



June 2014

Pigging Industry News

the newsletter of the Pigging Products & Services Association

THE PRESIDENT'S LETTER

By Steve Mayo, Pipelines 2 Data (P2D) Ltd

Welcome to the June 2014 PPSA newsletter. First things first, my name is Steve Mayo and I am honoured to be elected as President for the forthcoming year. My thanks go to Terry Delasalle, a good friend of mine, who did a fantastic job as President last year. It is fair to say that he and I had a 'comprehensive' handover on his recent visit to Aberdeen for the PPSA seminar. I'm happy to report Terry survived the various Scottish dishes he sampled, including the haggis!

The AGM was held on the 11th February in Houston and there were a couple of changes to the PPSA Board. Our thanks go to Basil Hostage, Paul Birkinshaw and Ben Cottam, who all stepped down as Directors. An equally warm welcome goes to our new Board members: Paul Mallaburn, of PII Solutions Ltd, Iain Shepherd of Halliburton, Evert Witkop of ROSEN Group and Paul Job of Jee Ltd.

It is an exciting time for our industry as a whole, with technical and operational advancements, like some of those shared at the recent PPSA seminar in Aberdeen, making our services more efficient, relevant and essential for operators than ever before.

I know that I personally get a genuine thrill when my colleagues and I come up with a new, innovative way of meeting our clients' needs... and this is something which I hope many of you also experience and will share at our next PPSA seminar, which incidentally will go ahead in Aberdeen on 19th November 2014.

Ahead of that though, the PPSA are pleased to be attending the IPE exposition, Calgary, in September. This, combined with our regular involvement with the PPIM in Houston gives us a great and varied platform to meet new people and further the interests of our industry.

NEW Members

Full

**Precision Pigging, LLC
USA**

Tulsa Valve, USA

**Dacon Inspection,
Services Co. Ltd, Thailand**

Associate

Bakercorp UK Ltd, UK

Individual

André Hognestad, Norway

Finally, a quick note on our recent golf tournament. It was the 9th annual event and a great day was had by all. Congratulations to the winning teams and of course our thanks go to the sponsors (see below).

As always, the PPSA continues to provide a fantastic service, with the technical enquiries facility proving to be a real highlight and entry point for customers into our field. Thanks to Diane Cordell, who does a fantastic job at keeping it all running smoothly and providing us all with the guidance we need to ensure the PPSA remains at the forefront of the sector.

PPSA Annual Golf Tournament— Houston, 2014

Golf Results:

First Place:

Courtney Zimmerman (TDW)
Mitch Zimmerman (Williams)
Jason Flauhes (NOV)

Second Place:

Monty McDonough (Applus RTD)
Larry Legendre (Williams)
Joe Campos (BP)
Rick Odegard (Applus RTD)

Third Place:

George Carlisle (N-SPEC)
Carl Bayer (Kinder Morgan)
Mark Slaughter (Weatherford)

Closest to the Hole:

Courtney Zimmerman (TDW)

Longest Drive:

Courtney Zimmerman (TDW)

A huge thanks to our sponsors:



TDW's largest ever subsea pipeline pressure intervention in Indonesia

T.D. Williamson, Inc. (TDW), performed a complex subsea pipeline pressure intervention in record time, that helped to prevent a major gas supply interruption for millions of residents and businesses in Jakarta.

The operation was the largest subsea pipeline pressure intervention that TDW has ever executed. The challenging hot tap and STOPPLE® plugging operation was carried out for main contractor **Timas Suplindo** in cooperation with Offshore Construction Specialists on behalf of **Pertamina EP**, on sections of the pipeline network attached to the Lima Flow Station in the North West Java Sea. Work was carried out as part of the Lima Subsidence Remediation Project. The initiative aims to raise the Lima Flow Station that has been slowly subsiding since 1997. The flow station consists of compression, service and process platforms, as well as a platform bridge, flare bridge and tower.

Stabilizing the L-PRO platform on the seabed by lifting and consolidating it made it necessary to shut down several lines connected to it. A complete shut-down would have severely disrupted the flow of natural gas from the Lima field. "Nine million live in Jakarta; half of whom rely upon natural gas supplied from Lima field, so the stakes were extraordinarily high," said Edward Sinaga, Execution Lead for Pertamina EP. "Without gas from Lima field, much of the city would have been thrown into chaos, without power and in some cases, electricity, which was utterly unacceptable. It was critical that supply to the city remained while jacking operations took place."

To ensure that production and supply would continue uninterrupted, several lines were to be installed to bypass the 14-inch and 20-inch MGL pipelines that extend from the TLA and TLD platforms to the L-PRO platform and the 24-inch MGL pipeline that extends between the L-PRO and Cilamaya, where the pipelines make landfall. Pertamina EP engaged TDW to isolate the affected lines so that temporary bypass lines could be installed.

The operator afforded TDW only five months to plan and execute the project. Each phase – preparation, engineering assessment, fabrication, simulation, mobilization and execution – had to be carried out to perfection in order to meet the deadline. To maintain flow and facilitate the installation of the bypass lines, TDW developed a solution that required an intricate series of subsea activities: nine hot taps followed by

simultaneously executing STOPPLE® plugging operations in six different locations. Because Pertamina EP required that all intervention work be completed within three months, TDW quickly mobilized equipment from North America, Europe and Asia Pacific, accompanied by a team of experienced technicians, to the hot tap and STOPPLE® plugging operation site.

Following the installation and commissioning of the temporary bypass lines upon the successful completion of nine hot taps, the TDW team began setting the STOPPLE® plugs in six different locations. Working from dive support vessels at depths up to 131 ft. (40 m), the five-member team used a full complement of specialist machines to hot tap the pipelines, and STOPPLE® plugging systems with Lock-O-Ring® Plus fittings to plug them for final completion. Once the line has been safely isolated, cold-cutting of the isolated pipeline for the installation of sub-sea in-line ball valve commenced. In 25 days all of the lines were hot tapped, STOPPLE plugs set and successfully isolated, making it the fastest such operation for TDW.

For 22 days the lines remained safely isolated and the operation was completed in just 63 days. Natural gas flowed through the temporary bypass lines to Jakarta. ●



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T.D. Williamson

STATS Group's effective isolation : deadleg removal

Petroleum Development Oman (PDO) had a requirement to remove 14 bends from 20" bypass pipework around block valves on their main oil pipeline while the main oil line remained live and at operating pressure. PDO is the foremost hydrocarbon exploration and production company in the Sultanate of Oman. It accounts for more than 70% of the country's crude oil production and nearly all of its natural gas supply.

STATS Group were asked by PDO to engineer a solution whereby an isolation tool could be deployed to isolate the branch below the bend to allow the safe removal of 20" bypass pipework on the main oil line.

PDO have 1760 km of main oil pipeline with a total of 31 Block Valve Stations (BVS), 12 of which are on the main oil line from Nahada to Mina Al Fahal. The current layout of the BVS consists of an above ground bypass with three isolation valves. Following routine inspection of the pipeline, internal corrosion issues had been discovered on the bypass pipework included corrosion on the valve flange faces and pitting corrosion on the 90 degree bends.

PDO developed an upgrade strategy to carry out the required maintenance activities in a timely manner

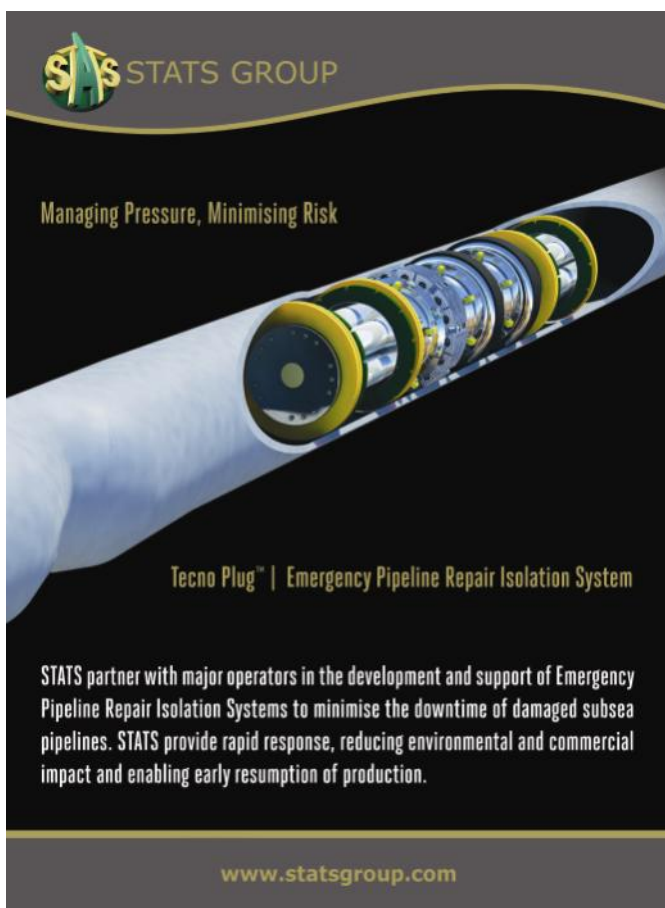
and with limited disruption to production. Out of the 12 BVS's that required maintenance, five were completed during a scheduled shutdown, however seven sites would need the bypass pipework to be isolated to allow upgrade to take place while at an operating pressure of 55 bar (797 psi) and without interrupting production. The planned upgrade work would include reconfiguring the BVS and piping layout so that the bends were completely removed and replaced with a straight vertical section. This allowed the design to be kept simple and prevent integrity issues resulting from stagnant product.

As full bore access to the bypass pipework was available, STATS proposed the use of a tethered Tecno Plug deployed from a temporary launcher by a flexible stem bar. Typically, however 1.5D bends are not designed to be piggable, so the engineering challenge was to design and manufacture a Tecno Plug™ capable of negotiating 20" 1.5D long radius bends. As STATS Tecno Plugs™ incorporate both seals in a single module, this provides a tool with a compact body allowing the Tecno Plug™ to be deployed around the corroded bend and positioned in the short pipe section. This ensures the bypass section is isolated without interrupting the flow of the main line.

STATS also engineered a hydraulic deployment system to deliver the Tecno Plug™ to the exact isolation location, as positioning of the tool was critical due to the space restrictions. This novel concept ensured an efficient and controlled deployment on each of the 14 occasions, positioning the isolation plug below the section of pipework to be cut and removed.

With the bypass pipework isolated crude oil was displaced behind the Tecno Plug™ with nitrogen and the pipework was cut below the bend and safely removed. A weld-neck flange was then welded directly behind the Tecno Plug™ and Non-Destructive Testing was performed; this would provide the tie-in point to reconnect a new 20" full bore valve to the system in a vertical arrangement. During the maintenance work the Tecno Plug™ was constantly monitored.

Prior to reconnecting the ball valve, the Tecno Plug™ control lines and deployment stem bar were reconnected, allowing the Tecno Plug™ to be recovered into the temporary launcher. Once the ball valve and launcher were rigged into position and bolted, a service test was performed against the rear of the Tecno Plug™ while isolation was maintained; proving the integrity of the new flanged joints. The Tecno Plug™ could then be unset and recovered vertically into the launcher for removal to complete the workscope and allow the equipment to be transported to the next location. Having initially estimated that the entire project would take three months, it was completed three weeks ahead of schedule. ●



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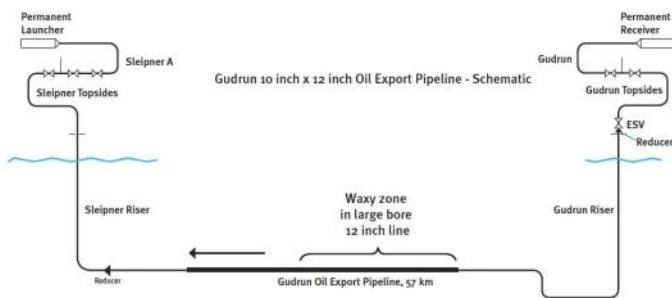
www.statsgroup.com

Controlling wax in the Gudrun Oil Export Pipeline—Statoil

The Gudrun field is located 55 km north of Sleipner in the North Sea. The field contains both oil and gas. **Statoil** plans to develop this field with oil and gas transported to Sleipner in separate pipelines for onward export to Kårstø, Norway. There is an estimated recoverable volume of 150 million barrels of oil equivalent from the field.

The oil and gas export lines to Sleipner are multi-diameter and as such special care must be taken in the design and selection of any pre-commissioning (RFO), operational and inspection pigs for the system.

The oil line is 10" x 12" with 10" risers and a 12" pipeline where wax is expected to deposit. This deserves special attention in order to control this wax. Initial pigging frequency will be weekly. The diameter change is 23% and the challenge is to clean the wax from the large bore pipeline as effectively as possible. By their nature, dual diameter pigs are not aggressive in the large bore pipeline. Pig design, development and testing have been performed to establish a more aggressive pig for this pipeline without compromising its ability to negotiate the line.

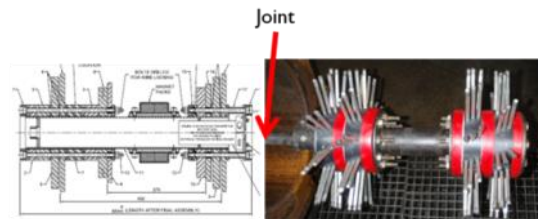


Overview of Gudrun Oil Export

In 2007, Statoil initiated an R&D program to examine wax removal from oil and condensate pipelines with a focus on recovery of heavily waxed pipelines, wax control in dual diameter lines and wax removal and transport in gas dominated two phase pipelines. The results of the findings of this work have been used to address a practical application – the Gudrun Oil Export 10" x 12" line.

The pig design for Gudrun Operational pigging for wax management resulted from the design of the pre-commissioning pigs (Flooding, cleaning and gauging / dewatering) with an increase in aggression along with input from new styles of scraper elements from the Dewaxing R&D project.

The following schematic shows the elements planned into the oil export pig as a result of these projects: -



Tow Pig: -
 • Optimised for aggression;
 • Magnets;
 • Data logger;
 • Bypass (Maximise in 12");
 • Flushing action over body?

Trailer Module: -
 • Brushes (stainless);
 • Capped / collars;
 • Torsion springs

Schematic of the Gudrun Operational Pig

The tow module is an aggressive version of the Flooding, Cleaning and Gauging pig with thicker guide discs for example. The trailer module is an aggressive brush module with specialist brushes to withstand the change in diameter to allow good scraping in this diameter.

In the trials for Gudrun operational pig, a number of trailer modules were tested: -

- Tipped brushes;
- Spring steel scrapers;
- Torsion springs.

All were trialled and all were successful but the Torsion spring style module was considered to be the best for ploughing up the wax and preparing it for removal by the next pig.



Final Gudrun OE Operational Pig

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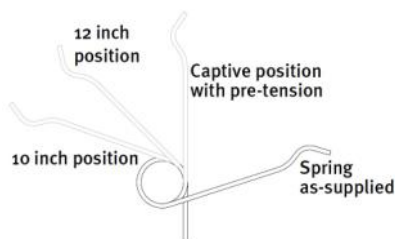
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The operation of the torsion springs are noted below. By its very nature, a torsion spring is ideal for dual diameter pigging in general as large angular deflections can be accommodated (90, 180, even 270 degrees rotation). Pre-tension can be designed in, thus maximising the force on the pipeline wall in the large bore. The large deflection and small contact area with the wax makes it ideal for any diameter change and penetration of hard wax deposits: -



Action of the Torsion Springs

A torsion spring can have angular deflections up to 270 degrees. This means that they can be held in tension and deflect through 90 degrees from one diameter pipe to another.

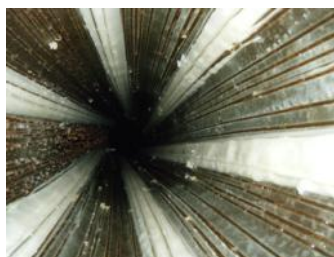
The small contact area means that the resulting force can penetrate through the wax to the pipe wall thus ploughing it up in preparation for the next pig run.

Monitoring the Gudrun OE pigging would help to provide valuable feedback on the success of this design. The aim is to try to keep the line clean for hydraulic efficiency but also for inspection of the line every 5 years: -

- There is a data logger provided for the Gudrun OE pigs which can indicate the build up of wax in the line (increased differential pressure, reduced vibration etc). It is planned to perform a base line run at the start of the project and then follow this up with other data logger runs two or three times per year. This will help to establish the success of the Gudrun pig aggression;
- The ability of the pig bypass system (high area in 12" and low area in 10") will be assessed. The pig uses the 10" sealing discs to control bypass in the small diameter line and higher bypass will be used than would normally be possible. The pig is also designed to flush wax off the body but this will only be assessed on receipt of the pigs;

- The maintenance requirements for these pigs can be assessed based on the wear and tear on the various components such as discs, springs and other components.

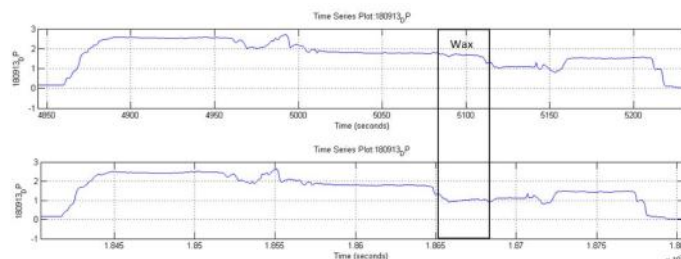
For Gudrun it is planned to use the pig and data logger to optimise the pigging frequency over time. This could then also be applied to other dual diameter waxy pipelines in the future and allow control of such wax deposits. To do this will require good records from Gudrun to establish if such an optimisation is possible.



Although 6 mm of hard wax is not expected to build up in the line and the whole objective of this development is to prevent this, the tests were performed on this worst case scenario to see which technique would be best at removing such a deposit.

Action of torsion springs on a thick hard wax during trials

The Torsion springs work by ploughing into hard wax deposits and preparing them for removal by subsequent pigs run through the line. Population of the trailer module with more and more springs can be done to increase the aggression.



Two dewaxing Pig runs during tests (using data logger)

The graphs show data logger output during the initial run to remove a short section of 6 mm thick hard wax (top plot) and the second run (lower plot). The reduction in differential pressure over the hard wax zone shows that the majority of the wax has been removed. By comparing this to a base case run in the line it is possible to monitor the pigs ability to control wax in the line. ●



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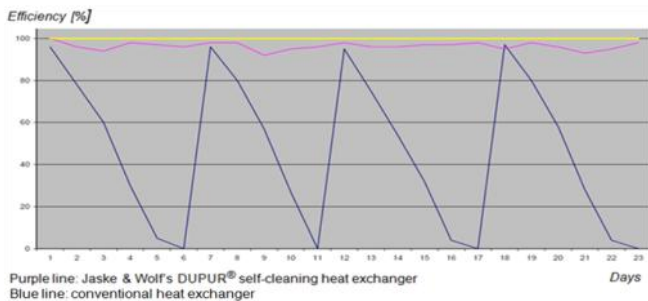


The unnoticed niche – Permanent Pigging

A case study provided by **JOERG LIS engineering & project management**.

Conventional heat exchangers require downtimes for extensive cleaning resulting in production loss. A corrugated cardboard factory was facing downtimes of a plate heat exchanger often after only a few hours use and at best it would last for five days. The new heat exchanger system with a permanent cleaning system by running pigs was developed and patented by Jaske and Wolf GmbH an Energy & Water Solutions company in Lingen, Germany. This is a great success as no downtime is required anymore for cleaning.

Permanent pigging means that the pigs remain in the pipeline systems and will frequently run as required, e.g. every hour or every day.



The chart shows the efficiency over the first 23 days. The system is successfully proven and has already operated for over 25000 hours. Today, further heat exchangers with permanent cleaning pigs are in operation in several industries. The pig run intervals can be adjusted as needed, e.g. regulated by differential temperature. In this specific case, cleaning pigs circulate every 30 minutes. The pigs remain in the system and can be replaced quickly if required.

The DUPUR® heat exchanger with its permanent pigging system is a suitable application for petrochemical industry, food industry, biodiesel plants, paint industry, thermal oil circuits in power distribution systems, geothermal heat recovery from mine water (surface brown coal mining) for buildings and more.

The advantages are:

- No filter for pre-cleaning of the medium required (high dirt contamination can be handled)
- Surface cleaning within seconds
- Cleaning intervals adjustable in accordance to the level of debris
- Intervals can be controlled by temperature (automated control)
- Heat transfer remains steady on a high level
- Silt, crust formation, calcification and fouling in heat exchangers is effectively avoided
- No chemicals necessary for cleaning
- Elimination of redundant replacement systems and more

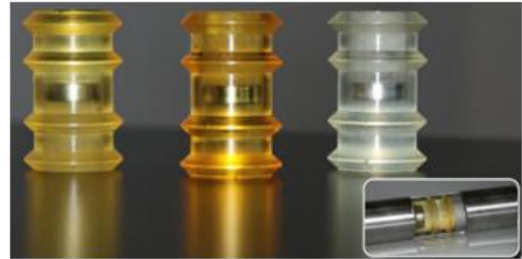


Fig. 1: permanent cleaning pigs for different conditions.

The lifetime of the pigs depends on the kind and amount of debris. Some pigs were removed after 4 weeks. Other pigs have been running for over 3 years.

Debris will be removed automatically during uninterrupted operation.



Fig.: 2 pig stations (dark grey boxes), each station controls 4 pigs in 4 different pipelines

Conclusion: a permanent pig system is successfully proven to be extreme efficient. This is a smart solution for several purposes and many industries. Joint ventures are being sought to enter the international market and new fields of application. ●

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Second Queen's Award for the Online Electronics Group

Online Electronics Limited of Aberdeen the parent company of business units in Houston, Dubai, Singapore, Perth W.A. and specialist Online Valves Limited has been awarded the most prestigious Queen's Award for Enterprise 2014 for achieving outstanding results in International Trade.

Recipients of the Award in 2008 the business is again one of an elite group of companies that have been recognised as deserving winners of the UK's highest accolade for business success.

Founded in 1996 now with fifty employees, Online Electronics, designs and manufactures pipeline pig monitoring, pipeline data communication and logging systems. It wins the Queen's Award 2014 International Trade for sustained growth in overseas export earnings over the last five years, entering 30 new markets in the period.

Managing Director Brian Gribble commented, "Receiving the Queen's Award on a second occasion is a great honour and an incredible achievement made possible by the professional standard of work delivered by all of our staff in Aberdeen and across all of our overseas business units." ●



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CPPI launches 40inch and 48inch Tri-axial MFL inspection tools

China Petroleum Pipeline Inspection Technologies Co.,Ltd (CPPI) has launched two new diameters of its Tri-axial MFL inspection technology-40inch and 48inch. The new tools are equipped with Speed Control System and Mapping Unit.

In late April 2013, the first Tri-axial MFL tool for 28-inch pipe made its debut in the Southwest Oil and Gas Field pipe. The operator was pleased with the process and results, and scheduled several additional segments for inspection in the coming months. From now on, operators of larger diameter pipelines can also achieve the benefits from CPPI's new 40inch and 48inch tools.

CPPI has started the basic research of Tri-axial MFL technology since 2009. Magnetic field is a three-dimensional vector, using a cylindrical coordinate, the vector can be divided into 3 components, axial, radial and transverse. Compared with Uni-axial MFL inspection, Tri-axial MFL inspection technology can obtain more magnetic field distribution characteristics. Probability of detection (POD), probability of identification (POI) and sizing accuracy are enhanced through a 13-in-1 sensor technology that incorporates four main Hall Effect corrosion sensors oriented in axial, radial and transverse vectors respectively, combined with an eddy current sensor for internal/external discrimination.

The 40inch and 48inch Tri-axial MFL inspection tools will continue to assist pipeline operators in improving pipeline integrity. The Tri-axial MFL inspection tools is currently available in 20inch, 28inch, 40inch, 42inch and 48inch.



CPPI launches 40" and 48" Tri-axial MFL inspection tool ●

Clock Spring Marker Bands

Introduction

Pipelines require periodic inspection to detect imperfections in the wall of the pipe that could lead to subsequent failure. Inspection is done by several methods, the most common of which is running an inspection tool through the pipe, known as in-line inspection. These tools are designed to inspect the steel for imperfections by use of various technologies including, but not limited to, ultrasonic and magnetic flux leakage (MFL). MFL is the most common technology used for this inspection task. It is valuable for a pipeline operator to be able to detect prior repairs on subsequent inspection so that time is not spent determining the disposition of a defect detected by the inspection equipment. The older more traditional repairs are identifiable in the magnetic flux leakage inspection tool data but the **Clock Spring** composite repairs are invisible to this technology due to their non-metallic nature.

Clock Spring Marker Bands are steel bands that are installed at each end of the Clock Spring repair. These bands are clearly detectable by MFL inspection tools and they indicate the position of a Clock Spring repair. Figure 1 shows MFL readings of two defects close to a girth weld that have been repaired with Clock Springs that had the markers bands installed.

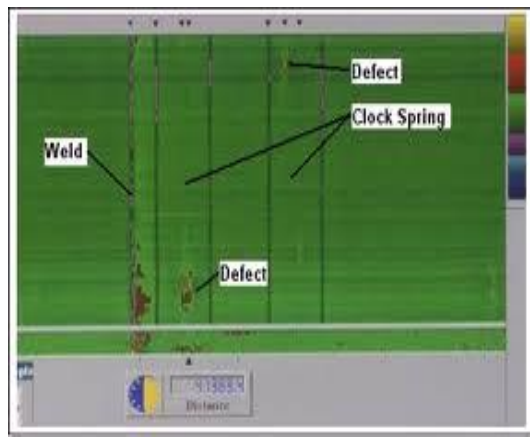


Figure 1. Detection of Marker Bands by MFL tool. The Clock Spring is situated between the two marker bands

The Design

The design of the marker band is quite simple in principal but was a result of considerable thought. Clock Springs have been carefully designed and it was important that the marker bands did not affect or modify the composition of the composite material in anyway. The elegant solution was to wrap a steel band around the repair at each end of the repair area. Research conducted during the design of the Clock Spring had already shown that steel in contact with the outside of the Clock Spring composite caused no issues. Also installing these bands would be a quick and simple procedure.

Other methods to allow the repair to be MFL tool detectable could have been used. One of these was to modify the structure of the composite to include steel in its makeup. This was not considered by Clock Spring as a viable option. Having a steel member sandwiched within the composite causes a

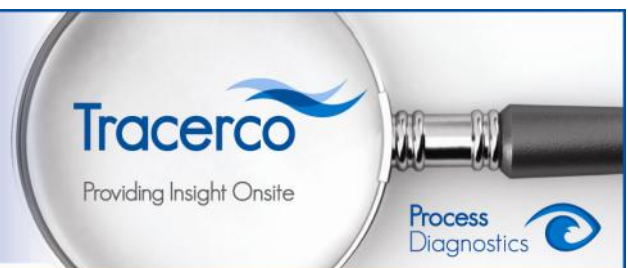
number of potential long term performance issues. The addition of steel within the composite structure reduces the ratio of glass to resin. In a Clock Spring the ratio is approximately 66% E glass to 33% resin. This ratio was carefully determined during the extensive long term durability testing in the R&D phase of the Clock Spring's development. Significant reduction in the E glass percentage causes a significant reduction in the performance and durability of the composite. Also Steel has a very different modulus to the E-glass that is used in the manufacture of the composite. Continued stresses within the repair would create the potential for the resin/fibre matrix to separate from the steel component. Not only would this damage the composite it would also create capillary paths that would draw moisture into the composite material. This moisture would cause internal swelling which would cause further damage and create further capillary paths for moisture ingress. The result would be a runaway situation that could seriously reduce the strength of the repair in a relatively short space of time. In addition to this any moisture drawn in by capillary action would cause the steel to rust. Rust has a larger volume than steel and this would mean an additional mechanism of swelling within the composite matrix.

Use in the Field

To date many thousands of Clock Spring marker bands have been installed and no evidence of any reduction in performance of the composite has come to light.

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Figure 2 shows marker bands being installed. Figure 3 shows the marker bands installed over the repair however, you will see in Figure 2 that some operators prefer to install the markers bands outside of the repair area. This is an acceptable method providing that the marker bands are well insulated from the pipe ensuring that metal to metal contact is not possible. Both methods of installation are in accordance with Clock Spring's documented literature.



Figure 2. Clock Spring Marker Bands being installed



Figure 3. Clock Spring Marker Bands installed as per standard procedure

Defect Shielding Caused by Steel Markers

The presence of steel acting as a marker can shield the defect from detection by the MFL tool. If steel in some form was to be incorpo-

rated into the composite structure its location within the repair would be fixed. The position of Clock Spring Marker Bands can be adjusted to avoid shielding of the defects. Having fixed markers can lead to a situation where it is impossible not to have the marker over the defect location. The defect would then be shielded from future MFL surveys.

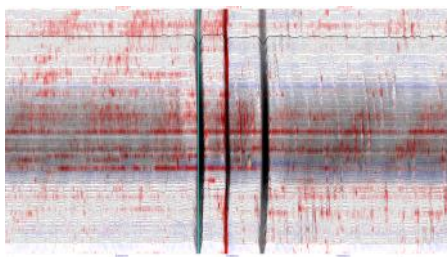


Figure 4: The Clock Spring Marker Bands are seen along with a girth weld

Summary

The design of the Clock Spring system is the result of extensive testing and validation. Clock Spring Marker Bands are a method of allowing MFL tool detection without creating any deleterious effects to the long term characteristics to the Clock Spring repair. They have been used extensively and have been proven in service. Other methods of making a composite sleeve MFL detectable are available. However, any pipeline operators considering such methods should satisfy themselves that the marking system will cause no detriment to the repair.

For an installation video please visit:

https://www.youtube.com/watch?v=C_fsJenjrbo

NDT Global's UT inspection tool for crack detection of 6" pipelines

NDT Global has announced the commercial availability of LineExplorer UC crack detection Intelligent Inline Inspection (ILI) tool for 6-inch pipelines.

The new ultrasonic ILI tool detects and sizes axial cracks and crack-like features such as fatigue cracks, stress corrosion cracking (SCC) or weld cracks.

Six-inch size pipelines are predominantly used for the transportation of refined products as well as crude oil over relatively short distances. The tool handles inspection distances up to 80 km and has 1.5D bend capability. Its in-house designed sensor carrier is equipped with 144 newly developed crack inspection sensors to secure optimum inspection data quality.

Cracks and crack-like features can appear during manufacturing, construction and operational life of a pipeline. Inline Inspection and subsequent data analysis ensure early detection of cracks thus preventing pipeline failure which happens when the crack dimension reaches a material-specific critical size.

NDT Global's new 6-inch ultrasonic tool is a result of the company's tool expansion program and reflects the growing demand for enhanced inline inspection data accuracy and integrity services by pipeline operators and owners.

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New software helps operators manage pressure cycle fatigue analysis in aging pipelines

Quest Integrity Group recently released *Pacifica*[™], a new software solution to perform pressure cycle fatigue analysis on seam crack flaws in pipelines.

In aging pipelines, failures can occur after long run times due to an accumulation of pressure cycles. Since the safety and environmental consequences of a pipeline failure are highly significant, Quest Integrity Group developed *Pacifica* to help operators manage the cyclic fatigue on their pipelines. Based on the American Petroleum Institute's advanced Fracture Mechanics methodology, this software solution helps operators meet regulatory expectations, observe best practices, and effectively manage the risk of failure due to pressure cycle fatigue. In addition, this solution increases the information yield from operators' existing investments in SCADA systems and on-line monitoring sensors.

Fatigue growth analysis is performed using actual pressure data for real-time monitoring, while hydraulic modeling determines true pressure loading at crack locations throughout the pipeline for accurate growth predictions. *Pacifica* also uses a database structure to store pressure data for future analysis. With the support of Quest Integrity engineers, the analysis data guides prioritization of anomaly investigations, hydrotest and in-line inspection schedules, material property testing requirements and evaluation

of the impact of operations on seam weld integrity.

Pacifica adds to Quest Integrity's advanced analytics solution set focusing on pipeline integrity management. Pipeline operators can now accurately model crack fatigue growth in pipelines, set re-inspection schedules, prioritize anomaly investigations and enhance their overall program by utilizing this new software. ●

US natural gas supplier uses innovative inspection technology from 3P Services

3P Services has created new inspection tools for the US natural gas supplier Pacific Gas and Electric (PG&E). They have been successfully deployed in their high pressure gas pipeline system in late February 2014.

The intelligent inspection tools, also known as "smart PIGs", are specially created for the 1m diameter and 20km long pipeline which includes extremely narrow bends. The 1950s-vintage line also shows diameter changes between 30" and 36", and the tools will provide PG&E with a highly detailed analysis of the condition of their pipelines.

The inspection tools collect different kinds of parameters such as geometric deformations, corrosion and metal loss. They use the gas in the pipeline to make it travel, which means there will be no interruption of gas service.

"This is the first time in our history since the pipelines have been installed that we've launched an inline inspection tool to assess the integrity of our pipelines," said Sumeet Singh, PG&E's vice president of assets and risk management in gas operations.

When the data is analyzed, PG&E will have detailed information about the pipeline that was unobtainable before.

The inspection operations were captured by various media such as NBC, Bay Area TV and radio reporters. This has a particular reason. The inspected pipeline is part of the natural gas distribution system for the densely populated peninsula between the Pacific Ocean and San Francisco Bay.

That is where one of the most serious US pipeline accidents happened about 3 years ago. A gas line section exploded in San Bruno, south of San Francisco. 8 humans lost their lives and a fire wall of 300m height destroyed dozens of homes. The pipeline operator, PG&E, sought for modern inspection technologies and met the specialists of 3P Services of Lingen, Germany. A contract was awarded to design, build and test the inspection tools two years ago.

After the PG&E representatives have approved the inspection devices in last winter, it was time to run the special tools in the pipeline under real conditions. It has been a success and 3P Services is looking forward to inspecting more "unpiggable" pipelines for PG&E. ●



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ROSEN introduces new ATEX Certified EPD device

To localize and track inspection or cleaning tools during their run, they are usually either equipped with an ITX Transmitter or with strong magnets, whose fields penetrate the pipe wall or magnetize it. The signals of the ITX Transmitter or the magnetic fields can be received by a receiver outside the pipeline.

ROSEN has now developed a new generation of ATEX certified instruments for tool localization at its Research and Technology Center in Lingen, Germany.

Today ATEX certification is an essential requirement if a product is to be used in potentially explosive atmospheres. The certification must be provided by a recognized certification body.

These bodies check and verify on the one hand, whether the design is in compliance with current standards. On the other hand, statutory tests are performed. The ROSEN ATEX EPD (EPD - Electronic Tool Detector) has this assessment and all tests were successfully completed and documented by a EC-Certificate of Conformity.

The new ATEX EPD combines essential features of previous receivers. In addition, the partially very weak electromagnetic fields can be displayed on an LCD display with the ATEX EPD, improving the readability of the received signals significantly. The new

ATEX EPD is a completely revised and expanded device.



ATEX EPD with carrier

The following list summarizes the key features of the new ATEX EPD:

- ITX Transmitter Locating
- ITX and MFL Tracking
- Yoke Detection
- ATEX and IEC Ex Compliance
- Graphic LCD Display, GPS, Bluetooth

The first devices were already successfully used in Mexico and Colombia and customers are showing great interest. ●

New multi-million pound offices for IKM Testing (UK) Ltd

IKM Testing (UK) Ltd is investing in a new multi-million pound facility for its pipeline and process operations. The £3.82 million purpose-built facility, located in Westhill Business Park near Aberdeen, UK, will provide a 22,500sq ft base for IKM's

Aberdeen International Division headquarters.

Mark Rasmusen, director of IKM's International Division, said the firm was going to have an exciting 2014. He said: "We have outgrown our old office and workshop/yard in recent years as we've considerably expanded our operations.

"The new high specification building will allow us to continue our growth and provide us with a purpose-built facility with a larger office, workshop and yard space incorporating a training facility and designated test bay.

"The move will allow us to consolidate our existing properties in Aberdeen in an easily accessible location, which will make us more streamlined and allow a bigger work capacity, and also shows our commitment to the UK market, not just to clients but also to our employees. ●

Innospection Ltd's subsea riser scanner MEC-MPS200+ demonstrates superior defect detection

A successful defect detection verification trial of the external SLOFEC based subsea riser scanning system, MEC-MPS200+, was performed on coated heavy-walled steel riser pipe samples by **Innospection** for an Operator in the Gulf of Mexico.

The 6", 8" and 20" riser test samples with wall thickness up to

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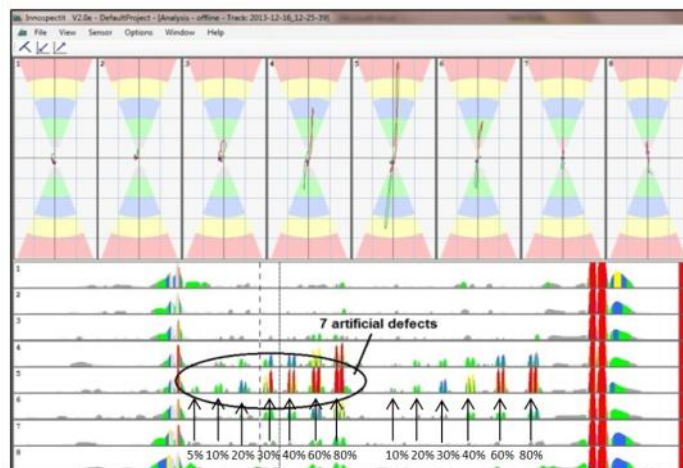
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1" and external Splashtron coating of 12.7mm were the subject of the verification trial. Artificial 10mm and 20mm external and internal defects with wall loss varying from 5% to 80% were machined onto the coated riser samples. The target of the verification trial was to show the defect detection capabilities of the SLOFEC technique on external and internal defects having a wall loss of at least 10%.

The full detectability down to 10% wall loss was achieved for both the 10mm external and internal defect on all three coated pipe samples. In addition, this target was exceeded as the MEC-MPS200+ scanner was able to detect the 20mm external defects having a wall loss of 5% on all three coated pipe samples. This demonstrated the superior detection capability of the SLOFEC technique despite the fairly thick pipe coating.

In conclusion, the quality of the obtained test data was good and the artificial defects were classified as well detectable when the corresponding Eddy Current signals show a signal-to-background ratio of 6 dB and higher. The ratio between the pipe wall thickness and coating thickness showed relevance to the field penetration and detection capability.

Although the MEC-MPS200+ scanner is configured



Signals display showing detectability down from 10% wall loss onwards for Ø10mm and Ø20mm internal defects on 6" coated riser sample

for inspecting comparable pipe wall thickness and coating thickness as in this verification trial, some other tests performed have shown additional inspection capabilities of the SLOFEC technique with additional induced field strength.

With the completion of this verification trial, a mobilisation to perform an external inspection of five coated hull risers on a platform in the Gulf of Mexico will follow shortly. ●

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