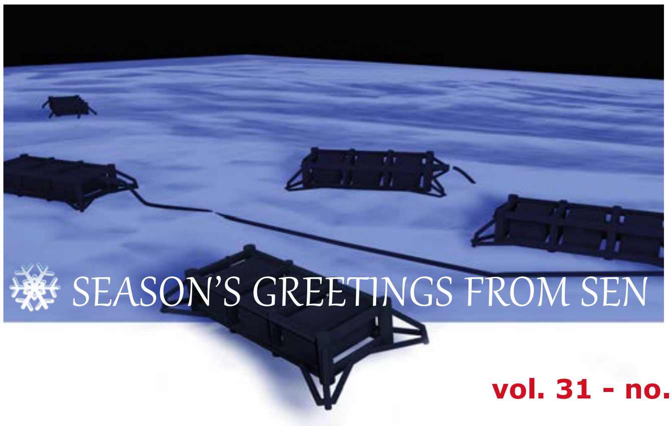

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HARTENERGY

SEN

SUBSEA ENGINEERING NEWS

CHEAPER BY THE DOZEN: *THAMES* COMPLEX ON THE WAY OUT

From the North Sea (NT): Perenco and Tullow Oil have launched decommissioning plans for the *Thames* field and its associated satellites in the UK southern basin, which add up to the largest such project in the sector to date in terms of the number of fields involved.

In addition to the satellites in the so-called *Thames* complex - *Bure Oscar*, *Bure West*, *Thurne*, *Wensum* and *Yare* – there are six longer distance tiebacks - *Arthur*, *Gawain*, *Horne*, *Orwell*, *Wissey* and *Wren*, making a total of 12 fields.

Thames was developed with three small platforms. While *Wensum* was drilled from the field centre and *Horne* and *Wren* were jointly produced from a wellhead platform, the other satellites are all subsea tiebacks, in *Wissey*'s case to the *Horne/Wren* platform.

The long and short of it

The closest tieback to *Thames* is *Thurne* (4.6km) and the furthest *Arthur* (29km). From *Thames*, gas was exported to Bacton by a 90km, 24in pipeline.

Arthur, *Gawain* and *Orwell* have three wells each and the other satellites one each. *Thames* has five platform wells, including two water disposal wells, as well as one subsea well located beneath one of the platforms.

The platforms and subsea production equipment - xmas trees, manifolds, templates, protection structures - will be removed, while the operators recommend that the pipelines and umbilicals, which are trenched and buried, be left in place. Due to the strong seabed currents in the area, drill cuttings have long been dispersed.

Work on some of the fields begins straight away and all the programmes are due to be completed by 2018. Rigless plugging and abandonment of the *Thames* platform wells is scheduled to be completed by Q1 next year.

The cost of decommissioning this extensive network of fields has been put at £221.5mn. The *Thames* complex is put at £96.1mn with platform

WHAT'S INSIDE

removal accounting for £43mn and the well p&a £40m. Elsewhere the well p&a is easily the major item, accounting for £33mn out of a total bill of £44.1mn on *Arthur*, £25mn of £31.8mn on *Gawain* and £14mn of £19.5mn on *Orwell*. Another £30mn has been estimated for *Horne/Wren* (£21.5mn) and *Wissey* (£8.5mn).

Thames was brought onstream in 1986 by Arco. The final tieback was *Thurne* in 2008, which employed a refurbished subsea tree from the abandoned *Deben* field. The official cessation of production took place in May this year, although some of the fields had already been shut in for a period - *Orwell*, for example, since 2009.

Thames, *Arthur*, *Bure* fields, *Gawain*, *Wensum* and *Yare* are operated by Perenco and the others by Tullow, which is still seeking to offload most of its Southern Basin assets.

OIL PRICE CRASH

PRESENT AND FUTURE: OIL PRICE CRASH AND ITS EFFECTS

The current oil price tumble has sent consultants and analysts polishing their crystal balls to provide us with their considered views on current events and what they think might happen in the foreseeable future.

As in the past, operating companies and suppliers have burst into a frenzy of job cuts, relieving themselves of all of the 'fat' in their workforce - some contractors and some permanent staff.

Of course, there will not be an upturn. Why not dump experienced staff. What about the pre-crash mantra 'training, training, training'?

Does anyone really not believe that the price of oil will not be back closer toe $100/bbl within five years? Taking bets now.

What does seem the prevailing view is that OPEC, aka Saudi Arabia, is prepared to keep pumping oil at current rates to push the price of oil even lower to put pressure on shale production, notably in the USA.

While shale oil production has contributed to the current supply glut, no one really knows how long this will continue. The simplistic view that onshore is cheap and easy and deepwater is difficult and expensive does not quite take all issues into account.

Several commentators have taken note of the true complexity of the shale business. Douglas-Westwood, in its weekly missive, noted the continuous investment necessary to keep the oil flowing and well productivity decline of up to 60% per year.

This compares with the target cost of an offshore project which will have a baseline capex and well productivity that should reflect the costs.

Different view

Gaffney Cline & Associates also perceived that the oil price affects onshore and offshore developments in different ways.

The economics of a so-called deepwater 'mega-project', ie $1bn+, is not based on today's oil price - although this is part of any consideration - but some forecast of the price in five year's time. Shale developments, on the other hand, are much shorter to first oil and need to be aware of near-term price.

This means that some of the costly GoM projects could still go-ahead now, while short term projects might get pulled.

Even before the price crash, one could hardly move without hearing about initiatives to bring down the cost of development.

PwC is suggesting that the industry could save £15bn in development costs over the next five years if it took a more collaborative approach to developments.

Some of its commentary seems a bit old hat, having been said many times before, but that, of course, does not make it less valid. It mentions continuous 'over-spending' on projects - it uses the 40% issue; 'short-term' view on staffing; failing to learn from earlier projects; 'gold plating' when a simpler approach will do; etc.

And, just to keep to another old view, take a closer look at opex. It seems remarkable, but the industry continues to talk about 'life cycle' costs, but project teams continue to hardly look beyond 'first oil'. Whatever happens after that is someone else's problem.

UK WORKFORCE: DOWN, BUT NEWER AND YOUNGER

From Aberdeen (IF): The current gloom surrounding the UK oil and gas industry continues, with a new report forecasting a near-10% drop in workforce numbers before the end of the decade.

The workforce study produced by professional services firm EY reveals the positive news that around 12,000 new entrants are expected to join the industry over the next five years, but also estimates that the overall workforce will shrink by 9% to 340,000 in this period.

Taking into account the inflow of new entrants, this means 47,000 current employees will be gone by 2019.

This forecast has cast a fresh chill over Aberdeen, which is already beginning to feel the impact of belt-tightening at both operators and service firms due to the low oil price and soaring costs. Among the latest to make cuts is ConocoPhillips, which confirmed last week that around 230 posts are going from its UK operations following a review.

EY says the loss of jobs in the next few years will be driven primarily by a significant decline forecast in UK capital expenditure. It does say, though, that this could be partly offset by increased spending on decommissioning and more expansion into overseas markets.

Industry watchers have also been left puzzled at the 375,000 figure given for the current size of the UK workforce dependent on the oil and gas industry. For years, the widely reported figure was has been around 450,000, but 75,000 posts appear to have vanished in a single stroke.

Offshore trade association Oil & Gas UK (OGUK), one of the bodies who commissioned the study, was asked by SEN to explain the reason for this. It said EY had used a different methodology from OGUK to calculate the workforce data in its report.

'The EY approach includes only the companies which have more than 50% of their revenue generated from the...sector,' OGUK economics director Mike Tholen explained. He added that OGUK is planning to look at an update of overall employment figures in 2015.

Meanwhile, the EY report dispels once and for all the popular 'ageing workforce' myth. The offshore industry has a lower proportion of over-55s at just over 10%, compared to a national average of 32%. In addition, the proportion of those aged 35 and below represents about 40% of the workforce compared to a national average of 31%.

Another upbeat finding is that the sector is making successful efforts to build a sustainable pool of talent for the future.

More than 85% of companies have programmes in place for graduates and/or apprentices and the sector supports 6,000 graduates and 13,000 apprentices.

The report also notes the offshore industry employs one in 80 of the UK workforce, with the average annual salary of £64,000.

Over two-thirds of companies are having difficulties in recruiting. The shortage is said to be less pronounced than 12-18 months ago and is limited to specific areas including technical safety, drilling, engineering, geosciences and business support services, predominantly in Aberdeen.

John McDonald, managing director of skills organisation OPITO, said, 'This report offers significant insight into the skills requirements of our industry and...critical intelligence to ... companies, government and education providers alike.

McDonald said it is 'vital' to build on this momentum and OPITO will now lead on the creation of a skills strategy to ensure there is a workforce equipped to sustain the industry in the future.

PROJECT UPDATES

BP: NO SHORTAGE OF OPPORTUNITIES

BP has more development opportunities than it can handle over the next six years and will run its 'capital value' slide rule over every prospective project and progress only the best ones, the company said in its recently announced upstream strategy.

The company which has divested $43bn in assets - $32bn upstream - in the aftermath of the *Macondo* blowout and oil spill has also instigated a major standardisation initiative which aims to make a minimum reduction of 15% in cost plus schedule savings.

It also expects to trim $1-2bn (4-8%) off its earlier stated 2015 capital budget.

By 2020, BP expects to have added 0.9mmboe/d in new production, despite a forecast of 3% to 5% annualised decline through 2018.

Pleasure in numbers

This is a real numbers freak's dream. There are three primary drivers, four major regional areas and 10 focus points. And there are more numbers - 50% of operating cash will come from those four areas (Angola, Caspian Sea, the North Sea and the Gulf of Mexico), while 75% of its 2020 production will come from existing or already planned projects.

While this latest strategy was obviously drawn up either before or during the current price decline - an $80/bbl was mentioned at least once - it seems unlikely that the recent price fall will have any material effect on any of the current projects, most of them with a subsea production element.

Included are the widely talked about *Quad 204* (SEN, 30/24) and *Shah Deniz 2* (31/12), but also include *Kizomba Satellites* phase two, *Greater Plutonio* phase 3, *Thunder Horse South* and water injection and two in Australia - *Persephone* (31/18) and *Greater Western Flank A* (29/20) aka *Goodwyn H-Tidepoloe*.

A quick tot-up gets 82 new subsea wells with the largest numbers at *SD2* (26), *KizSats2* (24) and *Quad 204* (14).

More than a standard loaf

The standardisation programme has focussed not just on procurement of subsea and facilities equipment, but into the concept development teams. BP has also picked up the latest bit of oilfield jargon - 'lean engineering' - to indicate it will be tough on costs.

Its example of what can be achieved is on *Mad Dog 2* (31/3). It reckons that it has already reduced the project cost by 37% to $14bn. This might seem like a rather large sum for a later phase development, but BP says that to date only 12% of the field's 4bnboe have been recovered, so there is everything to play for.

As BP said, there are plenty of other opportunities in either the design or appraisal phase. These include lots of gas in Egypt (*East* and *West Nile Delta*); expansion of the *KG-D6* complex, offshore eastern India; further work at *Thunder Horse* and *Atlantis* plus *Kaskida* in the GoM; more wells in its non-operated Block 17 asset in Angola; and its first development in Brazil at *Itaipu*.

E CANADA PERMITS CONTINUE TO DRAW INTEREST

From Houston (BN): Despite the oil price collapse, confidence remains high in the Flemish Pass deepwater play off Newfoundland and Labrador.

ExxonMobil, ConocoPhillips and Suncor teamed up for the winning bid of $559mn for NL 13-01 Parcel 1, which covers 266,139ha in waters beyond 1,000m about 460km east of St John's, NL. The area is 75km southwest of Statoil's finds at *Mizzen*, *Harpoon* (SEN, 30/7) and *Bay du Nord* (30/13).

The bid is a record for offshore Canada. ExMob has 40% of the licence with COP and Suncor taking 30% each. As for the oil-price risk, the license is for nine years, mitigating against the current decline.

Six tracts were offered in the round announced in August when Brent closed at nearly $103/bbl - it fell below $60 this week. ExMob and Suncor went 50-50 on a successful $21mn bid for 288,800ha Parcel 2 in Carson Basin (NL 13-02) 480km southeast of St. John's. ExMob also submitted a successful $16.7mn bid for 108,938ha Parcel 1 in Jeanne d'Arc region (NL 14-01) about 345km east of St. John's. There were no bids for three other tracts offered in the Carson Basin.

A bigger *Hibernia*

Also, the Canada-Newfoundland & Labrador Offshore Petroleum Board has boosted its reserve estimate for the *Hibernia* Field by nearly 18% to 1.644bnboe from the last estimate in 2010. The increase is based on expanded activity in the *Hibernia* Southern Extension plus the *Ben Nevis-Avalon* and the *Catalina* reservoirs. The original estimate in 1986 was 711mboe.

NEW STATOIL CUTS ADD TO FURTHER RIG FLEET WOES

From the North Sea (NT): Statoil has taken further steps to cut the cost of its chartered rig fleet, extending suspensions on three of four semis recently taken out of action.

Worst hit is *COSL Pioneer*, which has been laid off until August 2015, while the services of *Scarabeo 5* and *Songa Trym* will not be wanted until February. A fourth semi, *Transocean Spitsbergen*, remains suspended until year-end, but is then due for a port visit.

Earlier in the year Statoil terminated its contract with the semi *Ocean Vanguard*, which is now stacked. Even so, the company still has 14 rigs active on the Norwegian continental shelf. On the international front, last month it cancelled its contract - with two years to run - on the drillship *Stena Carron* working in the Angolan sector.

Statoil faces different conditions from when it signed up so many rigs. At that time the challenge was to ensure sufficient rig capacity, a company official pointed out. Now drilling is facing lower margins, high costs, and lower profitability, the official said.

It has also endured below-par success this year including a succession of dry and non commercial holes in the Barents Sea and two disappointing wells in Angola's Kwanza basin. At home or abroad, greater success would probably have spawned more follow-up drilling, keeping the fleet better employed.

As it is, there are substantial costs still to be borne. Laid-off rigs go onto reduced dayrates, and cancelled contracts trigger a penalty. In the case of *Stena Carron*, Statoil put the cost of terminating the rig and services at $350mn.

The full effect of the collapse in the oil price and budget cuts has yet to hit the rig market. In the North Sea, rig utilisation remains high with one source reporting 100% for jackups and 89% for semis during November.

Beside *Ocean Vanguard*, only two units are stacked or idle. The warning signs are there, though, with few new North Sea fixtures coming and many rigs due off contract next year with no further work arranged.

Adding to the downward pressure on dayrates are newbuildings - about 200 units, of which more than half are jackups. Even bullish Seadrill, which believes rig market difficulties will be short-lived, has decided to suspend its newbuilding programme for an indefinite period. It has 16 rigs under construction.

PROJECT BRIEFS

The **PERTH-DOLPHIN-LOWLANDER** (SEN, 31/18) development could yet morph into a platform-based scenario, SEN was told this week by operator Parkmead.

With recoverable reserves now doubled to 80mmbls - which according to the operator makes this one of the largest undeveloped oil projects in the UK sector - SEN was told that it assuredly will not be a subsea tieback.

The current base case remains an fpso, but if the reserve base grows any more, it could yet be a small platform development. Earlier concerns about associated sulphur in the wellstream have been dealt with by using corrosion-resistant materials.

Parkmead is also undeterred by the current oil price fall as it does not see this field onstream before 2018. It even believes that development costs will come down to match the falling value of crude.

From Houston (BN): Shell has received regulatory approval for its phase two plan for **COULOMB** in 2,302m in Mississippi Canyon 657, which currently produces to the *Na Kika* production semi.

Plans call for two wells to be drilled, the first to spud in February, the second in early 2016, although Shell indicates the schedule could slip. The plan approved was filed in April when the oil price was much higher.

Production will be of very light (API°46) condensate. It will flow 43km via a new 8in line to the BP-operated semi located to the northwest in MC473. New jumpers, umbilicals and a manifold will be installed on the existing field of three wells.

Coulomb gas already flows to *Na Kika* via an existing 8in flowline. The semi, which began operation in 2003, is a hub serving eight fields: *Kepler, Isabella, Santiago, Ariel, East Anstey, Fourier* and *Hershel* plus *Coulomb*.

From Australia (RW): Woodside Petroleum is to acquire Apache Energy's stake in the **WHEATSTONE** (31/13) LNG project and the nearby producing **BALNAVES** (30/22) fpso development off Western Australia plus the Kitimat LNG project in British Columbia, Canada, for $2.75bn.

The deal includes 13% interest in *Wheatstone* and 65% interest in the *Julimar* and *Brunello* subsea satellites that will feed into the LNG facility now under construction. Woodside also gains 65% of *Balnaves* which came onstream in August.

In Canada Woodside has snared 50% of *Kitimat* which includes 129,000ha of permits in the Horn River and Liars basins.

Julimar-Brunello will provide 60bcm of sales gas into *Wheatstone* generating net sales of about 4mcm/d of LNG plus 0.6mcm/d of sales gas into the WA domestic market. There will also be 3,250b/d of condensate.

The Chevron-led *Wheatstone* project will produce 8.9mt/a of LNG when completed. Commissioning is expected in 2016. Chevron also operates *Kitimat* which expects to export up to 10mt/a of LNG. Financial close of the transaction is due by the end of March 2015.

From Houston (BN): Deep Gulf Energy has received the official go-ahead to drill and complete a well on the **ODD JOB** field in 1,830m in Mississippi Canyon 215. The field was previously operated by Eni, who sold out, leaving operator DGE and Calypso as partners. Plans call for tying back oil production to LLOG's *Delta House* fps in MC254.

Statoil's *Gullfaks A* platform in the Norwegian North Sea has received a lifeline which will extend its operating period beyond 2030 as a result of the filing of a plan for development for **GULLFAKS RIMFAKSDALEN**.

This field, another in Statoil's 'fast-track' programme, will move 80mmboe through *Gullfaks A* at a cost of NOK4.6bn. There will

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be two subsea gas wells on a standard subsea template with the possibility of a further pair. Production startup will be 2017.

From Houston (BN): The BG's **STARFISH** (29/18) subsea project, offshore Trinidad & Tobago, has achieved first gas. The development consists of three subsea wells linked 10km to the *Dolphin A* platform. *Dolphin A* was refitted to handle the added gas and combine it with *Dolphin* production. The gas is pipelined ashore to the National Gas Co of T&T and to Atlantic LNG.

Husky Energy and CNOOC have begun producing gas from a single subsea well at 0.85mcm/d from the **LIUHUA 34-2** satellite field to the existing *Liwan 3-1* infrastructure. The field, in waters out to 1,250m, will reach peak production of 1.3mcm/d. The subsea hardware award comes from OneSubsea.

Wintershall has increased the recoverable reserve base for its **MARIA** (31/18) subsea tieback in the Norwegian sector by 28% to 180mmboe as a result of work associated with its plan for development.

From Australia (RW): Cooper Energy has bought a 50% interest in the **SOLE** gas field, offshore Gippsland plus 50% of the onshore gas plant in Victoria from Santos who retains operatorship and 50% of the field and plant. The A$27.5mn deal comprises initial cash of A$2.5mn followed by Cooper funding 100% of the first A$50mn development costs. Cooper says FEED will cost A$25-$29mn.

Sole, originally discovered by Shell in 1972, is in eastern Bass Strait about 65km from the onshore plant. Shell intersected 16m of net gas pay on the flank of the field, but did not continue as it was deemed non-commercial and too far from existing infrastructure. *Sole-2* appraiser was drilled by Santos in 2002 near the crest of the structure and found 68m of net gas pay. The well tested 0.6mcm/d.

With FEED about to begin, the field is due onstream late 2018 or early 2019. Gas will be piped to the plant which was used for production from Santos' *Patricia/Baleen* fields. Final investment decision is planned for the third quarter of 2016.

Sole will be developed with a single well expected to produce up to 2mcm/d and piped direct to the plant which is currently processing gas from the *Longtom* (30/10) field in Bass Strait. Modifications will be needed to handle *Sole* gas which contains 1% CO_2, 0.15% H_2S and less than 1bbl/mcf of condensate with production due at 30b/d.

Cooper also operates (65%) the *Basker-Manta-Gummy* complex where it is studying re-development, notably gas reserves. These fields lie 35km southwest of *Sole*.

From Australia (RW): Offshore contractor Jumbo has been awarded a contract with Technip to install subsea structures on Chevron's **WHEATSTONE** (31/13) LNG project off Western Australia. The 13 subsea structures include plets, tee protection structures and manifolds. The manifolds will be in water depths of 240m.

Jumbo will use its DP2 heavylift vessel *Fairplayer* for the work. This vessel is equipped with two 900t revolving deep water cranes. The vessel will sail from Europe and will begin work in April-May next year

Wheatstone is being developed with a subsea system tied back to the recently installed production platform. Gas will flow through a subsea pipeline to the LNG facilities onshore. The project is due onstream next year.

Also Down Under, Origin Energy has completed the heavylift phase of the **BASSGAS** (30/22) mid-life enhancement project. Crane vessel *Sapura Acergy 3000* installed the gas compression and condensate pumping modules onto the *Yolla* platform in the Tasmanian Bass Basin this week.

Tie-in and commissioning of modules is due to begin mid-2015 after development drilling has been completed. Origin says the modules are not critical to current operations and are expected to be commissioned in 2016-17.

BassGas has been shut in since late November for planned maintenance and facilities integrity testing. The compressor installation was integrated during the shut-in period. Gas production from the platform will recommence before the end of the year and will continue until the two-well development drilling programme begins in Q1 2015.

Origin says the two new wells should increase production to 1.5-1.7mcm/d, up from the current average of 1mcm/d.

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Subsea 7 has picked up the SURF and subsea construction contract for Hess' **STAMPEDE** (31/18) tlp development in the Gulf of Mexico. The scope includes twin 10in flowlines from each of two drill centres plus steel catenary risers, umbilicals, jumpers and ancillaries.

Wood Group Kenny and AMEC Foster Wheeler will handle FEED for Chevron's **CAPTAIN EOR** project in the UK North Sea. WGK will work on subsea trees, controls and the polymer injection flowlines, while Amec FW will be responsbile for the bridge-linked platform which will store, mix and pump the polymers as well as brownfield modifications to the existing facilities.

Wood Group PSN has picked up a five-year $750mn contract to provide EPC services for six **BP** North Sea assets. The deal covers *Andrew*, *Bruce*, *Clair*, *ETAP* and *Magnus* plus the new Quad 204 fpso *Glen Lyon*.

From Houston (BN): Freeport-McMoRan is re-thinking its investment plans in the Gulf of Mexico in light of the falling oil price, while also announcing successful drilling results.

At **HOLSTEIN DEEP** (31/7) in 1,185m in Green Canyon 643, about 290km south of New Orleans, the company reported hitting 71m net pay en route to total depth of 9,479m. The company said it expects production from a planned three-well development to reach 15,000boe/d in 2016 and further work, including wells in adjacent GC599, could raise output to 75,000 boe/d by 2020. The production will be tied back to the *Holstein* spar in GC645. FM has raised its estimate of *Holstein Deep* potential by 78% to 250mboe.

At **DORADO** in 1,176m in Viosca Knoll 915, about 225km east-southeast of New Orleans, FM reports finding 75m net pay en route to 4,450m total depth. Output from a planned three-well development should reach 15,000boe/d in 2016. The wells will be tied back to the *Marlin* tlp. At both locations, FM sees opportunities for additional tiebacks.

From the North Sea (NT): Centrica has made a marginal gas discovery with its **IVORY** wildcat in the Norwegian Sea. With reserves estimated at 2-8bcm, it is too early to say if the find is commercially attractive, it says.

The well, 6707/10-3S, which was spudded in 1,421m by the drillship *West Navigator*, found gas in its main target, but not the secondary. It is located 20km north-east of Statoil's *Aasta Hansteen* (31/14) deepwater gas development on the Nyk High, which would be the natural tieback point if development proves viable.

Last weekend *West Navigator* had to perform an automatic emergency disconnect after drifting from the well location. The drillstring was cut, the well secured and the riser disconnected from the BOP. In the process a volume of 230m^3 of oil-based drilling mud was released from the riser, Centrica says.

From Australia (RW): Origin Energy has made a new gas find in the offshore Otway Basin, western Victoria. Origin reported that pressure data taken in its **SPECULANT-1** wildcat indicated a 145m gas column. Further evaluation is currently underway.

The discovery lies 3km southeast of Warrnambool and north of its *Halladale* and *Black Watch* fields discovered in 2006. The well was spudded on 23 September, targeting a tilted fault block structure over an area of about 7km^2. The company used extended reach technology and the *Ensign 931* rig.

From Houston (BN): **MEXICO** has offered 14 shallow-water blocks in the Bay of Campeche to foreign companies, kicking off Round One bidding under historic energy reform.

Hydrocarbons regulator CNH has laid out preliminary terms for deals. Wood Mackenzie analysts told SEN the terms appear to give foreign investors what they want - the ability to book reserves as assets. WoodMac said potential bidders are being invited to give feedback on the terms, so tweaking is likely before the framework becomes final.

To be qualified, companies must have expertise in shallow-water operations and have had capex of at least $1bn over the past four years. Each company can only bid on five blocks and companies that produce more than 1.6mmboe/d cannot partner with each other, intended to increase competition in bidding.

A data room will open 15 January, making available seismic and other data about the tracts. Fiscal terms will be finalised by mid-May and the bid deadline is July 15. It is likely that opportunities to participate in development of shallow-water producing blocks will be added to this first mini-round.

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FLOATER NEWS

CHEVRON FINDS A WAY TO KEEP *ROSEBANK* ROLLING

From the North Sea (NT): Chevron and its licence partners in the proposed *Rosebank* (SEN, 30/19) deepwater fpso development, west of the Shetlands in UK waters, are successfully finding ways of reducing the £6bn project costs.

'The joint venture participants have made significant progress in optimising the *Rosebank* facilities and have identified changes to the scope of the facilities which we expect to deliver a reduction in development costs and a consequent improvement in project value sufficient to support the project moving to final investment decision (FID),' the company says.

While no specific timing is mentioned, it looks as though the final investment decision could be reached some time next year.

'We are now conducting additional engineering...and supply chain activities to improve scope definition, validate the improvements identified and produce a detailed programme of work to FID…we will continue to pursue ways to...improve project value and reduce uncertainties as we move forward through the FEED,' Chevron says.

Its optimism contrasts with the pessimistic view of some analysts which have identified *Rosebank* and Statoil's *Johan Castberg* (31/11) fpso project in the Barents Sea as the two projects most vulnerable to being delayed by the recent precipitous fall in oil prices.

Since Chevron decided to review this project - which will be in the deepest waters in the UK sector - in November 2013, oil prices have almost halved.

FLNG IS GROWING IN IMPORTANCE

From Singapore (JS): Floating LNG schemes are a hot topic in Asia-Pacific, either for handling gas or building the vessels.

Exmar's FLNG scheme offshore Colombia looks likely to be the first of four projects currently under construction to come onstream, Tony Regan, principal consultant at consultancy Tri-Zen told the OSEA conference here.

The 0.5mt/a FLRSU (including regasification and storage) will take in gas from the *Creceinte* field. It is being built by the Wison yard in China and is expected to start production in 2016. LNG will be supplied to the Caribbean islands.

The Exmar start-up is likely to be followed by Petronas *FLNG 1*, which is due to be installed offshore Malaysia. *PFLNG 1* is being built in Korea by Daewoo and will be moored at the *Kanowit* field, offshore Sarawak. It is designed to produce 1.2 mt/a of LNG.

Petronas hopes to have the unit in place by 2016. It will have an external turret and will use tandem transfer rather than side by side transfer of LNG. Its sister vessel, *Petronas FLNG 2*, will follow in 2018 and will operate at a rate of 1.5mt/a. It will be located off Sabah.

Regan said, however, that all eyes will be on Shell to pull off the big one with its 5.3mt/a *Prelude* (SEN, 31/14) project, 'to prove FLNG really is achievable on a large scale.' *Prelude* is due to start operations in 2017.

Regan said there are a number of other projects coming up behind the initial four, although Woodside has just delayed a final investment decision (FID) on the giant 11.7mt/a *Browse* (31/18) project off Western Australia until mid-2016.

ExxonMobil and BHP Billiton's 6mt/a *Scarborough* (31/14) project off Australia is also on the cards, while Shell and Inpex's 2.5 mt/a *Abadi* (31/11) project off Indonesia could be next off the block, with start-up planned for 2019.

Regan said, 'This one is a bit smaller than planned and they had to agree to supply some of the gas to the domestic market. I suspect they are probably talking with the government about putting in a bigger unit because they have found more reserves and that would fit in much better with Shell's design for FLNG.'

Meanwhile, ENI is also proposing an FLNG project in Rovuma Area 4 off Mozambique.

FLOATER BRIEFS

Teekay Offshore Partners is to acquire the aged fpso *Pertojarl I* from parent Teekay Corp as part of a contract to supply a floater to Brazilian company QGEP for the development of the **ATLANTA** field in Santos Basin.

The total $240mn cost to TOP includes $57mn to acquire the unit which will be used an early production system plus upgrades at the Damen yard in Schiedam. The five-year charter is due to generate $275-300mn.

The field is in 1,550m and has recoverable reserves of 260mmbbls.

TOP has now also acquired the **PETROJARL KNARR** (31/18) fpso, to be leased to BG Norge for the eponymous field, from its parent for $1.2bn, financed by $815mn in long-term debt and $400mn in short term from Teekay.

Eni is the latest amongst the big international operators to begin producing from Angola's deepwater reservoirs with first oil from its **WEST HUB** (SEN, 31/13) fpso development in Block 15/06.

Producing to *N'Goma* fpso, chartered from SBM Offshore and moored in 1,250m, the field began flowing at 45,000b/d with ramp up heading for 100,000b/d within a few months. When the companion *East Hub* (31/14) project comes onstream in two years, the 15/06 complex will reach 200,000b/d.

The block, first awarded to Eni in 2006 with the first find made two years later, has had 24 exploration and appraisal wells drilled on it, finding 3bnbbls in place and recoverable reserves of 850mmbbls.

The *West Hub* is actually comprised of seven fields - *Sangos*, *Cingvu*, *Mpungi* and *M Nort Area*, *Vandumbu* and *Ochigufu* - grouped in three clusters and it took less than four years (44 months) from declaration of commerciality to first oil. Eni said that this quick route to production is the result of its 'modular development model'.

The three clusters will have 21 subsea wells with hardware from GE Oil & Gas. Aker Solutions supplied the steel-tubed umbilicals, while Technp provided flowlines and risers and handled the transportation and installation of subsea equipment and structures.

From Australia (RW): Woodside expects to begin the FEED phase for the proposed **BROWSE BASIN** (SEN, 31/18) floating LNG development in mid-2015. Partners BP, Japan Australia LNG, PetroChina and Shell have all agreed to the revised schedule.

Woodside said the delay will take into account the substantial shift in market conditions which will enable the joint venture to seek significantly lower costs for the project.

Woodside CEO Peter Coleman said the time will be used to maximise long-term economic benefits for the development.

SEN Online Glossary of Terms - click here

'The JV intends to take the opportunity to go back to the shipyard, the designers and the suppliers and make sure they are beginning to put some of the cost reductions into the numbers that they're showing us,' he said. 'We don't want to move forward...at this point and miss the opportunity of locking some lower prices into our cost.'

Activities to be undertaken leading up to FEED include progressing primary approvals for the project, managing the impacts of the maritime boundary changes affecting the retention leases and technical work to optimise and de-risk the development. A final investment decision is due in mid-2016.

The hull of the first of Petrobras' 'replicant' fpso's, destined for the **LULA SUL** (31/15) field, is being moved from the Rio Grande 1 shipyard to Brasfels for the installation of its topside modules and system integration. The fpso, the first of eight, is 288m by 54m with a processing capacity of 150,000b/d and 6mcm/d and storage for 1.67mmbbls. This unit will be moored in 2,200m.

While on Petrobras, first oil has flowed from **IRACEMA SUL** (31/11) to the fpso *Cidade de Mangaratiba*, supplied on a 20-year charter from Modec. Moored in 2,200m, the unit has the same capacitIES as the replicants.

From the North Sea (NT): BP's **SKARV** (31/17) field, where production was shut in in early November (SEN 31/17), came back onstream on 22 November.

Oil production is close to maximum, but gas output is restricted as only one of the two gas export trains is available, BP tells SEN. A new high voltage transformer will have to be installed before gas export can return to normal, which is due to take several months.

From Australia (RW): Plans for Shell's **PRELUDE** (31/14) floating LNG project, offshore Western Australia, are on track for a pivotal year.

Shell says it will operate with a 'fly-in-fly-out' workforce of about 240 personnel with the main construction activity underway in the Geoje, South Korea shipyard of Samsung Heavy Industries. About 100 Australians will be lodged there as future operators of the project to familiarise themselves with the FLNG vessel.

In 2015 Shell also intends to award 45 key contracts - about 30% of the total - to support operations. These will include facilities management, maintenance, laboratory services and production chemicals. More than 70% of procurement, contracting and operations will be contracted locally.

FMC has picked up a $268mn contract to supply subsea hardware for phase three of Chevron's **AGBAMI** deepwater (1,463m) development, offshore Nigeria...Otto Energy has sold all of its shares in the Galoc Production Co, which operates the **GALOC** (31/13) field, offshore the Philippines, for $108mn to partner Nido Petroleum.

TECHNOLOGY

FLEXI-RISERS: UNANSWERED TECHNICAL ISSUES

Flexible risers are seen as an enabling technology which has advanced the development of offshore resources around the world, but whose operational behaviour remains not fully understood.

Last year at this time (SEN, 30/19), the Petroleum Safety Authority in Norway organised an event that revealed some of the ongoing technical and design issues associated with flexi-risers.

In the last year, PSA and Statoil - the biggest user (300) of flexi-risers on the Norwegian shelf - have continued to work with DNV-GL to better define some of the failure mechanisms that make flexi-risers such a problematic piece of technology.

An ongoing taskforce, which includes riser specialist 4Subsea, is focussing on carcass collapse - one of the three main failure modes along with wear events at interfaces and ageing - is gathering data on failures of multi-layer PVDF (polyvinyl difluoride) risers.

DNV-GL told SEN that this has been one of the most 'open' data gathering exercises it has been involved in. The group has worked in a collaborative fashion and broken down previously stout commercial barriers.

While materials, particularly non-metallic, remain a key focus, the software used in design work has also been looked at. DNV-GL has gone 'inside' ABACUS, a finite element program, to alter the structure to better calculate failure modes.

There remain any number of unanswered questions relating to flexi-risers:

* has the adoption of integrity monitoring measures proved to be the panacea that many hoped it would be considering the rising number of failures?;

* can flexi-risers be allowed to 'run to failure' like other types of topside or subsea equipment as a failure could result in a pollution incident?; and

* how is it possible to overcome the classic design conundrum that the strongest and lightest steels which are best to use in carcasses and armouring are also those most vulnerable in sour conditions?

This latter issue is of major significance offshore Brazil where fluids from pre-salt fields are often characterised by significant amounts of CO_2?

While this could push riser selection in Brazil towards a greater use of steel catenary risers, this technical solution will not be available in the shallower waters of the North Sea.

One response to carcass collapse is proper operational procedures. One industry specialist told SEN that operators often do not respect depressurisation procedures which can result in rapid gas decompression, damaged sheaths and sometimes carcass collapse.

SEN has also been told that at least one of the major suppliers has now moved to a new PVDF which is more ductile and uses a lower quantity of plasticiser. This has resulted in a design that employs just a single layer PVDF pressure sheath.

POLICY

UK ADDS NEW TAX CHANGES TO BOOST INDUSTRY

From Aberdeen (IF): The UK Government has given more details of tax measures to help support the North Sea offshore industry.

Treasury Exchequer Secretary Priti Patel and Treasury Chief Secretary Danny Alexander outlined the planned changes in a visit to Aberdeen following Chancellor George Osborne's autumn statement. Industry body Oil & Gas UK has now urged the government to move swiftly on the fiscal reforms.

Alexander revealed that the system of field allowances was being simplified through introduction of a basin-wide investment allowance. This will be based on a company's costs, rather than characteristics of a field.

The Liberal Democrat minister also announced financial support for seismic surveys in under-explored areas of the UK Continental Shelf.

'In addition, we will be working with the Oil and Gas Authority once it is up and running to look at how we can support exploration through the tax system,' he added.

Patel said the government will consider options for reforming the fiscal treatment of infrastructure and also look at improving access to decommissioning tax relief to encourage new entrants into the North Sea.

Tax cut

In his autumn statement, Osborne announced major reforms to the fiscal regime. These include a 2% reduction in the rate of the Supplementary Charge to 30%.

The ring fence expenditure supplement is being extended from six to 10 years for offshore activities to support investment by companies whose expenditure exceeds production income. There will also be a new 'cluster area' allowance to support investment in technically-challenging hp/ht projects and encourage exploration and appraisal.

OGUK chief executive Malcolm Webb said he was encouraged that offshore oil and gas fiscal policy will now be framed in the context of the sector's wider economic benefits and take into account the global competitiveness of the industry. He said the government must act swiftly given the current challenges facing the industry.

POLICY, POLITICS AND SAFETY BRIEFS

From Houston (BN): The latest bad news for BP in the **MACONDO** (31/18) oil spill saga may be the worst yet.

The US Supreme Court has refused to consider BP's effort to undo its multibillion-dollar settlement with damage claimants. It is unclear what options, if any, BP has left to limit its exposure under the settlement, but the fight probably will continue in some form.

The company has set aside $43bn to cover all claims and penalties due to the 2010 Gulf of Mexico spill and, as of the end of 2013, estimated its ultimate claims payout at more than $9bn. Total penalties have not been decided, but will add billions to the payout.

Meanwhile, in an action that does not apply to the BP spill, the Bureau of Ocean Energy Management (BOEM) has raised the limit of liability for oil spills from offshore facilities to $134mn from $75mn.

The increase follows recommendations by the National Commission on the BP *Deepwater Horizon* Oil Spill and and is the maximum allowed under the Oil Pollution Act of 1990.

The 78% increase is the first since 1990 and keeps pace with inflation. The move does not apply to the BP spill because BP waived BOEM's liability limit when it set up a $20bn damage claims fund immediately after the spill and because a judge has found BP grossly negligent, which if upheld, negates any liability limits under the 1990 act.

And in a development that probably will add several pages to the environmental impact assessments required for offshore oil permits, a BOEM study has identified 107 new species of wildlife in the GoM.

And, if you must know, BOEM says 'these included many new genera and species of crustaceans - 18 new genera and 77 new species of copepods, one new genera and 17 new species of ostracods, and four new species of tanaidacea.' For the mystified, in biology, 'genera' is to 'species' as 'oil play' or 'trend' is to 'field.'

From Houston (BN): **PETROBRAS** scandals keeps growing.

Reports out of Brazil indicate Maersk tanker business with Petrobras has become a target of 'Operation Car Wash', the probe of alleged money-laundering, bribery and kickbacks involving Petrobras and its suppliers.

Maersk denies paying bribes, citing its anti-corruption policy. It says its employees and agents are forbidden to pay bribes and are authorised only to pay commissions according to international norms.

Also mentioned in recent news reports has been is Samsung Heavy Industries' deals to supply drilling units.

According to multiple reports, Brazilian prosecutors this week charged a former Petrobras international director, a broker representing Samsung and two other suspects in the payment of $53mn in bribes. Samsung has had no public comment, but its code of ethics specifically bars acquiring business 'through illegal activities'.

From Houston (BN): Drilling contractor **NOBLE CORP** has reached a $12.2mn settlement with the US Department of Justice for safety and environmental violations during Shell's 2012 drilling campaign off Alaska.

Noble agreed to plead guilty to eight felony offenses arising from Coast Guard inspections of the drillship *Noble Discoverer* and the Shell-owned, Noble-crewed semi *Kulluk*. Noble will pay $8.2mn in fines, be placed on four years probation and spend $4mn on community service chosen by DOJ.

The CG found mishandling and misrecording of oil and bilge water on both vessels and hazardous conditions on *Discoverer*. Both units were ill-fated after the drilling campaign. *Discoverer*'s engines failed and it had to be towed to port. *Kulluk*, which is not self-propelled, ran aground during towing and had to be scrapped. *Discoverer* has now undergone shipyard upgrades, including installation of a new main propulsion system, a new power generation plant and improved bilge-water collectors. Noble said it also has improved vessel management and the training of crew.

BUSINESS BRIEFS

There has hardly ever been such a dire prediction on offshore activity, so this one has to be noted. **Robin Allan**, a director of Premier Oil and chair of BRINDEX, the independent operators organisation, told the BBC this morning that the industry here is 'close to collapse' with no new UK projects to be approved with a $60/bbl oil price.

Also reported elsewhere is that offshore service provider **WOOD GROUP PSN** will cut rates for 1,850 contractors by 10% for a second time this year, while freezing salaries for 12,000 onshore staff.

Difficult trading conditions often send companies into reorganisation mode.

SBM OFFSHORE is to lose 600 employees and another 600 contractors as it tries to weather the combined factors of the current downturn and its position now as an outsider in the key Brazilian market.

It will also move its corporate HQ to Amsterdam, while retaining its Monaco base as a centre for technology, engineering and operators. It expects to save $40mn on cutting staff, while facing $25mn in redundancy costs to be spread across this year ($17mn) and next.

SUBSEA 7 is to change its shape from four geographic regions to two business units - northern hemisphere (North Sea, Canada and Gulf of Mexico) and life of field-iTech plus southern hemisphere (Brazil, Africa and AsiaPacific-Middle East) and global projects.

Steve Wisely will head up the former unit and **Oyvind Mikaelsen** the latter and also joins the executive management group.

From The North Sea (NT): As Norwegian oil minnow **NORECO** approaches the end of the year unable to meet its financial liabilities (SEN, 31/18), the company has put a restructuring proposal to its creditors based on the conversion of bonds to equity.

A full conversion of bond debt is needed if Noreco is to be maintained as a going concern, it says. Last week it requested the suspension of trading in its shares on the Oslo stock exchange while it seeks to come to an agreement with its bondholders.

(*From the editor:* As SEN went to press today, Noreco cancelled plans for bondholder meetings on the advice of its bond trustee.)

Continual production interruptions on E.ON's *Huntington* (31/14) field in the UK sector have hit Noreco's cashflow. Now the company reports that the field will remain shut in at least until today (Thursday), but 'probably longer', due to problems on the *CATS* riser platform through which gas is exported.

CEO Tommy Sundt also cites the pressure of rising opex on *Huntington*, where a water injection well is being mulled for next year and the 'accelerated retention of cash to cover future abandonment costs'. The one bright note for Noreco is that this month it spudded the *Xana* wildcat in the Danish sector.

From the editor: Also affected by reduced *Huntington* production which threatens its financial stability is **IONA ENERGY**. There is concern there as well about breaches of bond covenants, so it is cutting costs.

It has said that it may, though, have to re-think its delayed *Orlando* (31/18) subsea satellite project to take advantage of the 'softening' contracting market.

GE Oil & Gas has acquired the electric actuator business **IFOKUS** from Oceaneering and will integrate its Stavanger-based team into its own organisation there.

GEOG expects to use these actuators for a number of applications including choke valve actuation and other low-cost rov-operated retrofit scenarios. There is also a diver retrievable option.

SEN is now more than half way through year 31 of its existence and there are not that many companies who were around at the beginning who are still here.

So celebrating 30 years in the subsea business is quite a feat. **SUBSEA CONTROL SERVICES**, Dave Fudge's entity, found its niche in the controls business on Texaco's *Highlander* project in UK waters, the first big subsea development in the SEN era. It featured a number of industry firsts, such as the first multiphase meter, albeit the size of a small building, - photo available if necessary - and the first subsea actuated chokes.

And it was an eight mile (13km) tieback to the *Tartan* platform. Dave reminded SEN that despite the relatively short distance - compare it with the 140km plus at *Snøhvit* - there were a number of tenders for the umbilical offering two to eight splices.

The world has moved on a bit since then - subsea pumping system, long distance tiebacks, high power cables, underwater mateable connectors and fibre optics - but SCS is still here. More than ever, the industry needs its troubleshooting skills.

From Australia (RW): The **NEON ENERGY-MEO** merger (31/17) has been thrown a curve as Mossman Oil & Gas launched a reverse takeover bid for MEO last week. MOG believes there is a possibility that the merger proposal will not happen and says that its reverse takeover offers an alternative. It is an Antipodean-focused explorer listed on the London AIM market

MOG has offered MEO shareholders one of its shares for every 20 MEO share. The plan is to acquire 100% of MEO, although the proposal is conditional on the Neon-MEO merger not proceeding. MEO is notable for its assets in Australia, eg *Heron* and *Blackwood* gas finds; New Zealand and Indonesia.

MEO directors have rejected the MOG approach as inferior. Acting chairman Stephen Hopely said the proposal implied a value of about A1.65¢/MEO share, a discount of 13% on the last traded price of the shares and below the A2.65¢/share value under the Neon proposal. He said MEO directors intended to continue with the Neon deal.

ADVANCED INSULATION has been named supplier of the year by Aker Solutions for its syntactic phenolic composite system provided for 99 subsea vertical trees delivered to Petrobras...Sound Oil has made a hostile bid for **ANTRIM ENERGY** which has UK offshore assets, but the bid is more about onshore Italian assets...**JAMES WALKER MOORFLEX** has been added to FMC's qualified supplier list...**Ally McDonald**, a long-time figure on the Tyneside oilfield scene with Duco and Wellstream has been named CEO of Caley Ocean Systems...**James Smith** has joined 3Sun as general manager of its subsea division RRC Controls Services after 16 years with Aker Solutions-cum-Subsea.

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