

Bumi to pay EnQuest US \$15m

Malaysia's Bumi Armada has agreed to pay US \$15m to EnQuest to settle issues with the *Armada Kraken* FPSO (Floating Production, Storage and Offloading) vessel offshore the UK.

Bumi Armada delivered the *Armada Kraken* FPSO in February 2017 to the EnQuest-operated Kraken field in the UK North Sea.

The two companies have been working to resolve a dispute regarding delays in the FPSO topsides commissioning.

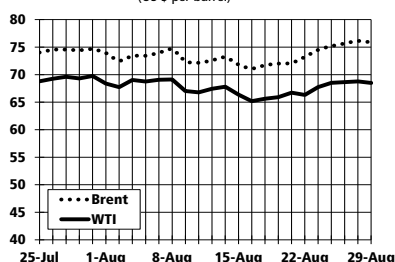
The FPSO produced first oil in June 2017, four and a half months after its hook-up. However, in August that year, EnQuest had to downgrade its full-year oil production forecast due to topside commissioning delays with the *Armada Kraken* FPSO.



OIL WATCH

Latest prices

Brent/WTI Crude Price
(US \$ per barrel)



INSIDE THIS WEEK

- Share Watch2
- UK Agar Plantain well spudded3
- Wood wins Denmark Tyra job4
- Ampelmann bags Audrey decom work5
- Norway leads offshore recovery6
- Shearwater to buy WesternGeco assets7

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EUROPEAN OFFSHORE PETROLEUM NEWSLETTER

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Catcher tieback options mullied

Premier Oil has several tieback options for its *Catcher* field development in the UK North Sea and plans to sanction the project during Q1 2019.

The *Catcher Area*, which started oil production in December 2017 through the BW Offshore-owned *Catcher FPSO*, reached plateau production rates of 60,000 boe/d in May. Rates of up to 70,000 boe/d (gross) were achieved after the first half of the year.

Potential from the wells is "significantly in excess of the FPSO design capacity" so initial talks have been instigated with BW Offshore regarding sustaining production rates above the currently contracted 60,000 boe/d.

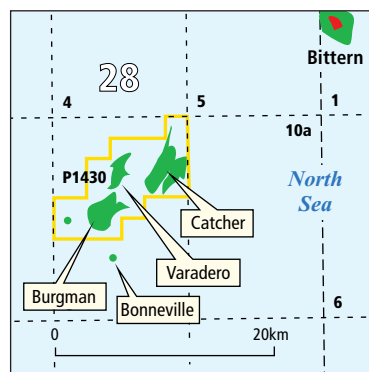
The completion of the current phase of the *Catcher Area* development is expected by November following completion of the seventeenth and eighteenth producer wells.

Premier said the next step is to tackle the "several identified near field discoveries as potential high value subsea tiebacks to the *Catcher Area* FPSO to maintain and extend plateau production."

Development concepts for the *Laverda* and *Catcher North* oil prospects will be a major focus. They will include two development wells drilled from a common drill centre tied back to the *Varadero* manifold. Project sanction is targeted for Q1 2019.

Premier has also identified potential infill well locations targeting resources beyond the reach of the initial production wells. Premier also plans to acquire 4D seismic to help define future infill drilling locations.

- In February, Premier was awarded two blocks adjacent to the *Catcher Area* in the UK 30th Offshore Licensing Round. One of the blocks lies to the south of the *Catcher* field and holds the *Bonneville* discovery, a potential future tieback to the *Catcher Area* infrastructure.



Sverdrup Phase 2 PDO submitted

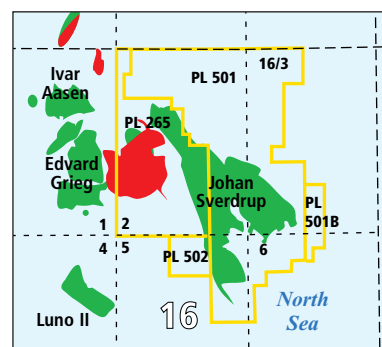
Equinor and its partners – Lundin Norway, Petoro, Aker BP and Total – have tabled a US \$4.93 Bn Plan for Development and Operation (PDO) for **Phase 2** of the *Johan Sverdrup* development project offshore Norway to the Norwegian Ministry of Petroleum and Energy.

The PDO for the full field development of *Johan Sverdrup* includes increased resource estimates and lower investment costs.

In the Phase 2 PDO, the resource estimate for the entire *Johan Sverdrup* field is raised from 2.1-3.1 Bn boe to 2.2-3.2 Bn boe, with an expected estimate of 2.7 Bn boe, Equinor said.

Phase 2 includes another processing platform (P2), modifications of the riser platform and the field centre, five subsea templates, in addition to power from shore to the Utsira High in 2022.

Production start-up for the Phase 2 development is planned for Q4 2022. The partners in *Johan Sverdrup* are: operator Equinor (40.0267%), Lundin Norway (22.6%), Petoro (17.36%), Aker BP (11.5733%) and Total (8.44%).



continued on page 4...

OIL & GAS COMPANIES

Company	Stock Market	Closing price 28 Aug 2018 US \$	% change 1 week	% change 1 month	% change 12 months	Market cap US \$ (millions)
AKER BP	Oslo	35.45	5.5	1.72	110.25	12,764.64
AMINEX (LON)	London	0.03	18.84	2.5	-50	96.21
BP	London	7.21	1.47	-1.34	25.63	144,021.51
CABOT ENERGY	London	0.03	1.67	1.67	-40.69	20.80
CAIRN ENERGY	London	3.14	4.73	0.33	35.41	1,849.56
DNO	Oslo	1.97	-4.33	3.62	44.51	2,138.69
ENI	Milan	19.11	0.8779	0.716	24.265	69,455.68
ENQUEST	London	0.56	7.68	21.03	67.12	663.80
EQUINOR	Oslo	26.17	1.07	2.3	49.79	87,374.86
FAROE PETROLEUM	London	1.93	2.46	2.32	77.75	721.31
GAZPROM	MICEX SE	2.15	1.61	5.51	22.61	50,883.22
HELLENIC PETROLEUM	Athens	8.47	8.4	-0.55	-6.95	2,588.39
ITHACA ENERGY (DI)	London	1.43	0	0	0	592.07
JKX OIL & GAS	London	0.37	-8.06	-3.39	111.11	63.04
LUKOIL	MICEX SE	67.72	2.74	3.67	57.11	57,601.41
LUNDIN INTERNATIONAL	Eur.Paris	202.94	0	0	0	329.77
LUNDIN PETROLEUM	Stockholm	34.29	9.79	11.36	72.91	11,670.24
MAUREL ET PROM	Eur.Paris	6.95	0.5076	-6.8966	64.5429	1,359.14
MOL MAGYAR OLAJ-ES GAZIPARI	Budapest	10.41	0.49	6.27	-3.13	8,533.43
NORSK HYDRO	Oslo	5.73	4.01	1.57	-11.51	11,852.27
OMV (FRA)	Frankfurt	53.54	3.86	-2.64	-2.04	17,523.00
PREMIER OIL	London	1.55	2.9	-6.07	115.36	1,206.71
PROVIDENCE RES.	London	0.14	1.4	0.23	40.65	83.91
REPSOL YPF	Madrid-SIBE	19.44	1.0655	-1.1316	24.8322	31,036.75
ROYAL DUTCH SHELL A	Amsterdam	33.03	1.0029	-3.7378	21.5255	151,159.22
RWE	Frankfurt	25.40	1.975	-2.91	3.241	14,627.75
SOCO INTERNATIONAL	London	1.17	-4.51	-7.24	-23.21	389.09

% change is for Total Shareholder Return i.e. assumes all dividends re-invested

oil & gas companies (contd.)

Company	Stock Market	Closing price 28 Aug 2018 US \$	% change 1 week	% change 1 month	% change 12 months	Market cap US \$ (millions)
STERLING ENERGY	London	0.16	-5	-4.26	-15.56	35.00
TOTAL	Eur.Paris	64.19	2.9882	-0.3636	27.043	171,022.43
TULLOW OIL	London	2.94	2.19	0.97	45.88	4,093.33
WESTMOUNT ENERGY	London	0.10	6.67	6.67	28	4.86

OIL SERVICE COMPANIES

Company	Stock Market	Closing price 28 Aug 2018 US \$	% change 1 week	% change 1 month	% change 12 months	Market cap US \$ (millions)
ABB LTD N	SIX Swiss	23.91	2.773	2.637	5.752	51,856.20
AKASTOR	Oslo	2.04	0.83	-0.7	12.85	560.25
AKER	Oslo	79.44	5.41	3.76	138.13	5,903.82
CGG	Eur.Paris	2.76	-3.1199	-1.0067	-3.7472	1,933.21
FRED OLSEN ENERGY	Oslo	0.58	1.31	-41.21	-46.84	38.41
FUGRO C DUTCH CERT	Amsterdam	13.24	-2.5011	-5.9484	8.2336	1,160.36
NATIONAL OILWELL VARCO	New York	46.41	3.9883	-1.0659	52.9664	17,757.36
PETROFAC	London	8.50	6.8	9.24	54.17	2,940.65
PETROLEUM GEO SERVICES	Oslo	3.94	-10.89	-23.64	115.15	1,332.99
PETROLIA	Oslo	0.39	1.89	-9.5	-13.6	22.99
PROSAFE	Oslo	3.58	8.36	56.84	43.27	291.45
SAIPEM	Milan	5.27	-1.8753	0.6711	46.9628	5,328.89
SBM OFFSHORE	Amsterdam	16.22	0.7273	4.5678	3.901	3,336.65
SEADRILL	Oslo	19.56	5.84	-2.98	-58.58	36.86
TECHNIPFMC (PAR)	Eur.Paris	30.75	3.7944	-7.5678	22.94	13,980.27
TGS-NOPEC GEOPHS.	Oslo	38.90	1.47	-1.4	102.25	3,993.20
WEIR GROUP	London	24.73	2.54	-1.03	5.9	6,415.63
WOOD GROUP (JOHN)	London	10.07	9.8	19.07	37.64	6,824.82

Source: Thomson Reuters Datastream

In Brief...

Xervo wins lifeboat system job

Xervo, which makes conventional NORSOK-approved lifeboat systems, has signed a contract with Awilco Drilling to deliver an R-002 lifeboat system for a new semi-submersible drilling rig.

The order included the delivery of four 75 POB complete sets of lifeboat davit systems and one FRB davit system.

In addition, SH Group, Xervo's parent company, received an option of delivering three similar rig systems if Awilco Drilling activates its rig options at Keppel FELS.

Xervo said delivering the conventional Boat-In-A-Box NORSOK-system for a semi-submersible drilling rig is "a breakthrough in the industry".

Trends

Project spending figures

Russia's Gazprom, China's state-owned Sinopec and Anglo Dutch major Shell are among the top spenders on planned and announced projects among all oil and gas companies across oil and gas value chain by 2025, says analysts GlobalData.

Gazprom tops the list with estimated capital expenditure (capex) of US \$160 Bn expected to be spent on 84 oil and gas projects around the world. Sinopec and Shell follow with \$87 Bn (74 projects) and \$86 Bn (91 projects) respectively, noted GlobalData.

The company's report 'H1 2018 Top Global Oil and Gas Companies Planned Projects and Capital Expenditure Outlook' shows that in the upstream sector, Shell leads among companies with an estimated capex of \$58 Bn to be spent on 53 planned and announced production fields globally. Brazil's state

player Petrobras follows with \$48 Bn to spend on 33 fields and Gazprom will be in third position with \$40 Bn to be spent on 22 fields.

In the midstream sector, Gazprom is expected to lead both pipeline and gas processing sectors in terms of capex spending. In the pipeline segment, Gazprom is estimated to spend \$71 Bn to bring 18 planned and announced projects online by 2025.

Raj Sekhar, Oil & Gas analyst at GlobalData, said: "In the LNG liquefaction segment, Qatar Petroleum is projected to spend an estimated capex of \$35 Bn on two upcoming liquefaction terminals by 2025, while China National Offshore Oil Corporation leads in regasification capex, with \$4 Bn to be spent on three upcoming regasification terminals."

UK Agar Plantain well spudded

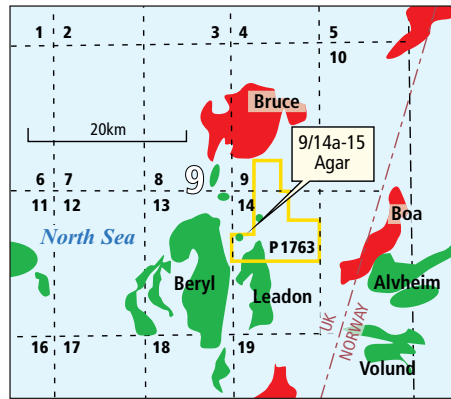
Azinor Catalyst, the Seacrest Capital Group-backed UK Continental Shelf player, has spudded the **9/14a-17** exploration/appraisal well on the **Agar Plantain** prospect offshore the UK using the *Transocean Leader* rig.

Azinor Catalyst has a 25% operating stake in the sole risked well, while Nautical Petroleum (a wholly owned subsidiary of Cairn Energy) holds 50% and Faroe Petroleum has 25%.

The 9/14a-17 well is expected to take around 28 to 38 days to complete and will be drilled to a depth of 1,845m (6,053ft). The Plantain exploration prospect will be drilled first followed by a contingent sidetrack to appraise the Agar discovery.

The Agar discovery was made in 2014 with the **9/14a-15A**

exploration well, which encountered a 10m (33ft) column in high quality Eocene Frigg Formation sands.



Agar and Plantain have estimated combined mid-case resources of 60m boe, with an upside case of 98m boe.

Faroe Petroleum CEO, Graham Stewart, said: "We are pleased to announce the spudding of the Plantain exploration well which is the first in a sequence of seven committed wells in Faroe's current exploration and appraisal programme. The next prospect is the Faroe-operated **Rungne** exploration well due to spud in September, located in Faroe's core area of the Norwegian North Sea."

Lundin wraps Norway appraisal

Lundin Norway has completed appraisal well **16/1-28 S** in **Production Licence 338C** (PL 338C) offshore Norway.

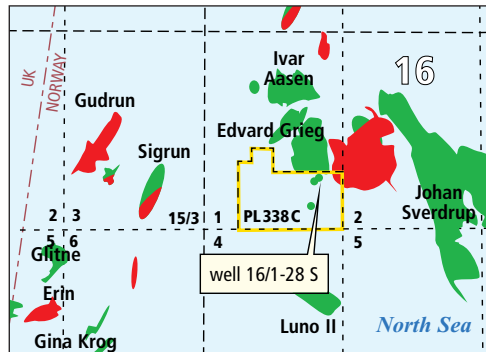
The well was drilled around 1km northeast of the discovery well, **16/1-12**, and around 190km west of Stavanger. The **16/1-12 (Rolvnes)** discovery is located just south of the **Edvard Grieg** field. The well was drilled by the *COSL Innovator* rig.

"The discovery was proven in basement rocks in 2009 and delineated by well **16/1-25 S** in 2015. Prior to the drilling of **16/1-28 S**, the operator's resource estimate for the discovery was between 400 Mcm and 2.2 MMcm of recoverable oil and between 300-400 MMcm (10.59-14.12 Bcf) of recoverable gas," said the Norwegian Petroleum Directorate (NPD).

"Appraisal well **16/1-28 S** was drilled with a horizontal reservoir section towards the southwest, to around 1km north of **16/1-25 S**. The objective of the well was to investigate whether a horizontal well, drilled in fractured and weathered basement rocks, could deliver production rates that are commercially interesting, as well as to assess the reservoir quality."

Well **16/1-28 S** was drilled to respective vertical and measured depths of 1,919m (6,296ft) and 4,880m (16,011ft) below

the sea surface, and was terminated in granitic basement rock. Water depth at the site is 107m (351ft). The well will now be temporarily plugged and abandoned.



In the horizontal section, the well encountered 2,500m (8,203ft) of granitic basement rock with poor reservoir quality. Preliminary estimates place the size of the discovery between 2-11 MMcm of recoverable oil and between 100 MMcm and 2 Bcm (3.53-70.6 Bcf) of recoverable gas.

"The licensees will assess the discovery with a view toward a potential application to conduct test production,

probably by tying in the appraisal well to existing infrastructure on the Edvard Grieg field," added the NPD.

The well was formation-tested (DST) for 10 days and extensive data acquisition and sampling have been carried out, including production logging. The production rate from DST was 1.1 Mcm oil per flow day through a 52/64-inch nozzle opening. The main flow period of five days was held with a rate of 700 cm/d of oil flow through a 52/64-inch nozzle opening.

This is the third exploration well to be drilled in PL 338C, which was carved out of **PL 338** (awarded in APA 2004) and awarded on 16 December 2014.

MOL gets Norway well permit

The Norwegian Petroleum Directorate (NPD) has granted MOL Norge a drilling permit for exploration well **2/6-6 S** in **Production Licence 860** (PL 860) offshore Norway.

Well **2/6-6 S** will be drilled around 40km northeast of the **Valhall** field using the *Rowan Viking* rig.

Mol Norge is the operator of PL 860 with a 40% stake, while

Lundin Norway holds 40% and Petoro has 20%.

The area in this licence consists of parts of **Blocks 2/6** and **9** and part of **Block 3/4**. PL 860 was awarded on 10 February 2017 in APA 2016. This is the first well to be drilled in the licence.

Equinor given probe permit

The Norwegian Petroleum Directorate (NPD) has granted Equinor a drilling permit for exploration well **6406/2-9 S** in **Production Licence 199** (PL 199) offshore Norway.

Well **6406/2-9 S** will be drilled using the *West Phoenix* rig. The area in this licence consists of part of **Block 6406/2**. The well will be drilled around 7km south of the **Kristin** field.

Equinor operates PL 199 with a 52% stake. The other partners are: Petoro (27%), ExxonMobil (15%) and Total (6%).

PL 199 was awarded in September 1993 in the 14th Licensing Round on the Norwegian Continental Shelf. This is the fifteenth exploration well to be drilled in PL 199.

Sverdrup Phase 2 PDO submitted

...continued from page 1

“The Johan Sverdrup field is the largest field development on the Norwegian shelf since the 1980s. At plateau, the field will produce up to 660,000 b/d, with a break-even price of less than \$20/bbl and very low CO2 emissions of 0,67 kg per barrel. Johan Sverdrup is on track to deliver vast volumes of energy with high profitability and low emissions for many decades to come,” said Eldar Sætre, Equinor’s CEO.

“We are announcing an increased resource estimate and we are reducing the total estimated investment for both **Phase 1** and Phase 2 of the development by an additional NOK 6 Bn [US \$720.9m] since February of this year. Since the PDO for the first phase in 2015, we have reduced the total estimated investment for Johan Sverdrup full field development by more than NOK 80 Bn [\$9.61 Bn]. The project will yield even greater value creation and larger spin-off effects than previously estimated,” added Sætre.

Full field development of Johan Sverdrup is projected to contribute more than NOK 900 Bn (\$108.13 Bn) in income to the Norwegian State over the lifetime of the field.

An updated analysis from Agenda Kaupang estimates that the development of Johan Sverdrup Phase 1 and Phase 2 can contribute more than 150,000 man-years in Norway in the period from 2015-2025. In the operations phase, Johan Sverdrup may generate employment of more than 3,400 man-years every year.

The PDO for Johan Sverdrup Phase 2 also includes measures to facilitate power from shore to the Utsira High by 2022, in accordance with the terms for PDO Phase 1. Emission savings from the Johan Sverdrup field are estimated at 460,000 tonnes of CO2 per year, which is equivalent to annual emissions from

230,000 private cars.

“We have completed nearly 80% of the first phase of the development, and it is gratifying to see that the good momentum and quality of the construction phase seems to be continuing in the installation phase offshore. This means that we are on track to start production from the field in November next year,” said Margareth Øvrum, executive vice president for Technology, Projects & Drilling in Equinor.

“The continued high quality of project execution is a result of close cooperation with our suppliers and partners. Together, we have managed to reduce the estimated investments for Phase 1 by an additional NOK 2 Bn [\$240.3m],” said Øvrum.

The updated investment estimate for Phase 1 is now NOK 86 Bn (\$10.33 Bn), a reduction of 30%, amounting to NOK 37 Bn (\$4.45 Bn) since submission of the Phase 1 PDO.

“We have worked systematically to make the second phase of the Johan Sverdrup development even more profitable and robust. We have taken the good solutions and experience gained from Phase 1 and have optimised the development concept for Phase 2 in cooperation with our partners and suppliers. In the Phase 2 PDO, we have reduced the investment estimate to NOK 41 Bn (\$4.93 Bn), and the break-even price for Phase 2 is now less than \$25/bbl. Throughout the entire history of this industry, I don’t think we have ever seen a project that has been improved as much as Johan Sverdrup has over the last three years,” said Øvrum.

In connection with the development of Phase 2, Equinor and the Johan Sverdrup partnership have established a full field digitalisation and technology plan “to further reinforce safety and efficiency in operations, increase value and reduce carbon emissions from the field.”

Wood wins Denmark Tyra job

Wood Group has bagged a four-year contract from Total Denmark E&P to provide “the development and delivery of a significant operations readiness assurance scope” for the **Tyra** redevelopment project in the Danish sector of the North Sea.

Wood will deploy its Integrated Maintenance Database (IMD) to build Total’s SAP maintenance management system, the company said. Tyra lies 225km west of Esbjerg.

Delivered by Wood specialists based in Esbjerg (Denmark), Aberdeen (Scotland) and Manila (Philippines), “the IMD enables the creation and manipulation of hierarchical equipment lists, job plans and tasks, task lists, object lists, bills of material, routes and planned maintenance,” Wood noted.

Tyra is Denmark’s largest gas field and its US \$3.36 Bn redevelopment is the largest oil and gas investment in the Danish North Sea, with operations set to continue for the next 25 years.

The full redevelopment of the Tyra gas field was approved by the Danish Underground Consortium (DUC) in December 2017, while the project was still operated by Maersk Oil. Total took over as operator last March after the French major acquired Maersk Oil.

The redeveloped Tyra is expected to deliver around 60,000 boe/d at peak, and it is estimated that the redevelopment can enable the production of more than 200m boe. Around two thirds of the production is expected to be gas and the rest oil.

In Brief...

M² wraps Stella subsea survey work

M² Subsea has completed a contract for Ithaca Energy to conduct a subsea system survey of the Stella UK North Sea field.

The company deployed the *Go Electra* multi-service vessel equipped with a Triton XLX work class ROV to the Stella field, located 280km off Aberdeen at a water depth of 85m (279ft).

The work scope included the survey and inspection of subsea systems including pipelines and subsea structures.

Oseberg H all set for September

The Norwegian Petroleum Directorate (NPD) has granted Equinor consent for the **Oseberg H** facility offshore Norway to start production in September 2018.

Oseberg H is a new unmanned wellhead platform that is part of the **Oseberg Vestflanken 2** development project in the Norwegian North Sea. The consent has been given to the licensees in the **Oseberg Area**, of which Equinor is the operator.

Planned investment in the Plan for Development and Operation (PDO) totaled US \$984.5m (NOK 8.2 Bn). The costs have subsequently been reduced to \$780.4m (NOK 6.5 Bn).

Recoverable reserves for the develop-

ment have recently been increased by 17.6 MMcm of oil equivalents (62m bbl) and 7.8 Bcm (275.34 Bcf) of gas, noted the NPD.

“Oseberg H is a new type of facility on the Norwegian Continental Shelf, and the NPD finds it positive that the licensees have developed a new, cost-effective development solution with an unmanned wellhead platform,” said the NPD.

The PDO for Oseberg Vestflanken 2 was approved in June 2016. In addition to Oseberg H – with its associated pipelines and umbilical – the plan includes continued use of the G4 subsea template, along with modifications on the Oseberg field centre.

Ampelmann bags Audrey decom work

Ampelmann has landed decommissioning work from Spirit Energy for the **Audrey** platform in the UK Southern North Sea (SNS).

An E-type gangway system has been installed on the *Olympic Orion* vessel to carry out the two-month workload for Spirit Energy to prepare the Audrey platform for decommissioning.

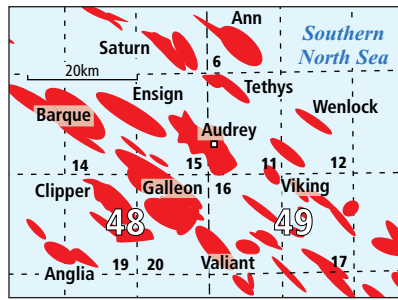
The E-type is the largest fully motion compensated system within the Ampelmann portfolio. Operating globally, it has enabled more than 300,000 safe personnel transfers in the oil and gas industry and can perform in sea states up to 4.5m significant wave height, said the Netherlands-based Ampelmann.

“We have identified decommissioning as a key sector of interest and it’s great to see that there is an increasing need for fully motion compensated gangway systems, not only in our

traditional personnel transfer offering, but also for innovative vessel-based life support solutions,” said Lorenz Nehring, Ampelmann’s business development manager in Aberdeen.

In 2017, Ampelmann worked with Boskalis to help prepare for the decommissioning of the **Leman** platform in the SNS. With the use of the A-type gangway system, the client was able to reach the multiple landing locations necessary to remove the platform in parts. The A-type also provided a safe escape route in case of an emergency.

In addition, Ampelmann recently submitted a concept to the Oil & Gas Technology Centre’s Decommissioning Life Support ‘Call for Ideas’. After receiving positive feedback, the company is now drafting a feasibility study and is looking for industry backing.



Technology

ABB’s Ability tech to boost commissioning

ABB’s Ability technology is estimated to save 40 days in the commissioning stage of field start-up by reducing manual interventions by some 98%.

ABB is set to deliver what it believes to be the world’s fastest start-up when Equinor’s **Aasta Hansteen** gas field starts producing first gas later this year.

ABB is in the final phase of “providing a suite of innovative ABB Abilit digital technologies for Aasta Hansteen”, which has a water depth of 1,300m (4,265ft) in the Vøring area of the Norwegian Sea, 300km offshore.

Part of the challenge for ABB was to make the first gas start-up process as quick and efficient as possible. For this, ABB needed to reduce a sequence of more than 1,000 manual interventions to as few as possible. The outcome is a series of buttons that are as simple as starting a car, said ABB.

“Our teams went through the start-up steps, identified and defined obstacles that needed to be improved, then used our ABB Abilit System 800xA simulator to do a virtual start-up of the plant,” said Per Erik Holsten, managing director for ABB Oil, Gas and Chemicals.

“At this stage we made a lot of improvements for starting up and operating the plant. Through automating much of the process we managed to reduce a complex set of manual interventions to just 20, which means we are all set to deliver what we believe to be the world’s fastest start-up at first gas,” Holsten said.

The company estimates it saved about 40 days in the commissioning phase of the project, or nearly 2,700 man-hours by using the ABB Ability System 800xA simulator to identify and

improve 57 areas in the start-up.

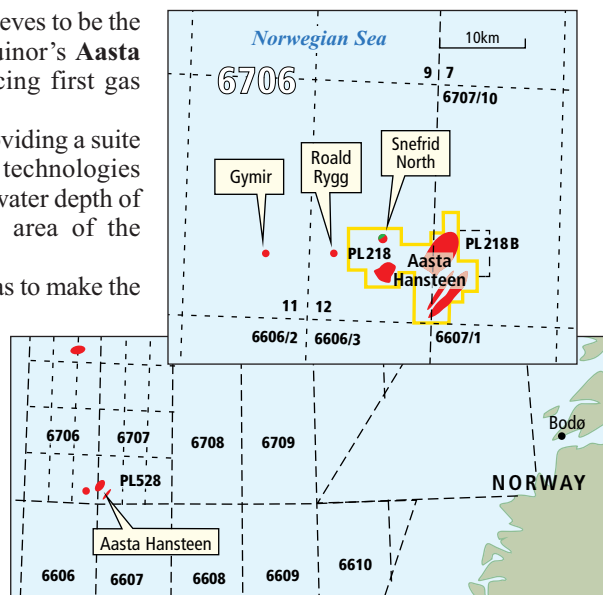
The ABB Ability System 800xA simulator is a solution that

minimises risk and reduces the occurrence of unplanned shut-downs, while improving safety, productivity and energy savings. It has a control system that is disconnected from the physical process and is instead simulated by a dynamic process model.

“In the operation of oil and gas projects there are lots of different automation and instrument competencies and disciplines required for the project to run smoothly,” Holsten said. “In upstream greenfield sites such as Aasta Hansteen, ABB is one of the few companies that is sufficiently skilled and resourced to connect the different parts of the jigsaw together to provide a truly connected plant. Aasta Hansteen is a great example of how it is possible

to do just that, while making the start-up and operation of the plant more efficient.”

The ABB Ability System 800xA solution is part of a much bigger suite of digital technologies being implemented by ABB at Aasta Hansteen. These include a condition monitoring system to monitor more than 100,000 maintenance conditions from more than 4,000 pieces of equipment, tools for alarm management and alarm rationalisation, delivery of several safety critical applications, data storage solution to store all alarms and events easily, and third-party system integration of essential data traffic, ABB added.



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Stena Don scoops Total contract

Stena Drilling has landed more charter work for its *Stena Don* rig from French player Total.

The rig is currently on hire with Total E&P UK on an exploration well west of the Shetland Islands.

Under the new deal, the *Stena Don* rig will drill one well for Total on the **Laggan** field in 2019. The Laggan field is also located west of the Shetland Islands. The 90-day contract is scheduled to start in mid-March 2019. Total has an option to extend this contract.

Stena Drilling recently decided to upgrade the *Stena Don* with the installation of an eight-point mooring system. The rig will, upon completion of the current Total contract, arrive at the Damen Verolme Rotterdam yard and is expected to remain there for three months for the upgrade work.

The *Stena Don* is a harsh environment dynamically positioned Class 3 semi-submersible drilling rig, which can operate in water depths of up to 500m (1,640ft). It was built by Kvaerner Warnow Werft Shipyard in Germany in 2001.

Vessels

PSA's *Goliat* FPSO audit

The Norwegian Petroleum Safety Authority (PSA) has found irregularities during an audit of Eni's *Goliat* FPSO (Floating Production, Storage and Offloading) vessel in the Barents Sea.

The PSA carried out an audit of Eni's *Goliat* FPSO between 28-31 May 2018. The audit looked at Eni's management of emergency preparedness on *Goliat* and included follow-up of an investigation and previous audits of logistics and employee participation.

The objective of the audit was to verify that Eni has established barriers, defined performance requirements, and followed these up in the areas of logistics and emergency preparedness.

The goal was also to verify Eni's handling of previously identified non-conformities in connection with audits of logistics and employee participation, and the incident involving seri-

ous personal injury on the *Goliat* FPSO that took place on 25 June 2016.

The PSA identified regulatory non-conformities in respect of roles and responsibilities, procedures and instructions, documentation, risk assessment, competence and training of personnel, evacuation routes, and signage and marking.

Also, improvement points were observed concerning the use of lifting equipment, scaffolding, fire team radio communication, alternative mustering station for response teams, and changes to emergency preparedness functions in the offshore period.

The PSA gave Eni a deadline of 21 September to report on how the non-conformities would be addressed. The PSA also requested Eni's assessment of the improvement points observed.

Offshore

Norway leads offshore recovery

Norway is leading the way during the offshore market's gradual recovery, according to Mhairidh Evans, senior research analyst at Wood Mackenzie's offshore supply chain team.

Offshore drilling activity has nosedived since the oil price crash, decreasing by 36% globally between 2014 and 2017, said consultants Woodmac, adding that the ramifications for the rig market are huge. Utilisation of the global floating rig fleet dipped from 90% to 65%, and day rates were slashed by up to 70%.

In the North Sea, the decline wasn't as dramatic as the global picture. High levels of sanctioned projects pre-downturn, and ongoing drilling campaigns at giants such as **Troll** and **Ekofisk**, meant activity dropped by only 20% from 2014 to 2017.

At the Offshore North Sea (ONS) Conference in Stavanger, Evans said: "Looking to the future, we expect the global recovery in the offshore market to be cautious and gradual. However, momentum in the Norwegian market means the NCS [Norwegian Continental Shelf]

is leading the way and is one of the world's hottest offshore markets for now. About 40% of all subsea xmas trees ordered globally in 2017 will be delivered to Norwegian fields (compared to previous levels of 10%-15%).

"And for rigs, a combination of increased demand and tight supply has meant rates within the specialist harsh environment fleet are rising the fastest of any sector."

Woodmac estimated a 25% increase for 2018 harsh environment rig day rates compared to 2017, with further rises expected for 2019.

"But the longer term outlook may sound alarm bells for the Norwegian sector. Poor exploration results have meant a drying up of the project pipeline and operators are having to work harder to grow their portfolios from existing discoveries," added Evans.

"Wood Mackenzie forecasts year-on-year declines in NCS drilling activity out to the early 2020s. Meanwhile, projects being planned in the deepwater sectors of Africa and Latin America promise bigger prizes for the supply chain. More investment will be required to keep the NCS near the top of the tree."

Calendar 2018

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26-27 Tank Storage Asia 2018

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OCTOBER

2-8 2018 Operational Excellence in Energy Europe Summit
London

Aibel bags Haugsneset deal

Equinor has awarded Aibel a contract to build Phase 2 of the onshore power plant at Haugsneset east of Kårstø, Norway.

The Phase 2 development will contribute to securing the power supply from land to the further development of Johan Sverdrup, and also to establishing the area solution for power from shore to the remaining fields

Company News

on the Utsira formation (Edvard Grieg, Ivar Aasen and Gina Krog).

Aibel will build a new converter substation with double the capacity compared to the plant in Phase 1. The contract is valued at around US \$60.0m (NOK 500m).

Shearwater to buy WesternGeco assets

Shearwater GeoServices and Schlumberger have entered into a definitive agreement for Shearwater to acquire the marine seismic acquisition assets and operations of WesternGeco, the geophysical services product line of Schlumberger.

Schlumberger revealed plans in January for WesternGeco to exit the marine and land seismic acquisition sector and turn into an asset-light business.

The deal is subject to regulatory approvals and other customary closing conditions. The deal is expected to be closed in Q4 2018, Shearwater said.

Shearwater GeoServices will operate the combined businesses as a global, customer-focused and technology-driven provider of marine geophysical services. Shearwater will own and operate a fleet of 14 fully equipped seismic vessels offering a full range of acquisition services including 3D, 4D and Ocean Bottom Seismic (OBS).

Shearwater was formed in 2016 between GC Rieber Shipping and Rasmussengruppen, taking over four GC Rieber Shipping seismic vessels: *Polar Empress*, *Polar Duke*, *Polar Duchess* and *Polar Marquis*.

Under the terms of the agreement, Shearwater will acquire 10 high-end seismic acquisition vessels, including seven 3D vessels and three multipurpose vessels configured to serve the growing OBS market, 12 complete streamer sets with spares, as well as two source vessels. The proposed transaction also includes WesternGeco proprietary marine seismic technology, as well as development and manufacturing facilities in Norway and Malaysia.

Schlumberger will receive cash consideration based on an enterprise value of US \$600m plus a 15% post-closing equity interest in Shearwater GeoServices Holding.

In addition, Schlumberger will for a limited period be entitled to payments under an earn-out agreement linked to future vessel usage over and above specific thresholds. To ensure a more robust financial platform, an additional \$50m of cash will be injected in Shearwater GeoServices Holding for working

capital purposes, bringing the total cash funding requirement for the proposed transaction to \$650m.

The \$600m cash consideration to Schlumberger and \$50m for working capital purposes will be funded by \$325m in new cash equity and \$325m in debt financing.

Rasmussengruppen has fully underwritten the equity issue and GC Rieber Shipping intends to subscribe for approximately \$28m (of the total of \$325m) before closing. The debt financing will be provided by DNB Bank and Sparebank 1 SR-Bank.

Under the terms of the agreement, Schlumberger will have an option to utilise two vessels from Shearwater on potential multi-client work for the first two years after closing the transaction.

Shearwater will continue to develop and offer processing and imaging services and Reveal software. The company will also have a portfolio of proprietary streamer technology and processing software enabling effective execution of geophysical surveys and delivery of high-quality data.

“We will combine two strong complementary businesses and create an industry-leading full-service geophysical company with a solid financial and strategic platform,” said Irene Waage Basili, CEO of Shearwater. “Our strategy has been to build a stronger company during the downturn, and we are very pleased to see the commitment made by our owners, which enables this transaction.”

After completion of the transaction, Shearwater will have nearly 600 employees.

“Our customers will benefit from our expansion as a full-service provider that has critical mass, global reach and long-term viability. We intend to grow, and we are committed to investing in technology and people to drive the efficiency of our services,” said Basili.

Maurice Nessim, president of WesternGeco, added: “With the divestiture of our marine seismic acquisition business, WesternGeco will be strategically positioned as one of the largest asset-light geophysical services providers in the oil and gas industry.”

Wood bags Mongstad contracts

Wood Group has won two new strategic modifications contracts from Equinor for the Mongstad refinery near Bergen, growing its downstream capability in Norway.

Wood said the work scope of the contracts includes Front-End Engineering Design (FEED) for a gas residue debottleneck project, and engineering and procurement services to reduce sulphur content in gasoline produced at the refinery.

Effective immediately, the contracts will be delivered by

Wood’s engineering teams based in Sandefjord and Bergen, Norway, with support drawn from the company’s global expertise.

Dave Stewart, CEO of Wood’s Asset Solutions business in Europe, Africa, Asia and Australia, said: “Wood has worked with Equinor for more than 20 years and is committed to supporting the Mongstad production facility and the key role it plays in processing oil and gas from the Norwegian Continental Shelf.”

IOR award for Alvheim partners

The partners in the **Alvheim** field in the Norwegian North Sea have been awarded the Norwegian Petroleum Directorate’s (NPD) Improved Oil Recovery (IOR) prize because of “their willingness to accept risk”.

Adopting new technology, sharing data and being able to view a wider area as a whole have helped to more than double available reserves from this area.

The award was presented for the fifteenth time by NPD director general Bente Nyland at an event during the ONS 2018 oil show in Stavanger yesterday.

The partners in Alvheim are: BP (operator with a 65% stake), ConocoPhillips (20%) and Lundin (15%).

“After a very demanding – and pleasant – process, the jury has concluded that the candidate with the largest number of points in relation to the IOR prize criteria is the Alvheim licensees,” Nyland said.

Alvheim came onstream in 2008. Since then, extensive data gathering has led to the continuous identification, maturing and drilling of new well targets. In addition, an exploration programme around the field has resulted in further discoveries and the development of a number of new finds.

Discoveries beyond Alvheim’s immediate vicinity, such as **Vilje**, **Volund**, **Bøyla** and **Skogul**, have also been tied back to the field.

In Brief...

Baker bags NCS extension

Baker Hughes, a GE company (BHGE), has been handed a three-year extension to a subsea services frame agreement with Equinor for its operations on the Norwegian Continental Shelf (NCS). BHGE will provide support for several installations including Troll, Snorre B and Tordis/Vigdis. The deal marks more than 40-years of collaboration between the two companies, said BHGE. Services support will be provided by BHGE’s Stavanger facility and its offices in Bergen.

Floating wind mulled to power Gullfaks and Snorre

Equinor and its partners in the **Gullfaks** and **Snorre** fields plan to explore the possibility of supplying the fields with power from floating offshore wind facilities.

This could be the first time an offshore wind farm is directly connected to oil and gas platforms.

The project forecasts a reduction of CO2 emissions by more than 200,000 tonnes per year, equivalent to the emissions from 100,000 cars.

Equinor has performed an extensive study evaluating which oil and gas installations on the Norwegian Continental Shelf (NCS) are suited for power supply from a floating offshore wind farm. The Snorre and Gullfaks fields in the Tampen Area in the northern Norwegian North Sea are the best match for realising this idea.

“Reducing the use of gas turbines by supplying platforms with power from floating offshore wind is a challenging and innovative project. It may also facilitate new industrial opportunities for Norway, Equinor and Norwegian supply industry within profitable renewable energy, while enabling oil and gas production with low CO2 emissions. The Hywind Tampen project is contributing to further developing floating offshore wind technology, reducing costs and making the solutions more competitive,” said Equinor’s executive vice president for New Energy Solutions, Pal Eitrheim.

The solution to be further explored is a wind farm consisting of 11 wind turbines based on Equinor’s floating offshore wind concept, Hywind. The 8MW turbines will have a combined capacity of 88MW, and are estimated to meet about 35% of the annual power demand of the five **Snorre A** and **B**, and

Gullfaks A, B and **C** platforms. In periods of higher wind speed this percentage will be significantly higher.

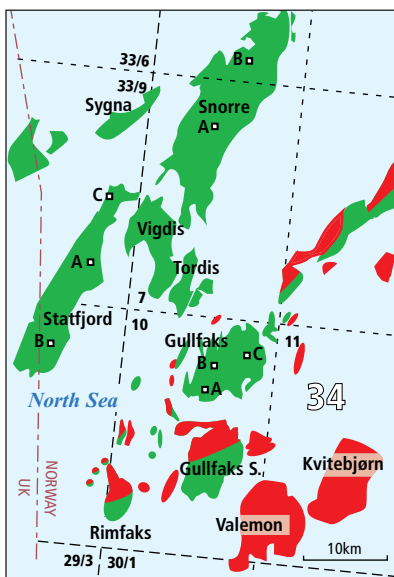
“I am pleased that the partnership has managed to mature this from an idea to a concept choice. In order to maintain profitable operations on the NCS in the long term, it is essential that we do our utmost to further reduce the carbon footprint from our activities. The Tampen project will make a considerable contribution to the industry’s ambition to reduce CO2 emissions on the Norwegian continental shelf by 2.5 million tonnes per year from 2020 to 2030,” said Equinor’s executive vice president for Development and Production Norway, Arne Sigve Nylund.

The preliminary capital and development expenditures of the project totals around US \$600.0m (NOK 5 Bn), and the project partners aim to further reduce costs. The industry’s NOx fund will provide up to \$67.9m (NOK 566m) in investment support for the project.

In addition, Norwegian authorities and Enova could supply financial support for innovative offshore wind projects associ-

ated with the oil and gas industry. The Snorre and Gullfaks partners have applied for support from Enova’s programme for full-scale innovative energy and climate measures to realise the project.

“The partners have now made a concept choice for an offshore wind farm tied in to the two fields. This is still a groundbreaking and challenging project that requires optimisation of the technical solutions and further cost reductions before the partners can make a potential investment decision,” said Equinor’s project director, Olav-Bernt Haga.



Ogilvie

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