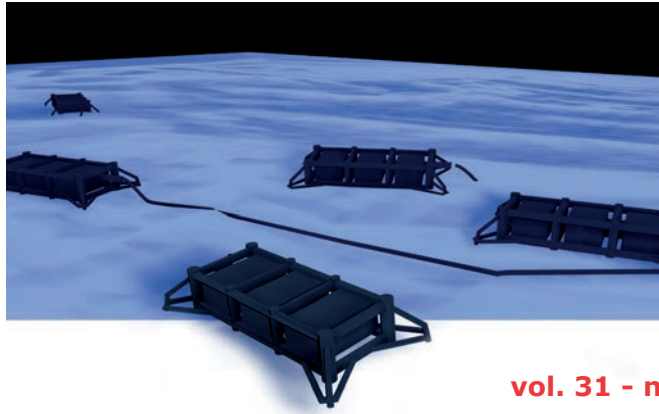


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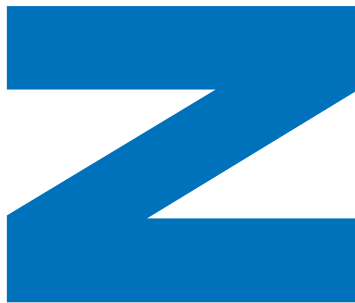


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HART ENERGY



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NEWS

BACK TO THE FUTURE: STATOIL SHIFTS AWAY FROM SUBSEA

From the North Sea (NT): Statoil's choice of a remotely controlled, unmanned wellhead platform as the concept for phase one of the *Oseberg Future* project reflects the swing it warned of last year from subsea back to surface installations as a means of cutting costs (SEN, 31/7).

'The alternative was to place the wells on the seabed, but the costs of subsea wells have been tripled during the last decade,' explained Anders Opedal, senior veep, projects. 'We have therefore chosen a jacket-based unmanned wellhead platform that will reduce costs by several hundred million kroner.'

Dubbed 'subsea-on-a-stick,' the stripped-down platform - for which three different concept studies have been made - lacks living quarters, helideck and lifeboats.

These facilities will instead be located on the support vessel which, rather than helicopters, will transport maintenance crews to the platform. High-quality platform equipment should ensure that only two short maintenance campaigns are required per year, to be performed in good weather seasons.

New to Norway

According to Ivar Aasheim, senior veep, field development, the costs of subsea systems are still rising. While unmanned wellhead platforms without facilities represent a new concept in Norway, Statoil said, they are common elsewhere, including in the Dutch and Danish sectors.

Further pre-studies of the concept will be carried out, opening the way to an investment decision next winter.

'Subsea-on-a-stick' will presumably also be evaluated, along with subsea solutions, for a new *Oseberg* area tieback - *Krafla-Askja* (31/x). Following a fifth discovery on these fields, Statoil reckons it has confirmed reserves of 140-220mmboe, which it describes as 'very substantial volumes for a mature area of the shelf.'

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Krafla is expected to be developed as a 25km tieback to *Oseberg South*, possibly linking into the *Stjerne* subsea facilities, 16km to the northwest. *Askja* will likely be tied back 13km into *Krafla*. The project looks like another candidate for Statoil's 'fast-track' portfolio.

The fifth discovery in the area was a modest find of 6-19mmboe, mainly oil, made with the

Krafla North exploration well (30/11-10). The semi *Transocean Leader* then drilled an appraisal sidetrack (30/11-10A) into the *Krafla Main* reservoir, substantially lifting the reserves estimate to 50-82mmboe from 13-57mmboe, according to the NPD. The water depth is 105m. Discoveries have also been made on *Krafla West*, *Askja West* and *Askja East* (30/20).

PROJECT UPDATES

JOHAN SVERDRUP MOVES, BUT STATOIL CUTS 2015 CAPEX

From the North Sea (NT): Development of Norway's giant *Johan Sverdrup* (SEN, 31/20) oil field is moving ahead as planned.

Last week saw the submission of three applications - the plan for development and operation (PDO) for the field facilities and of plans for installation and operation of the export pipelines and power-from-shore (pfs) system for the first phase.

With an estimated investment of NOK117bn (\$15.4bn), it will be up to the Storting to give the go-ahead. Given the breakeven price of less than \$40/bbl, the project remains robust in the face of current prices.

Despite drilling 22 appraisal wells, the licence group does not yet have a precise idea of what the first-phase recovery will be, estimating it at 1.4-2.4bboe. They are unanimous in recommending that Statoil be appointed the permanent operator, but the division of interests proposed in the PDO - Statoil 40.03%, Det norske oljeselskap 11.89%, Lundin 22.12%, Maersk 8.12% and Petoro 17.84% - is only backed by four.

Detnor claims the outcome does not fairly represent the quantity and quality of hydrocarbons across the four licences. The matter will have to be resolved by Oil & Energy Minister Tord Lien who expressed disgruntlement at being involved in the issue.

Approval is expected to be given ahead of the Storting's summer break in June with start-up scheduled for late 2019.

The first phase, which calls for 51,000 work-years, will see the establishment of a four-platform field centre along with three subsea water injection templates. Oil will be exported to the Mongstad terminal by a 275km, 36in pipeline and gas to Kårstø by a 165km line hot-tapped into the Statpipe close to shore.

The pfs of 100MW will be supplied through a high voltage DC cable from Kårstø drawing 112-113MW from the grid to allow for transmission losses.

A second phase is due onstream by 2022, when the PFS system will be extended to the *Edvard Grieg*, *Ivar Aasen* and *Gina Krog* fields, all currently under development. Overall capex will be NOK170-220bn and ultimate reserves are 1.7-3bboe. A 70% recovery rate is aimed at over the field's 50-year lifetime.

Cuts

Meanwhile, in response to market conditions, Statoil is to cut back its 2015 capex budget by 10% to \$18bn. Exploration added 540mmboe to its resource base in 2014, although organic reserves replacement of 62% was less than half the 2013 figure, it reported. Production,



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at 1.93mmboe/d, was down on 2012's 2mmboe/d, although by Q4 it had improved to 2.1mmboe/d.

The company lists several potential future developments, including *Snorre 2040*, *Johan Castberg*, *Bressay*, *Krafla*, *Trestakk*, *Bay du Nord*, *Tanzania LNG*, *King Lear*, *Asterix*, *Peon* and *Lavrans*, but without giving any indication

of when they might happen. There is flexibility in the portfolio, it says.

Cost reduction initiatives are bearing fruit: \$2.5bn shorn off *Johan Castberg* with another \$0.8-1.7bn aimed at; the *Gullfaks Rinfaksdalen* project almost halved to \$0.8bn and the concept cost of the Tanzania offshore discoveries reduced by 30%.

SHELL AIMS TO CONTINUE EXPLORATION SUCCESS

From Rijswijk (JS): Shell is planning to drill around 20 deepwater exploration and appraisal wells in 2015, roughly on a par with activity levels in 2014, Ceri Powell global head of exploration told SEN at a briefing at the company's learning centre in Holland.

The company is hoping for a repeat of its 'stellar' year in exploration in 2014. Several wells will be drilled in the Shell heartland of the Gulf of Mexico, while an appraisal of the *Leopard-1* pre-salt gas discovery off Gabon will be high on the agenda.

Timing of the Gabon follow-up well depends on the availability of the drillship *Noble Globetrotter II*, which is currently drilling the *Şile-1* wildcatd in 2,093m of water in the Black Sea off Turkey for Shell in partnership with TPAO. Start-up is anticipated in Q3.

Shell is also taking its first steps in deepwater exploration in Myanmar and Namibia, where seismic acquisition has recently been completed. Exploration off South Africa has been put on hold for the time being, however, due to an uncertain regulatory environment.

Powell highlighted Shell's successes in 2014: 11 major finds plus 41 near-field discoveries. Overall in 2014, there was an 80% success rate, twice the industry average.

Shell made nine finds in Malaysia last year including *Rosmari* and *Marjoram* gas strikes, which together contain more than 200mmboe. Overall 300mmboe were added to the Shell portfolio, 'probably the best year ever for our geologists and geophysicists in Malaysia.'

They also had a 100% track record in near-field exploration with five successes.

GoM comes good

In the Gulf of Mexico, Shell has made major deepwater discoveries in the last 12 months, including the 100mmbbl *Rydberg* (31/09) oil discovery, *Kaikias*, *Gettysburg* and *Power Nap* which is still drilling.

Powell said the success rate has been fuelled by Shell's capabilities in technology and innovation. 'It's about more brain cells per barrel,' she added.

GOM DEEPWATER GAS SYSTEM GOES LIVE

From Houston (BN): Williams and DCP Midstream have started up the *Keathley Canyon Connector* gas pipeline, which is an extension of the *Discovery* pipeline system into the ultra-deepwaters of the central Gulf of Mexico.

The 20in 11mcm/d line stretches 336km from Anadarko's *Lucius* (SEN, 31/22) spar in 2,195m in KC875, about 480km south-southwest of New Orleans, to a junction with Discovery's 30in line in South Timbalier 283.

The operators have long-term transportation deals with the owners of *Lucius* (operator Anadarko); *Hadrian South* in KC964 (operator ExMob); *Heidelberg* in Green Canyon 860 (operator Anadarko); and *Hadrian North* in KC918 (operator ExMob).

This latest deepwater line also passes near discoveries at *Buckskin* (operator Chevron, KC 872); *Yucatan North* (operator Shell, Walker Ridge 95) and *Shenandoah* (operator Anadarko, WR52).

One discovery along the route, *Coronado* (31/15) in WR98, has been abandoned. Once highly touted by Chevron (Unocal), the operator when it was discovered (122m net oil pay at TD 9,713m), it was expected to be developed in coordination with *Shenandoah*. But the *Coronado* leases were terminated by Anadarko, ConocoPhillips and Venari last November after Chevron sold out.

Chevron and Anadarko have not commented publicly. Nor has Venari, a partner when the leases were canceled. But COP in its Q3 2014

earnings call said the first *Coronado* appraisal well was disappointing.

As for the ongoing *Heidelberg* development, Technip has delivered the Finland-built spar to Anadarko, and it is at Keiwit's Ingleside TX yard undergoing mating with the 70%-complete topsides before sailout to its installation location.

Subsea installation work has commenced at the five-block project centered on GC860, and first oil is still set for sometime in 2016.

WOODSIDE CONTINUES NWS EXPANSION

From Australia (RW): Subsea 7 has won a contract from Woodside Petroleum for the *Persephone* (SEN, 31/18) development - Work Pack 2 covering fabrication, subsea installation and diving services on the North West Shelf.

The project involves two wells tied into a subsea production manifold and gas production tied in to the existing *North Rankin* complex 7km away.

Subsea 7's contract covers fabrication, transportation, installation and pre-commissioning activities, with additional decommissioning and pipeline suspension work in the *Echo/Yodel* satellite field to the *Goodwyn A* platform.

Project management and engineering will start immediately in the group's Perth office. Offshore operations using the diving construction vessel *Seven Eagle* will begin during the fourth quarter of this year.

The North West Shelf partners approved development of *Persephone* last November.

Total investment will be A\$1.2n with the field due onstream in early 2018.

A few more details on the Woodside FEED contract with Wood Group Kenny for the flowline system and procurement support for its *Greater Western Flank* (31/22) phase 2 development on the NWS.

GWF2 is the next phase of gas supply to the existing NWS project after *Persephone*. It includes six fields - *Keast*, *Dockrell*, *Sculptor*, *Rankin*, *Lady Nora* and *Pemperton*.

The new contract follows completion of the preliminary engineering of the *GWF2* rigid flowline basis of design phase.

Scope of work for the new award includes engineering and procurement support services for the 16in CRA rigid flowlines, FLETs, inline tee assemblies, mid-connection structure and tie-in spools.

The focus of the FEED is to develop the flowline system prior to final investment decision in the second half of this year.

DEEPWATER ACTIVITY HOLDS STEADY IN GOM

From Houston (BN): The deepwater rig count in the Gulf of Mexico has held steady as the onshore US count has plunged.

The Bureau of Safety & Environmental Enforcement tallied 61 drilling and workover rigs at work in deep water - anything more than 150m, by BSEE definition - versus 57 at about the same time last year.

In the Baker Hughes count, the number of land rigs at work in the United States has fallen by 21% to 1,358 in mid-February compared with last year.

Using a different methodology, BH's most recent count showed active offshore rigs up two from the previous week to 52, although that was down two from 54 last year.

Exploration and development plans approved for the GoM include BP's initial exploration plan to drill two six month wells this year at its *Bluegill* prospect. The site is in 2,057m in Keathley Canyon 745, 450km southwest of New Orleans.

Anadarko won approval for its supplemental exploration plan to drill four more 110-day wells at *Lucius* (31/22) at the rate of one a year through 2018. The wells will be drilled in

2,075m in KC874. Regulators also okayed Deep Gulf's plan for two wells at *South Santa Cruz* in 1,996m in Mississippi Canyon 563, about 245km southeast of New Orleans.

Of interest is the cancellation by Petrobras of plans for two more wells at its producing *Cascade* (SEN, 30/24) field in 2,485m in Walker Ridge 206. The company did not immediately respond to an SEN inquiry as to why these wells were axed.

PROJECT BRIEFS

Some time ago it seemed like the subsea compression scheme for Shell's **ORMEN LANGE** (SEN, 31/17) had gone dormant. An onshore compression station had moved to the top of the list as scheme with subsea pushed out to at least 2020. That would be a long wait.

So SEN was surprised to hear that it was back on the agenda, although exactly what this means remains unclear as no one at Shell in Norway is speaking.

From the North Sea (NT): RWE Dea's hopes of confirming fresh reserves at the **CROSGANA** potential subsea tieback to the *Breagh* (31/3) facilities in the UK southern basin, appear to have been stymied by appraisal drilling.

Well 42/15a-3, drilled by jackup *Ensco 70*, found the target Whitby formation much deeper and with thinner sands than expected, the company tells SEN. It has now been plugged and abandoned.

From Houston (BN): The US Bureau of Ocean Energy Management has more than quadrupled its estimate of oil and gas that could be recovered from Alaska's **CHUKCHI SEA** tracts leased in Sale 193 in 2008.

The final environmental impact statement (FEIS) comes in response to a court order arising from a lawsuit filed by Alaskan native and environmental advocacy groups. The new estimate - 4.3bnbbbls of oil and 34bcm of gas - is more than four times the original 1bnbbbl estimate that plaintiffs argued underestimated environmental impacts and that federal courts found 'arbitrary and capricious' and ordered revisited.

The new FEIS was to be published in the Federal Register followed by a 30-day public comment period. After that, BOEM will decide whether to lift a suspension of all licenses issued and affirm Sale 193.

If the sale and leases are affirmed, BOEM and the Bureau of Safety & Environmental Enforcement would still need to review specific exploration plans and drilling permits before any work could begin.

The industry is still awaiting BSEE's proposed new Arctic drilling rules. Waiting in the wings is Shell, which has said it wants to return to the Arctic this year.

Environmental advocates blasted the new feis. They have expressed concern about Shell's plans in the wake of the company's disastrous 2012 effort.

From Australia (RW): Chevron's \$54bn **GREATER GORGON** (31/13) subsea gas-to-LNG project on Barrow Island, off Western Australia, is 90% complete.

The company says that both LNG storage tanks are ready to receive product, while three of the four condensate storage tanks have also been completed. The loading jetty is virtually complete and requires only the installation of the loading arm.

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The domestic gas pipeline from Barrow Island to the mainland is now connected to the gas plant site and pre-commissioning activities have been completed.

All subsea pipelines, wellheads and associated facilities at the *Gorgon* and *Jansz-Io* fields have been completed. All 18 development wells have been drilled and completed and pre-commissioning work for the subsea facilities is underway at both fields.

All modules for Train 1 at the LNG plant are on their foundations along with 13 of the 17 modules for Train 2. The project is expected to be brought onstream in mid-2015.

From the North Sea (NT): Allseas has succumbed to pressure from critics for using the name *Pieter Schelte* (31/22) for its newbuild single-lift vessel and has renamed it **PIONEERING SPIRIT**.

'It has never been the intention to offend anybody,' the company says. 'The name of the vessel reflects what she stands for: a new technological step in platform installation and decommissioning.'

The original name drew widespread protests as Pieter Schelte, Allseas president Edward Heerema's father, was a member of the Waffen-SS during the Second World War.

Pioneering Spirit has been contracted to remove three *Brent* topsides, starting with *Delta*, but according to the draft decommissioning programme for *Delta* just issued by Shell, this is now scheduled for 2016 rather than this year.

Delek has updated the resources estimated at the **TAMAR** (31/9) deepwater gas complex, offshore Israel. Proven plus probable reserves are now put at 300bcm and 13.7mmbbls of condensate. Including possible reserves the numbers are 348bcm and 16mmbbls...CNOOC has put reserves at its **LINSHUI 17-2** deepwater gas field at 100bcm...**APACHE ENERGY** has reported that its fourth quarter 2014 North Sea production came in at just

over 80,000boe/d, up 7% from the previous year and its highest ever quarterly production in the sector.

4Subsea and DNV GL have picked up contracts for Wintershall Norge's upcoming **MARIA** (31/19) subsea tieback project.

4S is to supply subsea engineering services under a new frame agreement which covers advise on wellheads, xmas trees and well intervention. The Norwegian engineering company which is better known for its riser work also has a cooperation agreement with controls specialist Head Energy Multicontrol.

The DNV work gives it the combined role of independent verification body and third party design verification activity for the various parts of the subsea systems including hardware and SURF elements.

BG has inked a six-year global upstream engineering alliance with **KBR** covering pre-FEED, FEED and project management.

From Australia (RW): MEO Australia and Eni have decided to split their Timor Sea permit between them.

MEO will withdraw from the **BLACKWOOD** (29/22) gas discovery in the permit with no cost penalty by transferring its interest to Eni.

MEO now believes reserves are not large enough to support development at its proposed **TASSIE SHOAL** (29/17) LNG-methanol plant in shallow water off the Northern Territory coast.

ENI will transfer its 50% interest in the remainder of the permit to MEO. The Italian major has agreed to take responsibility for managing the future division of the permit to enable separate ownership of *Blackwood* and the nearby *Heron* gas find in the same permit. It will also bear the costs of the process.

MEO will now take 100% of *Heron* and focus its efforts in that field. The company is also seeking interest from various parties for a farm-in to the *Tassie Shoal* project.

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From the North Sea (NT): It's medals all round for the foreign partners and contractors who helped drill the **UNIVERSITETSKAYA-1** (31/14) discovery find for Rosneft in the Kara Sea last year.

Among those to be decorated with Russia's Order of Friendship are Seadrill chairman John Fredriksen, whose North Atlantic Drilling subsidiary supplied the *West Alpha* rig and his right-hand man Tor Olav Trøim (or former pal as the two are reported to have had a serious falling out), although they were, of course, never anywhere near the Kara Sea.

The more hands-on folk from contractors Halliburton and Schlumberger and partner ExxonMobil have also received the distinction, according to Russian press sources. With reserves of 965mmbbl and 392bcm of gas, the discovery, now named *Pobeda*, was the world's largest in 2014.

From Australia (RW): Karoon Gas Australia's **KANGAROO-2** (31/20) appraisal well in the Santos Basin offshore Brazil has confirmed a 250m gross oil column in Paleocene and Maastrichtian reservoirs.

The company has completed a successful multi-formation production test programme in the *Kangaroo-2* vertical well and in down-dip and up-dip side track wells. The initial discovery was made in November 2014.

Well data indicates a number of separate accumulations and there is no significant gas cap. Tests indicate commercial flow rates are achievable from the field. Karoon intends to move to a separate structure in the same play type at *Kangaroo West* this month.

Karoon operates (65%) for Pacific Rubiales Energy Corp (35%).

From the North Sea (NT): Lundin has made a small gas discovery with the **ZULU** exploration well 26/10-1. Situated 30km northeast of *Johan Sverdrup*, this was a prospect which the Swedish company had high hopes for.

This wildcatg was targeting oil reserves around 153mmboe at *Zulu*, but instead found gas. It doesn't bother to say how much, but the NPD gives 1.5-4bcm (25mmboe at most). *Zulu* was drilled by the semi *Island Innovator* in 140m.

From Australia (RW): Tap Oil has become the second potential partner to withdraw from WHL Energy's offshore Otway Basin permit.

Tap this week has declined the option of a 10% interest in the permit which contains the **LA BELLA** (31/20) gas discovery and a number of other leads and prospects. AWE also withdrew from the permit in December last year.

Tap was to acquire the interest by paying up to \$A3.85mn of the year two seismic costs in the block. The company has since decided to focus on its *Manora* (31/8) oil development, offshore Thailand.

WHL now reverts to 100% interest in Vic/P67 and is still keen to attract a farm-in to join a development of the gas resources.

Providence Resources has snapped up Chrysaor E&P Ireland in a move which boosts its shareholding in the **SPANISH POINT** prospect in FEL 2/04, offshore Eire, to 58%.

Providence now also holds 58% in FEL 4/08 and 43% in FEL 1/14. The licences, all located within Quadrant 35 in the northern Porcupine Basin, west of Eire, are operated by Cairn Energy (38%).

An appraisal well on *Spanish Point* is planned to be drilled later this summer.

Providence has also reached agreement to farm out a portion of its *Barryroe* asset, also offshore Ireland to an un-named company.

Sterling Energy has been given the nod by the government of **MADAGASCAR** to extend the offshore Ampasindava and Ambilobe PSCs to July 2016.

Sterling and partner Pura Vida are continuing with planning of the 3D seismic programme on *Ambilobe*, which due to begin next month.



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FLOATER NEWS

***SUNRISE* FUTURE REMAINS UNCERTAIN**

From Australia (RW): There has been renewed uncertainty over the development of the Woodside Petroleum-operated *Greater Sunrise* (SEN, 30/3) gas field in the Timor Sea following new East Timorese legislation passed last week.

This came in the wake of the resignation of East Timor's Prime Minister Xanana Gusmao.

There was hope that the leadership change would lead to a diplomatic breakthrough, but the new law established a maritime council with the intent of settling permanent boundaries with Australia in the area now known as the Joint Petroleum Development Area or 'Timor Gap'.

A government spokesman said East Timor considered the current Certain Maritime Arrangements in the Timor Sea accord (CMATS treaty) which covers the *Sunrise* area to be invalid. The treaty put aside the maritime boundary issue for 50 years, but the statement throws everything up in the air.

Under the CMATS accord, Australia and East Timor have equal shares in royalties from the 140bcm in the *Sunrise* fields. Setting a permanent boundary could shift the resource entirely into East Timorese waters depending on where it was set, for example along a median line that is common in maritime boundaries elsewhere.

East Timor has been adamant that *Sunrise* gas be developed through an onshore plant on its southern coast, while the Woodside group favours floating LNG at the field.

Much will hinge on the new Prime Minister. There is speculation that the opposition FRETILIN party could lead a unity government that could be more amenable to discussion on *Sunrise* and the prospect of a compromise in the national interest.

There is a growing realisation within East Timor that the country could run out of oil and money if it continues a hard line approach on the *Sunrise* development question.

SIX DEAD IN BRAZILIAN FPSO ACCIDENT

From Houston (BN): At least six workers have died in an explosion aboard the BW Offshore-operated fpos *Cidade de Sao Mateus*, 80km offshore of Vitoria in Espirito Santo state.

The ensuing fire was quickly controlled, the vessel stabilized and production safely shut down. There was no spill. Efforts continued to find three personnel still missing as of yesterday (Wednesday). Search and rescue efforts were hampered by persistent accumulations of gas on board.

Gas leak alarms sounded in the pump room prior to the blast, but the cause awaits further investigation. Reports indicated 26 personnel were hurt, seven seriously enough to be hospitalised. Five remained in hospital at midday Wednesday.

Petrobras said the unit had been in operation since 2009 producing post-salt *Camarupim*

(Petrobras 100%) and *Camarupim Norte* (Petrobras 75%, Eouro Preto Energia 25%) reservoirs in the Espirito Santo Basin.

Production at the time of the accident was about 2.2mcm/d and 2,000b/d, well below the fpos's capacity. The ANP board earlier this month had asked operators by January 2016 to 'introduce studies for the reduction of idle capacity' at the fpos, including possible connection of wells in the *Golfinho* field to boost throughput. Sources said it is unlikely that the request contributed to the accident.

Also from Brazil, Petrobras reported a slight drop in January domestic oil and gas production, to 2.661mboe/d compared with 2.675mboe/d in December with a contribution of 669,000b/d from the pre-salt.

Petrobras attributed the slight drop in January production to shutdown of fpos *Marlim Sul* in the Campos Basin and completion of an

extended well test in *Berbigao* field in the Santos Basin by the fpso *Dynamic Producer*.

On the plus side, new wells were started up on fpso *Mangaratiba* in *Lula* field and on platforms P-52 and P-62 in Roncador.

There was also the successful completion of drilling and tests of an extension well in the northwest portion of the *Libra* (SEN, 31/21) block in the Santos Basin pre-salt.

The well, 4km southeast of the discovery well, 300km southeast of Rio de Janeiro, confirmed a net 290m column of high quality reservoirs. The *Libra* consortium includes Petrobras (operator, 40%), Total (20), Shell (20), CNPC (10), CNOOC (10). The state-owned pre-salt oil company, PPSA, also is involved.

Finally the Petrobras board named a new boss, Aldemir Bendine, former ceo of the

Bando do Brasil to replace Maria das Gracas Silva Foster, who resigned (SEN, 31/22) in the wake of the bribery and kickback scandal that has plagued the company for months.

The board also appointed a new CFO and investor relations officer and four new interim executive directors to head the upstream, downstream subsea engineering, and gas and power divisions.

From the editor: The troubles at Petrobras are spilling over, as one would expect, into the supply sector.

Seadrill has had to write out over \$1bn in backlog as a result of a delay in the signing of two deepwater rig extensions. The good news for the drilling contractor is that contracts for two deepwater drillships which will operate at *Libra* have been signed with work there due to begin in the next few months.

DRILLING AND PIPELAY MOVE *ICHTHYS* ON

From Australia (NT): The Inpex group has begun development drilling at the *Ichthys* (SEN, 31/22) gas/condensate field in the Browse Basin, 200km offshore northwest Western Australia.

The first well was spudded by the semi *Ensco 5006* early this month. Another 19 wells are planned for the Brewster Formation reservoir. The wells will be directionally drilled to 4,000-4,500m submudline, grouped around five drill centres of four to six wells.

The Ensco rig will be joined by a second semi *Jack Bates*, later in the programme. Both rigs will be supplied and air serviced from Inpex's offshore logistics base in Broome WA.

In other project news, the deepwater pipelay for the 889km gas export line to Darwin has also begun. Saipem's installation vessel *Castorone* will lay the 718km section to connect with the 164km shallow water section of pipe laid into Darwin harbour and the LNG plant at Blayden Point last year by Saipem's *Semac-1* semi-submersible barge. Saipem expects to complete the pipeline late this year.

The *Ichthys* gas floater-to-LNG project will produce 8.4mt/a of LNG from two trains along with 1.6mt/a of LPG and 100,000b/d of condensate. Reserves are estimated to be 340bcm and 500mmbbls of condensate. The project is due onstream next year.

FLOATER-VESSEL BRIEFS

Shell in the UK has long been mulling the redevelopment of its **PENGUINS** (SEN, 31/17) field which is currently a subsea tieback into the *Brent* complex. With its host facility due to be abandoned before the reserves run out, a new plan is required. An fpso has been the preferred option and SEN heard that it is having a long hard look at a Sevan circular unit, although the price tag may make such a development a bit marginal.

From Australia (RW): A conceptual study has found that Cott Oil & Gas Ltd's plan to use a floating LNG vessel for the **PANDORA** (31/16) gas field in the Gulf of Papua is technically and commercially viable.

The study by Wison Offshore & Marine evaluated the FLNG option as well as a nearshore LNG solution and found the former was more attractive. Cott said FLNG was

becoming more sophisticated in technology and in reduction of cost, making it viable for gas fields that cannot be developed by more conventional means.

The company added that PNG is a growing LNG hub for Asia and *Pandora* will supply this market. Vessel owners and infrastructure partners have expressed interest in a 'build-own-operate' model for gas developments.

Pandora has an estimated 23bcm in gas resources. The reservoir is a buried reef structure located midway between Port Moresby and Daru in the PNG sector of the Papuan Gulf. Water depth is 120m.

The field was discovered in 1988 by International Petroleum Corp, but H₂S in the gas and the uncertain gas market precluded development at that time.

The full development of Eni's **15/06** (31/21) in Angola is several years away - *West Hub* is onstream, but *East Hub* is not due in production until next year - but the Italian operator is taking a long view of recovery on the field. SEN understands that it is looking at a retrofit seabed pumping scheme which suggests it is in talks with OneSubsea - who else is there?

From Australia (RW): ABB has been awarded a contract to supply the electrical system for Petronas' second floating LNG vessel.

Although just announced, Japanese contractor JGC Corp awarded the \$50mn contract Q4 last year. JGC is a member of the construction consortium for **PFLNG2** (31/19) which is being built at Samsung in South Korea.

ABB will design, manufacture and supply transformers, switchboards, moto-control centres and the power management system. The company will also manage the installation of the equipment and integration with the systems it is powering.

The machinery and controls will be stored in two electrical modules with a height equivalent to a five-story building. The pre-

fabricated steel enclosures will keep the equipment isolated from the corrosive marine environment and hazardous gas.

PFLNG2 will be moored over the deep water *Rotan* gas field off the Malaysian coast. The field will be brought onstream in 2018. The vessel will produce 1.5mt/a of LNG for at least 20 years before drydocking for inspection.

Sevan Marine offshoot Kanfa has won a \$50mn EPC contract for four process modules for the *Yinson Production* fpso which will be deployed at the Eni-operated **OFFSHORE CAPE THREE POINTS** (31/22) project off Ghana. Fabrication is expected to take 15 months.


The fpso will be based on the conversion of the *Yinson Genesis*, a recently acquired vlcc. It will have oil processing capacity of 58,000b/d, gas injection capacity of 4.2mcm/d and a maximum future gas-export capacity of 6mcm/d with storage capacity of 1.7mmbbl.

The fpso, with a total topsides weight of almost 15,000t, will be spread-moored in around 1,000m.

Total's \$15bn **EGINA** (31/20) deepwater fpso development in Nigeria will result in over \$1bn being spent in developing the local content capability in the country, according to the Nigerian Content Development Board...Hyundai has handed over the 64,000t **GOLIAT** (31/16) cylindrical fpso, the largest of type built to date, to operator Eni Norge for tow to Norway...The first of Logitel's Sevan-designed cylindrical **FLOATING ACCOMMODATION UNITS** has been delivered by Cosco to Teekay Offshore.

Two of the industry's main fpso contractors are taking a somewhat different view of the market while reporting their annual results.


BW OFFSHORE reported EBITDA up 17% to \$520mn in 2014, although this was somewhat skewed by a one-off payment by Murphy to cover the early termination of its contract for the fdpsos *Azurite* which was working on the eponymous field in the Congo.



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It said that it saw the short-term market for leased production ships as 'currently uncertain' - a pretty honest assessment - although it still saw 'outsourcing of production' to be cost effective for operators.

More optimistic is **TEEKAY OFFSHORE PARTNERS** even though it saw 'distributable cashflow' - it is a different sort of corporate beast so it has alternative reporting and targets - down \$7mn to \$50mn in Q4. With several new Brazilians contracts in hand - for Petrobras *Libra* (31/21) and QGEP *Atlanta* (31/19), it sees the long term deepwater fundamentals as 'strong'.

Meanwhile, the biggest floater player **SBM OFFSHORE** had a year that can best be

described as patchy. While consolidated net income rose substantially - nearly tripling to \$652mn - income attributable to shareholders fell 7% to \$349mn, order intake fell by nearly two-thirds from 2013 to \$3.1bn and net debt rose 40% to \$4.775bn.

Royal Boskalis Westminster subsidiary Dockwise has taken possession of a new semi heavy transport vessel **WHITE MARLIN** which will be used to transport drilling units...DeepOcean is to provide Tullow with a multi-purpose construction vessel **REM FORZA** to provide inspection, survey and construction services in Ghana...Huisman will manufacture and install 400t knuckle boom cranes to **MAERSK SUPPLY SERVICE** for its two new subsea support vessels (31/11).

CONFERENCE REPORT: SUBSEA EXPO

SUBSEA EXPO: WHO WILL WEATHER THE STORM?

From Subsea Expo, Aberdeen: It must be the season of multi-syllabic panaceas as the words heard most often here last week were collaboration, cooperation, innovation, simplification, standardisation, et al.

Lots of nice encouraging words about working together, finding ways to reduce costs, getting new technology into the market, while under the surface there were people quaking in their boots worrying about how exactly the current slowdown will pan out.

Companies could be divided into two groups - those with thick orderbooks who expect to weather 2015, but worry about next year and those who are already thinning out their workforce and cutting back on everything from paperclips to coffee in the canteen.

Operators and contractors alike are looking at every and all possibilities for ways to reduce costs, but the answers, apparently, are right in front of them.

Phil Simons of Subsea 7 spoke about partnership, at least one multi-syllable word that has some meaning. Its *DSVi* arrangement in which it provides services to six different operators covering 40 fields offers a possible model for companies looking to make savings on opex and maintenance.

From Mark Richardson of Apache who has been stirring the pot on various issues for years comes another - a project team of five.

That is what his company did on *Bacchus* (SEN, 31/10) and *Aviat* (31/16), the latter where shallow gas, normally viewed as a hazard, is being exploited as a subsea development to fuel the *Forties* complex and he wondered why other companies can not do similar. Or why *Bacchus* could be developed subsea at a cost of \$22mn/well slot, a figure much lower than most North Sea operators.

When times are hard, wordage becomes more interesting. Neil McCulloch of EnQuest, another lean medium-sized company, spoke about 'margin compression', a neat term for little left in the cupboard.

It would have been impossible for technology to stick its head above the parapet and Chevron's Peter Blake who now also wears the lofty mantle as chairman of National Subsea Research Initiative (31/6) did so, only to reveal a major shortcoming of research here.

NSRI has joined a crowded room of organisations - ie ITF, OGIC, TLB, OGUK - who are all trying to influence and/or nab funds to back research. Fewer agencies and more focus is what is really required.

Blake asked the question - 'can NSRI make a difference?' Its programme of trying to meet industrial needs centred around five subsea technology action groups might find a focus, but it looks like the Technology Leadership Board which is looking at finding new technology to assist in the 'exploitation of small pools' might have found the target.

The question remains - is there a need for more technology or really a need for corporate will to deploy what already exists?

Keep calm...

The UK subsea sector is facing tough times ahead over the next couple of years, but it will weather the storm if it embraces innovation and new technology.

'Don't panic' was the message for delegates from Neil Gordon, the chief executive of Subsea UK. He said the operating landscape had been changed dramatically over the past few months and that there is now a need to drive efficiency through innovation and technology.

'This industry does go through cycles of highs and lows. We have been here before. We don't have to panic. This is a long term industry based over decades of investment,' he said.

He said the UK's subsea sector, which generates annual revenues of US \$13.7 billion, came out of a strong 2013 to a relatively flat second half of 2014, which has continued into 2015.

'The existing order book kept the industry going but as this dries up and projects are abandoned or postponed until the oil price recovers, we are in for major challenges.'

The situation also presents opportunities for the subsea sector, however, and delegates were told 'not to waste a good crisis.' Gordon said that there needs to be a cultural change in how projects are approached with more cooperation and collaboration.

The oil price decline is beginning to bite and offshore activity will remain 'moderate' in 2015 and 2016 with operations in frontier areas such as the Arctic and East Africa likely to be delayed, according to Infield Systems research analyst Kieran O'Brien.

In the Gulf of Mexico, peak shallow water activity is expected around 2016, while FIDs on deepwater developments will be further delayed. Deepwater activity is expected to recover from 2017-2020.

Global subsea tree orders are expected to fall 30% to 2,227 from 2015-2019, down from Infield's earlier forecast of 3,142. Spending on subsea trees is likely to pick up in 2018, however, with high levels of ultra-deepwater tree orders expected.

Activity in West Africa will remain robust and deepwater development will be strong in Angola, Ghana and Nigeria. More than a dozen deepwater developments are expected to come onstream in West Africa in the next five years with recoverable reserves of more than 6bnbbbls of oil, Fawaz Martini of Petrologica said.

Projects coming

These include, in 2015, Chevron *Lianzi* (30/4) in the Congo (46,000b/d); Tullow *Jubilee* phase 2 (31/6) in Ghana (40,000b/d); and ExxonMobil *Kizomba* (31/17) satellites phase 2 in Angola (125,000b/d); and in 2016 Tullow *TEN* (31/15) in Ghana (80,000b/d); Total *Moho Nord Marine* (30/23) in the Congo (140,000b/d); Eni *15/06 East Hub* (31/20) in Angola (80,000b/d); and Total *Egina* (31/20) in Nigeria (200,000b/d).

Following are Total *Kaombo* (31/16) in Angola (200,000b/d), Eni *Etan* in Nigeria (85,000b/d) and *OCTP* (31/22) in Ghana (80,000b/d) are due onstream in 2017. Maersk *Chissonga* (31/8) in Angola (100,000b/d) is due for start-up in 2018, Eni *Zabazaba* in Nigeria (40,000b/d) in 2019 and Shell *Bonga SW* (31/10) in Nigeria (225,000b/d) in 2020.

New boys in town

Sue Whitbread of UKTI said developments in Nigeria would be driven by the appearance of new, energetic, independent oil companies including Seplat, Afren, Oando, Sahara, Frontier, Tenoil, and Energia.

'These companies might not be familiar to you but you are talking about progressive, enthusiastic, small and very expert independent oil companies which are going to make a huge difference to the way Nigeria runs its industry,' she said.

They are currently focussing onshore, in swamp regions and in shallow water, but they are also acquiring deepwater assets which will require expertise, hopefully from the UK, to help develop.

'Some of the technology from the subsea sector could influence the way they handle those portfolios. Now is the time to get amongst all that and see if we can shape

some of the decision making,' the UKTI official encouraged the audience.

Proserv was named 'subsea company of the year' at the Subsea UK awards dinner...The team behind DES and the MARS connector - led by Ian McDonald and Tom Bryce - has reformed under the **Enpro Subsea** moniker with a new flow access system which does not need direct connection to a xmas tree.

TECHNOLOGY BRIEFS

Engineers at Denmark's Ramboll Oil & Gas have developed a new **SEABED CUTTING** technique for pipeline burial based on steel wire and described as similar to cheese cutting. The system for which a patent is pending is being as particularly applicable in Arctic conditions where deep burial to avoid icebergs is seen as essential.

Aquaterra Energy's recently launched **RISER MONITORING SYSTEM** has been developed to prevent risers from being used beyond their expected fatigue life. It combines direct strain measurement, subsea data logging and riser analysis.

DNV GL is leading a joint industry study to develop design guidelines for **CONCRETE COATING OF PIPELINES**. Members of the

JIP includes Petrobras, Saipem, Bredero Shaw, SVAP and Wasco Coatings.

While on pipelines, The Welding Institute and Swagelining have joined with Saudi Aramco in a JIP on the use of polymer lined pipes for **SOUR SERVICE**. The two phase study will both test sections of lined pipe to determine corrosion rate, while testing for liner collapse plus study the flow regime.

Aker Solutions has completed development and fabrication of a subsea containment assembly (sca), part of **SUBSEA CAPPING SYSTEM**, which will be delivered to the Marine Well Containment Corp which will own the system for use in the Gulf of Mexico. The 15Kpsi 170t sca is a series of adapters and connectors for directly flow from a well.

POLICY

UK SECTOR FACES STRIKE ACTION

From Aberdeen (IF): The UK North Sea could be hit by strike action by thousands of workers. Unions representing employees of contractors are unhappy about unilateral cuts to their members pay and conditions following the collapse in the oil price.

Workers are now expected to be balloted on whether to take industrial action after unions had unsuccessful talks last week with the Offshore Contractors Association.

A strike could involve around 2,500 people employed in mechanical, electrical and allied services, construction, modifications and maintenance, design and project engineering, fabrication and decommissioning.

John Kelly, GMB Scotland regional officer, claimed there was 'blatant opportunism' by oil companies and contractors in seeking to attack the terms and conditions of union members employed in the offshore industry.

'There are also major concerns over the proposed changes to shift rotas and the health and safety implications that could follow from a major change. GMB believes that any changes to rotas could have a serious impact on the safety of those working offshore and we urge the companies to rethink the proposals,' he added.

Workers are particularly unhappy about changes to offshore shift patterns from two

weeks on-three weeks off to three weeks on-three weeks off.

Unite industrial officer Tommy Campbell said the downturn in the oil price had seen his members terms and conditions under attack like never before.

'What we want is for the OCA to work with us to preserve jobs, skills and sustain offshore safety rather than impose these opportunistic, unsustainable and unworkable changes to livelihoods,' he added.

'Oil prices will recover but knee-jerk cuts to jobs and standards will only undermine the

future prosperity and safety of the industry in the long term.'

The OCA has dismissed the possible strike threat as 'premature'. Bill Murray, chief executive for the OCA, said the North Sea was going through a challenging time and savings were needed until the oil price and activity picked up again.

He said the need for productivity enhancements and efficient working was highlighted to union negotiators in talks in December. Murray added that these talks are ongoing and further meetings between OCA, Unite and GMB are scheduled for next week.

BUSINESS

INDUSTRY CONTINUES TO CUT STAFF AND SPENDING

From Aberdeen (IF): Drilling and engineering contractor KCA Deutag is the latest North Sea player to announce cuts to its workforce.

The Aberdeen-based group is planning to axe up to 500 jobs worldwide - nearly half in the UK - plus reduce salaries by 5%. KCA-D said it became clear in the second half of 2014 that the declining oil price would have an impact as companies reviewed their cost base.

To prepare for this, a management team carried out a review. The UK jobs due to go include 30 onshore support positions in Aberdeen plus 200 offshore in the North Sea as clients pause drilling operations. KCA Deutag currently employs more than 9,000 staff worldwide.

The firm is stressing its commitment to Aberdeen with plans to relocate its two offices in the Altens area to one site at the City South Office Park in 2016.

Belt-tightening is also continuing at other companies with North Sea interests.

Centrica expects exploration and production capex to fall to around £800mn in 2015 and to approximately £650mn in 2016, around 40% lower than 2014 levels.

It is also to maintain a tight control on production costs, examining all internal and

external supply costs for its operated fields and working with partners to reduce costs where it is not the operator.

The company is also targeting a 10% - or £100mn - reduction in its 2016 lifting and other opex costs compared to 2014 levels.

Energy services group Hunting said most of its businesses expect the full impact of the lower price environment to be felt from the second quarter of this year.

The group said that, given its range of products and services and geographic diversity, it is possible that some businesses will report growth in the year ahead, while others will be affected by the wider sector downturn. Its well completion and construction businesses are expected to be most affected whilst the impact on well intervention will be to a lesser extent.

The company said its businesses which are most impacted by the lower levels of activity anticipated have begun staff reductions as and where necessary. But no details were given on the number of job losses or where they would be in the world.

Meanwhile, according to a new PwC report, the UK oil industry would have been in a much better place to weather the oil price maelstrom had it heeded 30-40% cost reduction warnings 12-18 months ago.

It also states that those who think that there is little point locking the stable door after the horse has bolted - or who have simply reacted with cost cuts - should think again.

PwC energy specialists believe that there is still time to learn the harsh lessons of past languor, taking steps now to deploy a fresh

strategy that will help secure the future of the UK Continental Shelf.

However, to do this effectively, businesses need to get away from the short term 'kneejerk' reactions it has applied in previous downturns - or risk damaging the long-term future of the industry.

BUSINESS BRIEFS

The demise of **REEF SUBSEA** (SEN, 31/22) has hit hard. Members of the current and former management team have taken personal financial hits, but a big loser is Norwegian shipowner GC Rieber.

Rieber which was mistakenly referred to as German in the last issue never actually got its money when it sold its stake in Reef to one of HiTec Vision's investment companies. Who was its financial adviser?

Chinese transport company CSR Times Electric has acquired Tyneside roving and trencher builder **SMD** in a deal valued at just over £100mn. CSR reportedly was looking to get into the offshore market.

JFD, the merged entity created by James Fisher Defence and Divex, has acquired the **NATIONAL HYPERBARIC CENTRE** in Aberdeen. No figure was put on the deal. NHC has had a string of owners since first established in 1987.

From Houston (BN): The 10% headcount reduction at **FMC TECHNOLOGIES** will spare subsea manufacturing and be felt most strongly in providing equipment for North American onshore shale projects, chairman-ceo John Grempe made clear to investors in a recent earnings call.

The reason: The company is busy filling a 'very secure' \$6bn backlog in equipment orders for subsea developments and expects any slowdown due to the collapse in world oil prices to develop much more slowly in deepwater offshore.

Still, Grempe said FMC does not expect 2015 subsea orders to be as strong as 2014.

'Although subsea projects are proceeding, including awards we received in the fourth

quarter, most operators are reassessing their project portfolios, looking for ways to achieve significant cost reductions,' he said.

FMC is helping companies re-evaluate projects, proposing alternative approaches, early acceptance of new technologies and different business models that reduce the cost of development, Grempe told investors.

He also reiterated a theme from previous comments - the need for standardisation of equipment, collaboration among operators and earlier involvement of equipment manufacturers in planning as rising project capital expenditure was an issue before the oil price fall.

'There's a recognition that something has to change. This can't be incremental. We can't just roll up our sleeves and work harder and shave things around the edge. We've got to do something substantially different if we're going to expect a significant change in the development cost,' Grempe said.

While on layoffs, SEN heard that 120-130 bodies are to go from the subsea processing team at **ONESUBSEA**'s Bergen centre, although a few folk have gone from elsewhere and there is due to be a redeployment with some people in Houston being sent back to the base in Norway.

Despite being hit by a \$1.64bn loss in 2014 on the back of lower oil prices and exploration writeoffs of \$1.7bn, **TULLOW OIL** ceo Aidan Heavey is looking on the bright side.

'The *TEN* project in Ghana, which remains on track, will increase our net West Africa oil production to over 100,000boe/d by the end of 2016 generating substantial cash flows and placing Tullow in a strong position when the sector recovers,' he said.

TEN Tullow's second major project offshore Ghana following Jubilee, is now over 50% complete and remains within budget and on track to deliver first oil in mid-2016.

The \$4.9bn development includes the drilling and completion of up to 24 development wells which will be connected to an fpso.

Development drilling began in 2014 and all 10 of the wells expected to be on stream at start-up have now been drilled with completion operations to start in Q1 2015.

The conversion of the *Centennial Jewel* tanker into the *TEN* production ship is on schedule at the Jurong Shipyard in Singapore.

Tullow's 2015 capex is forecast at \$1.9bn, including a reduced exploration and appraisal budget of \$200mn. The company expects to pump 63,000-68,000b/d from its West African operations in 2015. *Jubilee* gross production is forecast to average 100,000b/d in 2015.

More Results: It seems as if **AKER SOLUTIONS** managed to keep its head well above water in 2014 ahead of what looks likely to be a dim 2015. Revenue was up 21% and its backlog is up 17% to NOK48.3bn.

TECHNIP can boast an order book of nearly €21bn based on new order intake of €15bn in

2014. Its margin for subsea projects was 13% from revenue of €1.29bn, up 34% from the same period last year.

It was another good year for **OCEANEERING** with revenue up nearly 10% to \$3.66bn, although activity slowed in Q4 compared with the same period in 2013.

It was a tough Q4 for **HELIX ENERGY SOLUTIONS** as income sank 36% to \$207mn compared with Q3 and net income plummeted nearly 90% to just under \$8mn, even though for the year revenue was up 26% to \$1.1bn.

There were problems with well intervention vessels and contracts in the quarter, even though the company reported record annual income in both well intervention and robotics.

Royal IHC and Tompkins UK - Modus Seabed Intervention - have formed a joint company **TI GEOSCIENCES** to get into the deepwater geotechnical market...The European Commission is taking a closer look at Siemens' proposed takeover of **DRESSER-RAND** (31/13)...**GE OIL & GAS** has completed the £13.5mn investment in its Montrose facility, south of Aberdeen, which involves heat treatment facilities and cladding workshop...Chemicals giant **BASF** and grouting specialist **FOUND OCEAN** are to offer a new supply and service operation based on the former's new high strength grout.

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