

# Thailand Operations Update

30 June 2010



## Concession L44 (Carnarvon 40%)

A total of five new wells have been drilled in the Bo Rang North (BRN) production license over the past couple months which have resulted in extending the envelope for potential oil reserves but have not added significantly to oil production rates. A sixth well is currently drilling ahead just above the target. A summary of the six wells, being the L44-W and NSE group of wells, is outlined below.

Drilling rates have improved with the rig currently drilling between 3 and 4 wells per month, and consequently drilling costs per well have decreased compared to 2009 levels. However, the anticipated 400 BOPD (gross) increase per well has not eventuated with the result that current production rates are in the order of 6,500 BOPD gross (2,600 BOPD net to Carnarvon).

A further 6-9 development wells are scheduled for drilling within the Bo Rang North and Na Sanun East (NSE) production licenses in 2010.

The Operator, Pan Orient, continues to evaluate opportunities for increased oil production apart from drilling new wells, with the deepening of the NSE-H3 well with a workover rig a good but modest example of what can be achieved.

An exploration well in L33 (Carnarvon 40%), to the north of L44, is expected to be drilled before the commitment date in July 2010.

Carnarvon is confident of further production increases over the next few months as more infill wells are drilled within the tested outlines of the NSE and BRN production licenses.

## Permit Equity

### **L33, L44 and SW1A**

Pan Orient Energy (TSX:POE):	60% and Operator
Carnarvon Petroleum (ASX:CVN):	40% and Non Operator

Recent wells extending the boundaries for oil reserves in the L44 exploration license

Efficient rig ensures wells drilled within 10 days at a cost of US\$0.8 to \$1.1 million each completed

Current production rates around 6,400 BOPD gross (2,600 BOPD net to CVN)

Production drilling ongoing

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## **Bo Rang “B” Field**

**L44W-A15-2**, a deviated appraisal well located approximately 1.1 kilometres east of the BR-3 and BR-4D1 surface location, encountered the top of the Bo Rang “B” volcanic target at a depth of -473m true vertical depth subsea (TVDSS) and the base at -510.58m TVDSS. The well has been on production for approximately four weeks and is currently flowing at a rate of 360 BOPD gross (144 BOPD net) after initially producing at approximately 500 BOPD gross.

**L44W-A15ST1**, a step out horizontal appraisal well drilled from the same surface location as the L44W-A15-2 well and a target location approximately 500 metres south of the L44W-15-2 well. The well encountered the Bo Rang “B” volcanic target at a depth of -439m TVDSS and the base at -463m TVDSS. The well has been on production for approximately five weeks at a rate of 56 BOPD gross after initially coming on at approximately 300 BOPD gross. It is believed the unexpected low rates relative to the deviated L44W-A15-2 well above, may be due to drill cuttings lodged in the fracture system behind the perforated liner that was used in the completion.

**L44W-A14**, a step out appraisal well located approximately 1.1 kilometres east of the L44W-A15 surface location was drilled to test the areal extent of the Bo Rang “B” field assigned as possible reserves in the December 31, 2009 reserve report (“3P”). The main Bo Rang “B” volcanic reservoir was encountered at a depth of -539m TVDSS, two metres below the estimated oil water contact of -536m TVDSS assigned as probable reserves in the December 31, 2009 reserve report (“2P”) and the base of the volcanic at -564m TVDSS, four metres below the 3P estimated oil water contact of -560m TVDSS. The well is planned to be tested over three intervals, of which the bottom two have been completed:

Test #1: Casing was set over the upper portion of the volcanic target in order to isolate the lower 38 metres, below the 3P oil water contact. Testing of the base of the volcanic interval resulted in the recovery of approximately 1 barrel of oil and 63 barrels of water (mainly brine) before the well reached pump off due to a lack of permeability. Test #2: The interval -532 to -550 metres TVDSS, located in the uppermost 18 metres of the target volcanic was perforated at a depth straddling the 2P oil water contact. The well produced 1 barrel of oil and 38 barrels of brine before pumping off due to low permeability.

Test #3 will commence in the next two days with perforations over a nine metre thick volcanic that was encountered above the main Bo Rang “B” volcanic target and exhibited good oil shows while drilling.

## **Summary**

Drilling results within the Bo Rang “B” field appear to confirm the 2P oil water contact at -536m TVDSS and provide modest encouragement with regard to the 3P potential inferred by the very minor quantity of oil recovered from the interval -618 to -657 metres TVDSS at L44W-A14, the top being approximately 58 metres below the estimated 3P oil water contact of -560m TVDSS. There remains a large area of hydrocarbon potential within the Bo Rang “B” and Bo Rang “A” field areas that will be the focus of continued development drilling activities.

## **NSE-F1 Field**

**NSE-F2** was a vertical well drilled from a surface location approximately 1.2 kilometres north east of the NSE-F1 discovery well surface location and outside of the NSE-F1 field reserve envelope for proven reserves in the December 31, 2009 reserve report (“1P”). The top of the target volcanic zone was encountered at a depth of -675 metres TVDSS and the base at -732 metres TVDSS. Testing of the open hole interval -675 to -732 metres TVDSS resulted in the recovery of 18 BOPD of oil (gross)

with 172 barrels of water. The well confirms a field areal extent much greater than the 1P envelope, but with an oil water contact most likely 79 metres higher than the 2P oil water contact estimate.

**NSE-F3** was a deviated appraisal well approximately 1.6 kilometres south east of NSE-F2 described above. The top of the main volcanic objective was encountered at a depth of -646 metres TVDSS and the base at -689 metres TVDSS. Testing resulted in the recovery of approximately 0.6 million cubic feet of gas per day with no liquids.

**NSE-F4** is a deviated development well drilled from the NSE-F2 surface pad targeting the main volcanic reservoir objective approximately 120 metres south of the original NSE-F2 well and approximately 35 metres structurally higher. The well is currently setting casing just above the main target zone and is anticipated to be completed drilling in the next three days.

### Summary

The NSE-F1 field oil water contact is now estimated at approximately -696 metres TVDSS and the area of hydrocarbon accumulation appears much larger than the original 1P reserve envelope. There appears to be a gas cap of undefined areal extent that will be better defined after the drilling and testing of the NSE-F4 well. There remains a large area of potential defined by the inferred oil water contact and the lowest known gas that will be the focus of continued development drilling.

### NSE Central Field

**NSE-H3**, an infill development well targeting the main volcanic reservoir within the NSE Central field, was deepened to open up an additional 10 metres of potential volcanic reservoir. The well was placed back on production approximately three days ago and is currently flowing gas at approximately 0.73 million cubic feet per day with 10 barrels of oil and 45 barrels of completion brine per day. The well will continue to be tested until it stabilizes.

### Production

Production has averaged 6,385 BOPD gross to date in the month of June 2010 (2554 BOPD net to Carnarvon). This is well behind the pace required for a 2010 production average of 9,000 barrels of oil per day gross (3,600 BOPD net to Carnarvon) that was forecast at the beginning of the year.

In the first quarter of 2010, delays in production growth were mainly the result of slower than anticipated drilling related to problems encountered on a series of horizontal wells. These issues in the first quarter of 2010 were rectified in the second quarter with the average drilling time per well reduced to approximately ten days from rig on location to rig off. Well costs, including drilling and completing for production of approximately US\$0.8 to \$1.1 million dollars (\$0.32 to \$0.44 million dollars net to Carnarvon) were within expectations but production performance on the newly drilled wells has been below the 400 BOPD (gross) average that was forecast. This is mainly the result of higher risk early stage appraisal wells seeking the limits of the NSE-F1 and Bo Rang "B" oil accumulations. NSE-F2 encountered the field oil water contact higher than anticipated but extended the areal extent of hydrocarbon charge materially outside of the 1P reserve envelope. NSE-F3 encountered a gas cap at the up dip crest of the NSE-F1 structure and L44W-A14, with one zone still left to test, evaluated the Bo Rang "B" reservoir below and at the 2P and 3P reserve envelope limits.

Through the remainder of 2010, the Operator Pan Orient plans continued development drilling at Bo Rang “B”, Bo Rang “A”, NSE-F1, Wichian Buri and Na Sanun. In Concession L33 (Carnarvon 40% and Non-operator) a commitment well is planned in early July.

**Concession L20 (Carnarvon 50% Working Interest and Operator)**

Work has been progressing on plans for a drilling campaign onshore Thailand in this Carnarvon operated block to the west of the L44 and L33 blocks. The Environmental Impact Assessment (EIA) for the three most promising targets has been submitted to the government on schedule. Drill sites have been identified and landowners have signed leases to allow drilling. Well design and rig selection are well advanced. Bids have been received and are being reviewed for long lead items. All is on track for a drill campaign to commence late 2010.