Vol. 15 Issue 4 *23 February 2012*

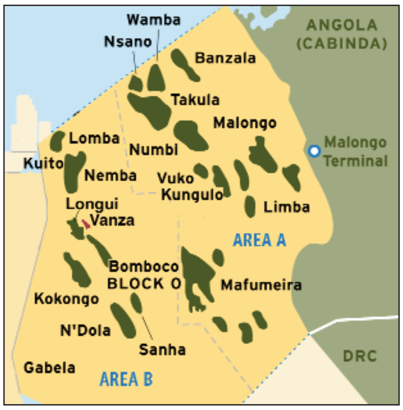
# AFRICA OIL AND GAS

BREAKING NEWS AND ANALYSIS FROM AFRICA

## Chevron's Mafumeira gives final twist

Chevron will finally award limited contracts for the US $5 Bn **Mafumeira Sul** project off Angola next month, with one major twist.

The major winners for the shallow water platform development off the Angolan enclave of Cabinda will be as predicted by AOG but with one highly unusual change – Daewoo Shipbuilding & Engineering (DSME) is believed to be working with Mustang as its engineering company rather than the long honoured alliance with KBR. The previous alliance worked together on many of the biggest projects in West Africa including the **Pazflor** and **CLOV** FPSOs off Angola and the **Agbami** FPSO off Nigeria.




Next month DSME will be given the limited go ahead and Mustang will start front end engineering and design validation while final glitches caused by the long delays to the project are ironed out.

Hyundai Heavy Industries was given a glimmer of hope for the platforms contract earlier this year when they were asked to meet up with Chevron in South Korea but there were suggestions that this may have been a strategy to ensure DSME's price remained competitive.

As previously revealed by AOG, the 120km pipelines contract went to Saipem while the brownfield work on the existing **Mafumeira Norte** platform went to Saipem/Sonangol joint venture Petromar, as did the onshore pipeline from shore to the terminal at Malongo.

The new project involves two wellhead platforms, a central production platform and living quarters platform. It is intended to supply gas to the Angola LNG plant.

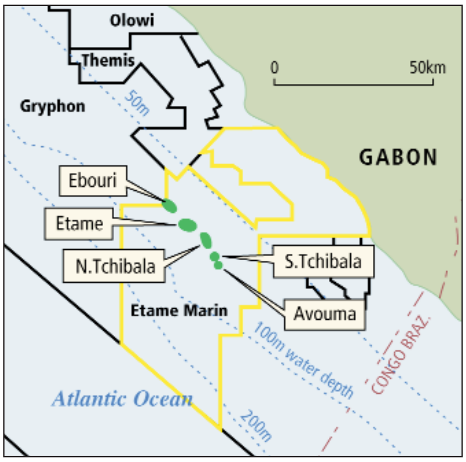
The DSME victory will see much of the work conducted at the Paenal yard in Angola. As revealed by AOG last issue, Angola is rapidly placing greater and grater emphasis on local content. It has told Chevron that only companies with yards in Angola may be shortlisted for its **South N'Dola** project, for which invitations to bid will be sent within weeks.

The previous most stringent standard was to platform bidders on Mafumeira Sul itself with companies being told they must partner with a local yard.

The Mafumeira Sul project is in **Area A** in **Block 0** off Cabinda in a water depth of 160ft (49m).

## VAALCO ready for Gabon bidding

US independent VAALCO will issue invitations to bid for a new platform off Gabon next quarter with pre-FEED studies being completed on a second.




The infrastructure is for additional development wells at its producing **Etame** block.

The company currently produces from four fields on the block to the *Petroleo Nautipa* FPSO which has oil production capacity of 25,000 b/d. Currently there are platforms over the Etame field itself, one over **Avouma** and **South Tchibala** and one over the **Ebouri** field.

The bidding due to start next quarter is for a platform for additional development wells at the Etame field. The platform will have a jacket weighing around 1,300 tons and up to five new well slots. First production is expected in the second half of 2014.

Approval from partners Sinopec and Addax has taken some time to get but they are now progressing with a planned second platform. The pre-FEED studies are currently completing for similar infrastructure to develop the **Southeast Etame** discovery and provide a base for further delineation of the **North Tchibala** area.

VAALCO is already modifying the **Avouma** and **Ebouri** platforms on the block in order to accommodate new development wells.





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## STRATEGY

# Major Nigerian blocks finally renewed

Nigeria and ExxonMobil finally reached agreement and signed 20-year oil renewals on three onshore blocks, with renewals for other majors promised next month.

The US supermajor believed it had agreed to pay US $600m to renew its rights on **OMLs 67**, **68** and **70** back in 2009. However, a year later it was told the deal was invalid and this resulted in an ill-tempered impasse between the oil minster and the company.

This has now been resolved with Mark Ward, Exxon's head of Nigerian operations, saying that they were "very pleased with the outcome", although he added: "This has been a long journey and some would say a difficult journey to accomplish what we have done here today."

Oil minister Diezani Alison-Madueke said the leases were "renewed on a mutually fair basis for which to work together for the next 20 years" and that "all other pending renewals will be expeditiously processed".

Eni, Shell and Chevron all have outstanding shallow water, onshore oil licences to renew.

Ward declined to say how much was paid for the licences which produce 550,000 b/d.

NNPC Managing Director Austin Oniwon said he hoped "all renewals will be completed in the next few weeks".

# Nigeria Finance Minister adds hope for PIB

Nigeria's Petroleum Industry Bill received a boost as respected Finance Minister Ngozi Okonjo-Iweala put her weight behind efforts to have it passed, with a less stringent draft expected in the near future.

The all encompassing bill has been delayed for years and politicians' promises that it will be passed in the near future have been broken on a regular basis. Current minister Deizani Alison-Madueke said in 2010 that it would be passed within weeks.

However, with the support of the respected finance minister, the bill may have a new impetus. Last week she told the Financial Times: "In two to three months, I predict you will see fast progress. At the very outside, before the end of the year it should be law.

"We are aiming to have a balanced bill to ensure the Nigerian government gets its rightful share and oil companies are incentivised. We must have a bill in which Nigerians do not feel they have been cheated."

Alison-Madueke said earlier this week that a new draft of the bill would be submitted for consideration within the next six weeks. Though she did not discuss the details of the modifications, there are expectations that the fiscal regime in the new bill is likely to be less stringent.

# Bowleven confirms takeover talks as M&A activity surges

Bowleven may be one of the Africa-focussed operators to disappear this year with confirmation it is in early talks about a takeover by Dragon Oil.

Merger and acquisition activity is expected to pick up sharply this year with Cove Energy having received an offer from Shell and the remaining East Africa operators also likely to disappear. Chariot Oil is regularly mentioned as a potential takeover target but larger operators such as Afren, Ophir or even Tullow are also regularly included in the rumour mill.

Dubai-based Dragon is currently a single asset firm in Turkmenistan, and has been on the acquisition trail for some time.

Bowleven, currently valued at around US $560m, has enough cash to see it through its two-plus well exploration programme until the end of the year but has none to develop its existing discoveries off Cameroon. It is not a forced seller, but neither is it able to negotiate from a position of great strength.

Dragon must decide whether to make an offer by 16 March and analysts have suggested that Perenco or Kosmos could also be interested in Bowleven although Noble Energy has also been regularly mentioned in the past due to the proximity of its own reserves in Equatorial Guinea and Cameroon.

## FIELD DEVELOPMENT

# Saipem upbeat on 2012

Saipem said it expects a bumper 2012 as it reported an increase in annual profits.

"Oil industry spending is expected to increase in 2012," Saipem said. "Furthermore, important projects related to gas field development and transport may be sanctioned during the year."

It said the offshore market is expected to be buoyant in West Africa - particularly Nigeria and Angola – and that the onshore sector would be busy in Nigeria. It is hoping the **Brass LNG** project will be sanctioned alongside the Algeria-Italy **Galsi** pipeline project.

The company expects 2012 net profit to rise 9% to around US $1.33 Bn with revenues up 3% at $17.23 Bn. Net profit for the fourth quarter climbed 9% to $342m compared to the same period in 2010, while revenue rose 15% to $4.52 Bn.

The backlog fell marginally to $27.06 Bn from $27.18 Bn with Algeria accounting for 7% of the total and Nigeria and Angola accounting for 5% each.

# Gabon FPSO hurts Olsen

Fred Olsen showed a drop in its financial figures for the year due to problems on the **Olowi** field off Gabon and warned that its sector of the FPSO market remains below expectations.

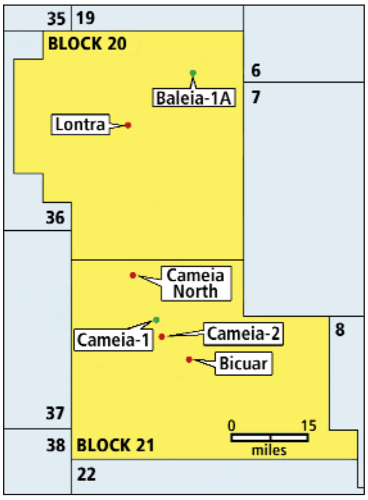
The company was forced to write-down US $25m on its Knock Allan FPSO on CNR's field off Gabon "due to the lower than expected performance of and reserves in the Olowi field". This resulted in a $6.0m loss for the final quarter compared to a $2.5m profit the previous year.

"The total market demand for FPSOs continues a slow upward trend, but the number of lease projects remains below market expectations," the company said, adding: "Few projects have materialised in West Africa during the last year, with the exception of high-end projects."

It said that only 13 FPSO contracts were awarded last year and in its leased sector there were only five competitive open tenders.

# Cobalt prepares for Angola fast-track FPSO

Cobalt International is hoping to fast-track an FPSO development of its pre-salt discovery off Angola with first oil within three years.




As previously exclusively revealed by AOG, the results from its **Cameia** wildcat in **Block 21** have been so successful that it has decided to immediately drill an appraisal well which is due to spud any day.

"We have elected to pursue the **Cameia-2** appraisal well prior to drilling the **Bicuar-1** pre-salt exploratory well in order to accelerate the evaluation of a phased approach for developing the Cameia pre-salt oil discovery," the company said.

"Our current plans are to implement an early production system incorporating an FPSO system for the Cameia development. We believe this phased development approach will help us better understand and quantify the pre-salt reservoir performance as well as deliver earlier cash flows than would be possible using an immediate full field development strategy," it added.

The company is already talking to leased FPSO providers and is validating the subsea concept design specifications.

The Cameia-2 appraisal well is being drilled around 3km from the discovery well to a total depth of up to 18,000ft (5,485m). It is expected to take 100-120 days to drill.

The company is in the market looking for a rig for the second half of the year in a programme likely to include the **Cameia North**, **Bicuar** and **Lontra** prospects. The last of these is in Cobalt's neighbouring **Block 20** and is likely to be drilled next year. Cameia North and Bicuar are both around 16km from Cameia-1 in opposite directions. There is also likely to be a well on the **Loengo** prospect in **Block 9** later this year or early next.

The discovery well flowed at a sustained rate of 5,010 b/d of oil and 14.3 MMcf/d of gas under constrained rate and Cobalt believes the actual flow capacity could be more than 20,000 b/d. It uncovered around 900ft of net pay (275m) – almost double the pre-drill expectation – with a high API 44° oil. The well only drilled the pre-salt carbonate with the planned deeper syn-rift section still to be tested.

● The US Securities and Exchange Commission and Department of Justice have launched an investigation into Cobalt's operations in Angola following informal discussions about allegations of ties between its local partner in Angola and senior government officials.

There have been allegations that one of its junior partners, Nazaki Oil and Gas, is linked to senior Angolan officials.

# OMV increases Tunisian pipeline plan

OMV is increasing the capacity of its planned South Tunisian Gas Pipeline (STGP) and is still hoping to make a final investment decision this year.

The company is planning the project, involving a new 28-inch 320km gas pipeline from the **Adam** production concession to the city of Gabes, in partnership with Eni and national oil company ETAP. The project consists of building a gas compression plant in the southern blocks and the early feasibility studies for the project were completed back in early 2009.

The company said yesterday that the FEED is progressing and that the capacity is being increased to accommodate potential from the **Cherouq** block which it took over last year from Pioneer.

A series of wells on OMV's **Nawara** concession in the south of the country have proven up gas and condensate which can only be commercialised by the pipeline to the north.

The development came a major step closer after the Austrian firm spent US $866m on buying out Pioneer. OMV believes it still has significant upside potential and will shortly start a new two rig campaign, although it stressed that adequate reserves already exist to make the development profitable.

# Uganda project on as Tullow deal finally gets thumbs up

Tullow's long-awaited US $2.9 Bn deal to bring in Total and CNOOC to its Ugandan oil fields has finally been completed, paving the way for project go-ahead and further exploration.

The deal was initially announced back in early 2010 but a tax dispute with the government involving former partner Heritage Oil, alongside protracted negotiations over details connected to the production sharing agreements, resulted in lengthy delays.

Total will operate **Exploration Area-1** and Tullow will operate **Exploration Area-2**. CNOOC will operate the new **Kanywataba** licence and the **Kingfisher** production licence marked out from former **Exploration Area-3**.

It is currently expected that small-scale oil and gas production for the local power market will start in 2013 from the **Kaiso-Tonya** area. Major production from the Lake Albert Basin is anticipated to start 36 months after a basin-wide plan of development is approved. The export pipeline to the coast in Kenya is now expected to be ready in 2016.

The partners are now restarting drilling to undertake a wide-ranging exploration and appraisal programme in 2012. Immediate exploration priorities include drilling the **Kanywataba** prospect, a series of prospects west of the Nile starting with the **Omuka** well in EA-1 and further appraisal work in both EA-1 and EA-2.

# Modec targets eight African projects

Modec expects revenue and profit to grow over the next year as it has eight projects in Africa in its sights.

The Japanese firm reported an increased net income of US $39m for 2011 compared to $34m in 2010 but expects the figure to rise another 13% to $44m this year. Its revenue actually dropped 13% this year to US $1.65 Bn but it expects this figure to rise 15% this year.

The prospective projects it sees in Africa include the **T.E.N.** FPSO for Tullow and the **Mahogany** FPSO for Kosmos in Ghana; the **Block 32** FPSO for Total, a **Block 31** FPSO for BP, the **Chissonga** FPSO for Maersk, and an FPSO for Cobalt – all in Angola; an FPSO for Tullow for **Kudu** in Namibia and a floating production unit for Anadarko off Mozambique.

# Total lines up new project and exploration timetable

Total revealed its new timetable for projects in Africa and a heightened exploration programme for the next two years.

In terms of developments it confirmed it hopes to launch **Egina** in Nigeria and **Moho Nord** in Congo this year. The double FPSO **Kaombo** project in **Block 32** in Angola is expected to come onstream around the same time as Moho Nord in around 2016.

However, **Ikike** in Nigeria could be the first development yet to be sanctioned that will see oil. Total confirmed it will go ahead with Ikike in **OML 99** with first oil expected by 2015. The shallow water project is near the existing **Amenam** complex with production of around 55,000 boe/d. It is currently in FEED. One project that has gone back in time is **IMA** in **OML 112** in Nigeria which is now set at around 60,000 boe/d in 2018 – the same time as **Brass LNG**.

Total also promised a "bolder" exploration strategy with 65 wells planned in each of 2012 and 13 compared to 48 in 2011. The exploration spend will increase by 20% this year to US $2.5 Bn.

In terms of Africa this will involve frontier and conventional wells targeting "elephants and big cats". The frontier wells will be off Côte d'Ivoire, Gabon, Kenya and Angola. The conventional ones are in Mauritania, Nigeria, Congo, Algeria and Egypt.

# Technip predicts 2012 boost

Technip is predicting a bumper 2012, expecting sales to rise by up to 17.5% for the year from US $8.9 Bn in 2011.

"Looking ahead to 2012, our clients show confidence in oil and gas prices and continue investing to meet challenging production targets," chief executive Thierry Pilenko said.

"We're going to see large projects again in Angola in particular and possibly in Nigeria although the certainty is less in Nigeria. But we are also going to see large projects, particularly gas projects, in eastern Africa including LNG projects. There are lots of opportunities related to recent gas finds," he added.

The backlog at the end of 2011 stood at $13.77 Bn, up nearly 7% from the end of 2010. Of the total 12% was in Africa, down from previous years as major projects such as **Block 31** and **Pazflor** in Angola were handed over to clients. Shallow water accounts for 36% of the total backlog with 20% in deepwater and 15% in gas/LNG/FLNG.

Of the $10.4 Bn revenue prediction this year, the expectation is that around 56% will be subsea and 44% onshore/offshore. The company's subsea operating income rose nearly 9% to $660m last year while onshore/offshore income was up nearly 32% at $363m.

# BW Offshore has to turn down clients

BW Offshore outlined four FPSO projects it is targeting in West Africa over the next year while it announced its figures were hurt by charges.

The company has four targets in the region, including the **Kudu** floating production unit for Tullow in Namibia which it believes will be awarded in the third quarter and the **T.E.N.** FPSO for Ghana for the same operator which it believes will be awarded at the same time. It also pinpointed the **Chissonga** FPSO for Maersk off Angola and the Addax **Udele/Ofrima** FPSO off Nigeria, both of which it expects to be awarded in the first quarter of next year.

The company sees market activity in its sector of the market as very high. "We are in a position where we have currently to turn clients down as we do not have the capacity," said CEO Carl Arnet.

"We are very confident that we will be able to attract the volume of work that suits our investment appetite as we do not see a lot of competition," he said.

The company's results figures were distorted by the first year of incorporation of Prosafe Production as well as impairment charges of US $135.5m largely due to the sale of an FPSO to Apache. Operating revenue for the year was up at $846.2m compared to $549.3m in 2010 while there was a net loss of $115.5m in 2011 compared to a profit of $20.5m.

# PA works to Zarat plan of development

PA Resources and Sonde hope to unitise their potential joint FPSO project and start appraisal drilling in the shared zone between Libya and Tunisia this year.

The companies have completed a feasibility study on the **Zarat** field in the shared zone and are working towards an approved plan of development.

PA hopes to drill an appraisal well in the fourth quarter of this year or early next on the Tunisian side while Sonde recently said it will start a three well drilling programme on the Libyan side in September this year.

Originally the development scenario was for a tie-back to PA's nearby **Didon** facilities but a stand-alone project may well now be on the cards.

Last year's **Zarat North-1** well drilled by Sonde encountered 240 net ft (75m) of pay, around twice that expected, and production tests flowed at up to 750 b/d of condensate and between 8-11.5 MMcf/d of gas. The block is in water depths ranging from 250-375ft (75-115m).

# Repsol gets US $3 Bn approval

Repsol has finally obtained approval for the US $3 Bn development of six gas fields in the Algerian Sahara.

Major new projects have become rare in recent times following increasing demands from national oil and gas company Sonatrach for a greater return from its upstream industry, however the Algerian ALNAFT authority has issued a permit to develop the **Reggane**, **Azrafil South-East**, **Kahlouche**, **Kahlouche South**, **Tiouliline** and **Sali** gas fields in the Algerian desert.

The field development plan foresees a constant production rate of 8 MMcm/d over a production period of 12 years with first output in 2016. A new joint company will be established by the project partners for the projects in the next few months.

The exploration phase for the block ended in 2009 and early the following year a Declaration of Commerciality was signed by the project partners and submitted for official approval. A decision was then expected by the middle of 2010.

The partners are: Sonatrach (40%), Repsol (29.25%), RWE Dea (19.5%) and Edison (11.25%).

# Shell launches East Africa drive

East Africa gained even more momentum as Shell laid down its mark by offering a significant premium to take over Cove Energy for its assets in Mozambique and Kenya.

The UK minnow has a minority stake in Anadarko's successful **Area 1** but importantly it has pre-emption rights to any further sales and it also holds minority stakes in seven blocks off Kenya with BG and Anadarko, where drilling will start later this year.

While the actual stakes Shell has bought are relatively small the purchase is seen as a sign of intent despite its recent failure in neighbouring Tanzania and there are expectations Shell will be spending out more than the US $1.6 Bn it offered for Cove.

"There may be opportunities to build more of a stake in the Rovuma play," Shell said, adding that opportunities were being assessed.

The major European oil companies have been increasing their stakes in East Africa in recent months with Total being the most active. The US majors are notably absent although ExxonMobil has a stake in Statoil's current gas find off Tanzania (see story pg 7).

Last year Shell took a 50% stake in Petrobras' **Blocks 5** and **6** in Tanzania to the north of Ophir's **Block 4** which hosts the **Pweza** and **Chewa** gas discoveries. However, the **Zeta-1** was recently completed on Block 5 with disappointing results. Shell paid the full cost of the well.

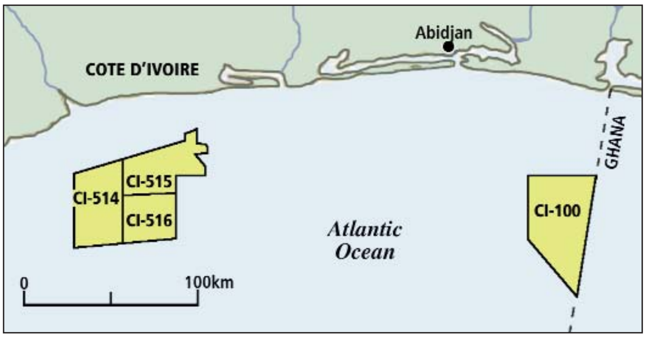
The Anglo-Dutch major already has an application in for a production sharing agreement for **Blocks 9-12** in the north of the country bordering Kenya. However, the application was first submitted back in 2002. The blocks have not been awarded to Shell although the latter does ask for an update occasionally and originally said it would drill the first well in 2003.

# Total/Anadarko add in Côte d'Ivoire deep ahead of wells

Total and Anadarko have taken three blocks offshore Côte d'Ivoire with both companies drilling off the country in different blocks this year.

The French firm has signed up for **CI-514 in** the ultra-deepwater which neighbours **CI-513** recently taken by African Petroleum. Total will hold 54% with Canadian Natural Resources holding 36% and national oil company Petroci 10%.

Total is planning the **Ivoire-1AX** well in highly prospective **CI-100** in the east of the country. It borders Ghana and some of the latter's most successful exploration acreage and is in water depths from 4,920-10,170ft (1,500-3,100m). Total shot 1,000sq km of 3D seismic last year and will drill a well before the end of 2012.




The company also signed up for 45% in **CI-515** and **516** which Anadarko will operate, also with a 45% stake. Again Petroci will hold 10% and Total will take over operatorship in the event of a commercial discovery. The block neighbours that in which Anadarko has one well in a two well programme currently drilling. The *Eirik Raude* semisub is drilling on the **Kosrou** prospect in **CI-105** and then **Paon** on **CI-103**.

The three new blocks in total cover an area of 3,200sq km with water depths ranging from 6,560ft to 9,845ft (2,000m to 3,000m). The work program includes a 3D seismic survey of the whole acreage and one well to be drilled on each block during the initial three-year exploration period.

# FAR gets Senegal thumbs up

FAR has finally received approval for renewal of its two deepwater blocks off Senegal with a well planned within two years.

The company requested entry to the second renewal period on the **Rufisque** and **Sangomar Deep Offshore** blocks back in 2010 and the delay in approval has put back farm-in talks.

The new terms specify the requirement to drill a well within two years, backed by a surety of US $5m.

The blocks cover an area of 7,491sq km and a 2,086sq km 3D seismic survey was acquired back in 2007.

Earlier this year African Petroleum signed up for the **Rufisque Offshore Profond** and **Senegal Offshore Sud Profond** blocks, the first of which neighbours FAR acreage.

"The Ministerial approval and pending Decree places FAR in a strong position to secure a farm-in partner," FAR said.

# Maurel plumps to raise Tanzania stake

Maurel & Prom has decided to use its pre-emption right to up its stake in the **Mnazi Bay** block in Tanzania which was offered to partner Wentworth.

Former partner Cove Energy agreed to swap its 16.38% stake in Mnazi Bay, valued at $38.8m, for Wentworth's rights over its acreage off Mozambique. However, Maurel has elected to exercise its right of pre-emption under the joint operating agreement.

This now leaves Maurel with 48.06% in production and 60.075% in exploration while Wentworth has 31.94% in production and 39.925% in exploration and national oil company TPDC has 20% in production.

# CAMAC adds Kenya booty

CAMAC Energy is continuing its quick expansion by signing a heads of agreement for three blocks in Kenya.

The firm has already increased its stake in a deepwater field off Nigeria, signed up for two blocks off Gambia and taken minor stakes in Kenya and the Seychelles this year.

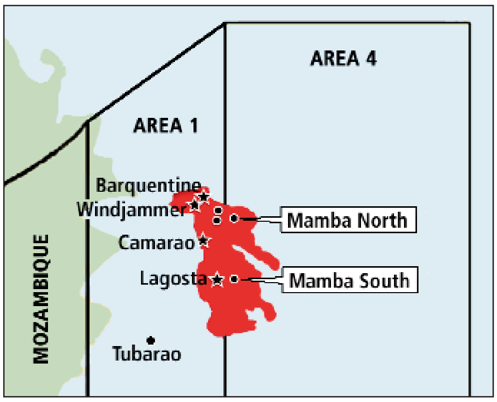
It now hopes to finalise production sharing contracts within the next month on **Blocks 11A**, **L1B** and **L16**. The first is an onshore block covering 10,913sq km in northwest Kenya, near the Ugandan border and blocks operated by Tullow Oil. Block L1B is also onshore covering 12,197sq km in eastern Kenya on the Somali border. Block L16 covers 1,699sq km onshore and 89sq km offshore on Kenya's southeast coast.

# Eni studies early production after second Mozambique find

Eni is considering early production facilities after bringing its total reserves in deepwater Mozambique to 30 Tcf after a second successful wildcat.

The company also showed its eagerness to test the region by saying it will drill at least another five wells this year after already securing a rig.

Partner Galp said that first LNG production has already been set for 2018 at the latest in order to meet the timetable set by Anadarko for its current 25 Tcf in neighbouring **Area 1** but CEO Manuel Ferreira De Oliveira also said production could come much earlier.




"It is a world class block and the partners both in Area 1 and Area 4 are now rushing for its full development as soon as possible. 2018 is now a consensus date, for starting operations, although as I said there are options being studied to see whether it is possible to have some early production facilities," he said.

The **Mamba North-1** well in Eni's **Area 4** encountered 7.5 Tcf of gas in place adding to the 22.5 Tcf in last year's **Mamba South** discovery around 23km to the south.

The new well was drilled in 5,545ft (1,690m) of water to a total depth of 17,485ft (5,330m) around 45km off the Capo Delgado coast. The well encountered a total of 610ft (186m) of gas pay in multiple Oligocene and Paleocene sands.

During the production test, the first performed offshore Rovuma as Anadarko has yet to complete any in Area 1, the well flow at around 30 MMcf/d although this was constrained by surface facilities. There were also minor volumes of condensate. In a final production completion configuration, estimated gas production per well is expected to reach more than 120 MMcf/d.

"I can however tell you that we are very confident on the potential of Area 4, given the exceptional nature of the reservoirs, as it was already announced, and we are already looking at this discovery as an asset of extreme relevance in our portfolio. We are working towards starting production from this area as soon as 2018, although a more aggressive option in terms of timing is also being considered. This is why we are accelerating the exploration and appraisal program in area 4," Galp added.

Eni had previously planned to drill another two wells in the block this year but now said that: "During 2012, Eni plans to drill at least another five wells in nearby structures to assess the upside potential of Mamba Complex".

Eni is the operator of Offshore Area 4 with a 70% interest while Galp, KOGAS and national oil company ENH each hold 10%.

● Anadarko extended the boundaries of the massive gas complex in its neighbouring Area 1 with the **Lagosta-3** well drilled 3km to the west of **Lagosta-1**. The well encountered 577ft net (176m) of gas with pressure readings confirming continuity to Lagosta 1 and 2 and to the **Windjammer/Camarao** wells further north.

The drillship will now move to drill the **Barquentine-4** appraisal while a second rig is drill-stem testing the **Barquentine-2** well.

## EXPLORATION

# Petrobras Angolan Benguela pre-salt test

Petrobras will drill its first deepwater pre-salt wildcat off Angola later this year.

While Maersk and Cobalt have announced pre-salt wells in the Kwanza Basin, the Brazilian firm will be drilling further south in **Block 26** in the Benguela Basin.

The well will be on the **Ogonga** prospect and is expected to reach a total depth of 19,685ft (6,000m) through more than 3,820ft (1,000m) of salt. Petrobras believes the basin will prove similar to the Santos Basin off Brazil and has already shot 3,200sq km of 3D seismic on the block which is in water depths of 3,280ft to 8,203ft (1,000m to 2,500m).

This will be the first ever well on the 4,383sq km block although two have been drilled on Total's **Block 25** to the north which it won in last year's pre-salt licensing round. Eni previously held the acreage and drilled the **Leao-1** well in 2001 but this came up dry. This was followed by another dry hole on the same block.

The nearest successful well was ExxonMobil's **Semba** wildcat in **Block 24** in 3,800ft (1,170m) of water in 2001. It flowed at a combined rate of 3,039 b/d of oil from two reservoirs.

Petrobras signed up for the block in 2007 and has a commitment to two wells. It originally held 80% but BP farmed in for half of this late last year while Sonangol holds the remaining 20%.

# First deep Guinea test dents Hyper's zeal

Hyperdynamics' has released the rig after the first deepwater well in Guinea encountered only oil shows.

The company decided not to use the *Jasper Explorer* drillship for a planned second well after long delays in completing the **Sabu-1** well in a water depth of 2,329ft (710m).

The well encountered oil shows while drilling the targeted Upper Cretaceous section.

"The indicated oil saturation appears to be residual, suggesting that larger volumes of oil formerly were present in the reservoirs but subsequently leaked out or that these rocks lay on a hydrocarbon migration pathway," the company said.

The well was drilled to the planned total depth of 11,844ft (3,610m) approximately 145km southwest of Conakry.

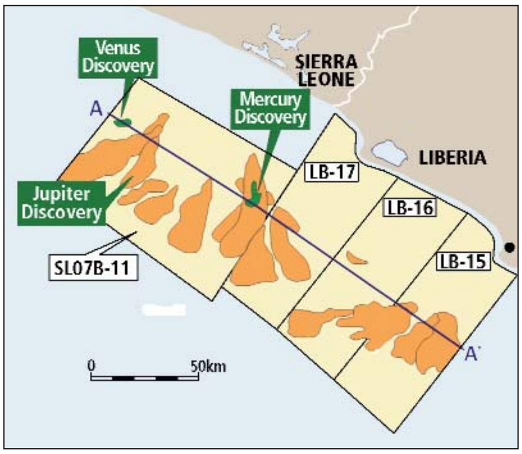
The company recently completed a 4,000sq km 3D seismic survey that is currently being processed but has already met its commitment on the block. A second well, **Baraka-1**, was scheduled in direct continuation of Sabu but the lengthy delays proved costly for a small operator like Hyperdynamics.

Only one exploration well has ever been drilled off Guinea, back in 1977 when deepwater was 655ft (200m).

Hyperdynamics operates the block with a 77% interest while Dana Petroleum holds the remaining 23%.

# Three times lucky for Anadarko in Sierra Leone deep

Anadarko Petroleum has made its third deepwater discovery-with its third well off Sierra Leone although the scale of the discovery was less than expected.




The company has made a find with the **Jupiter** discovery which encountered 98 net ft (30m) of hydrocarbon pay in Upper Cretaceous-age reservoirs.

The **Jupiter-1** well in **Block SL-07B-11** is more than 25km from the previous **Mercury-1** discovery well. Jupiter was drilled to a total depth of approximately 21,212ft (6,465m) in water depths of approximately 7,215ft (2,199m) by the *Transocean Discoverer Spirit* drillship. Once operations are complete at Jupiter, the drillship will move 15km northeast to the **Mercury-2** well which will target several reservoir levels including extensions of the oil accumulations discovered by the Mercury-1 well.

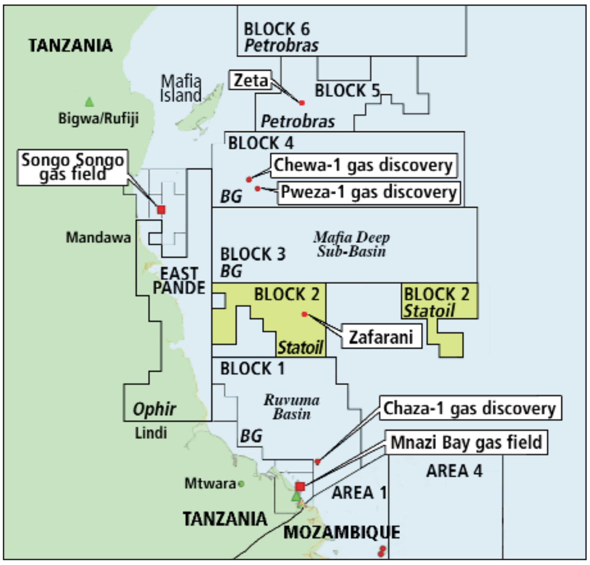
"The Jupiter-1 well is a successful test that has been preserved for possible re-entry, as the area will likely require additional evaluation," said Bob Daniels, Anadarko Sr. VP of worldwide exploration. "We are planning potential drill stem testing in the basin, following the Mercury appraisal well, to provide additional information regarding reservoir quality and deliverability."

The company made the Mercury find back in late 2010 (see AOG 25 November) around 65km southeast of the 2009 **Venus** discovery (see AOG 17 September). The Mercury-1 exploration well encountered approximately 135 net ft (41m) of oil pay in two Cretaceous-age fan systems. Pre-drill reserves were put at 450m boe.

Anadarko (55%) is operator of offshore Block SL-07B-11 along with partners Repsol (25%) and Tullow (20%).

# Statoil teases out Tanzanian deepwater gas

The excitement about the East African deepwater continues to mount with Statoil uncovering gas off Tanzania.




The **Zafarani** well is being drilled in **Block 2** by the *Ocean Rig Poseidon* drillship and the Norwegian company said it had "...encountered indications of natural gas in a good quality reservoir. Drilling operations are still ongoing and it is too early to give any indication of size and commerciality."

The well was spudded in early January and is expected to take up to three months to complete. It is in a water depth of 8,145ft (2,482m) and is expected to reach a total depth of 16,895ft (5,150m).

The block is neatly sandwiched between BG's successful blocks where it has three finds and where drilling is ongoing.

"TPDC is pleased about these preliminary results and is eagerly awaiting further information on this operation," said Yona Killaghane, managing director of national oil company TPDC.

This is the Norwegian firm's first operated discovery in Africa since **Nnwa** off Nigeria back in the year 2000 although it also has two undrilled blocks in neighbouring Mozambique and is said to be interested in the upcoming ultra-deepwater acreage in Kenya.

It recently signed up for two pre-salt blocks off Angola where it already has minority interests in other successful acreage and was at one time perusing Ghana.

Statoil operates Block 2 with 65% with ExxonMobil making a rare foray into African frontier territory by taking a 35% stake back in 2010 (see AOG 8 April). Block 2 covers an area of 11,099sq km and has water depths up to 9,843ft (3,000m).

# VAALCO mulls Angolan pre-salt as Kwanza double delayed

VAALCO Energy has put back drilling on a two well programme off Angola as it is still trying to find a new partner for its Kwanza Basin acreage and said it may now target the pre-salt.

The US independent operates **Block 5** and the wells were originally set to spud way back in 2007 but financial troubles for then partner Interoil forced continual delays.

Then, last September, VAALCO said it hopes to use Transocean's *GSF 135* semisub for a programme starting next month, saying that national oil company Sonangol was helping it find a new partner and would take up the interest itself if it could not find one.

However, VAALCO has now said it is "...continuing to work with Sonangol both to identify a working interest partner and to explore possible options involving well drilling obligations and the acquisition and reprocessing of additional 3D seismic data to further develop additional pre-salt leads.

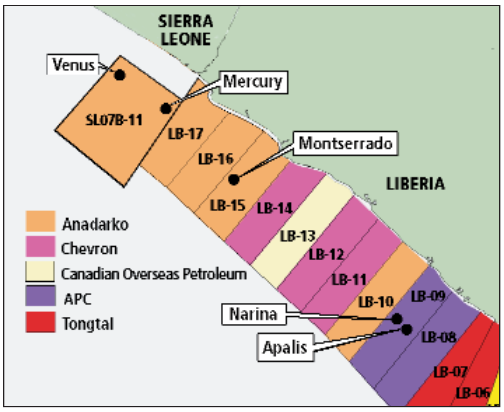
"VAALCO noted that recent discovery announcements by other operators appear to confirm the presence of prolific, mature, source rocks and thick, high quality pre-salt reservoirs in the Kwanza basin. VAALCO's Block 5, located in the northern portion of the basin, is situated to trap pre-salt hydrocarbons which may have migrated up-dip from the deeper part of the basin."

It was previously looking at drilling wells on two of the **Loengo**, **Kindele** or **Jack** prospects in the south of the block. These are in water depths of between 250-510ft (75-155m), each with gross potential reserves of 41-93m bbl.

# Liberia deepwater discovery adds Transform Margin hopes

The first deepwater oil discovery has been made off Liberia, adding to the growing faith in the Transform Margin.

African Petroleum (AP) said it has made a "significant oil discovery" with its **Narina-1** well in Block **LB-09**, the second well in its drilling programme off the country. The well had a pre-drill estimate of 500m bbl of oil and AP is hoping the well clipped the edge of a 250sq km Turonian fan system which it is now hoping to appraise in the third quarter, potentially alongside another exploration well.




With Chevron and Anadarko to drill more wells off Liberia this year, a series of deepwater wells drilling off Côte d'Ivoire and Ghana, and Anadarko's new discovery off Sierra Leone (see story pg 7), this could well be the year that transforms the upstream industry in West Africa.

The Narina well encountered a total of 105ft (32m) of net oil pay in two zones. Of this 69ft (21m) was in the Turonian and 36ft (11m) in the Albian. Good quality oil was found in each of the Turonian and Albian reservoirs of 37° API and 44° API respectively.

It was drilled by the *Maersk Deliverer* to a total depth of 15,912ft (4,850m) in a water depth of 3,750ft (1,143m).

Oil was found in reservoirs in a Turonian submarine fan system extending across a prospective area of 250 sq km, the company said, with CEO Karl Thompson adding: "Additionally, the well found thick reservoir sands in shallower zones and thick source rocks which together with the discoveries in the Turonian and Albian has transformed the prospectivity of **Blocks LB-08** and LB-09, and the surrounding open acreage."

Last year AP drilled the **Apalis-1** well on the same block with "encouraging results" that "proved the hydrocarbon potential of the region". It was after analysis of this that AP decided to drill targeting the Turonian. The only other deepwater well off Liberia was on Anadarko's **Montserrado** prospect. It was completed late last year in **Block LB-15** and was classified as a sub-commercial oil discovery. Anadarko will return for a well in the fourth quarter on the **Strontium** prospect. Chevron will shortly spud the first of two wells on its own acreage off Liberia using the *Transocean Discoverer Spirit* which has one more well to drill for Anadarko in Sierra Leone.

# Aminex hits Tanzanian gas

Aminex appears to have uncovered gas with its latest well onshore Tanzania.

The **Ntorya-1** well in the **Mtwara** licence was initially drilled to a deeper than expected 8,203ft (2,500m), at which point partner Tullow Oil decided to withdraw. Aminex decided to deepen further to test an additional target identified on the seismic data at a depth of approximately 9,025ft (2,750m).

The well has now "encountered strong gas shows in a good quality reservoir sand" and a logging programme has started.

The well is designed to test the high quality Tertiary and Upper Cretaceous sands previously encountered in the **Likonde-1** well, 14km to the north.



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Tel: +44 (0)1962 711756

Annual subscription (incl. postage worldwide): £645

**Printing:**
Four Point Printing, Chertsey, UK

Registered as a newspaper at the Post Office.
ISSN 1469-106X

**Associated Publications:**
***Asia Oil and Gas Newsletter*, *E&P•Daily* and *European Offshore Petroleum Newsletter***