

# Thailand Operations Update

27 August 2010



## CONCESSION L44/43 (CVN 40%)

### WBEXT-1 Exploration Well

The WBEXT-1 well was drilled 2.5 kilometers northeast of the nearest Wichian Buri field producing well and 6.7 kilometers south of the L33-1 oil discovery well. The WBEXT-1 exploration well tested free flowing 35 degree API oil at a rate of over 1,500 BOPD gross (600 BOPD net to CVN) with a water cut of less than 0.05 percent from the volcanic reservoir. Following approval for a 90 day production test on August 9<sup>th</sup> the oil production from the WBEXT-1 well has averaged 3,360 BOPD gross (1,350 BOPD net to CVN) over the past 15 days.

### WBEXT-1A Appraisal Well

The WBEXT-1A appraisal well, drilled from the same well pad as the WBEXT-1 discovery well, is currently setting casing just above a second potential volcanic reservoir approximately 150 meters deeper than the proven volcanic reservoir encountered at WBEXT-1. The main, proven volcanic reservoir exhibited 100 meters of oil shows and elevated mud gas readings while drilling through the main volcanic interval starting at 819m true vertical depth (approximately 25 meters low to the WBEXT-1 discovery), but did not encounter drilling fluid losses. Three attempts at logging of this volcanic zone, and the deepest of two overlying sandstone intervals that exhibited a high rate of penetration (inferring good porosity) and good oil shows, were unsuccessful due to bore hole conditions. A further 77 meters of oil shows and highly elevated mud gas readings were observed while drilling through fractured shale directly overlying the deeper potential volcanic reservoir, the top 1 meter of which was penetrated at 1,000 meters TVD prior to setting casing.

In the event of drilling fluid losses in the deeper volcanic interval, testing of this zone will take place upon the completion of drilling through the interval. In the event that the zone appears low permeability (no drilling fluid losses) and in order to assure a high deliverability, the well will be immediately sidetracked to a highly faulted location approximately 150 meters north east of where the WBEXT-1A well originally penetrated the main volcanic objective.

WBEXT-1 producing at a rate of 3,360 BOPD gross during a 90 day production test

WBEXT-1A drilling ahead to test a deeper potential volcanic reservoir below WBEXT-1 producing zone

Further drilling anticipated in WBEXT area

Current production of 7,500 BOPD gross (3,000 BOPD net to Carnarvon)

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A production license (“PL”) application is expected to be submitted to the DMF upon the completion of two additional appraisal wells after WBEXT-1A has been completed. Historically, these PL application approvals have taken approximately 90 days from submission to approval. Additional appraisal wells will be required to determine the extent of the WBEXT-1 accumulation at the volcanic reservoir level.

### WBEXT (Wichian Buri Extension) Field

Additional drilling in the near term will concentrate on the Wichian Buri Extension area and, based on drilling results, may include:

- two additional appraisal wells drilled from the WBEXT-1 surface pad after WBEXT-1A;
- up to four exploration / appraisal wells targeting further fault compartments west of the WBEXT-1 discovery and drilled from the WBEXT-2 surface pad which is located approximately 1.6 kilometers northwest of the WBEXT-1 surface location;
- up to four exploration / appraisal wells from the WBEXT-3 surface pad located 1.9 kilometers to the northeast of WBEXT-1, and
- up to four exploration / appraisal wells from the WBEXT-4 surface pad located 1.1 kilometers due north of WBEXT-1.

### Bo Rang “B” Field

During the first half of 2010, the operator of the concession Pan Orient drilled two development wells and three appraisal wells in the Bo Rang “B” field. Results were generally in line with expectations for probable (“2P”) reserves in the December 31, 2009 reserve report and some encouragement was observed with minor amounts of oil recovered at and below the inferred oil water contact for possible (“3P”) reserves in the December 31, 2009 reserve report from a tight reservoir section with very low influx. It is anticipated one future additional well will be drilled within the 2P envelope and an additional well will target the 3P region in a more optimal position for the fractured volcanic reservoir.

### NSE-F1 Field

During the second quarter of 2010 three appraisal wells were drilled in the NSE-F1 field resulting in the NSE-F1 field oil water contact being interpreted at a depth of approximately -696 meters TVDSS. The area of oil accumulation appears to be much larger in areal extent than the envelope for proven reserves assigned in the December 31, 2009 reserve report, however the reservoir gross rock volume is reduced by: 1) the higher inferred oil water contact, and 2) a gas cap encountered in the eastern portion of the structure. These results will negatively impact the assessment of 2P and 3P reserves for the NSE-F1 field at year end, likely resulting in the loss of all 3P reserves and a new 2P estimate which is less than half the estimate of 4.8 million barrels net to Carnarvon at December 31, 2009. Further development drilling will be conducted in this field utilizing horizontal wells in an attempt to increase well deliverability, as was successfully utilized at Bo Rang “A” when similar initial low deliverability drilling results were encountered in the first few appraisal wells. Additional potential upside is also recognized in a shallower 10 meter thick volcanic that exhibited live oil to surface while drilling at NSE-F4. During testing of the NSE-F4 well

this interval was tight, but it will be a test case for using horizontal jetting technology that drills four small diameter 100m horizontal holes out from the existing wellbore at relatively low cost. This test is expected to be conducted within the next two months with potential broad application to our reservoirs in Thailand in the success case.

### NSE Central Field

During the second quarter of 2010, two development wells were drilled within the limits of the NSE Central field resulting in one producing well at NSE-B3 and one well at NSE-H3 which encountered a secondary gas cap. Production performance at the NSE Central field has been below the production forecast for 2P reserves in the December 31, 2009 reserve report and a negative revision to the 2P estimate of 7.2MM barrels net to Carnarvon is likely at year-end 2010 despite at least five horizontal infill locations that remain to be drilled within the field limits.

### **CONCESSION L33/43 (CVN 40%)**

As was previously reported, two successful exploration wells in the L33 exploration concession have been shut-in pending the submission and approval of a production license application.

The L33-1 exploration well was drilled vertically from a surface location in Concession L33 approximately 4.5 kilometres north of the Concession L44 / Concession L33 boundary targeting a volcanic reservoir. The well free flowed 35 degree API oil at an average rate of approximately 1,100 BOPD gross in the last 36 hours of a 108 hour test.

The L33-2 appraisal well was drilled from a surface location approximately 1.8 kilometres south of L33-1 and targeted the same L33-1 volcanic reservoir. The L33-2 well has tested on free flow, 38 degree API crude at an average rate of approximately 2,370 BOPD gross.

A production license application is being prepared and a submission of the final document to the DMF has been targeted for the first week of September 2010. Until a production license is approved by the DMF, historically 90 days from the date of the application submission, no production may be sold from wells in Concession L33 since a point of sale as established by a production license does not exist within the concession. The wells will likely remain shut-in until that time.

### **THAILAND RESERVES**

Management estimates that the majority of likely negative 2P reserve revisions at the NSE-F1 and NSE Central fields in the 2010 year-end reserve evaluation will be offset by the reserve additions related to the recent discoveries at L33-1, L33-2 and WBEXT-1.

## THAILAND OIL PRODUCTION

Oil production has averaged 7,500 BOPD gross (3,000 BOPD net to CVN) over the past eight days. Shut-in production capacity from the L33-1 and L33-2 wells in Concession L33 is approximately an additional 3,500 BOPD gross (1,400 BOPD net) resulting in a current production capacity of 11,000 BOPD gross (4,400 BOPD net to CVN) that will not be fully realized until the granting of a production license over the Concession L33 discoveries expected in December 2010. Current production includes 3,360 BOPD gross (1,340 BOP net to CVN) coming from the WBEXT-1 well that is producing under a 90 day production test which commenced 9 August.

Production guidance for 2010 provided by Carnarvon at the beginning of the year was for an average of 9,000 BOPD gross (3,600 BOPD net) for calendar year 2010, and as outlined in earlier press releases, the pace of production growth through the first half of 2010 has not been in line with this original estimate.

Considerable uncertainty with regard to the average production level for 2010 remains, related mainly to:

- 1) appraisal drilling results from the WBEXT-1 field volcanic reservoirs and the untested overlying sandstone reservoirs, and
- 2) the timing of DMF approval of the production licenses for the Concession L33 and WBEXT-1 field discoveries.

Average production for the first half of 2010 has been 6,000 BOPD gross (2,400 BOPD net to CVN).

In consideration of the above factors, management is revising the average production forecast for 2010 to between 6,000 BOPD and 6,500 BOPD gross (2,400 and 2,600 BOPD net to CVN).

The underlying assumption with regard to the lower end of the range is that an additional six new producing wells are drilled and on-stream at 500 BOPD gross each between now and year-end. For the high end of the range, an additional eight producing wells are assumed to be drilled and on production between now and year end at an average of 700 BOPD gross each.

Participants in L43/44 and L33/44 are:

|                              |              |
|------------------------------|--------------|
| Pan Orient Energy (Operator) | 60.0%        |
| <b>Carnarvon Petroleum</b>   | <b>40.0%</b> |

## Thailand 2010 Drilling – Concessions L33/43 & L44/43

