Boss Energy Ltd.
Annual Report for EL20/2004
Latrobe Oil Shale Project

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Boss Energy: Annual Report, EL 20/2004

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Summary

Exploration for the year to 26 November 2008 for EL 20/2004 dominantly consisted of activities related to the extraction of a bulk sample of Tasmanite oil shale from the China Flats locality between Latrobe and Railton. China Flats was targeted for bulk sample testing following a drilling program in April 2007, that identified an area where the oil shale was close to surface. Material from the bulk sample has been stockpiled on site for testing with modern retorting techniques.

Other work completed includes the identification of bitumen in barrels at the location of the Southern Cross Fuel and Oil Co. Site at Latrobe, suspected to have been produced from the Tasmanite Shale. Samples from drill core were analysed by Rock Eval, and confirmed to have high hydrocarbon generation potential.

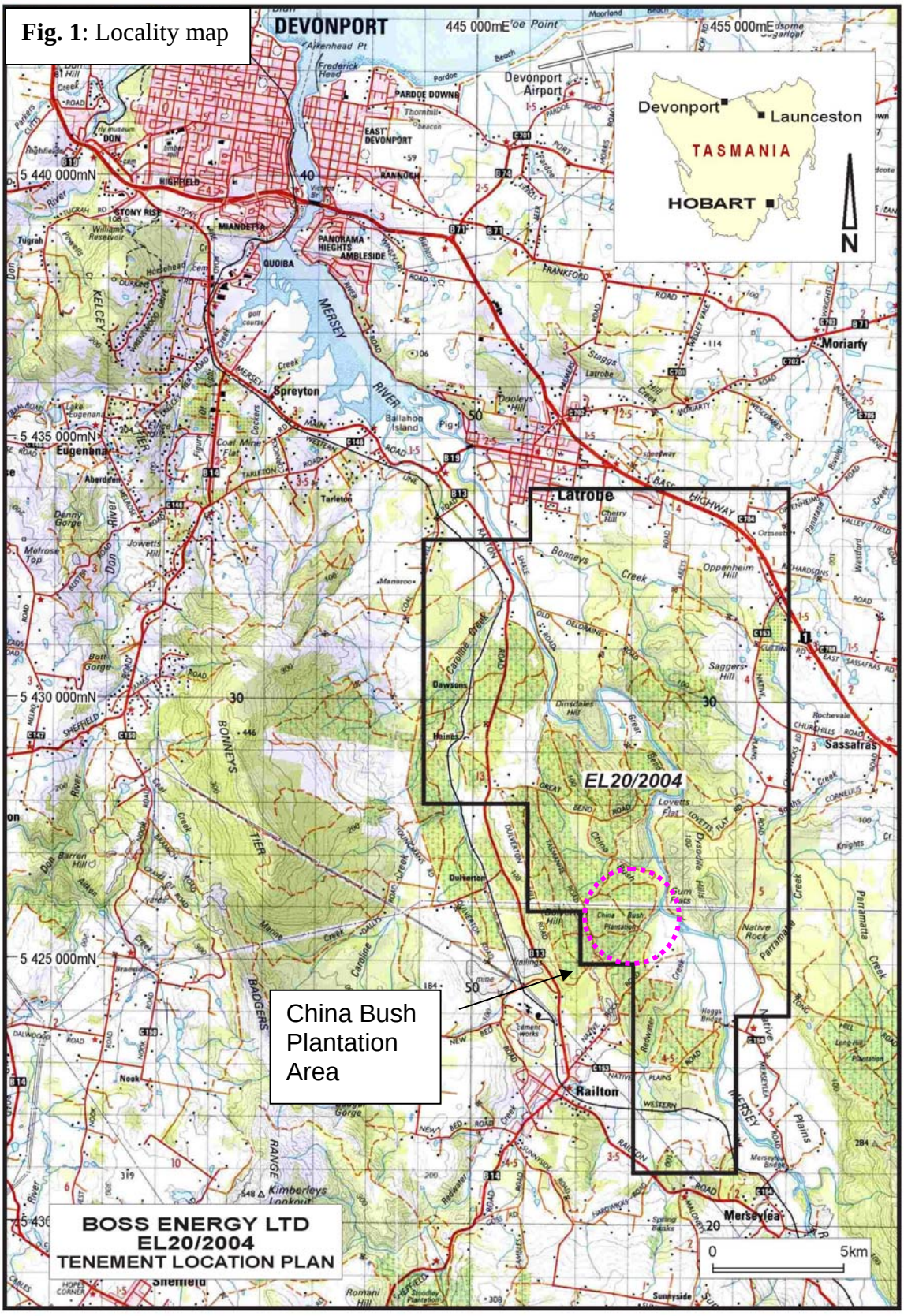
Introduction and tenement information

EL 20/2004 is a 61 square kilometre tenement encompassing an area to the east and west of the Mersey River between Railton and Latrobe in North Western Tasmania (figure 1). The tenement was acquired from Daley Resources PTY. LTD. in July 2007. Tenure consists of low density residential areas, freehold agricultural land, forest plantation and forest reserves. Access across the tenement is good with all year round access via established vehicular roads, tracks and short distance walking.
The tenement covers the largest area of known shallow oil shale occurrences in Tasmania

Geology Overview

The Tasmanite oil shale occurs in Tasmania within the Parmeener Supergroup, which includes marine and freshwater sedimentary sequences of Upper Carboniferous to Early Triassic age (Burrett and Martin, 1989). The sequence was deposited in the Tasmania basin which has a broad axis stretching from Cygnet in southern Tasmania, to Latrobe in northern Tasmania. The Tasmanite horizon is located within Upper Carboniferous to Early Permian Lower Parmeener Supergroup rocks just above the boundary between basal tillites and overlying glacio-marine pebbly mudstones of the Quamby formation and correlates (Bacon Et al, 2000). At Latrobe, the formation is known locally as the Spreyton Beds. The Quamby Formation is overlain by a sequence of richly fossiliferous siltstone, sandstone and minor limestone known as the Bundella Formation, which is in turn succeeded by a freshwater sequence known locally near Latrobe as the Mersey Coal Measures (Bacon Et al, 2000).

Fig. 1: Locality map



Previous Work

There is an extensive history of early work conducted on the Tasmanite oil shale, including historical production of 1.13 ML of oil from mines near the Mersey River's Great Bend . Bacon, 1986, and Bacon et al, 2000, should be referenced for an analysis of early work. Relatively recent exploration work is detailed in Table 1 below.

In 1987 the Tasmanian Hydro Electric Commission conducted extensive research and reported on the production of liquid fuels from oil shale in Tasmania. Their study concluded that it is technically feasible to produce a full range of transport fuels at a production rate of 2MT of shale/year over 20 years, yielding 286 megalitres of shale oil per year.

Table 1: Recent exploration work

Company	Year	Report	Authors	Work completed	Results/Conclusions
Endeavour Oil Co	1975	EL 4/74	Hunt, F.L.	Feasabilisy study oil shale as a bitumen resource	Uneconomic at time Recommend further development work for hotmix usage
Endeavour Oil CO	1975	EL 4/74	Nixon, L.G.	drilled 38 holes	possible indication of 42MT of shale
Endeavour Oil CO/CRAE	1981-82	EL 4/74	Clementson, I.M.	drilled 135 holes	42MT of shale indicated
CRAE	1982	EL 4/74	Bujtor and Waldrum	Project evaluation mining and bitumen production	Uneconomic Market penetration issues product acceptance time lag 3 yrs
Endeavour Oil CO/CRAE	1983	EL 4/74	Clementson et al	Investigation of Tasmanite as Anode Carbon source Investigated use as Bitumen binder	Further work recommendation only if economics improve

Work Completed for the year to 26 November 2008

The drilling program conducted by Boss Energy in April 2007 resulted in the identification of a suitable site for the extraction of a bulk sample at China Flats, also known as China Bush Plantation (figure 1). China Bush is a recently harvested pine plantation jointly managed by Forestry Tasmania and Timberlands Pacific, located near the 'Big Bend' in the Mersey River.

Approximately one thousand tonnes of shale was extracted from an area where shale was found to be less than five meters from surface. The extracted shale has been stockpiled on site

with approximately 26 tonnes separated and crushed to less than 100mm. It is expected that batches of shale will be trial retorted with modern hydrocarbon extraction technologies to assess the feasibility of hydrocarbon recovery using large scale processes. A full description of the bulk sample process is provided with this report as Appendix 1.

Bitumen sample

At the ruins of the Southern Cross Motor Fuel company processing plant near Latrobe are the remains of a group of bitumen barrels. The presence of the bitumen drums was noted by Forestry Tasmania workers conducting an archaeological survey in early 1997. It is highly likely that these barrels contained bitumen produced on-site from the Tasmanite oil shale in 1939 using a digester converter constructed by the Tasmanian Mines Department, producing approximately 750 gallons of 'ashphalt', as described by Hunt, 1975.

Several of the barrels have rusted away, allowing the bitumen once contained to flow onto the ground beneath. Two barrels remain that were found to contain significant amounts of Bitumen, one about one third full laying at the side of a vehicle track (figure 2), and the other two thirds full, recently disturbed and obviously leaking, near the line of barrels shown in figure 3. Samples of the bitumen were collected and sent to CSIRO in Hobart for hydrocarbon fingerprint analysis. One of the drums was retrieved with permission from Forestry Tasmania and Mineral Resources Tasmania, and contents were transferred to a new container.

The bitumen contained in the rusting barrels is engaging evidence that the Tasmanite shale can be processed on an industrial scale to produce petroleum products. It is intended that pending positive analytical results, samples of the bitumen will be archived with Mineral Resources Tasmania and local museums with the assistance of Boss Energy.

Figures 2-3 Rusted bitumen barrels in the vicinity of the old shale processing plant at the Warawee reserve near Latrobe.

Analytical results

Introduction

Samples taken from diamond cores of Boss Energy's 2007 drilling program at China Flats, Latrobe were submitted to Geotechnical Services PTY LTD, Welshpool W.A., for hydrocarbon assessment. Half core samples were taken from the upper, middle, and lower shale bands from diamond drill holes CF15, and CF16. Details of samples submitted are shown in Table 2. Details of the April 2007 drilling program are provided in Appendix 3.

The aim of analyzing these samples was to establish the hydrocarbon yield potential of the shale at China Flats, and to assess the comparability of modern techniques with previous work. The technique chosen for analysis by Boss Energy directors was 'RockEval' Pyrolysis.

Table 2. samples submitted for analysis

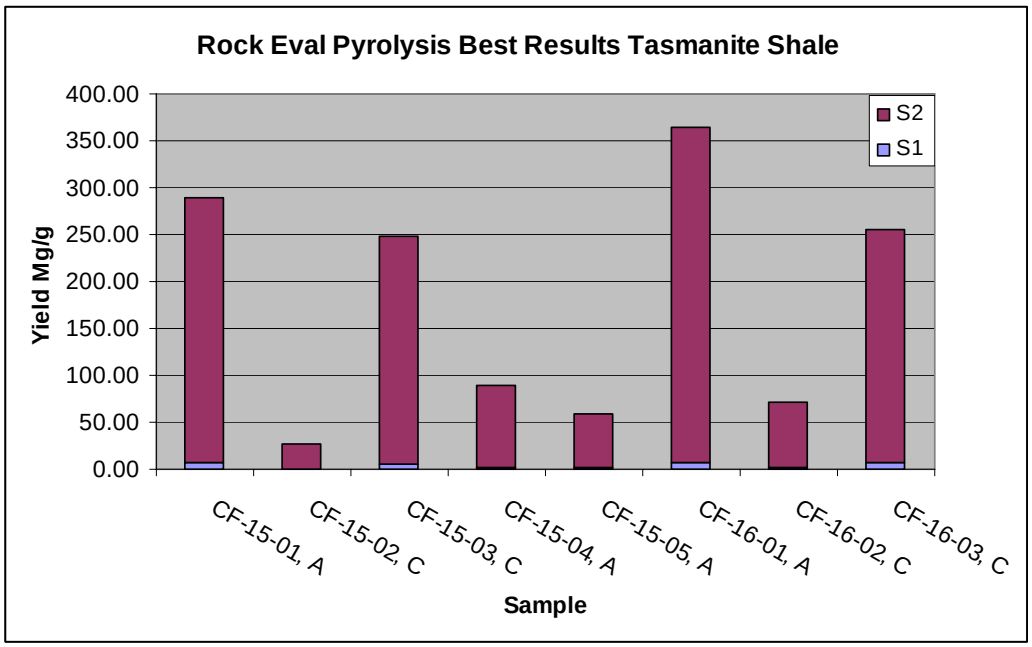
Sample	Hole No	Depth from	Depth to	interval	Comment
CF15-01	CF15	20.95	21.7	0.75	Upper band tasmanite gradational contact downhole
CF15-02	CF15	21.7	21.9	0.2	Middle band siltstone
CF15-03	CF15	21.9	21.96	0.06	small sample, discrete horizon
CF15-04	CF15	21.96	22.46	0.5	Middle band siltstone
CF15-05	CF15	22.46	22.58	0.12	Lower band - 12cm discrete horizon
CF16-01	CF16	18.3	18.85	0.55	Upper band - overdrilled - imperfect sample
CF16-02	CF16	18.85	19.25	0.4	Middle band - siltstone
CF16-03	CF16	19.25	19.7	0.45	lower band - 13cm rich tasmanite basal horizon

Results

It was expected that the samples submitted would be crushed, pulverized and split to produce a homogenous sample, representative of the chosen core interval, as is standard procedure in the minerals industry. Unfortunately the samples were sub-sampled at the laboratory, with small chips taken at intervals along the core for analysis (Cindy Barber pers. comm.). A total of twenty four samples were subsequently analysed for hydrocarbon production characteristics by Rock Eval. Laboratory results are shown in Appendix 2.

The resulting analyses cannot be considered to be representative of the entire intervals sampled, but nonetheless are indicative of the range in yield that might be expected. It is intended that these samples will be re-analysed.

Figure 4. Selected best results



The results shown in figure 4 are selected best results from samples, with cumulative S1 and S2 yields, where S1 represents volatile hydrocarbons released at temperatures of up to 350 degrees centigrade, and S2 represents the hydrocarbon generation potential at temperatures up to 441 degrees centigrade.

Numerically the results seem comparable to data from Clementson 1981, however Boss energy data is reported in Mg/g, wheras CRA data from Clementson 1981, and other authors is presented as litres per tonne. For this discussion a value of 1.16 litres per kilogram[1] as an average value for crude oils has been used, providing the calculated litres/tonne data shown in Table 3.

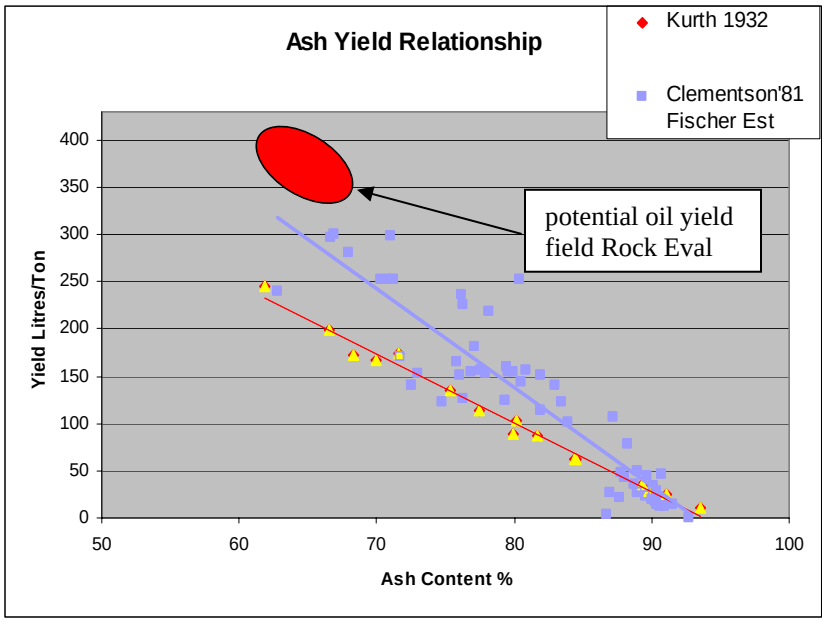
Table 3. Rock Eval selected best results

Name	*S1*	*S2*	*S1+S2 kg/tonne*	*S1+S2 litres/tonne*
CF-15-01, A	8.00	281.60	289.60	335.936
CF-15-02, C	0.40	26.70	27.10	31.436
CF-15-03, C	5.50	243.20	248.70	288.492
CF-15-04, A	1.80	87.20	89.00	103.24
CF-15-05, A	1.20	57.00	58.20	67.512
CF-16-01, A	7.20	356.80	364.00	422.24
CF-16-02, C	1.80	68.80	70.60	81.896
CF-16-03, C	7.20	248.00	255.20	296.032

[1] Source: Energy Policy and Planning Office (EPPO), Ministry of Energy, Royal Thai Govt.

Assuming that ash contents for Boss Energy samples are in the same range as for previous data and that an SG value of 1.16 is reasonable, potential yields using the Rock Eval technique can be identified. Figure 5 shows a potential data field that includes samples CF15-01A, and CF16-01A, results from the upper shale horizon in drillholes CF15 and 16. This simply demonstrates that it is probable that the laboratory yields using the Rock Eval technique will be higher than figures obtained by previous research reported by Kurth, 1932 in Hunt,1975, and Clementson, 1981.

Figure 5: Potential yields from Rock Eval technique.



Environment

Following the drilling program conducted at China Flats in April 2007, re-habilitation work was carried out on the drill collars. The PVC collar pipe inserted in each hole was cut off below ground level, capped and marked with a short length of steel 'rio bar'. The collars were buried and residual collar set foam was removed. The collars should be re-located with a GPS and metal detector. Figures 6 and 7 show the China Flats site and location of RC drillhole CF12.

Fig. 6. location of RC hole CF12

Fig 7. China Flats, vicinity of RC holes CF12-CF14 looking south west

A stream-way traversed during the bulk sample operation in April 2008 was re-habilitated according to industry standards. A culvert pipe and screening used during operations was removed. The Bulk sample pit site was filled with excavated overburden, rolled and covered with stockpiled topsoil. The sample site was re-contoured to blend with the local slope, as described in Appendix 1.

Expenditure

The breakdown of expenditure for EL 20/2004 is shown in Table 4 below.

Table 4: Expenditure

Crushing costs	$3,800.00
Equipment Hire	$10,535.70
General Contractor	$7,134.59
Geologist	$26,071.64
Geotechnical	$910.00
Survey	$1,396.73
Travel costs (meals)	$3,283.29
Total:	**$53,131.95**

Proposed Exploration

Work in the 2008-09 reporting period will include follow up test work on bulk sampled material, review of prospective temements, examination of shallow resources of oil shale on EL 20/2004, and a potential drilling program for the extension of shallow resources.

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Appendix 1: Bulk sample report: China Flats

Appendix 1.1 Bulk sample photographic record

Appendix 2: Rock Eval results

ANALYSIS OF ORGANIC MATTER BY ROCK-EVAL PYROLYSIS

TASMANIAN SAMPLES

Samples		*Tmax*	*S1*	*S2*	*S3*	*S1+S2*	*S2/S3*	*PI*	*TOC*	*HI*	OI
CF-15-01, A	Core	439	8.00	281.60	3.30	289.60	85.33	0.03	14.87	1894	22
CF-15-01, B	Core	440	1.50	82.20	1.50	83.70	54.80	0.02	7.48	1099	20
CF-15-01, C	Core	nd	nd	nd	nd	nd	nd	nd	7.57	nd	nd
CF-15-02, A	Core	nd	nd	nd	nd	nd	nd	nd	2.74	nd	nd
CF-15-02, B	Core	nd	nd	nd	nd	nd	nd	nd	3.01	nd	nd
CF-15-02, C	Core	437	0.40	26.70	0.50	27.10	53.40	0.01	3.63	736	14
CF-15-03, A	Core	437	5.50	224.00	2.90	229.50	77.24	0.02	12.12	1848	24
CF-15-03, B	Core	nd	nd	nd	nd	nd	nd	nd	11.75	nd	nd
CF-15-03, C	Core	441	5.50	243.20	3.00	248.70	81.07	0.02	12.46	1952	24
CF-15-04, A	Core	438	1.80	87.20	2.00	89.00	43.60	0.02	7.20	1211	28
CF-15-04, B	Core	nd	nd	nd	nd	nd	nd	nd	7.01	nd	nd
CF-15-04, C	Core	nd	nd	nd	nd	nd	nd	nd	6.04	nd	nd
CF-15-05, A	Core	440	1.20	57.00	1.40	58.20	40.71	0.02	6.17	924	23
CF-15-05, B	Core	nd	nd	nd	nd	nd	nd	nd	3.93	nd	nd
CF-15-04, C	Core	nd	nd	nd	nd	nd	nd	nd	2.03	nd	nd
CF-16-01, A	Core	437	7.20	356.80	3.90	364.00	91.49	0.02	15.39	2318	25
CF-16-01, B	Core	nd	nd	nd	nd	nd	nd	nd	7.31	nd	nd
CF-16-01, C	Core	435	4.20	171.20	3.10	175.40	55.23	0.02	11.37	1506	27
CF-16-02, A	Core	nd	nd	nd	nd	nd	nd	nd	4.04	nd	nd
CF-16-02, B	Core	nd	nd	nd	nd	nd	nd	nd	4.10	nd	nd
CF-16-02, C	Core	435	1.80	68.80	1.30	70.60	52.92	0.03	6.70	1027	19
CF-16-03, A	Core	nd	nd	nd	nd	nd	nd	nd	9.82	nd	nd
CF-16-03, B	Core	441	3.50	194.40	2.10	197.90	92.57	0.02	11.77	1652	18
CF-16-03, C	Core	437	7.20	248.00	4.40	255.20	56.36	0.03	13.12	1890	34

A TMAX value is not reported if the S2 is <0.2mg/g

TMAX = Max. temperature S2 (^{o}C)

S1 = Volatile hydrocarbons (HC) (mg/g rock)

S2 = HC generating potential (mg/g rock)

S1+S2 = Potential yield (mg/g rock)

S3 = Organic carbon dioxide (mg/g rock)

PI = Production index

OI = Oxygen Index

TOC = Total organic carbon (wt % of rock)

HI = Hydrogen index

nd = no data

GEOTECHNICAL SERVICES PTY LTD

Appendix 3: Drilling report: April 2007