Takone Project

Relinquishment Report for part EL73/2007
for the Period 16 June 2008 to 15 June 2009

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SUMMARY OF ACTIVITIES FOR THE Takone PROJECT
for the Period 16 June 2008 to 15 June 2009

- Compile previous work
- Interpret remote airborne geophysical and other digital datasets
- Assess prospectivity
CONTENTS

1.0 Introduction/Abstract
2.0 Tenement Details
3.0 Location and Access
4.0 Geology and coal/oil shales
5.0 Previous Exploration
6.0 Work Carried Out During the Period
7.0 Prospectivey
8.0 Selected References

Figures 1 to 4
Tables 1 and 2

KEYWORDS

Geology/Mineralisation:
Permian Lower and Upper Parmeener Supergroup, coal, oil shale, tasmanites
Minerals/ Commodities:
Coal; Oil Shale; Tasmanites
Deposits/Occurrences:
Preolenna Coalfield
Oonah oil shale
Exploration:
Data review, prospectivity

COORDINATES

All lat/long co-ordinates in this report refer to the AGD66 Datum
All AMG co-ordinates in this report refer to the AGD66 Datum - Zone55
1.0 Introduction/ Abstract

This report covers the exploration activities conducted by Geotech International Pty Ltd within the relinquished sections of EL73/2007 at Takone (The ‘Tenement’), for the period 16 June 2008 to 15 June 2009.

The original full Tenement included areas with known coal and oil shale deposits, which were Geotech’s exploration targets.

During the period all available previous work was evaluated and the prospectivity was appraised.

The area relinquished has little prospectivity because of absence of the target Permian stratigraphy, or is overlain by basalt making evaluation impractical.

2.0 Tenement Details

Tenement details are shown in Table 1.

Table 1 – Takone Project Tenement Details

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Holder</th>
<th>Date Applied</th>
<th>Date Granted</th>
<th>Area</th>
<th>Two Year Expenditure Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL73/2009</td>
<td>Geotech International Pty Ltd</td>
<td>Mar 2008</td>
<td>16 June 2008</td>
<td>202km²</td>
<td>$61 000</td>
</tr>
<tr>
<td>Reduced area</td>
<td></td>
<td>July 2009</td>
<td></td>
<td>116km²</td>
<td></td>
</tr>
</tbody>
</table>

3.0 Location and Access

The Tenement surrounds the locality of Takone in NW Tasmania, as shown on Fig 1. The relinquished area is shown on Fig 4.
The area is very accessible with many roads and tracks, and is about 25km from the port of Burnie. Potential resources lie in non-sterilised working forest areas.
4.0 Geology and Coal/Oil Shales

Coal seams and an oil shale unit have been found here in two stratigraphic intervals within the Permian parts of the Lower and Upper Divisions of the Parmeener Supergroup within the Tasmania Basin. The Parmeener Supergroup is up to two kilometres thick, and has been subdivided into two divisions; the Lower Division, being predominantly marine; and the Upper Division, being wholly of freshwater origin.

The oil shale unit occurs towards the base of the Lower Parmeener Supergroup above tillites in a restricted marine environment.

The Preolenna Coal Measures occur at the base of the Upper Parmeener Supergroup, as shown on the stratigraphic column on Fig 3.

The two main areas of the original full area of the tenement containing coal and oil shale are shown on Fig 2. These are at Preolenna and at Oonah.

Oil Shale at Oonah

The oil shale, near the base of the Lower Parmeener Supergroup, is the variety Tasmanite, which occurs in only a few places world-wide. The kerogen of tasmanite occurs as particulate amber-colored discs (in reality, flattened sacs), having a distinct structure and clearly defined cell walls. The oil shale is thought to have formed in a quiet ecosystem of shallow bays, inlets and river estuaries in which the alga was free to multiply. The kerogen resulted from prodigious algae blooms when conditions were favourable for completion of the life cycle and "spore" build-up in the marginal marine waters.

The target stratigraphy is shown on Fig 4. The unit is flat lying and is a window in a larger area of Tertiary basalt, with an intrusive Jurassic dolerite sill to the north.

Oil shale at Preolenna

Here, at a higher stratigraphic level than at Oonah, there are bands of ‘cannel coal’ or torbanite within the thin seams of black coal. These are stated to have been caused by concentrations of the alga Reinschia. These bands are very rich in volatiles, and have been called 'oil shale' by some authors.

The bands are lenticular and from 23 to 60cm thick. Very high oil yields are reported by Rogers (1934):- he reports 130 gallons per ton, which is 590litres/t!

Coal at Preolenna

Bacon (1991) has reviewed this coalfield, correlated with the Mersey Coal Measures further east. The seams are thin, from 220-600 mm thick, discontinuous, dislocated by faulting, and dip steeply at 14-25°. Four seams of coal crop out on the north-western bank of the Jessie Gorge near Preolenna, and also crop out in the Flowerdale River valley south of Preolenna over a distance of three kilometers. Mining activity has taken place in both the Jessie Gorge (Preolenna Coal Mine) and in the Flowerdale River valley (Torbanhill or Meunna Coal Mine). Coal outcrops are also recorded from near Relapse Creek, south-west of Preolenna, and west of West Takone.

Oil shale occurrence on Cam River

MRT maps show an oil shale occurrence on the Cam River near Tewkesbury in the relinquished portion of the tenement. No information on this could be located.
5.0 Previous Exploration

A summary of previous exploration activities, for oil shale and coal only, is presented in Table 2.

Table 2 – Takone Project Previous Exploration Summary

<table>
<thead>
<tr>
<th>Year/Company</th>
<th>REPORT No</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre 1990 Tas Geol Survey</td>
<td>Bacon, 1991</td>
<td>Summary of all past work for Preolenna coals</td>
</tr>
<tr>
<td>1923 Tas Geol Survey</td>
<td>URMISCA_011-13</td>
<td>Discovery of Oonah oil shale by Reid in 1923 recorded in Mercury Newspaper. “Reserves” of 6M tons are quoted.</td>
</tr>
<tr>
<td>1924 Tas Geol Survey</td>
<td>UR1924_242-243</td>
<td>Quotes reserves of Tasmanite at Oonah</td>
</tr>
<tr>
<td>1928 Tas Geol Survey</td>
<td>UR1928B_081-86</td>
<td>Quotes reserves of Tasmanite at Oonah</td>
</tr>
<tr>
<td>1944 Tas Geol Survey</td>
<td>UR1944_043-45</td>
<td>Sampling and oil analyses</td>
</tr>
<tr>
<td>1980-1982 Petroquest Pty Ltd</td>
<td>80-1429, 80-1449, 82-1780</td>
<td>Geological review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drilling</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Down-hole geophysical logging</td>
</tr>
<tr>
<td>1984 CRA</td>
<td>84-2169, 84-2172, 84-2173</td>
<td>Geological appraisal</td>
</tr>
</tbody>
</table>

The work done in the Preolenna area is amply summarized by Bacon (1991), but all this field lies in the retained area of the Tenement.

The Oonah oil shale was discovered by Reid in 1923 as recorded in the Mercury Newspaper. The “reserves” were quoted as 6 million tons. This reserve was repeated by Reid in 1924, and also repeated by Blake in 1928. No basis for the reserve calculation was stated. In 1944 Henderson conducted field sampling of the outcropping oil shale. All of the Oonah oil shale area lies within the retained area of the Tenement.

The only modern field work which has been done in the area was by Petroquest, from 1980 to 1982. CRA held part of the area in 1984 but merely carried out a semi academic review of the prospectivity for coal, but oil shale was not reviewed.

Petroquest carried out a desktop review of prospectivity of northern Tasmania, including the Preolenna and Oonah area, and generated maps showing target stratigraphy. They followed this with an unclear poorly documented amount of field work. Ultimately they drilled several areas including at Oonah and Preolenna, all within the retained area of the Tenement.

There is no documented MRT drilling outside the retained area.

No University studies such as theses have been located for the area.
6.0 Work Carried Out During the Period

Work during the period has consisted of office based:
- Compile all past company exploration data, government reports, drill data.
- Process drill data on previous maps
- Assess prospectivity for coal and for oil shale.
7.0 Prospectivity

7.1 General

Prospectivity for only coal and oil shale was examined. No other commodities were reviewed. The prospectivity for coalbed methane was not evaluated, (coalbed methane rights are not held).

7.2 Oonah Oil Shale

A large prospective area, about 6 x 5km, entirely in the retained area, contains a flat lying tasmanite unit(s), which are potentially open pittable. High oil yields of greater than 95litres/t are recorded for surface samples. The known thickness of the oil shale from drilling and trenching is 0.3 to 1.0m.

The area is readily accessible, with numerous roads and tracks traversing the predominantly working forest area.

Tasmanite is potentially more valuable than “traditional” types of oil shale because the entire oil shale need not be retorted. The tasmanite spores can be recovered by flotation, thereby producing a higher yielding product, and potentially substantially lowering operating costs.

7.3 Preolenna Coal and Oil Shale

The Preolenna coalfield, which includes cannel coal or oil shale lenses, is entirely within the retained area.

7.4 Conclusion

The known coal and oil shale is within the retained area. The area relinquished has little prospectivity because of absence of the target Permian stratigraphy, or is overlain by basalt making evaluation impractical.
8.0 SELECTED REFERENCES


Other references are tabulated in Table 2
TABLE CAPE 177

Wyndham Seabrook

Somerset

Takone

CAMPBELL RANGE

Mt Leisele

Tawkesbury

Mt Myrtle 351

Mt Hicks

Calder

Olinda

Kallatier

Pruama Hill 364

Henrietta

Prelanna

Meenoo

CAMPBELL RANGE

GEOTECH INTERNATIONAL PTY LTD

TAKONE PROJECT
EL73/2007
LOCATION

FIG 1
diamictites, glacial outwash conglomerates and sandstones, and local mudstones and rhythmites (Clarke 1989; Hand 1993) were deposited as the Wynyard Formation. Total Organic Carbon (TOC) is low through these diamictites, at less than 0.4% (Domack et al. 1993). The diamictites rapidly give way upwards to marine pebbly siltstone and mudstone, of the Woody Island Formation (Fig. 2,3). Environments of deposition were glacial, with glendonites and scattered ice rafted pebbles common (Domack et al. 1993; Clarke 1989). The green alga *Tasmanites punctatus* is dispersed throughout the Woody Island Formation, and 20–30 m above the base of the unit algal tests are abundant, and in places are accumulated to form the Tasmanite Oil Shale, which has TOC up to 63%. The oil shale occurs in the northwest (Wynyard area) to the east (Bicheno-10), and in the central basin (Ross-2), with dispersed *Tasmanites* elsewhere (Fig. 4). In the central Tasmania Basin (Reid et al. 2003), conglomerates and conglomeratic siltstone and sandstone facies associated with topographic highs, occur in place of typical Woody Island mudstone facies, and the Tasmanite Oil Shale and dispersed *Tasmanites* are absent. Conglomerates also onlap basement highs in the north and northwest at this time. Banks & Clarke (1987) noted Tasmanite Oil Shale distribution may be controlled by proximity to palaeo-shorelines. Domack et al. (1993) suggested seasonal melting of sea ice created a stable sea surface and allowed a photic zone with increased productivity within a stratigraphically restricted zone. As yet the distribution sandstone facies associated with topographic highs, occur in place of typical Woody Island mudstone facies, and the Tasmanite Oil Shale and dispersed *Tasmanites* are absent. Conglomerates also onlap basement highs in the north and northwest at this time. Banks & Clarke (1987) noted Tasmanite Oil Shale distribution may be controlled by proximity to palaeo-shorelines. Domack et al. (1993) suggested seasonal melting of sea ice created a stable sea surface and allowed a photic zone with increased productivity within a stratigraphically restricted zone. As yet the distribution