



## **BLOCK 2B, OFFSHORE ORANGE BASIN, SOUTH AFRICA**

### **STATUS REPORT – APRIL 2010**

#### **Executive Summary**

Block 2B is a low risk and oil-prone shallow water licence, situated in the Orange Basin, just off the Atlantic coast of South Africa.

The block contains the only oil discovery on this Southern African margin, A-J1, drilled as a stratigraphic test by Soekor in 1989 and testing 200 bopd of 36° API crude. Reprocessing of 2D seismic has defined several Lower Cretaceous rift graben prospects, genetically analogous to the prolific Lake Albert play in Uganda. The largest of these features is estimated to potentially hold a P50 resource of 90 mmbo, with the presently defined 5 prospects + the A-J1 discovery having a total potential resource (P50) of 179 mmbo. A further graben, as yet undrilled but about 50% larger than the AJ Graben, has been identified from the 2D seismic. It is considered that this will add interesting upside potential once the proven oil system of the AJ Graben has been appraised.

Thombo has completed an extensive evaluation of the existing data, including reprocessing much of the previous 2D seismic data and Basin Modelling. Once the government has formally confirmed the full Exploration Right (expected imminently) Thombo will continue its exploration campaign, initially by funding the acquisition of a 524 km<sup>2</sup> 3D seismic survey. It is anticipated that this will lead to the drilling of an exploration well, during the next commitment phase, in three years time.

Simco, as long standing advisor to Thombo, has been retained to provide on-going technical and management input for the Block.

#### **Introduction**

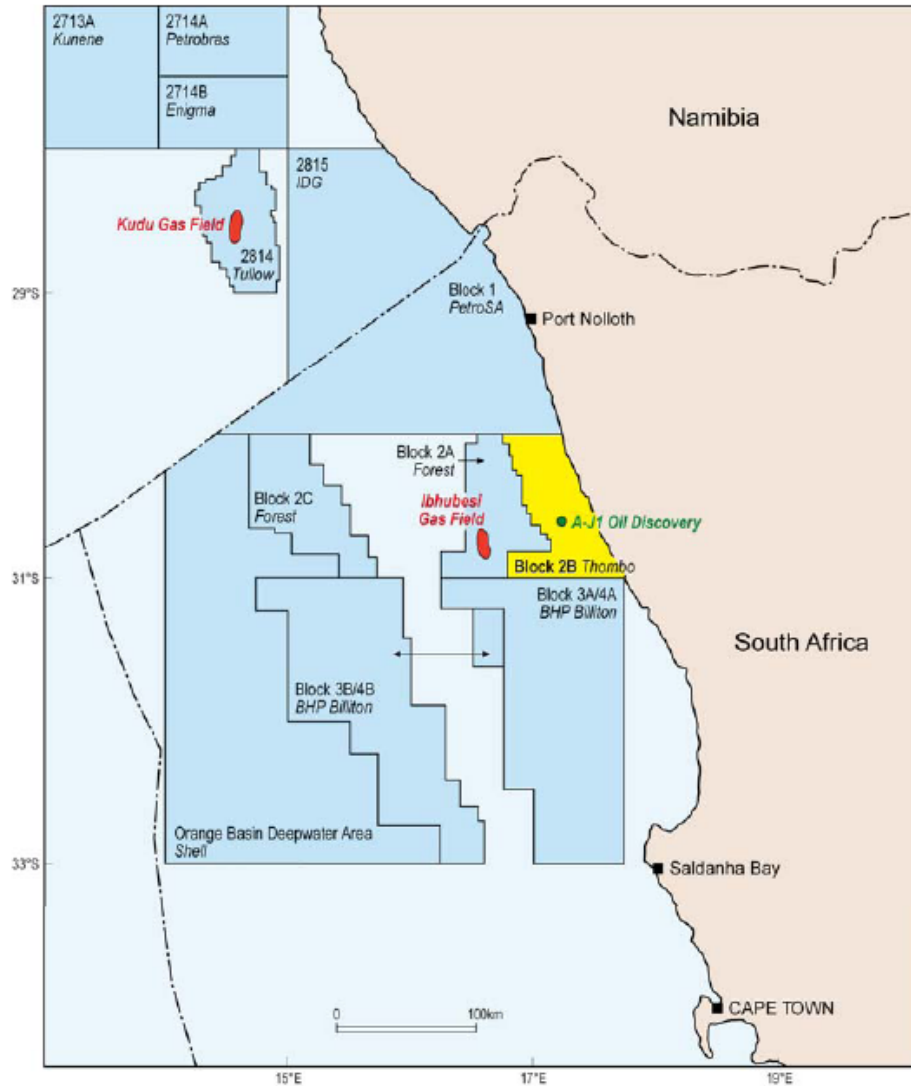
Thombo, formerly called QVD, is a single asset, privately owned vehicle, which has been involved in Block 2B for over 5 years. It was founded by Trevor Ridley, a South African born reservoir engineer, based on his analysis of the original A-J1 oil test. During Nov 2007 to 2008, the block was held under a Technical Co-operation Permit (TCP)

#### **Block Description**

Block 2B is located in the Orange River Basin, shallow water area, lying between the Ibhubesi gas field and the Namaqualand coast. The Block covers an area of >5,000 sq km and water depth ranges from 0m to 250m.

The main reservoir objectives are the fluvial and lacustrine sands of the AJ Graben of Lower Cretaceous age. These occur in three sequences, penetrated by the A-J1 well, the lowest of which

was oil bearing. The upper sequences (with shows) are interpreted to rise updip to the graben margins, where they form pinchout and hanging wall traps beneath the pronounced end Rift unconformity. Further, more speculative prospectivity has been identified as a fractured basement play (analogous to Yemen), which could form a secondary target, adjacent to the AJ Graben. The 2D seismic data has also revealed the presence of a further (undrilled) Rift Graben, lying on-trend to the north of the AJ Graben. It is expected that this would become the focus of additional exploration, once commercial success had been established in the AJ Graben.



Block Location Map (Atlantic seaboard of South Africa)

Block 2B saw various 2D seismic campaigns during the 1970s and 80s and was drilled by Soekor in 1989 with the primary purpose of determining whether or not source rock was present within a Rift Graben that preceded the break-up of Gondwanaland in the Lower Cretaceous. The well was located on a bright seismic anomaly lying relatively downdip, which was predicted as a potential source interval. The A-J1 well encountered good oil shows in relatively tight, interbedded sands below 3,300m, which tested at a rate of 200 bopd. At the time, Soekor interpreted this result as indicative of a small volume trap, but QVD's reinterpretation indicates a reasonable volume of accessed reservoir, limited by mechanical problems.

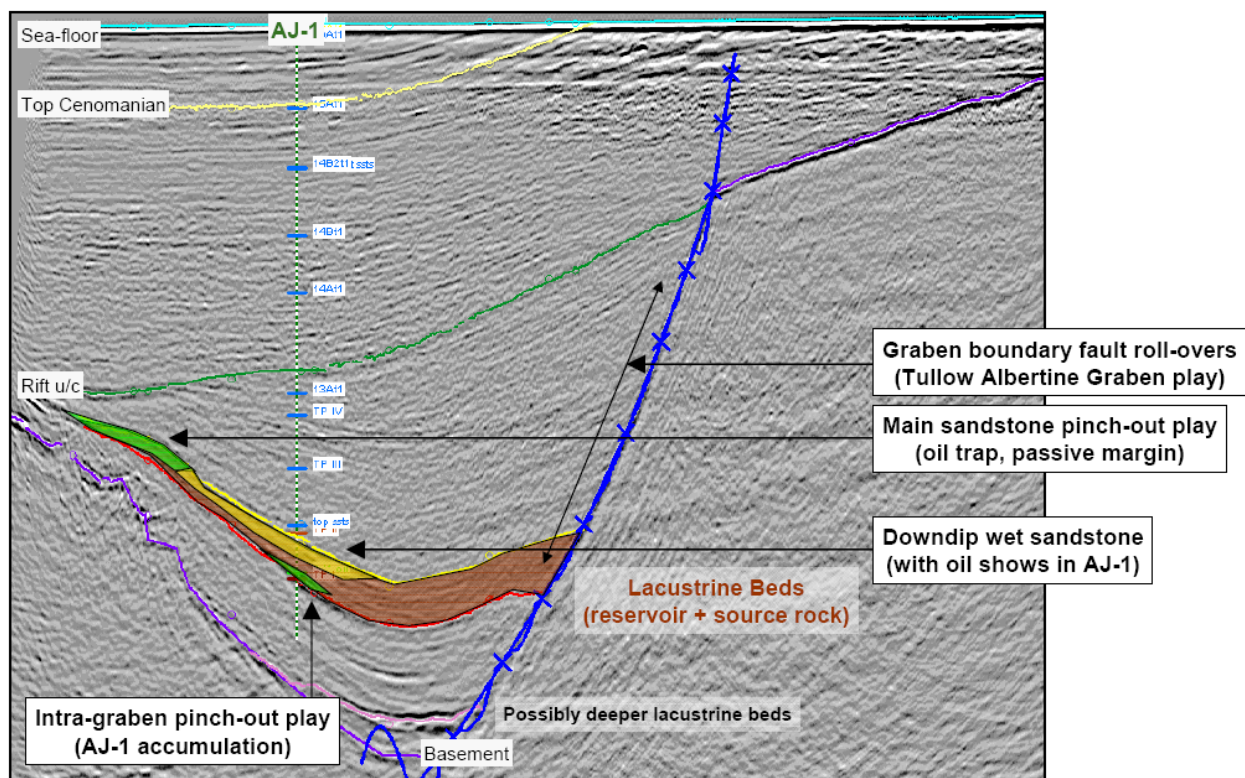
The Block was subsequently awarded to QVD as a Technical Co-operation Permit (TCP) in Nov-2007 for a period of one year. During this time 1,175 km of existing 2D seismic data was reprocessed, a core study and petrophysical analysis on the A-J1 reservoir was performed and the data was integrated into a Basin Modelling study to determine likely volumes of generated and migrated hydrocarbons. Prospects were mapped, potential resources and risk estimated and an economic scoping study was commissioned.

During 2009 the South African government completed a review of licensing and fiscal terms, resulting in one of the most beneficial regimes worldwide. Thombo completed a 3D seismic acquisition plan and the associated Environmental Impact Assessment (EIA). An award to Thombo of a full Exploration Right, lasting a total of 7 years in 3 phases, is expected imminently. In the first 3 year phase the work commitment will be the acquisition of a 524 km<sup>2</sup> full-fold 3D seismic survey over the AJ Graben. The parameters for this have been accurately modelled and it is expected that shooting will take place in the “summer” season (Dec-Mar) of 2010-11, at a cost of \$6-7 mm.

It is anticipated that the following 2 year phase will require the drilling of one well, with a further well required if the final 2 year phase is entered.

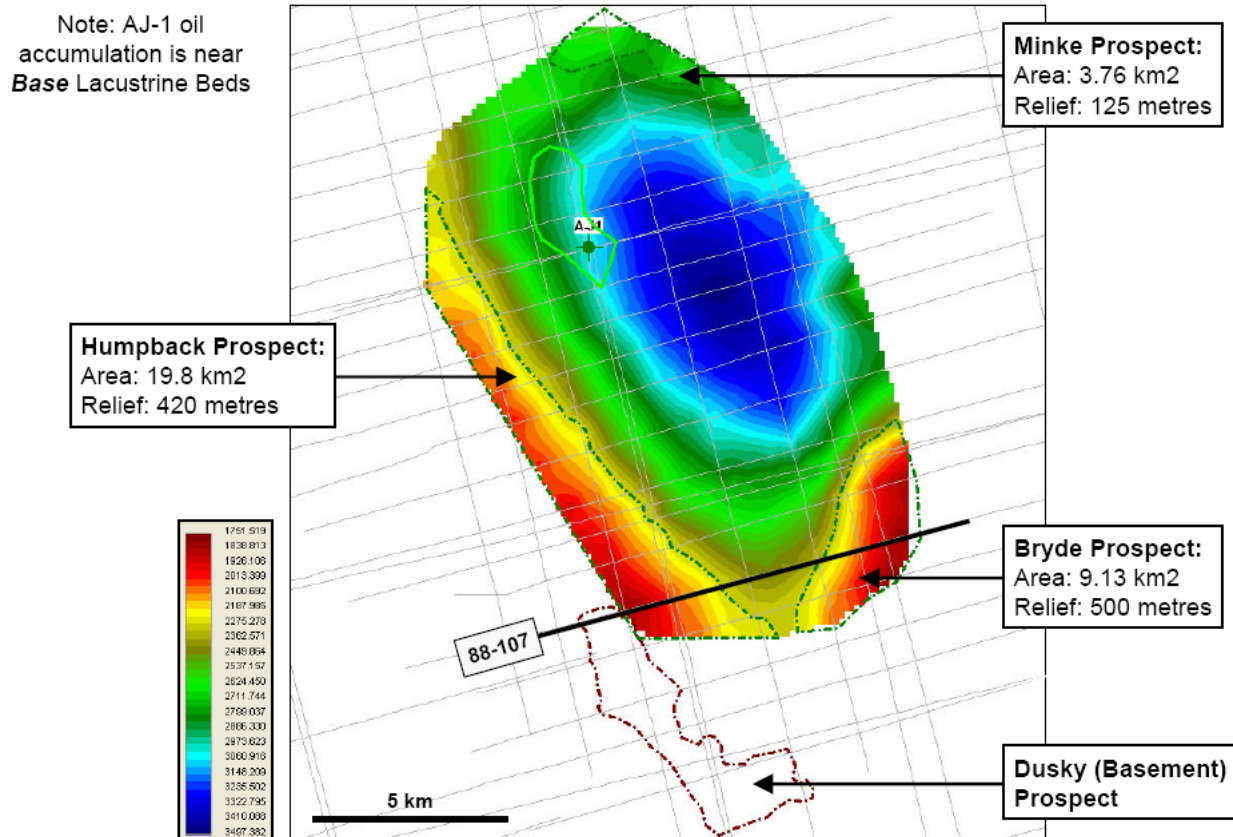
## Prospectivity

The reprocessed 2D data is of good quality and has been used to delineate the likely extent of the A-J1 oil discovery and to define where else in the graben the better quality reservoirs, above the proven oil zone, may trap hydrocarbons. The A-J1 oil accumulation appears to be a relatively small (4 km<sup>2</sup>) area of moderate quality reservoir that has an estimated P50 resource of ~8 mmbbl.



Main Lacustrine Sand Play – AJ Graben

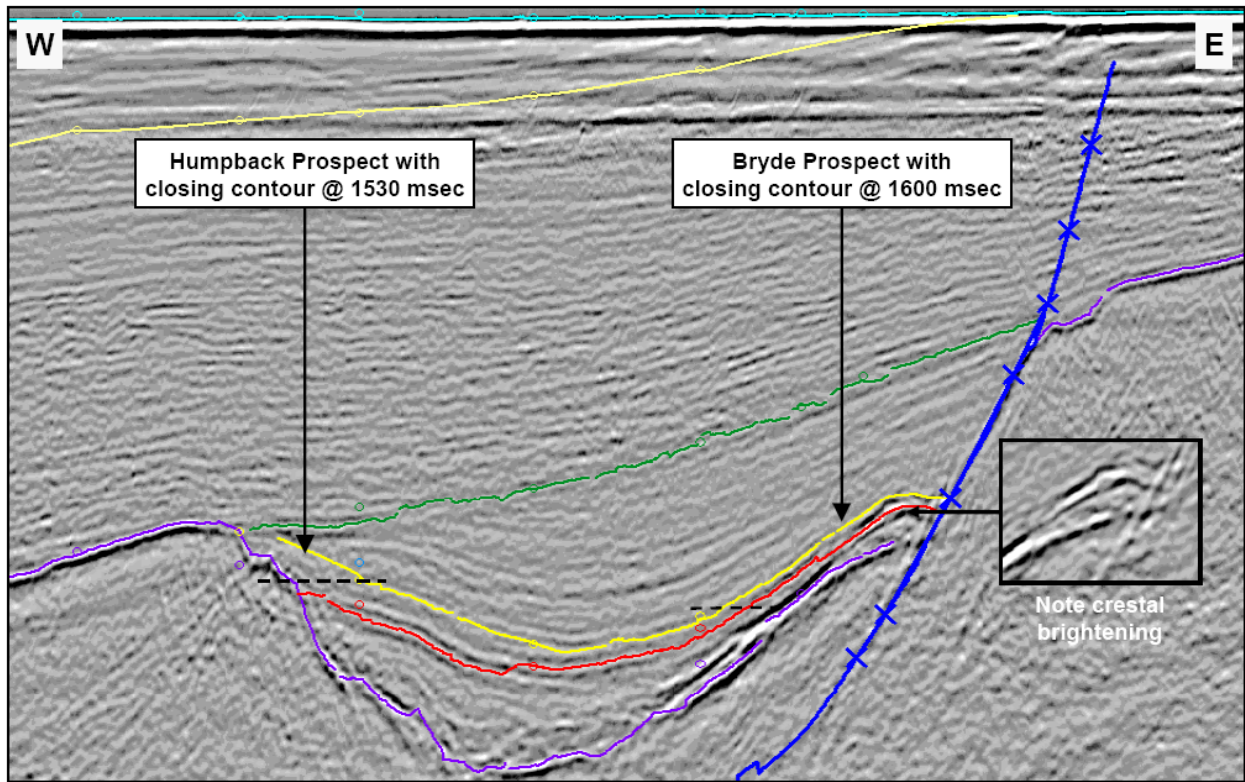
By contrast, the thicker, higher net:gross sand packages above this (the middle sequence of which contains fair oil shows) can be mapped to form relatively large sub-crop prospects, near the graben margin, about 1,000m updip of A-J1. The largest of these, the Humpback Prospect covers an area of nearly 20 km<sup>2</sup> and has a P50 estimated resource of 90 mmbo. The similar Bryde Prospect is about half this size (41 mmbo), but is associated with interesting amplitudes in the hanging-wall of the basin boundary fault. This is an analogous situation to some of the recent discoveries made by Tullow in the Ugandan Albertine Rift. The prospects are sealed by overlying, shale-prone lacustrine and red-bed sequences and ultimately by the initial marine transgression of Aptian age, which initiated the break-up of South America and Africa.



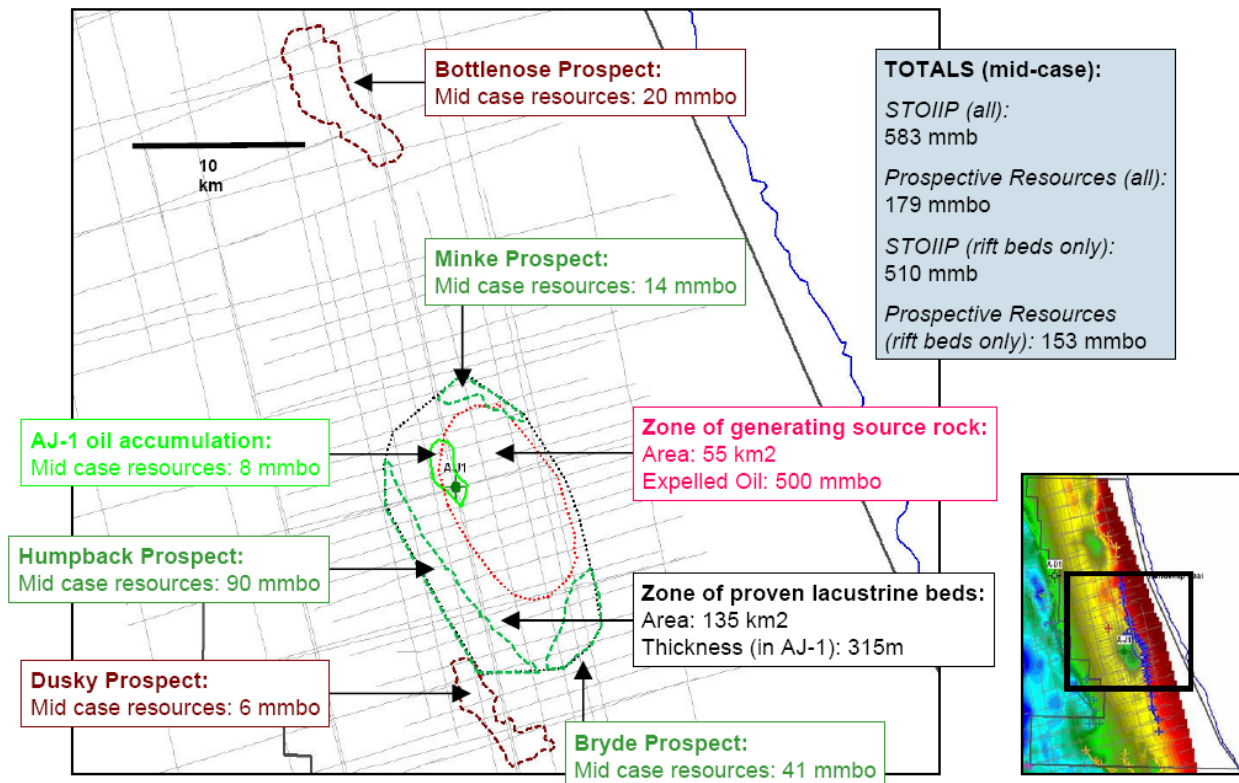
Top Lacustrine Beds (TP2) Depth Map with main pinch-out prospects defined

The section beneath the TD of the A-J1 well may also have a lacustrine component in the basin depocentre. Thombo's predecessor, QVD, conducted a trial reprocessing of one 2D line that appeared to show a decreased stacking velocity for this interval. The extent of this anomaly will be evaluated when the new 3D has been acquired.

A secondary play has been identified adjacent to the graben margins, comprising large basement highs in a situation analogous to discoveries onshore Yemen (and offshore Vietnam). Prospectivity depends largely on the degree to which such basement is adequately fractured, but if an effective system exists, then the largest mapped feature, Bottlenose, could have P50 potential resources of 20 mmbo.

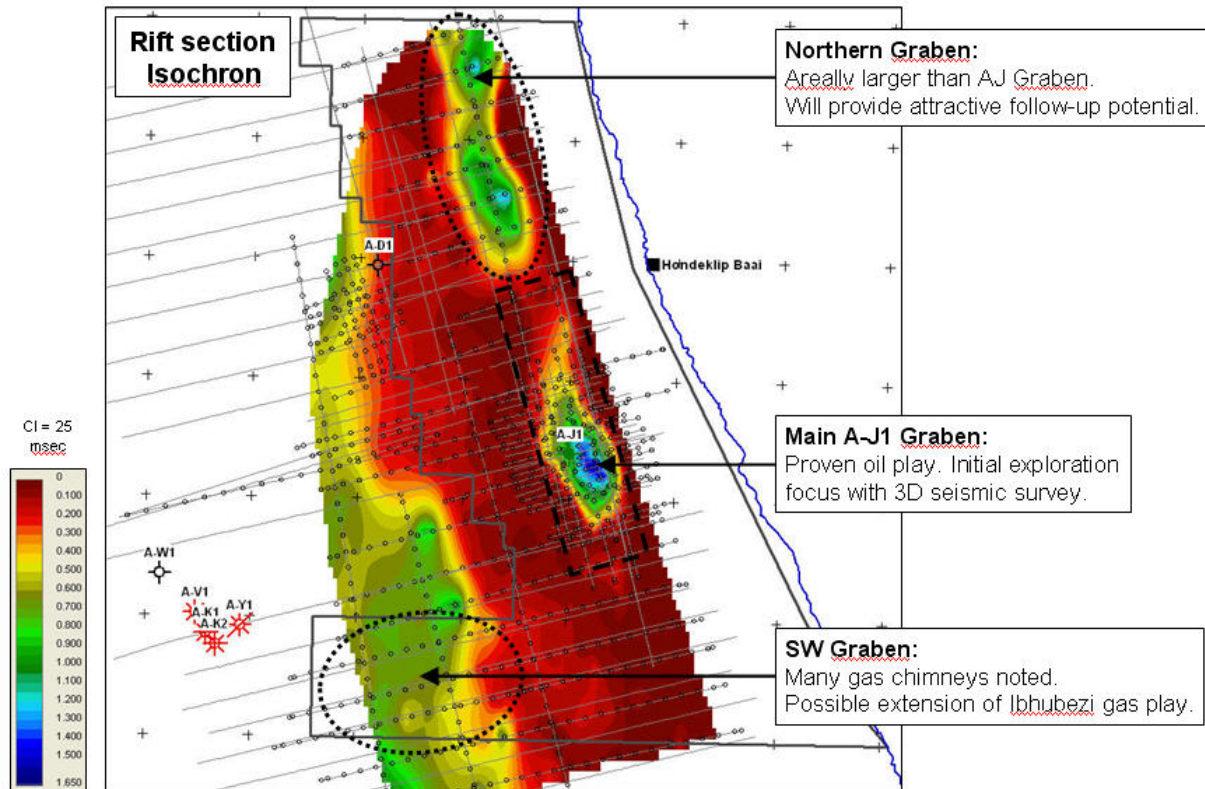


Dip Seismic Line (88-107) across High-graded Prospects



## Prospect Summary Map

In all, 5 prospects plus the A-J1 oil accumulation have been identified with a total P50 potential resource of 179 mmbo, corresponding to ~500 mmb STOIP. A reality check on this figure was made by conducting a Basin Modelling Study, using the Burytech method. This concluded that the P50 amount of oil expelled by the lacustrine source rocks (seen in A-J1) in the centre of the graben was in the order of half a billion bo, with >1 billion bo in the P10 case.



Block 2B: additional prospectivity

As previously mentioned, a further graben system has been identified in the northern part of the licence, on-trend to the AJ Graben. A sparser, but good quality 2D grid indicates an Early Cretaceous rift section nearly as thick as in the AJ Graben and displaying similar “bright” lacustrine type reflectors. The areal extent of the northern graben is about 50% larger than the AJ.

A third region of interest is focused on the SW part of the licence, where part of the outboard graben that underlies the Ibhubezi Field straddles a basement nose. This is a zone of frequent gas chimneys into the post-rift section and therefore could extend the Middle Cretaceous gas play. Onto Block 2B.

## Commercial terms

The South African fiscal regime, revised in February 2009, is one of the most beneficial in the world from the contractor perspective. It is a simple tax/royalty system, with a maximum royalty

of 5% and CT of 29%. A state company (PetroSA) equity of 10% is carried through exploration and generous uplifts are available on both exploration and development capital expenditures.

Scoping economics have been run on the development of one or more oil accumulations on Block 2B, following a 3-well exploration/appraisal programme, using a fixed platform in an average water depth of 150m, 25 km from the coast. At a mean oil price of \$70/bo, the range of NPV10, prior to development expenditure, works out at between \$5.25 and \$19.50/bo, with an expected value of \$11-12/bo. This means that the risked mean resources figure of 77 mmbo has a mean value of \$850 mm net to Thombo, while the P50 resources of 90 mmbo for the largest prospect (Humpback) would have an NPV10 of ~\$1,050 mm.

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