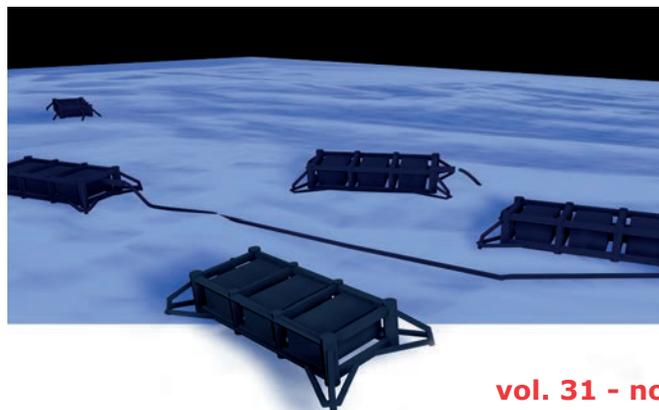


Welcome to
the factory floor



www.akersolutions.com/subsea

AkerSolutions™



\$154,700,000

Pore to Process™
Optimization.

What's it worth to you?

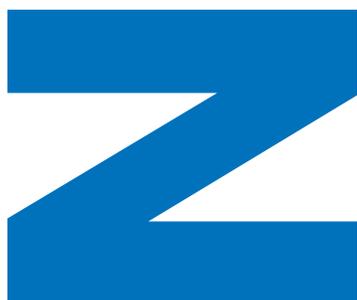


OneSubsea
A Cameron & Schlumberger Company

www.onesubsea.com/optimization

vol. 31 - no. 12 4 September 2014

HART ENERGY



**SUBSEA
ENGINEERING
NEWS**

THE PRESSURE IS ON TO REDUCE COSTS, ONS IS TOLD

From ONS-2014, Stavanger: One could hardly take two steps at this show last week without hearing a conversation, a presentation, a debate - or even an order in a bar, as it is Norway - on one specific over-riding subject: cost reduction.

Not since the events of 9/11 thirteen years ago when security became an obsession has there been a subject that has overwhelmed the industry like the current momentum to force down capital costs. And this is more likely to happen than a fall in the price of the £10 pint of beer here.

There have been any number of such 'crises' that have gripped the industry over the last 35 years, but this one is different as was pointed out by a number of commentators. While in the past, cutting costs was required by a fall in the price of oil, the per barrel value has been relatively stable for at least three or four years.

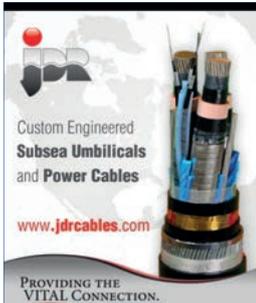
Too much, too many, few

It is the cost of projects that has run away. Too much documentation, too many engineering man-hours, too few repeatable solutions and too many very expensive deepwater wells have just piled on the costs, according to various speakers and presenters.

At a forum in the 'Centre Court' area of the exhibiton on Monday, domestic voices worried about the future of the Norwegian industry. Linn Cecilie Moholt, CEO of electrical specialist Karsten Moholt, expressed the view that expertise would follow work.

Ms Moholt said engineering may be carried out in Norway now, but as more and more fabrication work shifts to the Far East, eventually the engineering will follow. She said Norway 'had too many academics and not enough craftsmen'.

She said Norway is 'too expensive' with 'high salaries and low efficiency' and was one of the first to state that engineering and documentation are driving costs up.



Custom Engineered
Subsea Umbilicals
and Power Cables

www.jdrables.com

PROVIDING THE
VITAL CONNECTION.

WHAT'S INSIDE

- All the news from ONS, 1-6
- *Scarborough* questioned, 7
- *Phoenix* rises, 9
- Scottish debate, 13-14



APOLLO

Passionate about
engineering

SUBSEA | TOPSIDES | MARINE
ONSHORE | EQUIPMENT

www.apollo-oe.com

At the same forum, Jan Skogseth, head of topside specialist Aibel which has benefited from having a highly efficient, low-cost fabrication yard in Thailand, made the somewhat shocking statement that safety could be 'just good enough' to save money. This might seem a surprising view, but it was another that was reiterated. Safety requirements, particularly in Norway, are 'too high' and need to be 'fit for purpose'.

A few hard numbers rounded it all off. Nina Koch, Statoil veep for operations, said that capital costs had risen 300% in the last ten years and her company had instituted 'an improvement agenda' that by 2016 should result in opex falling by 20% and drilling costs come down by 25%.

On Tuesday, the heavyweights were brought out to hammer home the points. Arne Sigve Nylund, Statoil executive veep for drilling and production in the domestic sector, told the main conference that the industry had to improve profitability, while not compromising on safety.

And this, he said, is against a backdrop of declining production from existing fields, even with the target of reaching 60% recovery rate, and declining return on capital, down by one-third.

Statoil - and Norway - will be saved by a 'call to arms'. The 'fast-track' programme has seen seven smaller subsea fields already brought into production, getting their reserves

onstream before host facilities get closer to abandonment.

There is *Johan Sverdrup*, Norway's new giant with 2-3bnbbbls in reserves, which will be onstream in 2019 at 300,000b/d rising to more than 500,000b/d at peak. And finally there is the prospect of new big developments in the Barents Sea.

Nylund, like Koch the day before, pointed to an internal efficiency programme - he mentioned STEP - which is aiming to achieve savings of \$1.3bn by 2016.

From the other side of the table came a view from the suppliers. Tore Halvorsen, FMC's senior veep for subsea, said that the subsea slice of the major project 'pie' has not changed in the last decade from the 8-10% level, but the cost per well has tripled against a similar rise in the price of oil.

Halvorsen posed the question: why do similar pieces of kit used in other industries cost so much more in the offshore sector. He cited a fibre optic connector which cost \$500 outside the industry and \$35,000 when used subsea and a control valve that in the automotive industry cost €13 and \$25,000 in oil and gas.

Like many others, he called for the 'industrialisation' of subsea to bring down cost. Reduced documentation, simplified technology and fewer 'add-ons' would begin the process. 'The opportunities are there', Halvorsen said, but 'the pressure is on'.

NORWAY: MORE THAN JUST STATOIL

From ONS-2014, Stavanger: Statoil, Statoil, Statoil...everything in Norway seems to be about Statoil...but not quite. It is clear to everyone that the Norwegian state company is the 500lb gorilla in the room. Other companies might try to look the other way, but it is hard to ignore it.

The CEO of one of the growing Norwegian independents - who in fact formerly worked for Statoil - complained here about its

dominant position and called for the authorities to offer more operatorships to other companies.

This well thought-of chap seems to have forgotten that it was the Norwegian government which has fostered the current situation by allowing Statoil and Norsk Hydro to carve up Saga Petroleum 15 years ago and then allow Statoil to gobble up Hydro eight years later.



Nonetheless, there are at least a half dozen new field developments being operated by others - Lundin, Det norske oljeselskap, Wintershall, Premier and BG - with more to come in the next decade.

The first three took the opportunity of this show to puff out their relatively small chests and say 'hey, look at us'.

Keep looking

Lundin is the biggest of the trio in terms of what they have achieved. The multi-billion barrel *Johan Sverdrup* may be Statoil's baby now - Lundin has ceded any interest in operating - but it was the Swedish company's Norwegian geoscientists - formerly with Saga and Hydro - who proposed looking at a different geological horizon in a much drilled block - it is in licence 01 in the sector - and look what they found.

Those who missed include three 'small' companies - Total, ExxonMobil and Statoil.

This Swedish company, led by a Brit (Ashley Heppenstall) with a Norwegian backbone (Torstein Sanness, Hans Christen Rønnevik), has two projects on the way.

Its subsea satellite *Brynhild* (SEN, 31/6) is late, but the big project, *Edvard Grieg* (30/8), with its jacket on location, was just one day past due.

Some time in the future, it will move on *Gohda* (31/9) in the Barents Sea.

Sanness even took a veiled poke at Statoil - one must be careful when poking a gorilla - by saying that Lundin wanted to operate like Hydro. Ouch!

Big company power

Also with a big platform project - *Ivar Aasen* (29/20) - on the go is Detnor. It was their headman, Karl Johnny Hersvik, who bemoaned the power of his former employer Statoil, but he also spoke like a man from a big company looking at how to find a new way of doing business in this high cost era.

Hersvik called for a 'radical change' in the structure of the industry in Norway in order to have 'the ability and the agility' to respond to global events.

He also said that there needed to be more competition on the domestic scene and a new business model at a time of rising costs and reducing value of fields.

The former Statoil technology man could not fail to mention his company's acquisition of Marathon Norge (31/6) for \$1bn plus which he called 'a good fit'. He also found time to mention Detnor's stake in *Sverdrup* which gives it a nest egg for the future.

Production goal

Last, but not least, Wintershall put out its stall and reiterated its goal of producing 50,000boe/d on the NCS.

This will come from new production at operated fields like *Maria* (31/7) and *Skarfell* (30/21), but also from stakes in *Grieg* and *Knarr* (30/22) as well as from its operatorship at *Brage* which acquired in a package of assets from Statoil.

It will have its field development plan for *Maria* ready next month with detailed engineering set to start in early 2015.

Raw challenge

One of the most interesting elements of this subsea satellite project - which will see services from three different Statoil facilities - is the water injection scheme with a 43km pipeline from *Heidrun*.

With such a long and expensive pipeline, one would have thought it would have been a prime candidate for a subsea raw water injection system.

And it is and Wintershall looked at the technology. The problem is that this reservoir requires low sulphur water for injection which could not be provided by a subsea rwi system. Alas and alack.



Delivering Subsea Solutions

Email: subsea@mcdermott.com | <http://www.mcdermott.com/Solutions/Pages/Subsea.aspx>

© 2014 McDermott International, Inc. All rights reserved

ONS 2014 SHOW BRIEFS

According to the ONS organisers, this was the biggest show ever with 80,000 visitors and making a run at OTC. Well done, guys.

Of course, not everything runs to plan. The 'pink elephant' award surely went to **MARATHON** and its reasonably sized stand promoting its *Alvheim* fypo development. Oops, but Marathon does not own *Alvheim* any more and, in fact, does Marathon Norge even exist, having sold the assets to Det norsk oljeselskap?

Now here is blasé for you. Stefano Maione of Eni took the stage at the conference to give a brief rundown on the Italian company's big development plans for its deepwater gas finds in Area 4 (SEN, 31/5) off **MOZAMBIQUE**.

Besides confirming what is common knowledge - that there will be both a subsea-to-beach development in the northern area adjacent to finds made by Anadarko in Area 1 and a floating LNG vessel for the *Coral* area finds - Maione called what Eni is doing here 'normal technology'!

That is, subsea wells in waters from 1,500m to 2,500m with a subsea pipeline network that will have to snake its way on the seabed to avoid a series of seriously deep canyons. Quite normal!

Anyway, while the pure subsea area will have 16 wells, the FLNG vessel - with a capacity of 2.5mt/a - will produce from five wells.

The design competition began in May and is ongoing with the EPC tender having gone out in July. The final investment decision will be made before year-end with the plan to have the vessel in operation in 2019.

The suggestion that the show was dominated by Statoil with its two major projects - **JOHAN SVERDRUP** (31/8) and **ASTA HANSTEEN** (31/7) - being trumpeted was hard to argue with.

Everything about *Sverdrup* is big - the reserves (2-3bnbbbls), the engineering contract with Aker Solutions (10 years) and the scale of the four-platform complex. But as with almost everything at this event, the

focus is also on finding ways to 'improve and simplify' the project, ie look for opportunities to reduce the NOK100-120bn price tag.

From this vantage point, four years before pre-drilling is due to begin, there is already talk of reducing the number of wells in order to learn more about the reservoir and looking for ways to standardise. Sounds like a plan.

There is subsea here and it won't be that small either. There will be three subsea water injection manifolds to assist phase one production, while the project teams also looks at WAG (water alternating gas) at some later point. Further phases are likely include reaching other parts of this giant reservoir with subsea production.

The deepwater (1,300m) *Hansteen* will be developed with the first spar and steel catenary risers deployed in the North Sea and is already being described as a marginal field by the operator.

The spar will be the biggest ever built and the first with condensate storage which presents an interesting challenge - offloading. There is no buoy, so the condensate will loaded directly into a tanker in side-by-side mode.

How this will be done - the fluids taken back up to the topside and then flowed down to the tanker or in a horizontal flowpath direct from the tank has not been explained.

When cost reduction was not being mentioned here, the alternative subject was the dreaded **STANDARDISATION**. It apparently was kicked off on the first day when Statoil headman Helge Lund asked why subsea could not be more like Lego? Did he mean yellow and plastic? It's already mostly yellow, so he must have meant plastic then.



On a serious note, DNV GL is driving a new self-funded initiative to establish international standards - but not a set of regulations - that will allow manufacturing companies to receive a certification for a product and/or component that would be recognised in offshore sectors around the world.

DNV GL has started work on wellheads and xmas trees which will be followed by control systems and manifolds. At later stage will come work on flexibles and umbilicals.

According to Bjorn Søgard, known as 'Mr Subsea' in DNV GL, this is about 'cost, scheduling, quality' and a desire to create predictability in both the supply chain as well as in documentation.

(NB: This week DNV GL added to its already heavy workload by linking up with Statoil to develop standard interfaces for the latter's and others 'subsea factory'.

And Lego was mentioned again, this time by head of technology and project Margaret Øvrum. Does this mean that Statoil will be acquiring Lego!?!?

The aim of the soon-to-be-launched joint industry project will be to develop installation tools and tie-in technology that would be available to be used to link up to standard sized modules.)

Edinburgh-based analysts Wood Mackenzie seemed to think that ONS would be a good time to crank out a couple of reports on the **NORWEGIAN SECTOR**.

WoodMac says that of the \$200bn scheduled to be spent on capital projects in Norway over the next 10 years, half will be spent on incremental projects. These include subsea gas compression (*Åsgard* and *Ormen Lange*), infill drilling, field extensions (*Heidrun Nord Flank*) and redevelopments (*Hod*).

An add-on is that there remain 10bn bbls of already discovered reserves that are remaining to be developed, along new finds. Thanks for that.

And finally...SEN had the pleasure of spending 30 minutes speaking to the '**REAL MR SUBSEA**' in Norway, aka FMC's senior veep for subsea Tore Halvorsen. He has been associated with the company and its

predecessor Kongsberg Offshore for nearly three decades. That's endurance.

While many people point to rising manpower wages as a key element in the high cost of developments, Halvorsen pointed to the rising number of engineering hours. He said that there was never any point in trying to prepare for a subsea project as it was mostly impossible to predict what would be required.

He did mention Shell out of Houston which has made an effort to use the same equipment worldwide. They will shift equipment on order from one sector to another as needed.

Some operators are good at capturing experience and turning them into specifications, Halvorsen said, but then they use different suppliers who are less systematic in turning experience into specs.

There is also the problem with multiplication of specs. He pointed to incidents where a small operator tells a supplier that they will use an off-the-shelf solution that has been supplied on a similar project, but then discovers that the operator of its host facility wants different specs.

But positive things are happening. He pointed to the recently announced 20K JIP (31/9) supported by four big operators who are prepared use the same equipment that others are using.

But really it is not pressure that will be the big gamechanger, but high temperature. The 350°F (177°C) barrier is severe, but Shell, of course, is talking 400°F (204°C) for *Appomattox* and others.

Subsea Production Systems Engineering COURSE

Upcoming courses, now booking:
14 - 17 October 2014 - Aberdeen
11 - 14 November 2014 - Houston

Organised by:





contact www.clarion.org or SEN for details

ONS-2014 TECHNOLOGY BRIEFS

Subsea raw water injection is a technology that is viewed as a key component in the future of both greenfield and brownfield seabed developments.

SEN agrees, but somehow **SEABOX** which has been around for more than a decade has eluded our notice.

It may be that such a long gestation period - not exactly a new problem for subsea technology developers - distracted us from being interested in its SWIT technology, but several of the super-majors, ie ExxonMobil and Shell, have already pre-qualified the prototype for potential use.

Another member of the HiTec Vision portfolio, Seabox has developed a range of systems, but the 'basic one' - albeit rated for 3,000m - is a 47t unit which can produce 40,000b/wd for injection purposes by putting the water through a number of processes.

Important features include the ability to retain water for up to 90 minutes for treatment and backflush its filters. Current work is focussed on developing a low salinity version.

SCHNEIDER is another company which has found itself a niche in the expanding subsea universe. It has supplied three CPDU's (control production distribution units) for the *Åsgard* subsea gas compression system under a subcontract from Aker Solutions.

The low-voltage switchgear technology is not new, but getting AkerSol to put it into a marinised enclosure and provide an interface got in onto the seabed.

It is also working on a prototype subsea transformer which SEN was told was simply dependent on the wall thickness of the enclosure and installation of penetrators. Of course, as with all new equipment now, it will be rated for 3,000m.

GE OIL & GAS has opened a new technology centre outside Stavanger adjacent to its subsea system facility in Dusavik.

While there was not anything startlingly new - unless you were interested the growing use of

3-D printers for models! - but a few tidbits came out.

Pumping is at the fore with GEOG just as it is with many others in the subsea arena. It is working on the development of a centrifugal pump for seabed multiphase boosting stations, although it is not saying where the pump work is being done.

It is also looking to take the esp technology which picked up in the Lufkin Industries deal last year (SEN, 30/2) and go subsea with it.

Also being rolled out is more use of the MAPS inspection scanner for flexibles and the use of nano-filters for raw water injection.

What it really wanted to talk about, though, is its DVXT deepwater vertical subsea xmas tree. Again, it does not exactly fall into the category of 'new' kit, but it is a new configuration and provides flexibility while offering proven technology.

This is a 10Kpsi, 149°C and rated for 3,000m, which is pretty standard now. What it does have is the standard wellhead connector at the top to allow it to be installed with a drilling riser and can take a crown plug as a top barrier.

While it is due to be manufactured at Montrose, south of Aberdeen, it can also be 'flatpacked' for assembly in countries where this would contribute to local content.

The only missing piece is that it does not fit the specifications for Statoil's current vertical tree tender. Pity.

Aquaterra has a new shallow water **RISER MONITORING SYSTEM** which combines direct strain measurement, data logging and riser analysis for optimising drilling and workover operations...Petrobras has signed a **TECHNOLOGY AGREEMENT** with Foro Energy to develop a high-power laser drilling system...Trelleborg has a new VIV suppression system dubbed **T-STRAKE** which is deployed as interlocking modules...The lubricants division of ExxonMobil is looking at expanding the use of **DTE10 EXCEL** product for use subsea in a number of applications.

FLOATER NEWS

HUNTINGTON PARTNERS HOPE FOR BETTER LUCK IN PHASE TWO

From the North Sea (NT): The *Huntington* (SEN, 31/3) field partners are preparing a second stage of development, although their immediate thoughts are ongoing technical problems with the fpso *Voyageur Spirit*.

The Sevan Marine-designed circular production vessel has suffered a string of interruptions since the field came onstream in the UK sector in April last year.

In late August, after a four-week shutdown for planned maintenance on the *CATS* pipeline system through which gas is exported, further equipment malfunctioning restricted production to 10-15,000boep/d, partner Noreco has reported.

The problem is understood to involve a small balance piston in the low-pressure compressor which has suffered excessive wear and tear taking it beyond its performance limits.

E.ON has now confirmed the issue with a 'minor component'. The repairs will necessitate a complete shutdown for seven days before full production can be resumed,

Noreco says. In the first five months *Huntington* produced an average of 16,000b/d, little over half of its expected capacity of 30,000b/d.

Meanwhile the licence group is preparing for the phased development of *Maxwell*, a Fulmar/Triassic reservoir underlying the main *Huntington Forties* reservoir and previously known as *Huntington Deep*.

According to partner Iona Energy, development planning is underway with the concept due to be selected this year, project sanction to be sought next year and start-up scheduled for 2016.

Presumably involving subsea wells tied back to the fpso, the project should be relatively low-cost. Reserves, based on Noreco's claim of a net 4mboe, are 20mboe.

The firm five-year lease on the Teekay fpso will probably have to be extended. An appraisal well was at one point planned for *Maxwell*, but this appears no longer to be part of the current plans.

BHPB DEMERGER PUSHES SCARBOROUGH ONTO BACKBURNER

From Australia (RW): In the wake of announced plans for a demerger of parts of its mining operations, BHP Billiton's petroleum and potash president Tim Cutt has reportedly told a conference that BHPB will prioritise its highest-return petroleum opportunities.

These include a near-term focus on deepwater plays in the Americas and the company's US shale liquids business.

Cutt said that the company's greenfield LNG business, which includes the undeveloped *Scarborough* (SEN, 30/17) gas field on the Exmouth Plateau, offshore Western Australia, is lower priority. BHPB is in 50/50 joint venture at *Scarborough* with operator ExxonMobil.

There is a possibility that BHPB may opt to sell its smaller petroleum assets.

It has been reported earlier this year, but not confirmed, that BHPB is concerned about the economics of the current *Scarborough* floating LNG proposal.

Alternative scheme

It may be that the company would prefer a development - ie subsea tieback, a small floater, spar or tlp - that was tied in to the existing Woodside-operated *North West Shelf* LNG facilities. BHPB is a member of the *NWS* consortium, but ExMob is not.

FEED work for the FLNG project has been delayed giving rise to feelings of uncertainty about the development. As originally proposed an FLNG vessel, in 900m about 220km northwest of Exmouth on the WA coast, would produce 6-7mt/a of LNG beginning in 2021.

FLOATER/VESSEL BRIEFS

From the North Sea (NT): BP has finally got the original **SCHIEHALLION** (SEN, 30/16) fpso off the field and off its hands.

The vessel is now in Rotterdam undergoing final works before transfer to a new owner, the company says. The new owner is understood to be Malaysian fpso operator Bumi Armada which is also supplying a production unit for EnQuest's *Kraken* (31/9) development in the UK sector.

Bumi will deploy the vessel, which was built at the Harland & Woolf yard in Northern Ireland and delivered in 1997, in more benign waters than its previous west of Shetland location. As early as 2005, cracks were detected in the hull necessitating an extensive programme of repairs which was expected to take several years. BP acknowledged that 'additional strengthening' was being undertaken (22/6).

Last month Bumi clinched its biggest fpso order to date - for Eni's deepwater *East Hub* (31/11) development in Angola. This will be based on a vlcc conversion and will have 1.8mmbbl storage, double that of the *Schiehallion* unit. With the *East Hub* floater, Bumi's fpso fleet rises to nine units.

From Australia (RW): Shell has chosen IKM's mud-recovery-without-riser (MMR) system for its deepwater **MALIKAI** (30/24) tlp project offshore Sabah in Malaysia. It will be the first time the MRR technology has been used outside the North Sea.

Shell says eight top holes in the field will be drilled by the drillship *Norshore Atlantic* in 475m. IKM's system will be used to pump drilling fluids back to the vessel.

The system is second generation technology using specially-engineered drilling mud. It reduces risks of environmental impact and overall operational costs as it reduces the number of offshore personnel required.

IKM will be part of an integrated team with Shell engineers on board the drillship during the operation.

A 26,000t tlp is being built by a joint venture of Technip and Malaysia Marine & Heavy Engineering for the project. It will process 60,000b/d and 1.4mcm/d.

FPSO contractor **BW OFFSHORE**'s first half accounts benefited from a \$70mn one-off payment from Murphy Oil as a result of the early termination of the lease on the fdpso which was working on the *Azurite* field, offshore Congo. The result was half yearly EBITDA of \$296mn.

It also has had the lease on the fpso *BW Athena* extended by Ithaca Energy. The unit, which has been operating on the eponymous field in UK waters, is on an original five year charter through next year, but that has now been extended by five years with a rolling 12-month termination notice.

The big deal in the quarter for BW was the 10-year charter of an fpso for Premier's *Catcher* (31/10) development in the UK which has been valued at \$1.3bn.

(NB: Kongsberg Maritime Engineering is to supply the integrated control and safety systems for the *Catcher* production unit.)

Premier Oil has remained mum on the concept for its **BREAM** (31/10) fpso for Norway, but a recent presentation clearly showed a Sevan circular unit.

Veolia is to carry out the decommissioning of the ill-fated 14,000t **YME** (31/10) jackup production unit with dismantling to be carried out at Lutelandet in southwest Norway in partnership with Lutelandet Offshore...ABS has been chosen to class the second **REMORA HILOAD** (30/22) dp offloading system which will operate in Brazil in Santos Basin for Petrobras.



SPE Offshore Europe
CONFERENCE & EXHIBITION

- > Dedicated Deepwater Zone
- > Deepwater Presentation Area
- > More than 35 International Pavilions
- > 1,500+ Exhibitors in 6 Halls



Van Oord is to build a new **ROCK DUMPING** vessel at Sinopacific in Shanghai. The 14,000t DP3 vessel will be 154m by 28m and will be able to operate in waters to 600m....Ceona's newbuild flagship field development-SURF vessel **CEONA AMAZON** (31/4) was floated out of its drydock at the Lloyd Werft yard in Bremerhaven this week. It is due for completion in November.

Ship design-and-build specialist Ulstein has launched a new concept for harsh-weather conditions. **X-STERN** which follows on from its X-BOW concept is meant to achieve reduced pitch and wave drift and eliminate slamming, while operating with reduced power and fuel consumption on DP. The design could be useful for the next generation of well intervention units.

PROJECT UPDATES

PHOENIX SOUTH: 1980'S BP FIND RISES AGAIN FOR APACHE

From Australia (RW): Apache's oil find at *Phoenix South-1* (SEN, 31/11) in the Canning Basin, off Western Australia, is potentially the largest here in the last 30 years.

Apache has estimated oil-in-place could be up to 300mmbbls and said it is a commercial discovery, but has refrained so far in giving a likely recoverable reserves figure. Not so resource analysts who believe the recoverable reserve figure could be 60-90mmbbls.

Phoenix South-1 is in a permit 180km north of Port Hedland in 133m. It lies 13.5km from BP's original 1980 *Phoenix-1* discovery. That well was plagued with technical troubles and was never fully evaluated.

However BP was sufficiently encouraged to drill *Phoenix-2* in 1982. The second well also found oil, but the Triassic-age reservoir sands were not good quality and BP's campaign was terminated. The company had identified the *Phoenix South* prospect, but it was outside BP's acreage.

Phoenix South-1 has intersected the same stratigraphic intervals as the BP wells. Based on measured permeability in *Phoenix South* there is a possibility that the old BP wells could have been a commercial oil find that was misdiagnosed.

Apache intends to review the old well logs for BP's 1980s campaign to 'back-solve' it with the new well.

Low threshold

In any event, the relatively shallow water at *Phoenix South* puts a minimum threshold for viable development at around 15-20mmbbls and supports Apache's declaration of a likely commercial find, although appraisal drilling will be needed to confirm this diagnosis.

The discovery has also upgraded the potential of adjacent permits with Apache immediately committing to drill the neighbouring *Roc* prospect next year and exercising options to acquire a 40% interest in two other permits.

SHELL MULLS 2015 ARCTIC PROGRAMME

From Houston (BN): Shell has 'made no formal decision' but is keeping options 'viable' for a 2015 Arctic offshore drilling programme. The company has filed a revised Exploration Plan with the Bureau of Ocean Energy Management. Changes since the failed 2012 campaign: If Shell drills in 2015, it will run two rigs at the same time and it will drill in the Chukchi Sea only.

Earlier plans called for one rig each in the Chukchi and Beaufort seas with a second rig

only on standby in case of emergency need to drill a relief well.

The revised plan itself was not publicly available, but Shell said in a statement: 'We have made no formal decision, but are undertaking activities to preserve the option of a 2015 season...Any final decision to go forward will depend on successful permitting, clearing any legal obstacles and our own assessment that we are prepared to explore safely and successfully.'

The two rigs scheduled for a possible Arctic exploration campaign next year are the drillship *Noble Discoverer* and the semi Transocean Polar Pioneer.

BOEM said it will begin an informal review of the revised EP, but said it cannot formally process it until it complies with a 9th Circuit Court of Appeals directive to revisit the Final Environmental Impact Statement for the 2007 lease sale in which Shell acquired its acreage.

The court faulted as 'arbitrarily low' the BOEM estimate of 1bnbbs recoverable from the Chukchi Sea in its FEIS for Sale 193. Plaintiff native communities and environmental

advocates argued the number 'low-balled' potential environmental impact.

The timeframe looks tight for next year. BOEM said its new Record of Decision on the validity of the sale after FEIS revision is not expected until March 2015. If that decision is approved, the next step is official review of Shell's plan, including an environmental analysis and time for public comment.

Shell has spent more than \$5bn on its Arctic offshore drilling effort, but has little to show for it except two partially drilled holes in 2012 and the grounding of the drillship *Kulluk* as it was being towed to summer quarters.

PROJECT BRIEFS

From Aberdeen (IF): Production from the £2bn **LAGGAN-TORMORE** (29/7) deepwater gas development west of the Shetlands will be put back until next year, according to licence partner DONG Energy (20%).

However, its statement is at odds with the view of operator Total (80%).

Construction of an £800mn gas processing plant on Shetland, a key piece of infrastructure for the development, has been hit by pay disputes at lead contractor Petrofac. Local sources in Shetland say the plant is behind schedule.

DONG said in a financial report last week: 'The operator of the *Laggan-Tormore* field is currently reviewing delays in the construction of the gas treatment plant in the Shetland Islands. It is DONG Energy's expectation that production start-up from the field will be postponed from end of 2014 to 2015.'

But a Total spokesman was later quoted as saying *Laggan-Tormore* was still on schedule, although no official statement has been forthcoming from the French company's headquarters. There was no comment either on the situation from Petrofac.

Noble Energy has said that it has signed a non-binding 15-year deal to sell gas from the deepwater **LEVIATHAN** (31/8) field, offshore Israel, to Jordan's National Electric Power Co. It is understood that the Israeli government will sign off the deal.

The deal, when approved, will see Noble deliver 8.5mcm/d to Jordan once the required pipeline infrastructure is in place. *Leviathan* is expected to be able to be able to deliver 45mcm/d with 60% of that capacity now sold.

From the North Sea (NT): Apache Energy's **AVIAT** (31/4) gas development has been approved by DECC. This involves two subsea wells to be tied back 23km to the company's *Forties A* platform where the gas will be used as fuel. Start-up is scheduled for spring 2016.

From Houston (BN): Brazil's energy agency ANP has reported **PRODUCTION** in July grew 14.8% (oil) and 12% (gas) compared with year-earlier totals.

Domestic oil production reached 2.267mb/d and gas 87.9mcm/d for an overall total of a record 2.82mboe/d. Pre-salt production totaled 480,800b/d and 16.2mcm/d for an overall total of 582,800boed.



GULF OF MEXICO
Offshore Executive
CONFERENCE

October 16, 2014
The Westin Houston, Memorial City
Houston, TX

Register at
OffshoreExecutiveConference.com

Shelf • Deepwater • Ultra-deepwater

Pre-salt output came from 34 wells in 13 fields - *Blue Whale, Whale, Humpback, Barracuda, Caratinga, Buzios, Sole, Squid, Marlim Leste, Pompano, Sapinhoa, Trail* and *Iara*. More than 90% of Brazilian output came from fields operated by Petrobras. The leading oil-producing field was *Roncador* in the Campos Basin averaging 273,000b/d.

Petrobras has also declared commercial the pre-salt *Sul de Guar-Nordeste de Tupi-Florim* complex in Santos Basin, acquired under the Transfer of Rights agreement. The fields which have combined reserves of over 2bnbbbls have now been renamed *Sul de Sapinho, Sepia* and *Itapu*, respectively.

Already penciled in for development, the latter two fields are due onstream in 2018 and 2020, but development of the former will not be revealed until the 2015-19 management plan is announced.

And Petrobras has proven an extension of the ultra-deepwater (2,790m) *Moita Bonita* light oil find in the Sergipe-Alagoas Basin in a more northerly part of Brazil's offshore sector.

From the North Sea (NT): The incremental development of the **CARRACK** (28/21) gas field in the UK's Southern Basin is partly onstream, operator Shell has reported.

Carrack East produced first gas in late March, but *Carrack West* has yet to start up and Shell declines to say when it expects it to.

This is the first development embodying the company's *Sweep* philosophy – the use of standardised equipment combined with a vertical slimhole drilled by the specially designed *Swift 10* jackup rig.

GE Oil & Gas has supplied the subsea trees, Aker Solutions the controls and Technip the umbilicals, while Subsea 7's *Seven Navica* laid the pipelines.

From Australia (RW): Indigenous construction contractor Downer EDI has been awarded a A\$170mn works contract for Chevron's **GREATER GORGON** (31/8) subsea gas-to-LNG project, offshore Western Australia.

Scope of work includes structural and piping erection, mechanical installations, electrical and instrument services, miscellaneous civil works, pre-commissioning work and

commissioning and start-up assistance at the onshore LNG plant on Barrow Island.

The \$54bn *Gorgon/Jansz* development is due onstream mid 2015. Separate 65km and 130km pipelines will link the *Gorgon* and *Jansz* fields to the three-train 15.6mt/a of LNG facility nearing completion on Barrow. The facilities on the island will also include a 7mcm/d gas plant to feed into Western Australia's domestic grid.

Wood Group Kenny has secured a pair of contracts with **PETROBRAS**. WGK is to provide concept select and basic and detailed engineering services plus engineering studies under one deal. The second more specific job will be to handle conceptual engineering of alternative pipeline heating concept for the pre-salt **LAPA** field. It will compare water-heated PIP with trace-heated PIP.

Forum Technologies will supply eight 150hp **WORKCLASS ROVS** to Vard Group as part of the outfitting of four pipelay support vessel for the DOF Subsea-Technip joint venture which will operate them for Petrobras...Viper Subsea is to supply subsea hydraulic and electrical distribution equipment for a Caspian Sea project, presumably **SHAH DENIZ 2** (31/9). This multi-million pound award is the biggest ever for Viper.

From Houston (BN): Noble Energy had made two modest successes in the deepwater Gulf of Mexico: at least 40-60mboe in its **KATMAI** exploration well and appraisal well results at **DANTZLER** that support gross estimates of 65-100mboe in place (SEN, 31/7).

At *Katmai* in Green Canyon 40, logging indicated 46.9m of oil pay in multiple reservoirs, including 36m in the Middle Miocene and 11m in the Lower Miocene. The semi *Ensco 8501* drilled the well to 8,504m in 640m. Pending appraisal, gross Katmai resource is estimated at 100mboe.

Returning to Mississippi Canyon 782, the *Dantzler-2* appraisal well penetrated 37m of oil pay in two Miocene reservoirs. The drillship Atwood Advantage drilled the well to 5,550m in 2,012m.

The successes came in the wake of the recent disappointment at the BP-operated *Bright* (31/7) prospect in Atwater Valley 362, in which Noble had a 50% interest. The drillship

EnSCO DS-4 drilled to 4,115m without encountering hydrocarbons in Upper and Middle Miocene targets.

Dantzler will be added to Noble's *Rio Grande* (30/20) development, which combines a 2012 discovery at *Big Bend* in MC698 and a 2013 find at *Troubadour* in MC699. First production from *Big Bend* is expected in 4Q 2015 and from *Dantzler* in 1Q 2016.

From the North Sea (NT): Appraisal of Lundin's **LUNO II** (28/22) discovery in the Norwegian sector has failed to boost reserves, although it still looks a likely candidate for tieback to the upcoming *Edvard Grieg* (30/8) platform development.

Well 16/4-8S, drilled by the semi *Bredford Dolphin* in 100m, found oil, but poor reservoir properties limited the flow to a mere 450b/d in tests. It also indicated limited pressure communication with the 2013 discovery well, 16/4-6S, which lies 4km to the north-west.

Lundin now estimates recoverable reserves at 27-71m mboe - on discovery it put the top end at 125m mboe. A previous appraisal to the southwest of the discovery well was dry.

Luno II lies less than 20km south of *Edvard Grieg*, which is due to come onstream next year. Changes in the *Luno II* licence will give Lundin 50%, OMV 20% and Statoil and Wintershall 15% each once approved.

From Houston (BN): The newbuild drillship *Pacific Sharav*, delivered in May 2014 and under contract with Chevron, began working at **BUCKSKIN** (30/10) in Keathley Canyon 785. *Sharav* is capable of drilling in 3,658m to a depth of 12,192m. The 5-year contract is estimated to be worth \$1bn.

Just as new and similarly capable is Transocean's drillship *Deepwater Invictus*, now working for BHP Billiton at *Neptune* in Atwater Valley 618. *Invictus* is under three-year contract at a dayrate of \$595,000.

From Houston (BN): **SAMSON ENERGY** is moving to sell its assets in the Gulf of Mexico, which are all deepwater and all non-operated. Asked why, a spokesman told SEN: 'We're trying to focus on onshore US.'

Samson owns non-operated interests in more than 70 federal GoM leases, including

upcoming developments at Noble's *Gunflint* (19.13%) and Chevron's *Buckskin-Moccasin* (12.5%).

As recently as March 2013, Samson was accumulating GoM lease interests. In Central Gulf Sale 227, Samson (33%) partnered Statoil in submitting the winning bid of more than \$81mn for Walker Ridge 271. It was the highest bid of the sale. Samson and Statoil also won WR272 for more than \$10mn.

Was this over-blown or what? Statoil had earlier in the year trumpeted its **MARTIN** (31/6) prospect in the Gulf of Mexico as the next big find, but in the event it has made only a non-commercial discovery which is now being plugged and abandoned.

And disappointment again in Angola at the **DILOLO-1** well in Block 39 which found no hydrocarbons, although it has clarified some geologic issues.

Better luck elsewhere. BG completed a drillstem test at the **MZIA** (30/19) gas find in Block 1, offshore Tanzania, which bolstered plans for an onshore LNG plant. *Mzia-3* flowed at 3mcm/d. Total reserves at finds across three blocks have been put over 400bcm.

In Malaysia, Shell reported a deepwater gas find at **MARJORAM-1** in 800m, while Inpex has found an 800m gas column in a well near its **ICHTHYS** (31/11) gas-to-LNG development, offshore Western Australia.

From the North Sea (NT): North Energy will become the largest party in Norwegian licence PL 484 following deals to acquire 20% and 18% from partners Explora and Dana Petroleum, respectively.

Coming on top of the 15% it previously agreed to acquire from operator Noreco - all deals were agreed in August - it will end up with 53%. The big attraction is not the disappointing **VERDANDE** well (6608/10-16) which was recently drilled on the *Norne*-area licence in the Norwegian Sea, but other interesting prospects which the company eventually hopes to drill.

A company official was non-committal about whether it would seek to take over the operatorship. Noreco will hold only 15% when the various deals are effected.

POLICY

EWING ATTACKS TAX CHANGES BEFORE SCOTTISH VOTE

From Aberdeen (IF): The UK government's numerous North Sea tax changes in recent years have been attacked by Scottish Energy Minister Fergus Ewing.

Ewing, a member of the Scottish National Party, was speaking at a Scottish independence referendum event in Aberdeen on Wednesday held by Oil & Gas UK.

The minister outlined the case for independence to around 300 industry bosses, while the argument against was put forward by former Labour Chancellor Alistair Darling, leader of the Better Together campaign.

Darling highlighted the dangers of the people of Scotland deciding to leave the UK at the historic vote on 18 September. The ex-Chancellor said the North Sea had given a massive boost to the UK for 40 years and now supports 450,000 jobs.

Darling said the British oil industry has a 'very stable' tax and regulatory regime, which allows firms to plan for the future. He warned about the risk of an independent Scotland being over-reliant on volatile income from the North Sea. The ex-Chancellor said North Sea revenue would represent about 15% of income for an independent Scotland against a current 2% for the UK.

Darling said the broad shoulders of the UK mean it is better placed to maximise

remaining reserves in the North Sea, spreading the cost across an economy of more than 63mn people in the UK rather than just 5mn in Scotland.

Ewing said the independence debate was not covering a number of important North Sea issues, such as ageing infrastructure, rising costs or the low level of exploration.

'Over the last 40 years, this industry has achieved great things,' he said, 'but sadly industrial success has not been matched by government stewardship of the sector. We have heard the UK has provided a stable fiscal regime, but I beg to differ.'

Instability

The Scottish Energy Minister said the industry had been hit by no fewer than 16 significant tax changes in the last 10 years. Ewing said independence offers a huge opportunity to end the instability of the tax regime.

The Scottish Energy Minister said an independent Scotland would provide long-term stability and certainty, including a commitment to formal consultation on any future reforms.

Despite a recent poll showing increased support for independence, bookmaker William Hill still reckons a 'no' vote is a strong favourite, quoting odds of just 1-4.

ANOTHER VOICE JOINS THE SCOTTISH FRAY

From Aberdeen (IF): A day does not seem to pass without a new report or opinion on what the future could hold for the North Sea oil industry after Scotland's independence vote.

There have been forecasts of a possible meltdown, while others offer a bright outlook. This is very confusing for 'the man on the street' trying to decide which way to vote on 18 September.

Scottish energy economist Derek Loudon has now issued his annual report for the UKCS,

which anticipates a huge rise in oil output by 2018. Loudon, who is in the 'yes' camp, said he had read quite a bit recently suggesting that the industry here is a busted flush.

'Output has fallen, of that there is no doubt. In recent years a catalogue of problems has affected output from the *Clair* field, *Schiehallion* and the *Elgin/Franklin* complex in particular,' he said. 'All of which are in the process of being restored and upgraded. In addition, a number of large new fields are about to commence production.'

'Even allowing for a generous rate of natural decline, I cannot see how output would fall in the period from 2015 to 2018. It seems impossible. We've seen record levels of capex investment for several years and this will result in nothing? Not a drop more oil will be produced – sorry, I don't believe this and nor should anyone else.'

Louden said UK oil production was 37.9mt in 2013 and additional production of 42.9nt was being targeted by 2018. He said it was clear that, even allowing for natural decline, output will rise by over 50% by 2018.

Louden said he did his research from the ground up using the Department of Energy & Climate Change's own numbers for production up to 2013.

'From then onwards, I've projected at accepted rates of decline and shown what these are,' he said. 'I've also shown the rates needed for the OBR (Office for Budget Responsibility) zero-growth scenario to result. I can't make their numbers work.'

The economist said the OBR analysis was partial, did not reflect reality and was wrong.

POLICY BRIEFS

From Aberdeen (IF): Just under two-thirds of the UK North Sea workforce is either **OVERWEIGHT** or obese. The average weight of a male employed offshore has also shot up by 20% to 92 kg since 1985.

These worrying facts were outlined by Ian Russell of Sodexo at an Oil & Gas UK breakfast in Aberdeen, addressing 'a recipe for a healthy workforce' event.

The audience heard nearly 62,000 people regularly travel offshore, where they face difficult living and working conditions. In 2011-12, there were nine medical deaths - all were workers aged over 40 and eight involved heart problems. The majority were smokers.

Russell said 34% of offshore workers drink more than the recommended limit, 64% are either overweight or obese and 32% are smokers. He said poor health and life habits increase turnover and absenteeism.

The Sodexo managing director asked why a number of wellness initiatives, such as healthy food options, gyms and medical assessments, have a limited impact.

Russell said these programmes were not designed to motivate employees to take action and there needed to be a culture change. 'People can eat as much as they want all day long. We are stoking the fire,' he said.

He spoke about Sodexo's Well Track programme, which aims to support employees throughout their life. Personal goals are set and a wellness programme outlined.

From Houston (BN): Halliburton has agreed to settle a 'substantial majority' of plaintiffs' class damage claims as a result of its role as BP's cementing contractor in the 2010 **MACONDO** (SEN, 31/10) blowout and spill.

Halliburton will pay \$1.1bn into a trust, in three installments over the next two years, but no payouts will occur until all court appeals are resolved. Another contingency is an 'agreed-upon level of participation by the current claimants which, if not achieved, allows Halliburton to terminate the agreement.' The exact level of participation required was not specified in Halliburton's settlement announcement.

(From the editor: As SEN went to press Thursday, a US District court judge found BP guilty of 'gross negligence' and 'willful misconduct' in regards to *Macondo*. BP immediately said it would appeal, saying that the findings were 'not supported by the evidence at the trial.')

From Houston (BN): Optimism about **MEXICO** energy reform (31/11) is spreading. The IEA says its forthcoming International Energy Outlook will boost last year's forecast of Mexican liquids output in 2040 to 3.7mn b/d from 2.1mn b/d last year.

With many details of the reform still to be worked out, IEA's optimism is cautious. Actual performance could still differ significantly from these projections because of the future success of reforms, resource and technology developments, and world oil market prices, the agency says.

BUSINESS BRIEFS

From Australia (RW): The board of **NIDO PETROLEUM** has unanimously recommended acceptance of a takeover offer from Thai company BCP Energy (SEN, 31/10). BCP has made an all cash bid (A\$0.55/share) with the condition that it receives a 90% acceptance.

BCP has already increased its stake in Nido to 29.13% since the offer opened including a separate agreement with fellow shareholder Petroleum International Investment Corp to acquire its 19.66% interest.

Nido's directors recommended the offer as it represents a premium to its historical share price and it is a cash offer. BCP has received foreign investment approval from the Australian government.

Nido is active offshore Philippines and Indonesia while BCP is a refiner and marketer of petroleum products. If successful, the buy will enable it to diversify into the upstream sector. The offer has a closes 13 September.

AKER SOLUTIONS has altered the shape of its upcoming demerger (31/9). It will now include the geoscience division Aker Geo in the non-subsea Akastor organisation.

Meanwhile, AkerSol and Baker Hughes have received regulatory approval for their Subsea Production Alliance venture (31/4).

BIBBY OFFSHORE has opened an office in Stavanger to be headed up by **Arne Lier**, formerly with Statoil, but more recently with Norfield and Gulfmark Norge. Also joining Bibby as strategy director is **Stuart Jackson**

who most recently was with Ceona, but is better known for his stints with Stolt Offshore and later Subsea 7.

Some familiar names have popped up in new places. **Ian McKendrick**, previously with Ithaca Energy, and **Tom Reynolds**, most recently with Bridge Oil, have joined Iona Energy as executive chairman and CEO-president, respectively.

Jonathan Roger, formerly headman at Venture Production and Centrica Energy Upstream, is the CEO of new North Sea-focused E&P company Siccar Point Energy which is starting up with \$500mn from Blackstone Energy Partners, Blue Water Energy and GIC.

Longtime North Sea hand **Eamonn McGennis**, most recently with Reef Subsea, has been named business development manager with floater specialist Bumi Armada.

Specialist wellhead company Plexus has formed a new joint venture in Malaysia - **PLEXUS PRODUCTS** - to pursue more business in Asia...**AKER SOLUTIONS** is to move to a new office complex in a business park near Aberdeen airport to consolidate its workforce now spread out across six sites around the Granite City...Pareto JGO Shipbrokers has acquired leading UK-based offshore shipbroker **DERRICK OFFSHORE**...Norwegian engineering consultancy and manpower supplier **RC CONSULTANTS** has been bought by NES Global Talent.



**WOOD GROUP
KENNY**

Over 35 years of offshore and subsea
design and management experience
Experience that Delivers



Editor: Steve Sasanow. *Correspondents:* Ian Forsyth (Aberdeen); Rick Wilkinson (Australia); Bruce Nichols (Houston); Nick Terdre, John Sheehan (UK).

SUBSEA ENGINEERING NEWS (ISSN 0266-2205) is published twice monthly by Hart Energy Publishing LLP, Houston TX, USA. Editorial office: Knighton Enterprises Ltd, PO Box 27, Cheltenham GL53 0YH, UK; telephone: +44 (0)1242 - 574027; fax: +44 (0)1242 - 574102; e-mail: sen@btinternet.com; web-site: www.subsea-news.co.uk.

2014 annual subscription: £425 + VAT (where applicable), \$675 USA. For multi-user subscriptions, contact us or check the website. Credit cards accepted subject to charges.

© Hart Energy Publishing LLP. Material may not be reproduced in any form, photocopied or forwarded electronically without written permission of the publisher.

PDF Production by Monbro Ltd - www.monbro.com



Follow us on  @SubseaEngNews