Pigging Industry News
the newsletter of the Pigging Products & Services Association
May, 2007

News from the Secretary

THE PPSA held its Annual General Meeting at the Pipeline Pigging and Integrity Management conference in Houston in February when Brent Cross, Global N-SPEC Manager for Brenntag Oil & Gas took over the role of President for 2007.

"The PPSA has grown considerably over the years into one of the major oil and gas services' associations worldwide", says Brent Cross. "Brenntag, with its N-SPEC business, has been an active member since the early 1990s, and the PPSA has brought many business opportunities for all Association members, including Brenntag, since then. It is an excellent communication channel for the members to the outside world as well as to authorities, and an ideal platform for producers, processors and operators from the oil and gas industry to find the most complete picture of technical possibilities currently available. I am proud to be the new President of such an organization, and I am looking forward to taking this organization to the next level".

We would like to take this opportunity to thank Brent's predecessor, John Lambley of Tracerco, UK, for his valuable contribution to PPSA. John continues as a member of the Board while Jack Angel of Baker Hughes, USA, and Lloyd Pirtle of T D Williamson, USA, were elected as directors, to replace Coleman McDonough (retired), and Bryce Brown of Rosen, who had completed his term of office. They join directors John Healy of Macaw Engineering, UK, Dr M K El Chami of Lin Scan, UAE, to make up the Board.

2006 was a good year for PPSA: its membership is now well into in the 80s and includes leading pig manufacturers and service companies from throughout the world. A very successful one-day seminar was held in Aberdeen in November, with ten speakers from the Association demonstrating how PPSA members solve a wide variety of pipeline problems. It was particularly interesting to hear the operator's view from Alf Tordel of Statoil, Norway, who started the day with guidelines for best practice in pigging pipelines with high wax content. As always, there was time for discussion during the breaks when delegates and PPSA members mixed together in the exhibition area. If you have not attended a PPSA seminar, why not make a note in your diary for 14 November, 2007, when we will be back in Aberdeen.

Another excellent PPSA event was the 2nd Annual Golf Tournament held in Houston on the Sunday before the pigging conference. It was well supported by members and a good day was had by all.

The Houston pigging conference continues to grow with even more people attending the event

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this year. Our congratulations go to the organizers and the contributors.

We would also like to thank PPSA members who displayed our directories and leaflets on their stands at conferences all over the world throughout the year: Inpipe, UK, Inline Services, USA, N-Spec, USA, T D Williamson, USA, and Clarion Technical Conferences, to name but a few.

PPSA members will remember a request that came in just before Christmas via Chevron, from the Woburn Safari Park, UK. The Safari Park was looking for foam pigs for their elephants to play with. Word went out instantly through the PPSA technical enquiry service, and a number of replies were quickly received. However, we found that Inpipe had already cornered the elephant market by supplying Woburn's near neighbour, Whipsnade Zoo (*see left*). We hope they managed to make the Woburn elephants' Christmas a happy one, too. It was later revealed in Houston that Knapp Polly Pig has supplied spheres for gorillas resident in the US. It is good to know that PPSA members are always ready and able to solve any problem. ●

Industry news

Major investment in design and processes

UK-BASED **Pipeline Engineering** (PE) has undertaken a complete redesign of its product range to ensure its pigs, closures, and signallers continue to be among the leaders in the industry, and to meet the ever-increasing variety of pipeline needs, quality requirements, and delivery expectations of customers, as well as being designed for manufacturing efficiencies to provide competitive products. This has been done in parallel with a major investment in new CNC plant and the streamlining of design and manufacturing processes to meet the increasing volume of business, requiring shorter lead times, going through the company's new UK manufacturing facility in North Yorkshire, where in recent years production has increased fourfold.

A typical example of these improvements is the company's pig range which, although

New members

Full

Ajaks, Poland
China Petroleum Pipeline Inspection Technologies, China
Langfang Greentsing Pipeline Technology Co Ltd, China
Startrak Pigging Technologies, USA
Tube Tech International, UK

Associate

Electrochem Commercial Power, USA
Statoil, Norway

Individual

Adedayo Olowe, UK
Martin Phillips, USA
Patrick Porter, USA

Honorary

Coleman McDonough, USA

designed around a range of standard component parts, can now be constructed in such a way that every pig is engineered to meet the specific requirement of a pipeline not simply to be the nearest fit. The economies of using standard parts with the flexibility to construct a unique pig means that a better cleaning operation is done by the 'tailor-made' pig as opposed to an 'off-the-shelf' pig, but at the same price.

Over the years PE has grown to become a major global supplier of utility pigging equipment, with over 90% of its production exported. The company has recently developed a 'solutions' business, providing a specialist pigging consultancy design, prototyping, testing, and deployment services to some of the leading pipeline operators. This part of its business now represents a major part of the company's turnover. ●

Output restored after condenser cleaned

UK-BASED power generator **InterGen** was experiencing a steady decline in output from its 860-MW combined-cycle, gas-fired, power station at Spalding, in the UK. The problem was traced to reduced efficiency of the plant's air-cooled condenser (ACC), whose fin-fan units had progressively become clogged with pollen and other dust from surrounding agricultural land. The built-in cleaning system could not clean the ACC fast enough, so **Tube Tech** was called in. Following a week of intensive night working by Tube Tech, the ACC was completely cleaned and the power station was restored from a 500-MW low to its design output.

The Spalding Energy facility's extremely efficient, low-noise, environmentally-sound air-cooled condenser technology allows it to use 90% less water than typical water-cooled plants. The plant also achieves very high levels of efficiency by directing the exhaust heat from the combustion turbines to heat-recovery steam generators (or boilers) that then produce additional power from a steam turbine. The steam condenses rapidly as it is passed through an air-cooled condenser (ACC) to create a vacuum that increases pressure and efficiency in the turbine. The ACC is comprised of 35 fin-fan units arranged in seven 'streets', with five 'plenums' per street. The plant's efficiency means that Spalding is among the cleanest fossil-fuel power plants in the UK.

During 2006, the plant management became aware that on hot days it was difficult to maintain the necessary vacuum. On investigation, extensive accumulations were discovered on the cooling fins of the ACC. The power station is located in an area of quite intensive agriculture, which gives rise to high levels of airborne pollen in the spring and, to a lesser extent, dust at harvest time. These airborne particles had been steadily clogging-up the cooling fins of the condenser, resulting in a significant loss of efficiency – the power station's output had fallen to around 60% of its design rating – around 500MW. Although the ACC is inspected regularly and cleaned where necessary, it tends to clog-up again fairly quickly. There is a built-in semi-automatic cleaning system, which has to be manoeuvred into place manually for each fan unit. This was tried first for four days and was proving successful, but it was taking too long, with significant loss of production each day. The manufacturer of the built-in cleaning system was unable to help in the time available, but fortunately a member of staff at the plant had had dealings with Tube Tech before and passed the contact details to the appropriate manager.

The client takes up the story: "Tube Tech responded very well to our enquiries - from initial contact

to coming on site and beginning work was only a week, which was very helpful. The job done was excellent; I have no complaints at all. Tube Tech happily accommodated working night shifts for us, which enabled us to shut down some fin-fan units to improve the working environment for them. It also helped us maintain output during peak demand. We didn't really need to get involved at all – the Tube Tech team just did their stuff and we hardly knew they were here – apart from the obvious results." The client says that the improvement in performance was almost immediate: "It took a week to clean the whole ACC, by which time it was back to design performance." For the cleaning operation, Tube Tech used a telescopic lance system, which enabled the team to work from walkways inside the apexes of the fin-fan units – where the deposits were worst – eliminating the need for costly scaffolding. ●

Multi-diameter pipeline inspections

INTEGRTY assessment based on ILI technology is now frequently mandatory, since it can guarantee safe and efficient operation. However, many pipelines were constructed before in-line inspections became a requirement. Defying inspection with off-the-shelf tools, approximately 40% of the world's gas, oil and product pipelines are classified as 'unpiggable'. A large proportion of these are multi-diameter lines: apart from different internal diameters, for example 18-24in, 28-42-in, or 40-48-in, these older pipelines typically have special fittings, such as unbarred Ts or heavy-wall 1.5D bends.

To optimize the development of multi-diameter tools, **Rosen** has introduced a simple method for classifying the different types of multi-diameter pipelines: the *MuDiCompass* (multi-diameter complexity assessment). To assess the complexity of pipelines, three parameters are used:

- passage ratio: minimum internal diameter divided by maximum outside diameter;
- bend ratio: the maximum length of a rod equivalent which can still pass the ID of a bend is determined to assess bend complexity;
- absolute pipeline sizes including cross-sections to ensure passage of all required parts even through the smallest pipeline ID.

On the basis of these calculations and values, the inspection company can then determine the appropriate complexity level of the required multi-diameter tools which are, in analogy to pipelines, also divided into five classes of different complexity (classified as A – D, and R (for robotic inspection alone)).

26-30in multi-diameter corrosion-detection tool

Statoil requested a 26-30in multi-diameter MFL ILI tool for the inspection of one a 150-km offshore gas pipeline in the North Sea. Rosen's assessment method showed that a complexity group B tool was required for the task. The minimum bend passage capability of this tool is 3D: since offshore pipelines usually have a higher wall thickness, the tool had to be designed in such a way that it could magnetically saturate a wall thickness of at least 23mm in the 30-in section of the pipeline. Nevertheless, the main challenge of this project was the combination of a multi-diameter tool with a speed-control unit which was required due to the high gas flow rate in the line.

The function of a speed-control unit integrated into a corrosion-detection tool is to achieve a programmable target speed between 0.5-5m/s by controlling the flow of the medium through the unit. The constant speed leads to a significant increase in the quality of the data collected; additionally, speed control also allows the operator to maintain high gas flow rates without any throughput loss during the entire inspection process resulting in significant cost savings. A project aimed to overcome the challenges posed by the Statoil pipeline was started in April, 2006; in October of that year, a multi-diameter ILI tool combined with a speed control unit with a total length of only 3.244m was ready for operation, and the pipeline was successfully inspected by this tool.

18-24in multi-diameter corrosion-detection tool

In January, 2006, Rosen was contracted to develop, build and test an 18-24in multi-diameter corrosion inspection tool, intended for a 48-km long 24-in diameter pipeline which decreases to 18in for 7.2km before expanding to 24in again. Although the

numerous 1.5-D bends located in the 18-in section posed some difficulty, the most complicated aspect of this project was the thickness of the pipeline wall. Since it reached up to 21mm in some of the bends, the effective internal diameter was reduced to 16.2in (411mm).

Standard 18-24in multi-diameter tools cannot pass 1.5-D bends with this wall thickness, and it was therefore determined that a multi-diameter tool of complexity group D, i.e. the most-complex tool classification, was required for the task. For the purpose of developing and testing the tool, an 18-24in test loop was built at Rosen's plant in Germany, making it possible to simulate all the challenges of the pipeline, including the heavy-wall 18-in, 1.5-D bend, section. Consisting of three units and with a total length of 3.2m, the finished tool could be easily launched and was capable of continuous inspection of internal diameters between 16in and 24in.

Since simulations conducted in the purpose-built loop in September, 2006, showed that the tool could pass the 18-in, 1.5-D bends, despite a wall thickness of 21mm, the tool was released in late October. The actual inspection was successfully completed in early November. The line had 27 challenging 24-in 1.5-D bends of 90° and several 45° bends in the 18-in heavy-wall section. Despite these difficult conditions, the tool passed through the line without any damage. Moreover, the inspection data confirmed smooth run conditions and a suitable rotation rate. The specified levels of tool performance and defect detection were achieved in all areas.

Pipeline group introduces new software

GE's PII Pipeline Solutions division has launched a new version of *PipeView SheetGen*, its software tool designed to generate pipeline alignment sheets directly from maintained data sources. The software application automatically generates alignment sheets directly from relational databases and GIS, and provides up-to-date, construction-quality drawings of a pipeline system for field use as well as analysis and decision-making purposes.

With this release of the software, users can directly access the ability to format sheets, place sheets and generate sheets from within *ArcGIS* – a GIS from **ESRI**. The alignment sheets can be generated from data stored in *ArcGIS* as well as rendered in *ArcGIS* layout space for plotting and storage purposes. Using *SheetGen*, users can customize alignment sheets using alignment sheet templates. Individual sheets with associated templates are then placed automatically or interactively along the pipeline using a module called *Sheet Placer*. From there, generation of alignment sheets can be performed for all or some of those sheets directly from the most up-to-date data.

The company has also launched a major new version of *PipeView Integrity*, a suite of software solutions to help transmission pipeline operators and local distribution companies assess and manage the integrity of their pipelines. The software combines several important integrity tools – including a data-alignment manager, feature assessment, risk assessment, and integrity planning – into a single, integrated environment.

Users can select their area of interest using either a Google Map interface or a schematic view of their pipeline system. The new interface then provides workflows based on the specific tasks that a user is completing: loading and aligning data, performing engineering-critical assessments of inspections, calculating risk to which the pipeline is subjected, or generating integrity-management plans.

Nether-Drive takes the strain

PIG launching and receiving normally involves the operation of many valves, most of which are small and do not take a lot of time to operate. However, the main and kicker line valves are large, and can make the operational switch-over procedure longer than necessary. In order to remedy this problem, valve-control specialist **Netherlocks** has developed a device to facilitate the manual operation of problematic valves, whether they are high-torque, difficult-to-reach, or require many handwheel rotations to activate. The company's *Nether-Drive* is a portable pneumatic handheld actuator that has been designed to allow valves, according to the company, "to be operated at least

The Nether-Drive *is designed to be suitable for all handwheel-operated valves*

40 times faster than by conventional means".

Opening or closing large manual valves can also place a physical strain on an operator's body, and it is in an employer's interest to combat this source of stress, both for the well-being of its workforce and to comply with relevant legislation.

The *Nether-Drive* is said to be suitable for all handwheel-operated valves when used in conjunction with its universal drive plate. Instead of an expensive actuator, each valve is fitted with a plate, allowing every valve in a plant to be activated by a single drive unit. Since it is air-driven, the drive is also safe for use in potentially-explosive atmospheres. The portable actuator is supplied in lengths of 480mm or 1182mm; an optional aluminium storage box is available, including a 20-m reeled air hose, an integrated air filter/lubricator, and an air-reduction valve.

Critical precommissioning in Kazakhstan...

ABERDEEN-based **BJ Process and Pipeline Services** has been awarded a contract by **Saipem Kazakhstan** to provide precommissioning services on pipelines for the Kashagan Field development experimental programme project located in the North Caspian Sea in Kazakhstan. During the next two years, BJ is contracted to provide swabbing, air-drying, nitrogen purging and packing, and caliper survey services on the 28-in diameter, 95-km long main oil and gas pipelines, the 18-in, 95-km long fuel-gas trunk lines, and associated 18-in and 6-in infield lines.

According to Lindsay Link, general manager of BJ PPS, the operation has been designed to minimize consumption of liquid nitrogen, reduce costs, and limit potential logistics challenges. The company will draw from its large Kazakh resource base to execute this work, and will support the operation from its bases in Aksai and Atyrau.

...and safety testing for Shell Philippines

BJ PPS has completed a contract for **Shell Philippines Exploration** to provide a range of process and pipeline services for the Malampaya gas-to-power project, located in the Malampaya Field offshore Philippines. The company has carried out safety testing and maintenance services, including nitrogen leak detection, nitrogen purging and flushing, and a full programme of joint integrity-management procedures. Following completion of the maintenance programme, the BJ PPS team performed a series of nitrogen leak detection tests to ensure a safe, leak-free start-up.

"We used a process called 'flawless start-up' during the preparation phase of the shutdown. This allows us to identify any potential flaws that can hamper a trouble-free start-up after all of the maintenance work has been completed. BJ's joint integrity-management and nitrogen/helium leak testing ensured that we had a leak free start-up," said Gerry Linklater, shutdown manager for Shell Philippines Exploration.

Weatherford expands into Brazil

HOUSTON company **Weatherford's** Pipeline & Specialty Services group (P&SS) has opened a new base at Macae, Brazil. Jason Reynaud has assumed the position of regional manager, and will be responsible for Mexico, Trinidad, and all of South America; Andrew McFarlane has recently joined the company as Brazil country manager.

Having been contracted for work starting Q1, 2007, the company is committed to providing quality pipeline and process service work throughout South America, bringing its deepwater expertise to Brazil in particular. It offers a range of services used throughout the lifecycle of pipelines, including cleaning, filling, testing, dewatering, drying, purging,

nitrogen (membrane and cryogenic), inspection, and rehabilitation.

Pipeline-inspection/ integrity link

IS today's inspection technology capable of delivering information that enables effective integrity management? The answer is ambiguous. In the 1990s and early 2000s, the quality of high-resolution started to bear fruit, and in-line inspection was upgraded to a preventive service. Today, it has become evident that even preventing leaks is not enough; we have to demonstrate the lack of risk of having a leak, and this calls for an holistic approach

We have to consider all aspects that may risk a leak, so looking at wall thickness loss and considering operational stresses only may no longer be deemed enough. Metal loss and pipe-wall deformation (sometimes in combination with forces other than pressure) cause a rise in local stress levels. This increase in stress can dramatically increase the risk of a leak; finding, sizing, and keeping track of these anomalies is a difficult task, considering that a pipeline consists of a great number of components, often runs over a long distance, is buried or is on the sea bed, and third parties have almost unlimited access to it. The capabilities of modern inspection technology are limited: tracking of all anomalies reported by multiple inspections is therefore required in order to improve confidence level and accuracy of data, and this can now be done.

Dubai-based **Lin Scan** has developed a software tool it calls *PIL* (pipeline inspection/integrity l), which is designed to correlate and enhance all inspection information to provide more-accurate sizing and higher confidence levels. PIL is also designed to carry-out diagnostic integrity-management activities such as identifying different corrosion processes, determining corrosion growth rates, and predicting a failure date. It can be extended to provide advice for both corrective maintenance activities and remedial technologies.

Brenntag joins supplier database

BRENNTAG Oil & Gas **Europe**, one of the largest chemical distributors worldwide and a provider of innovative pipeline-cleaning solutions, has been officially registered as a supplier in the FPA (First-Point Assessment) database. The FPA database is the oil and gas supply chain database for the UK and the Netherlands, and is a division of **Achilles Information**, a leading provider of supplier-management information. The database is rapidly evolving into a key tool used by purchasers in the oil and gas industry to identify and select current and potential suppliers when awarding supply contracts.

All suppliers listed in the database have gone through an extensive audited process to create a complete company profile, including specific company data, information about products and services, project references etc. The database currently matches the needs of over 70 purchasing organizations with the capabilities of over 2400 suppliers, and it is used by major operators and pipeline owners in the North Sea area. Time and cost saving benefits are achieved (on both the purchaser's and the supplier's sides) through minimizing – and, in many cases, eliminating – duplication work in the administrative processes related to sourcing of products and services.

Electrochem has record year

PPSA member **Electrochem Commercial Power**, a leading manufacturer of lithium battery packs and cells used in extreme environments, and a division of **Greatbatch Ltd**, recently announced a 32% increase in cumulative sales revenue during the year to 29 December, 2006, compared to the prior year. Electrochem's sales jumped to $43.7 million against $33.2 million in 2005.

The robust growth was primarily driven by increased market penetration, new product introductions, and greater value-added assembly sales, and the company's expansion was seen across multiple markets, including oil and gas, oceanographic, and seismic surveying applications. For over 25 years, the company has provided high-performance lithium batteries for demanding applications including pipeline inspection.

Benefits of joining the Pigging Products & Services Association

Members receive:

☆ e-mail notification of technical enquries and tender invitations received by the PPSA
☆ entries in the PPSA's Buyers' Guide and Directory, and on the PPSA's web site
☆ free copies of *An introduction to pipeline pigging*
☆ free access to the PPSA's database of pipeline pigging contacts
☆ free technical information and problem-solving
☆ free copies of the PPSA Buyers' Guide and Directory and regular copies of *Pigging Industry News*

☆ **the opportunity to present papers and/or exhibit at PPSA seminars**

☆ discounts at pipeline pigging conferences organized by *Pipeline World* and *Clarion Technical Conferences*

To join the PPSA, please fax back the form below.

Annual membership fees:

Full member: £935 plus £50 joining fee
Associate member: £420 plus £50 joining fee
Individual member: £145

Note: UK members' fees are subject to VAT

Please send me a membership application form

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❒ Individual (£145)

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