Offshore Senegal

Sangomar, Rufisque & Sangomar Deep Offshore Blocks

May 2010
First Australian Resources Limited

EXECUTIVE SUMMARY:

Introduction: Envoi has been commissioned to assist First Australian Resources Ltd (‘FAR’), the Western Australia based ASX listed company, expand its search for a drilling partner to join them in the large (7,490 km²), highly prospective but undrilled deepwater exploration Licence offshore Senegal. This involves the three contiguous Rufisque, Sangomar and Sangomar Deep Blocks which FAR owns and operates with a 90% working interest. Petrosen, the Senegalese state oil company, retains a 10% interest in the Blocks which is carried through exploration.

The acreage is covered by one of the largest 3D seismic data sets for the region, including detailed attribute analysis, having acquired over 2,050km² of new data over the Licence. FAR’s interpretation to date indicates that their acreage contains prospects in both an Early Cretaceous carbonate shelf play and also Late Cretaceous slope fan system play. The latter is interpreted to be similar to the proven hydrocarbon systems onstrike to the north in Mauritania and south Guinea Bissau Basin but with multi million barrel reserve potential in the structural, stratigraphic & stacked closures mapped in FAR’s Licence.

FAR is willing to offer up to a 70% working interest (net 63% equity after the Senegalese state oil company, Petrosen, carry) in the Licence, in return for funding the forthcoming exploration well (estimated US$ 50-65 million). FAR would like to engage a new partner by mid September 2010 and ahead of the Second Renewal Period which carries an associated drilling obligation after November this year (2010).

History: Even though regionally the petroleum system’s potential was initially evidenced by Shell’s V-1 well offshore Mauritania back in 1974, the more successful exploration did not commence until after 2000. Since then, exploration along the continental shelf edge in Mauritania, to the north of FARs acreage in Senegal, has resulted in a series of both oil and gas discoveries. These include the Pelican field which found gas condensate in the Cretaceous play, and the Chinguetti, Tiof, & Tevet fields which found oil, and the Banda field which found gas in the Miocene play. These all appear to be sourced by Late Cretaceous marine black shales.

Discoveries to the south of FAR’s Senegal acreage have confirmed both light (33.6° API) oil discovered in Maastrichtian sands and heavy (10° API) oil found in Oligocene carbonates and include the large one billion barrels in place Dome Flore field. This is situated in the AGC area shared by Senegal and Guinea Bissau and is clear evidence of the southerly extension of the Mauritanta-Guinea Bissau Basin play trend. Significantly, all the undrilled acreage between the two proven play area’s offshore Senegal and both north and south of FAR’s acreage is now fully licensed. The Ophir / Rocksource Group have also had approval to drill the first ever deepwater well in the area later this year (2010).

The Rufisque, Sangomar and Sangomar Deep Blocks were originally awarded in July 2004 to Hunt Oil. FAR farmed into the Licence for a 30% interest in January 2006, and contributed to the acquisition of the large modern (2,086 km²) 3D seismic programme in the region. Existing 2-D coverage of the Licence was predominantly made up of 1970’s and 1980’s data, with later acquisition by Western Geco in 1997 and Vanco in 2001. Though the data quality was good, the new 3D survey acquired in 2007 was instrumental in determining the shelf closures and detail of the fan systems.

Even though the new data achieved this, Hunt Oil decided to withdraw from Senegal in 2009 along with several other frontier exploration areas in the world following a change of senior management. FAR subsequently increased its interest in the Licence to 90% in September 2009 and assumed operatorship.

The FAR Licence is currently at the end of its First Renewal Period after extensions were granted in November 2008 enabling the acquisition of a CSEM survey in 2009 (funded by Shell) and completion of other geophysical evaluation. The results of the CSEM however, were deemed inconclusive due to a number of factors including lack of well control, the presence of carbonates and depth limitations associated with CSEM technology. Even though Shell did not proceed in the project (partly linked to the inconclusive results of the CSEM, the global financial crisis at the time and restructuring of its worldwide operations), other evidence of large prospectivity including prospects in the Early Cretaceous carbonates and the Late Cretaceous slope fan complexes clearly mapped on the new 3D data, was more than sufficient for FAR to progress on their own and seek a new partner.
Regional Setting & Petroleum Geology

Overview: The Senegal Basin, incorporating FAR’s acreage is the largest of a series of passive continental margin sub-basins which make up the Mauritania-Senegal-Guinea Bissau Basin (‘MSGB’) that runs parallel to, and locally overlapping, the West African coastline.

The Senegal Basin is itself a Mesozoic rift basin which developed as the Atlantic Ocean opened. Late Triassic to Early Jurassic rifting began as America and Africa began to pull away from each other, with synrift continental sediments deposited in the developing basin as a result. Rifting continued in the Early Jurassic with the creation of new crust from the developing Atlantic spreading ridge. This proto-oceanic stage is characterised by a thick evaporite sequence and widespread anoxic deposits. From the beginning of the Mesozoic, the Senegal Basin did not undergo any orogenic or compressional stress.

Carbonate platform building throughout the basin began in the Mid-Jurassic, continuing well into the Late Cretaceous. On the shelf, gravitational movement of the underlying salt commenced down-slope into the basin, with the first emergence of diapirism at the slope base. This salt movement was triggered and exacerbated by the faulting and eastwards dipping rotation of the overlying carbonates. Along trend, both the north and south of the FAR Licence, several large discoveries have been made associated with salt structures. Seismic also indicates differential rotation of the East dipping shelf strata along the shelf margin.

Cretaceous shelf lithologies and structures are apparent along the West African coast, extending south from the MSGB Basin into proven producing areas in the Gulf of Guinea and onshore into Cameroon.

Prospectivity: FAR has carried out a comprehensive evaluation of the Rufisque and Sangomar blocks, acquiring 2,086 km² of new 3D seismic and CSEM data, all now tied in to an evaluation of the wells in and surrounding the Licence. This geological and geophysical work has confirmed and delineated several prospects in the main shelf carbonate and slope apron debris fans.

In the FAR Licence, progradational and aggradational packages can be identified on seismic throughout the platform building period, with the last aggradational package seen in the Cenomanian. A period of relative tectonic inactivity followed the Cenomanian, with deposition of deep marine shales in anoxic conditions. These Turonian bituminous shales are the main oil source rocks for the Licence, with proven regional oil potential. Secondary source rocks may include Triassic shales and intraformational shales and coals within the Albian-Aptian limestones. Uplift and exposure of the carbonate platform in a tropical climate and associated karstification at the Senonian Unconformity, was concurrent with channel erosion and incision. These incised channels transported reworked carbonates and siliciclastics down the slope, depositing them in fans, which, through repetitive influxes, are often stacked. The geometries of these fans are similar in form to slope fans along the coast, as far away as Ghana.

The thick sequences of post Senonian shales are expected to form a good regional seal for the Early Cretaceous Albian and Aptian platform carbonate reservoirs, and were laid down from the Late Cretaceous to the Oligocene across both shelf and slope. In the deep water areas these sealing shales were subsequently overlain by thick shales deposited from the Oligocene to the present.

On the shelf itself, eastwards tilting Aptian carbonates form an estimated 178 km² four-way dip closed structure. This extends northwards, transitioning into a top Neocomian closure. Porosity of 10 to 23% and permeability within the carbonates are anticipated, largely the result of secondary diagenesis, including vugs and fractures.
The Albian carbonates on the shelf were mostly eroded by the Senonian Unconformity but where present they form small hills and in particular a closure of approximately 34 km². This is likely to be karstified and sealed by Upper Cretaceous and Tertiary shales. Significantly this Albian Buried Hill closure directly overlies the southwest part of the deeper Aptian shelf closure, where both could potentially be tested with just one well.

The slope apron debris fans identified consist of three main channel complexes; North, Mid and South. The northern channel complex is a single Santonian age unit, whereas the middle and southern complexes are multiple stacked units, also of Santonian age. All three have an east to west trending alignment, visible as amplitude anomalies from 10 to over 20 km in length.

Continuation of the petroleum systems can be seen across the Licence. Within the Rufisque Block, in the northern part of the Licence, the Rufisque Dome, a localised high created by igneous upwelling, has been drilled on both crest and flank. The crest wells, RF-1 and DKM-2, encountered hydrocarbon shows in the Cretaceous and Tertiary sections. The flank wells tested for oil in Senonian age sands, with 16ft of net pay (RF-2), and in Cretaceous carbonates (RF-3).

The Late Cretaceous aged stacked fan prospect has a mean STOIIP of around 183 MMbo. The southernmost stacked fan forms a prospect in its own right which has a footprint of approximately 30 km² and was estimated by Shell to have a mean potential of 500 million bbls recoverable. The multiple prospects and leads mapped by FAR to date have an impressive combined reserve potential of over 5 billion bbls recoverable. These are all significantly larger than the 100 MMbo recoverable commercial threshold that results from the excellent fiscal terms in Senegal.

**Work Programme & Obligations:** The seismic and G&G work programmes required for the first two Exploration Periods since 2004 to the present day are now complete and all obligations fulfilled. FAR is looking for a partner to join them in committing to the follow-on two year contractual Second Renewal Period due to commence in November 2010. This will require commitment to one exploration well currently estimated likely to cost of around US$ 50-65 million and would best be drilled in 2011 to allow enough time, if successful, for appraisal before an additional extension can be requested to 2013 for an another optional exploration well.

**Infrastructure:** The Sangomar Offshore, Rufisque Offshore and Sangomar Deep Offshore Licence is located immediately to the south west of the Senegalese capital, Dakar, the most westerly city on the African mainland and a major regional port. Existing export facilities and infrastructure for oil and gas are therefore located close to FAR’s blocks, giving easy access to markets.

**Production Sharing Agreement:** FAR holds and operates the three Sangomar - Rufisque Blocks under a Senegalese production sharing agreement with Petrosen. The excellent fiscal terms in Senegal mean that FAR estimates as little as 100 MMbo recoverable in the Licence would be commercial such that discovery of even a percentage of reserves potential estimated in the various prospects mapped would generate significant returns.

**Terms:** FAR is offering up to 70% working interest (net 63% equity with the Petrosen carry) in the three blocks to a company willing to fund the cost of the forthcoming exploration well in September 2010 (est. US$50-65 million dry hole). FAR is seeking a contribution to its US$ 20 million share of past cost.

**Additional Information:** Access to the key project data on the Blocks is available to seriously interested and capable parties on a portable hard drive after qualification and execution of a Confidentiality Agreement. Seriously interested parties will be invited
to visit FAR’s offices in Perth (Australia) or Houston in the US for a more detailed presentation, data review and related discussions if appropriate.

A copy of FAR’s own project summary including additional graphics can be downloaded from the following link: [FAR(WAfrica=Senegal)ProjectedSummary](FAR(WAfrica=Senegal)ProjectedSummary)

All expressions of interest and requests for more information, including a copy of the CA for execution prior to access to the online data room, should be made through Envoi.

Envoi Limited
11 Cowper Road
London, W7 1EL
United Kingdom

Tel : +44 (0)20 8566 1310
Fax : +44 (0)20 8566 1312
E : mail@envoi.co.uk

Contact: Mike Lakin

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Montage Showing the Hydrocarbon Prospectivity of the Sangomar and Rufisique Licences, Offshore Senegal

Summary of Petroleum Geology

**Key:**
- Licence Area
- Prospects
- Fields
- Wells
- Reservoir
- Primary Source rock
- Seal
- Structural closures

**Boundary of 2007 3-D seismic acquisition**

- Lower Cretaceous carbonate shelf margin
- North channel complex Single Santonian age unit
- Mid channel complex Stacked Santonian age unit
- South channel complex Stacked Santonian age unit

**Dome Flores & Gea**
- 500mmbo - 1bbf

**Sangomar & Rufisque Concession**

**Diam Niado**
- (now depleted)

**Tiof**
- 380 mmboe

**Banda**
- 25 mmboe

**Chinguetti**
- 80 mmboe

**Tevet**
- 41 mmboe

**Sinapa Discoveries**

**Diam Niado**
- (now depleted)

**Location Map of MSGBC Basin**
- Senegal
- Guinea
- Bissau
- Mauritania
- Mali

**Location Map of Africa**
- Atlantic Ocean
- Indian Ocean
- Atlantic Ocean

**Location Map of MSGBC Basin**
- Senegal
- Mauritania
- Guinea
- Bissau
- Mali

**Map Showing Identified Play Types and Location**

**Schematic Cross Section Across Shelf Margin**

**Schematic Lithology**

**Age and Epoch**

- **Tertiary**
  - Early Eocene
  - Late Eocene
  - Oligocene
  - Middle Eocene
  - Early Eocene

- **Cretaceous**
  - Late Cenomanian
  - Early Cenomanian
  - Turonian
  - Coniacian
  - Campanian
  - Maastrichtian
  - Coniacian
  - Turonian

- **Jurassic**
  - Early Kimmeridgian
  - Late Kimmeridgian
  - Callovian
  - Oxfordian
  - Bajocian
  - Bathonian
  - Hettangian
  - Aalenian
  - Toarcian
  - Pliensbachian
  - Sinemurian
  - Liassic

**Licence Area**

- Prospects
- Fields
- Wells
- Reservoir
- Primary Source rock
- Seal
- Structural closures

**Lithology**

- Chalk
- Clay
- Dolomite
- Limestone