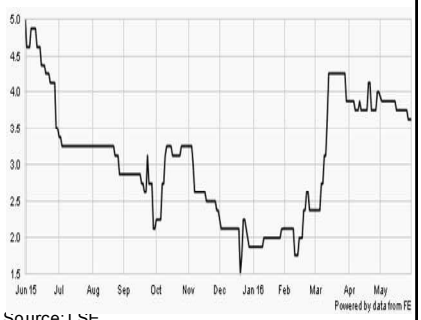
1 June 2016

# Canadian Overseas Petroleum Ltd

## Exploring new frontiers

**Oil & Gas**




Source: LSE

| Market data | |
|---|---|
| Price (p) | 3.625 |
| 12m High (p) | 5.00 |
| 12m Low (p) | 1.50 |
| Shares (m) | 606.1 |
| Market Cap. (£m) | 22.0 |
| Cash (debt) (£m) | 4.4 |
| EPIC | COPL |
| Free Float (%) | 99% |
| Market | LSE/TSXV |

**Description**

A dual listed Sub-Saharan focused E&P company with assets in Liberia in addition to Nigeria, Equatorial Guinea and Namibia. COPL's strategic partner in Liberia is ExxonMobil which is carrying the company through US$120m of exploration expenditure.

**Directors and Company information**

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**Canadian Overseas Petroleum (COPL) is a junior E&P company with a focus on deep water exploration opportunities in Sub-Saharan West Africa. The company's core asset is a 17% interest in Block LB-13 in Liberia where COPL will be carried through US$120m of exploration expenditure by the operator, ExxonMobil. A high impact maiden exploration well is scheduled to be drilled on Block LB-13 in Q4 2016. COPL also has exciting exposure to prospective exploration assets in Nigeria, Equatorial Guinea and Namibia through its interest in ShoreCan, a 50/50 joint venture with major African conglomerate, Shoreline Energy International.**

- COPL's exciting portfolio is focused on the offshore Cretaceous plays that have delivered so much exploration success across the deep water regions of West Africa in recent years. As a frontier explorer, COPL is seeking to follow these trends into underexplored basins where huge potential exploration upside is believed to exist.
- The company's most advanced asset is its 17% stake in Block LB-13 in Liberia where the group will be carried through US$120m of exploration expenditure. Drilling activity is expected to commence with the spudding of the Mecurado-1 well in late 2016. This well will target multiple horizons with prospective resource potential estimated to be in excess of 1 billion barrels of oil.
- Weak oil prices since 2014 have depressed rig rates and increased availability in West Africa. As such, we believe that the value of ExxonMobil's carry will provide for the drilling of a second well on Block LB-13. This has the potential to expose COPL to a significantly greater proportion of the estimated 2.6bn bbls of recoverable resources on the licence than was expected when the ExxonMobil farm-in was originated in 2011.
- Through its ShoreCan JV, COPL has a major interest in offshore Block OPL 226 in Nigeria which includes the untested Noa-1 discovery. Noa-1 exhibited several oil and gas pay zones and is only 5 km from the fully appraised Anyala discovery. COPL has noted that 3D seismic data on the block has identified numerous prospects that merit further exploration. The acquisition of Block OPL 226 is currently subject to Nigerian Ministerial consent and a licence extension, both of which are in process.
- ShoreCan has a MOU with the Ministry of Mines, Industry and Energy to acquire the Production Sharing Contract for offshore Block EG-018 in Equatorial Guinea and negotiations are underway with ratification anticipated in late 2016. The offshore region of Equatorial Guinea is a relatively mature hydrocarbon province. However, ShoreCan has identified exciting anomalies in the underexplored central region of the Rio Muni Basin which has distinct similarities to the play types offshore Liberia.
- ShoreCan also owns 100% interests in three exploration licences offshore Namibia. Blocks 1709, 1780 and 1808 are located in the Namibe Basin which has only had two exploration wells drilled to date. However, the Namibe Basin is thought to be highly prospective given that its conjugate basin is the Santos Basin in Brazil where some of the world's largest offshore discoveries have been made.

**COPL's current share price is entirely underpinned by the value of its carried interest in Liberia and we have calculated that near term exploration drilling could be worth up to 13p per share (fully diluted) on a conservatively risked basis. With medium term upside calculated at over 30p per share, possibly in the event of a disposal of COPL's interest in Block LB-13, we believe that COPL represents the most compelling West African exploration play on the market.**

# Introduction to COPL

Canadian Overseas Petroleum Limited (COPL) is an independent oil and gas E&P company listed on the London Stock Exchange (LSE) and the TSX Venture Exchange (TSXV) in Canada. The company is focused on exploration and development opportunities in Sub-Saharan Africa.

COPL's core asset is a 17% equity interest in the highly prospective Block LB-13 offshore Liberia. Its partner and operator with the remaining 83% interest is ExxonMobil which has agreed to carry COPL over US$120m of gross exploration drilling expenditure. An initial exploration well on the licence is anticipated in Q4 2016.

COPL also has an interest in ShoreCan, a 50/50 joint venture (JV) between the company and Shoreline Energy International Limited (Shoreline), a conglomerate with oil and gas interests across Sub-Saharan Africa. The JV operates through a Bermuda based special purpose vehicle called Shoreline CanOverseas (ShoreCan) and each party has a 50% equity interest in the JV.

ShoreCan's provisional core asset is an 80% interest in a foreign owned corporation that in turn owns 100% of offshore Block OPL 226 in Nigeria. This acreage includes the untested Noa-1 discovery. This deal is currently subject to Nigerian Ministerial consent and a licence extension, both of which are in process.

ShoreCan also has a Memorandum of Understanding (MOU) to acquire the Production Sharing Contract (PSC) for Block EG-018 in Equatorial Guinea. Negotiations are currently underway with final terms and ratification is anticipated in late 2016. The JV also has an 80% interest in three offshore blocks in Namibia which represent longer term upside to COPL.

**Early history of COPL**

Prior to August 2010, COPL was known as Velo Energy Inc., an oil and gas company with operations in Alberta, Canada. The group changed its name to Canadian Overseas Petroleum on 3 August 2010 with a strategy to grow a portfolio of assets in the UK North Sea through farm-ins and the acquisition of assets with single well discoveries.

During 2010 and 2011, the company acquired several UK North Sea assets including the Fulla/Freya prospect and collaborated on a number of projects with BG International Limited. The group also raised C$130m of equity financing in December 2010 that was held in escrow while the group was engaged in negotiations for additional licences.

Following the payment of earn-in agreements and agents' commissions in relation to several UK licences, COPL realised C$85.5m of net proceeds which were used to advance the company's acquisition of Block LB-13 in Liberia in May 2011.

## Entry into Liberia

Through a Bermuda based subsidiary, COPL primarily signed a Sale and Purchase Agreement with Peppercoast Petroleum plc to acquire a 100% interest in Block LB-13 for US$85.0m (equivalent to C$86.4m at the exchange rate at the time) on 18 May 2011. This transaction was satisfied by US$50.0m in cash with the balance payable in COPL shares.

In November 2011, COPL also signed an Asset Acquisition Agreement with ExxonMobil Exploration and Production Liberia Limited for the onward sale of a 70% interest in the PSC for Block LB-13. In return for this, ExxonMobil agreed to pay COPL US$55.0m and fund COPL's share of the first exploration well on the licence to a maximum of US$36.0m gross expenditure. ExxonMobil also agreed to pay COPL's share of JV costs estimated at $6.0m up the completion of the first well.

**Increasing focus on Liberia**

By the end of 2012, COPL had relinquished its UK licences and terminated its involvement in North Sea projects with BG following a legal dispute with BG. In November 2012, the company was also awarded an onshore exploration licence in New Zealand although this was subsequently relinquished in February 2015.

With momentum increasing in Liberia, the National Oil Company of Liberia (NOCAL) accepted the proposed JV between COPL and ExxonMobil in April 2012 and in March 2013, a restated and amended PSC for Block LB-13 was agreed.

Under the new terms, COPL reduced its interest from 30% to 20% with ExxonMobil increasing its holding to 80%. However, under the restated terms, ExxonMobil agreed to fund exploration costs for the first US$120m of gross expenditure. Additionally, NOCAL agreed to pay COPL's obligations to Peppercoast under the original PSC terms and ExxonMobil subsequently agreed to pay to NOCAL all funds payable to COPL under the Asset Purchase Agreement. As result of the amended contract, COPL was not required to issue any shares to Peppercoast.

These transactions closed in April 2013 following ratification of the emended PSC by the Liberian government. In a final chapter of the deal, COPL elected not to make a US$7.2m payment due to ExxonMobil within 75 days of the closing payments and a further 3% of the company's interest was transferred to ExxonMobil. This left the JV partners with the 83%/17% equity structure that exists currently.

**Ebola hiatus provides further opportunities**

Planned exploration drilling on LB-13 was delayed in 2014 as a consequence of the outbreak of the Ebola virus in the region which resulted in a significantly reduced presence of expatriate technical expertise in Liberia. However, this provided COPL with the scope to advance other areas of the business including a listing on the LSE and the development of the ShoreCan JV.

On 4 April 2014, COPL announced its admission to the Standard List on the LSE. The company also incorporated its ShoreCan JV in October 2014 to focus on upstream opportunities in Sub-Saharan Africa.

In February 2015, the Ministry of Energy in Namibia ratified ShoreCan's 80% interests in three deep water offshore blocks, 1780, 1709 and 1808. In March of the same year, the JV also entered into a farm-in agreement to acquire 60% of the Kimbiji and Latham offshore licences in Tanzania although these were subsequently relinquished in Q4 2015.

In May 2015, ShoreCan signed an MOU on Block EG-18 in Equatorial Guinea. A meeting to discuss the terms of a PSC was held recently in February 2016 and negotiations are ongoing.

In August 2015, ShoreCan agreed to acquire 80% of the share capital of a Nigerian oil company which holds a 100% interest in an oil appraisal and development project offering near term oil production. This deal, which is subject to the approvals of the Nigerian regulatory authorities, is located in the Niger Delta offshore Nigeria. A nominal consideration of C$250,000 is being held in escrow until completion of certain conditions.

## Events in 2016

**Liberia now Ebola free**

In January 2016, the WHO declared that the recent outbreak of the Ebola virus in Liberia had ended and all known chains of transmission had been stopped in West Africa. Liberia was declared "Ebola-free" on 14 January some 42 days (two 21-day incubation cycles of the virus) after the last confirmed patient in Liberia tested negative for the disease twice. Although the risk of additional flare ups remains, these announcements represent unequivocally good news for the country and companies operating in Liberia.

**PSC extended**

As a consequence of the Ebola outbreak and the hiatus that ensued, ExxonMobil informed COPL that an extension period for with regard to the PSC for Block LB-13 length had been granted by NOCAL on 23 February 2016. This extension was set at 619 days and that the Second Exploration Phase timeframe has been extended until 25 September 2017.

Consequently, the well to be drilled under the Second Exploration Phase, Mesurado-1, is planned to spud no earlier than Q4 2016. COPL now expects that ExxonMobil will finalise the rig contract and drilling timing target over the coming months.

It is very important to note that with the hiatus of exploration activity in Liberia coinciding with the prolonged decline in global oil prices, rig utilisation in the region has fallen and availability is high. Additionally, expected drilling costs have fallen dramatically since 2014 and we are confident that COPL will benefit from the prospect of a free carry on a second exploration within ExxonMobil's planned exploration expenditure.

### Financial position

At the end of March 2016 had net assets of C$15.5m predominantly comprised of C$16.5m of exploration assets and C$1.3m of cash offset by a modest amount of accounts payable and derivative liabilities.

The company boosted its cash reserves in April and May with two placings to raise a gross aggregate of C$8.6m. Assuming that the company has no major expenditure due with regards to Liberia now that the drilling phase of exploration activities is approaching, we are confident that COPL has ample cash reserves to fund its general administrative costs over the next 12 months which we estimate to be between C$1.0m and C$1.5m per quarter.

# Indicative valuation

Within our valuation of COPL, we have elected to focus on the group's Liberian asset given that drilling activity on Block LB-13 represents a key driver of value in the near term. At this stage, we have not included any value for the company's interest in the ShoreCan JV given that government consents and a licence extension is required in Nigeria, the PSC terms are still under negotiation in Equatorial Guinea and Namibia is a very early stage frontier exploration asset. In effect, we believe that these assets represent a highly attractive free option on the company.

### Share price underwritten

It is important to note that the market capitalisation of COPL is completely underwritten by the implied value of its carried interest in Block LB-13. The transactions on the licence since November 2011 have demonstrated a stable valuation for COPL's equity interest despite the collapse in oil prices since 2014. Therefore we believe that there is negligible downside to the current share price as it is supported by the status of COPL's relationship with ExxonMobil which carries a value of $37.2m equivalent to 4.3p per share on an undiluted basis.

**Transaction values underpin current share price**

| Date | Transaction | Interest | Value US$m | Implied value of LB-13 | COPL interest | Implied value of COPL's % | Notes |
|---|---|---|---|---|---|---|---|
| **May 2011** | Purchase of 100% of LB-13 from Peppercoast | 100% | $100m | $100m | 100% | $100m | Includes loan of $15m to Peppercoast forgiven |
| **Nov 2011** | Initial ExxonMobil farm-in | 70% | $97m | $139m | 30% | $41.6m | ExxonMobil pay $55m<br>Provide $36m carry<br>Pay first $6m of JV costs |
| **Mar 2013** | Amended PSC terms | 80% | $175m | $219m | 20% | $43.8m | Provide $120m carry plus $55m initial fee |
| **June 2013** | Relinquished 3% stake to ExxonMobil | 3% | $7.2m | $240m | 17% | $40.8m | COPL did not make payment due to ExxonMobil |
| **Current** | **ExxonMobil operator** | **83%** | **$182m** | **$219m** | **17%** | **$37.3m** | Exxon carry valued at $127 plus $55m initial fee |

Source: COPL

# Establishing a valuation range

Establishing a single valuation number for a frontier explorer is contentious as it would exclude the analysis of a range of variables. With the current value of COPL underpinned by the value of the ExxonMobil carry on LB-13, we have outlined the potential upside to the share price based on an escalating range of scenarios.

In our analysis, we believe that a valuation range of 7p-11p per share is indicative of short term risked drilling success from a maiden well. However, we believe that such success would imply a substantially increased value range of 30p-61p per share for COPL's interest should the company elect to dispose of its interest before the development phase.

### A valuation range for COPL

| | | Prospect | | | Mid case | | |
|---|---|---|---|---|---|---|---|
| Variable | | Low | Mid | High | Low CoS | Mid CoS | High CoS |
| Unrisked recoverable resource | Mmbbls | 500 | 750 | 1,000 | 2,644 | 2,644 | 2,644 |
| COPL interest | % | **17%** | **17%** | **17%** | **17%** | **17%** | **17%** |
| Unrisked recoverable resource (net to COPL) | Mmbbls | 85 | 128 | 170 | 449 | 449 | 449 |
| Chance of success | % | 20.0% | 20.0% | 20.0% | 20.0% | 30.0% | 40.0% |
| Risked resource | Mmbbls | 17.0 | 25.5 | 34.0 | 89.9 | 134.8 | 179.8 |
| Implied value per bbl of discovered oil (US$) | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 |
| **Expected Monetary Value** | **US$m** | **74.3** | **111.5** | **148.6** | **392.9** | **589.4** | **785.9** |
| Undiluted equity (m) | 606.1 | 606.1 | 606.1 | 606.1 | 606.1 | 606.1 | 606.1 |
| Fully diluted equity (m) | 914.0 | 914.0 | 914.0 | 914.0 | 914.0 | 914.0 | 914.0 |
| Value per share (undiluted) | GBp | 9 | 13 | 17 | 45 | 68 | 90 |
| **Value per share (fully diluted)** | **GBp** | **6** | **8** | **11** | **30** | **45** | **60** |
| **Corporate adjustments (£m)** | | | | | | | |
| Cash (End Q2E) | 4.3 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Overheads (2016E) | -2.6 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Warrants and options (May 2016) | 11.8 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| **Total valuation per share (fully diluted)** | **GBp** | **7** | **10** | **13** | **31** | **46** | **61** |
| **Exchange rates** | | | | | | | |
| CAD/USD | 1.34 | | | | | | |
| CAD/GBP | 1.92 | | | | | | |
| USD/GBP | 1.44 | | | | | | |

Source: Shard estimates

### Analysis of the variables

The first three scenarios in our range focus on the valuation of the successful drilling of different sized prospects. This is driven by two key variables, the first of which is chance of drilling success (CoS). We have assumed 20% which is slightly more conservative than the assumption of the independent reserves evaluator, DeGolyer & MacNaughton. We believe that there is major upside potential with this metric given that both ExxonMobil and COPL have both indicated a considerably higher chance of success such is their confidence in the asset.

The second variable is the implied NPV of a barrel of discovered oil in the ground. To calculate an indicative value for this, we have applied the terms of the Liberian PSC to a notional oil development of approximately 450 mmbbls. Within our assumptions, we have applied the following variables.

- Production commences in 2021
- Production peaks at 150,000 bopd in 2022 and 2023 and declines thereafter
- Long term flat oil price of US $75.00 per bbl
- Royalty payable of 5% on gross revenue
- Full cost recovery out of 70% of available oil (after royalty)
- Development cost totalling US$1.2bn
- Operating costs of US$40 per bbl

We have also applied the requisite split of profit oil after cost recovery in line with the production levels outlined below in order to arrive at an NPV (12.5%) per barrel metric*.

**Profit oil split on Block LB-13**

| Production rate | NOCAL | Contractor |
|---|---|---|
| 0 to 100,000 bopd | 40% | 60% |
| 100,001 to 150,000 bopd | 50% | 50% |
| > 150,001 bopd | 60% | 40% |

Source: NOCAL

## Major share price upside in the range

The three prospect scenarios represent a range which from a commercially viable deep water development prospect of 500 mmbbls to a major discovery of 1 billion barrels which is indicative of potential size of the primary drilling prospect on the block. Our analysis indicates that there will be significant upside to COPL's share price should ExxonMobil make a discovery with commercial quantities of oil.

We have extended our analysis using the same variables to illustrate the potential value of the entire block. We believe that this range is indicative of the potential acquisition value of the acreage should ExxonMobil make a commercial discovery. In tandem with this, we have applied an increasing CoS to the unrisked recoverable resource to reflect the operator's confidence in drilling success.

***Risk factors heightened in Liberia**

To be particularly conservative, we have applied a discount rate of 12.5% to our NPV rather than the industry standard 10% in order to account for heightened risk factors with regard to Liberia. We contend that Liberia is a high risk political, social and economic jurisdiction with endemic corruption and severe poverty. The country was embroiled in civil war throughout the 1990s and a fragile stability has only been in place since 2003.

The Ebola crisis of 2014, which ended in May 2015, precipitated a major hiatus in activity across the region and this remains a risk to activity in Liberia. However, considering that the country's healthcare facilities were virtually wiped out following the end of the civil war in 2003, we believe that the country performed well in aiding the global effort to eradicate Ebola in the region.

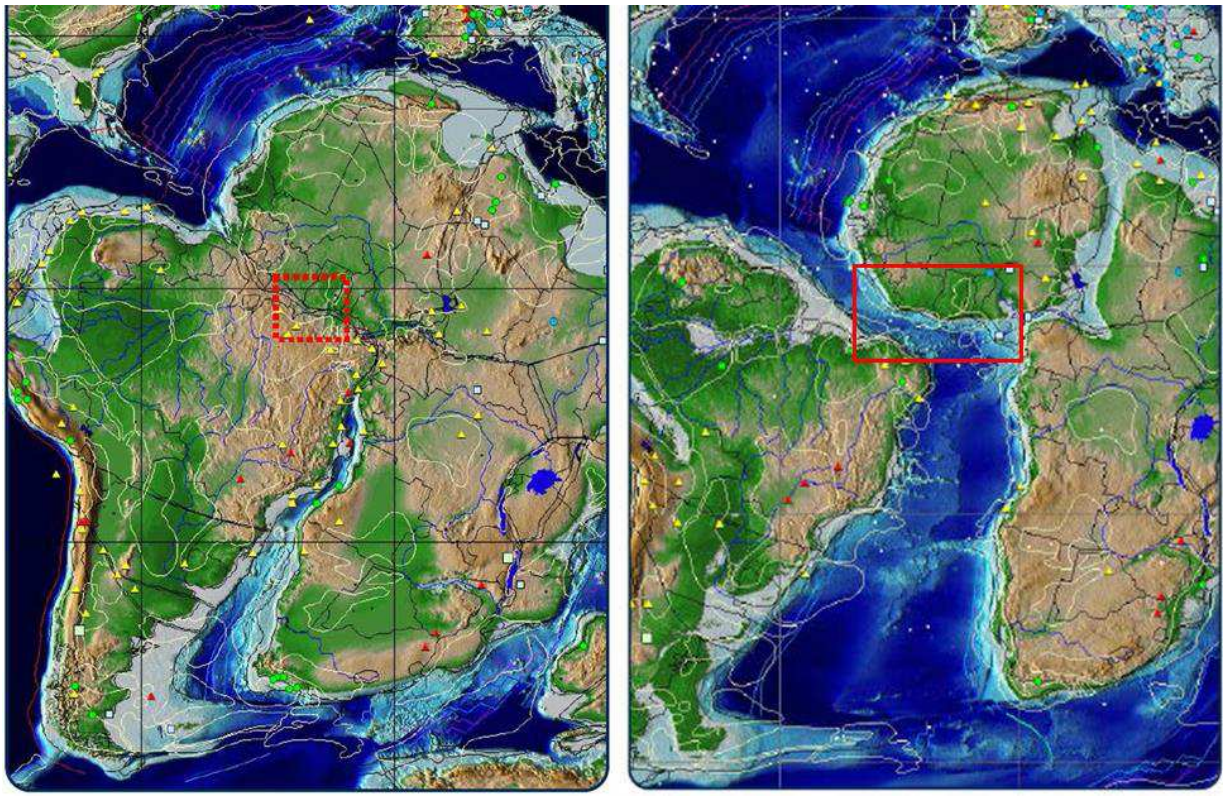
Other factors to take into consideration include the fiscal risks associated with changes of government making major alterations to the existing attractive PSC terms. COPL also faces more generic risks to drilling delays and operator risk should ExxonMobil decide to defer drilling.

We believe that these risks have been mitigated hugely since 2014 as global rig market conditions have softened considerably since the slump in oil prices. COPL has indicated that there are at least two readily available drilling ships in West Africa. Rig rates have also reduced considerably over the last two years to the point that COPL is confident that the existing US$120m drilling budget will cover at least two wells.

# Liberia – An emerging deep water oil province

Oil exploration offshore Liberia is focused on the Sierra Leone-Liberia Basin. The origins of the Sierra Leone-Liberia Basin play can be dated back to the Aptian stage of the Early Cretaceous Period between 113 million and 125 million years ago (see Appendix B) when the South Atlantic was emerging as an open ocean due to the movement of the South American and African tectonic plates at the time. As the North and South Atlantic oceans were opening, a geological region known as the West African Transform Margin (WATM) became established. This area is highlighted on the right hand map.

**Paleo-reconstruction with Sierra Leone-Liberia Basin and WATM highlighted**



Source: COPL

## The Sierra Leone-Liberia Basin

During the Cenomanian and Turonian ages between approximately 100 million and 90 million years ago, South America and Africa separated and the WATM region became drowned, rapidly creating ideal conditions for Cenomanian source rock beds. In particular, the creation of deep basins and onshore river systems led to the establishment of turbidite* fans/channel complexes in the deep water region offshore what is now Liberia and Sierra Leone. Additional basins are also evident in the Cote D'Ivoire-Tano Basin and the Dahomey-Embayment Basin offshore Ghana, Togo and Benin further to the south and east of Liberia.

Continued subsidence within this region also resulted in the subsequent deposition of shales which are believed to act as effective seals to the turbidite fans/channel reservoir rock.

The WATM extends from the north of Sierra Leone around the coast of West Africa to Benin in the east. This geological region is considered distinct from the Northwest African Atlantic Margin (NWAAM) which extends northwards from Guinea in that there are major salt structures in the basins to the north of Sierra Leone. The approximate boundary between these two petroleum systems is called the Guinea Transfer Fault Zone (TFZ) and is outlined on the map below.

*A turbidite is a geologic deposit of sediment through gravity flow responsible for distributing vast amounts of clastic sediment into a deep ocean. The distinction of turbidites is that the water carrying the sediments must be travelling at a certain (relatively high) velocity in order to suspend the sediment and carry it along. Massive accumulations of turbidites often result in the formation of submarine fans which often represent ideal conditions for hydrocarbon reservoirs.

**Location of the Sierra Leone-Liberia Basin**


Source: Created from Google Maps by TGS

## Reservoir potential in the Early Cretaceous channel systems

The cross section below highlights the potential channel systems (in yellow) within the Cenomanian-Turonian stratigraphic sections of the Early/Lower Cretaceous period in addition to those potentially located in the Campanian-Maastrichtian aged rock of the Late/Upper Cretaceous Period. (See Appendix B for additional detail regarding the stages within the Cretaceous Period).

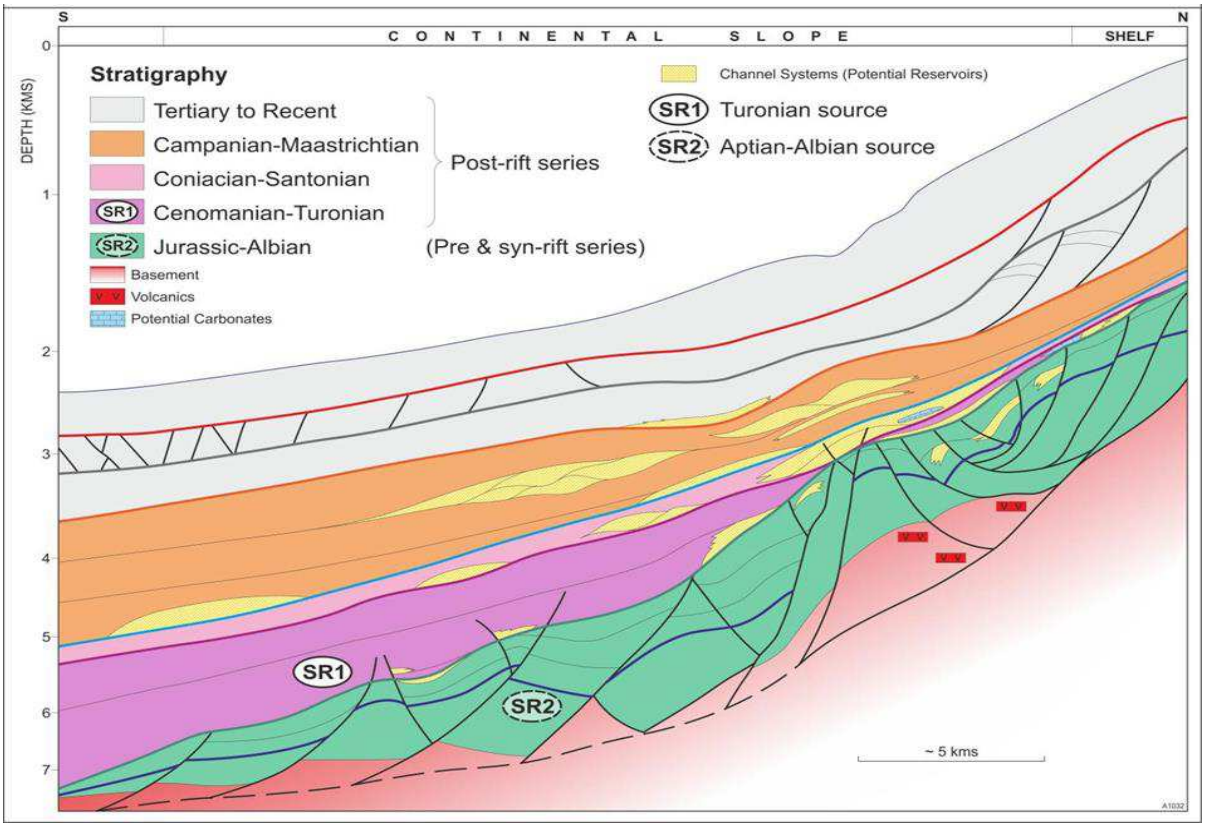
Norwegian geo-scientific consultant TGS has indicated that these turbidite channels, together with source rocks laid down in earlier periods of deep water anoxic (depleted of dissolved oxygen) conditions have produced a potentially prolific Upper Cretaceous play, particularly in water depths in excess of 1,000 metres.

This system has been proven in adjacent basins outlined on the map above with drilling success from the Mercury-1 and Jupiter-1 exploration wells in Sierra Leone and the producing Jubilee oilfield in Ghana.

**Multiple play potential**

It would appear that this Upper Cretaceous play is home to potentially stacked sands and through basic and advanced seismic AVO acquisition, COPL has identified that there is the potential for hydrocarbons in multiple zones over an area of 180 $km^2$ analysed by the company. This is supported by TGS which also believes that a secondary play exists in the Lower Cretaceous sections although this play has delivered smaller discoveries in similar basins to date.

**Generalised geological section of the West African Transform Margin**




Source: TGS

# Seal potential

COPL has indicated that there are very encouraging slumping features around the pinchout points on many of the channels and fan structures on the licence. These features have strong similarities to other turbidite sand reservoir oil fields offshore Angola, where slumping has created effective seals. A slump occurs when a coherent mass of loosely consolidated materials or rock layers moves a short distance down a slope.

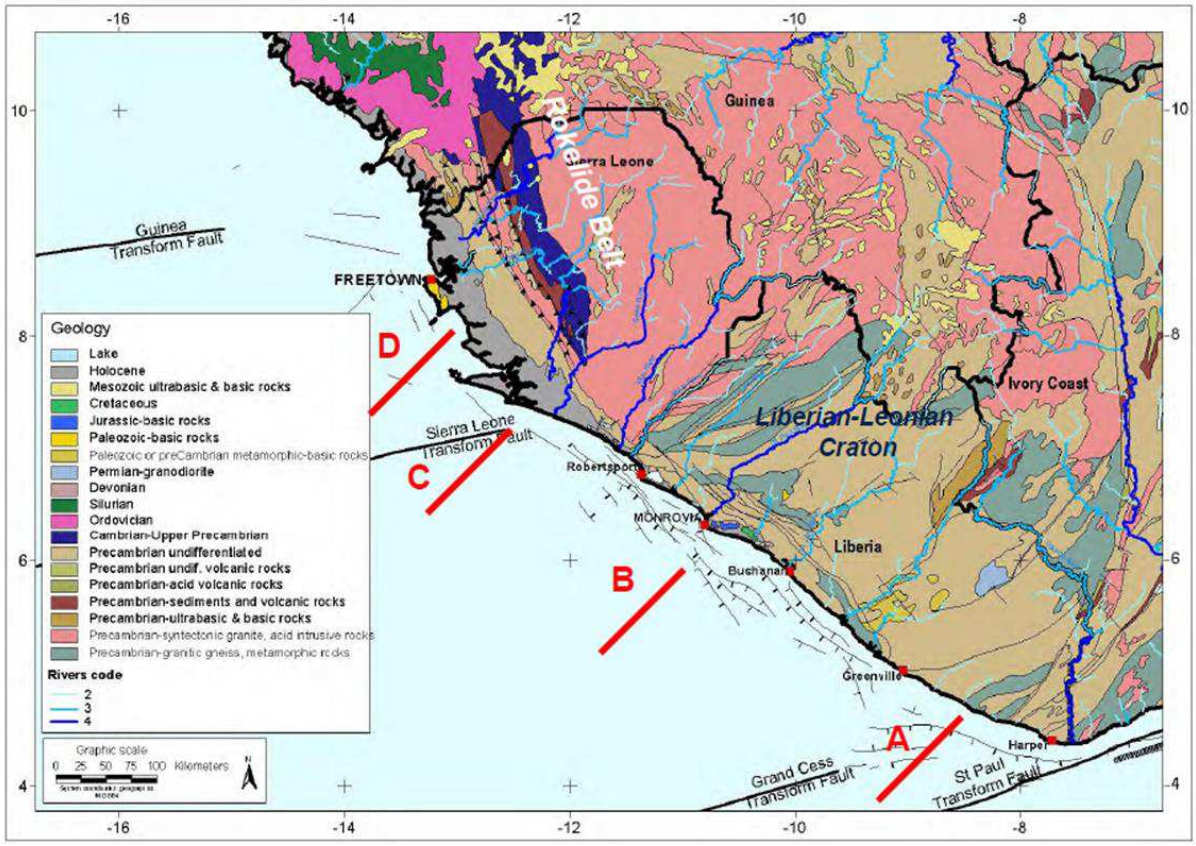
**The Liberian model**

As a basin wide indication, we believe that the three diagrams below the map depict the slumping features clearly on a 2D cross section. The larger map of Liberia and Sierra Leone below highlights four zones where 2D cross sections (A, B, C and D) have been taken.

We are primarily interested in the cross sections A to C which are located within the Sierra Leone-Liberia basin and it is clear from the three cross sections that slumping features are prevalent throughout the basin. Cross section B, which is located closest to COPL's licence depicts slumping on a steep continental shelf basement and pinchout points on the Upper Cretaceous intervals (in light green) most starkly.

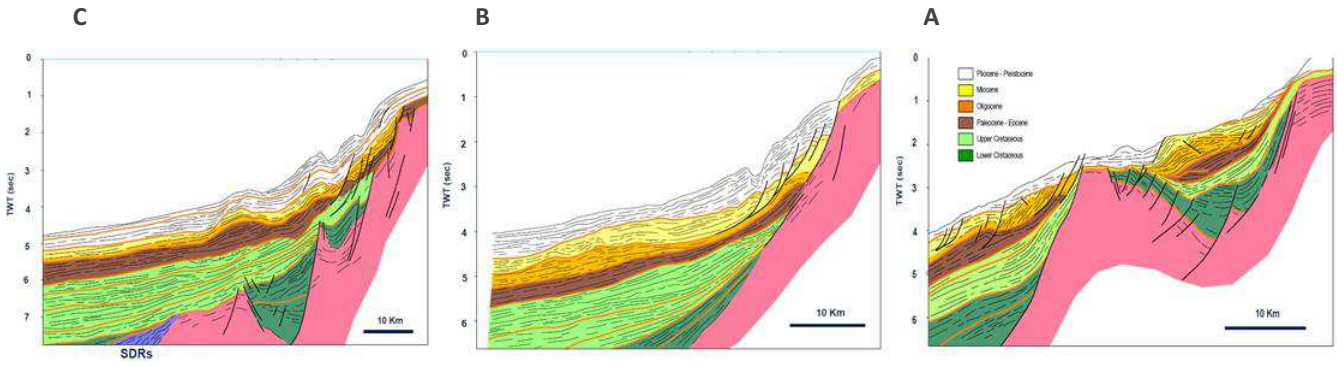
This hypothesis is supported by COPL which indicates that the continental slope is less steep towards Sierra Leone in the north and also towards the south of the basin. The company argues that this could imply a lower clay content in the sediment and therefore higher quality reservoir sands and high net to gross pay ratios.

**Geologic map of Liberia and Sierra Leone**




Source: Repsol

**2D cross sections related to the geologic map**



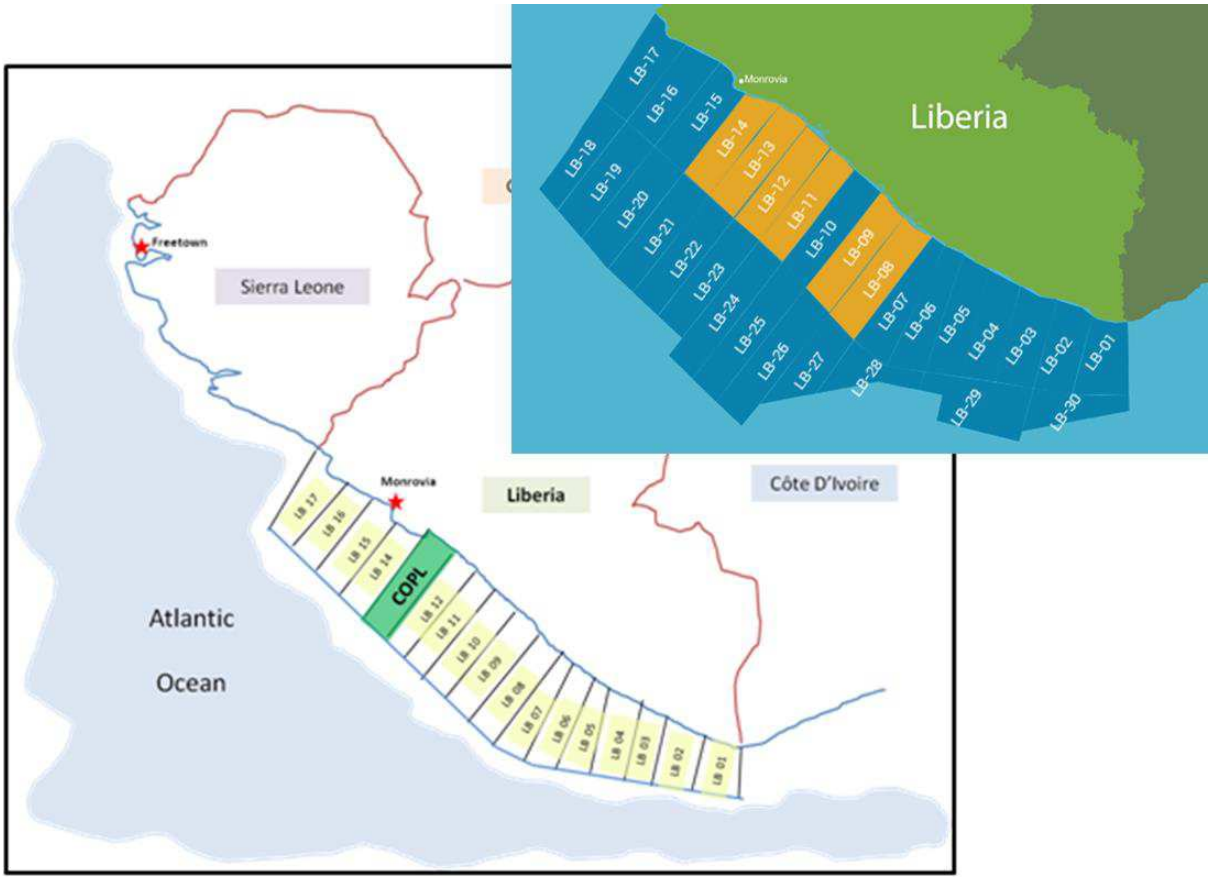

Source: Repsol

# Liberia Block LB-13

Block LB-13 is located off the coast of Margibi and Grand Bassa to the southeast of the Liberian capital Monrovia. The water depths range from zero at the coast to 2,500 - 4,000 metres at the southwest extremity of the licence. Of the total number of blocks on the continental shelf, six have been licenced (highlighted in orange on the map inset). Among the other operators are major players including Chevron, Anadarko and African Petroleum in addition to COPL's operator, ExxonMobil.

Liberia has also delineated 13 ultra-deep exploration blocks with water depths up to 4,500 metres. However, these are as yet unlicensed.

**Location of Block LB-13**




Source: COPL, NOCAL

## Exploration activity on Block LB-13

In 1970, Chevron drilled the IIB-1 in the shallower waters of Block LB-13 and reported immature oil shows at depths of 683 - 1,000 metres and also below 2,700 metres. The well was drilled to a total depth (TD) of 2,930 metres and plugged and abandoned as a dry hole. However, the indications of oil and gas prone source rocks and oil shows across multiple zones bodes well for the deeper prospects which COPL has identified where the hydrocarbons are likely to be more mature.

**Expenditure to date**

As part of COPL's due diligence on Block LB-1, COPL invested US$25m between 2011 and 2013. Of this amount, approximately C$15m was invested in 3D seismic data with the balance spent on legal and administrative costs. As operator, ExxonMobil has also invested over US$130m of which a signature bonus of US$50m was payable to NOCAL upon the successful renegotiation of the PSC in 2013 and a further c.US$80m was spent to acquire the asset from the original owner, Peppercoast.

As outlined earlier, ExxonMobil will now fund US$120m of gross exploration drilling costs and all other JV costs have been capped at US$1.0m until 100% of drilling costs have been completed. This reduces COPL's financial exposure going forward to a negligible amount.

**Prospective resources**

Block LB-13 covers an area of approximately 2,500 $km^2$. COPL has a licence to use 3D seismic shot over the block in 2010 and has identified several drilling targets in the Cretaceous turbidite sand stratigraphic traps. These appear to have similarities to recent deep water oil discoveries made offshore Ghana and Sierra Leone.

The company commissioned a Dallas based independent reserves evaluator, DeGolyer & MacNaughton to conduct a Gross Prospective Petroleum Resource Report for Block LB-13. Following review of the available seismic by the evaluator, it selected the top 13 prospects on the block and derived a gross prospective recoverable resource number of 2.6 billion barrel (P50) for the block.

**Prospective resources summary for Block LB-13 (mmbbls)**

| mmbbls | P10 | P50 | P90 |
|---|---|---|---|
| **Gross** | 4,238.6 | 2,643.7 | 1,797.8 |
| **Net** | 720.6 | 449.4 | 305.6 |

Source: DeGolyer & MacNaughton, COPL

## Drilling target acquired

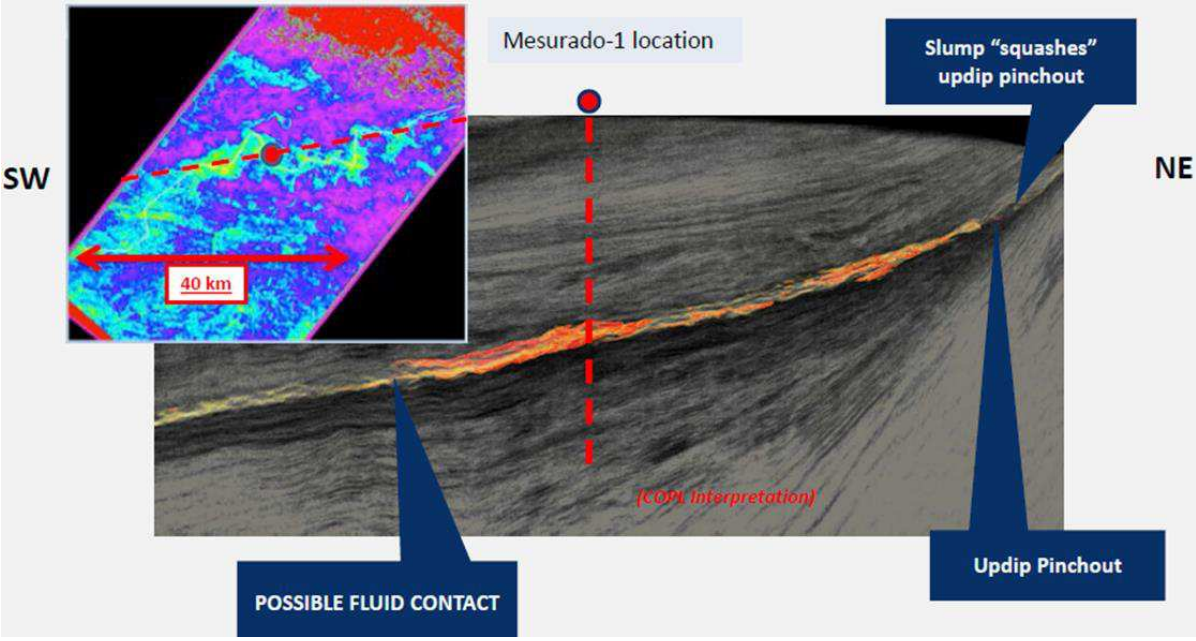
The JV partners have identified the primary prospect that it intends to drill with the timing of the spudding of a well indicated for Q4 2016. The location of the well, which will be called Mesurado-1 after the Mesurado River in Liberia, is outlined on the seismic AVO map below.

The primary target is the highlighted area which is believed to be Santonian to Turonian aged multiple fans stacked vertically, providing multiple targets from a single well. The cross section below also depicts the slumping to the northeast of the structure which provides an updip pinchout point and a very credible potential trapping mechanism as outlined previously. We estimate that the pre-drill prospective resource estimate for the primary prospect is in excess of 1.3 billion barrels of oil.

**A second exploration well**

It is important to consider that the prolonged slump in the oil price since 2014 has depressed global drilling rig rates and increased availability in the region. As such, COPL believes that the value of ExxonMobil's free carry could comfortably provide for the drilling of two exploration wells on the block rather than the original one assumed prior to 2014.

**Seismic map of the primary prospect on Block LB-13**



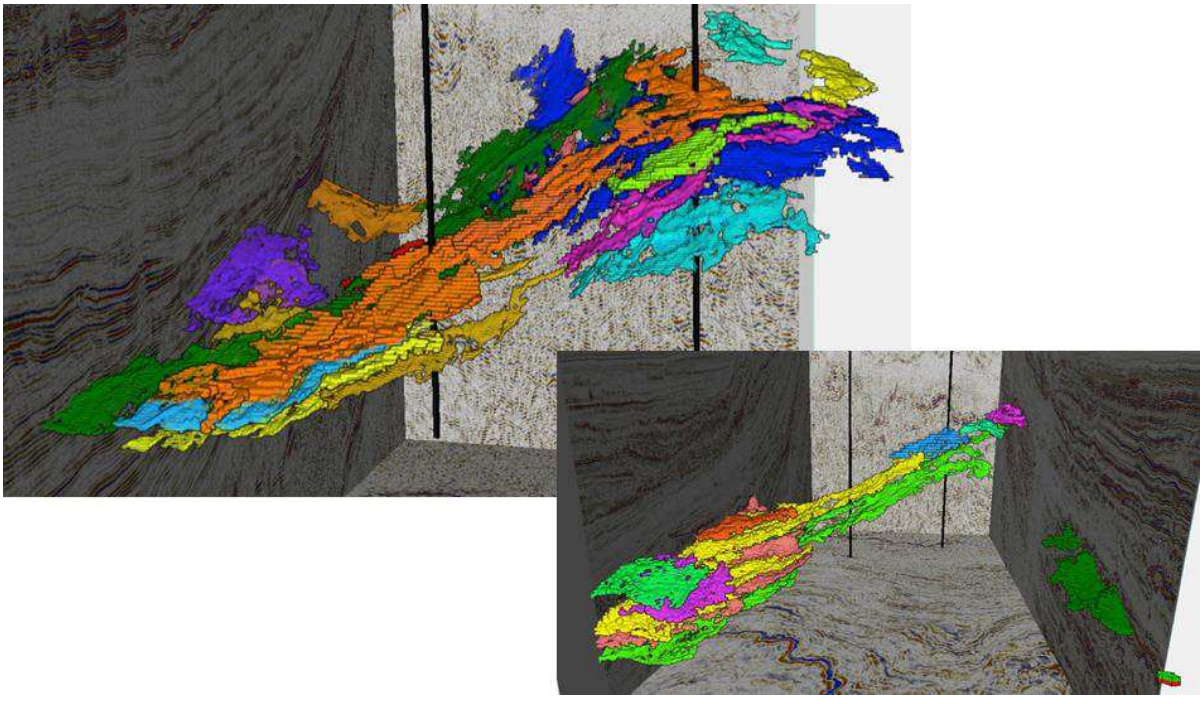

Source: TGS

**Multiple targets from a single well**

Outlined below is a sophisticated 3D depiction of the existing seismic data to highlight the areas with hydrocarbon potential and further delineate prospective areas from the surrounding rock. This technique is very adept at highlighting the potential for multiple stacked sands that a single well bore can penetrate.

It is important to note that the independent evaluation of prospective resources only provides estimates for the Santonian aged sands and that pay zones from additional sands have the potential to provide very significant upside to the existing resource estimates.

**Primary prospect with secondary prospect inset**



Source: DeGolyer & MacNaughton, COPL

# Deep water exploration in Liberia

Prior to 2010, there was negligible exploration drilling activity in Liberia. Between 1970 and 2005, Amoco Chevron and Frontier Oil & Gas drilled only five wells of which three were deep and recorded 100% dry holes. Activity since 2010 has been more concerted and six wells were drilled in less than three years providing Liberia with its first deep water discovery, Narina-1. The Ebola crisis and the decline in oil prices since 2014 have curtailed recent activity. However, Mesurado-1 will represent the rejuvenation of exploration activity in 2016/17.

**Recent deep water drilling activity in Liberia**

| Date | Well | Block | Operator | Result |
|---|---|---|---|---|
| Oct-10 | Montserrado-1 | 15 | Anadarko | Dry |
| Aug-11 | Apalis-1 | 9 | African Petroleum | Dry |
| Feb-12 | Narina-1 | 9 | African Petroleum | Discovery |
| May-12 | Nighthawk-1 | 11 | Chevron | Undisclosed |
| Jul-12 | Carmine Deep-1 | 12 | Chevron | Undisclosed |
| Feb-13 | Bee-Eater-1 | 9 | African Petroleum | Oil shows |

Source: NOCAL, Various

## Block 9

African Petroleum operated Block 9 has provided the majority of the news flow from Liberia in recent years. The licence was first drilled by Frontier Oil & Gas in 1972 with the Cestos-1 well in the shallow water region. Although classified as a dry well, it did record oil shows at 426 metres in the Palaeocene section and mixed hydrocarbon prone source rock below 1,259 metres in the Aptian interval.

**Recent drilling**

Of the three wells drilled by the current operator, Narina-1 was declared a discovery with 32 metres of net pay reported over two sections in the Turonian (21 metres) and the underlying Albian (11 metres) with no oil water contact observed. Good quality oil in Turonian and Albian reservoirs with 37° and 44° API oil respectively was encountered. This well is a particular landmark for the region as it demonstrates a working petroleum system in the central Liberian Basin.

Bee-Eater-1 was drilled updip of Narina-1 to determine both the extent of the Narina-1 pay and the commercial viability of the prospects from the discovery well. African Petroleum has claimed a discovery from up to 135 metres of net pay in Bee-Eater-1 although the reservoir is tight and additional information is being gathered on the well before commerciality can be established.

## Analogous plays in the West African Transform Margin

**Sierra Leone**

A total of six deep water exploration wells have been drilled in Sierra Leone yielding four discoveries. These include Venus and Mercury by Anadarko which opened up the Sierra Leone-Liberian hydrocarbon play in an area adjacent to the maritime border with Liberia.

The Venus discovery on Block SL 6/07 was announced in August 2009. However, being relatively thin with approximately 50 feet of net pay in water depths of 1,800m, it has not been classified as commercial at this stage.

In November 2010, Anadarko announced that the Mercury-1 well had encountered 135 feet of net oil pay in two Cretaceous aged fan systems located on Block SL-07B-10. The well was drilled to a TD of 4,863 metres in 1,600 metres of water. In the primary objective, the well encountered 35 net metres of light sweet crude oil with a gravity of between 34° and 42° API with no water contact. An additional 6.4 net metres of pay with 24° API crude was encountered in a shallower secondary objective.

In February 2012, Anadarko with its partners Repsol and Tullow drilled Jupiter-1 on Block SL-07B-11 to a TD of 6,465 metres in 2,199 metres of water. This well was declared a discovery with net pay of 30 metres in the Upper Cretaceous interval. It did not encounter an oil-water contact zone and Anadarko has preserved the well for future re-entry given that the area is likely to require additional evaluation.

Given that the location of the three Anadarko discoveries in the WATM, we are confident that this highly prospective trend extends through the deep water acreage in Liberia.

**Location of major Anadarko discoveries in Sierra Leone**


Source: Tullow Oil

**Potential discovery by Lukoil in 2012**

It was announced by Lukoil that its Savannah-1X exploration well on Block SL5-11 which was drilled to a TD of more than 4,700 metres encountered oil-saturated reservoirs and the company retrieved oil samples from Turonian sands. A government source claimed that the well encountered light oil on the Savannah structure in more than 2,000 metres of water and although an appraisal has been mooted, the well has not been declared a discovery yet and further information has not been forthcoming.

## Ivory Coast – the Saphir discovery

Extending the WATM play to the east takes us into the Deep Ivorian Basin offshore Ivory Coast. To date eight exploration wells have been drilled yielding six discoveries. Of particular interest is the Total operated Saphir-1XB well on Block CI-514 which proved the presence of liquid hydrocarbons in the deep offshore play.

Saphir-1XB was announced as a discovery in April 2014 and represents the first discovery in the frontier San Pedro Basin. The well was drilled to a TD of 4,655 metres in 2,300 metres of water on Block CI-514 and encountered c.40 metres of net pay containing light 34° API oil in a gross section of 350 metres.

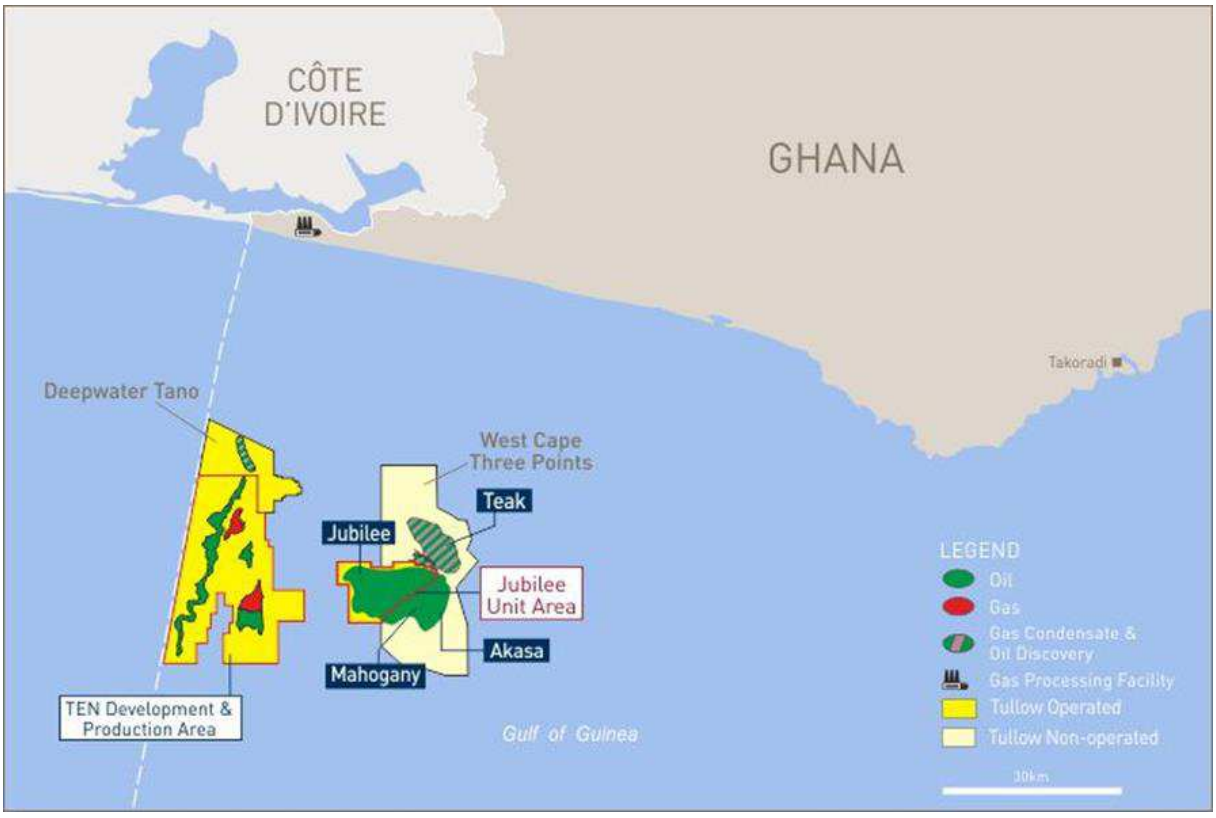
Ivory Coast has existing oil and gas production including the Foxtrot, Marlin and Manta producing fields. This demonstrates that there is a working hydrocarbon system in the offshore region in the Upper Cretaceous intervals in particular. However, these fields are located in the shallow water region and do not represent our core area of interest for the purposes of comparison with Liberia.

## Ghana – the Jubilee field

The Jubilee field in Ghana is representative of an earlier phase of activity in the WATM play where successful exploration drilling in the West Cape Three Points Block has led to a series of discoveries and a major development project.

The Jubilee field was discovered in 2007 by Kosmos Energy which drilled the Mahogany-1 and Hyedua-1 exploration wells discovering attractive net pay in high quality stacked sands. The field, which was estimated to contain up to 600 mmbbls of gross reserves with potential upside of 1.8 billion barrels, was developed by Tullow and came on stream in December 2010. Average production was 102,600 bopd in 2015 although this has declined to 80,300 in Q1 2016 due to technical issues with an FPSO turret.

**Location of the Jubilee field and associated discoveries**




Source: Tullow Oil

A series of additional discoveries were made in this highly prospective region including the Mahogany oil discovery in 2008, the Teak oil and condensate discovery in 2011 and the Akasa oil accumulation, also discovered in 2011 by Kosmos.

The Deepwater Tano Block which is located immediately to the west of West Cape and borders Ivory Coast has also yielded four major oil and gas condensate discoveries between 2009 and 2012 and first production from these fields is anticipated in 2016.

# ShoreCan Joint Venture

COPL has a 50/50 joint venture partnership with Shoreline Energy International Limited (Shoreline), a conglomerate with oil and gas interests across Sub-Saharan Africa. The JV's core assets are located in Nigeria, Equatorial Guinea and Namibia. The JV operates through a Bermuda based special purpose vehicle called Shoreline CanOverseas (ShoreCan). It should be noted that COPL's interests in Liberia and Shoreline's interests in Block OML 30 in Nigeria are outside the scope of the JV.

The JV was set up to enable COPL to increase its exposure to value enhancing assets and opportunities while providing a greater degree of risk protection and capital requirements for the company's existing shareholders. Although ShoreCan's activities can be financed by its shareholders, ShoreCan is in a position to access private equity markets directly through the involvement of Shoreline Energy.

The JV is interested in oil and gas exploration and development assets in addition to producing assets and gas to power projects for stranded gas. The Directors of the JV include two representatives from each JV partner.

- Arthur Millholland - Chief Executive Officer (COPL)
- Viscount William Astor - Non-Exec Director (COPL)
- Kola Karim - Chief Executive Officer (Shoreline Group)
- Tunde Karim – Executive Director (Shoreline Group)

## Nigeria

ShoreCan's most advanced asset is an 80% interest in a foreign owned corporation that in turn owns 100% of Block OPL 226 which is located in the Niger Delta region offshore Nigeria. This deal is currently subject to Nigerian Ministerial consent and a licence extension application, both of which are in progress. As such, a nominal consideration of C$250,000 is being held in escrow until completion of certain conditions.

ShoreCan has already presented the Nigerian National Petroleum Company (NNPC) with a provisional budget in support of its applications for Ministerial consent and licence extension and provided a Technical Team to manage future operations in Nigeria.

**Block OPL 226**

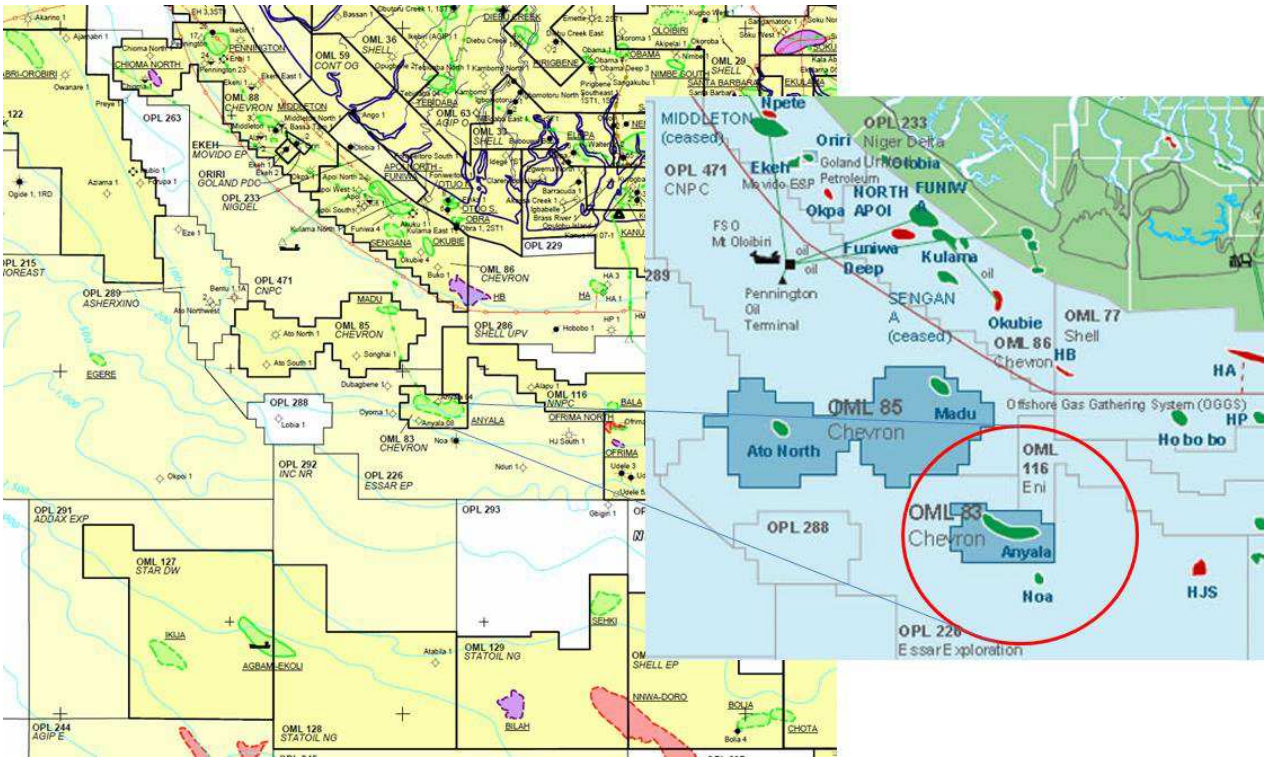
The OPL 226 licence surrounds the Anyala Field in separate licence OML 83. The Anyala field and the Madu field to the north in OML 85 were discovered by Texaco in 1993 but development was deferred during the 1990s due to cost concerns. Although Chevron, after its merger with Texaco, began a new development plan in 2004, the field was never developed and was subsequently sold to Nigerian independent, First E&P Limited in 2014.

The two fields have been fully appraised with nine wells capable of production and combined recoverable oil and gas resources are estimated to be 340 mmboe. However, the weakness in the oil price since the acquisition by First E&P has delayed a full development project which would be expected to deliver 50,000 bopd in addition to gas for the Nigerian market when on stream.

**The Noa-1 gas discovery**

OPL 226 also contains the Noa-1 undeveloped discovery which was drilled in 2001 by Nexen and is located only 5 km south of the Anyala field. Although Noa-1 has been plugged and abandoned, it exhibited several gas pay zones and a lower oil zone with nearly 20 metres of blocky oil sand pay. It is evident that the wider area is highly prospective and 3D seismic maps illustrate numerous anomalies and prospects.

**Licence OPL 226**




Source: COPL, IHS Energy, First E&P, Essar Exploration

## Prospectivity of the area confirmed

The Anyala field and the Noa-1 discovery have provided a raft of evidence that suggests that further exploratory drilling on OPL 226 will yield additional discoveries, particularly along the southeast plunge of the anticline feature that delineates the Anyala discovery. This area is bisected by the seismic crossline 2840.

Through the analysis of existing data and time structure maps, which identify the seismic image times at which subsurface structures are located, COPL identified net gas pay of 16.6 metres on Anyala and two equivalent zones of 7.0 metres of net gas pay and 18.7 metres of net oil pay on Noa-1 at the same depth.

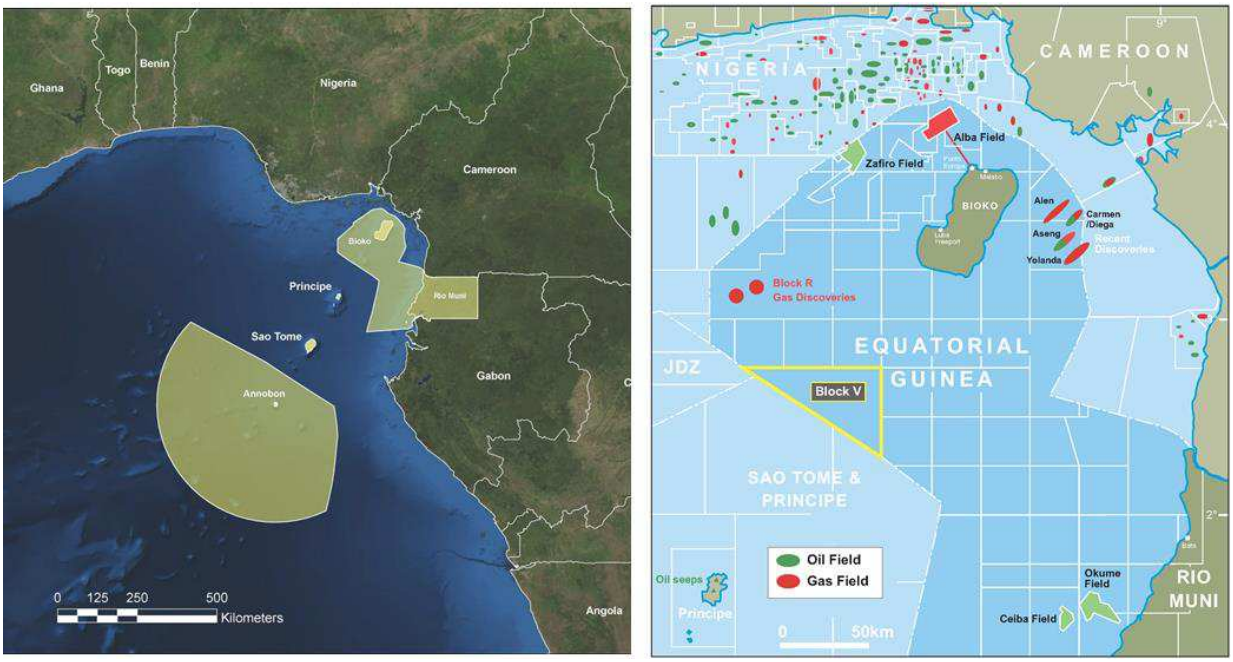
With this prognosis, the company identified an attractive prospect called Noa NE-1, a short distance northeast of Noa-1 on seismic crossline 2840. COPL believes that an exploration well at this location could probe between 16.6 metres and 25.7 metres of oil bearing sands. The company also believes that there could be an additional deeper oil bearing zone in Noa NE-1 at a depth where thick gas pay was recorded in the Anyala field.

# Equatorial Guinea

ShoreCan has a Memorandum of Understanding (MOU) with the Ministry of Mines, Industry and Energy (MMNE) in Equatorial Guinea (EG) to acquire the Production Sharing Contract (PSC) for offshore Block EG-018 in the Rio Muni Basin. This agreement was signed in May 2015 and negotiations are currently underway with final terms and ratification anticipated in late 2016.

Although a small country with a population of around one million people, EG is an established hydrocarbon producer and the third largest producer in sub-Saharan Africa after Nigeria and Angola. Its offshore licenced area for oil and gas exploration is also substantial given the location of islands of Bioko off the coast of neighbouring Cameroon and the smaller island of Annobón in the ultra-deep water margins.

**Location of Equatorial Guinea, its territorial waters and major oil & gas fields**




Source: MMIE and AFEX Global

**Current industry status**

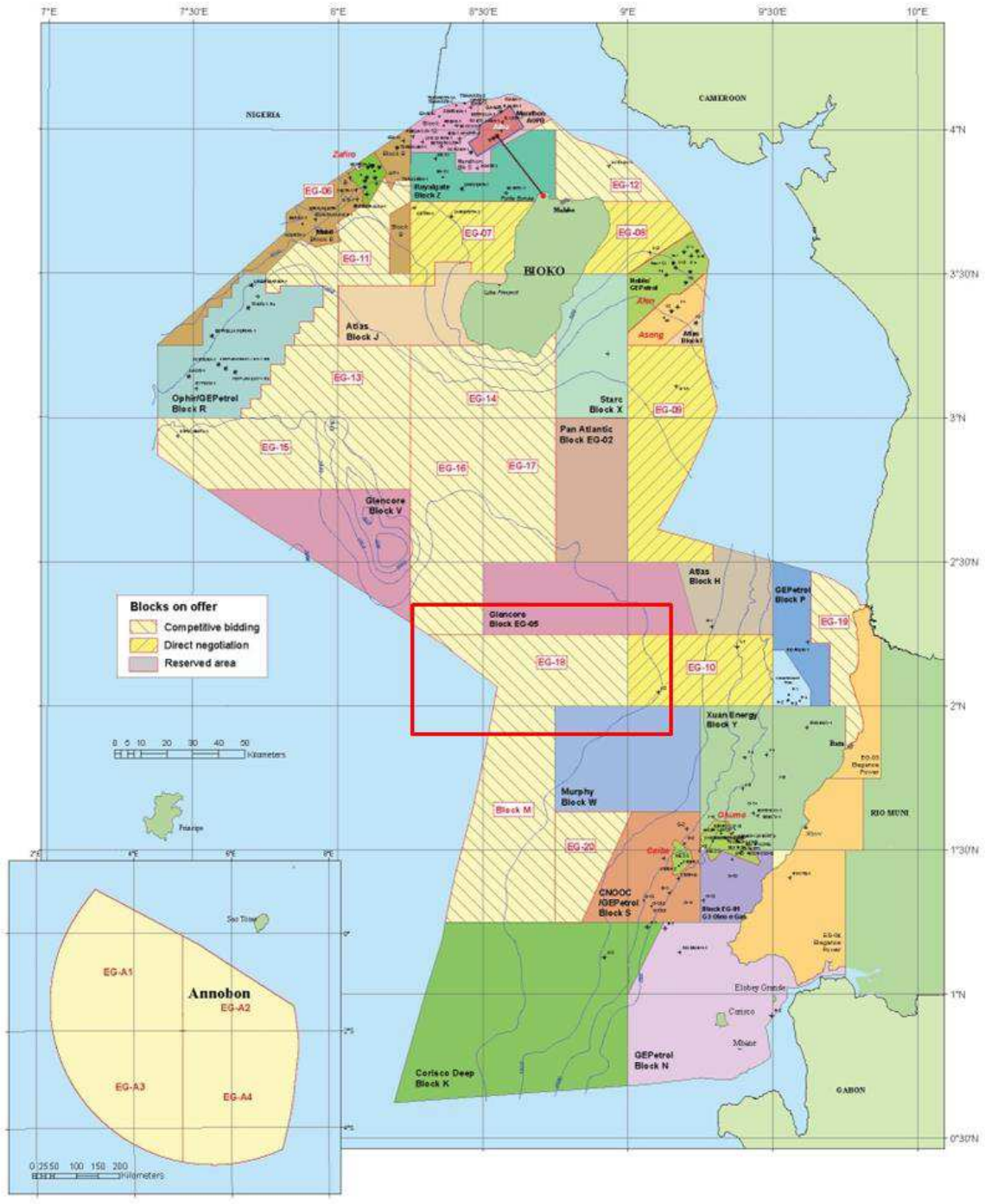
Oil and gas production in EG commenced in 1992 and according to BP, peaked at approximately 350,000 bopd in 2007. Production was estimated to be approximately 280,000 bopd in 2014 although EG also produces significant quantities of gas condensate.

The major fields which comprise most of EG's output include the Zafiro Field Complex, the Alba gas field bordering Nigeria to the north and the Ceiba and Okume field complexes in the shallower waters. There is also a grouping of predominantly gas condensate fields to the east of Bioko Island including the Alen and Aseng fields that contribute significant volumes to EG's aggregate hydrocarbon output.

**Block EG-18**

ShoreCan's licence under application is a large block covering 5,056 $km^2$. The area is highlighted on the map below. There have been no exploration wells drilled on the block but ShoreCan has identified an area of particular interest that is approximately 220 $km^2$ covering a high amplitude anomaly which merits further investigation.

**Equatorial Guinea hydrocarbon licence areas**




Source: MMIE

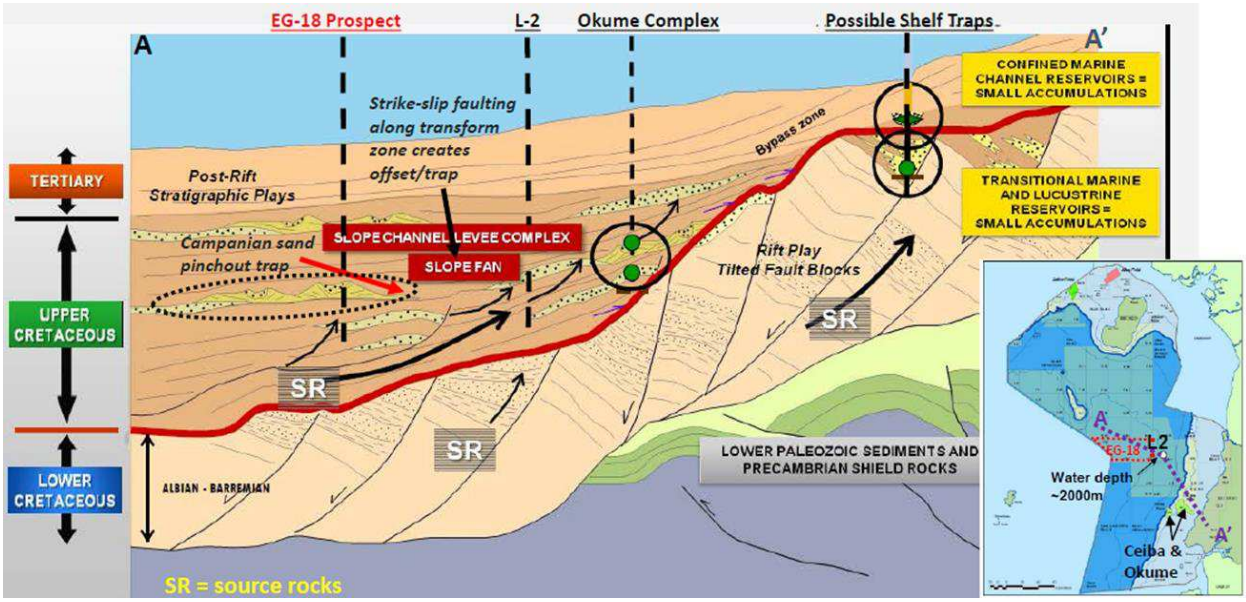
## Major similarities with Liberia

ShoreCan's interest in EG is driven by the presence of major geological similarities with COPL's interest in Liberia. In particular, the stratigraphic level of the prospects found in Liberian Block LB-13 is the same as those prospective in the Equatorial Guinea Block EG-18.

As with LB-13, the mid-Cretaceous aged Campanian, Santonian and Turonian stages show a meandering sand trend across EG-18 on far angle seismic amplitude maps analysed by COPL. Additionally, the seismic data also indicates that the trend on EG-18 is a "confined turbidite channel" that may have an updip pinchout which could be a possible trap for hydrocarbons as in the expected case of LB-13 in Liberia.

This is illustrated on the approximate northwest to southeast cross section map shown below which shows the characteristic stacked channel sands in the Upper Cretaceous interval in addition to evidence of tilted source rock to provide trapping mechanisms. With existing major discoveries such as the Okume Field Complex evident in this play type, we believe that the Block EG-18 could be highly prospective.

**Block EG-18 cross section**




Source: COPL, ShoreCan

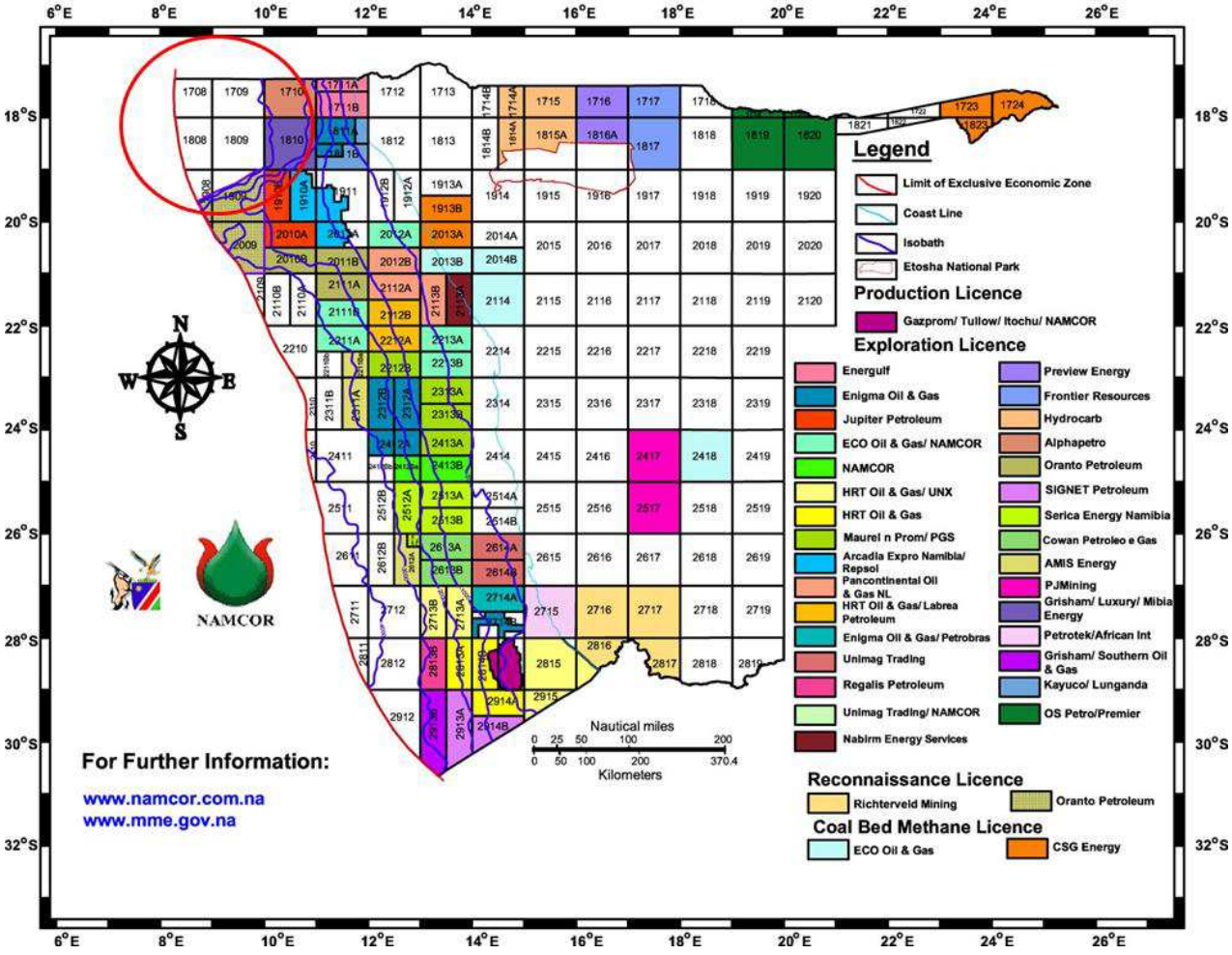
# Namibia

In February 2015, the Ministry of Energy in Namibia ratified ShoreCan's 80% interests in three deep water offshore blocks, 1780, 1709 and 1808. These are located in the far northwest of Namibia's licenced region in the Namibe Basin.

Namibia's state oil company, NAMCOR states that over 50 hydrocarbon licences have been issued to oil and gas companies to date. Of these, 48 are exploration licences, one is a production licence and two are coal bed methane licences. Across this acreage, a total of 32 wells have been drilled in the offshore region. These comprise 15 exploration wells and 7 appraisal wells. A further 10 wells have been drilled for scientific research and 10 exploration wells have been drilled onshore.

The offshore area under 2D seismic survey coverage is estimated to be approximately 147,000 km and NAMCOR is aware of more than 40,423 km² of 3D seismic data that has been acquired by various licence holders. The core of Namibia's geological and geophysical database is complemented by 28,000 km of aeromagnetic data which was acquired in 1998 covering the whole of offshore Namibia.

**Namibian hydrocarbon licence map (2012) highlighting the location of ShoreCan's acreage**




Source: NAMCOR

**Namibian exploration activity**

The Kudu gas field with estimated reserves of 1.3 TCF was discovered by Chevron in 1974 and proves that there is a working hydrocarbon system in the Orange Basin in southern Namibia. The field has not yet been developed although recent plans for the asset have centred upon a major gas to power development which will provide a solution to electricity shortages in Namibia.

More recent exploration activity has not been particularly successful. The Tapir South-1, Kabeljou-1, Wingat-1, Murombe-1, Moosehead-1 and Welwitschia-1 wells were drilled between 2012 and 2014 but were subsequently plugged and abandoned. Nevertheless, several of these wells such as Wingat-1 did exhibit hydrocarbon shows and confirmed the presence of lower Cretaceous clastic and carbonate reservoir rocks. The well data also showed an oil based working hydrocarbon system with two rich mature source rocks within the Aptian interval.

This spate of exploration activity was spread very thinly over an enormous area and of the wells drilled, three were located in the Walvis Basin, two in the Orange Basin and only one well, Tapir South-1, was drilled in the Namibe Basin where ShoreCan holds its licences. The relative locations of these basins over are outlined in the map below.

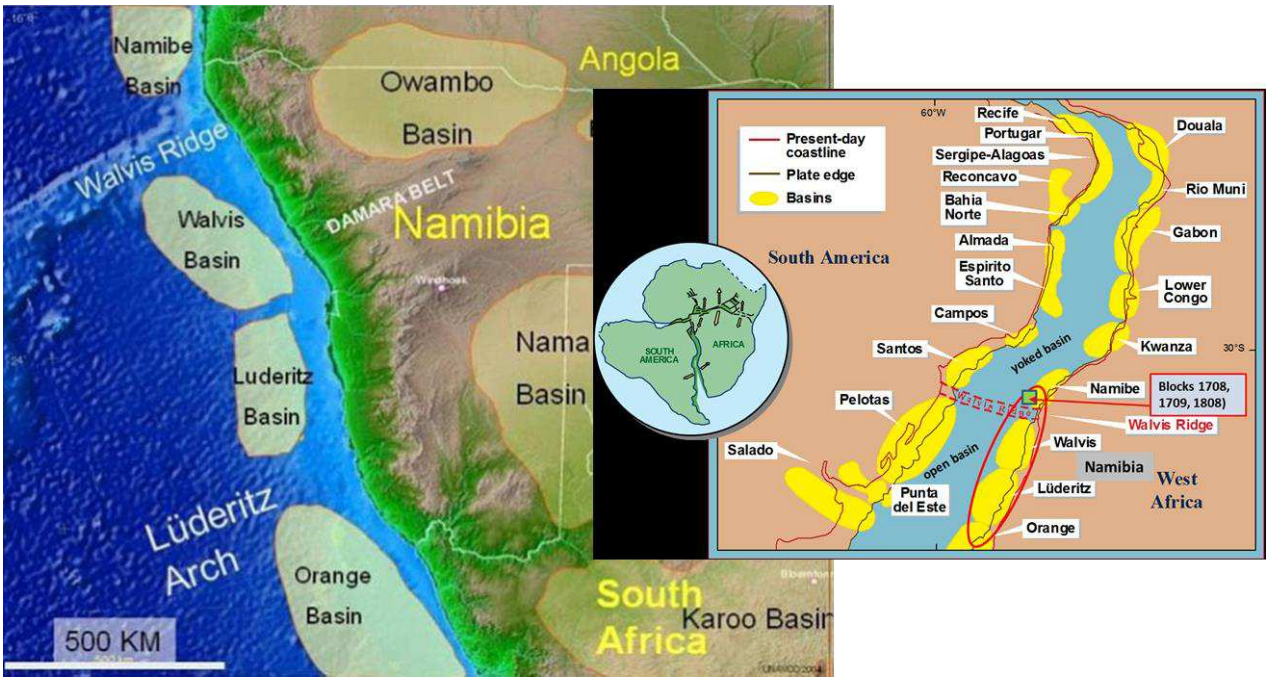
An earlier well, Kunene-1, was also drilled on Block 1711 in the Namibe Basin in 2008 and although there have only been two wells drilled in the Namibe Basin in total, Kunene-1 did demonstrate sub-commercial gas shows.

## The Namibe Basin – analogous with Santos in Brazil

The Namibe Basin is located north of the Walvis ridge on the Namibian/Angolan border. This region is thought to be prospective given that it is the conjugate basin to the Santos Basin in Brazil (see inset map).

As with the Sierra Leone-Liberia Basin play, the origins of the Namibe Basin can also be dated back to the Aptian stage of the Early Cretaceous Period when the South Atlantic was emerging as an open ocean. The analogous Santos Basin is home to several major sub-salt discoveries including Jubarte, Carioca and Lula (formerly Tupi), the latter of which was considered to be the largest oil discovery in the Western hemisphere in more than 30 years with estimated recoverable reserves of over 5 billion barrels of oil.

**Namibia's offshore hydrocarbon basins**

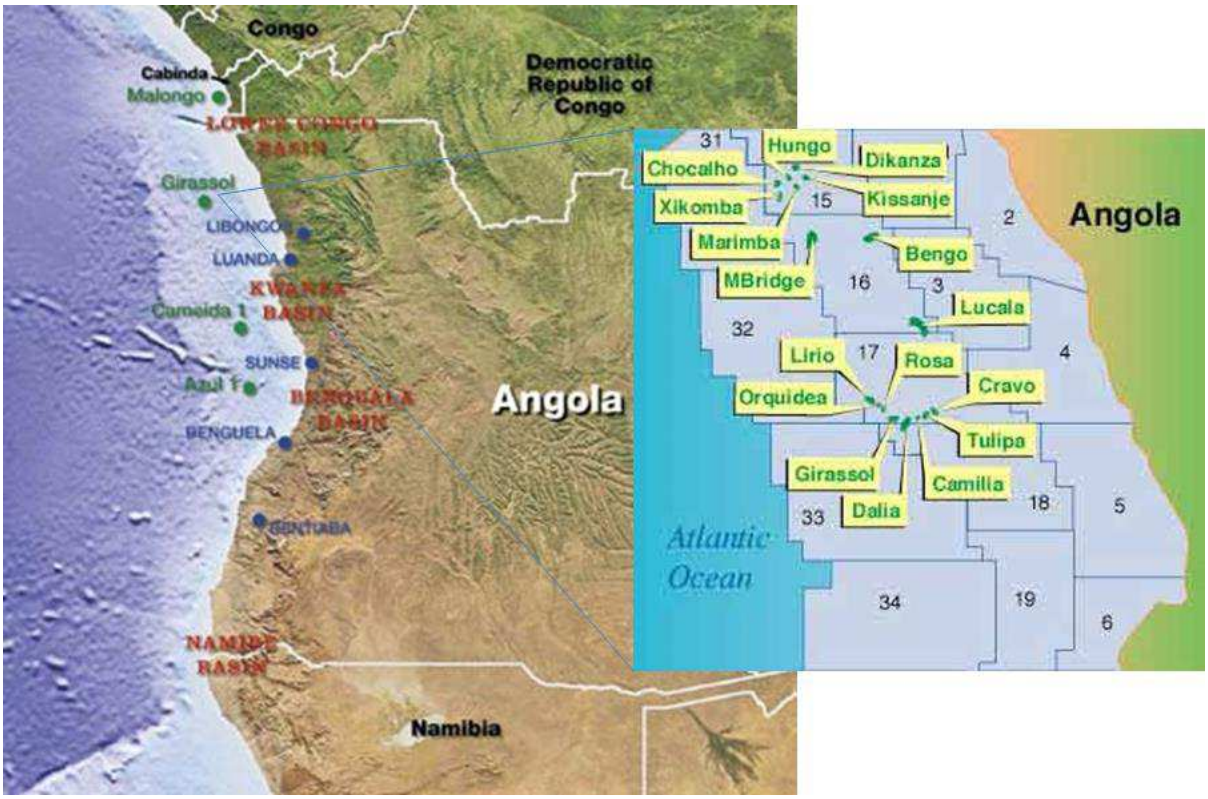



Source: Letho Resources, COPL

**Namibe Basin – a frontier region**

The Namibe Basin is unequivocally frontier acreage. As the map below depicts, Angola's agglomeration of discoveries and producing fields, including the giant Girassol field and several follow up discoveries, are concentrated in the Oligocene and Miocene reservoirs of the Lower Congo and Kwanza basins in the north of the offshore region. By contrast, the Namibe Basin on both sides of the border is underexplored.

**Location of major oil discoveries in Angola**




Source: Fugro-NPA Ltd, Oil and Gas Online

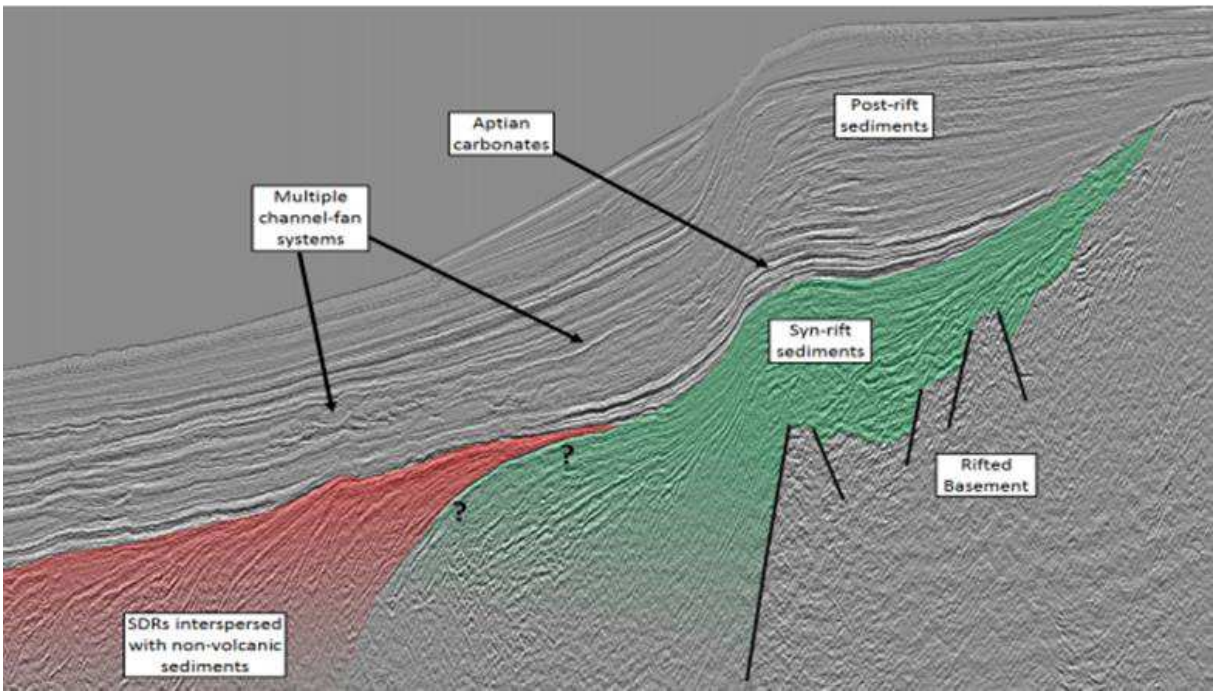
**Summary**

In a study of the Namibe Basin published by PGS (Petroleum Geo-Services) in 2013, the group shot 10,000 km of 2D seismic in the deep water offshore region of the Namibe Basin. Encouragingly, the data acquired is consistent with COPL's focus on the Cretaceous hydrocarbon plays created since the South Atlantic rift.

The main play elements within the Namibe Basin include thick sequences of sediments deposited in narrow deep lakes to create reservoirs and pinch out traps on the high points of channels and fans. As with COPL's preferred plays in Liberia and Equatorial Guinea, the seismic data demonstrates the potential for stacked channel/fan systems in the Lower Cretaceous (Aptian) aged intervals.

PGS concludes that this region has tremendous potential for hydrocarbons particularly in the pre-salt sediments and that the seismic work conducted to date has de-risked this play in the deep water to a significant degree.

**2D seismic cross section, Namibe Basin**




Source: PGS

# Appendix A: Board and management

## Board

**Arthur Millholland - President and Chief Executive Officer**

Mr Millholland has been President and Chief Executive Officer of Canadian Overseas Petroleum since August 2009 and has been a professional geologist for 30 years. He has worked in a variety of regions including the UK North Sea, Canada, the Gulf of Mexico, the United States, South America, and West and North Africa. In particular, he was the founder and key Director of Oilexco Inc. He is a member of the Association of Professional Engineers Geologists and Geophysicists of Alberta, and the American Association of Petroleum Geologists.

**Harald Ludwig - Chairman and Independent Director**

Mr Ludwig is President of Macluan Capital Corporation, a diversified private equity investment company. He is also Director of Lions Gate Entertainment Corp (NYSE), Seaspan (NYSE) and West Fraser Timber (TSX). Harald serves as a member of the advisory Board of TennenbaumCapital Partners, LLC.

**Viscount William Astor - Independent Director**

Viscount Astor is a Director of Networkers plc (AIM), Tavistock Investments plc (AIM), SilvergateMedia Ltd (UK Private) and formerly Chorion plc (until 2011). He sits as an elected hereditary peer in the UK House of Lords.

**Massimo Carello - Independent Director**

Mr Carello has over 30 years of international senior management and board level experience. He is a Director of Orsu Metals Corp (TSX) and Canaccord Financial Inc. (TSX, LSE). He was previously a Director of Uranium One, Urasia Energy Ltd, Anker plc and President and CEO of Diners UK Ltd.

**John Cowan - Independent Director**

Mr Cowan has over 38 years' experience in the oil and gas exploration and production business. He is currently a Director of Dundee Energy, as TSX listed Canadian E&P Company. He was previously founder of two other Canadian E&P companies.

## Senior management

**Rod Christensen - Vice President Exploration & Exploitation**

Mr Christensen has been Manager of Exploration since August 2009. He has 30 years' working in the natural resource industry in Western Canada, the UK North Sea and throughout the world. He has served as the lead geologist for a variety of companies that have made numerous significant discoveries. He holds a Bachelor of Science Degree from the University of Washington.

**Norman Deans - Vice President Operations**

Mr. Deans has 20 years' experience in the oil and gas industry primarily involved in the drilling and engineering of wells for both onshore and offshore. During the course of his career he has worked for some of the world's largest companies in the industry. He has a Bachelor of Mechanical Engineering Degree (Honours) and a Master of Science Degree in Offshore Engineering.

**Ken Halward - Manager of Reservoir Development**

Mr Halward has been Manager of Reservoir Development since August 2009. Mr. Halward has over 30 years of diversified experience in both the Western Canadian Basin, the UK North Sea and in international areas including Venezuela, Argentina, Ecuador, Libya, and the UK North Sea.

**Dr Richard Mays – Vice President Business Development and General Counsel**

Dr Mays has extensive Legal, Commercial, Oil and Gas experience dating over 30 years. He was previously Executive Chairman of Blackstar Petroleum and Peppercoast Petroleum. He is a former Professor in Law and Depute Dean at Aberdeen Business School.

**Ms Kristin Obreiter – Interim CFO**

Kristin is a Chartered Accountant with a Bachelor of Commerce, Accounting from University of Calgary. She spent four years as an auditor and the last 10 years working with international oil and gas firms.

**Nick Pillar – Manager Geophysics**

Nick is a Geoscientist with a BSc in Applied Geology and over 30 years of experience in the oil industry. He was Chief Geophysicist at Enterprise Oil prior being taken over by Shell. He joined Ikonscience, a niche rock physics software and service company as Operations Director and left Ikonscience in 2009 to pursue a consulting career prior to joining COPL in 2011.

# Appendix B: Sub divisions of the Cretaceous Period

| System/ Period | Series/ Epoch | Stage/ Age | Age (Ma) |
|---|---|---|---|
| Paleogene | Paleocene | Danian | younger |
| Cretaceous | Upper/ Late | Maastrichtian | 66.0–72.1 |
| | | Campanian | 72.1–83.6 |
| | | Santonian | 83.6–86.3 |
| | | Coniacian | 86.3–89.8 |
| | | **Turonian** | 89.8–93.9 |
| | | Cenomanian | 93.9–100.5 |
| | Lower/ Early | Albian | 100.5–~113.0 |
| | | Aptian | ~113.0–~125.0 |
| | | Barremian | ~125.0–~129.4 |
| | | Hauterivian | ~129.4–~132.9 |
| | | Valanginian | ~132.9–~139.8 |
| | | Berriasian | ~139.8–~145.0 |
| Jurassic | Upper/ Late | Tithonian | older |

Source: International Union of Geological Sciences

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