August, 2008

Pigging Industry News
the newsletter of the Pigging Products & Services Association

President's letter

John Lambley of Tracerco was re-elected President of the PPSA at the Annual Meeting held in Houston in February.

IT WAS indeed an honour to be elected to serve a second term as President of PPSA. I would like to take this opportunity thank my predecessor, Brent Cross of N-SPEC, USA, for all his excellent work in support of the Association. Brent continues as a member of the Board. Following elections held at the AGM, we welcome Peter Fretwell, Pipeline Engineering, Ullrich Schneider, NDT Systems & Services, and Kevin Scott, Baker Hughes, to the Board and our congratulations go to Lloyd Pirtle, T D Williamson, who was appointed Vice President for 2008.

PPSA continues to grow and now has over 90 members. The Aberdeen Seminar drew even more delegates last year, with nearly 100 people attending, so much so that we have booked additional space for 2008. The seminar will be held on 19th November at the Marcliffe Hotel in Aberdeen. A call has gone out for papers and the programme will be finalized shortly.

PPSA held its Annual Golf 'Classic' at the Blackhorse Golf Club in Houston earlier this year, prior to the annual pigging conference. Although I could not be there, I know the day was a great success and on behalf of PPSA would like to thank our sponsors, Shell who provided lunch, and hole sponsors, Baker Hughes Pipeline Management Group, N-SPEC, Brenntag Nederland BV, Girard Industries, Greene's Energy Group, Rosen Group, InLine Services Inc, TDW Services, and Clarion Technical Conferences. For the full results, see page 2.

The next golf tournament will be held on Monday 9th February, 2009. Everyone is welcome to take part – members and non-members alike. Please do everything you can to support this event, by making up teams or by sponsorship. The golf tournament is entirely self-supporting with any profits going towards prizes and gifts. It is a great opportunity for PPSA members, their customers, and pigging conference delegates to meet up for an informal and enjoyable day's golf.

Last year Brent Cross suggested we issue a questionnaire asking members how PPSA might improve its services. We are now seeing many of the suggestions being put into practice. Both the web site and the directory have been redesigned, with a new section on pigging terminology on the web site. We plan to publish case studies on the site, and have asked members to send their submissions to the Secretary, Gill Hornby. We hope to have this section up and running soon. ●

New members

Full

Gulf Petrochemical Services & Trading LLC, Sultanate of Oman

ROPLAST GmbH, Germany

Pigging Products & Services Association is at:
PO Box 2, Stroud, Glos GL6 8YB, UK
tel: (+44) (0) 1285 760597 fax: (+44) (0) 1285 760470
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Golf results

1st Broch Hennigh, Fraser McDowell, Clint Jenkins, and Bryan Sinclair (Weatherford Pipeline & Specialty Services)

2nd Lloyd Pirtle, Coleman McDonough, Scott Miles, and Kenneth Warfield (TDW Services, Inc.)

3rd Terry Delasalle, Bob Vilyas, Dave O'Brien, and Jerry Crafton (Greene's Energy Group)

- Longest drive ***and*** closest to the pin – Jon Simpson (Gator Environmental)

The winning team receiving prizes from PPSA Secretary, Gill Hornby

Industry news

Commissioning contract for Technip Oceania

BJ Process and Pipeline Services has recently completed a commissioning contract for **Technip Oceania Pty Ltd**. As part of this work, the contractor supplied nitrogen-helium leak-detection services on process piping and vessels associated with the Otway gas-processing plant and the remotely-operated platform located offshore Victoria in southern Australia.

Technip Oceania is developing the Otway project on the Thylacine and Geographe gasfields to supply up to 10% of SE Australia's demand for natural gas. The primary elements of the project are the onshore central processing plant at Port Campbell, 200km SW of Melbourne, and a remotely-operated offshore platform. The gas plant and platform are connected by a network of onshore and offshore flowlines that will have a capacity of approx. 220mcuft/d when operational.

Using nitrogen converters that deliver high flow and high pressures, BJ PPS undertook nitrogen-helium leak testing on all of the process facility's pipework and vessels to ensure a safe, leak-free start-up when live gas production began.

Technical expertise and equipment to carry out the Technip Oceania operation was provided by BJ PPS from its base in Perth, Western Australia. "We are extremely pleased to have had the opportunity to contribute to the safe operation of the Otway gas processing plant," said Lindsay Link, general manager of BJ PPS. "Critical leak detection services were successfully completed, which means that Technip Oceania can rest assured that no hydrocarbon emissions will be released into the atmosphere upon start-up," he added. As a result of its expertise and positive performance, BJ PPS has also been retained to provide pipeline maintenance and support services on a call-out basis, as required.

Over the life of the Otway project, the Thylacine and Geographe fields are expected to produce 950bn cuft of gas, 12.2m brls of condensate, and 1.7m tons of LPG.●

Direct production of pipeline alignment sheets

GE PII Pipeline Solutions has launched a new version of *PipeView SheetGen*, a software tool for generating pipeline alignment sheets directly from maintained data sources such as relational databases and geographic-information systems. The latest release of the software also supports direct editing of enterprise data, meaning that attributes can be edited right from the band view.

"*SheetGen* was the first alignment sheet generation product in the industry when it was developed in 1992," said John Bucci, general manager of GE PII. "The team has created a mixture of power, flexibility, and ease of use, providing improved features that operators will greatly appreciate." With this release of *SheetGen 5.0*, users can generate *ad-hoc* alignment sheets on demand simply by navigating to an area of interest on the map. The software will then produce an alignment sheet using the map extents, allowing the ability to create alignment sheets where required in addition to the use of predefined sheet windows. Additionally, *SheetGen* provides the time-saving feature of on-demand previews for alignment sheet configurations. The sheet layout that the user sees on the screen is the sheet the user receives as hard copy. Such new efficiency-based features and an improved interface greatly simplify the configuration process.

Another feature is a set of predefined templates that users can take advantage of immediately; these contain preset bands that users can simply copy, save, and modify or they can create new ones as needed.

Queen's Award for pipeline technology

ABERDEEN-based pipeline pigging specialist **Online Electronics** is one of 11 Scottish companies to be receiving this year's Queen's Award for Enterprise. The company, which specializes in the development, design, and provision of pipeline pig-monitoring equipment as well as related data communications products and logging systems for the oil and gas industry, started trading in 1997 and employs more than 20 staff members in Aberdeen, supporting staff in both Dubai and Singapore.

The Queen's Award is divided into three separate categories: international trade, innovation, and sustainable development. Online received its award for an outstanding performance in the international trade section. A first-time winner of this award, the company achieved the honour following an impressive 150% increase in overseas sales in the last three years, which took its annual export turnover to more than £1million. Overseas sales now account for more than 60% of its production.

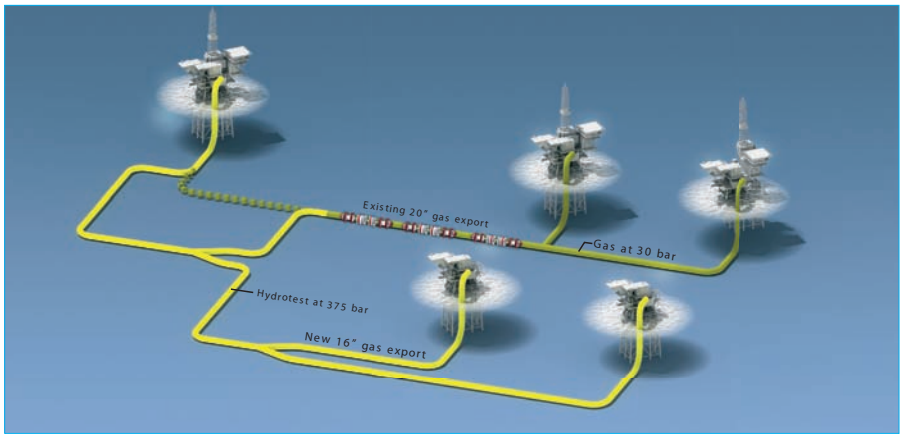
In addition to the company's significant financial success, this achievement also recognizes Online's innovative approach to solving pipeline-related problems, its extensive market research, notable progressive staff increases, and its network of international agents and distributors, which provides a sales force, covering more than 50 countries.

Aramco and Rosen sign MOU for R&D

SAUDI **Aramco** and the **Rosen Group** have signed a memorandum of understanding (MOU) to conduct joint research and development in non-destructive testing technologies for the oil and gas industry. Isam A Al-Bayat, VP of Saudi Aramco Engineering Services, and Hermann Rosen, president of the Rosen Group, signed the MOU at Aramco's headquarters in Dhahran, Saudi Arabia. The activity resulting from this agreement will focus on the development of advanced NDT applications for Saudi Aramco and the global market. Products and services resulting from the collaboration will be distributed world-wide through Rosen's marketing department.

"As a world leader in energy supply, Aramco is always interested in partnering with world leaders in different disciplines to provide solutions, not only for Aramco's needs, but also for the oil andd gas industry in general," Mr Al-Bayat said. "We're pleased that this MOU will result in the creation of high-tech solutions and contribute to the development of our Saudi workforce in the Kingdom."

Owned by the Saudi Arabian Government, Saudi Aramco manages proven conventional reserves of 260bn barrels of oil, the largest of any company in the



Layout of Shell's Shamrock and Caravel fields in the N Sea, and TDW's pipeline-isolation project.

world, and manages the fourth-largest gas reserves in the world. In addition to its headquarters in Saudi Arabia's Eastern Province city of Dhahran, Saudi Aramco has affiliates, joint ventures, and subsidiary offices in China, Japan, Netherlands, Philippines, Republic of Korea, Singapore, UAE, UK, and the USA.●

Record pipeline isolation pressure achieved

STAVANGER-based **TDW Offshore Services AS** has recently been part of a project to tie-in two new gas production platforms on Shamrock and Caravel fields in the N Sea to an existing pipeline system on Corvette field. The company provided its *SmartPlug* technology to enable hydrotest activities to be completed at a pressure of 375bar in the project's 20-in pipeline system, the highest pipeline pressure ever isolated by TDW Offshore Services, following more than 120 pressure-isolation projects it has completed worldwide.

The pipeline-isolation operation was carried out on behalf of **Shell UK Ltd**, which required the tie-in of a new 16-in gas export pipeline to its existing 20-in gas export pipeline infrastructure. While carrying out the subsea tie-in, Shell needed to control the pressurized gas flow in the existing pipeline system. In addition, Shell requested full certification of the new subsea tie-in by carrying out a full hydrotest of the new system to 375bar.

TDW's plugging tool ready for launch.

Double and quadruple block isolation

The project consisted of two different types of pressure isolations. The first isolation, put in place at the beginning of the work, provided isolation from the gas in the pipeline, which made it possible to complete the subsea mechanical tie-in work; the second isolation allowed the hydrotest to be carried out. TDW provided three complete plug trains, each of which was equipped with two isolation modules. One train created a safe and efficient double-block isolation against the existing 30-bar gas pressure in the pipeline. The two other trains created quadruple-block isolation against a pressure of 375bar in the new pipeline.

Typically, a high-pressure isolation project ranges from pressures of 50 to 350bar. TDW achieved what it says is a new world record by sustaining a full pressure hydrotest of the new pipeline at 375bar.

Remote-controlled plugs in the pipeline for 91 days

TDW began working on the tie-in delivery project during the summer of 2006, with extensive engineering, design and testing. In November, 2007, the remotely-operated *SmartPlug* trains were pigged into position in the pipeline, and moved to a position upstream of the subsea tie-in point. While in the line, the tools were managed remotely from two platforms: the normally-unmanned launching and recovery platform Corvette and, as dictated by logistics and weather conditions, Shell's Leman platform.

"The ability to keep the *SmartPlug* train in a pipeline for a

long time is one of the significant advantages of the tool," explained Paul Christie, project manager for TDW. "Keeping tools in production offshore pipelines for lengthy periods is definitely not a pipeline operator's favourite task. We can, however, ensure that when this is required, our tools carry the highest safety and quality certificate standard, which is underscored by our extensive track record."

By using technology such as the *SmartPlug* tool during the maintenance and upgrade work, Shell was not required to vent or flood the pipeline. Flooding the pipeline with water or another fluid is an alternative to the isolation; however, this requires the contents of the pipeline to be evacuated, and has a substantial impact on the length of the operation and associated costs.●

Software supports effective pipeline-integrity management

PIPELINE-INTEGRITY management is a complex process involving people, assets, procedures, data gathering, analysis, and commercial consideration in terms of production, operations and maintenance costs. The primary objective of an integrity programme is to maintain the pipeline in a fit-for-purpose condition in a safe and cost-effective manner. Standards and codes of practice are available which provide clear guidance for the practical implementation of pipeline integrity management in a logical and consistent manner.

Vast amounts of information are generated during the integrity-management process, and software tools are a necessity to aid the engineer in its practical implementation. These include essential elements such as effective data management, appropriate assessment tools, documentation of the integrity assessments undertaken, an auditable record of the overall integrity-management process, and incorporated rights' management. There is always a concern that such integrity-management systems can become unnecessarily complex, difficult, and expensive to implement and maintain. Therefore, a primary requisite for any software tool must be that it is flexible and allow for customization to suit the needs of a wide range of operators.

Rosen has developed a suite of software tools which meets such technical and functional demands. The company's asset integrity management software (*ROAIMS*) is made up of a number of functional modules that can be combined to configure different integrity management applications. Following an initial audit of an operator's specific requirement the system can be customized as needed, ranging from a simple data storage or repository to a comprehensive integrated integrity-management software solution.●

150-yr old brush manufacturer opens new factory

UK-based **Cottam Brush** recently inaugurated its new factory in Hebburn to celebrate 150 years in the brush-manufacturing business. The Cottam family started making brushes in 1858 to supply the local shipbuilding and mining industries in NE England. 150 years later, the company is still going strong as a successful manufacturing business and remains family owned and run. Its markets have changed over the years, and the company now designs and manufactures brushes for a variety of different industries. "Our biggest market is the oil and gas industry; we are heavily involved in pipeline maintenance around the globe," explained sales manager Kathy Bevan.●

Ultrascan for Keystone pipeline project

A SUBSIDIARY of **TransCanada Corporation** has awarded Florence, Italy-based **GE Oil & Gas** a contract to use its 'ecomagination'-certified *UltraScan Duo* pipeline inspection tool to evaluate portions of TransCanada's 864-km long Keystone pipeline that crosses Saskatchewan to near Winnipeg, Manitoba. Starting in June, the tool is undertaking in-line inspections of three sections of the pipeline and uses an automated, 'phased-array' sensor system to perform comprehensive – and simultaneous – inspections for both cracks and metal loss in a single run. As a result, the operator is able to save critical time and money.

GE says that the tool's technology is similar in principle to that of high-capacity, phased-array, radar units that can simultaneously track a large number of targets. The technology enables detection of smaller cracks of 25mm in length instead of 30mm, which represents a 17% improvement on existing technologies. The tool has also earned 'ecomagination' certification, which is GE's corporate commitment to address challenges such as the need for cleaner, more efficient sources of energy, reduced emissions, and

abundant sources of clean water. 'Ecomagination' products are evaluated for their ability to significantly and measurably improve a customer's environmental and operating performance, and a multi-tiered review process is concluded in each case with an independent, third-party audit to ensure accuracy and thorough documentation of technological performance.●

Precommissioning contract for Gimboa

WEATHERFORD'S Pipeline & Specialty Services group has been awarded a contract from **Technip** which forms part of the Gimboa field development project 85km offshore the Angolan cost, in 680m water depth. The project consists of three production and four water-injection subsea wells, clustered around a central manifold and tied-back to a floating production storage and offloading unit (FPSO). Technip will perform the engineering, procurement, fabrication, testing, and installation of:

- one production and one water injection flexible flowline
- one gas lift flexible pipe
- one service umbilical
- associated flexible risers
- flexible well jumpers.

Weatherford's scope of work includes:

- flooding and cleaning of all pipelines
- leak-testing of pipelines and system components
- integrity testing and lay monitoring of the hydraulic umbilical
- integrity testing of the electrical umbilical

Weatherford's work commenced in Q4, 2007, and is scheduled to be completed in Q3, 2008.●

In-line cathodic protection inspection service

BAKER HUGHES' Pipeline Management Group (PMG) has introduces its *CPCM* ILI service, claimed to be the industry's first method of assessing the effectiveness of a pipeline's cathodic protection system from inside the pipe. Using the technology, PMG says that pipeline operators can use an ILI tool to actively identify gaps and flaws in their cathodic protection systems before corrosion damage can occur.

Steve Schroder, Baker Hughes' PMG general manager, describes the company's new equipment. "The *CPCM* ILI service uses a smart pig travelling through the line, performing high-resolution cathodic protection measurements of the entire pipeline, minimizing valuable time and resource requirements. There are no gaps in the data stream due to rough terrain, lakes or streams, city streets and other inaccessible areas. The quality of the data is maintained regardless of right-of-way conditions. Obviously, the system is also ideal for assessing offshore pipelines."●

PE awarded ISO 14001

UK PIGGING equipment manufacturer **Pipeline Engineering** has been awarded ISO 14001 certification from Lloyds Register Quality Assurance, following considerable development and refinement of its existing environmental procedures to meet the required standards. Willy Watson, PE's managing director, commented: "It has always been my ambition that Pipeline Engineering is recognized for its professionalism in all aspects of its business. ISO 14001, and our concern for the environment, is yet another step towards this aim".

PE's environmental-management system establishes procedures, work instructions, and controls to ensure that implementation of the policy. It is subject to both internal and external audits to ensure that it is effective in operation, is meeting the objectives and targets, and continues to perform in accordance with relevant legislation and standards. These audits also provide an ideal forum for PE to consider possible improvements for the future and ensure that environmental

considerations remain a priority within the company.

Gaining the ISO 14001 environmental standard follows-on from PE achieving the ISO 9001 quality standard in 1995 and, in 2007, becoming one of the first companies in the north of England to receive ISO/TS29001, the quality standard specific to the oil and gas industries.

Hydraulically-activated pipeline pigging

by Björn Stoltze
HAPP Technology Ltd, UK

IN 2007, HAPP Technology introduced its new pigging technology for pipeline cleaning, the essential feature of which is a patented hydro-mechanical brake system ensuring a controlled movement of a pig in a pipeline. The *HAPP* brake system is now in use for two applications: pipeline cleaning and speed control for inline inspection tools.

Pipeline cleaning

The basic principle is that a pressure drop is created over a by-passable pig holding back against the pipeline's fluid flow. The pipeline fluid passing through the pig's cleaning head and is accelerated by the pressure drop to form strong cleaning jets. These jets are directed onto the pipe's inner wall in front of the pig, removing all kind of deposits. Generally this technology transforms the kinetic energy of the pipeline fluid into a locally-available differential pressure which, in this case, is used to create cleaning jets but can also be used otherwise.

In cases where new crude oil streams of unknown composition are transported through a pipeline, wax precipitations often occur. If a regular pigging programme is not thoroughly in place, the accumulation of wax deposits rapidly reaches volumes which cannot be safely removed with standard pigging: blockages and subsequent expensive salvage are often the consequence.

It is here where pipeline cleaning with *HAPP* technology is best applied. The very strong and effective cleaning jets ensure the entire removal of all deposits in only one cleaning run. Accumulation of debris in front of the pig is prevented by the cleaning jets permanently creating a turbulence of the debris into very small particles, which are then continuously flushed downstream by the by-pass stream.

Speed control for ILI tools

A number of ILI companies have expressed their need for a reliable speed-control system for their tools. Especially in gas pipelines, inspection tools often exceed their design speeds, and can consequently deliver inadequate data over the period during which they have travelled too fast. The velocity of uncontrolled ILI tools can vary considerably due to friction changes between the pipeline and the tool: while a tool is blocked or slowed down due to an obstacle (such as higher friction), the driving gas pressure behind it builds up until it is high enough to propel the tool forward and, if not controlled, this can result in the tool jerking forward at high speed causing the gas pressure at its rear to decrease. At the same time, a counter pressure builds-up in front, slowing the tool again. Under certain conditions, the tool can even comes to a halt, resuming travel only after sufficient driving pressure is built-up again.

The compressibility of the driving medium makes it extremely difficult to apply reliable speed control. Solutions that involve electronic control of the by-pass orifices currently seem to be the best available, but often deliver unsatisfactory results due to the slow reaction times of the electronic control system.

A *HAPP* brake system offers a reliable and simple solution for all kinds of ILI tools operated in gas pipelines. Its hydromechanics instantly adapts to any pressure change in the driving gas; correctly adjusted, the brake constitutes a defined counter force to the driving force, smoothing-out speed variations both above and below the design travel speed. Sharp speed variations are reduced to moderate changes which, at the correct settings, can always remain below the tool's design speed, and therefore allow 100% data collection within the tool's speed specification.