

SEN

SUBSEA ENGINEERING NEWS

(with DEEPWATER INTERNATIONAL)



ERSKINE DEAL GIVES COLUMBUS LEGS

Serica Energy is hoping plans to export gas from its UK North Sea *Columbus* (SEN, 31/7) field via a subsea tieback to the *Lomond* platform can now come to fruition, despite a number of setbacks in the past.

The company believes its recent completion of a deal to take an 18% stake in the *Erskine* (31/7) gas/gas condensate field from BP will boost its position.

A direct tieback to *Lomond A*, less than 8km away, is the preferred technical solution for the development of *Columbus*.

And work done on *Lomond* over the past winter to increase throughput capacity for *Erskine* is considered likely to improve performance and economics of the *Lomond* route and should pave the way for a *Columbus* development.

Serica said several different export routes have also been evaluated but export via *Lomond* is still considered the most viable option for *Columbus*.

It said negotiations with *Lomond*'s owner BG have been constructive and an indicative commercial proposal has been received which holds a 'potential commercial solution.'

The field lies partly in Block 23/16f, operated by Serica with a 50% interest, and partly in Block 23/21 operated by BG. *Columbus* holds contingent resources of 5.2mboe.

Tony Craven Walker, Serica's Chairman told SEN an export solution for *Columbus* output had still not been settled on.

He said, 'These are still under review and the export route (our preference is still via *Lomond*) is still subject to commercial discussions.

'The purchase of an interest in *Erskine* gives us an interest in the transportation agreements for *Erskine* product streams through *Lomond* and therefore enhances the option of using the *Lomond* export route for *Columbus* products.



The *Lomond* platform

'The field has now restarted production after a long winter shutdown and performance is expected to benefit from the major investment that has recently been made to the *Lomond* platform, an integral part of *Erskine*'s export infrastructure.'

Development plans for *Columbus* have had a rough ride in the past. In 2013 an FDP was agreed which provided for two near horizontal production wells to be tied back to *Lomond* via an 8-inch pipeline to a minimum facility Bridge Linked Platform (BLP).

The BLP was to be built and installed by BG and connected to *Lomond* by a short bridge. However, in late March 2013, BG decided not to proceed with the installation of the BLP, leaving Serica out in the cold.

Prior to the cancellation of the BLP project, first gas from *Columbus* was expected in the second half of 2015 with initial production rates estimated in the FDP to be 1.68mcm/d of gas and 3,000b/d of condensate.

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DEVELOPMENT

BIG FOOT PLAGUED BY MORE DELAYS

From Houston (BN): *Big Foot* (SEN 32/5) has stubbed its toe again. The long-delayed \$5bn Chevron project in the Gulf of Mexico faces a new setback as pre-installed mooring tendons lost buoyancy and sank to the seafloor, preventing anchoring of the tlp.

Start-up, originally targeted for mid-2014, then 2015, is now pushed at least into 2016.

Nine of 16 Kiewit-made tendons, each 1.6km in length, sank in 1,600m waters in Walker Ridge block 29, about 360km south of New Orleans. The remaining seven were being monitored.

'Installation was not taking place at the time of the incident,' a spokesman told SEN by email. 'We're assessing damage to the tendons and undertaking an investigation to determine the exact cause... We will provide guidance on the project schedule at our next earnings call.' (Likely in early August.)

Thirteen vessels and four ROVs are supporting response to the problem, the spokesman said.

Typically with a tlp, there are four tension legs of four tendons each. Prior to arrival of the platform, one end of

each tendon is anchored to the seafloor. The other end is temporarily buoyed at shallower depth for later grappling and attachment to the platform.

When installed, the platform floats, imparting tension and stiffening the legs, which hold the tlp in place.

In this instance, it appears the temporary buoyancy systems failed sometime between May 29 and June 4, the Chevron spokesman said. Although installation was not underway, Heerema's *DCV Balder*, which installed the tendons and was to facilitate tlp attachment, was on site.

Chevron had said that as of May 27 the *Big Foot* tlp was nearby, awaiting installation, but now says it was 63km to the south when the incident occurred. Loop currents have plagued installation and some reports suggest rough seas, so it may have moved between May 27 and May 29. It will be parked at a yet-to-be specified sheltered location to await developments.

The 2006 Miocene discovery, believed to hold 200mboe recoverable, appears snakebit, to borrow a Texan euphemism for cursed.

Chevron (60% owner and operator) and partners Marubeni (12.5%) and Statoil (27.5%) sanctioned the project in December 2010, deciding on a dry-tree extended tlp with a drilling rig and capacity to handle 75,000 b/d and 700,000 m³/d. The plan calls for development drilling and completions using the tlp rig.

In 2013, undetailed problems with a contractor caused relocation of 'a significant scope of work' to another yard, resulting in several months' delay.

By last November, Kiewit's Ingleside, Texas, yard had finished the platform and made it ready for sail-out, but loop currents in the Gulf – eddies that hive off the Gulf Stream -- delayed moving the tlp into the Gulf until March and have slowed installation since.



The *Big Foot* tlp

KVAERNER, KBR LAND SVERDRUP TOPSIDES

Statoil has stuck close to home awarding the \$861mn contract for the utility and living quarter platform for the *Johan Sverdrup* (SEN, 32/5) field off Norway to Kvaerner and KBR.

Margareth Øvrum, Statoil's executive vice president for technology, projects and drilling, said the companies had won the contract in the face of stiff international competition.

The contract includes engineering, procurement and construction (EPC) of the topsides for the *Johan Sverdrup* utility and living quarter platform.

The platform consists of two modules, one utility module and one accommodation module. Fabrication of the utility module will be carried out by subcontractors in

Poland under management of Kvaerner and completed at Stord Norway.

KBR will carry out engineering and procurement of equipment for the utility module. The accommodation module will be constructed at Apply Leirvik's yard in Stord Norway and in Emtunga Sweden. The topside modules will be assembled at Kvaerner Stord.

The topside will have a total weight of around 19,000t, the utility module accounting for 9,700t and the accommodation module 9,300t.

The contract also includes an option for commissioning assistance and offshore hook-up for the platform.

Øvrum said, 'So far the Norwegian supplier industry has won the main *Johan Sverdrup* contracts. It is good to

see that Statoil and the suppliers jointly are about to break the cost curve to ensure competitive force in a tough time for the whole industry.'

The platform will be completed in the first quarter of 2019 for installation at the field by the world's largest heavy-lift vessel, *Pioneering Spirit*.

The platform will accommodate personnel working at the *Johan Sverdrup* field for more than 50 years. It will constitute the largest living quarters on the Norwegian continental shelf (NCS) with a bed capacity for 560 people.

In addition to accommodation, all field production control and monitoring activities will be carried out in the control room on the utility and living quarter platform. The platform will also contain central support systems for the field centre, such as emergency power, firewater systems, diesel, heat recovery and freshwater production.

The utility and living quarter platform will be connected to the processing platform at the *Johan Sverdrup* field centre by a gangway.

The first phase of the *Johan Sverdrup* field development will consist of four installations, including the utility and living



The *Johan Sverdrup* utility and living quarters platform

quarter platform, a processing platform, a drilling platform and a riser platform, as well as three subsea water injection templates. The platforms will be interlinked by gangways.

The ambition is a recovery rate of 70% for *Johan Sverdrup*. The licensees are Statoil, Lundin Norway, Petoro, Det norske oljeselskap and Maersk Oil. The partners have recommended Statoil as operator for all field phases.

WINTERSHALL TARGETS CORE AREAS FOR EXPANSION

From Paris: Wintershall is looking to boost oil and gas production from its core areas including Russia, Norway and the UK while also expanding activities in Argentina, new company chairman Mario Mehren told the World Gas Conference in Paris.

The company is looking to hit production of 190mboe in 2018 and Mehren said the company will invest €4bn over the next four years to reach its targets.

He said, 'Wintershall is pursuing promising projects. These include the ongoing development of the *Achimgaz* project in Siberia, the Norwegian fields *Edvard Grieg* (32/4), *Maria* (32/4) and *Aasta Hansteen* (32/5), as well as the *Vega Pleyade* gas project off the Argentinean coast at Tierra del Fuego.'

Wintershall board member Martin Bachmann told SEN on the sidelines of the conference that Norway was a key area of focus for the company.

He said, 'In the last five or six years in Norway we have grown from basically no equity production to now more than 60,000 b/d equity production with one major platform being operated at *Brage* and a major subsea development being operated at *Vega* which is producing very well.'

Wintershall has also just handed in the PDO for the *Maria* development, its first operated project in Norway, while it also plans to develop the *Skatfjell* (32/5) oil discovery.

'We want more operatorships and we're going to grow further through the projects we have in the pipeline. Norway is a major part of our strategy next to major places like Russia, the Southern North Sea and Argentina,' Bachmann added.

Meanwhile, managing director of Wintershall's Netherlands business unit, Robert Frimpong, said

the Southern North Sea (SNS) is also a core area for Wintershall.

He said, 'Denmark is a continuing part of our innovative growth story. We are currently in the middle of the development phase on the *Ravn* (31/15) project. We installed the platform last week. We still have to drill the first two wells as part of the phase one development which is progressing.

'There are a number of challenges we have had to overcome with that set of wells being drilled with the *Enasco 121* but we hope to have production by year end.'

The field is being developed with a minimum facilities platform with dry well heads.

He said exploration was also continuing across the SNS, 'We're exploring across the area and we're currently drilling the *Sillimanite* well with the *Enasco 121*.'

Development options for the more than 30mmbbls Rembrandt oil discovery in the Dutch sector, where appraisal work is continuing, are also being considered.

Frimpong told SEN, 'We've just completed the 17-13 well on that structure and we will now go through the analysis of that data in order to put together the concept we want to use to develop the field. All options are open for Rembrandt.'

The International Maritime Organisation has recently approved a slight change to shipping lanes in the area which gives Wintershall much easier access to the reservoir.

Frimpong added, 'In the UK we have the *Wingate* field which is produced back to Dutch infrastructure. That is a key part of our plans and the A5 well will be drilled there this year. It is about making sure production is run at plateau.'

ÅSGARD SUBSEA GAS COMPRESSION TAKES SHAPE

Statoil has begun installation of the modules for its subsea gas compression project on the Åsgard (SEN, 32/4) field off Norway.

The project will boost falling gas pressures from the *Midgard* and *Mikkel* satellite reservoirs, allowing stable production to continue and 280mmboe to be recovered.

A total of 22 modules will be installed and connected in 300m. These comprise two identical 11.5MW compressor trains weighing 1,500t each.

The installation work is being carried out by the *North Sea Giant* vessel, which was rebuilt for the purpose.

The modules will be put in place in the large subsea



The Åsgard template being installed

frame that was installed on the field in summer 2013.

All the modules are provisionally stored at Vestbase in Kristiansund, from where they are shipped following commissioning and testing in Egersund.

The modules comprising the subsea gas compression plant vary in size. The smallest modules, up to 70t, are being installed via the vessel's moonpool.

Several larger modules will be installed from the *North Sea Giant's* crane system, which has been modified to incorporate a special handling system (SHS).

This lifting system is designed to carry a load of up to 420t and can operate in up to 9m high waves. Each module is lowered into the sea via a crane and guided into place with a ROV and cables.

Project director Torstein Vinterstø said, 'This crane system makes the installation work safer and more efficient. To ensure quality at every stage of the process, all operational crew have practised the operations in a specially designed simulator. We have also performed a number of sea trials prior to installation.'

Vinterstø said the installation sequence has been carefully planned so that start-up work can be carried out on the first compressor train while work to install modules on train 2 continues.

MARINER PIPELAY GETS UNDERWAY

Subsea 7 has kicked off pipelay work on the Statoil-operated UK North Sea *Mariner* (SEN, 31/15) field with the *Seven Navica* pipelay vessel.

Around 40km of pipelines for gas, oil and diluent will be installed on the seabed.

The *Mariner* field is being developed with a production, drilling and quarters platform (PDQ) and only dry wellheads.

All wells are to be drilled through well slots on the platform. Despite this, the field development includes an extensive subsea installation scope.

'This year we will have more than 200 vessel days on nine different vessels,' said Jon Aksel Brynildsen, project manager for SURF on the *Mariner* project.

Statoil will have a total of six vessels in rotation

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doing guard vessel duties to support offshore installation activities.

The turn-key (EPCI) contract for the SURF scope on *Mariner* was awarded to Subsea 7 in 2013. In addition, a contract for the fiber optic cable was awarded to Tampnet.

The pipeline and riser scope for *Mariner* includes two infield pipelines, two flexible risers and a gas import pipeline.

The infield pipelines connect *Mariner A* – the PDQ – to *Mariner B*, the floating storage unit (FSU). Both the 10-inch oil export pipeline and the 6-inch diluent import line are approximately 3km long. Flexible risers will connect the infield pipelines to the FSU via two riser bases.

Gas will be imported to the *Mariner A* platform for power generation. The gas import pipeline will tie into the existing *Vestered* pipeline that runs from the Norwegian *Heimdal* installation to the St. Fergus gas terminal near Peterhead in Scotland.

Earlier this spring the seabed was examined and large rocks that blocked the path of the pipeline were removed. When the pipelaying is complete, other installation vessels will be used for flooding, trenching and rockdumping.

A new plem will be installed approximately 33km east of *Mariner*. This manifold will be the tie-in point for the gas import pipeline and also provide tie-in options for possible future projects in the area. A subsea safety isolation valve (SSIV) will be installed close to the *Mariner A* platform.

The plem is the largest steel structure to be installed as part of the subsea scope. It will be 16m long, 14m wide, 4m high and weigh 130t.



The *Seven Navica* is installing pipelines on *Mariner*

The plem, the subsea safety isolation valve and two riser bases are currently under construction. The plem and the riser bases will be installed in August. All tie-in spools and glass reinforced plastic covers will be wet stored as the last operation in the 2015 campaign.

The subsea work will pick up again in 2016, for installation of the subsea safety isolation valve, flexible risers, tie-ins and pre-commissioning. Finally, the communication cable and control cable will be installed once the platform deck is in place.

Meanwhile, Baker Hughes has said it will design and supply production chemicals and services to the *Mariner* field under an eight year contract, anticipated to start in July 2015. The contract also includes an extension option of four years.

DEVELOPMENT BRIEFS

Aker Solutions has taken its first steps into the offshore Mexico arena after winning a contract from Saipem to supply umbilicals for the Pemex-operated **LAKACH** (SEN, 31/15) deepwater natural-gas field.

Aker will deliver 73km of electro-hydraulic steel tube umbilicals that will help connect Mexico's first subsea gas development to onshore processing facilities.

The field is located about 98km southeast of Veracruz in 900-1,200m in the Gulf of Mexico. It is targeted to supply 11.2mcm/d of gas.

The umbilicals will be manufactured in Mobile, Alabama, and the order will be completed in the third quarter of 2016.

From Australia (LB): Construction and engineering firm Cimec will undertake work on Chevron's **GORGON** (32/4) project in Western Australia after winning a slew of new contracts.

The contract awards come from Rio Tinto, Sedgman, GE Oil & Gas and FMC Technologies.

The contract handed down by GE Oil & Gas will see Cimec undertake fabricating and testing of *Gorgon's* new 34 inch subsea pig launcher/receiver (SSPLR) in two stages. The complete structure will weigh in at 104t. Stage one works will start immediately and be wrapped up in November.

Meanwhile, Cimec will also begin work, on behalf of FMC Technologies, for the fabrication, surface treatment and testing of a production manifold.

The manifold is designed for installation at Woodside Petroleum's *Persephone* (31/23) project, located on Australia's North West Shelf and is scheduled for completion in March 2016.

Premier Oil says that with improved weather, better progress has been made with the commissioning work on the facilities for its **SOLAN** (32/5) field, West of Shetland.

The *Victory* flotel has now moved to a new location and will be replaced by another flotel from early August.

In the meantime, it is anticipated that work will continue using a 'walk-to-work' vessel. The *Ocean Valiant* rig is now on location with the drilling of the second pair of producer-injector wells will start imminently. First oil is

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still targeted for the fourth quarter this year.

Premier has also now taken full control of the *Solan* field after agreeing a deal to acquire Chrysaor's 40% stake in return for payments of £3mn/a and royalty payments.

Premier has also entered into a deal with FlowStream Commodities, under which FlowStream will make a \$100mn upfront payment to Premier in return for the proceeds from 15% of Premier's production from the *Solan* field.

Chevron has awarded Technip a lump sum project for the decommissioning of the brownfield development and installation of new subsea equipment supporting a floating production system on the **BLIND FAITH** (30/12) field in 2,000m in the Gulf of Mexico.

The project scope includes project management and engineering; decommissioning of existing equipment including manifold, jumpers and flying leads; fabrication and installation of 8.8km of steel lazy wave riser, flowline and plets; installation of an 8.8km gas lift umbilical, replacement manifold and associated hardware; fabrication and installation of manifold foundation and seven jumpers, pre-commissioning and testing.

Technip's operating centre in Houston, will perform the overall project management.

The infield flowline and riser will be welded at the Group's spoolbase in Mobile, Alabama.

The offshore installation is expected to be performed in the second half of 2016 by vessels from Technip's fleet.

The *Deep Blue*, one of the world's largest ultra-deepwater pipelay and subsea construction vessels will install the steel lazy wave riser, flowline, and gas lift umbilical, and the *Global 1200*, will install the manifold and foundation.



The *Ivar Aasen* jacket being installed

The steel jacket for the offshore Norway **IVAR AASEN** (32/1) platform has been lifted into place.

The platform deck, which is under production at the SMOE yard in Singapore will be installed in 2016 and first oil is expected in Q4 2016.

The *Ivar Aasen* field is located on the Utsira High in the North Sea, and is expected to reach peak production of about 75,000 boe/d. The field has an anticipated economic life of 20 years.

Petrofac has won a contract to support Oranje-Nassau Energie, which has become operator of the **SEAN** (30/23) gas field in the UK Southern North Sea.

The duty holder support services contract is worth \$45mn over three years, with the option of two one-year extensions, and begins immediately.

The *Sean* assets comprise a manned, bridge-linked wellhead and production platform, a normally unmanned installation and a 30-inch export pipeline to Bacton.

The contract will support around 40 on and offshore jobs and will see Petrofac provide operations and maintenance services plus a range of ancillary functions.

Alexander Berger, Oranje-Nassau Energie's CEO, said, 'We are optimistic about the growth prospects of the *Sean* area and believe that our experience, coupled with our strong balance sheet, makes us well positioned to capitalise on other opportunities.'

ShawCor's Bredero Shaw pipe coating division is to restart work on its contract with Europipe for the concrete weight coating of Line 1 of the **SOUTH STREAM** (32/4) pipeline after a work suspension was lifted.

In December 2014, ShawCor announced the suspension of the majority of the work on its South Stream Pipeline contracts with Europipe and with Marubeni Sumitomo Consortium (with a combined value of approximately \$100mn) and with Saipem (approximately \$24mn).

Bredero Shaw's contracted work for Line 2 of the *South Stream* Pipeline, with a value remaining to be executed of approximately \$48mn, continues to be suspended.

NorSea Group has won northeast Scotland's first major "small piece" decommissioning contract on the **RENEE** and **RUBIE** (30/19) fields in the UK North Sea.

Work has already begun on the six-month project, which is being carried out at NorSea Group's Peterhead facility on behalf of Endeavour Energy and involves disposal of subsea manifolds and associated pipework from the fields.

All materials from the fields, which lie 200 km north-east of Aberdeen, are being delivered to Smith Quay which is operated by NorSea Group.

An important element of the contract was the requirement that reuse of returned material be maximised, and NorSea Group will achieve a 100% recycling rate, the release said.

The returned material includes 1,000t of concrete mattresses which will be used as hard core and in road construction projects; 200t of pipework and skid units which will be recycled as scrap metal; manifold valves which will be refurbished and reused and a 17t crossover manifold which will be transported to the Underwater Centre at Fort William where it will be used for diver training, according to the release.

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FLOATER NEWS

CYPRUS APHRODITE MOVES CLOSER

Noble Energy and Delek Group look set to push ahead with an fpso development of the **APHRODITE** (SEN 32/1) discovery off Cyprus after making a declaration of commerciality for the Block 12 reservoir.

Partners in Aphrodite now intend to submit a proposed outline of the development plan for the find to the government of Cyprus.

Plans call for an fpso development which would produce 8bcm/a and construction of pipelines to Egypt and Cyprus.

At the same time the Block 12 partners are also exploring further options to develop *Aphrodite*, including as an inte-

grated development with adjacent reservoirs in the Israeli economic zone, including the *Leviathan* and *Tamar* reservoirs.

The estimated cost of the development, excluding costs of constructing the pipeline to Egypt, is between \$3.5–4.5bn.

Noble Energy (70%) and Israel's Delek Group (30%) discovered the deposit, estimated to hold 128bcm of gas and 9mmbbls of condensate in 2011.

Subject to the Cypriot government's approval of the development plan in the first half of 2015 and compliance with the preconditions set out above, Delek said the planned production start-up is the first half of 2020.

FLOATER BRIEFS

Alpha Petroleum has awarded Xodus Group a pre-front-end engineering and design (FEED) study for an fpso development on the UK North Sea **CHEVIOT** field.

Cheviot is a redevelopment of the *Emerald* field which was discovered in 1975 and initially developed in the mid-1990's. However, as a result of insufficient water handling capacity, the Emerald field was abandoned early when only 8% of the original oil in place had been produced.

The study results will be incorporated into the field development plan and environmental statement to be submitted to the UK's Oil and Gas Authority in September.

Alpha plans to include the *Padon*, *Peel* and *Poppy* fields in the development.

The FEED study will also form the basis for the full FEED tenders to be issued toward the end of 2015. First oil is targeted for 2020.

In support of this process, the company has recruited three new senior project team members covering disciplines from subsea infrastructure to fpso delivery.

McDermott International (MDR) has been awarded an offshore contract by Pemex for the engineering, procurement, construction, installation (EPCI) and pre-commissioning of the **AYATSIL-C** (32/2) replacement jacket and associated deck installation.

McDermott expects to use its in-house engineering and procurement experts, Altamira fabrication yard located in Mexico, *Intermac 600* transportation and launch barge and heavy-lift *Derrick Barge 50* vessel to complete the installation of all structures.

The total weight of the facilities is approximately 14,800t. Completion is scheduled for Q4 2016.

Located in the Bay of Campeche, the *Ayatsil* field is the largest discovery for Pemex to date. Pemex has said it plans to develop *Ayatsil* with as many as four platforms and the adjacent *Tekel* heavy oil field with one platform, all tied to an fpso. It plans to drill 43 wells in the project.

Panoro Energy, operator of the OML113 licence offshore Nigeria, has entered into a rig contract with Saipem for the *Scarabeo 3* drilling rig to carry out the drilling and

completion programme for the **AJE** (31/22) field Cenomanian oil development.

The field is situated in 100–1,000m about 24km from the coast and first oil is targeted for December 2015.

The *Scarabeo 3* semisubmersible will be used to carry out well operations for the first phase of the *Aje* development that includes two subsea production wells.

The well operations will comprise the completion of the existing *Aje-4* well as a production well, and the drilling and completion of a new well, *Aje-5*, which will be drilled to the *Aje-2* subsurface location.

Well operations are expected to begin in early Q3 2015 and are likely to take approximately 90 days to complete. Once well operations have been completed, subsea equipment will be installed and the wells will be tied back to the *Front Puffin* fpso, currently undergoing refurbishment in Singapore.

KBR has grabbed a near-shore FEED contract to provide topsides and hull engineering design for a **EURASIA FLNG** project from Lloyds Energy.

Work has begun and is expected to be completed in first-quarter 2016, the company added.

The *Eurasia* FLNG plant can handle 2.5mt of LNG per year. Start-up is scheduled for 2019.

The FLNG barges will house all processing facilities, utilities and power generation. The barges will moor at a new single jetty about 3.5km long. LNG will be stored in the hulls and will be loaded through a separate carrier berth at the end of the jetty.

'This is a significant milestone in KBR's FLNG industry strategy, and our relationship with Lloyds Energy complements our existing FEED experience for the *Coral South* FLNG project in Mozambique,' said Jan Egil Braendeland, KBR president, engineering & construction for the EEA region. The units could be deployed in a range of locations globally.

Tidewater Subsea and local Nigerian partner T1 Marine have completed a mooring and hull inspection programme of BW Offshore's **SENDJE BERGE** fpso.

The inspection included mooring chain measurements, hull cleaning and complete inspection reporting services with the survey/light IMR vessel *Goldblatt Tide*.

EXPLORATION

STATOIL HITS HANSTEEN HAT TRICK

Statoil has hit gas in its *Gymir* prospect well, marking the third discovery in a row in the *Aasta Hansteen* (SEN, 32/5) area after *Snefrid North* (32/1) and *Roald Rygg* (32/5).

The estimated total volumes in the three discoveries is 75-120mmbbl of recoverable oil equivalent, corresponding to about one third of the *Aasta Hansteen* recoverable volumes.

Statoil said the discoveries will now be further evaluated for future tie-in to the *Aasta Hansteen* facilities.

Discovery well 6706/11-2 was drilled by the *Transocean Spitsbergen* rig and proved a gross 70m gas column in the Nise Formation with good reservoir qualities.

Statoil estimates the volumes in *Gymir*, which is located 8km from *Roald Rygg* and 14km from *Snefrid North*, to be in the range of 6-19mmbbl of recoverable oil equivalent.

The three wells are the fastest deepwater wells ever drilled on the Norwegian Continental Shelf, Statoil said.

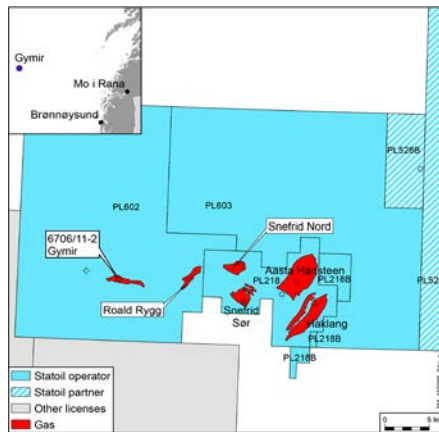
The *Gymir* well was completed in just 13 days.

The total savings achieved in the three wells amount to 50 days or \$46mn compared to the initial plan.

Thor Emil Bensvik, head of Statoil exploration drilling operations on the NCS, said, 'This is a result of STEP (Statoil technical efficiency programme) within drilling and well, and the ability of the onshore planning team and the *Transocean Spitsbergen* crew to take out the full potential of the drilling process. The efficiency gains were achieved while keeping high HSE standards.'

Aasta Hansteen will be the largest SPAR platform in the world and is the biggest ongoing field development project in the Norwegian Sea. 'Additional reserves from the three

discoveries tied in to *Aasta Hansteen* will be important for increasing the value of the *Aasta Hansteen* investment,' added Torolf Christensen, Statoil veep for the *Aasta Hansteen* project.



Map of *Gymir* prospect

EXPLORATION NOTES

From *Houston (BN)*: Chevron is wasting no time leveraging its recently announced Keathley Canyon joint venture with ConocoPhillips and BP, getting a green light from regulators on further exploration of **GUADALUPE** (SEN, 31/20) in Garden Banks 978 and KC 10 and 11 and initial exploration of *Gibson* in KC 96.

At *Guadalupe*, plans call for 200-day wells targeting API 27.9-degree oil, seven wells in GB 978, three in KC 10 and two in KC 11. Work was to start this month, although government records do not reflect a rig on site as of June 8, and continue at the rate of one a year through 2026.

At *Gibson*, plans call for seven 200-day wells targeting API 37-degree oil. Work was to start this month and continue at the rate of one a year through 2021.

Interestingly, Chevron has renamed its Dual Gradient Drilling technology. It is now Subsea Mudlift Drilling. There is no actual change in the details, but the new name more accurately reflects the fact that the technology can be used in single-gradient as well as dual-gradient mode.

In the Gulf of Mexico, LLOG has announced a discovery at its **CROWN & ANCHOR** prospect in Viosca Knoll 959.

LLOG said an initial exploratory well in 1,399m penetrated more than 15m of oil-bearing sand in a high-quality Miocene reservoir. Partners are LLOG (60%), Ridge-wood and Stone.

As for the **RIG COUNT**, Baker Hughes reports 27 rigs active in the Gulf of Mexico, down two rigs from the previous week but off 31 rigs from the same week the year before.

Using a different methodology, the U.S. Bureau of Safety and Environmental Enforcement counts 37 rigs at work in the deepwater GOM. Either way, it's sharply fewer than last year.

Statoil has been awarded four licences offshore Nicaragua covering an area of about 16,000sq km in the largely unexplored **SANDINO BASIN**.

Statoil will operate with 85% with national oil company Petronic taking the remainder.

The licence awards represent the first steps for Statoil in Nicaragua.

The initial work commitments during the first exploration phase of 2.5 years include re-processing of 2D seismic, acquisition of new 2D seismic data and geology and geophysics studies.

Nick Maden senior vice president for Statoil's exploration activities in the Western Hemisphere, said, 'Offshore the Nicaraguan Pacific is virtually untested and the awards of new acreage in this frontier area are in line with our exploration strategy of access at scale.'

'This is a long-term opportunity with high subsurface uncertainty, but with impact potential.'

From *Houston (BN)*: Petrobras announced it has found more oil at **POCO VERDE** (31/14) in the Sergipe Basin, 23.5km from the discovery well and 72km south-east of Aracaju.

The well Poco Verde 4 (3-BRSA-1303-SES or 3-SES-189-SE) found 85m of light oil pay zones amid good porosity and permeability. Total well depth is 5,350m in 2,479m of water. This is the third well in the area since the discovery in July 2012.

Sterling Energy has acquired a 13.5% interest in the PSC for **BLOCK C-10** off Mauritania from Tullow Oil. The PSC, awarded in 2011, is in the second phase of the exploration period. The current phase will expire on 30 November 2017 and has a minimum work obligation of one exploration well.

The block surrounds the *Chinguetti* (31/16) field and lies in water depths of 50–2,400m with full 3D seismic coverage.

Tullow has identified a drill ready Neocomian carbonate prospect in approximately 100m. The JV anticipates that the exploration well will be drilled in 2016.

Following completion, the holders of the PSC will be Tullow 76.5%, Sterling 13.5% and SMHPM 10%.

Spectrum has kicked off acquisition of their Mexico Gulf of Mexico 2D campaign, in collaboration with Schlumberger.

The first phase of the acquisition program, named **MEXICO CAMPECHE-YUCATAN** 2D Regional survey comprises 12,200 km of regional lines from the full 44,000km programme.

The programme will cover areas from the Campeche Escarpment, including ties to Round 1 blocks, the Yucatan shelf and deepwater areas. The survey will also tie with Spectrum's BigWave program in the U.S. Eastern Gulf of Mexico. Fast Track products will be available starting in July with final products available in November.

Suncor Energy is preparing to spin the bit in its **NIOBE** prospect exploration well in UK North Sea Blocks 12/26b & 27.

The well is being drilled using the *EnSCO 100* jack-up rig and well operations are currently anticipated to last approximately 31 days in the dry hole case.

From *Houston (BN)*: Opponents of Shell's **ARCTIC** (32/4) drilling plans persist in their efforts and some are facing consequences.

Twelve environmental advocacy groups led by Earth-justice said they will ask a federal court to review the U.S. Department of Interior's decision to reinstate Shell's Chukchi Sea leases.

The original lead plaintiff, the Native Village of Point Hope, has withdrawn saying new federal regulations protect the Arctic and that it wants to profit from offshore drilling.

Meanwhile, the U.S. Coast Guard has filed civil actions against four protestors who violated a safety zone around Shell's Arctic drilling and support vessels in Bellingham, Washington. The Coast Guard can seek maximum penalties of \$40,000 for each violation.

And 25 protestors styling themselves as 'ShellNo' and 'Seattle Raging Grannies' were trying to block landside access to Seattle Terminal 5 to prevent the Transocean rig *Polar Pioneer* from finishing its outfitting and heading to the Arctic as planned around July 1.

Six were detained and questioned by police but then released. Shell is using the Puget Sound area of Washington as a staging ground for plans to drill the *Burger* prospect offshore of northwest Alaska this summer.

Mitra Energy has kicked off a 3D seismic survey in the **BLOCK 127** PSC area, offshore Vietnam.

The survey is being carried out by PTSC CGGV Geophysical Survey Co with the 3D seismic survey vessel *Amadeus*. The 3D seismic survey is planned to cover a full-fold area of 533sq km and will fulfil the PSC Exploration Phase One extension 3D seismic survey acquisition commitment of 500 full-fold sq km. The survey is anticipated to take 21 days to complete.

Pancontinental Oil & Gas and its **L10A** joint venture partner PTTEP of Thailand have issued operator BG notices of withdrawal from Block L10A in the Lamu Basin offshore Kenya.

Pancontinental's 18.75% interest and PTTEP's 31.25% interest will be transferred to operator BG which will then be the only remaining participant and hold 100% of the L10A licence.

Pancontinental said it remains in a unique position, with its remaining asset portfolio in Namibia (EL0037 with Tullow Oil) and Kenya (Block L6 with FAR Limited, Milio International) fully funded for the next phase of exploration commitments.

Sterling Energy has completed a 1,100sq km 3D seismic survey on the **AMBILOBE** (31/23) Block offshore Madagascar.

The acquisition was undertaken by CGG Services and was acquired on time and on budget. Processing of the data will commence shortly to a pre-stack depth migration cube. The final processed data is expected to be completed in Q1 2016.

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The *Ambilobe* PSC, awarded in 2004, is in Phase 2 of the exploration period with all minimum work commitments for the current phase completed.

POLARCUS and the National Petroleum Corporation of Namibia (NAMCOR) have agreed to team up to explore and develop Namibia's offshore petroleum resources.

Under the terms of the MoU, Polarcus and NAMCOR will work together to identify opportunities and develop initiatives to enhance and promote the petroleum potential using Polarcus' specialist services and expertise.

Polarcus will provide 3D/4D marine seismic acquisition and processing services together with its geosci-

ence expertise to help promote industry investment offshore Namibia.

Providence Resources says new 3D seismic data has confirmed the presence of **DRUID**, a new, large Paleocene deepwater fan prospect in the southern Porcupine Basin, offshore south-west Ireland.

The central 60sq km of the 400sq km fan system exhibits marked mounded seismic morphologies which have previously been modelled to be consistent with a thick (up to 120m) high porosity, shallowly buried sandstone reservoir system.

Further work is ongoing to estimate *Druid's* prospective resource potential.

VESSEL BRIEFS

EMAS AMC's **LEWEK CONSTELLATION** pipelay vessel has set an industry record for pipelay in the U.S. Gulf of Mexico.

The vessel set the record in 2,246m during her sea trials in preparation for the execution of three subsea tie-back projects for Noble Energy.



The *Lewek Constellation* pipelay vessel

She performed her final pipelay trial in the GoM and during the deployment of the 3.2km, 16-inch diameter, 28mm wall thickness pipeline, complete with the second plet, the tension recorded was 632mt, rendering this the highest tension ever experienced in the history of rigid reeled-lay operations.

John Meenaghan, veep for global operations, said, 'What this record means for clients going forward is that we can offer a more efficient pipelay solution in ultra-deep water for pipelines up to 16 inch in diameter when compared to traditional S-Lay or J-Lay methods, even with thick insulation coatings.'

Meanwhile, EMAS Offshore has won a contract to provide support services to four vessels in West Africa for an oil major.

The contract is for more than \$30mn and is part of a larger project awarded to EMAS AMC, the subsea services division of Ezra Holdings.

The job scope includes the accommodation, anchor handling, towing and supplying of EMAS Offshore's vessels, including an accommodation barge, platform supply vessel and PSV and anchor handling tug supply vessels. They will be chartered to EMAS AMC, EMAS Offshore said.

From Houston (BN): Companies continue to advance development offshore of eastern Canada. Teekay Offshore Partners announced long term contracts to provide a group of companies shuttle tankers to haul their production off Newfoundland-Labrador and Nova Scotia.

The 15-year contracts call for three new Suezmax DP2 shuttle tankers to be built at a cost of about \$365mn. Delivery of the new vessels is expected late in 2017 and early 2018. Until then, existing tankers, Teekay's *Navion Hispania* and two or three third-party-owned vessels, will do the hauling.

Prosafe and Shell have agreed a one month extension to the firm period for the provision of the **SAFE ASTORIA** accommodation support vessel at the Malampaya Phase 3 Depletion Compression Project offshore the Philippines.

Total value of the firm extension period is approximately USD 5 million.

Construction of Subsea 7's state-of-the-art new heavy construction vessel, the **SEVEN ARCTIC**, is on sched-



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ule with the vessel targeted for delivery in 2016.

The vessel, which is in dry dock at Hyundai Heavy Industries (HHI) in South Korea, is being readied for the installation of key capabilities including a 600t Vertical Lay System (VLS) and a 900t crane.

Both the 600t VLS and 900t crane are currently being assembled in South Korea by Dutch heavy construction equipment manufacturer, Huisman, ready for installation later in the year.

From Houston (BN): London-based Harkand said it finished its first ROV subsea support project for BG in waters off Trinidad and Tobago.

The company said the 75-day project included ultrasonic scans, free span pipeline rectification work, subsea control module change outs, and the supply and installation of anode pods and clamps in areas north and east of T&T. The work was done from Harkand's *Go Electra* vessel.

VARD has won a contract to design and build a diving support and construction vessel for Singapore-based Kreuz Subsea group.

The 91.2m hull will be built at Vard Tulcea in Romania and delivery is scheduled from Vard Soviknes in Norway in Q2 2017.

The DP2 class vessel will have a 100-ton active heave compensated offshore crane, and is prepared for Remote Operating Vehicles (ROVs).

POLICY

NORWAY - MORE OIL THAN 10 YEARS AGO

The Norwegian Petroleum Directorate (NPD) says the current recoverable volume of oil in fields and discoveries off Norway is more than the estimated figure in 2005, and it is also presumed that more oil remains to be discovered.

The findings come as the result of the NPD's review of the resource basis in a select number of fields and discoveries on the Norwegian shelf between 2005 and 2014.

'A lot of good work has been done to increase the resources on the Norwegian shelf, and there has been substantial resource growth in many fields,' said Kirsti Vegge-land, assistant director general for shelf analysis in the NPD.

'The most important reasons for this are more wells, extended field lifetimes and improved knowledge. Decisions were also made to develop new deposits in the fields over the 10-year period.'

The NPD had hoped to achieve an oil reserve growth of 5bn bbl over 10 years from 2005, but figures show the growth is somewhat less.

The goal would have been reached with 'flying colours' if the development plan for Johan Sverdrup

had been submitted before the end of 2014, the NPD added.

In addition to producing fields, the NPD has reviewed 62 discoveries for which development decisions had not been made in 2005.

Over the course of this 10-year period, 28 of them have been developed, and their oil reserves have nearly doubled. This is due to new information, better reservoir understanding and optimisation of development solutions and drainage strategies.

Discoveries made after 2004 have also led to development decisions for 13 new fields, which have contributed an overall resource growth totalling 80mn standard cubic metres of oil. The *Edvard Grieg*, *Ivar Aasen* and *Knarr* fields account for more than 75% of this volume.

'The NPD had hoped that improved recovery measures would account for a greater share of the growth in oil reserves. However, many new opportunities to improve recovery have been identified, and the potential is greater in 2015 than it was 10 years ago,' adds Vegge-land.

BUSINESS

SUBSEA SPEND TO REACH \$145BN BY 2019

Analyst Douglas-Westwood (DW) expects global subsea hardware capex to reach \$145bn between 2015 and 2019. This represents growth of more than 27% compared with the preceding five-year period.

The 350 subsea tree installations in 2014 represent the highest volume of installed units on record, a trend expected to continue until 2018 when lower orders in the current commercial environment will drive a decline in trees installed for that year.

DW said in its *World Subsea Hardware Market Forecast 2015-2019* that the crude oil price decline, apparent since June 2014, presents a major challenge for operators of subsea developments. Subsea projects are typically among

the most capital intensive and technologically challenging in the industry.

As operators (and their investors) have increased focus



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on cash flow, the higher upfront costs associated with these projects have left them vulnerable to deferrals and cancellations. Tree orders in 2014 totalled 233, the lowest volume for a decade.

But DW added, 'Despite these near-term concerns, the long-term fundamentals of the subsea hardware industry are strong and represent a growth story as they benefit



Subsea hardware spend will reach \$145bn

BUSINESS BRIEFS

From Houston (BN): The Lava Jato (Car Wash) Petrobras bribery-kickback scandal grinds on, and its effects multiply. Reports say publication of Petrobras' new 2015-19 plan, expected to cut capital spending 20% to 30% from the \$221bn in the 2014-18 plan, is being delayed.

It was set to be presented to the board on June 23. In other developments, Petrobras has hired Merrill Lynch to help sell off \$5bn in assets as part of efforts to ease the company's debt burden.

The 10-year-old Brazilian Institute of Corporate Governance, which seeks to instill best practices in management of Brazilian companies, has suspended Petrobras from its membership pending evaluation of reforms.

Reports indicate U.S. prosecutors are monitoring the scandal for possible sanctioning of companies under the U.S. law barring bribery to obtain business overseas.

Still, there seems to be optimism long term. The company sold \$2.5bn in 100-year bonds in an offering that was five times oversubscribed, reports said. Russia's Gazprom expressed interest in bidding in the 13th Brazilian oil and gas lease auction in October.

And, in an apparent attempt to ameliorate damage to Petrobras, the lead Car Wash prosecutor told reporters the oil company was not an instigator but a 'victim' of a supplier cartel and the misconduct of individual Petrobras executives.

In New Orleans, a jury acquitted **David Rainey**, BP's former vice president of GOM exploration, of lying to investigators about the size of the 2010 spill. Prosecutors' scorecard in the disaster is spotty so far.

A judge earlier ordered a new trial for an engineer accused of destroying evidence. Other BP employees still await trial in the case, and a judge is considering billions in potential penalties against the company.

from continued hydrocarbon demand growth, declining conventional reserves and technological improvements.

'Over the next five years, development activity in the established deepwater provinces, coupled with the start of field development in frontier areas, such as the Eastern Mediterranean and East Africa, will support expenditure.'

Subsea hardware spend will be the highest in Africa, Asia and Latin America, with the three regions combining to form almost half of the global total. Expenditure continues trending towards deeper waters with around 42% of total spend in the next five years targeting projects in water depths greater than 1,000m.

Subsea production equipment, SURF and pipelines each attract approximately one third of all expenditure by component, with higher capacity and capability equipment a theme throughout the sector. The development of remote fields, the addition of new project phases and the tie-back of satellite fields into subsea hubs continue to support SURF expenditure over the forecast period.

From Australia (LB): Brookfield Asset Management and Macquarie Capital's successful \$2.1bn play for a slice of Apache Energy's Australian oil and gas business has spawned the creation of a new Perth-based energy company, **QUADRANT ENERGY**.

The company went public following the transfer of ownership of Apache's Western Australian-based assets to the consortium. Quadrant will now operate the Varanus Island and Devil Creek gas plants. It also has a stake in BHP Billiton's Macedon gas plant.

Quadrant, which is being led by founding chair Macquarie executive director Kate Vidgen, has taken on the role of being one of WA's biggest gas suppliers, supplying more than 40% cent of the state's domestic gas needs.

The previous Apache WA staff and management have been retained by Quadrant, which will be led by Brett Darley.

Darley said the company would continue to underpin the state's energy market and contribute to Australia's energy security as a major domestic gas and oil producer.

'Exploration will remain a major focus for Quadrant Energy, with drilling activity on the Levitt prospect and Roc-1, associated with the recent Phoenix discovery, in the Carnarvon Basin scheduled to be undertaken in the second half of this year,' he said.

'Our company will be of significant size and capability to our industry peers, with much room and opportunity to grow over coming years.'

Touting the new company's credentials, Darley said Quadrant had an extensive portfolio of producing assets and prospective exploration targets, a substantial base of contracted sales, and proven management capability.

ENDEAVOUR INTERNATIONAL has put its UK North Sea oil and gas assets under the hammer.

Endeavour said it would consider a full range of options in order to unlock the value underlying the company's assets, including a sale of individual North Sea assets.

Endeavour was created in 2004 to find and to develop oil and gas reserves in the UK North Sea and since inception, the company has successfully used the first regional 3D seismic database to participate in the acreage licensing rounds and to develop a portfolio of core assets.

Endeavour owns interests in five producing oil and gas fields – *Alba, Bacchus, Rochelle, Bittern* and *Enoch*.

The International Well Control Forum (IWCF), the independent organisation that sets international well control standards, has appointed **David Conroy** as its first chief technical officer (CTO).

Conroy has 20 years of experience in the international oil and gas industry. He will join IWCF in July from Schlumberger where he has held a variety of positions for more than 10 years, including as drilling and drilling engineering director of curriculum in Dubai.

Mooring and subsea operations specialist **DELMAR SYSTEMS** has created a new R&D team dedicated to developing innovative technology.

AQUALIS OFFSHORE is bucking the current cut-back trend in the offshore industry by establishing an office in Aberdeen.

The company's core services include concept, FEED and basic design engineering for upgrades and conversions of jack-ups, fpsos and rigs, transportation and installation of floating production units and integrated decks using third party equipment, marine warranty, dynamic positioning, construction supervision and due diligence services.

The Aberdeen office will be headed up by Martin Brown, a chartered naval architect with 25 years' experience from offshore projects on the UKCS and elsewhere around the world.


From Australia (LB): Gas infrastructure business APA Group has wrapped up the \$4.6bn purchase of BG Group's **QCLNG** pipeline.

BG said it would use the sale proceeds to reduce net debt and to fund future growth investment.

The pipeline, which links the gas fields in Queensland's Surat Basin to the project's LNG plant on Curtis Island, has been renamed the Wallumbilla Gladstone Pipeline following APA taking ownership.

APA expects the pipeline's contribution to first full-year EBITDA to be around \$355mn.

The pipeline deal gives APA an even bigger share of the energy infrastructure business in Australia. APA already has a large monopoly across the gas transmission sector, with the company owning 14 high pressure gas transmission pipelines totalling over 14,000km.



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