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SUBSEA ENGINEERING NEWS

(with DEEPWATER INTERNATIONAL)



CHEVRON TRIMS ROSEBANK, EYES SEMI FOR GOM HUB

From the North Sea (MT): Chevron is pushing ahead with a slimmed down plan for its deepwater *Rosebank* (SEN, 31/19) fpso for west of the Shetlands in UK waters, while also progressing with conceptual work on a newbuild ultra-deepwater semi hub facility in the Gulf of Mexico that will hit the market for pre-FEED by the end of the year.

The US major remains set on developing *Rosebank*, which has been the subject of an intense capex reduction exercise, with the operator still in the midst of rebidding and renegotiating contracts to take advantage of reduced costs in the current depressed market.

SEN hears that Chevron is downsizing and simplifying items such as the topsides processing capacity of the fpso, which is currently being built at Hyundai Heavy Industries in South Korea. The optimisation work has also seen the operator reduce the complexity of the turret and mooring system in particular.

Other subsurface work has incorporated an improved reservoir management plan, enabled by an ocean bottom node seismic survey, resulting in the number of development wells being cut by 10%, with the expected reservoir recovery rate improved by a predicted 20%.

Discovered in 2004 in 213/26 and 213/27 in 1,115m, Chevron holds a 40% stake in *Rosebank*, with partners OMV with 50% and DONG 10%. The field was originally estimated to hold recoverable reserves of 240mmboe, although that figure is understood to have been increased thanks to the reservoir optimisation efforts. The floater is now expected to have a production capacity of 100,000b/d of liquids and 2.2bcm/d of gas.

SEN has previously highlighted Chevron's push to reduce the original \$6-8bn price tag including changes to the scope of the facilities. A final investment decision may now come before the end of this year.

Aside from Hyundai's original \$1.9bn fpso contract,



The Jack-St Malo FPSO (courtesy Chevron)

OneSubsea clinched a \$540mm deal for subsea hardware, including vertical monobore trees with retrievable process modules, six-slot manifolds and production control equipment. The supplier confirmed in 2013 that the project had been deferred, while it continued to work with Chevron to improve project economics.

New hub

On the other side of the pond in the Keathley Canyon area, Chevron earlier this year outlined plans for a new production complex based on Lower Tertiary deepwater discoveries in the area including *Guadalupe*, *Tiber*, *Gila* and *Gibson* after doing a 24-lease asset alignment deal with BP and ConocoPhillips (31/22).

It is understood the operator is now set on using a semi as the central facility, similar to the one at its *Jack-St Malo* (32/2) development in a bid to avoid too much re-engineering and keep costs down.

A pre-FEED is expected to come out during the fourth quarter of this year or early in 2016 with the usual suspects lining up for what is likely to be a tough bidding battle in today's project market, including Aker, FloaTEC, Wood Group Mustang, Houston Offshore Engineering and KBR.



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FLOATERS

GOLIAT FPSO REACHES NORWAY

From Norway (JS): The fpso for Eni's *Goliat* (SEN, 31/23) oil field in the Barents Sea has arrived off Hammerfest in Norway from South Korea and is undergoing final checks before tow out to the field.

The heavylift vessel *Dockwise Vanguard* arrived off Hammerfest on Friday with the fpso after completing its 15,700 nautical mile journey from Ulsan.

Following float-off from *Vanguard*, the fpso will be located in Ersvika fjord for two to three weeks for preparatory work. After that it will be towed to the field with mooring and pull-in of risers to take place later this spring and in early summer.

Vetle Dalan, subsea technology manager for Eni, told delegates at the Subsea Valley Conference in Oslo that the aim is to start up production from the field via the geostationary fpso in late summer this year. He said current activity on the field involves the drilling of two wells, while five wells have already been fully drilled and completed.

Goliat, which will be the northernmost oil field in the world, will be produced through a total of 22 subsea wells - 11 producers, nine water injectors and two gas injectors.

Two 12in subsea pipelines have been installed and the subsea production system will provide the means

for injecting chemicals to prevent hydrate, wax and scale formation. Subsea installation took place in 2011 and 2012.

Dalan said sophisticated oil spill monitoring equipment has been installed on the field. A total of 80 sensors are in place with a capacitance sensor installed on each well slot and three rov-deployable acoustic sensors installed on each template. Eni will be using satellite imaging, as well as planes, helicopters and stand-by vessels to detect acute spills and to monitor the movement of any spills.

The Sevan Marine-designed floater, the world's largest cylindrical floater yet built, weighs 64,000t, is 117m dia and 75m tall. It has storage capacity of 1mmbbls.

Power will be provided from land, while oil will be exported by shuttle tankers. Associated gas will be reinjected, while the possible export of gas is also being evaluated.

The project is substantially behind schedule, originally having been planned to come onstream before the end of 2013. It is also over budget, with project cost estimates now put at \$5.5bn, up from the original estimate of \$4.2bn, due mainly to engineering adjustments and higher equipment prices.

FLOATER MARKET TO SLOW, THEN RISE AGAIN

The low oil price climate is making oil companies increasingly reluctant to sanction new projects while the lack of orders is pushing the supply chain into a deflationary direction, according to a new report on the floating production market.

Many companies have postponed entering into detailed design and making investment decisions until at least 2016, Energy Maritime Associates says in its second quarter 2015 *Floating Production Systems Report*.

The study says all projects are under review by all operators, particularly capital intensive developments using FLNG, fpso's, and tlps.

So far, FSRU projects have not been as severely impacted, as these projects are driven by the difference between oil and gas prices, as well as political and environmental factors.

After a number of awards in the first quarter, little activity is anticipated in the next two quarters as oil companies



Floaters face choppy waters ahead

continue to reduce development spending. In EMA's base case forecast, four more fpso orders are expected in the rest of 2015, most likely in Q4. If oil futures drop below \$60/bbl (low case scenario), then only one additional order is predicted this year.



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In Q1 2015, seven units were awarded, worth over \$2bn: four fpsos, two fsos, and one mopu. Asian yards received all the known awards, including three orders to Malaysia Marine & Heavy Engineering.

Nine units were delivered: three fpsos, four fsrus, one tlp and one fso and two units were decommissioned – one fpso (*Marlim Sul*) will be scrapped and one production semi (*P-27*) is laid-up.

EMA MD David Boggs, said, 'Since 2014, the floating production orderbook has been steady between 62-64 units, but will begin to decline as deliveries outpace orders. Thirteen additional deliveries are scheduled for this year. Without new orders in 2015, a few companies, particularly yards in China, will see an idle period with no floating production work. The downturn that already swept through the exploration sector is now just starting to hit the production market.'

Meanwhile, analyst Douglas-Westwood's new *World Floating Production Market Forecast 2015-2019* forecasts

that despite the current low oil price environment, between 2015 and 2019 \$81bn will be spent on fps units, an increase of 73% compared to 2010-2014.

The value of annual installations is projected to grow from nearly \$12bn in 2015 to \$21bn in 2017 before declining to \$17bn in 2019. Projects already ordered will account for much of this spend.

The fpso represents by far the largest segment of the market both in numbers (87) and forecast capex (81%) during 2015-2019. The tlp accounts for the second largest segment of capex (9%) with fps third (7%).

Latin America will see nearly a third of the 110 installations forecast and 32% of the projected capex. Asia accounts for nearly a quarter of forecast installations, but only 13% of spend. Africa is important in capex value (22%). Western Europe is expected to form 15% of forecast spend. Deepwater expenditure will make up 68% of the global fps market.

NORWAY SEEKS EU VIEW ON CASTBERG SUPPORT

From the North Sea (NT): The Norwegian government is entering into talks with the EFTA Surveillance Authority (ESA) to determine what kind of state support can be given to Statoil's *Johan Castberg* (SEN, 32/1) development in the North Sea.

ESA's job is to ensure that Norway, which is not a member of the EU, sticks to EU rules in order to maintain its unofficial associate member status.

There is a relevant precedent for *Castberg*. State aid was provided for the Melkøya LNG plant as part of the *Snøhvit* (31/22) development. Now the government would like to see similar help being provided to set up an onshore terminal for *Castberg*'s oil.

This was the original proposal by the licensees, although they have since balked at the cost and post-

poned the investment decision while they examine alternative options. In March the investment decision was put back to 2017.

'We see that landing the oil will give the best resource management so that the Norwegian people get the most for the resources,' said Oil & Energy Minister Tord Lien. 'So we must see what room for manoeuvre we have to arrange for the oil and gas to be brought ashore.'

The minister's announcement was welcomed by Karl Eirik Schjøtt-Pedersen, the new managing director of the Norwegian Oil and Gas Association. As the possibility of state support had first been broached by the previous government before it left office in 2013, it would also enjoy the support of the Storting, Lien said, although without explaining why it had taken his government so long to act on the matter.

FLOATER BRIEFS

From Houston (BN): Chevron's **BIG FOOT** (32/2) tlp development is enduring another delay.

After sailing out of Kiewit's Ingleside TX yard into the Gulf of Mexico on 14 March, the big tlp was expected to be on site in Walker Ridge 29 within two weeks. Instead, persistent loop currents in the GoM have forced Chevron to 'park' *Big Foot* about 96km north to await better ocean conditions.

First oil was expected by the end of the year before the latest delay. The \$5bn project has been a bit star-crossed. Originally slated for first oil in late 2014, top-side construction issues pushed facility completion to the right. With the tlp virtually complete last fall, loop currents and other weather issues delayed sail-out for months. Now this.

Simple math shows the cost of delay. If *Big Foot* had come onstream as planned, Chevron would have had at

least six months of production at \$90-110/bbl. Instead, assuming current pricing patterns hold (a big assumption), revenues will be about half that much.

The dry-tree extended tlp has the capacity to handle up to 75,000b/d and 0.7mcm/d. Chevron operates (60%) for Statoil (27.5%) and Marubeni (12.5%).

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The ill-fated *Yme* platform's topsides

From the North Sea (NT): Talisman's hopes of removing the topsides of the ill-fated **YME** (31/22) jackup platform this summer are under threat.

Reports are emerging that the commissioning of *Pioneering Spirit*, Allseas' newbuild single-lift vessel which is lined up for the job, is taking much longer than expected and the vessel may only become available in late September.

Talisman says it understands that Allseas is evaluating the commissioning schedule and that it has no new information on when the removal operation will take place. So far it has only talked vaguely of 'sometime this summer'.

A request to Allseas for clarification was unanswered at press time. At some point, however, if *Pioneering Spirit* fails to show as winter conditions begin to set in, Talisman is likely to have to postpone the operation until next year.

Meanwhile the *Yme* drilling derrick, which was not installed on the platform, has been sold to Norway Energy & Drilling Centre, located near Stavanger, where it will become part of a test rig available for industry use.

From Houston (BN): LLOG announced initial produc-

tion from its **DELTA HOUSE** (31/19) fps in Mississippi Canyon 254 in 1,372m.

LLOG plans to have eight wells onstream by year-end. The fps is designed for peak capacity of 100,000b/d and 6.8mcm/d.

LLOG executives said this year will be transformative for the company, with five exploration wells and continued development around *Delta House* and *Who Dat* (30/1). Its first fps started up in 2011.

Backed by Blackstone Energy Partners, LLOG operates (50%) for Ridgewood and Red Willow (23.75% each) and Houston Energy (2.5%).

From Rotterdam (MT): SBM Offshore's latest pair of **GENERATION 3** pre-salt fpso's being converted at China's Guangzhou Shipyard are due to set sail later this year for its Brasa Shipyard in Brazil for further modules integration and completion, before heading off to work for Petrobras.

The two sister ships, *Cidade de Marica* and *Cidade de Saquarema*, will be completed at Brasa before going on location in late 2015 and mid-2016, respectively. Both are part of a conversion project worth approximately \$3.5bn, the largest such project handled by SBM. Both will have a service life and charter of 20 years each.

The combined weight of the topsides for these two converted double-hull fpsos comes to 46,000t. Each conversion has involved the building of an entire new deck for each unit.

From Australia (RW): The **MANORA** (31/23) development drilling programme, offshore Thailand, has been curtailed with operator Mubadala Petroleum and partner Tap Oil Ltd deciding to postpone two production wells and one injection well indefinitely. The decision follows a review of the seven wells put into production so far.

The field has already reached peak production of

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15,000b/d with flows hitting 16,000b/d on some days. The full field development had initially been set at up to 10 producing wells and five injectors, but this will now be reviewed.

Four of the existing wells (MNA-01, 02, 03 and 05) have shown the expected high productivity and are producing free of water and sand. The other three are injecting water to support production from the Central fault Block. MNA-07, a potential producer in the East fault Block tested at 1,332b/d with 64% water cut, while MNA-08 also on the east fault is producing at 2,377b/d with 14% water cut. MNA-11 in the Central Fault Block intersected 98m of oil pay which is the thickest so far in the reservoir. This has confirmed there are thicker sands in the central block.

Mubadala operates (60%) for Tap (30%) and Northern Gulf Petroleum (10%). The latter is in default of the \$27mn payment demand for the programme and had until 20 April to pay or lose access to revenue from production. By 20 May without payment, the company will lose its title to the block.

From the North Sea (NT): A \$56mn contract for the conversion of the fso for Statoil's **GINA KROG** (32/2) development has been placed by Teekay with the Sembawang shipyard in Singapore.

The unit will be converted from Teekay's *Rand-grid* shuttle tanker, which is expected to arrive at the yard in June. In addition to hull reinforcements, the scope includes refurbishment of the submersible turret loading (STL) compartment and the installation of an azimuth thruster. Delivery is due in May next year.

Technip, working in partnership with China Offshore Oil Engineering Corp, has picked up the FEED work on a pair of tension leg platforms for CNOOC's **LIUHUA** complex in the South China Sea. The twin fields, 11-1 and 16-2, lie in waters of roughly 400m.

The FEED activity, to be executed out of Technip's Houston office, will cover the tlp hull, topside including drilling rigs, process system and the mooring and riser system and is due to be completed by the end of the year.

The former field was first developed by Amoco in the early 1990's using a semi production unit and an fpso. It is seen as likely that an fpso will be included here as well. An earlier concept had one tlp located 7km from the fpso, which both handled production and provided power, while the other floater was 35km away and drew its power from the first tlp.

GMC has completed design work on a self-installing buoyant tower destined for the **PRINOS** field, offshore Greece. GMC's brief was to propose remedial work on existing facilities on the field as well as a new unit to extend its life. This concept could be linked to the current *Prinos Delta* processing platform. One of the key design issues was to come up with a concept that could be built locally as well

as being installed without the use of heavy lift vessels, which the combined drilling and production unit met.

The class certification for the fpso *Armada Perdana* working on CAMAC's **OYO** field, offshore Nigeria, is expected to be issued before the end of the month... Full production of 28,000boe/d has resumed at the **HUNTINGTON** (32/2) field in the UK, including 3,000boe/d of gas into the CATS pipeline system. Production at *Voyageur Spirit* had been limited due to problems with the pipeline network and it will be shut down again in the summer for



The Petrojarl 1 at the Damen shipyard

maintenance at the receiving terminal... First oil has been reported at Lundin's **BERTRAM** field, offshore Malaysia, through a wellhead platform and an fpso moored in 75m off the east coast of the mainland.

The aged production ship **PETROJARL 1** (32/1) has gone into drydock at Damen Shipyard in Rotterdam for a year-long programme of upgrade and renewal work. The work is being done in partnership with Frames and Nevesbu.

The Japanese 4M consortium - Modec, Mitsui, Mitsui OSK Lines and Marubeni - will provide and finance the fpso *Cidade de Campos dos Goytacazes MV29* for Petrobras's **TARTARUGA VERDE & MESTICA** fields. Modec will supply the production ship while the others will provide finance, which they have done before on four other projects.

The spread-moored unit, which will operate under a

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20 year charter, will be moored in 765m and is due for delivery in late 2017. It will have the standard Petrobras processing capacity of 150,000b/d and 5mcm/d and storage of 1.6mmbbls.

Worley Parsons has secured an engineering and project services agreement with Ophir Energy that covers the development of its **FORTUNA** field as a floating LNG project in Block R, offshore Equatorial Guinea. A 20-well subsea production system will feed the 3mt/a FLNG unit. The field is in waters of 1,400-1,900m.

Bumi Armada is to supply an fsu to **ELECTROGAS MALTA** as part of an LNG terminal development ...

Technip has picked up a SURF-IRM contract with Dana Petroleum for work on its **TRITON** fpo which handles production from six fields in the Central North Sea. The work includes installation of two new risers and one new umbilical and a range of remedial and maintenance work ... Nautronix has said that Subsea 7 has completed installation of a 16-station NASNet acoustic positioning array on Statoil's **AASTA HANSTEEN** (32/2) field in Norway in advance of the main subsea installation programme...Kongsberg Maritime and Braemar ACM have joined Enegi Oil in its **MARGINAL FIELD INITIATIVE** providing remote control and monitoring equipment and financing and other commercial services, respectively.

DEVELOPMENT

STATOIL: 'SLIMMED DOWN' SNØHVIT FOR E AFRICA

From Norway (JS): Statoil is planning a slimmed down version of its *Snøhvit* (SEN, 31/22) subsea-to-beach development in the Barents Sea to tap the 620bcm of gas it has discovered off Tanzania.

The gas from Block 2 will be gathered by a subsea system and piped onshore to an LNG plant.

Harald Eliassen, offshore project director for Tanzania, told the Subsea Valley conference in Oslo that the company had looked at what it had done before on subsea-to-shore at *Ormen Lange* (32/02) and *Snøhvit*, both offshore Norway, to come up with a development solution.

'We started out to create a subsea system very similar to *Ormen Lange* with large manifolds, dual pipelines, dual service lines, dual umbilicals, loads of redundancy – basically a copy ... for ultra-deepwater. But we soon realised this would be too expensive so we looked at *Snøhvit* and decided to make it even simpler than that.'

Statoil has now developed a system with a daisy chain layout with no manifolds and no large modules to be lifted. 'We have simple in-line tees on the flowlines that we can connect each well to. It allows us to spread the xmas trees around on the seabed so that we get an easier well path and lower drilling costs,' Eliassen said. 'All of this made the system a lot cheaper and we managed to cut something like 30% off the cost from the original system we had.'

The project is now in the equipment selection phase and Statoil is looking at standardised solutions for the development.

'We are looking at already proven solutions and we need to work together with industry and our partner Exxon (35%) to find out if there is anything out there we can use and copy and standardise, then we will do it. We will try to avoid as much technology development as possible.'

Eliassen stressed that the gas project is still in the early stages and there is a lot of work ahead on technical solutions for the onshore LNG plant, which will be built in conjunction with BG, which has made major gas finds in Blocks 1 and 4.

Statoil has drilled nine exploration wells, one combined exploration and appraisal well and three appraisal wells in Block 2 with the drillship *Discoverer Americas*, only two of which have been unsuccessful.

The discoveries, named after spices, are about 100km offshore in 2,200-2,500m. One of the deepest drillstem tests ever carried out in the world at 2,500m tested two zones and confirmed the production potential of *Zafarani* (32/02). It proved the reservoir connectivity and the extent of the reservoirs.

'We think we can achieve a recovery factor of 60-80%,' Eliassen added. 'It depends on how much water support we get. We need some ... to keep the pressure up, but we don't want the water breaking through into the production wells.'

He said the first phase will need 13-20 wells – *Zafarani* (5-7); *Piri* (3-5); *Lavani Deep* (2-3) and *Lavani Main* (3-5). 'I think that's what we are going to start with.'

Statoil is currently drilling the 14th well – the last well in the drilling campaign – the *Tangawizi-2* appraiser.

'If we can prove the reservoir to be feasible and economical to develop, we will probably add that to the production some 7-10 years after first gas and that will add another 5-8 wells to the development.'

The *Giligalani*, *Mronge* and *Mdalsini* finds will not be included in phase one as they are located in an area of difficult seabed terrain with steep seabed canyons and valleys around them.

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MARIA CONTRACTOR HAS FOCUS ON WELLHEAD ISSUES

In the aftermath of BP's 2010 *Macondo* well accident, there has been an increase in concern over subsea wellhead integrity and life-cycle management, according to Norwegian consultancy 4Subsea.

The Norwegian company, which was originally a production riser specialist, now has a second business unit focussed on well intervention and drilling. It recently picked up an important advisory frame agreement with Wintershall covering all manner of production equipment with an initial focus on the upcoming *Maria* (SEN, 32/02) development.

Wellhead integrity has not historically been a matter of significant safety focus – there have been very few recorded wellhead failures – but as the industry has gone into deeper waters and drilled into higher pressure and temperature reservoirs, with the resulting increased loads on the wellhead, this has been an issue that has attracted more attention.

Following the *Macondo* incident, the Norwegian Petroleum Directorate, for example, pointed to this as an issue that needed to be addressed. There have also been a number of SPE technical workshops where integrity and loading were discussed in detail, according to 4Subsea.

Another side of this issue is the longevity of some subsea wells. Now, when newer rigs with heavier bops

and associated equipment are asked to intervene, there are concerns that these older wellheads may have already consumed their expected fatigue life.

The result of all this is a desire by some operators to seek to undertake remedial work on wellheads that are either older or could have a long expected production life.

Another new SURF-er

Norwegian contractor DeepOcean, which has to date specialised in IRM and light construction, has secured an interesting SURF installation job for Statoil related to *Maria*. This subsea tieback will be taking services from three different Statoil platforms – for production, water injection and gas lift.

The newbuild construction vessel *Edda Freya* – DP3, 150m by 27m with a 3,000t carousel and a 600t a/c knuckle boom crane – will be used to install a direct electric heating (DEH) cable and a dynamic umbilical at the *Kristin* production semi and a water injection riser at the *Heidrun* tension leg platform. There is also an option to handle a riser change-out at *Kristin*. The work is scheduled for Q3 next year.

DeepOcean made a point of noting that there was 'fierce competition' for this job – probably due to reduced work opportunities in the North Sea next year.

STATOIL MOVES TO INSTALL SUBSEA COMPRESSOR

From Norway (JS): Preparations to install the world's first subsea wet gas compression system on Statoil's *Gullfaks South* (32/1) field off Norway are ramping up.

Vessels have been mobilised and connection preparation has started. The system will be installed within the next month with start-up now set for October.

The wet gas compression system will be installed on the seabed and tied back to the *Gullfaks C* platform to provide another 22mboe from the *Gullfaks South* Brent reservoir. The recovery rate will increase from 62% to 74%, Jon Arve Svaeren, veep for processing systems sales at OneSubsea told SEN.

Since October last year, the wet gas compressor station has been through the final system integration tests at Horsoy outside Bergen. The delivery from OneSubsea consists of a 420t protective structure, a compressor station with two 5MW compressors totalling 650t, and all necessary topside equipment for power supply and control of the plant.

Meanwhile, Svaeren said the market for subsea multiphase pumps has ground to a halt in the last 18 months.

'Last year we did not sell any multiphase pumps because of delays in orders, but we have a significant backlog of orders from sales in 2013 and there is a good



The *Gullfaks* subsea wet gas compressor

pipeline moving forward. Last year was a dull year for the industry in order intake, which will probably change next year.'

Svaeren said multiphase pumps were first installed in the mid-1990s and some of them are still in operation. 'This has proven to be very reliable and robust technology,' he added.

Mean time to failure (MTTF) for the pumps is 15.6 years and OneSubsea has 85 of them operating in around 30 locations with over 2m running hours clocked.

DEVELOPMENT BRIEFS

First production from Total's **LAGGAN-TORMORE** (SEN, 31/20) deepwater gas development, west of the Shetlands, is unlikely until sometime during the summer.

Main contractor for the onshore plant on the Shetlands, Petrofac, has reported continuing problems related to commissioning the terminal. A combination of bad weather, low productivity and industrial action has resulted in slow progress towards completion of the work.

Having reported a \$230mn loss on the job at the end of last year, but reassuring shareholders in February that there would be no more losses, Petrofac this week has tacked on another \$195mn to this sorry tale.

From Australia (RW): The Chevron group has submitted plans to decommission the **THEVENARD ISLAND** processing facilities in Western Australia.

Production from six feeder offshore fields – *Saladin, Cowle, Yammaderry, Crest, Roller and Skate* – ceased in January 2014. Chevron and partners Santos and ExxonMobil have tried to sell the facilities without success.

The JV was granted a 25ha site on the tiny 550ha island 25km northwest of Onslow and 70km southwest of Barrow Island during the late 1980s and production began from *Saladin* in 1989. The other fields were progressively brought onstream between 1991 and 1998. The offshore complex included three *Saladin* platforms and six monopods on the other fields. Subsea flowlines brought the wellstreams to the process facilities on the island including oil storage tanks and a tanker loading terminal. There was also a gas export pipeline to the mainland as well as gas lift pipelines and a water injection pipeline.

Chevron plans to disconnect the subsea pipelines, but leave them in place. All the structures offshore and onshore will be removed. The 22 offshore wells and 14 directional wells drilled from onshore will be decommissioned.

The company will use a jack-up rig and construction vessel with a crane for the offshore work and a workover rig for P&A of wells.

It is anticipated the work will begin in 2016 and take about 12 months to complete the offshore work. Onshore decommissioning and remedial work on Thevenard, including removal of roads, footings and pathways, will take two years.

Ithaca Energy has reported completion of the fifth and final producer on the *Stella* field, part of the **GREATER STELLA AREA** (31/21) development, in the UK North Sea.

The fifth well flowed at 8,000b/d under test, bringing the test flow for all five to over 53,000b/d, reassuring Ithaca that it will be able to easily reach the forecast production rate of 30,000b/d. The company holds 53% of the licence.

The success of the development drilling programme,

notably the high level of liquids production, has also indicated a significant upside potential in the Ekofisk reservoir.

From Australia (RW): Saipem has awarded Kongsberg Oil & Gas Technologies the contract for delivery of the subsea structures associated with the gas export system from the **ICHTHYS** (32/1) processing platform to Darwin.

Ichthys is 220km off the coast of Western Australia in the Browse Basin and 820km west of Darwin. The subsea pipeline is 882km long and then continues for another 7km onshore to the liquefaction plant at Bladin Point in Darwin Harbour.

The contract involves delivery of adjustable pipe support structures to support the pipeline and bring it to the required height and orientation at the end termination. KOGT will do the engineering, procurement, construction and delivery of the structures. Saipem will do the installation.

Construction work will take place at the Henderson yard near Perth. Design began in January this year and the installation will begin in July.

Subsea 7 has picked up a two-year \$200mn contract continuation for *Seven Seas* to carry out **FLEXIBLE PIPELAY** for Petrobras. The vessel has been doing similar work for the Brazilian operator since 2013 ... Schlumberger is to supply subsea test trees and related services on Total's Block 32 **KAOMBO** (31/23) deepwater fpso development, offshore Angola, under a \$200mn deal. SENtree and SENturian eh operating systems will be reused for completion work on the 59 wells ... Litre Meter has supplied 11 low-flow scale inhibitor meters to SBM Offshore for its fpso *Cidade de Anchieta* which operates on Petrobras' **BALEIAS AZUL** field.

Jee is to provide **SUBSEA INTEGRITY MANAGEMENT** and engineering services to E.ON E&P for its North Sea assets ... EMAS AMC has won \$55mn in IRM, SURF and pre-FEED work on a number of projects across the North Sea, the Gulf of Mexico, west Africa and southeast Asia ... Wood Group PSN has secured a five year EPCM deal with **ENQUEST** on its three older assets, the *Thistle* and *Heather* platforms and the *Northern Producer* floater ... Seaway Heavy Lifting will transport and install the three platforms for the Eni-Repsol **PERLA** development in Venezuela as well as handling tie-in to the pre-installed pipelines ... BP has awarded AMEC Foster Wheeler a £50mn contract to provide **OPERATIONAL AND MAINTENANCE** support for its *Forties Pipeline System* including associated offshore facilities and the *CATS* gas pipeline terminal.

EXPLORATION

STATOIL FINDS GOM OIL - FINALLY!

From Houston (BN): Breaking a Gulf of Mexico losing streak, Statoil announced an oil discovery at its *Yeti* prospect, the latest in a rapid-fire succession of GoM exploration wells by the Norwegian operator.

The find is in Walker Ridge 160, about 15km south of Chevron's *Big Foot* (32/1) development and 11km west of Petrobras' *Cascade-Chinook* (31/23). The well was drilled by the drillship *Maersk Developer* in 1,797m.

Statoil said the discovery expands the subsalt Miocene play south and west of *Big Foot* where Statoil is a partner. Analysis continues to determine appraisal options.

Instead of details about the discovery, Statoil touted drilling efficiency - 123m/d - which the company described as 'the best of any well drilled in Walker Ridge.'

Prior to success at *Yeti*, Statoil had failed to find commercial hydrocarbons at *Martin* in Mississippi Canyon 718 and *Perseus* in Desoto Canyon 231. The rig has moved on to Statoil's *Thorvald* prospect in MC814.

Statoil operates (50%) for Anadarko (37.5%) and Samson (12.5%).

Cobalt has plugged and abandoned its *North Platte-2* appraisal well due to a seal failure in the riser connection system. The well was being drilled by the drillship *Rowan Reliance* in Garden Banks 958 in 1,487m.

The bit had reached a depth of 6,310m when drillers detected the riser problem. The well was permanently abandoned prior to reaching any geological targets. Cobalt is currently permitting *North Platte-3* approximately 61m from the surface location of the abandoned well.

Assuming timely receipt of permit approval, Cobalt anticipated spudding *North Platte-3* by the end of this week and said it still expects well results in the second half of this year.

The *North Platte* discovery well was drilled in 2012 and encountered over 167m net oil pay in multiple high-quality Inboard Lower Tertiary reservoirs. Cobalt operates (60%) for Total (40%).

Cobalt also gained approval at *South Platte* in GB1003. The plan calls for three 192-day wells at the rate of one a year starting this November and running through July 2018. It is in 1,350m about 390km southwest of New Orleans. Same ownership as above.

Hess has won approval to drill a sixth well at its *Penn State Deep* project in Garden Banks 216. The 120-day well in



The *Maersk developer* hit pay at *Yeti*

400m about 300km southwest of New Orleans was tentatively scheduled to spud 1 May with completion done by November and first production by January 2016.

The subsea wells are to be tied back to Hess' *Baldpate* platform in GB260. Hess operates (37.5%) for Shell (37.5%) and Anadarko (25%).

Freeport McMoRan is advancing one of the finds included in its Plains acquisition two years ago. Regulators have approved a supplemental development plan for the *King* project in 1,570m in MC84 and 85 about 145km south of the Alabama coastline.

The plan calls for 200m of 6in pipelines and a new manifold that will link two wells already equipped with trees to an existing flowline. That flowline goes to the *Marlin* tlp in Viosca Knoll 915.

The installation will require a new subsea distribution unit and electrical, optical and hydraulic flying leads on the existing umbilical. All the work is to be done this fall at the project wholly owned by F-M.

LLOG has received a conditional green light to explore its *Crown & Anchor* (surely a pub!) prospect in VK 959 and 960. The plan calls for four 45-to-50-day wells with 40-day completions. All four wells have surface locations in VK959, but two have bottom locations in VK960.

The first well is to be drilled this year starting in May, the rest at the rate of one a year through 2018. The site is in 1,329m about 230km southeast of New Orleans.



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SHELL AWAITS APPROVAL FOR CHUKCHI DRILLING PLAN

From Houston (BN): The 30-day clock started ticking 10 April on regulator evaluation of Shell's revised exploration plan (EP) for the Chukchi Sea.

That means Shell should have a go or no-go decision from the US Bureau of Ocean Energy Management by 10 May on Arctic drilling off northwest Alaska this year. There is a parade of 'ifs', but the project appears increasingly likely to go forward as planned, on or after 1 July, depending on ice melt.

One of two drilling units slated to do the work, the Transocean semi *Polar Pioneer*, arrived at Port Angeles, Washington, last Friday aboard the heavy-lift vessel *Blue Marlin*, after a voyage from Singapore. Greenpeace protesters who carried out an unauthorised boarding northwest of Hawaii departed the vessel and a court barred further boardings. The location of the second rig, the drillship *Noble Discoverer*, has not been disclosed, but it is en route northward.

Shell's revised EP proposes to continue the multi-year Chukchi Sea exploration drilling programme the company began in July 2012. This program includes drilling up to six wells within the *Burger* prospect, located in approximately 43m about 113km northwest of the village of Wainwright.

One well was drilled to 320m prior to the end of the disastrous 2012 campaign. The two rigs will both do the work and provide relief-well support for each other if needed. The two units and supporting vessels would leave the area at summer's end.

As for the 'ifs', regulators could give Shell's plan a conditional approval, requiring modifications, and drilling this



The *Polar Pioneer* arrives at Port Angeles

year would then depend on fulfilling those requirements before 1 July. But with ongoing give-and-take between company and government, even a conditional thumbs-up should clear the way if court challenges don't throw up any new roadblocks.

Shell will also need approval from the Bureau of Safety & Environmental Enforcement and other conservation agencies, a separate permit to spud each well and BSEE approval of an oil spill response plan. And before winning BOEM approval, the company must run another gauntlet of public comment on the environmental assessment and EP, a comment period that ends 1 May.

Meanwhile, new regulations for drilling in the Beaufort and Chukchi seas - Shell's plan meets or exceeds them already - are making their way through the bureaucracy. Public comment has been extended to 27 May.

BARENTS SEA COMPANIES JOIN FORCES

From the North Sea (NT): Several leading Barents Sea explorers - Eni, GDF Suez, Lundin, OMV and Statoil - have set up a cooperation group to find common solutions to the problems of operating in the challenging arctic environment.

Known as BaSEC - Barents Sea Exploration Collaboration - the three-year project is led by Statoil, although all the participants have representatives on the steering committee and the five working groups. The topics for these will be: metocean and ice; environment and oil spill response; logistics and emergency preparedness; mobile drilling units; and health and working environment.

The project will have a special focus on areas included in the current 23rd frontier licensing round, which includes acreage both in the newly opened southeast Barents and to the north in areas encroached on by the ice-front. Bellona, Greenpeace and other environmental groups oppose exploration activities in the Barents, especially near the ice-front, so BaSEC can be seen as having a PR as well as a practical objective.

New acreage in the Norwegian and Barents Seas is included in Norway's 2015 APA (Awards in Pre-defined Areas) licensing round. The APA is intended to provide exploration opportunities in areas where existing infrastructure will facilitate development, but this time the government appears to have departed from this principle.

Several of the 35 new blocks and part-blocks in the Norwegian Sea are in the area of the *Pil* (SEN, 31/21) and *Bue* (31/21) discoveries, while the 11 new blocks in the Barents Sea are close to the *Alta* (31/21) and *Gohta* (31/21) finds. There is no infrastructure in either area.

The remainder of the new acreage in the Norwegian Sea is in the area of the *Aasta Hansteen* (32/2) field to the north where infrastructure is being installed as part of the field development.

Companies have until 2 September to apply for new licences and awards are due to be made in the first quarter of next year.

EXPLORATION NOTES

From the North Sea (NT): Total is to evaluate development options for a small gas discovery it has made at **SKIRNE EAST** in the Norwegian North Sea.

The well, 25/6-5S, drilled by the semi *Leif Eiriksson* in 120m, found an estimated 0.4-1.5bcm. Development would utilise the nearby *Skirne* pipeline which is tied back 24km to the *Heimdal* gas processing platform.

Skirne East, also called *Shango*, was seen as a possible complement to Total's 2014 *Trell* (31/21) discovery in 25/5. However, *Trell* was an oil find - 13mmbbl, according to the NPD - so may not be appropriate for treatment on *Heimdal*. The two finds are on different licences.

In the Norwegian Sea, Statoil has followed up success at *Snefrid North* (32/01) with another strike at **ROALD RYGG**. It's another modest gas find - 2-7bcm compared with 5-9bcm at *Snefrid N* - but encouraging for Statoil in its quest to make *Aasta Hansteen*, to which they will be tied back, a more robust development. The volumes discovered at *Roald Rygg* and *Snefrid N* equate to about 25% of the volume in *Hansteen*, Statoil points out. *Snefrid N* lies 6km to the west of *Hansteen* with *Rygg* a further 7km distant.

The *Rygg* well, 6706/12-3, drilled by semi Transocean Spitsbergen in 1,287m, proved a 38m gas column with very good reservoir quality. Statoil has done a deal with partners Rocksource and Atlantic to raise its interest in the licence to 42.5%.

From Australia (RW): Chevron has reduced its charter on Atwood Oceanic's semi *Osprey* by 12 months.

The rig had been contracted to complete production wells on the **WHEATSTONE** (32/2) project in a programme due to run until May 2017. However, Chevron has decided to use termination clauses in the contract that were triggered following the incident last month when the rig broke its mooring lines during cyclone Olsen and drifted 5km from its location on the *Iago-B*.

The duration of the force majeure event and resultant repairs to the rig triggered the termination rights. Chevron and Atwood agreed to a reduction of one year of the contract, although contractual rates are unchanged.

Atwood expects the rig repairs will be completed by the end of this month. Chevron says *Wheatstone* remains on-track despite the *Osprey* contract amendment.

From the North Sea (NT): **ROSNEFT** and North Atlantic Drilling have kept alive hopes of reviving their \$4.25bn drilling rig framework agreement by postponing the completion deadline by a further two years to May 2017.

The agreement was entered into last August, but immediately scuppered by Western sanctions over Russia's involvement in Ukraine.

During the additional two years' period, the two parties will seek to renegotiate the terms of the six rig contracts arranged under the agreement including, presumably, the

contracts for *West Navigator* and *Energy Endeavour* which were cancelled last month (32/2).

Meanwhile NAD is free to negotiate work with other customers for the rigs which are still contracted to Rosneft. The agreement also foresees Rosneft, which is 70% owned by the Russian state and 20% by BP, acquiring equity in NAD and NAD taking over the operation of 150 Rosneft land rigs.

From Australia (RW): Karoon Gas Australia has found a 213m gross oil column in its latest wildcat in the Santos basin, offshore Brazil.

Wireline pressure data from **ECHIDNA-1** has confirmed the column across the Palaeocene and underlying Maastrichtian-aged reservoirs and fluid samples indicated the oil is a light 39.5° API gravity crude. Karoon plans to run a test in the 75m-thick Paleocene reservoir section which has a net of 50m and a porosity of 25%.

Karoon says the Maastrichtian sections - with a gross thickness of 113m and average porosity of 21% - will be tested during a follow-up drilling programme. In addition there is a deeper 7m Maastrichtian sand with an average porosity of 23%.

Echidna-1 has validated the salt flank play in the region and adds to the company's *Kangaroo* (31/20) oil discovery made earlier this year in a similar structure. The well is in Block S-M-1102 on the eastern side of the Emu salt diapir complex.

Karoon operates (65%) for Pacific Rubiales Energy Corp holding the balance.

Noble Energy has grabbed a 75% stake and operatorship in the PL001 License in the North Falkland Basin from Argos Resources.

PL001 covers an area of nearly 285,000 gross acres and is located to the northwest of the PL032 License, which includes the *Sea Lion* oil discovery. Edison International has obtained the remaining 25% equity.

Noble has identified the **RHEA** prospect as its initial target on the license. Rhea is a Cretaceous-aged stratigraphic trap prospect with multiple reservoir targets and total estimated resources in excess of 250mmbbl of oil. Water depth at the anticipated drilling location is approximately 473m and the target total well depth is 2,672m.

Rhea is anticipated to start drilling in Q3 2015 with Noble Energy's second slot on the 2015 Falkland Islands drilling campaign.

The company's initial operated Falkland Islands prospect, **HUMPBACK** (31/14), is now expected to commence drilling by early May 2015.

Petrobras has completed a formation test on the third extension well at its **FARFAN** (31/22) find in the ultra-deep waters of the Sergipe-Alagoas Basin off Brazil.

Drilling has confirmed two light oil and gas-bearing compartments: the upper one is 44m thick while the lower one is 11m. The second is a new discovery for the area. The well is 10.3km from the discovery well in 2,467m.

Results of the formation test have confirmed light oil (37° API) and the good productivity of the reservoirs.

Farfan was discovered in October 2012. Petrobras (60%) operates for IBV-Brasil (40%).

Norwegian seismic surveyor TGS has signed a JV with Dolphin Geophysical to acquire approximately 1,675

square miles of 3D seismic data over the western part of the Hammerfest Basin in the Barents Sea.

TGS said the multi-client survey will provide the industry with broadband data over acreage not previously covered by 3D. The new survey has been planned using TGS's and Dolphin's existing data as well as geological and geophysical knowledge from the area.

The new project links Dolphin's Gotha 3D survey with TGS's Finnmark Platform 3D surveys to provide data coverage over large areas of the western Barents Sea, TGS said.

VESSEL BRIEFS

Vessel designer Marin Teknikk has developed a new concept of multipurpose **DIVING SUPPORT AND CONSTRUCTION VESSEL (DSCV)** which will be built in China under a deal with China Merchants Heavy Industry for Ultra Deep Charter of Singapore.

The deal will see CMHI deliver three units, two as options, to UDC. The first is due to be ready by mid-2017 with the latter two to come in late 2017 and mid 2018 if the options are picked up. The aim is for them to be available at a time of a forecast resurgence in offshore activity.



Operations at the Huisman yard in the Netherlands

The MT6023 DSCV design is for a hull 112m by 23m. The unit will be equipped with an 18-man saturation diving system, a 150t heave compensated crane with operability to 3,000m, a 10t crane for 300m operations and two workclass rovs rated for 3,000m.

Lifting and pipelay system specialist Huisman is due to deliver the first of its **HYBRID BOOM CRANES** to Hyundai Heavy Industries for installation on Subsea 7's latest vessel *Arctic Seven*.

This design combines the characteristics of regular pedestal and knuckle boom cranes. This electrically driven crane has low weight with high lifting height with full lifting capacity. It also has low suspension point and reduced load swing.

The real-time heave compensation and shock absorbing system is said to increase the weather window for installing seabed structures and components.

Bibby Offshore has named its latest IRM-construction vessel, built at the Kleven Shipyard in Norway, **OLYMPIC BIBBY**. It will begin work under a three year charter with options for an additional two years ... Siem Offshore and Daya Materials of Malaysia have agreed to extend until today (24 April) their August 2014 memorandum of agreement under which Daya was to acquire a pair of **SUBSEA CONSTRUCTION VESSELS** - *Siem Daya 1* and *2* - from Siem. The two companies are said to be continuing their negotiations.

Transocean has picked up new contracts worth around \$26mn since March 18.

The *Sedco Express* has been awarded a 45-day contract extension offshore Nigeria at a dayrate of \$300,000 (\$14mn estimated backlog), while the *GSF Galaxy II* has been awarded a two month contract extension in the UK sector of the North Sea at a dayrate of \$190,000 (\$12mn estimated backlog).

The *Discoverer Enterprise*, *Sedco Energy*, *Transocean Amirante*, and *GSF Galaxy III* are all idle.

Transocean said estimated 2015 out-of-service time decreased by a net 59 days, primarily due to *GSF Rig 140*. The company is currently committed to approximately 48 days of planned out-of-service time in 2016.

The company said it intends to scrap the *GSF Explorer* and that the rig is classified as held for sale.

TECHNOLOGY

TOTAL EYES NEW TECHNOLOGY FOR NEW DEEPWATER ASSETS

From Norway (JS): Total is looking to deploy a number of subsea technologies as it moves towards its vision of the future in which it can tie back oil and gas discoveries to host infrastructure from 25km, 50km or even 100km away in water depths of more than 1,000m.

Flow assurance, subsea separation and boosting, pipeline electrical heat tracing, seawater treatment and injection, subsea power transmission and subsea chemical storage are all high on the agenda, Martin Tiffen, veep development, Total told the Subsea Valley conference in Oslo.

'We have got a number of exploration wells in the planning in increasingly deep waters, in some cases in more than 3,000m for instance in Uruguay, in the Philippines or the Black Sea,' Tiffen said.

'For us to be able to conceive of drilling exploration wells in such water depths we need to be able to believe that we can one day produce (from them).'

Total is moving towards electrically trace heated pipe-in-pipe solutions to improve flow assurance levels, by heating pipelines with electrical windings, and has successfully tested the technology on the UK North Sea *Islay* project. 'We're looking at deploying this in the much deeper waters offshore Angola,' Tiffen said.

Total along with ConocoPhillips and Sintef has also developed a model for multiphase flow which is being

commercialised under the trademark of Ledaflow. 'Getting this right is the key to successful flow assurance and understanding how to develop deepwater oil and gas,' he added.

An all-electric solution for controlling the valves on a subsea Xmas tree has been developed and deployed in the Netherlands.

Tiffen said, 'In 2008 in the Netherlands, we deployed an electric tree in pilot mode still with the downhole safety valve being hydraulically controlled and we're working in Holland on running a couple of trees in the next couple of years which will be all electric, including the downhole safety valve, the control module and all the valves on the Xmas tree. That would, in principle ...eliminate the hydraulic system from the subsea architecture.'

Trialled last year was SPRINGS – a subsea seawater treatment and injection system – aimed at removing sulphates from seawater by using membrane systems. This has successfully been demonstrated by running it in 400m (in the Congo) and field deployment is anticipated in 2018.

Total is also bidding to eliminate the need for chemical lines in umbilicals by storing chemicals locally on the seabed with a boat being used to change the tanks out.

'This is a work in progress we are looking to deploy towards the end of the decade,' Tiffen added.

WELL INTERVENTION IS TOO LOW

From Aberdeen (IF): Oil and gas operators don't do enough well intervention work and also fail to get the most from their intervention efforts, an industry conference in Aberdeen heard.

Martha Vasquez, a manager with management consulting firm McKinsey & Co, speaking at the Offshore Well Intervention Europe event in Aberdeen last week said with \$50/bbl oil, operators have become significantly cash constrained and are cutting budgets, yet production and ultimate recovery targets remain. Well intervention will help lower operating expenses per barrel.

'It is also usually cheaper, quicker, and less risky – and yields higher return per barrel than drilling a new well,' Ms Vasquez said. 'The incremental volume and recovery opportunity is significant – most active operators realise over 10% incremental production and 5% barrels protection from well intervention. However, operators don't do enough intervention and fail to get the most from their intervention efforts.'

Ms Vasquez asked why not enough well intervention was carried out. She said asset managers tend to put a low priority on well integrity and production optimisation tasks to protect production levels.

'The belief is that drilling brings higher value. Asset teams lack the information to be certain that intervention will bring higher value than drilling,' she said.

Vasquez said there was also a failure to get the most from intervention activity. Reasons for this included a shortage of good opportunities with companies preferring not to take a risk and not knowing whether an intervention worked by not understanding intervention performance.

She also said there was a lack of practice, with most successful companies getting better over time. Finally, only a few operators benchmark rigorously. Without a benchmark, there was no point of reference for performance and practices.

Andrew Paterson, head of strategy at Infield, said an industry survey had found that 77% of respondents felt it would be less than two years before the global business returns to the level of activity and positive sentiment witnessed before the recent oil price decline.

On well intervention, he said drivers include an ageing and growing base of subsea wells worldwide, expected to exceed 7,000 by 2019. Wells aged over five years will total more than 4,600 globally by that year.

Paterson also said that Europe and North America were the only regions of the world with significant capacity available to address light and medium well intervention demand with dedicated intervention vessels.

SUBSEA DOCUMENTATION TO BE SLICED

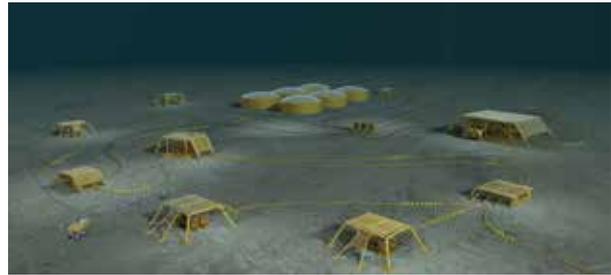
A DNV GL joint industry project aimed at cutting down on the swathes of costly documentation required for subsea operations is beginning to pay dividends.

A typical subsea project can involve more than 10,000 documents, with up to 80,000 in a complex one, over a lifecycle of 30 years. The JIP is hoping to achieve cost savings of 30%. The JIP involving 20 industry players including Statoil, Centrica, Subsea 7 and FMC, has made a major step forward in addressing the ‘explosion’ in documentation with the first issue of a Recommended Practice (RP).

The partners have agreed on and drawn up a set of typical subsea production systems (SPS) and functions with common terminology and a required minimum set of documentation between E&P operators and contractors. A first issue of the RP is now available to JIP partners and will be publicly available later this year.

The work has been performed in Norway, but has an international focus and DNV GL is now also talking to majors in Houston in an effort to spread the word.

Torgils Skaar, engineering department manager at Subsea 7, said, ‘Aligning documenting procedures and paperwork will present marked financial savings and provide a higher level of predictability for the production, han-



Subsea documentation hikes project costs

dling and administration of technical documents and time taken to undertake such tasks.’

The next phase of the JIP is now to extend the current scope of subsea production systems to also include SURF – subsea umbilicals, risers and flowlines.

Meanwhile, another DNV GL led JIP has drawn up a RP for standardisation of subsea steel forgings.

This was targeted as a high priority initiative in a report issued by the Norwegian Oil & Gas Association in 2014 and also highlighted by SPE. The RP has been developed through a JIP involving 21 companies, representing steel manufacturers, subsea contractors and operating companies. It contains requirements for qualification, manufacturing and testing, and complements existing industry codes for subsea equipment.

TECHNOLOGY BRIEFS

From Australia (RW): Chevron, Shell, Woodside Petroleum and Inpex have put forward a combined total of A\$3.2mn to fund research into **TROPICAL CYCLONE FORECASTING** over the next two years.

The work will be carried out by the Australian Bureau of Meteorology to develop new systems, including wave fields over the Western Australian continental shelf and nearby waters. The work will build on the ABM’s existing work on cyclones by focussing on the enhanced prediction of the impact of global weather systems and the low pressure systems that are likely to develop into cyclones.

The aim is to enhance cyclone response planning and public weather forecasting services for the communities in the region. It is expected to extend the number of days in advance ABM can accurately track the path of a cyclone. This will reduce risk, improve decision making and potentially reduce costs by decreasing operational down-time and unnecessary interruptions to construction operations.

IMI Critical Engineering is supplying four of the largest production chokes – 300mm by 300mm – for the topside facilities on Statoil’s **AASTA HANSTEEN** (SEN, 32/1) spar in Norway. The large chokes will be used to slow down the high-speed gas stream which could contain contaminants potentially damaging to other equipment downstream. Other features include design based on its Y-globe

concept with the actuator at 45° to the valve body and low-noise (75dBA or below) operations by using a solid tungsten disk stack based on IMI-CE’s DRAG technology.

Siemens, working with Statoil, has developed and qualified a **SUBSEA HYDRAULIC POWER UNIT** which can provide both high and low pressure hydraulics for seabed operations. The SHPU is seen as potentially an alternative to umbilical-supplied hydraulics or as a back-up in the event of an umbilical failure or damage.

The unit was initially developed to provide contingency supply as a result of an unexpected event and, according to Siemens, would have a ‘competitive advantage’, ie likely to be less expensive, than a new umbilical. The SHPU would take its power requirements from existing infrastructure and has been designed to be installed in a single lift by an roV.

Miko Marine of Norway has developed an roV-deployable **SUBSEA MAGNET** which could be used in a number of applications on the seabed. Capable of being switched on and off, the ROV-magnet can hold weights up to 750g and provide an anchoring point on a steel structure for a tool or equipment, such as a camera or light. It is contained within a 316L stainless steel housing, resists corrosion and can be attached to any painted surface.

POLICY, POLITICS AND SAFETY

BOP IS FOCUS OF NEW SAFE DRILLING RULES

From Houston (BN): Blowout preventers – making and keeping them safer – are the focus of a new set of offshore drilling safety rules proposed by US regulators.

Published 13 April and open for public comment for two months, the rules arise from independent investigation and interaction with industry since the April 2010 *Deepwater Horizon* accident in the Gulf of Mexico.

In large part, the rules – if finally approved in current form – would codify standards already adopted by industry which has welcomed the new regulations while taking credit for their development and promising to work with government to polish up the details.

It is the latest in a series of drilling safety rules put forth by the government since the Transocean rig working at BP's *Macondo* (SEN, 31/22) prospect suffered a blowout, explosion and fire and then sank. Eleven men died and an estimated 4mmbbls of oil spilled before the well could be killed.

Among the new rules is the requirement for double shear-rams and drillpipe-centering equipment to make certain that casing of runaway wells can be cut. Investigators found that the *Deepwater Horizon's* shear-rams failed to cut the pipe, perhaps because the jaws caught on a joint or the pipe was not centered.

The rules also make mandatory in-place industry standards for design, manufacture, and maintenance of bops; require third-party verification of bop shearing power; increase hydraulic accumulator capacity to insure enough power to cut drillpipe at a runaway well; require annual review of BOP records by a third party to ensure the equipment still meets original design criteria; require that all BOP components be traceable wherever repair and maintenance occur; mandate real-time backup moni-



A blowout preventer ready for deployment

toring capability (a 'second set of eyes') for operations in deepwater and in hp-ht conditions.

The new rules set standards for roV use in helping to close a bop; impose guidelines for packers, plugs and cementing, including requiring use of centralizers for cementing; and require 'the use of accepted engineering practices' in well design, drilling and completion operations. The rules would set the same bop standards for workover operations as for drilling and, in a nod to challenges faced by operators, they would change bop test frequency from 14 to 21 days in an effort to better balance effective testing with efficient drilling.

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WORLD BANK LEADS THE WAY ON 'NO-FLARING' INITIATIVE

Shell, Total and Eni lead a group of 10 oil and gas companies, nine countries and six international ngo's in signing up to the World Bank's 'zero-flaring by 2030' initiative last week.

Also among the group were Statoil and BG Group – soon to be part of Shell – along with the state companies and governments of Cameroon and the Republic of Congo, SOCAR of Azerbaijan, Petroamazonas of Ecuador, the Kuwait Oil Co and the governments of Norway, Russia, Gabon, Kazakhstan, Uzbekistan, Angola and France.

Currently 140bcm, or 1% of world natural gas production, is flared with the eight biggest contributors – Algeria, Iran, Iraq, Kazakhstan, Nigeria, Russia, the USA and Venezuela – responsible for 65% of the total. Flaring in the USA has increased with the advent of shale oil production, while Nigeria has for some time been known a major source of CO₂ from flared gas.

The amount of gas flared represents 20% and 30% of gas consumption in the USA and Europe, respectively. While Norway banned 'routine flaring' as long ago



as 1971, 'safety' and 'non-routine' flaring continues in many places.

Total has been one of the leaders in flaring reduction. The development scheme for its latest big deepwater development offshore Angola – the *CLOV* project (SEN, 32/2) – included a non-flaring philosophy.

Running in parallel with this initiative is the Global Gas Flaring Reduction Partnership (GGFR) which was set up to assist companies and countries meet the 2030 target.

BUSINESS

OIL SECTOR STABILISED, BUT MORE CUTS ON THE WAY

From Aberdeen (IF): The rapid and aggressive response by international oil companies to the low oil price has stabilised the sector, according to energy researcher Wood Mackenzie.

It says the price required for firms to be cash-flow neutral in 2015 has dropped by over \$20 per barrel to \$72/bbl. However, this means that further cuts are likely to be on the way if the oil price remains around current levels.

WoodMac added that for some companies this will mean selling assets, while others may suspend or limit dividend and buyback programmes. Corporate upstream analyst Tom Ellacott said, 'Capital cost cutting has been both rapid and in some cases dramatic. Individual companies have had one, two and sometimes three bites at the cherry. Q1 results will underline how much still needs to be done if oil prices do not continue to recover. More cuts to dividends and buybacks are likely if the \$50-60/bbl price persists.'

But Ellacott believes there are opportunities for the financially strong, as evidenced by Shell's move for BG. Wood Mac's analysis shows there is a huge inventory of assets on the market with 340 potential deals worth over \$300bn, but activity has collapsed.

'Buyer and seller expectations remain far apart,' Ellacott said, 'and buyers of material size are limited to the most financially secure. But a buyer's market in M&A might emerge as companies are forced to sell assets to balance the books. The \$300bn question is: with Shell having made the first move, who will follow?'

'Shocking' decline

Meanwhile, there was more gloom for Britain's offshore industry from the Office for National Statistics. Oil

& Gas UK has described as 'shocking' the new figures which showed a continuing serious decline in profitability of the industry.

ONS revealed that companies working on the UK continental shelf had a net rate of return of just 10.4% in the last quarter of 2014 – the lowest estimated rate since at least 1997.

Malcom Webb, ceo of OGUK, said, 'These shocking figures underline the very serious challenges the sector faces. After more than a decade of spiralling costs, over-taxation and weak regulation, the UK offshore ... industry is now bottom of the league in terms of the cost of producing a barrel of oil and gas.'

Webb said the UK industry's difficulties had been exacerbated by the sudden drop in oil price, but it would be a grave mistake to believe that the price fall is the cause of the problem. 'A recovery in the price, even to \$100/bbl, would not resolve matters,' he added.

Webb said the restructuring of the tax regime announced by the UK government in the 2015 budget and the establishment of the Oil & Gas Authority can encourage much-needed future investment.

'However, unless the underlying cost and efficiency challenge is first tackled and overcome, the productive future of the UK North Sea will be severely constrained and there will be a very much smaller industry to tax, regulate and invest in.

'All companies are now working hard to address the cost base and to improve the efficiency of their operations. This is very important work because we need to see a 40% improvement in unit operating costs if we are to secure jobs and investment for the medium and longer term,' added Webb.

BUSINESS BRIEFS

The deal by Russian equity funds to acquire the oil and gas assets of German company **RWE-DEA** (SEN, 32/1), including UK licenses, has hit the buffers.

LetterOne, the new entity led by former BP headman John Browne, has been told by the UK authorities, that the British sector licenses will be revoked unless they are sold on to an alternative buyer approved by the government. L1 has three months to appeal the decision.

The DEA UK licenses are believed to produce about 5% of UK gas.

From Houston (BN): In releasing long-awaited audited results for 2014, **PETROBRAS** reported a 21.6bn Real loss for the year (about \$7bn), due mostly to a 44.6bn Real impairment (about \$14.7bn) of assets. (\$1=3 Reales)



Petrobras blamed overvaluation of assets as a result of a bribery-kickback scandal that has rattled Brazil to the highest levels of business and government. The loss also was worsened by declining oil prices. There was another 16bn Real charges taken.

The announcement included correction of Q3 2014 results to a loss of 5.3bn Real (\$1.7bn) as opposed to net income of 3.1bn Real (\$1bn) reported in January. Petrobras also reported a \$26.6bn loss (about \$8.8bn) for Q4 2014.

Petrobras had come under fire for delaying Q3 results until January and then releasing them unaudited after Price Waterhouse Coopers declined to certify them. The company's stock had been hammered while investors awaited results and amid worries that failure to deliver reliable numbers would result in default on Petrobras' huge debt. The share price has risen 50% to nearly \$9 on expectations that the audited results for 2014 would be forthcoming.

The difficulties result from a federal investigation dubbed Operation Car Wash because it began modestly as a probe of money-laundering. The inquiry led much higher and investigators succeeded in extracting testimony from an arrested executive that Petrobras contracts were inflated by as much as 3% and the difference was pocketed as kickbacks to executives and Brazilian political parties.

Brazil's president Dilma Rousseff was chairman of Petrobras during many of the 10 years the scheme existed, but she has denied knowledge and has not been implicated. The scandal led to the resignation of CEO Maria das Gracas Foster, who also has not been implicated.

From the North Sea (NT): A further round of **JOB CUTS** in Statoil is expected to be revealed in May, when it is thought that around a fifth of the company's 12,000 engineers will be made redundant.

About 150 of 500 skilled offshore workers have also lost their jobs recently. The scale of job losses has prompted one trade union leader to warn Statoil to be careful about shedding expertise to the point where the safety of operations is threatened.

Contractors in Norway also continue to adjust to the depressed conditions. Seismic company TGS is to cut 10% of its global workforce of 950 as demand for its services weakens, while crane supplier Motus is to shed 11 employees, one quarter of the payroll, as orders dry up.

On this side of the median line, 70% of **UK WORKERS** surveyed by recruitment specialist Oil & Gas People reported that they were prepared to go abroad to work.

OGP suggested that they surveyed indicated that there was a low level of confidence that recently announced tax changes would make any different and that mass migration out of the sector could exacerbate the ongoing skills shortage.

From Houston (BN): Chairman-ceo John Grempe of **FMC TECHNOLOGIES** predicted deepwater subsea orders should return to normal in 2016 after operators finish re-evaluating projects in light of lower oil prices.

Addressing analysts during a Q1 earnings call, Grempe said lower oil prices are increasing the likelihood that equipment standardisation - talked about for decades but not carried out - will accelerate. Grempe said the four operators that are part of an FMC-led consortium on 20K hp-ht technology will see new operators join the effort. Grempe also said teaming with Technip to create Forsys Subsea (SEN, 32/1) is a major step toward standardisation earlier in project design.

For Q1 2015, FMC reported revenue of \$1.7bn, down 7% from the year before, and net earnings of \$148mn, up from \$135mn. Grempe cited stronger subsea performance

offset by decline in onshore North America and strength of the US dollar. Total inbound orders were \$969mn including \$552mn subsea. Backlog was \$5.5bn, \$4.8bn of that subsea.

FMC's Forsys partner **TECHNIP** reported Q1 2015 revenue up 17% to £2.9bn and EBITDA up 35% to £243mn. Headman Thierry Pilenko called the results 'solid' with the Subsea sector up to £1bn, but not everything was rosy. The order intake in the Subsea sector was down 50% from last year.

OCEANEERING INTERNATIONAL which has had a series of record-breaking results came down with a bump. Q1 results saw revenue down 22% from the last quarter, although just 6% from a year ago, while gross margin was down 22% from Q4 2014. The company saw a decline in demand for all of its products and services with roV utilisation down to 73%.

Further on down the food chain, **HELIX ENERGY SOLUTIONS** has seen a steady revenue decline of 9% from last quarter, but 25% from a year ago. Profitability was up from Q4 2014, but down by more than half from a year ago as well.

As SEN went to press on Thursday, **SUBSEA 7** reported that Orbis Funds - actually 10 different funds that com-

prise Orbis - owned more than 5% of its shares, which requires a formal statement.

AKER SOLUTIONS and **FJORDS PROCESSING**, the latter spun off from AkerSol, have formed an alliance on wellstream separation and treatment. AkerSol will focus on subsea, while Fjords will target topside work.

Newbie SURF contractor **CEONA** has formed a joint venture with **SEAWELD** covering deepwater projects, offshore Ghana.

China South Rail has completed the acquisition of roV and seabed engineering machine specialist **SMD GROUP**. The most curious fact about this deal is that SMD now stands for Specialist Machine Development having been out of Soil Machine Dynamics ... The Scottish Loan Fund is investing £1.5mn in subsea technology firm **ENNSUB** which designs and makes pipeline and pipeline repair products.

It is always interesting to see who sits on the boards of companies. SBM Offshore had and has some eminent offshore names. Stepping down as chairman of the supervisory board is former head of Shell UK **Heinz Rothermund**, while the new vice-chairman is former headman at Stena Offshore and its successor companies **Tom Ehret**.



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