Relinquishment Report
Licence P.089
Block 22/15a

2nd Round Traditional Licence Award

BG International Limited (Operator): 100.0%

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Synopsis

The P089 licence is a second round licence for block 22/15 awarded on 4th November 1965 to a Total-operated group. BG picked up 17% equity in the licence in 1992 then increased equity until 2010, when Maersk were the final partner to exit leaving BG with 100% interest. In November 2011 BG secured a two year extension to November 2013 by relinquishing 50% of the block (22/15b,c) and drilling the Esperanza 22/15-4 well. BG relinquished the residual part of the licence, 22/15a on 15th November 2013.

All technical work commitments on the licence have been met. BG and Maersk retain the liability for abandoning the 22-15-3 Banks well and this is planned for 2014.

Exploration Activities

A total of 4 wells have been drilled on the 22/15 licence 3 of those on the recently relinquished 22/15a area (figure 1 & 2). The 22/15-1 well was drilled on what is now 22/15b by Total in 1982 to test the Jurassic and Triassic, it was plugged and
abandoned as a dry hole. The 22/15-2 well was drilled by Total in 1988 and encountered gas shows in tight Paleocene Forties channel overbank sands and hydrocarbons in thin poor quality Jurassic reservoir. The Jurassic failed to flow and the well was plugged and abandoned.

The 22/15-3 well was drilled in 2006, by BG to test a Forties structural/pinchout play. The well was tested and flowed from both oil and gas legs and proved up the Banks discovery. The well was plugged but is not yet abandoned.

The latest well to be drilled was the 22/15-4 well drilled by BG in 2011, this well targeted the core of the Paleocene Forties channel suggested by the 22/15-2 well. The well was tested and flowed oil, proving up the Esperenza discovery. Well 22/15-4 was plugged and abandoned.

Prospectivity Analysis and resource summary

The remaining prospectivity within block 22/15a is seen by BG Group to constitute a Jurassic prospect directly underlying and extending to the SE of the Banks discovery. Figure 2 shows the location of this prospect known as Banks Deep.
Banks Discovery

The Banks well targeted a low-relief four-way dip closed structure (Figure 2 & 3) on a proven Forties sandstone channel fairway running from the Everest field towards the SE and pinching out on the Jaeren High.

At Top Forties level the structure is approximately 3km long and 2km wide and trends in a NW-SE direction. The crest of the structure is at 8590ft.

The shales of the overlying Sele Formation are the seal for the Banks discovery. The 22/15-3 well was located slightly off the crest of the structure to intersect the centre of a channel and encountered top Forties reservoir at 8655ft. The base of
the Forties sands at was encountered at 8943ft giving a gross reservoir thickness of 288ft.

The top 33ft of the reservoir was of ‘ratty’ quality, interpreted as channel abandonment facies with the top hydrocarbons pay encountered in good reservoir at 8688 ft. The hydrocarbon column height was 50ft consisting of a 16ft gas leg with a GOC at 8704ft over a 34ft oil column with a FWL at 8738ft. The well was tested in both the oil and gas legs and flowed sand free at 1080 stb/d and 12.3 mmscf/d.

![Image of reservoir summary](image)

**Figure 3: Banks Discovery summary**

BG carries in place volumes ranging from 13 - 22.5 mmboe with a Pmean of 17.5 mmboe. BG considered a joint Banks Esperenza development via Everest to calculate the recoverable resources. The resultant Pmean recoverable resources are 4.9 mmboe with a P90-P10 range of 3.7 to 6.3 mmboe.

**Esperanza discovery**

The Esperanza discovery well 22/15-4 proved a high net-to-gross channel fairway of Paleocene age Forties sands draped over a broad structural closure. The structure includes the nearby 22/15-2 well to the east though this lies outside the main channel depositional fairway (Figure 2 & 4). 22/15-2 well proved minor
gas shows in the Forties sands. The reservoir fluid is oil and the high seismic amplitudes appear to be indicative of lithology rather than fluid type, thus constraining any stratigraphic upside outside the closure.

At Top Forties level the Esperanza is broad shallow structure approximately 7.25km long and 3.5km wide with a crest at 8580ft and trends in a NW-SE direction. The area of channel facies within closure is about 3.3km².

Hydrocarbons have been sourced from the gas mature Upper Jurassic Kimmeridge Clay Formation, to the south and west of the well location. The seal is the shales of the overlying Sele Formation.

The 22/15-4 well encountered top Forties reservoir and hydrocarbons at 8601ft. The base reservoir was not penetrated and the well TD at 9343ft after drilling 742ft of Forties Formation. The Forties was good quality with a net-to-gross of 43%. The gross oil column height was 74ft with a FWL at 8675ft which corresponds to the structural closure. The well was tested and flowed 37.8 API oil at 1745 BOPD.

Esperanza volumes range from 11.8 - 18.6 mmbls with a Pmean of 15.1 mmbls in-place. A joint Banks/ Esperenza development via Everest was considered to calculate the recoverable resources. The resultant Pmean recoverable resources are 1.6 mmbls with a P90-P10 range of 1.3 to 1.9 mmbls. Secondary recovery methods could increase this.

Figure 4: Esperanza discovery Summary
Banks Deep prospect

Banks Deep is a Jurassic prospect underlying the Banks discovery. BG carries a recoverable resources range of 9 – 24 mmboe with a Pmean of 16 mmboe. The CoS is 20%.

The interpretation is a thin Jurassic Ula sandstone horst block bounded by Triassic Smithbank Mudstones (Figure 5). The top of the Ula is at around 12000ft. The key risks are the presence and effectiveness of the reservoir which is mapped as quite a thin Ula sequence. The charge mechanism and fluid phase are also uncertain. An alternative interpretation of a thicker Ula sequence is possible.

<table>
<thead>
<tr>
<th>Banks Deep (Gas Condensate case) Oil Equivalent mmboe</th>
<th>In Place</th>
<th>Recoverable</th>
</tr>
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<tbody>
<tr>
<td>Pmean</td>
<td>28.9</td>
<td>16.7</td>
</tr>
<tr>
<td>PG0</td>
<td>16.5</td>
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<td>PG1</td>
<td>27.2</td>
<td>14.7</td>
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<tr>
<td>PT0</td>
<td>43.6</td>
<td>23.9</td>
</tr>
</tbody>
</table>

**Figure 5: Banks Deep lead**

Clearance

It is believed that no outstanding permissions are required to show the seismic data in Figures 2, 3 and 4. All wells referred to are released and the work presented here has been approved for publication to the DECC.