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TRANS-ORIENT TACKLES THE EAST COAST BASIN

TRANS-ORIENT Petroleum is enthusiastically grasping the challenge of exploring for oil and gas in New Zealand's East Coast Basin – a system of forearc sub-basins adjacent to the Australia-Pacific plate boundary, with Neogene sedimentary thickness of 8000 metres or more in places.

The company acquired two permits (PEP-38348 and PEP-38349), totaling 8600 sq. km in area, some 15 months ago. Since that time it has carried out field sampling surveys and two separate geochemical surveys over a number of structural leads, and is presently conducting a 50 km seismic survey which is placing key lines over a number of its more favored exploration targets. Following on from this, the company intends to put together a wildcat drilling programme of up to six wells, to commence in late 2008.

In addition to this work, Trans-Orient is also appraising the feasibility of two small-scale development projects.



The first is related to the 1910 Waitangi-1 well, near the Waitangi oil ponds, north of Gisborne in PEP-38348. This well reportedly flowed oil to surface when tested in 1912, and is still flowing a light, sweet crude, from a greensand of 200 metres depth. Trans-Orient is looking at a beam pump approach to lift oil at rates of a few tens of barrels per day. East Coast oils have the major advantage over Taranaki oils of not being waxy and being light sweet crude with low pour points, hence simplifying production and handling.



Oil seep emanating from beneath Trans-Orient lands, hinting at underlying potential.

Further north at Te Puia Springs, naturally flowing thermogenic gas was collected for many years for local energy use through shallow bores, and flow is still sustained at rates sufficient to support a viable local electricity generation project, which Trans-Orient is now reviewing.

Trans-Orient's CEO, Dave Bennett, said there are numerous oil and gas seeps on the East Coast Basin, which are geochemically typed to excellent source rocks in the Paleocene Waipawa Black Shale and the Late Cretaceous Whangai, both of which are widely distributed and in the generation window.

"The interesting thing about both these appraisal projects is that there appears to be sustained oil and gas flow from these source rocks, which are present at shallow depth in both localities," Mr Bennett said.

"Thus they are in themselves evidence for reservoir potential within and adjacent to the source intervals. They point towards the 'unconventional' play potential of the Waipawa and Whangai as fractured reservoirs."

Fractured shale plays in North America have seen tremendous growth in production in recent years. A good example is the Elm Coulee field, discovered in the Middle Bakken shales in North Dakota in 2000, and now producing 50,000 barrels of oil a day, with an average recovery per well of 500,000 barrels. Horizontal drilling and fracing techniques enhance the existing fracture systems, and matrix porosities averaging eight to 10 per cent and matrix permeabilities averaging 0.05 mD (microdarcies) at Elm Coulee are considered to assist in supporting flow from the fractures. By comparison, Trans-Orient has measured matrix porosities up to 30 per



The Boar Hill prospect, bounded here by its seismic, has significant undiscovered resource potential, and Boar Hill-1 will test a number of potential reservoirs.

cent with permeabilities to 100 microdarcies in unfractured outcrop samples of Whangai and Waipawa shales.

However, it is the fracture development which is all-important in such plays, and both the Whangai and Waipawa in outcrop show a well developed bedding plane fracture, with typically two or three fracture sets orthogonal to that. Both appear, from core photographs, to compare favourably in fracture intensity with examples from the Middle Bakken.

Oil is frequently observed on fracture planes in core and outcrop samples of Waipawa/Whangai. An advantage of this play in the East Coast is that the intense structuration associated with compression and uplift adjacent to the plate boundary, assists in opening fracture systems on structurally high features, while the thick overlying bentonitic shales of the Eocene Wanstead Formation provide excellent top seals.

Trans-Orient has identified a number of Waipawa/Whangai structural targets at reasonable drilling depth, and its present seismic survey is intended to confirm drilling locations on two of these.

“The first wells in this play will certainly be learning experiences, as we accumulate stratigraphic, lithologic and geomechanical information about fracture development and oil adsorption onto fracture planes,” Mr Bennett said.

“If it appears that the play has merit, we do anticipate that future wells will take into consideration the horizontal drilling and fracking technologies which have proven so successful in opening up the Bakken play. The large area of the company’s permits, which cover the main Waipawa and Whangai play areas, indicate the major upside potential that would follow success in the play.”

At the same time, the company isn’t neglecting the virtues of more conventional targets within its permit areas. There are numerous reservoir quality sands the coquina limestones within the Neogene section, and the majority of the limited number of wells drilled in the Basin have had oil or gas ‘shows or flows’ in the Mio-Pliocene section. Last year, Trans-Orient commissioned an independent review of its acreage from Sproule International Ltd, worldwide exploration consultants of Calgary, Canada.

In their assessment report, Sproule identified some 60 Neogene prospects and leads within the two permits, and made probabilistic estimates of the potential size of the oil



A sample of Waipawa Black Shale.

and gas resource across this set of targets. Sproule estimated a ‘most likely’ figure of 1000 million barrels oil equivalent of oil and gas for the resource in place in PEP-38348, and 710 million barrels oil equivalent in place for PEP-38349.

In Dave Bennett’s view the East Coast Basin has all the prerequisites for oil and gas discovery.

“Our challenge is to turn a proportion of the resource identified by Sproule into proven, economically viable, producible reserves,” Mr Bennett said.

“The company has an unsurpassed knowledge base of the area and its geology, and can call on appropriate expertise to assist it in its endeavours. We are, of course, helped by the higher oil prices of recent years, and by the fact that we have exclusive control over a large area.”

“It is also very much to our advantage that we are working onshore and exploring for targets at reasonable depth, so our cost are limited and we can look at extended drilling in the acreage.”

There are other factors too, the East Coast oil, being a light, sweet crude, will attract a premium market price, while gas pipelines of the national grid cross both permit areas to Napier and Gisborne, thus providing access to the national gas market. Electricity supply in the East Coast is both expensive and constrained by limited transmission infrastructure; and the potential to use gas for distributed electricity generation opens

up a high value market with considerable growth potential associated with development of the forest processing industry.

Trans-Orient is well-placed for corporate growth. It is a fully reporting Canadian company, listed on the Bulletin Board in the United States, and counts among its significant shareholders some of the most prominent oil and gas investors in Canada. This means that while its present cash reserves in excess of US\$8 million are fully adequate to meet its immediate exploration plans, the company has a ready ability to call on large and sophisticated capital markets to support its growth in the event of success.

Mr Bennett believes Trans-Orient could become one of the leading growth companies in the junior international oil exploration ranks in the next few years.

“We don’t intend to sit around and do nothing,” he said. “The East Coast Basin is an exciting starter project, and we are always looking at additional projects within the Southeast Asia arena, which is our focus area. Keep an eye on us.” ■