SEN
SUBSEA ENGINEERING NEWS

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Enpro Technology Gains Traction

Enpro Subsea has sparked interest in the Gulf of Mexico and offshore West Africa with its enhanced subsea sampling and injection (ESSI) hub.

The Aberdeen-based company will be installing two of the systems for a major international operator on a greenfield project in the U.S. Gulf of Mexico in the third quarter this year. The system will include a multiphase flowmeter, a water cut meter and sand detector.

Enpro is also delivering two hubs to a large independent operator offshore Ghana in the second quarter.

The ESSI provides a universal 'open standard' interface which can be deployed at multiple locations including at the jumper hub, pipeline end termination or manifold.

It is a safe access port for well or pipeline operations and is either retrofitted into existing subsea hardware or considered as part of a new field development strategy.

Located 'off the tree', the ESSI is independent of all major subsea hardware decisions, thereby enabling fast-track procurement.

The system is also configurable for single vessel operations, which significantly lowers the economic threshold of deepwater well control, scale squeeze and acid treatments.

Ian Donald, managing director of Enpro, told SEN, "The flow access module acts like a USB outlet from the tree. Once you have that access point put in using one set of isolations, you can then do multiple services. That is one of our key differentiators.

"It doesn't interfere with the design of the tree so you can use a standard tree and it gives you long term flexibility. You can put this in and then throughout the life of the field you can configure it for what you need.

"What that enables you to do on a multiphase meter is to do your fluid sampling or fluid intervention or well kill. We have just been asked about multiphase pumping as well.

"Another competitive advantage is that we think we can install it with one vessel because the system is small and light. This potentially eliminates a second vessel because sometimes you have to have a pumping vessel and a workboat alongside."

Donald said Enpro has agreed Memoranda of Understanding with GE Oil & Gas, Baker Hughes and Technip to globalise the technology in different regions.

"That allows us to have global reach from here in Aberdeen. It is in the spirit of collaboration. Just now we're developing our 15k intervention system for deepwater in the Gulf of Mexico and West Africa. That is going to be ready this year," he added.

Decom ready

Enpro has also developed a plug technology for testing and extracting oil during decommissioning projects. It is being used on a major decommissioning job in the North Sea.

Enpro, formerly known as Cansco Subsea, was asked by Shell in 2014 to develop a decommissioning system to allow for the safe extraction of residual or 'attic' oil from the gravity base structure structure on **Brent Delta**.

The scope included the development of a narrow bore drilling and anchoring hub onto which dual isolation fluid sampling/monitoring & pumping assemblies are secured.

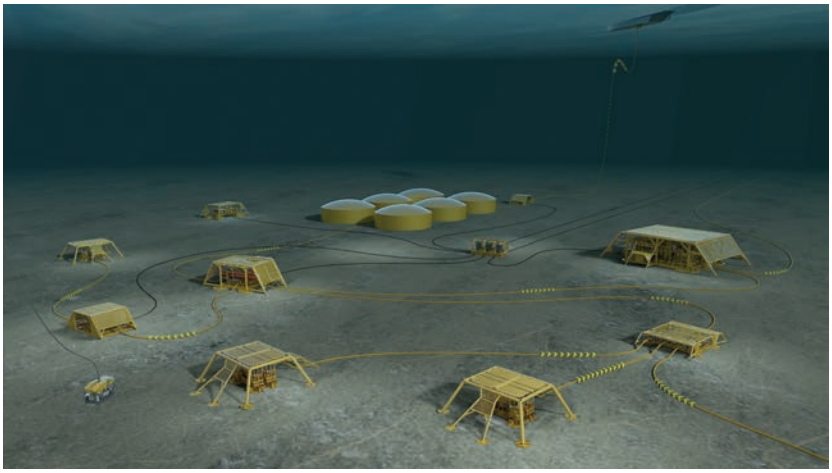
Multiple samples will be taken from each cell or tank for analysis. The system will be designed to be deployed on multiple cell locations and transfer attic fluid to a single export tank.

Donald added, "The reason it moves the game on is that you can make the tooling ROVable. It allows you to fly it into place underneath the platform. It is a piece of technology giving you the anchor and the access point and there is the opportunity to leave the instrumentation there for long term monitoring."

WHAT'S INSIDE

DEVELOPMENT

Subsea Processing JIP is Launched



DNV GL has launched a subsea processing JIP.

DNV GL has launched a joint industry project (JIP) to standardise subsea processing systems with industry partners Petrobras, Shell, Statoil and Woodside.

Subsea development projects have been under substantial pressure due to cost inflation and the low oil price, prompting a need to simplify the industry's approach.

DNV GL also is seeking additional collaborators for the project to drive standardisation, beginning with subsea pumping, to ensure benefits throughout the subsea supply chain.

The JIP participants will contribute their own standardisation studies and initiatives previously performed as well as current and future portfolio requirements, ideas on minimal industry specification and methodology for maturing technology gaps

DNV GL said, "Subsea processing is a relatively young and undeveloped field of technology, requiring operators to tailor-make solutions to meet field-specific requirements. If that technology could be better understood and harnessed, there is considerable potential for it to deliver increased value at reduced costs.

"Experience in the field already has grown significantly in recent years with subsea pumping developments from the JIP members (Petrobras, Shell, Statoil and Woodside) and other major operators."

The JIP "subsea processing—standardisation of subsea pumping" seeks to deepen industry knowledge and encourage progress in this area by examining the potential for standardisation in subsea processing, beginning with subsea pumping.

Standardisation still allows flexibility to custom-make facilities at a system level through standard functional descriptions and specifications.

However, it also increases predictability in the value chain, thus lowering transaction costs and improving the speed of implementation, while still allowing freedom to innovate and employ new technology.

The JIP's partners were all highly supportive of the initiative's end goals.

"One of the best ways to create value is by performing well in crisis situations. This JIP intends to contribute by taking the subsea processing and boosting to a higher value level. Petrobras experience with Vasps, Marlim, Mobo and other subsea processing systems clearly demonstrates that simplicity, delivery time and competitiveness are mandatory for future applications. The standardisation of parts and subsystems is one of the potential keys to achieve that. Common specifications will potentially increase the number of business cases for subsea systems and bring synergies to the surface" said André Lima Cordeiro, executive manager of Petrobras' Research and Development Centre.

"Subsea boosting systems provide the ability to increase recoverable reserves and further increase economic viability of a project by optimizing production. For complex systems such as subsea pumping to be successfully and more widely deployed, overall system costs need to be significantly reduced. Alignment of operators and system suppliers through this standardisation initiative can make a significant contribution in achieving this cost reduction goal," said Graham Henley, vice president projects, upstream operated and joint ventures, Shell projects and technology.

"With today's low oil price, it is more important than ever to create cheaper, leaner and standardised subsea solutions. This challenge goes across the oil industry and collaboration is key. The industry needs to lower costs to enable more subsea developments and increase the use of subsea processing technology," said Margareth Øvrum, executive vice president of technology, projects and drilling at Statoil.

"The oil and gas industry needs to reassess standalone host developments due to higher costs and look more closely at tieback opportunities. Subsea processing technologies enable long distance tieback opportunities for remote and marginal fields. Cost reduction through simplification and standardisation is key to ensuring application of these technologies" said Sean Salter, vice president of technology at Woodside.

Apache Picks Harkand for Nevis

Harkand has been chosen by Apache to provide installation work for its existing drilling campaign in the **Nevis South** Field in the North Sea.

The project will see Harkand provide project management and engineering services and deploy its personnel and one of its dive support vessels (*Harkand Da Vinci* or *Harkand Atlantis*) to install new subsea equipment.

The scope of work has been called off against the master service agreement for inspection, repair and maintenance the firm signed with the operator in 2014.

Harkand previously performed tie-in work in 2015 for the Nevis S67 well at the **Beryl** (*SEN, 32/19*) Field and a Beryl midline disconnect scope under the contract. The company also supported Apache with Phase 1 of the **Aviat** (*32/13*) development, which included preparation work and platform tie-ins of the newly installed Aviat flowline.

Harkand Europe Managing Director David Kerr said, "In this low barrel price climate, our strong reputation for quality and operational efficiency is proving to be particularly appealing to operators in the region. Being selected for Apache's latest campaign builds on the strong relationship we have established with this key operator over several years. We are committed to delivering the same high standards of safety, quality work and performance for them on this project and in the most efficient manner."

DEVELOPMENT BRIEFS

Statoil and Shell have put the concept selection process for the U.K. North Sea **Bressay** (*SEN, 31/23*) Field on ice because of the current low oil price environment. The pair have been working on a simplified development plan for the heavy oil field since 2014. The move was prompted by data from an extended well test conducted in 2013 on the neighbouring **Bentley** (*32/23*) Field, which is a close analogue to Bressay. Statoil and Shell were looking to make improvements in the reservoir drainage plan, while at the same time simplifying the production facilities and reviewing the project execution and contract strategy. Bressay was planned to be a **Mariner** lookalike with a large production, drilling and quarters platform combined with a floating, storage and offloading (FSO) unit. There were plans to reduce the number of wells and slim down the well-related facilities. Over the past year, work has been focused on a phased development for an initial period of up to 10 years, using a leased jackup rig with processing facilities and an FSO. But the rout in oil markets has now forced the pair to put the project on hold.

Det norske oljeselskap has been given the green light to carry out manned diving operations on the **Bøyla**, **Boa**, **Volund**, Øst **Kameleon** and **Viper Kobra** fields as well as on the **Alvheim** (*32/21*) FPSO unit in 2016. Norway's Petroleum Safety Authority gave the nod to the operations to be carried out over the course of 2016. The operations will be performed by Technip and Subsea 7.

Technip Angola, a joint venture between Technip and Sonangol, has been awarded a three-year engineering services contract by Total. The deal covers services for the existing **Girassol** (*32/13*), **Pazflor**, **Dalia** and **CLOV** FPSO units and associated subsea field development. These FPSO units are located in Block 17 offshore Angola. The scope of work can comprise engineering, technical assistance, management, supervision and coordination, as well as procurement-related activities. Technip Angola will carry out the contract, which is scheduled for completion at year-end 2018. President Subsea of Technip Hallvard Hasselknippe said, "This contract reinforces our activity in Africa, an area with good dynamics. It also fits into our strategy to engage with our clients at early stages of their projects and build on long-lasting successful relationships."

The Deepsea Atlantic has begun drilling on Johan Sverdrup

The *Deepsea Atlantic* drilling rig has spun the bit in the first of 35 wells to be drilled in the first phase of the **Johan Sverdrup** (*SEN, 32/22*) field development. The rig is drilling the first production well through a template that was installed on the field in summer 2015. Eight wells will be drilled through the predrilling template before the rig is relocated to drill injection wells at three locations on the field. In 2018 the permanent Johan Sverdrup drilling platform will be installed as the second of four platforms. The drilling unit is currently being constructed at Aibel's yard in Haugesund, north of Stavanger, and in Thailand. When the drilling platform is installed and operational, the eight predrilled wells will be hooked up from the predrilling template. At this point *Deepsea Atlantic* will be drilling the injection wells providing reservoir pressure support to maintain high field production.

Chevron has started producing LNG and condensate from the **Gorgon** (*32/21*) project on Barrow Island off the northwest coast of Western Australia. The Gorgon Project is supplied from the **Gorgon** and **Jansz-Io** gas fields,

located within the Greater Gorgon area, between 130 km and 220 km off the northwest coast of Western Australia. It includes a 15.6-million tonnes per annum LNG plant on Barrow Island, a carbon dioxide injection project and a domestic gas plant with the capacity to supply 300 terajoules of gas per day to Western Australia. Chevron is positioned to become a major LNG supplier by 2020. In particular, Chevron's Australian projects are well located to meet growing demand for energy in the Asia-Pacific region and more than 80% of Chevron's Australian subsidiaries' equity LNG from the Gorgon and Wheatstone projects is covered by sales and purchase agreements and heads of agreements with customers in the region. The Chevron-operated Gorgon Project is a joint venture between the Australian subsidiaries of Chevron (47.3%), Exxon Mobil (25%), Shell (25%), Osaka Gas (1.25%), Tokyo Gas (1%) and Chubu Electric Power (0.417%).

Subsea 7 has secured a sizeable extension to the existing contract by BP Exploration Operating Co. Ltd. for the provision of subsea construction, inspection, repair and maintenance (IRM) services in the North Sea. Under the terms of the agreement, Subsea 7 will provide BP with an additional two years of IRM delivery, extending the contract to 2019. The contract, valued between $50 million and $150 million, covers the maintenance of the **Schiehallion** (*32/19*), **Loyal**, **Foinaven** and **East Foinaven** fields west of Shetland. Project management and engineering work will be managed from Subsea 7's Aberdeen office.

McDermott International said it has been awarded a large contract by an upstream oil and gas operator for an unspecified offshore project in the Middle East. The scope includes engineering, procurement, fabrication, transportation and installation of offshore pipelines. Engineering and offshore mobilisation of McDermott's in-house vessels already has begun for the fast-track assignment, with project completion expected by year-end 2016. "The Middle East market remains very active and continues to be a focus for McDermott, and we are pleased with our customers' continued trust in our capabilities in executing offshore EPCI [engineering, procurement, construction and installation] work in the region," said Linh Austin, vice president, Middle East Area.

Well management company Exceed has won a contract to support Fairfield Energy in its forthcoming North Sea well plugging-and-abandonment campaign. Fairfield's programme includes 45 platform wells and 16 subsea wells, all of which will be plugged and permanently abandoned. The platform wells decommissioning will commence in the next few months with the operational phase of the subsea wells work due to start in 2017. John Anderson, Exceed commercial director, said, "This award demonstrates the capacity of Exceed as a multidisciplined well management organisation capable of providing support to complex well decommissioning activities. This will be a major focus going forward, both in the UKCS [U.K. Continental Shelf] and internationally, and Exceed is delighted to be supporting Fairfield in one of the largest single UKCS well abandonment campaigns of this nature to date."

FLOATERS

Ophir Eyes Subsea Production System Award

Ophir Energy plans to award the contracts for the subsea production system for its **Fortuna** (*32/18*) floating LNG (FLNG) project off Cameroon in first-half 2016.

The company also will make a final investment decision on the scheme in mid-2016.

A 20-well subsea production system has been mooted for the field in water depths of 1,400 m to 1,900 m. Fortuna would be the first FLNG project in West Africa.

The FEED process will be completed at the end of first-quarter 2016, which will allow a final investment decision to be made in mid-2016 with first gas expected in mid-2019.

Golar LNG will build, own and operate the *Gimi* FLNG vessel, which will operate on the field, in return for a tariff. Golar will conduct a separate FEED study for the midstream element of the project, which will begin shortly.

The *Gimi* is forecast to have a capacity of about 2.2 million tonnes per annum. With this throughput and the installation of late-life compression facilities, Ophir said the resources discovered in Block R to date are more than sufficient to deliver a production plateau of about 9.24 MMcm/d for more than 30 years.

Analysis of the drillstem test conducted on the **Fortuna 2** well in late 2014 demonstrated that the well contacted more than 22.4 Bcm of gas in the Fortuna Field.

Announcing a pretax operating loss of $376 million for 2015, Nick Cooper, CEO of Ophir Energy, said, "2015 saw Ophir respond swiftly to an exceptionally challenging operating environment. We radically reduced our cost base and delivered synergies ahead of forecast on the Sal-

amander acquisition. In the period we delivered material progress on the Fortuna FLNG Project: signing gas fiscal terms with the host government, securing Golar as midstream provider, commencing FEED, shortlisting binding offtake offers and signing a heads of agreement with Schlumberger to participate in the project. Through these steps, the forward funding requirements of the project will be met. In parallel through 2015, we also high-graded our exploration portfolio at minimal cost and with negligible commitments—exiting five plays and entering seven new plays, two of which are post period, that are better suited to the new price environment."

TEN FPSO Arrives in Ghana

The *TEN* FPSO has arrived in Ghana.

The new FPSO unit for Tullow's **TEN** (*SEN, 32/22*) project offshore Ghana has arrived in country.

The *Professor John Evans Atta Mills* vessel is expected to start producing oil from the TEN fields by July/August 2016.

"The FPSO [vessel] started its voyage from Singapore to Ghana towards the end of January with almost zero 'carry over', meaning only 2,000 man-hours of work remained to be completed during the voyage.

The FPSO unit will move directly to the installation phase when it arrives on station," the statement added.

This will be followed by the hookup of subsea facilities via flowlines, risers and control umbilicals, much of which already has been pre-installed. In addition, six wells already have been completed, and the completion of the remaining wells is on schedule.

The integrated facilities will undergo final commissioning and testing during second-quarter 2016 before first oil.

Tullow Ghana Managing Director Charles Darku said, "We are extremely pleased and proud that Ghana's second FPSO [vessel] has arrived safely here on our shores. It is a source of pride to note that many of the component parts of both the FPSO [vessel] and the subsea infrastructure were built and supplied by Ghanaian companies. Tullow and its partners remain at the forefront of unlocking Ghana's oil resources for the mutual benefit of the Nation and Shared Prosperity. We can look forward to first oil from the TEN fields by July/August this year."

The *Professor John Evans Atta Mills* FPSO vessel was constructed by MODEC and will be operated by MODEC Ghana Ltd. on behalf of the TEN partners.

FLOATER BRIEFS

A row has broken out over the *Armada Claire* FPSO contract.

Malaysia's Bumi Armada Berhad is to take legal action against Woodside Energy for terminating the contract in relation to the charter of the *Armada Claire* FPSO unit, which has been operating on the **Balnaves** (*32/11*) Field off northwestern Australia, since delivering first oil in August 2014. Bumi said the notice of termination is not valid and is "in fact tantamount to a cancellation for convenience or, alternatively, is a repudiation of the contract by Woodside, pursuant to which the company is entitled to compensation from Woodside." Bumi said it intends to fully enforce its rights under the contract, including initiating legal proceedings against Woodside for its unlawful purported termination of the contract. The possible termination of the FPSO charter contract is expected to have an impact on the Bumi's full-year 2016 financial results, "the extent of which cannot be conclusively ascertained at this juncture as it will depend on the outcome of the company's legal action against Woodside," Bumi said. The *Armada Claire* unit underwent a modification programme at the Keppel FELS shipyard in Singapore and left for the field in February 2014.

EXPLORATION

Australian Exploration "Decimated"

From Australia: A new report has found that the collapse in global oil prices during the past 12 months is now officially decimating oil and gas exploration activity in Australia—the lifeblood of feedstock for existing and future oil and gas projects.

Despite gas and petroleum annual production hitting record highs over the period, it is feared the exploration collapse also is having a secondary longer term economic impact.

This is the emerging expectation of a significant weakening for years to come in Australia's oil and gas reserves base.

The latest findings are in the just-released March quarterly report by independent analyst EnergyQuest and detailed at the Australia Domestic Gas Outlook conference in Sydney.

EnergyQuest CEO Graeme Bethune said the total number of exploration and development oil and gas wells drilled in Australia nearly halved, falling from 1,534 in calendar 2014 to just 821 in calendar 2015, including exploration wells falling from 119 to 54.

"In that time, exploration spending fell from $1,034 million in Q4 2014 to $446 million in Q4 2015," Bethune said. "This is Australia's lowest oil exploration spend in a decade."

Bethune said the low oil prices had driven significant downwards revisions of reserves, leading to negative reserves replacement ratios over the year just gone.

The collapsed oil price had its worst impacts off Australia's coastline, with offshore exploration activity crashing last year to just three wells sunk—nine times lower than the 29 offshore targets drilled in 2014.

Bethune believes last year's drought in offshore drilling is just the beginning of a prolonged period of very low Australian offshore activity, "despite the large take up of new acreage in offshore release programs between 2012 and 2014."

"A survey by EnergyQuest of work programmes to win offshore acreage in this three-year period shows explorers have guaranteed to spend a total of $1,105 million in the first three years, but this impressive headline figure includes only 12 wells," Bethune said.

"In addition, winning bidders loaded most of their proposed spending ($1,774 million and 43 exploration wells) into the secondary, nonguaranteed component of their work programs (years four to six of the permits). To make matters even more difficult, some politicians are intent on killing what little oil and gas exploration activity there is, with Senate inquiries now into unconventional gas as well as proposed oil and gas exploration in the Great Australian Bight."

"Australia is estimated to have only produced 76 million barrels (MMbbl) of oil in 2015, the lowest since 1970—yet exploration in the Bight provides the best chance of finding the new oil basin that Australia badly needs."

Hansa Targets Danish Offshore

Hansa Hydrocarbons has taken its first steps into the Danish offshore sector with the provisional award of two new licences in the country's seventh licensing round.

Hansa has picked up licences 7/16 and 14/16. Licence 7/16 covers an area of about 306 sq km. It is situated adjacent to the German median line to the south. The exploration objectives are an extension of the Late Miocene oil play successfully appraised in 2015 with the **Lille John-2** (*32/22*) well and side-track by Dana Petroleum.

The licence term is six years with a drill or drop decision at the end of the third year. The firm work programme consists of reprocessing existing 3-D seismic data, combined with AVO and inversion studies, de-risking the identified prospectivity prior to drilling. Partners on the licence will be Hansa (50%, operator), Edison International (30%) and Nordsøfonden (20%).

Licence 14/16 covers an area of about 285 sq km and is located on the northernmost margin of the Southern Permian Basin on the western limit of the Danish offshore.

The licence term is six years with a decision at the end of the second year to either acquire a new 3-D seismic survey or to drill an exploration well.

Partners in the licence will be Hansa (32%), Edison International (48%, operator) and Nordsøfonden (20%).

Hansa Hydrocarbon's CEO John Martin said, "At a time of a major industry downturn, these awards represent a great opportunity for Hansa to build out its exploration portfolio with high-quality, high-impact acreage in a new core area.

"We have recognised for some time that offshore Denmark is relatively lightly explored compared to other North Sea sectors, especially given the multiple play types present and the infrequent licensing rounds. The awards are the result of some considerable effort in regional work and once again demonstrate how a small technically focused company can be successful in leveraging knowledge across borders. Furthermore we are delighted to be partnering with Edison and Nordsøfonden for the first time and look forward to working together to mature the prospectivity on these high potential exploration licences."

Statoil Teams with Exxon Off Ireland

Statoil has been awarded six licensing options in Ireland's 2015 Atlantic Margin Licensing Round. Statoil will operate four of the licensing options and partner in two operated by Exxon Mobil.

The six licensing options awarded to Statoil total about 7,700 sq km in the Porcupine Basin in water depths ranging between 1,100 m and 3,150 m.

Statoil and Exxon Mobil each hold 50% equity in all the licensing options.

Work programme commitments are limited to 2-D and 3-D seismic surveys to be acquired during 2016 and 2017. The analysis of that seismic data will then determine whether the company will seek to convert the licensing options into frontier exploration licenses, enabling possible exploration drilling at a later stage.

"We are pleased with these awards that will see Statoil reentering the Irish exploration scene. This supports Statoil's exploration strategy of early access at scale and enables us to apply the exploration knowledge and experience we have gained globally and specifically on the conjugate margin offshore Newfoundland. We look forward to working with Exxon Mobil on exploring these opportunities," said Erling Vågnes, senior vice president, exploration Northern Hemisphere at Statoil.

Statoil has had a presence in Ireland since 1992. Currently, the company's main asset in Ireland is a 36.5% interest in the Shell-operated **Corrib** (*SEN, 32/20*) gas field off the country's northwest coast.

EXPLORATION NOTES

Eni has successfully performed the production test of **Zohr 2X**, the first appraisal well of the Zohr discovery in the Shorouk block, offshore Egypt.

During the test, 120 m of the reservoir were opened to production. The well, constrained by surface facilities, delivered up to 1.23 MMcm/d of gas.

Eni said, "The comprehensive set of data collected and analysed have proved that the well has a great production capacity, which is estimated in a deliverability of up to 7 MMcm/d in production configuration.

"The programme envisages for 2016 the drilling of a further three wells. Besides, the onshore gas treatment plant construction works have already started and the bids for the offshore activities launched and nearly completed."

Eni, through IEOC, holds a 100% stake in the Shorouk license. Operations are being conducted by Petrobel, which is a joint venture between IEOC and the State partner Egyptian General Petroleum Corporation (EGPC).

Eni has been present in Egypt since 1954 where it operates through IEOC Production. The equity production in the country was in 2015 about 200 Mboe/d.

China's CNOOC has made the country's first ultradeepwater natural gas discovery in the northwestern part of the South China Sea. CNOOC spudded the **Lingshui 18-1-1** exploration well last October in a water depth of 1,688 m. The discovery, made by the *Haiyang Shiyou 981* rig, is located near the **Lingshui 17-2** gas find, which has certified proven reserves exceeding 100 Bcm.

Lundin Petroleum has hit gas in the **Maligan** exploration well in Block SB307/SB308, offshore East Malaysia. The Maligan well was drilled with the *West Prospero* jackup rig to a total depth of about 1,380 m and encountered significant gas shows. The well has now been plugged and abandoned. Meanwhile, Lundin has almost completed the drilling of exploration well 16/4-10 on the **Fosen** prospect off Norway. The well is located in PL544 on the southern flank of the Utsira High in the Norwegian North Sea. The well was dry and is being plugged and abandoned.

Japan Oil, Gas and Metals National Corp. (JOGMEC) has signed an extension to a deal to evaluate the hydrocarbon potential offshore the Seychelles with PetroSeychelles. JOGMEC has been carrying out geological and geophysical surveys including seismic surveys with PetroSeychelles since the summer of 2013 under the exploration licence granted by the country's government. While the surveys ended in February 2016, an additional survey was considered necessary and more work will be carried out over the next two years.

SDX Energy has started drilling operations on the **Manatee-1** exploration well on Bakassi West, Cameroon. The well, which is located in shallow water in the prolific Niger Delta Basin offshore Cameroon, is being drilled using the *Paragon M825* jackup rig to a depth of 1,550 m and the operation is expected to take up to 45 days. The well is operated by Dana Petroleum, and SDX holds 35% working interest (38.89% paying interest) in the concession.

Rosneft's Vietnamese subsidiary has spudded an exploration well off the south coast of Vietnam, marking the Russian giant's first individual international offshore drilling project as an operator. After completion of the PLDD-1X well in Block 06.1, Rosneft will drill another exploration well in Block 05.3/11, also in the Nam Con Son Basin, in Vietnamese waters.

"I am sure that the experience gained in Vietnam will be used by the company not only in its activity in the southern seas," Rosneft CEO Igor Sechin said in a statement, adding it would help with planning and implementing upstream projects in remote areas.

Oil companies have paid Mexico's oil regulator nearly $80 million for seismic data ahead of an auction for deepwater fields, suggesting robust interest in the tender despite a lasting slump in the price of crude. To date, 13 companies including Exxon Mobil, BP and BHP Billiton paid $78 million for licences to use deepwater data, according to a document from national oil regulator CNH seen by Reuters. Company executives say the sum reflects only a fraction of their spending in the past year to acquire geological data ahead of the Dec. 5 auction, which will feature 10 largely unexplored blocks in the Gulf of Mexico. The deepwater auction is part of the Round One tender, which is the fruit of an energy reform finalised in 2014 that ended a decades-long production monopoly of state-owned oil firm Pemex.

Cairn Energy has successfully tested its **SNE-3** appraisal well offshore Senegal.

Two drillstem tests were conducted within the Upper Reservoirs, and flow rates were confirmed from two zones at up to 5,400 bbl/d of oil and 5,200 bbl/d. Cairn Energy CEO Simon Thomson said, "Cairn is delighted with the flow rates from the latest well in the Senegal appraisal programme, which validate the scale and growth potential of the SNE Field. The results have demonstrated the ability of the upper reservoirs to flow at commercially viable rates, and we eagerly look forward to the results of the BEL-1 well, which will commence operations shortly."

The Brazil survey is being carried out with the *Polarcus Alima*.

Polarcus has begun the first of a series of three 3-D seismic projects offshore Brazil with the *Polarcus Alima*. The first project is being acquired for Chariot Brasil Petróleo e Gás Ltda, and the duration of the combined campaign is seven months. Commenting on this significant milestone, Richard Price, senior vice president, North and South America, said, "We are delighted that our geophysical service offering and our environmental agenda have created the opportunity for delivering these projects for key clients in Brazil. The seven-month Brazilian campaign is an important element of our global strategy to maximize utilization of the Polarcus fleet through extending regional campaigns and minimizing vessel transits."

VESSEL

Havyard, Client Cancel $89 Million Contract

Havyard Ship Technology has agreed with an unnamed client to cancel an $89 million contract for the building of a new subsea vessel due to the challenging offshore market.

In October last year, both parties agreed to put off the delivery and that the buyer had the right to cancel the contract in March 2016, provided it has in advance paid Havyard Ship Technology an agreed amount.

The Havyard 858 L WE design is developed by Havyard Design & Solutions in Norway. The vessel was designed to perform inspection, maintenance and repair as well as light construction work on subsea installations.

"Planned delivery of the vessel was set to Q2 2018, and will therefore have no effect for liquidity and profits in Havyard Ship Technology for the financial year 2016. The cancellation will however lead to a lower activity and a smaller margin loss in Havyard Design & Solutions for 2016," the company said.

VESSEL BRIEFS

Transocean and Keppel Offshore & Marine have agreed to defer the delivery and related payments of five high-specification jackups until 2020. The Super B 400 Bigfoot Class jackup drilling rigs are now scheduled to be delivered from the Keppel FELS yard in two- and three-month intervals beginning in first-quarter 2020.

Oceaneering has been awarded an eight-year contract by Statoil to provide two work class electric ROVs for Statoil's CAT-J Platforms in the North Sea. The new eNovus.ROVs are currently being built in-house.

Statoil has terminated the contract for the *COSLInnovator* mobile rig. Statoil also decided to stop drilling operation with the sister rig *COSLPromoter* when it is safe to discontinue well operations. Statoil said the decision might have some short-term consequences for planned drilling activities but will not have impacts on long-term production on the **Troll** (*32/19*) field. The plans made by the licence for gas and liquids production from the oil zone remain firm.

Accommodation rig supplier Prosafe is expecting to take another two of its rigs out of the Mexican market due to low oil prices and spending cuts by state-owned oil firm Pemex.

The *Safe Lancia* and *Safe Regency* rigs will be taken out of operation in mid-March. *Safe Lancia* was originally contracted until year-end 2016 while *Safe Regency* was contracted until year-end 2017. The move means that all five Prosafe rigs working off Mexico and 10 out of the company's 14 rigs worldwide will be idle. "Pemex has been cutting spending to adjust their budget to an oil price of $25 per barrel. Consequently, Prosafe's Mexican client Cotemar Group has been directly impacted," Prosafe said in a statement. Prosafe will have one newbuild rig delivered in third-quarter 2016, which will begin a three-year contract in first-quarter 2017.

TECHNOLOGY

OTC Awards Technology Prizes

Organisers of the Offshore Technology Conference (OTC) have handed out 13 gongs in their 2016 Spotlight on New Technology Awards.

The awards showcase the latest and most advanced hardware and software technologies that are leading the industry into the future.

Winning technologies have to be new and innovative and less than two years old; proven through full-scale application or successful prototype testing; have a broad appeal to the industry and provide significant benefits beyond existing technologies.

The Spotlight Winners for 2016 are

- AFGlobal Corp., producer of Riser Gas Handling System
- Baker Hughes, producer of Integrity eXplorer Cement Evaluation Service
- FMC Technologies, producer of InLine ElectroCoalescer
- GE Oil & Gas, producer of SeaPrime I Subsea MUX BOP Control System
- Halliburton, producer of BaraLogixTM Density and Rheology Unit

- Lankhorst Ropes, producer of LankoDeep - Soft Rope Systems
- Oceaneering International Inc., producer of Remote Piloting and Automated Control Technology
- OES Oilfield Services Group, producer of DOPP
- OneSubsea, producer of OneSubsea AquaWatcher Water Analysis Sensor
- OneSubsea, producer of OneSubsea HyFleX Subsea Tree System
- SkoFlo Industries Inc., producer of Subsea Back Pressure Regulator Valve
- Teledyne Oil & Gas, producer of Electrical Optical Flying Lead

System Aims to Reduce Risk Associated with Installations

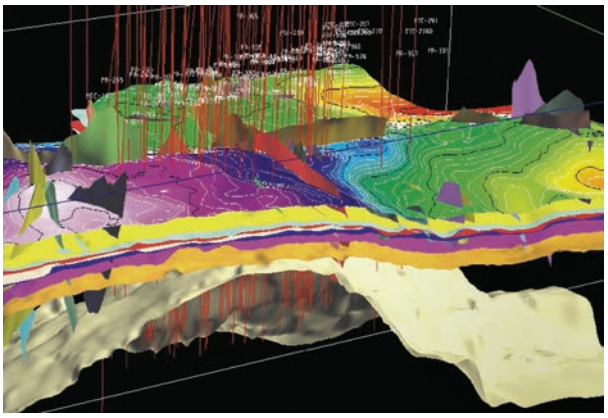
Seatronics and Norwegian associates RTS have achieved 100 successful global installations with the Subsea Deflection Monitoring system (SDM).

The SDM system aims to reduce the risk associated with both large and small installations. The SDM is a time-saving monitoring solution used for the deployment and installation of subsea structures. Time-stamped data from pressure and attitude sensors are transmitted through an ROV hot stab connection or an acoustic modem. When installing the structure, the operator has full online feedback of its heading and deflection. The hotstab serves as a contingency solution where power and telemetry from an ROV can run the SDM.

Additionally, subsea displays provide gyro, pitch and roll data. The SDM also includes remote control of all connected sensors, optional differential pressure monitoring of suction anchors, external sensor capabilities and customised logging intervals for long-time structure surveillance.

POLICY

Exploration Competition Launched



Geoscientists can use data captured last year.

The U.K.'s Oil and Gas Authority (OGA) has launched a competition linked to future exploration licensing rounds to stimulate further offshore oil and gas exploration activity in the U.K. Continental Shelf.

The £500,000 ($715,000) competition has been designed to encourage geoscientists and engineers to develop innovative interpretations and products potentially using the data acquired during last year's successful £20 million government-funded seismic surveys of the Rockall Basin and Mid North Sea High areas.

Successful applicants may be awarded up to £30,000 "seed funding" to carry out initial analysis, then two winning candidates may be awarded about £100,000 to develop their work into a final product for use by the OGA.

The OGA said it hopes the competition will not only significantly increase the understanding of these frontier areas in respect of the 29th Seaward Licensing Round later in the year but also will retain talent in the oil and gas community, which has been affected by the oil and gas industry downturn.

The data package available to applicants consists of about 40,000 km of new and reprocessed legacy seismic data (including a substantial set of broadband 2-D seismic data), supplemented by gravity, magnetic and well data.

In addition, to stimulate exploration interest in advance of the 29th Licensing Round, OGA will make all of these data openly available at the end of March 2016—the first time such large quantities of data have been made freely available to all. The data will be published via the Common Data Access UKOilandGasData portal.

OGA E&P Director Gunther Newcombe said, "We hope this competition will lead to a greater understanding of some of the U.K.'s frontier areas and capture the imagination of some of the brightest minds in the highly talented geoscience community.

"For the first time, substantial quantities of new and reprocessed seismic data will be freely and openly available to all. This, and the forthcoming implementation of a more flexible new licensing regime, will play a crucial role in revitalising exploration of the basin."

Energy Minister Andrea Leadsom added, "New exploration is its lifeblood, and we funded these seismic studies to support the industry in exploring and unlocking that potential. This competition encourages companies to come up with new, innovative ways to make the most of these data, and I look forward to seeing what they propose."

OGUK Presses for Tax Cuts

Oil & Gas UK has called for tax changes in the forthcoming budget to boost the industry's competitiveness and investors' confidence in the U.K. Continental Shelf (UKCS).

The calls for urgent tax reform follow the trade association's recent publication of new forecasts, which show that in the current price and business environment, more than 1 Bbbl of oil and gas are no longer considered economically viable to extract.

Mike Tholen, Oil & Gas UK's economics director, said, "In such a mature basin like the UKCS where special attention and expenditure must be directed at maintaining the integrity of oil and gas infrastructure, we know that strong and sustained investment does translate into higher production. The 10% increase in production in 2015, confirmed last week by the Oil and Gas Authority, is a direct result of significant annual capital expenditure in the five years to 2014."

The U.K. oil and gas sector is fighting hard for its survival and in a bid to restore competitiveness, expects to have improved efficiency and its average unit operating cost by more than 40% compared with two years ago.

Tholen added, "With investment approvals likely to fall to less than £1 billion ($1.43 billion) this year from a typical £8 billion annually over the last five years, there is a real risk that fields due to cease production in the next five years will simply not be replaced by new projects. Lost production puts at risk hundreds of thousands of skilled jobs, billions of pounds of tax revenues and the U.K.'s energy security. As a result, domestic oil and gas production is forecast to decline sharply beyond the end of this decade."

Tholen said the industry currently pays 50% tax on production profits or 67.5% for older fields.

"We are calling for a permanent cut of 20 percentage points and the removal of Petroleum Revenue Tax. These rate changes, coupled with the existing first year capital allowances, are strongly aligned with HM Treasury's 'Driving Investment' plan for fiscal reform. The incentivising effect on investment and production in the long term should render it of minimal cost to government.

"Unlocking the late-life asset market is vital in maximising the U.K.'s oil and gas recovery as asset transfers extend the life of important hub assets and defer cessation of production. This can be achieved through measures such as enabling decommissioning tax relief to transfer with the sale of an asset and ensuring tax relief can be accessed by the vendor where they retain the decommissioning liability, all at no cost to the government.

"Exploration, which currently sits at an all-time low, should be encouraged by permanent removal of special taxes from discoveries made over the next five years. Improving the effectiveness of the Investment Allowance for assets already discovered would stimulate activity in the short term and attract fresh investment."

BUSINESS

Deepwater Spending Slashed

Spending on deepwater projects will be hit.

Douglas-Westwood (DW) expects deepwater expenditure to total $137 billion between 2016 and 2020, a fall of 35% compared to its forecast a year earlier..

DW said the prolonged low oil price has impacted the deepwater market, with operators considering alternative development options and delaying the sanctioning of new projects, whilst trying to protect returns on their existing investments in the sector.

However, projects already under construction are unlikely to be affected. The largest proportion (38%) of the total spend will be attributed to drilling and completion.

Subsea production equipment, SURF (subsea umbilicals, risers and flowlines), pipelines and trunklines will represent 34% of total expenditure combined, whilst floating production units will account for 28% of spend over the forecast period.

The latest forecast is down 35% compared to the analyst's previous edition of the deepwater forecast issued in March 2015.

Expenditure will predominantly be driven by Africa and the Americas, which will account for a combined 87% of total deepwater capex. Though all regions will be adversely affected by low oil prices, projects that were sanctioned before the oil price downturn will help sustain activity levels in these regions, and in addition it expects to see the development of East African gas basins towards the end of the forecast period.

Record levels of backlog established over the 2011 to 2014 period have somewhat insulated subsea hardware manufacturers from the oil price downturn.

However, DW expects a further decline in subsea hardware installations in 2017 and 2018 with backlog falling rapidly and new orders trickling in at very low levels.

DW said, "We expect that the subsea OEM's will feel the full impact of the downturn in 2016/2017 and will face strong competition for the lower volume of projects. In total, it is forecast that the number of deepwater wells to be drilled over the next five years will decline by 3% compared to the preceding five-year period.

"From a supply-chain perspective, this point in the cycle is an opportunity to bring through new approaches and technology for deepwater developments to improve efficiency and lower cost. In the long run, we remain of the view that deepwater will be a cost competitive source of world class hydrocarbon reserves."

BUSINESS BRIEFS

Atlantic Petroleum has sold off its Norwegian business to **M Vest Energy,** a company partly owned by the existing management, for a nominal 1 Kroner (US$ .15). **Atlantic Petroleum** CEO **Ben Arabo** said, "Following a formal sales process last year failing to solicit bids for the company or parts thereof, Atlantic Petroleum has over the past months been reviewing a range of strategic alternatives, and the sale of its Norwegian activities is a step in the process of trying to resolve the issues facing the group in the current oil and gas industry market conditions. We believe the transaction is in the best interest of all stakeholders of the company, and we are pleased that the activities in APN will be continued through M Vest Energy." Atlantic Petroleum North Sea Ltd. remains in default on the **Ettrick**, **Blackbird** and **Chestnut** fields.

Brazil's state-run oil company **Petrobras** produced 2.47 MMboe/d in Brazil in January, down 7.1% compared with December 2015's 2 MMboe/d. Petrobras said the drop was principally due to scheduled maintenance on several platforms.

Malaysia's Petronas is to cut about 1,000 jobs and push through a shake-up in leadership following a strategic review of its business model. The new leadership line up has **Mohd Anuar Taib** as the new executive vice president and CEO, upstream, replacing **Wee Yiaw Hin**.

Norway's **Det norske oljeselskap** has agreed a deal to acquire Noreco's Norwegian portfolio consisting of seven licences. The assets on the Norwegian Continental Shelf include a 20% interest in the **Gohta** discovery (PL492) in the Barents Sea. Noreco's 4.36% interest in the Enoch Field is not included in the transaction. "Following the recent acquisition of both **Svenska Petroleum Norway** and **Premier Oil's** Norwegian subsidiary, this takeover of Noreco Norway underlines Det norske's belief in, and commitment to the Norwegian Continental Shelf", said **Karl Johnny Hersvik**, CEO of Det norske.

Santos has completed the sale of its 35% nonoperated interest in the **Kipper** gas field to **Mitsui E&P Australia** for $520 million. The field is located in the Gippsland Basin offshore Victoria. The sale was announced in November 2015.

Zennor Petroleum has sealed its purchase of first oil & gas and **Antrim Resources** from the joint administrators of **First Oil Expro**. Zennor will take on interests in the North Sea producing fields **Mungo** and **Monan** (Licence P059), **Bacchus** (Licence P255), **Cormorant East** (Licence P201) and **Causeway** (Licence P1383). The acquired companies are being renamed as **Zennor CNS Ltd.** and **Zennor Resources (N.I.) Ltd.**; new names to align them with other Zennor group subsidiaries.

Oilfield services company **Deep Down** has landed an order from Shell for an umbilical and distribution system to support a production platform mooring line control system. As well as supporting platform positioning, the system will provide real-time data collection during high seas and platform operations. Due to increasing safety standards for wave zone equipment, it will be designed to survive extreme wave loading conditions and extended design life.

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