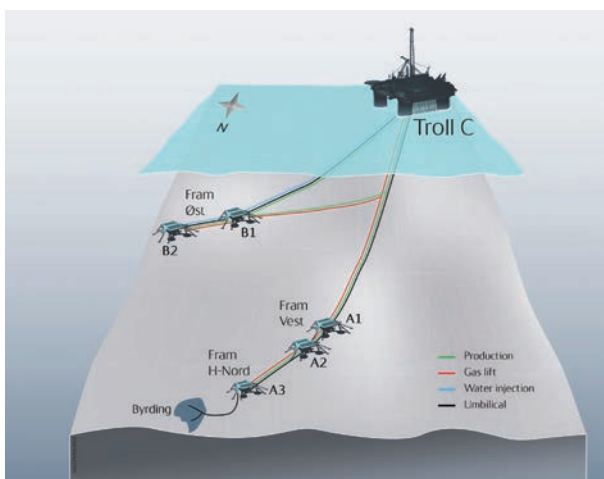




# SEN

## SUBSEA ENGINEERING NEWS

### Statoil Pushes Ahead With Norwegian Double



Byrding, formerly known as Astero, is an oil and gas discovery that lies in Block 35/11 offshore Norway. (Source: Statoil)

Norway’s Statoil and its partners have submitted two Plans for Development and Operation (PDOs) for two field projects—one in the North Sea and one in the Norwegian Sea—that were both made economically attractive by the use of existing subsea infrastructure.

For the Utgard gas and condensate discovery, which straddles the UK-Norway median line, Statoil tabled a PDO to the Norwegian government and a Field Development Plan (FDP) to U.K. authorities.

The majority of Utgard’s reserves lie on the Norwegian side of the median line. Recoverable reserves at Utgard are estimated at 56.4 million barrels of oil equivalent (MMboe). The capex is forecast to be around US \$421.5 million.

The Utgard development will include two wells in a standard subsea concept, with one drilling target on each side of the median line. All installations and infrastructure being located in the Norwegian sector, the U.K. well will be drilled from the subsea template on the Norwegian

Continental Shelf. The distance from the subsea template to the median line is 0.45 km.

Gas and condensate will be piped through a new pipeline to the Sleipner Field for processing and further transportation to the market. The Utgard gas has a high CO<sub>2</sub> content and will benefit from carbon cleaning and storage at Sleipner.

A Statoil spokesperson told *SEN* that tendering is underway for the four packages of work on the Utgard project: drilling; fabrication of subsea production system (SPS), pipelines and risers; installation of SPS, pipelines and risers; and modification work to existing facilities.

The modification contract is due to be awarded “very shortly,” with the other three workloads expected to be awarded “through the autumn and up to the end of 2016, possibly early 2017,” the spokesperson added.

“Reuse of existing infrastructure is essential to the development of the Utgard discovery,” Statoil noted.

“It is very positive that the licensees in Utgard have decided on a project that will ensure good and cost-efficient utilization of the facilities and the available process capacity on Sleipner,” said Tove Francke, assistant director for development and operation, Southern North Sea, at the Norwegian Petroleum Directorate (NPD).

She added that the Utgard subsea development shows “it is also possible to realize profitable projects during periods with challenging cost and price regimes.”

The Utgard wells are scheduled to come onstream at the end of 2019. In the plateau phase the field will produce around 7,000 standard cubic meters of oil equivalent per day (247,100 cubic feet of oil equivalent per day). The water depth at Utgard is 110 m (361 ft), and the reservoir is located around 3,700 m (12,140 ft) below the sea surface. Utgard is due to start producing in fourth-quarter 2019.

Discovered in 1982, Utgard (formerly Alfa Sentral) is located 21 km from the Sleipner Field. The discovery has been considered for development on several occasions in

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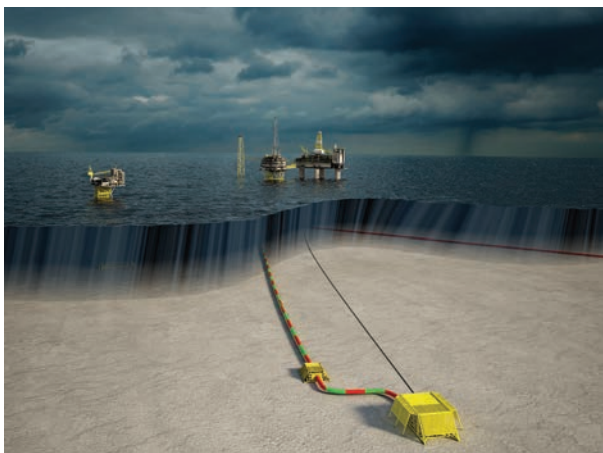
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The Utgard wells are scheduled to come onstream by year-end 2019. (Source: Statoil)

the past, Statoil said. But the use of existing subsea infrastructure made it viable this time around.

“Utgard provides new production which will be essential to further developing the Sleipner area, supporting the company’s ambitious targets for future activity and value creation,” said Torger Rød, Statoil’s senior vice president for project development.

Utgard is located in production licenses 046E and 046F on the Norwegian shelf and in Production License 312 on the U.K. shelf.

Statoil operates Utgard on the Norwegian side with a 62% stake, while Poland’s Lotos E&P Norge holds 28% and France’s Total has 10%. Statoil UK is the operator on the U.K. side with a 100% stake.

The Utgard development plan is the first PDO to be submitted to authorities in 2016, the NPD noted.

### Byrding Takes Flight

Statoil was quick to submit a second PDO of the year to the NPD for its operated Byrding discovery in the Norwegian North Sea.

Byrding, previously called Astero, is an oil and gas discovery that lies in Block 35/11. The estimated volume of recoverable resources from Byrding is around 1.8 MMcm of oil equivalents.

The discovery is located 3.8 km north of Fram and 27 km southwest of GjØa at a water depth of 360 m (1,181ft). The reservoir is situated around 3,100m (10,171ft) below the sea surface.

The discovery was made in 2005 with exploration well 35/11-13 and was appraised by well 35/11-14 in 2006.

“Development of Byrding has been considered multiple times over the past 10 years. The concept choice was made in Q1 2015 and the licensees plan to start production in Q2 2017,” the NPD said.

Under the PDO, Byrding will be developed with a two-branch well drilled from an available slot on the existing subsea template on Fram H-North. The well stream will be routed via Fram infrastructure to Troll C, where it will be partially processed. The oil will then be transported via pipeline to Mongstad, north of Bergen, while the gas will be sent via Troll A to the terminal at Kollsnes, south of Mongstad.

“It is very positive that Byrding is now being developed and is contributing to value creation both for society at large and for the licensees,” said Tomas Mørch, the NPD’s assistant director for the Northern North Sea.

Mørch also noted the importance of the efficient use of existing infrastructure and for companies to cooperate to develop “good area solutions” despite obstacles. “The development of minor discoveries using existing infrastructure, where the ownership structure and strategies differ in the various production licenses, may pose commercial challenges,” Mørch added.

Byrding lies in Production License 090 B (PL 090 B), which Statoil operates with a 45% stake, while Germany’s Wintershall holds 25%, Japan’s Idemitsu has 15% and France’s Engie has 15%.

—Steve Hamlen

## PROJECTS

### Cairn’s Plunge Offshore Senegal Boosts Reserves Estimate

The Atlantic Margin hydrocarbon resource’s potential is looking brighter for Cairn Energy, which has upped its best estimate of reserves for the SNE discoveries offshore Senegal to 473 million barrels (MMbbl).

The increase of nearly a third, up from 385 MMbbl estimated in March, comes as the company gears up for another phase of drilling following favorable SNE-4 appraisal well results. Striking a 100-meter (m) oil column in upper sands, Cairn said in May that the well confirmed the reservoirs stretch to the eastern end of the SNE Field.

The U.K.-based independent, which delivered the higher resource estimate Aug. 16 as part of its half-year report, also said the associated 2C oil in place for the SNE wells exceeded 2.7 billion barrels (Bbbl) based on inde-



Ocean Rig Athena was used by Cairn Energy during its latest appraisal drilling campaign offshore Senegal. (Source: Cairn Energy)

pendently verified best estimates. Further exploration potential of about 500 MMbbl exists.

Hopes are the SNE asset will deliver value for Cairn and its partners.

“The concept that we’ve previously outlined, a floating production, storage and offloading (FPSO) vessel with sub-sea wells remains valid, and the 2C resources presented today guides us now to a plateau rate of between 100,000 and 120,000 barrels of oil per day,” Cairn Energy COO Paul Mayland said on a conference call. The stand-alone FPSO vessel would have expansion capability for satellite tiebacks.

Cairn plans to submit an exploitation plan in first-half 2018, before beginning FEED work and making a final investment decision in first-half 2019. Detailed design and fabrication work would follow in hopes of reaching first oil in 2021 at the earliest—2023 at the latest.

### Enhanced Economics

At this point, the economics of the SNE 2C development appear promising.

“We’d previously guided for full development capex per barrel of around about US\$20 based on analog fields and similar water depths for FPSO developments,” Cairn CFO James Smith said. But based on today’s improved contracting environment and the company’s experience drilling five wells into the reservoirs so far, “we’re updating that guidance with reductions of 25% to 30%. So we see sub-US\$15 a barrel all-in development capex for a field of the 2C size that we’ve guided to,” assuming a leased FPSO development.

The majority of the capex would be for development drilling and subsea installation, he added.

“Most of that capex is back-ended towards first oil, which clearly enhances the economics and the financing plan for a development of that type,” Smith added.

Based on this development scenario, operating costs would be between US\$8 to \$10/bbl.

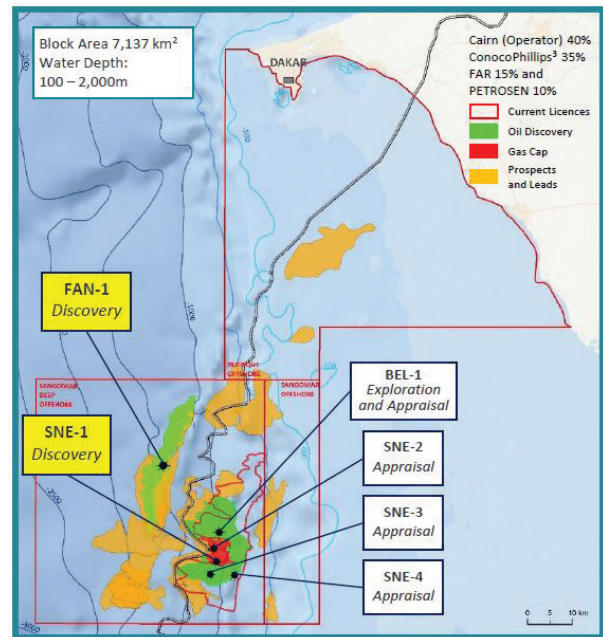
Currently, development conceptual engineering is underway. Pre-engineering studies with an engineering house have begun, Mayland said, adding a MetOcean buoy has also been installed offshore Senegal to collect more data that could prove helpful in optimizing the facility design as the company gears up for the next phase of drilling.

“The wells team has been working together with the joint venture completing initial studies in respect of conceptual development wells,” Mayland said. “We believe that around 15 to 20 wells will be drilled prior to first oil as part of a multiyear ongoing development drilling campaign which will comprise oil producers, water injectors and gas injectors. Approximately two thirds or so will target the upper reservoirs with the remainder targeting the lower reservoirs.”

### Next Steps

Most of the wells will be nearly horizontal, or high-angle types, with around 1,500-m lateral sections, he added.

“We’re making good progress in terms of commencing another exciting phase of exploration and appraisal drill



The SNE discovery has the potential for 473 MMbbl. (Source: Cairn Energy)

ing anchored around the SNE discovery, and we expect to start that campaign and operations before the end of the year,” Mayland said.

The exploration pursuit is being planned amid continued market volatility. Lower commodity prices, the result of a supply-and-demand imbalance, have prompted many oil and gas companies to cut exploration budgets among other areas as profits have shrunk. But possibilities for oil and gas payouts in some underexplored areas have been too great for some to overlook.

“Drilling is scheduled to re-commence in Senegal shortly, benefiting from lower costs across the sector,” Cairn Energy CEO Simon Thomson said in a statement. “The program contains options for multiple wells and in addition to ongoing appraisal of the SNE Field, the joint venture continues to assess optimal locations for further exploration drilling on the acreage.”

The third phase of exploration and appraisal drilling is set to begin in fourth-quarter 2016 or early 2017. With two firm plus multiple well options, Cairn said its focus will be on deliverability of reservoir units not tested yet and connectivity of upper reservoir units over development well testing—among other goals.

### Stake Sale Concerns

Cairn Energy, the operator, has a 40% working interest in the Sangomar Deep, Sangomar Offshore and Rufisque blocks, with partners FAR Ltd. and PETROSEN, Senegal’s national oil company, holding 15% and 10%, respectively. Woodside Petroleum Ltd. is currently in the process of buying the remaining 35% interest from ConocoPhillips (NYSE: COP), which is exiting deepwater exploration. The deal, which includes the FAN deepwater discovery, is expected to close by year-end 2016.

But concerns about this deal are brewing.

Australia-based FAR said on Aug. 23 that ConocoPhil-

lips did not comply with the terms of the joint operating agreement concerning the proposed sale of its interests in the project.

“As a consequence, FAR believes that the pre-emption period has not yet commenced,” the company said, adding it has advised ConocoPhillips of the concerns. Both companies have been urged by the government of Senegal to “reach an amicable solution.”

Woodside’s CEO, Peter Coleman, has described the region as an “underexplored and highly prospective emerging oil province” with “high-quality resources.” The company is also acquiring a 65% interest in the AGC Profond Block, which is south of the SNE and FAN dis-

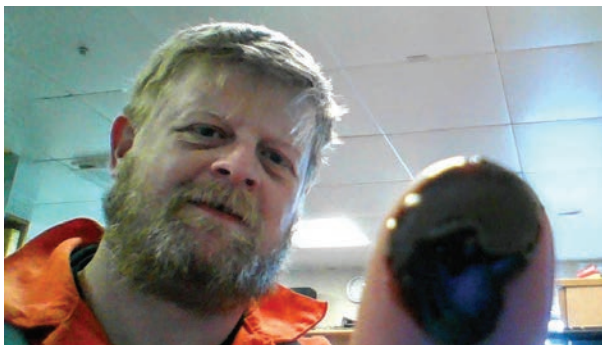
coveries between Senegal and Guinea-Bissau, as it builds up assets offshore West Africa.

During the first half of the year, Cairn and partners completed a four-well appraisal campaign that confirmed the field’s extension to the north, south and east and also confirmed the presence of good quality 32 degree API crude. Results from the BEL-1, which targeted the Belatrix prospect above the main SNE Field and evaluated the field’s deeper Northern Flank, revealed the shallower targets were gas and impermeable.

However, the deepened appraisal well confirmed that the reservoirs extend to the north, Cairn said.

—Velda Addison

## Skipper Results Buoy IOG In UK North Sea



A well site geologist working on the Skipper development shows oil. (Source: IOG)

Despite the low level of E&P activity offshore the U.K. in 2016, the region was boosted by the Skipper oil appraisal well encountering good quality oil shows.

Independent Oil and Gas (IOG) was cheered when an appraisal well on the Skipper oil discovery in Block 9/21a (License P1609) in the U.K. Northern North Sea encountered oil shows.

“Good quality reservoir condition oil samples have been retrieved from the Skipper field and have been dispatched to Aberdeen for full analysis,” IOG said. “Initial onboard observations during sampling confirm the oil to be mobile in the reservoir. This fulfills the primary well objective and will allow optimization of the Skipper field development plan.”

The Skipper well was drilled to a depth of 1,176 m (3,860 ft) when it encountered oil shows before continuing deeper.

“The well was drilled to a total vertical depth of 1,700 m (5,578ft) with no safety incidents and achieved its primary objective of retrieving good quality reservoir con-

dition oil samples from the Skipper reservoir in order to optimize the Skipper field development plan,” IOG said.

The well’s secondary objective—drilling two mapped reservoir structures beneath the Skipper oil field in the Lower Dornoch and Maureen formations—was also completed but hydrocarbons were not hit.

“We are extremely pleased to have achieved drilling success at the Skipper well, our first operated well. We are encouraged by the good quality oil samples retrieved, the well’s primary objective,” IOG CEO Mark Routh said. “Whilst the exploration prospects did not encounter hydrocarbons, I am increasingly confident that the commerciality of the Skipper field has been confirmed now that we have the data we need to progress to the field development planning.

“By retrieving the oil samples, the primary well objectives have been fulfilled and we have proved that the oil is moving in the Skipper reservoir,” he added. “This is a significant step for IOG towards achieving the target of being a company with 100 MMboe heading for development, in assets 100% owned as operator.”

The appraisal well, spudded on July 23, experienced some operational challenges that were unrelated to the reservoir. This required an early re-spud of the well, which increased the overall well duration.

“In addition to this, in early August we experienced a force 10 gale at the well location which caused a suspension of operations for almost two and a half days for safety reasons,” IOG noted. “These delays have resulted in an estimated increase in the operational phase of the well by around 13 days, the cost of which will be met in the short term by the existing London Oil and Gas loan facilities. Other costs are being deferred until the end of 2017.”

—Steve Hamlen

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## Kraken, Catcher On Schedule For First Oil In 2017

With all subsea equipment installed along with three production and four injection wells completed, wrapping up work relating to FPSO construction is one of a few hurdles left for the Kraken development.

But first oil is within sight and on track for first-half 2017, according to Cairn Energy, a partner in the EnQuest-operated development in the U.K. North Sea's East Shetland Basin.

The FPSO hull conversion is nearing completion, all modules onboard the vessel and commissioning underway, Cairn Energy said.

The FPSO for the project has a production capacity of 80,000 barrels per day (bbl/d) and storage capacity of 600,000 bbl, according to Bumi Armada. Sail-away is expected in fourth-quarter 2016.

If Kraken comes onstream in April 2017 as envisioned, it could bring about \$100 million in operating cash flow with US \$45/bbl oil representing the forward curve, according to Cairn CFO James Smith.

Plateau production will be about 50,000 barrels of oil equivalent per day (boe/d), about 15,000 of which will be net to Cairn. Smith also pointed out that costs have fallen for the project. So far, about \$300 million in gross capex savings have been delivered to date.

The update was given during Cairn's half-year 2016 report.

In related news, Cairn subsidiary Nautical Petroleum Ltd. increased its working interest in the development earlier this year to 29.5%, acquiring 4.5% interest from First Oil. EnQuest holds the remaining stake in Kraken, but recently said it is discussing farming out 20% of its Kraken stake to a subsidiary of Delek Group Ltd. as it works to reduce debt.

When asked during its first-half 2016 results conference call whether Cairn had interest in increasing its Kraken stake, CEO Simon Thomson said "we're comfortable with the level of equity we have."

However, the company is looking from a new venture perspective from both the exploration and production sides, he added.

Meanwhile, work at the Catcher FPSO development—also in the North Sea—continues to progress.

First oil is expected in second-half 2017 with planned plateau production at 50,000 boe/d (10,000 boe/d net to Cairn). So far, six wells have been drilled with reservoir quality and flow rates meeting or exceeding expectations, Cairn said.

If all goes according to plans, subsea installation will be complete by fourth-quarter 2016.



Kraken's plateau production will be about 50,000 barrels of oil equivalent per day. (Source: Cairn Energy)

As for the FPSO taking shape in Singapore, the stern and bow sections have been joined as crews prepare to lift the modules.


"On Catcher, you will recall we guided the market that there had been a bottleneck in the hull construction in the yard in Japan," Smith said. "The mitigation plan which the partnership has put in place to address that has now been affected. ... That keeps us on track for expected first oil in 2017."

The Premier Oil-operated development is comprised of 22 subsea wells—including 14 producers and eight water injectors—on the Catcher, Varadero and Burgman fields, which will be tied back to the leased FPSO.

With production costs for Catcher and Kraken at US\$17/bbl, Cairn and partners are looking forward to adding to operating cash flow.

"Even at today's oil price in the mid-40s we'll be generating around about US\$250 million of operating cash flow at plateau production, or at US\$65 in oil Brent for illustration, about US\$400 million of operating cash flow," Smith said.

—Velda Addison



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## PROJECT BRIEFS

**Statoil Starts Production From Fram C East**

Statoil has begun production from the Fram C East subsea satellite, lifting activities for the nearby Troll C platform in the Norwegian North Sea.

The company credited increased drilling efficiency and what it called a “simple, smart” concept to cutting about US \$24 million off the project’s \$97 million original price tag.



Production from Fram C East will be tied back to the Troll C platform hub. (Source: Øyvind Hagen /Statoil ASA)

“Profitability is resilient with a low breakeven,” Statoil said.

The Fram C East development is a long production well drilled from the existing Fram subsea template. Production from the development, which has estimated recoverable resources of 18.2 million barrels of oil and 1.6 billion standard cubic meters of gas, will be tied back to the Troll C platform hub. From here, gas will be transported to Kollsnes via Troll A, while oil will be piped to Mongstad for further processing.

“Fram C East is a small development project, but a key element of our plans to capture maximum value in the Fram area,” Lars Høier, vice president operations for Troll and Fram, said in a company statement. “We are pleased to see that our targeted efforts to cut costs and improve profitability on the Norwegian continental shelf (NCS) have benefitted this development project. Fram C East has seen profitability rise from good to even better, and will see a positive cash flow as early as in 2016.”

**Tullow Flows Oil From TEN Offshore Ghana**

Now that Tullow Oil and partners have delivered first oil from the Tweneboa, Enyenra, Ntomme (TEN) fields offshore Ghana to the FPSO Prof. John Evans Atta Mills, oil production is gradually increasing toward the FPSO capacity of 80,000 bbl/d.

The annual average production will be about 23,000 bbl/d gross (11,000 bbl/d net for Tullow), Tullow said in a news release Aug. 18. TEN marked first oil, which the operator said was accomplished on time and within budget, about three years after Ghanaian authorities approved the development plan.

“This is an important moment for Tullow as production begins from our second operated development in Ghana,” Tullow Oil CEO Aidan Heavey said.

At a water depth of between 1,000 m and 2,000 m, the project’s subsea components include 70-km flowlines, 60-km umbilicals and 40-km risers with two riser bases, 24 Christmas trees and four oil production manifolds and one gas export manifold. Most of the subsea production equipment, which weighed in at about 35,000 tonnes, was installed by the TS7 consortium of Technip and Subsea 7.

Plateau production is expected to be reached in 2017, the same year gas exports were set to begin.

But gas exports could start sooner than planned.

Tullow said it has been exploring options to accelerate gas export, considering fabrication of the gas export facilities could be finished in late 2016, about six months ahead of schedule.

The Ghana National Gas Corp. pipeline will transport the gas to the Atuabo gas processing plant in western Ghana, according to Tullow.



Plateau production is expected to be reached in 2017. (Source: Tullow)

The Tweneboa gas field is due onstream in 2018.

Tullow holds a 47.175% stake in the fields. Partners are Anadarko Petroleum Corp., 17%; Kosmos Energy, 17%; Ghana National Petroleum Corp., 15%; and PetroSA, 3.875%.

—Velda Addison

## DEVELOPMENT BRIEFS

## Ashtead Wraps Up Project For BP's Quad 204



Ashtead's Deflection Monitoring System (DMS) is shown during mobilization. (Source: Ashtead Technology)

Ashtead Technology, a subsea technology and equipment provider, has completed a subsea integrity management project for BP's Quad 204 redevelopment of the West of Shetland's Schiehallion and Loyal fields.

For the project, the company said crucial data needed to safely deploy and install two subsea manifolds at water depths of 400 m was collected using its new Deflection Monitoring System (DMS), which was optimized to the pressures and water depths required for the job.

"The system monitors deflection, heading, pitch, roll, depth and other parameters of subsea structures in real time," Ashtead said in a news release. "This allows informed decisions to be made during critical operations, ensuring specified tolerances and safety requirements are taken into account."

Acoustic data links and radio frequency enable Ashtead to control the project remotely, eliminating the need for direct ROV or diver support intervention to collect measurements.

"In today's increasingly harsh exploratory environments, data is key—it allows us to ensure subsea structures are installed to meet the differing complexities of developments around the world, offering long-term reliability and safety," Ashtead Technology CEO Allan Pirie said.

The subsea manifolds were installed within 24 hours of the DMS being deployed. BP's Quad 204 includes a new FPSO and upgraded subsea infrastructure. The project is expected to enable the potential recovery of an additional 400 million barrels of resource from the Schiehallion and Loyal fields, extending production into 2035.

### Norway Clears Shell For Knarr, Gaupe Use

Norway's Petroleum Safety Authority has given Shell permission to use the facilities at Knarr and Gaupe offshore the U.K. after a change of operatorship with BG Norge.

In a news release Aug. 25, the agency said that the previous operator had already given Shell consent, but the company applied for permission to use the facilities.

The Knarr oil field is located in the North Sea, northeast of the Snorre development; while, the Gaupe oil and gas field lies near the U.K.-Norway boundary, south of Varg. Gaupe was developed using two subsea wells, with the well stream taken to the Armada facility on the UK shelf. Also a subsea development, the Knarr field was developed using the *Petrojarl Knarr* FPSO.

### Claxton Completes Well Abandonment Duties

Claxton, an Acteon company, said it has completed its involvement in the abandonment of two wells on the Horne and Wren Platform in the Southern North Sea, wrapping up the job within 18 days.

The company was responsible for tubing cut verification, tubing recovery, sub-mudline abrasive conductor severance, conductor cut verification and the subsequent multi-string recovery from both wells, according to a news release. Claxton said its use of a jackup lift barge, instead of a rig, for multi-string severance cut costs.

"The Horne and Wren platform has a small 8m x 8m weather deck footprint, creating a space challenge which we managed to overcome. As well as using our latest evolution of the 'SABRE' abrasive cutting system, this project also required a full, bespoke, light weight work package," Rob Horton, project engineer for Claxton, said in the statement.

"This included a hydraulic proving system and a utility crane to ensure self-sufficiency in handling our equipment," Horton added. "Proving of tubing and conductor cuts were completed with the same system, enabling us to reduce equipment, time and money for the client."

—Staff Reports

## FLOATERS

## Stella Stays On Track To First Oil In November



The *FPF-1* vessel departs the Remontowa yard in Poland. (Source: Ithaca Energy)

Ithaca Energy reported that modification works on the *FPF-1* vessel have been completed, and the floater is approaching the U.K. North Sea Stella field location.

The operator also noted that Stella is on track for first hydrocarbons in November 2016, three months after sail-away.

The *FPF-1* modifications program was undertaken by Petrofac in the Remontowa shipyard in Poland.

“Importantly, all the onshore scope and testing work scheduled for completion in the yard has been completed as planned, avoiding costly carry over of unfinished work offshore. The vessel has been materially upgraded to

accommodate the requirements of the Greater Stella Area (GSA) hub,” Ithaca said.

“Additional buoyancy and enhancements to the marine systems have been undertaken to extend the operational life of the vessel and entirely new topside oil and gas processing facilities have been installed.”

Following the completion of deepwater marine system trials, the *FPF-1* started its tow to the Stella field location in early August. It is anticipated that the period from sail-away to first hydrocarbons is around three months. Following the tow, *FPF-1* will be moored on location using 12 pre-installed anchor chains.

The dynamic risers and umbilicals that connect the subsea infrastructure to the vessel will then be installed. Afterward, commissioning of the various processing and utility systems that can only be undertaken on location with hydrocarbons from the field will be completed.

Access to the Norpipe oil pipeline system has been secured for future GSA production, allowing a switch from tanker loading during 2017.

“This move will significantly reduce the fixed operating costs of the GSA facilities and enhance operational uptime, resulting in improved reserves recovery and increasing the long term value of the GSA as a production hub,” Ithaca said.

—Steve Hamlen

## Endeavor Launches Best Practices Project For FPSO Sector

Houston-based Endeavor Management, an international strategic advisory firm, is reaching out to industry experts to develop best practices for managing, designing and executing projects in the FPSO sector.

Endeavor’s joint industry project will utilize an expert advisory group to gather and evaluate information, develop and propose metrics, discuss lessons learned to rate practices and determine best practices, and document the effort.

Among the issues to be examined:

- Strategic decisions;
- Project delivery;

- Mooring and offloading;
- Hull design;
- Process module design;
- Vapor recovery, gas and water treating;
- Startup and end of project; and
- Operational considerations.

Endeavor is seeking representatives from various segments engaged in the FPSO sector, including oil and gas operators, leased FPSO providers, shipyards/fabricators and engineering companies.

—Staff Reports

## Sembcorp Marine Acquires LMG Marin For \$20 Million

Sembcorp Marine Ltd.’s subsidiary Sembcorp Marine Integrated Yard Pte. Ltd. (SMIY) has entered a sale and purchase agreement with its existing shareholders to acquire a 100% equity stake in LMG Marin AS for US\$20 million, according to a news release.

Headquartered in Norway, LMG is a ship design and engineering house with experience building floating structures, platforms and ships such as drillships, FPSO

vessels, floating storage and offloading vessels, offshore support vessels, LNG carriers and LNG-powered ships.

Sembcorp Marine said LMG originated several key designs adopted by Sembcorp Marine. These include the:

- Next-generation Espadon drillship design;
- FSO design used in the ongoing construction of the company’s newbuild FSO for deployment in the U.K. North Sea, and



- Gravifloat modular LNG and LPG platform solutions that are a cost-competitive alternative to FSRU, FLNG and land-based terminals.

The Robusto FPSO hull design, customized for operation in Brazil and West Africa, is another notable LMG creation, Sembcorp Marine said in the release.

The acquisition will be fully paid in cash by internally generated funds, the release said. As of July 31, the estimated net tangible asset value is \$3.8 million.

Following the acquisition, LMG will become an indirect wholly-owned subsidiary of Sembcorp Marine. The acquisition also brings into Sembcorp Marine a cache

of design patents and expertise in naval architectural design, engineering and technology development, the company said.

“Through the strategic acquisition of LMG, Sembcorp Marine further strengthens its intellectual property and knowledge to execute leading-edge design and engineering solutions for the global offshore and marine sectors,” said Sembcorp Marine President and CEO Wong Weng Sun. “This in turn supports our ongoing efforts to move up the value chain so that we can compete better and do more for our customers and partners.”

—Staff Reports

## VESSELS & ROVs



The ROVs will be delivered in December.  
(Source: FMC Technologies)

### FMC Technologies Lands Contract To Deliver Two ROVs To DOF Subsea

DOF Subsea will add two remotely operated vehicles (ROVs) developed by FMC Technologies to its Eastern Canada operations.

The HD and UHD-III ROVs from the Schilling Robotics business line will be delivered in December and employed by DOF Subsea for inspection, maintenance and repair (IMR) activities, the companies said in a prepared statement. FMC noted the strength of the two companies' long-term partnership in finalizing the deal.

“We’ve partnered with DOF Subsea for the last decade and this award, in these difficult market conditions, represents the continued strength of our relationship,” Tyler Schilling, president of Schilling Robotics, said in a statement. “The combination of the HD and UHD-III ROVs give DOF Subsea a lot of flexibility on this project.”

FMC stressed that its products are relatively easy to maintain and are equipped with comprehensive system diagnostics and intuitive maintenance programs. Its subsystems do not require advanced technical skills or specific system knowledge.

### Bucking The Downturn, ROVOP Expands Presence In Gulf Of Mexico

Surging business in the Gulf of Mexico has prompted Scotland-based ROVOP Ltd, a subsea ROV service provider to increase its Houston workforce by 10% in 2016.

The company, which employs 135 worldwide, recently completed a pipeline project with Drebbel de Mexico in which an ROV was involved in concrete mattress installation for the first time in Mexican waters. The two companies are now involved with a large multinational service operator to provide ROV services for pre-lay survey, riser inspection and crossing fabrication with concrete mattresses.

“We are particularly pleased with our performance in the initial contract with Drebbel because, with safety being of paramount importance, precisely positioning the mattresses in zero visibility meant that we eliminated the risk to divers by deploying one of our high-performance ROVs and expert operators,” Wayne Betts, president of ROVOP’s Houston operations, said in a statement.

The company’s growth is particularly pronounced in the midst of a global downturn.

“ROVOP is bucking the trend in the industry by adjusting to the lower oil price and increasing focus on efficiencies to meet our customer’s needs,” Betts said. “In Houston, we have seen a steady growth curve since inception and we expect that to continue for the rest of the year.”

### ROVOP Plans To Add To Workforce After Landing \$4 Million In New Contracts

Scotland-based ROVOP Ltd. will bolster its offshore workforce to keep to with more than \$4 million in contracts for ROVs with new clients operating in the North Sea, Gulf of Mexico, West Africa and Europe.

The contracts involve customers in the oil and gas, as well as offshore wind sectors, and include construction support, cable lay and protection, survey, and inspection repair and maintenance (IRM).

“I am encouraged by the contract awards and continued positive momentum in increasing both our client



base and future pipeline of work,” ROVOP CEO Steven Gray said in a statement. “As a result of these awards, we are increasing our offshore workforce across both Aberdeen and Houston.

“It’s clear that the market remains challenging,” Gray added. “However, ROVOP continues to win work by focusing on saving cost for our customers.”

The company recently hosted the Right Honorable Greg Clark MP during his first visit to Aberdeen in his role as secretary of state for business, energy and industrial strategy.

“We were delighted to welcome the new secretary of state for business, energy and industrial strategy Greg Clark to our Aberdeen facilities today, which allowed us to outline our full-service capabilities and briefly detail our key target markets in which we operate—oil and gas, offshore wind, telecoms and power transmission industries,” Gray said, adding that the company was also recently visited by Paul Wheelhouse, the Scottish Government minister for business, innovation and energy. “The continued prolonged market downturn has been significant,” Gray said. “However, this downturn will undoubtedly create opportunity for those companies who address the current challenges and adapt to the new market environment. This flexible approach, along with looking to increase cost efficiencies to clients should ensure we continue to be well positioned in our target markets going forward.”

—Joseph Markman

## EXPLORATION

### US GoM Oil, Gas Lease Marks A First, Sets Record Lows

U.S. Western Gulf of Mexico Lease Sale 248 made history Aug. 24 in more ways than one: the first livestreamed sale set record lows for the number of companies bidding, blocks receiving bids and total bonus bids since 1983.

With only three companies submitting bids on 24 of the nearly 4,400 tracts offered, the lease sale generated just more than \$18 million in bids as the oil and gas industry continues to rebound from one of the worst downturns in its history. Blocks ranging from nine to more than 250 miles offshore Texas were offered.

“We can mainly attribute the low bidding to the continued low price of oil,” Mike Celata, the Gulf of Mexico (GoM) region director for the U.S. Bureau of Ocean Energy Management (BOEM), said during a media call after the sale. “There are still significant opportunities in the deepwater Gulf of Mexico. We think this sale was low simply because of the low price of oil at this time.”

Abundant global supplies of oil and gas have outpaced demand across the world, which have sent commodity prices plummeting from highs above \$100 two years ago to around \$27 in January. In the months since, oil prices have risen steadily but failed to stay above \$50/bbl as companies cut costs and hold off spending. But tough market conditions linger as projects that secured funding before the downturn come onstream, helping to push GoM production to record highs.

Interest remains, including from companies with deep pockets.

ExxonMobil Corp., BHP Billiton Petroleum Inc. and BP Exploration & Production Inc. were the only companies that submitted bids. And if federal authorities deem their bids carried fair market value, the three could get the



blocks they desired—none of the blocks offered received multiple bids.

The highest bid—\$1.124 million for East Breaks Block 590—came from ExxonMobil. The world’s largest publicly-traded oil company, which at midyear had earned \$3.5 billion and generated \$10.5 billion of cash flow from operations and asset sales, also placed a bid on another East Breaks block—bringing its total bids to \$1.75 million.

At nearly \$10 million, BHP was the apparent big spender. The Australia-based company, which has GoM assets in the Green Canyon area, placed 12 bids. While most of these were for blocks in the East Breaks area, the company also targeted Alaminos Canyon acreage—the only one doing so during this lease sale.

BP placed bids on 10 blocks—all in Garden Banks—for a total of about \$6.3 million.

The companies were mostly attracted to deepwater. More than half of the blocks receiving bids had water depths between 800 meters (m) and 1,600 m. BHP placed the lone bid for the deepest of these—East Breaks 785, which has a water depth of 1,576 m.

| U.S. Western GoM Lease Sale 248 Top 10 Highest Bids |             |                     |
|---|-------------|---------------------|
| Company   | Bid         | Name/Block          |
| ExxonMobil  | \$1,124,000 | East Breaks/590     |
| BHP   | \$1,077,480 | Alaminos Canyon/127 |
| BHP   | \$937,480   | East Breaks/870     |
| BHP   | \$937,480   | East Breaks/871     |
| BHP   | \$937,480   | East Breaks/915     |
| BHP   | \$887,480   | East Breaks/786     |
| BHP   | \$887,480   | East Breaks/830     |
| BHP   | \$887,480   | Alaminos Canyon/170 |
| BHP   | \$827,480   | East Breaks/872     |
| BHP   | \$737,480   | Alaminos Canyon/39  |

Source: BOEM

“Despite these challenging circumstances, the companies that participated in today’s sale are investing millions of dollars in the future of America’s energy and economic security with no guarantee of success or financial return,” National Ocean Industries Association President Randall Luthi said in a statement. “The purchase of a lease block is a first step in a lengthy process that involves rigorous regulatory oversight including extensive environmental reviews, permitting, and safety checks.”

In a statement released a day before the lease sale, Luthi pointed out deepwater leases in the transboundary that enable U.S. companies to team up with other companies, such as Pemex, to develop resources.

But he also said that commodity prices and concern over regulatory burdens would factor into the sale’s outcome, possibly swaying U.S. companies into Mexican waters. Mexico is gearing up to offer 10 deepwater blocks on Dec. 5.

“Our neighbor to the south is eager to attract U.S. companies into their portion of the Gulf of Mexico,”

Luthi said. “The continuing onslaught of ever-changing U.S. regulatory policies may tilt companies towards investing more in Mexican waters and thus dampen interest in this sale.”

Many oil and gas companies have been critical of new well control rules that require real-time monitoring for deepwater and HP/HT drilling, more controls on maintenance and repair of BOPs and third-party reviews, among other regulations. The final rules, unveiled in April by the Bureau of Safety and Environmental Enforcement (BSEE), followed the deadly 2010 Macondo well blowout and Deepwater Horizon rig fire.

Some of the rules had already been adopted by the industry, which created its own standards, improved operating procedures and devised better technology following the tragedy. The use of double shear rams in the BOP stack is one of the rules that is now a baseline industry standard.

When asked whether regulations played a role in the lease sale’s outcome, BOEM Director Abigail Ross-Hopper said the BSEE rule is appropriate.

“Participation level is more a reflection of current market conditions and companies’ development strategy rather than a particular piece of regulation,” she said.

Lease Sale 248 was the last for the western GoM region in the current 2012-2017 lease sale schedule. The previous Western GoM lease sale, held in August 2015, generated about \$22.7 million in bids. Five companies submitted a total of 33 bids on the 4,083 blocks offered. Blocks in the Alaminos Canyon area received the most bids, but the highest bid was on an East Breaks block—submitted by Ecopetrol America Inc. for about \$2.8 million.

—Velda Addison

## Mexico Names Firms Qualified For Deepwater Tender

Mexico’s energy regulator said on Aug. 24 that 26 companies had qualified to participate in the country’s deepwater oil tender in December, the jewel in the crown of a landmark energy sector opening.

Of the 26 companies that have qualified for the so-called Round 1.4 tender, 16 are operators, including state-owned oil giant Pemex, and 10 are financial partners, the National Hydrocarbons Commission (CNH) said on Twitter.

Any consortia that form will be revealed on Nov. 28, the CNH said.

Among the qualifying companies are BHP Billiton, BP, Chevron, China Offshore Oil Corp., Eni ExxonMobil, Hess, Galp Energía, Inpex Corp., Lukoil, ONGC Videsh, Pemex, Repsol Shell, Statoil, Total and others.

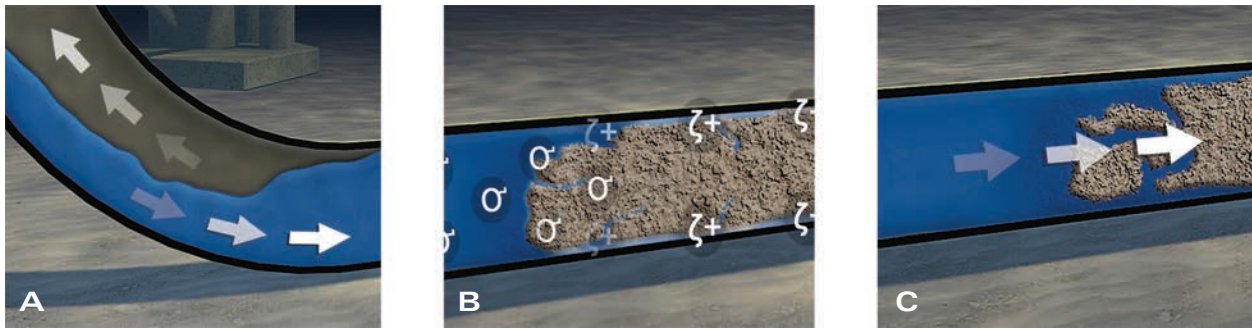
—Reuters

## TECHNOLOGY

### Keeping The Oil Flow Flowing

There’s little debate on how the oil and gas industry has benefitted greatly through the transfer of technologies from other industries like aviation and medicine to solve its big challenges. Beer brewing can now join the industry’s list of tech transfer success stories.

That transfer is a natural fit as the two industries struggle with similar challenges in keeping their production lines free from blockages. However, removing any blockages that might form is not always as easy as pouring a liquid cleaner down the drain, especially



A) The low surface tension of the cleaning solution (blue) allows it to penetrate the area between the deposit and pipe walls. B) Oxygen from the solution is released and neutralizes the zeta charge responsible for the stickiness associated with paraffin and asphaltenes. C) The cleaning solution reacts with a portion of the oil to create a simple soap lubricant. (Source: Ideal Energy Solutions)

when that blockage is in a subsea pipeline hundreds of feet below water.

There's now an environmentally friendly alternative to the traditional chemical and mechanical methods of well remediation. The roots can be traced back to the trial-and-error experimentation with solvents and oxidizing agents to develop solutions for the food and beer brewing industries to keep equipment like brass filtering plates and tanks clean.

That cleaning solution, with some additional tweaking in the laboratory, became WellRenew. In late 2015 a blocked Gulf of Mexico (GoM) pipeline was treated with WellRenew and is flowing crude once again. The nontoxic paraffin removal solution, developed by Lafayette, La.-based Ideal Energy Solutions, is not limited by the challenges that traditional paraffin and asphaltene management systems face, like low temperatures and long pipeline lengths.

### Blocking Flow

The deposition of paraffin in flowlines and production equipment is one of the more difficult challenges an operator can encounter over the life of its wells. Buildup occurs inside the lines naturally during the flow of crude, with the paraffin forming into solid wax particles when the crude temperature falls below the cloud point.

"As paraffin, asphaltene, oil and formation deposits lay down in the line, it does so like rings in a tree trunk," said Charlie Talley, chief developmental chemist for Ideal Energy Solutions. "The biggest challenge that we had was in coming up with something that could actually lower the surface tension enough so that the material could go around the pipe's surface and we could push the plugs out of the pipe."

Typical remediation methods like line heating, warm solvent or hot oil treatments, and chemical wax inhibitors are limited in their effectiveness by low temperatures and pipeline length, making them unsuccessful in most cases. Where coiled tubing can be effective, its use can be limited by pipeline length and bends. Also, the mobilization and utilization of these tools is costly, and there are many risks associated with the process.

"Coiled tubing involves taking an entire coil unit on location, and depending on the length of the pipeline, the crew might actually have to go in from both sides," said Kevin Ayers, COO for Ideal Energy Solutions. "There's a lot of equipment involved, and it's very expensive. It also can be dangerous, which is another advantage that WellRenew has because it's non-hazardous and has a minimal equipment spread."

### Unblocking Flow

The solution is based on three principles: surface tension, hydrophilic-lipophilic balance and controlled oxygen. The extremely low surface tension of the solution allows it to penetrate the area between the deposit and pipe walls and into any cracks or crevices present in the deposited material, Talley said.

"WellRenew works through a controlled oxygen release mechanism. We found that oxygen will neutralize the zeta charge that causes the stickiness of the paraffin plug," Talley said. "To get it around the pipe, you have to be able to lower the surface tension. We've come up with some very unique surface-active agents that can reduce the surface activity down to about 20 dynes."

This approach does not dissolve paraffin or asphaltenes but rather floats them and allows them to be pumped. When hot solvents are used and appear to dissolve these materials, the solutions will gel again when cooled and become hard to remove.

"Many people in the industry think you can dissolve paraffin, but you can't. It's virtually nonreactive," Talley said. "The only thing that you can do is get it to the point where you can move and pump it. That's what WellRenew does."

### Field Results

A major operator in the GoM had performed multiple chemical and mechanical remediation treatments to reestablish flow in a 7.9-km (26,000-ft) 4-in. pipeline that connected two of its platforms with limited success. Before abandoning the line, the operator treated it with WellRenew. Limited flow returned to the line after 5 hours of treatment, with full flow returning to the line 75 hours into the treatment with the solution.

—Jennifer Presley

## Helix Completes First Riser-Based Coiled Tubing Intervention



Helix Well Ops MODU class light well intervention vessel Well Enhancer. (Source: Helix Well Ops)

Aberdeen-based Helix Well Ops (U.K.) Ltd., a U.K. subsidiary of international offshore energy service company Helix Energy Solutions Group, has completed the industry's first riser-based coiled tubing intervention project from a mobile offshore drilling unit (MODU) class light well intervention vessel (LWIV).

The project was conducted from the company's MODU class mono-hull vessel *Well Enhancer*, which was designed to perform operations such as wireline and coiled tubing interventions, the company said in a news release.

"Delivering coiled tubing well intervention from this type of vessel has been anticipated by the oil and gas industry for some time," Helix said. "In the quest to enhance oil recovery and reduce the costs associated with subsea well abandonment, it may be seen as a potential industry game changer due to its cost effectiveness over traditional rig-based methods."

Helix carried out the first live riser-based coiled tubing intervention project from a LWIV in the North Sea earlier this summer. The work was done in water depths of 83 m (275 ft). The project involved drifting and milling to 4,400m (14,500 ft) and performing a reservoir saturation tool log

before perforating 267 m (877 ft) of reservoir section in four runs, followed by a venturi clean-up, the release said.

When combined and interfaced with Well Ops' patented technology and equipment, the coiled tubing unit virtually eliminates the effect of vessel motion, the company said. It also reduces the coil fatigue toward that of a fixed installation or platform. Altus Intervention provided the coiled tubing unit.

"Initial results of the intervention indicate an increase in daily oil output of over 1,500 barrels of oil equivalent per day," the company said. "Helix Well Ops' coiled tubing intervention system is designed to operate in water depths of between 80 m and 200 m and can deploy a variety of coil sizes up to 2 $\frac{3}{8}$  in and 20,000 ft in length."

### Norway Searches For New Technology

The Norwegian Petroleum Directorate (NPD) is facilitating a competition in hopes of strengthening its technological expertise and capacity.

The NPD is reaching out to companies with experience as it seeks to discover and produce more hydrocarbon resources.

According to a news release, the NPD needs consultants capable of fulfilling assignments in:

- Subsurface technology, reservoir geology and reservoir technology;
- Drilling and well technology;
- Development technology and operation of installations and facilities;
- Seabed technology and infrastructure;
- Onshore facilities, technology, infrastructure and capacities and
- Disposal of facilities.

Two-year parallel framework agreements, with an extension option, would be signed. The deadline is Sept. 30. For more information, visit the NPD's website.

—Staff Reports

### BUSINESS BRIEFS



Exterior weld of low pressure housing of a subsea wellhead. (Source: GE Oil & Gas)

### GE Oil & Gas Lands Subsea Wellhead Deal With ONGC

India's Oil and Natural Gas Corp. Ltd. (ONGC) has awarded GE Oil & Gas a multimillion-dollar frame agreement to supply about 55 subsea wellheads over the next three years. In a news release, GE said the SG5 wellheads will be used for the operator's shallow- and medium-water drilling campaign offshore India. The first wellhead will be supplied in fourth-quarter 2016. GE said part of the manufacturing scope will take place in India

for the first time, while engineering and project management support will come from regional teams in Singapore. The company has provided ONGC with subsea production equipment for more than 30 years.

“With India’s new energy policy and gas pricing policy in place we are seeing an uptick in ONGC’s exploration and development activity,” Ashish Bhandari, CEO–South Asia, GE Oil & Gas, said in a statement. “This latest award will enable GE to support ONGC as its technical partner, collaborating to improve the region’s energy supply capabilities through the discovery of new fields offshore.”

### **Subsea UK Brings Northwest Businesses Together**

Subsea supply chain businesses in northwest England will be able to identify opportunities and debate the challenges facing the sector thanks to a new industry networking event organized by Subsea UK, the body which represents the British subsea industry.

The regional gathering is targeted at firms operating in what is a growing hub for the U.K. subsea sector.

With a focus on underwater activity in relation to oil and gas, defense, oceanology and marine renewables, the event is sponsored by Bender UK, WITTENSTEIN, James Fisher Marine Services, PMI Analytical and Maytree Engineering Services. The event also is supported by the Furness Economic Development Forum’s supply chain growth program.

“As an organization covering the whole of the U.K., we want to help all companies in the subsea sector exploit the potential to increase business at home and abroad, particularly in the current lower oil price environment,” Subsea UK CEO Neil Gordon said. “The northwest has seen continuing growth in the subsea sector across a variety of industries, particularly offshore wind.

“Subsea UK aims to provide a platform through which companies can come together to share best practice and debate the challenges that they face in their respective industries,” he added. “This event is an important step in helping organizations in the northwest to come together and work toward a common goal. Anyone with an interest in the subsea industry is welcome to attend.”

Tickets are £42 for Subsea UK members and £48 for nonmembers and will be held on Sept. 7 at Preston’s Marriot Hotel. For more information, visit [subseauk.com/events.asp](http://subseauk.com/events.asp).

### **Seadrill Reviews Legal Options After Pemex Ends Contract**

Seadrill Ltd. is reviewing its legal options after Pemex backed out of a two-year extension to contract the West Pegasus semisubmersible drilling rig, Seadrill said in a news release.

The termination became effective Aug. 16.

The offshore drilling contractor said a provisional commitment for the two-year extension was signed during second-quarter 2015, and the day rate for the remaining

term of the initial contract was reduced. Seadrill said the extended contract was finalized during first-quarter 2016.

As part of this agreement, Seadrill and its 50%-owned joint venture with Finetech, Seamex Ltd., agreed to lower the day rate on five jackups for 365 days. The agreement to reduce the day rates of the existing contracts was contingent upon final confirmation of the two-year extension of the West Pegasus by Pemex management.

In the event of termination, Seadrill and Seamex are entitled to recover the day rate concessions as well as the demobilization for the West Pegasus. Seadrill said it also will seek reimbursement of certain costs incurred in anticipation of the extension.

### **Cobalt Terminates \$1.75 Billion Sale Of Angola Oil Blocks**

Cobalt International Energy Inc. said the proposed \$1.75 billion sale of a 40% stake in two offshore oil blocks in Angola to the state oil company was terminated as it did not get the necessary approvals from the country’s government.

The deal was automatically terminated after the Angolan government did not give the approvals within one year, Cobalt said on Aug. 23.

The oil and gas producer announced in August last year the sale of its 40% stake in the fields to Angola’s Sonangol, which holds the remaining stake. But, three weeks back Cobalt warned that it was unlikely to close the deal.

Cobalt said on Aug. 23 it has begun the marketing and sale process of the assets.

The company’s shares had tumbled more than 40% on Aug. 2 when the company first said that the deal was unlikely to close. Since then the stock has pared most of its losses through close on Aug. 22.

### **Ithaca Beefs Up Interest In Austen, Vorlich**

Ithaca Energy has entered sale and purchase agreements (SPAs) to increase its interest in the Vorlich discovery from about 17% to 33%.

An SPA has also been signed for the acquisition of a 75% interest and operatorship of the Austen discovery. Austen lies around 30 km from the GSA hub and is estimated by Ithaca to contain gross contingent resources (1C to 3C) in the range of 4 MMboe to 28 MMboe.

“Initial considerations are payable at completion of the acquisitions, with additional contingent payments at FDP approval and upon reaching reserves recovery thresholds. The acquisition costs including potential future contingent payments total under US \$6 million, with the transactions expected to complete in the second half of 2016,” Ithaca added.

During first-half 2016, the company said the producing asset portfolio performed well, with average production at 9,378 boe/d (93% oil). The “solid performance” was due in part to the Cook and Dons Area fields, where production exceeded guidance.

“Full year base production guidance, excluding any contribution from start-up of the Stella field during 2016, remains unchanged at 9,000 boe/d,” Ithaca said.

### **Anadarko Names New Executive Vice President of Operations**

Anadarko Petroleum Corp. said on Aug. 23 that Darrell Hollek has become executive vice president of operations; he was formerly the executive vice president for U.S. onshore E&P.

Also, Ernie Leyendecker was appointed as executive vice president of international and deepwater exploration; he was formerly senior vice president for international exploration.

As executive vice president of operations, Hollek will handle U.S. onshore E&P and midstream activities and also Gulf of Mexico and international operations.

Hollek has been at Anadarko since 1980, when he joined as a field engineer. He has worked in areas including global deepwater drilling; international, Gulf of Mexico and U.S. onshore E&P; and environmental, health, safety and regulatory.

Hollek will also remain as a director of Western Gas Holdings LLC, a subsidiary of Anadarko, and Western Gas Equity Holdings LLC, the general partner of Western Gas Equity Partners LP.

Leyendecker has more than 30 years of experience and joined the company in 2002. He has worked as general manager for worldwide exploration engineering, planning and international negotiations; as vice president of corporate planning; and as senior vice president of Gulf of Mexico exploration.

Bob Daniels, formerly executive vice president of international and deepwater exploration, will continue his current role as an executive vice president and member of the executive committee until his retirement later this year.

Jim Kleckner, formerly executive vice president of international and deepwater operations, also is retiring.

### **Cypriot Firm Energean Will Buy Stake In Tanin, Karish Fields**

The partners in Israeli offshore gas fields Tamar and Leviathan have agreed to sell their rights in two smaller fields to Ocean Energean Oil and Gas Ltd. for \$148.5 million to comply with a government requirement.

Delek Group, which has controlling interests in several gas fields in the eastern Mediterranean, is being forced by the government to sell off some assets in an effort to open the sector to competition.

Energean will buy Texas-based Noble Energy’s 47.06% stake in the Tanin and Karish fields and the rest from Delek subsidiaries Avner Oil Exploration and Delek Drilling, Avner said in a statement Aug. 17. The buyer of Tanin and Karish, with combined gas reserves of 3 trillion cubic feet, is a subsidiary of Cyprus-registered Energean E&P Holdings Ltd., which operates mainly in Greece and the Aegean Sea.

“Within six months of closing the deal, Energean will submit a development plan for the two fields to the Israeli government, in the context of a project which will also strengthen the geopolitical role of the energy triangle shaped by Israel, Greece and Cyprus,” Energean Oil & Gas CEO Mathios Rigas said in a prepared statement.

The sellers will also be entitled to royalties if and when gas is produced from the fields.

In 2015, Delek paid its partner Noble for the rights to sell its stake in the two fields.

The sale is subject to regulatory approval.

### **Wood Group In Top 3% Of U.S. Design Firms**

Wood Group has been recognized by Engineering News-Record (ENR) as #13 in its list of the top 500 design firms in the U.S.

Published annually, ENR ranks the largest U.S.-based engineering and construction firms based on 2015 revenue.

Wood Group placed No. 1 in the Pipeline category as well as the Offshore and Underwater Facilities category.

Wood Group also ranked in the top 20 of the following categories: Petroleum, No. 5; Auto Plants, No. 5; Refineries and Petrochemical Plants, No. 7; Chemical Plants, No. 7; Industrial Process, No. 8; Aerospace, No. 10; and Manufacturing, No. 20.

### **Wood Group Reports On SEAR JIIP For Warm-water Environments**

The SEAR joint industry project (JIP) aims to reduce subsea equipment failures through collaboration and knowledge sharing. Led by Wood Group, the JIP will contribute to improved subsea equipment design for offshore Australia and other warm-water environments to avoid time-consuming and costly interventions.

The offshore oil and gas industry in Australia is currently undergoing a major shift as a number of key projects move from the design and commissioning phase to the operating phase of their life cycles. In addition, continued challenging market conditions mean that the oil and gas industry as a whole is investigating all avenues to reduce production costs.

The ability to better understand subsea equipment failure modes and intervention requirements has the potential to offer operators significant cost savings. From SEAR Phase 1 research, intervention costs were estimated at AUD 150 million for a small subset of existing infrastructure. When loss of production costs are factored in, improving equipment reliability has the potential to offer substantial opex savings over the lifetime of a field.

By developing a better understanding of subsea equipment reliability, short-term solutions such as targeted risk-based monitoring, inspection and maintenance strategies are possible to implement for subsea equipment. Rather than dealing with a failure reactively, it can be managed proactively.

The long-term goal is to utilize lessons learned to feed information back to vendors, enabling equipment reliability issues to be designed out. Operational costs will be significantly reduced by:

- Reducing the frequency and duration of interventions and associated vessel costs;
- Reducing the requirement for purchasing new or refurbishing old equipment;
- Reducing the requirement for spares inventory and associated logistics costs; and
- Maximizing equipment reliability and availability and subsequent production uptime.

### Sembcorp Marine Will Take Full Ownership Of PPL Shipyard

Singapore-based rig builder Sembcorp Marine Ltd. said it agreed to buy the 15% of PPL Shipyard Pte Ltd. that it did not already own for about \$115 million from PPL Holdings Pte Ltd. and E-Interface Holdings Ltd. PPL Shipyard (PPLS), which is 85% owned by SembMarine, designs and builds oil rigs and ships.

“This will enable the company to optimally manage the businesses, finance and resources of PPLS and fully align the latter’s corporate strategies to the company

to generate sustainable returns,” SembMarine said in a statement.

SembMarine, which has been suffering from a slump in orders due to low oil prices, agreed to buy the Norway-based ship design firm LMG Marin AS for \$20 million.

In a separate statement, Yangzijiang Shipbuilding (Holdings) Ltd. said it would receive about \$51.8 million from the deal due to its 45% stake in PPL Holdings. It plans to use the net proceeds for working capital.

### ELA Container Offshore Moves Into New Headquarters

Haren, Germany-based ELA Container Offshore GmbH moved into its new, maritime-styled headquarters on Aug. 1, marking the company’s second anniversary.

The larger building includes 12 offices, a reception area, two kitchen facilities and a meeting room. The 10-employee company is primed to expand further.

ELA Container Offshore is part of the family-owned Albers group, which employs 550. Albers’ on- and off-shore container park encompasses more than 22,000 rental containers. Its fleet includes 60 special crane-equipped trucks.

—Staff & Reuters Reports

## UPCOMING

The next issue of Subsea Engineering News will be distributed Sept. 9. Until then, visit [epmag.com](http://epmag.com).

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## CONTACT INFORMATION

**MARK THOMAS** Editor-In-Chief, E&P Franchise  
[mthomas@hartenergy.com](mailto:mthomas@hartenergy.com)

**VELDA ADDISON** Senior Editor  
[vaddison@hartenergy.com](mailto:vaddison@hartenergy.com)  
(713) 260-6400

**CONTRIBUTORS**  
Steve Hamlen (UK)  
Joseph Markman (Houston)  
Erin Pedigo (Houston)

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