we are able to reduce the number of personnel on board an installation during the length of the shutdown - thereby offering cost savings to our clients, while maintaining the highest level of safety monitoring.”



Remote Tecno Plug & Leak Test Module

Tracerco Discovery™ deployed in the Gulf of Mexico

Industrial technology service provider, **Tracerco** part of **Johnson Matthey Plc**, has recently been awarded three subsea inspection contracts to provide critical asset integrity data on pipelines of a major operator in the Gulf of Mexico. As pipelines age over time, a variety of pipeline integrity issues, including corrosion, pitting and wall thinning start to arise, and the integrity of the assets could be compromised. Regulatory and safety demands are the key drivers of regular inspection campaigns.

Tracerco's multi award-winning Discovery™, a subsea CT Scanner, will be deployed to carry out the subsea inspections providing the operator with detailed, high-resolution tomographic images of the pipe wall thickness and contents to gain an enhanced understanding of the pipelines' condition. The tomographic image will identify any wall loss features within the pipe as well as the location, amount and density of any material and/or deposits in the line and will allow the operator to plan for the future life of the pipelines. As CT scanning is a non-intrusive, external inspection method, all assets will remain fully operational throughout each project, eliminating

interruption to production or the need for pipeline modifications.

"We are pleased to have been awarded these projects" said Jim Bramlett, Commercial Manager North America for Tracerco. "Maintaining a pipeline's integrity is invariably cheaper than performing significant repairs or pipeline replacement and we can help to ensure that potential failures are identified as early as possible. Through non-intrusive inspection, the Discovery™ allows us to assess the condition of the pipelines through any type of protective coating, while online and all in real time." ●

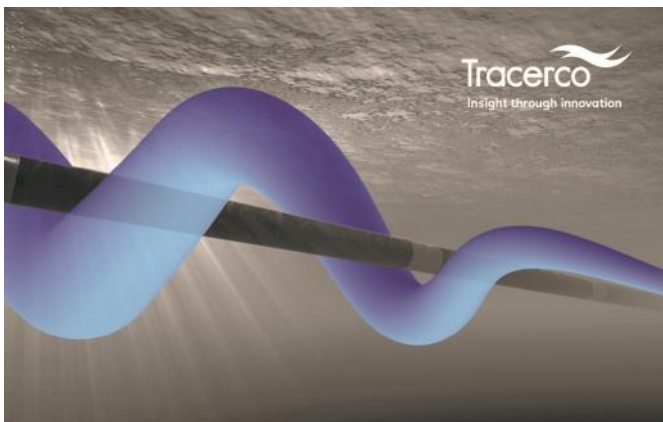
NDT Global's New Cloud-Based Data Visualization and Insights Platform

NDT Global has announced the commercial release of the OPTIX™ Data Visualization and Insights Platform, providing pipeline operators with an intuitive, Cloud-based dashboard to visualize all inline inspection (ILI) data in one accessible location.

OPTIX is the first and only platform that allows Cloud-based ILI data visualization and direct interaction with the ILI vendor. Digitization of the final inspection report, combined with the ease of filtering and arranging relevant data, allows operators to better understand their ILI inspection results and make more informed decisions to ensure the integrity of their pipelines.

Santiago Urrea, Head of Integrity and Field Verification Services for NDT Global commented, "OPTIX further demonstrates NDT Global's commitment to providing the best diagnostic data to drive decision-ready insights for our clients. When operators utilize NDT Global's leading ILI technologies to collect the best possible data, they gain the necessary diagnostic insights to make the best decisions for their specific asset. With OPTIX, we have further improved timely and confident decision making by bringing the Power of Clarity to the way operators access, interact with, and consume information."

The OPTIX platform provides a comprehensive view of pipeline conditions not previously available, bringing together results from many inspection runs. Continued advancement in ILI technologies has led to significantly more data to extract and interpret. Moving to a secure, Cloud-based platform makes that data readily available and accessible, allowing each end user to explore the information relevant to them and gain insights based on their specific needs. Having this sort of information at their fingertips means operators can make better pipeline integrity decisions in just a few clicks. ●



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Next-level system qualification: Artificial flaws

Author: Jens Voss, ROSEN Canada

The development of measurement systems for pipeline integrity applications always involves in-depth testing of the whole measurement and reporting chain. Robustness, repeatability and system testing with variations in such inspection parameters as velocity are the main factors in simulating the application in a real pipeline system before in-field application. Pull-through testing with artificial flaws like rectangular machined notches as well as pipeline cutouts with real flaws are the accepted test standard in the industry.

Reflection-based inspection technologies like ultrasound or the electromagnetic acoustic transducer (EMAT) are capable of detecting, identifying and sizing cracks and crack-like anomalies in pipelines. Utilized on an in-line-inspection tool, these systems are tested in pull and pump test setups with artificial flaws.

A challenge during the qualification of the measurement system is the availability of a representative anomaly population that covers all facets of anomalies in pipelines. Artificial rectangular notches as well as pipeline cutouts with real flaws only partially represent the full picture, and known variations have been found during field excavations in the past. Furthermore, the availability of real flaws in the diameter range of interest and required wall thicknesses may not exist. Summarizing the above, it can be concluded that there is a need for better test populations and their availability over the diameter range.

A limitation of machined rectangular notches is the difference in reflection characteristics compared to real cracks in pipelines due to their geometric shape. In general, reflection responses from machined notches are stronger than reflection responses from real cracks with the same length and depth dimensions.



ROSEN's test field in Lingen, Germany



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The ROSEN Group has executed a development collaboration for larger diameter EMAT inspection solutions with a North American pipeline operator. During these projects, a new set of pipe spools with artificial planar flaws was used. These flaws can vary in length, depth, orientation and location in the base material as well as the long seam. They can be angled, interrupted or even stacked to better represent real cracks in pipelines.

In order to see the system response, a pull test program with different inspection speeds was carried out to cover the full velocity range and also to test at higher-than-typical speeds. These tests are

done to derive the statistical foundation for the performance specification and cover Probability of Detection (POD), Probability of Identification (POI) and the sizing of flaws.

The team had the opportunity to work with a variety of flaws to fully characterize the measurement system. Availability of artificial flaws to characterize the measurement system can be seen as the next level of testing. Beyond that, this approach can also be seen as the next level of testing for other sophisticated ILI measurement systems. Providing synthetic flaws that mimic real pipeline features accelerates tool development and enables more comprehensive validation compared to previous standards. In the end, a demanding test setup to qualify inspection solutions reduces the uncertainty of measurement capabilities for pipeline operators, enabling ILI vendors to push the limits even further and provide improved solutions to the market. ●

Rosen Group establishes dedicated hydrogen testing capabilities for material testing

The ROSEN Group sets the course for the future and establishes its own hydrogen testing capabilities at the Lingen, Germany, location.

The energy industry as a whole has come to realize the potential of hydrogen as a viable alternative to fossil fuels. However, this hydrogen economy cannot function without a safe and efficient infrastructure. A large part of hydrogen transportation will take place via existing gas networks and/or newly constructed pipelines dedicated to hydrogen.

Based on its many years of experience in a wide variety of material testing, the ROSEN Group is expanding its existing material testing capabilities and dedicating a separate section to the topic of hydrogen. Hydrogen can have an adverse effect on the fracture and fatigue properties of steel. The magnitude of the effect can vary, depending on steel grade and microstructure, concentration of hydrogen, and other factors. Therefore, integrity assessments need to be

based on the material properties in hydrogen, which are usually not known in case of existing lines and must be assessed as part of the process of (re) purposing the lines for hydrogen transportation. Guidance on the design of hydrogen pipelines is given in ASME B31.12, including fracture toughness testing.

In response, ROSEN's testing capabilities offer the possibility of conducting material and exposure tests in a hydrogen atmosphere (hydrogen blends and pure hydrogen) at a temperature of up to 200°C and a pressure of up to 150 bar. The facility will be equipped to complete:

- Environmental fracture toughness tests
- Constant load/displacement KIH tests according to ASME B31.12
- Rising displacement J-R tests according to CSA CHMC 1
- Environmental fatigue crack growth tests according to CSA CHMC 1
- Tensile tests in hydrogen atmosphere
- Environmental slow strain rate tests
- Material testing of new pipe according to ASME B31.12

With this laboratory, the ROSEN Group offers the industry all the material testing methods necessary to ensure the safe transportation of hydrogen in pipelines. In addition, internal research and development activities in the field of hydrogen will be supported and promoted. The construction work for the facility is in its final phase, and with the delivery of the necessary equipment, it is on track to be completed in early 2022.

The ROSEN Group is a leading global provider of integrity solutions for the safe and reliable operation of industrial facilities in order to guarantee the protection of people and the environment. Hydrogen has been a focus of our technology group for several years and represents an important cornerstone of its long-term corporate strategy. Recognizing the ability to join expert knowledge, the latest inspection technologies and material testing methods, the ROSEN Group supports pipeline operators in the safe and efficient conversion of existing gas networks and in the reliable operation of hydrogen pipelines. ●

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T.D. Williamson completes first ILI in Kenya using multiple dataset technology

T.D. Williamson (TDW), the global pipeline solutions provider, completed its first in-line inspection (ILI) in Kenya using TDW multiple dataset (MDS) technology. The MDS platform incorporates a variety of inspection technologies on a single platform. It is widely accepted as the most comprehensive system on the market to identify integrity threats through a single in-line inspection run.

TDW performed the inspection on a new, 20-inch diameter refined multi-product transmission pipeline that runs 450 km (279 mi) from Mombasa to Nairobi. The pipeline is owned and operated by **the Kenya Pipeline Company**. The goal of the operation was to provide a baseline measurement to determine any threats that may impact future integrity, including mechanical damage, illegal hot taps, selective seam weld corrosion and material property changes such as hard spots.

Prior to the MDS inspection, TDW and its Egyptian Channel Partner **Engineering Petroleum Services (EPS)** cleaned the pipeline to avoid potential ILI tool performance issues that can degrade inspection data. They performed 12 cleaning and gauging runs on the 450 km (279 mi) of pipeline, totaling 3,600 km (2,237 miles) of cleaning. TDW Project Manager Jamie Bull oversaw the cleaning, gauging and inspection operations. Each achieved 100% success.

According to TDW Sales Manager Mohamed Hesham, the inspection prepared the pipeline to meet demand for petroleum products in Kenya and the region for years to come.



First ILI in Kenya using multiple dataset technology

Happy Golden Anniversary to Baker Hughes KOPP!

On 6th August 2021, the **Kopp** team, part of **Baker Hughes, Process & Pipeline Services**, celebrated their 50 year anniversary of delivering pipeline cleaning services.

The team was formed back in 1971 as part of **Gerhard Kopp International Pipeline Services**, a family company commissioning newly laid pipelines in the North Sea. At the start of the 1980s, **Pipetronix** (a subsidiary) was founded and the range of services expanded with the development of intelligent inspection tools to test pipeline systems which were already in operation. A production facility for polyurethane products and tailor-made pipeline accessories was also set up at this time.

Kopp has had several changes of ownership and names over the years and survived a fire at the plant in Lingen, Germany in 1994. Now, as part of Baker Hughes Process & Pipeline Services and with a production facility for polyurethane products and tailor-made pipeline pigs and accessories, the focus of Baker Hughes Kopp is delivering an extensive range of high-quality, reliable cleaning pigs, either off-the-shelf or custom-designed.

Kopp provides solutions for even the most demanding applications, including but not limited to de-waxing, de-scaling and other complex operations. With Baker Hughes Process & Pipeline Services, Kopp partners with operators to support their enhanced cleaning challenges.



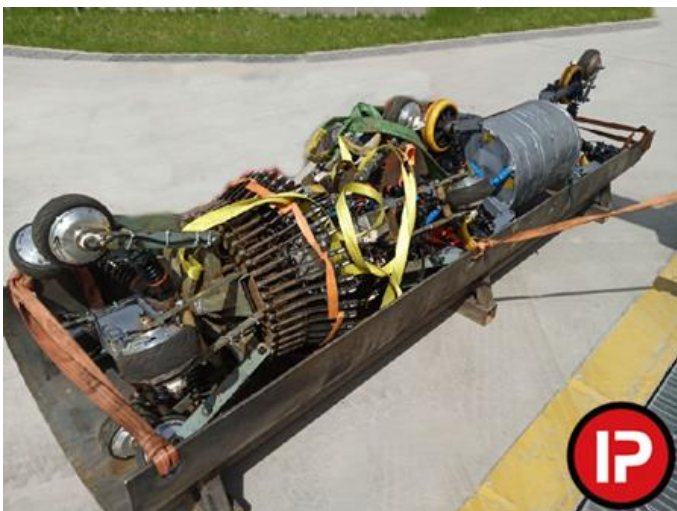
A recently developed Kopp pig which successfully dewatered and cleaned the 32" x 940km TurkStream pipelines in the Black Sea at water depths of over 2,000m

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Self-propelled: Successful baseline ILI project completed by IP Pipeline Technology

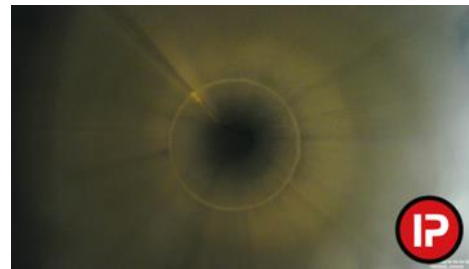
Before the new pipeline was put into operation, the in-line inspection tool had no forward driving force because there was no medium in the pipeline. At present, the detection of pipelines before commissioning mainly relies on air or water as power, which will increase the cost. Moreover, due to the compressibility of air, the operation of the inspection tool is unstable, so that the accuracy of the detection result cannot be guaranteed. The team led by Professor Yang Lijian of **Shenyang University of Technology** has successfully developed an in-line inspection tool that does not need to be driven by the medium in the pipeline and can realize automatic propulsion.

IP Pipeline Technology is the market-oriented window of Shenyang University of Technology. It is a company responsible for marketing, project implementation, data analysis and issuing inspection reports in the global market. Recently, IP Pipeline Technology completed a baseline inspection project using the new technology of Shenyang University of Technology.



Project overview: The diameter of the Ripuluo crude oil pipeline is 762mm, and the total length of the Xinxiang-Puyang section is 150km. The self-propelled tool successfully reached Puyang Station after 36 hours of smooth operation. It has been verified that the tool runs smoothly, the speed is stable at about 1.16m/s during the entire operation, and there is no stall or speed instability.

“The reason why it can run steadily is that the tool is equipped with an intelligent power management system and a travel control system, which can reasonably allocate power control methods according to the running status of the tool, ensuring high-speed and stable operation in a straight pipeline. When going uphill, the tool is controlled to decelerate and run, and the instantaneous power is increased to increase the climbing ability. When going downhill, the motor is switched to the power generation state, the battery is charged by the downhill power, and the electric brake function is performed in the power generation state to ensure Running at a constant speed under downhill conditions.” Professor Yang Lijian said.



Fred Lee, the tool is equipped with Caliper sensors, IMU and video recorder. The tool can also be equipped with crack detection probes and stress detection probes according to CEO of IP pipeline technology, said. “This time the customer requirements to achieve various functions of detection.”

In summary, the self-propelled technology greatly reduces the implementation cost of baseline inspection projects and provides a new and safer inspection method. IP pipeline technology hopes to provide more reliable baseline inspection solutions for global clients in future projects. ●

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Pipeline integrity monitoring for offshore pipelines using fiber optic acoustic sensing

Background:

Located in Mollendo, the most modern and strategic terminal in Peru required an early warning system to ensure the immediate detection of leaks of the hydrocarbons that are transported through the submarine pipelines and reach that terminal. Environmental protection and asset monitoring were defined as priorities.

Solution:

In order to achieve Client expectations, **Morken Group** installed a leak detection system based on fiber optic sensing technology to monitor both 14" and 20" submarine pipelines. Site activities were supervised by Client's engineers and carried out by divers specialized in this type of tasks.

Morken Group provided the complete solution that covered all the client's requirements, from the design of the project to its commissioning. The works were carried out by certified specialists and monitored by the manufacturer and developer of the technology, complying with the highest international standards.

Results and benefits:

The high sensitivity of the optical fiber allows the system to detect leaks at the speed of light with location precision of one meter, allowing the operator to take immediate action in the event. The analyzer module is designed and structured to be the most sensitive, fast and effective equipment on the market. This way, the terminal is the first in the world using this advanced technology in leak detection.

Here are some pictures of the tasks performed.

Morken Group has been in the industry for more than 35 year giving to our clients best technologies to achieve their goals. Please contact Morken Group for any inquiry.



Quest Integrity's advanced solution for inspecting deepwater risers and flowlines; a West Africa case study

Overview

Effective integrity management of subsea pipelines has been especially challenging due to the difficulty of pipeline access, safety, and other considerations. InVista™ Subsea, an advanced ultrasonic (UT) in-line inspection (ILI) tool from **Quest Integrity**, provides a solution for these challenging and difficult-to-inspect pipelines.

Quest Integrity recently successfully completed the ILI of a 12" production flowline loop for a major deepwater pipeline operator in West Africa. The subsea system was configured as a 16km piggable loop comprising two risers, four flowlines, and two manifolds supporting a total of seven producing wells. The inspection was required for regulatory compliance and to assess the integrity of the production flow loop, ensuring it was fit-for-service.

The operator had experienced previous challenges with their conventional ILI vendor in similar assets and searched for a solution to inspect the production loop asset and accurately detect corrosion damage. The operator eventually selected Quest Integrity's InVista™ Subsea UT ILI technology due to the tool's superior flexibility and navigational capabilities.

Inspection Challenges

The 12" production flow loop posed the following ILI challenges:

- Unknown extent of an inner diameter (ID) restriction from a defective valve on the Pipeline End Manifold (PLEM)
- Previous ILI failures in similar assets
- Deepwater (high pressure) operations
- Limited launcher/receiver space on the floating, production, storage, and offloading (FPSO) facility
- Pipeline downtime / deferment limitations

Solution

Quest Integrity mobilized personnel and two InVista™ Subsea inspection tools to the FPSO. The inspection campaign commenced with a cleaning program, and four cleaning pig runs were conducted in dead oil using a progressive non-aggressive pigging approach.

Upon completion of the cleaning runs, the InVista™ Subsea UT ILI tool was launched and propelled in dead oil at 46°C, at a rate of 102 m³/h to achieve an approximate scan rate of 0.50 m/s. All the data was collected in a single run. Upon retrieval of the InVista™ Subsea tool, the UT measurement data was

downloaded on the FPSO, and an initial field analysis was performed. The InVista™ Subsea ILI tool provided 100% circumferential and axial inspection coverage of each riser and flowline in the production loop.

Quest Integrity delivered to the client a preliminary report within 14 days and a Level 2 fitness-for-service final report in accordance with API 579-1 / ASME FFS-1 within 45 days.

Inspection Results

Following field inspection data verification, Quest Integrity analyzed and assessed the inspection data obtained and performed an API 579-1 / ASME FFS-1 Fitness-for-Service assessment. The inspection data was analyzed for wall thinning and anomalies such as corrosion, deformation, and lamination using the Streamline Universal Platform™ software. In addition, the pipeline's Remaining Strength Factor (RSF) and Reduced Maximum Allowable Operating Pressure (MAOPr) were calculated per a Level 2 local metal loss assessment described in Part 5 of the API 579-1 / ASME FFS-1 Fitness-For-Service standard.

Conclusion

The completion of the ILI provided the Operator with a comprehensive understanding of their asset and cost savings in overall project execution. In addition, the following factors contributed to Quest Integrity's successful inspection campaign:

- Ease of operation - Lightweight and hand-held InVista™ Subsea tool design, weighing less than 27kg and a compact length of 800mm. This allowed for simple hand launching / receiving operations ensuring no heavy lifting was involved or bulky transport.
- 30% Local Collapsibility - The InVista™ Subsea tool collapsibility of 30% allowed for full and low-risk navigation of the production loop, reduced local cross-section, including the ID restriction from a defective valve on the PLEM.
- Reduced Operational Risk – The InVista™ Subsea tool's bi-directional capability allows it to be reversed and received back at the launch location via reverse flow if a restriction greater than 30% is encountered, reducing operational risk.
- Simplified Inspection Process – The InVista™ Subsea tool's high-resolution UT sensors acquired direct measurements providing geometry and wall thickness data in a single inspection run; no gauging and caliper pigging was required leading to time and cost savings.
- Secondary tool - A backup InVista™ Subsea tool was mobilized on-site as a standard operational practice to increase project efficiency and minimize the chance of delays at no extra cost to the client. ●

The model 67 intrusive pig passage indicator

The Model 67 adds safety and servicing options to Apache Pipeline Products' existing line of intrusive pig passage indicators. Like other available models in the patented pigPRO™ series, it reliably detects the precise location of a cleaning pig as it travels within the pipeline network. When a pig passes the intruding plunger, it activates the plunger and triggers a visual flag indicator, signaling the pig's location.

Incorporating a customized ball valve with an extended lower housing into the design of their model 67 pigPRO™ allows for a safe and simple isolation of the pig passage indicator from pipeline pressure for inspection, maintenance or repair. Complete removal and re-installation on any pressurized line is easy using the Extraction Kit and does not require specialized hot tap professionals or equipment.

The Extraction Kit has the unique tools, fasteners, and soft goods to allow a technician to remove the Series 67 pigPRO™ and then reinstall it onto a pressurized pipeline. The Extraction kit contains a pressure relief tool and a custom built extraction cap and jack tube specifically designed for the series 67 pigPRO™. It also contains required soft goods (O-rings) that are installed in the lower housing. Fasteners, lubricant and hex key wrenches are all included in this kit as well. All items are contained in an industrial grade case so parts are available when needed.

Features and benefits

The integral isolation feature of the Model 67 means the cost, time and safety concerns of de-pressurizing and draining a line are eliminated. Now the pig passage indicator can be isolated, removed, repaired and reinstalled while the pipeline is flowing and pressurized. Preventative maintenance, inspection or repair are easily accomplished without specialized equipment or crews.

The Model 67 includes a thread mounting nipple, extended lower isolation housing with fluorocarbon O-Rings, and hemispherical plunger with a flag assembly. Aluminum extensions can be attached to enable detection of the pig's passage on buried pipelines. All pressure sealing components, including the isolation ball valve, remain below the extension module. Available in lengths of 2' to 8'.



Model 67 pigPRO™



Extraction kit

i2i's successful inspection of non-metallic pipe (NMP)

i2i Pipelines has now successfully inspected non-metallic pipe for several clients in Canada. The oil and gas industry has been installing NMP for many years, but it is only now that an in-line inspection solution is available to operators. NMP has several advantages that make it an attractive option in certain applications, but alongside these advantages they also have their own set of unique operational challenges and failure modes that are very different to what the industry has experienced with ductile steel pipe.

To meet some of the operating concerns and inspect for potential failure modes i2i has developed sensor technology and dedicated smart pigs for the inspection of NMP covering fiberglass, flexpipe, flexsteel, fiberspar to name a few.

The 4inch Pioneer NMP tool can pass the minimum ID of 85mm and the 3inch tool can pass 63mm at the interconnectors. All the tools can pass short radius bends.

The most basic smart tool carries an IMU and odometer that can inspect for and locate the interconnectors in flexpipe as well as potential failure modes at dents and ID changes in all the NMP. These tools can be run in all mediums.

When deploying the inspection smart pig integrated with sensors to inspect for material loss on the internal and external surfaces of the NMP then the specific operating conditions are required.



i2i's 4inch NMP Pioneer tool after an inspection run in 1.4km of flexpipe

After the inspection run the Pioneer NMP is connected to a laptop for data download. As with all i2i's smart pigs there is no requirement for specialist personnel to be onsite and these NMP tools were operated by local technicians.

Data validation on the latest inspection runs is still ongoing with the clients.



Pioneer NMP connected to a laptop for data download

NDT Global appoints new President

NDT Global is pleased to announce the appointment of Trevor MacFarlane to the role of President, NDT Global.

Mr. MacFarlane was previously the President and CEO of Dynamic Risk, a company acquired by NDT Global's parent company, **Eddyfi/NDT**, in March of 2021. He spent 20 years at Dynamic Risk in engineering, business development, and leadership roles, helping to drive the company to new heights. Mr. MacFarlane previously spent 7 years at **TransCanada Pipelines**, now **TC Energy**, giving him significant exposure to the operational and financial needs of pipeline operators. He holds Bachelor and Master's degrees in Materials and Metallurgical Engineering from **Queens University**.

In his new role, Mr. MacFarlane will be focused on expanding their technology leading product portfolio, improving their ability to quickly bring new technologies to market, enhancing and building client relationships, and ensuring they are agile and responsive to client needs. In addition, he will drive efforts to enhance their company culture, ensuring positive perception by employees and customers alike.

"I'm honored to join NDT Global and to have been given the opportunity to lead a passionate, talented team," Mr. MacFarlane commented. "We're going through a period of significant growth which has really been driven by our commitment to being a technology leader and delivering exceptional service quality to every project. NDT Global is a world class company and I am excited to be working with our teams and be part of this wonderful journey!"

3X Engineering repairs pipe supports

The client had some problems of corrosion between two pipelines and their supports in the Ivory Coast. These were a 8" oil pipeline and a 14" gas pipeline. The objective of the job, performed in February 2021 by local **3X ENGINEERING** distributor **PROMET-ERIC** was to reinforce and protect the area between the pipe and the support. To do this a combination of **ROLLERKiT®** and R4D solutions was selected.

As the corrosion was minor, 2 layers of R4D composite wrapping were proposed to restore pipe integrity and stop corrosion process. For this configuration, it was decided to apply **ROLLERKiT®** on the support for convenience.

The repairs were performed following the same stages:

PIPE SURFACE PREPARATION. Corroded areas of the pipe in contact with the support were grit blasted to get a good surface cleanliness and roughness ($R_z > 60\mu\text{m}$) before composite wrapping.

PIPE COMPOSITE WRAPPING WITH R4D. Wrapping reinforcement of the prepared surfaces were performed using Kevlar® tape and epoxy resin to reinforce the pipe. Two layers of R4D were applied before **ROLLERKiT®** installation on the supports.

SUPPORT SURFACE PREPARATION. Supports were also grit blasted to get a good surface cleanliness and roughness ($R_z > 60\mu\text{m}$) before receiving **ROLLERKiT®** pads. Degreasing and cleaning using acetone were then performed to ensure that the prepared surface was completely free from residue.

ROLLERKiT® PREPARATION. Cutting of the necessary number of pads to be installed. Eight pads were necessary to protect 8" pipeline and 12 pads for 14" pipeline. F3X8 filler was mixed and applied on the support and on the **ROLLERKiT®** (fiber glass side).

ROLLERKiT® APPLICATION ON THE SUPPORT. **ROLLERKiT®** was then fixed on the support to protect the area between the pipe and the support. The pads were positioned perpendicularly to pipe axis to let the pipe slide freely.

REPAIR FINALIZATION AND VALIDATION. When curing time was over hardness measurements were performed to confirm the good polymerization of the filler and the pipe was laid down on the support.

In total, 30 supports were protected with **ROLLERKiT®** product (15 supports for each pipeline). Both pipes can now slide freely on the supports avoiding coating degradation and potential galvanic contact. Pipes and supports are now protected from corrosion under supports.

NDT Global signals re-energized purpose, promise and drive via strategic brand refresh

In July 2021 **NDT Global** announced the launch of its refreshed corporate brand. The rebranding exercise follows a fulsome strategic review by the company in the wake of new ownership, with NDT Global having joined the **Eddyfi/NDT Group** in February 2020.

Today, with nearly 650 employees worldwide, NDT Global is the leading provider of ultra-high-tech diagnostic inspection solutions, advanced data analysis and integrity assessment services for ensuring the safety and longevity of energy-sector infrastructure assets. Recognized as the forerunner in ultrasonic inspection technologies comprising Pulse Echo, Pitch-and-Catch and Phased Array, as well as Acoustic Resonance (ART Scan) methodologies, the company also deploys a range of non-ultrasonic technologies, such as Inertial Measurement Units, with more under development.

Martin Theriault, CEO of Eddyfi/NDT and President of NDT Global, describes the company's strategic realignment: "With recent acquisitions having added to the strength and scope of our inspection, data analysis and integrity assessment capabilities, we are determined to enlarge our offering, in tandem with opening new markets. We are also determined to maintain our commitment to product leadership, while at the same time acknowledging feedback by making agility and customer focus new priorities."

"This rebranding initiative has been many months in the making and is a key part of our company's ongoing growth strategy and leadership vision. We are supported by an increasingly talented global workforce, enhanced technologies and an unprecedented capacity to innovate. We believe our brand should highlight the augmented value we deliver, together with our renewed goals and promises," adds Nathan Leslie, NDT Global's Vice President of Products & Marketing.

The company's corporate purpose has been defined as follows: NDT Global is committed to enabling a safer world for people, business and nature, by providing the best diagnostic data to drive decision-ready insights.

The new logo captures the updated brand identity in its balancing of blue (business) and green (environment), as well as technology (straight edges) and nature (curved contours, leaf shape). The two arrows meeting in the middle suggest a 'handshake' between partners. The tagline below is an expression of the company's Brand Promise: The Power of Clarity refers to the fact that only the best technology can capture the best data, to drive the best decisions, leading to the best outcomes — for business, people

and the environment. So asset owners can be confident they are taking the right actions, backed by The Power of Clarity.



In addition to its new logo and brand signature, the company is launching a redesigned website, updates to its social media channels, sales and marketing collateral, and more. ●

17th Pipeline Technology Conference back to Berlin

The flagship European conference and exhibition for the international pipeline industry, the Pipeline **Technology Conference (ptc)**, will open its gate for the 17th time from 7 – 10 March 2022 in Berlin.

Long-distance pipeline and distribution network operators from all over the world will return to ptc to be informed about the latest developments and news in the industry and to exchange ideas with other operators and market participants.

After two years in which the Pipeline Technology Conference was held online only, the upcoming ptc will be a hybrid event offering even more opportunities to all participants than before: the central face-to-face event, ptc Berlin, will be combined with a virtual platform, ptc Remote, where all information about the event is available and which will provide far-reaching networking opportunities for all participants, even across digital barriers. It will be easier than ever before to find someone who offers exactly what you are looking for. No matter if this person is sitting at the next table at the exhibition or sitting in front of their laptop in Houston or Dhahran.

"We are very much looking forward to seeing you all again in the usual setting in Berlin and finally talking face-to-face about innovative technologies, digital transformation trends and challenges for a decarbonized pipeline industry. Many thanks to the whole ptc community and especially to the members of the ptc Advisory Committee for their great support," says Dennis Fandrich, Chairman of the Pipeline Technology Conference.

