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GREAT SOUTH LAND MINERALS LIMITED

ACN 068 650 386

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ANNUAL REPORT 1998

COMMERCIAL IN CONFIDENCE

98-4255

ANNUAL REPORT 1998
GT SOUTHLAND MINERALS
ELS 1/88,9/95,21/95

AMG REFERENCE POINTS ADDEI

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1. Petroleum Prospectivity Mapping

The main geological activity of the year was the compilation of prospectivity maps of the Tasmania Basin. Prospectivity maps have been produced for three of the Australian Petroleum Systems as defined by Dr Marita Bradshaw (1993,1998), namely Larapintine II, Gondwana I and Gondwana II. These maps are included and described in GSLM's Exploration Strategy (Appendix 1)

Overlays have been produced for each of these systems using published and unpublished data sets including structures, sources, maturation, potential reservoir rocks and seals.

The Prospectivity maps produced have formed the basis for the preliminary placement of seismic lines.

2. Reservoir Resource Estimates

Mr Ian Reid has helped in the calculation of possible petroleum resources based on the structural mapping and comparisons made with the geology of southern Oman oilfields. Resource estimates have been made for the structural styles likely to be encountered in the Tasmania Basin.

Resource estimates for the entire Tasmania Basin in comparison with other similar basins is presented in Appendix 2.

For each of the attached examples in Appendix 3, a reservoir rock 35 metres thick has been chosen to represent sandstone within the Liffey-Faulkner Gp, with a porosity of 10%, Net to gross ratio of 20%, gas saturation of 60%, gas expansion factor of 200, gas recoverability of 65%, oil saturation of 55%, formation volume factor (FVF) for oil of 1.3 [describing the shrinkage of the oil volume from reservoir to surface conditions] and Recoverability of oil 20%

Appendix 3a and 3b show the results of oil and gas comparisons for a dome structure, in this case the dimensions of the Hunterson Dome. For this or a structure this size with a reservoir at a depth of 1500 metres we could expect a potential gas reserve of 23.4 Bcf or potential oil reserve of 4.5 MMbbl.

Considering the major NNW compressional event in the Mesozoic establishing a fracture pattern with strike slip faults striking 100° and 170° , and reverse faults striking NE (Berry & Banks, 1985), as evident in TASGO line AGS95-T4, it is possible to predict a generic fault block style, indicative in volume for most to be found within the Tasmania Basin. Appendix 3c and 3d show the results of oil and gas comparisons for a generic fault trap, in this case conservatively estimated to be 1 km^2 with a reservoir horizon 35m thick. Potential gas reserves for such a structure would be 1.9 Bcf with potential oil reserves of 0.4 MMbbl.

3. Geochemistry

Oil was found in Paleozoic sandstones from the Badger Head area of northern Tasmania. Samples have been sent to Geotechnical Services Pty Ltd (Geotech) in Perth WA for a full geochemical characterization. Summarised results from samples of Middle Permian 'coals' from Preolenna have also been geochemically characterized (Appendix 4). A resultant TOC of 64.30% from Preolenna indicates that the sample is analogous to a 'Canal coal' or 'Boghead coal' with a substantial algal component, though distinct from the Preolenna coal measures with a TOC of approximately 25%.

4. Archiving / Cataloging

As part of GSLM's continuing planning & appraisal process considerable effort has been expended collecting and cataloging GSLM's collection of reference material, the 'library list' has been attached as Appendix 5. This reference material is available for viewing / copying at Great South Land Minerals Limited offices, Level 3, 65 Murray St.

5. Seismic work

Field reconnaissance work has been carried out by Johnathon Knight and Gregory Kunda. The informal notes on initial reconnaissance is attached as Appendix 6 of this report. The colour photographs that accompany these notes are available for inspection / copying on request.

6. Research

Mr Gregory Kunda has started postgraduate studies investigating the dolerite masking problem from a seismic perspective within the Tasmania Basin.

As part of his research, Kunda has attempted to review previous seismic work including the BMR research cruise 78 data, acquired in 1988, around Bruny Island. Attached (Appendix 7) is a copy of the inventory conducted by Robert Richardson and Gregory Kunda of 'Bruny Island Survey Data' (circa 1991) held in the Petroleum Archive of the TDR.

Also attached (Appendix 8) is a list of 9 track tapes held in storage by Kestrel (contact Alex Mumme ph: (03) 9544 3399 Fax: (03) 9544 0475) for Shell Petroleum (contact Nadine Savage (03) 9666 5425 or Bruce Thomas (03) 9666 5183 for access rights). Shell reprocessed two lines in 1991. It would appear these lines were chosen due to the occurrence of relatively good reflectors in the brute stacks, as evident in the paper copies held by GSLM.

It should be noted that these data sets have been described to aid future retrieval, due to the likely poor condition of the field data, stacks and migrations stored on 9 track tapes by AGSO.

Ms Nicole Cashion has commenced an Honours project in the Lonnavale and Pelham areas. She has logged the Pelham core, and has started mapping the Lonnavale area.

7. NCPGG Proposal

GSLM has actively contributed to the development of the Regional Basin Evaluation Program proposed by the National Centre for Petroleum Geology and Geophysics (NCPGG), Appendix 9. The proposal involves regional work to be conducted as a concurrent individual project in co-operation with, but separate to, the detailed prospect level exploration work proposed by GSLM.

It is proposed to enlist the skill pool of the NCPGG to conduct this evaluation as a public good project, including the acquisition of the 2000 line km regional seismic survey and the drilling of a number of stratigraphic wells.

The principle arguments in support of the use of Public (i.e. Government) funds for these purposes are:

- The work can be considered pre-commercial in that the deliverable is an understanding of the basin at the Macro Level and will not identify drillable oil prospects.
- The seismic imaging together with gravity and magnetic data may well be expected to define an extension to the boundaries of the heavily mineralised Mt. Read Volcanics and therefore encourage mineral exploration with substantial consequential benefit to the economy.
- The seismic data may be calibrated against the stratigraphic drilling results, and thus allow the presence and distribution of subterranean water resources to be mapped. Water for agricultural purposes is becoming a highly valued resource, particularly through Central Tasmania.

Discussions have been held with Dr. J. Kaldi, Director of the NCPGG and agreement reached on the Project Scope. Given project approval, it is intended that a cooperation agreement be concluded between GSLM and the NCPGG to establish inter alia right of access and ensure optimal operational synergy with the exploration programme including seismic survey operations proposed to be carried out concurrently by GSLM.

The NCPGG proposal was submitted to government on the 23rd October 1998, and their detailed response is expected shortly.

8. Historical Seep Discussion

Some recent anecdotal notes are included in Appendix 10.

David J. ...
Chief Executive Officer
1st December 1998

APPENDIX 1

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GREAT SOUTH LAND MINERALS LIMITED
ACN 068 650 386

EXPLORATION STRATEGY

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Exploration Programme
1999 - 2004

Special Exploration Licence Application

Annex 1 of 98125

CONFIDENTIAL

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NOT TO BE REPRODUCED

November 1998

EXPLORATION STRATEGY

Great South Land Minerals Limited (GSLM) has identified three petroleum systems in and under the Tasmania Basin. These are parts of the petroleum supersystems as defined by Bradshaw (1993, 1998).

Larapintine 2

Beneath the Tasmania Basin in fold thrust belt setting of Devonian age.

Ordovician Gordon Group limestone - source
 Ordovician Gordon Group limestone - reservoir
 Siluro-Devonian Eldon Group siliciclastics - reservoir
 Eldon Group shales - seal
 Devonian structuring

Gondwana 1

In Late Carboniferous - Late Triassic Tasmania Basin.

Lower Permian Tasmanite Oil Shale and Quamby Fm. - source
 'middle' Permian Liffey and Faulkner Group siliciclastics - reservoir
 'middle' Permian Berriedale Limestone - reservoir
 Upper Permian shales and siltstones - regional seal
 Cretaceous structuring

Gondwana 2

In Late Carboniferous - Late Triassic Tasmania Basin.

'middle' Permian Liffey and Faulkner Group coals - source
 'middle' Permian Liffey and Faulkner Group siliciclastics - reservoir
 'middle' Permian Berriedale Limestone - reservoir
 U. Permian -U. Triassic sandstones Upper Parmeener Sgp. - reservoir
 Upper Triassic siliciclastics - seal
 Cretaceous structuring

On the basis of thermal maturation studies, source rock mapping and reservoir quality studies we have outlined areas within the Tasmania Basin for detailed seismic investigation. Our main petroleum system is based on the source potential of the Tasmanite Oil Shale and the remainder of the Quamby Fm (Gondwana 1). The most prospective areas for this system are certainly in the northeast and northwest margins of the basin and possibly in the southeast and southwest margins.

For Gondwana 2 the most prospective areas are scattered across the basin but thick sequences of the Upper Parmeener sandstones are found in the eastern and western regions of the basin.

The Larapintine 2 system occurs under the Tasmania Basin in structures formed during the mid-Devonian Orogeny. Areas of Gordon Group limestones and Siluro-Devonian sandstones have been mapped in the subsurface, using magnetic and gravity modelling, by Dr D.E. Leaman (1991). Leaman proposes that these potential reservoirs are mainly in the south of the state.

Our seismic exploration program, as defined below is focussed on identifying structures, facies changes and dolerite intrusions, within the Parmeener Supergroup as well as general architecture of the Tasmania Basin.

EXPLORATION PROGRAM

GSLM intends to increase its interest in the Tasmania Basin by conducting the following comprehensive exploration and appraisal program.

Seismic program :

The company plans to obtain in excess of 1500 km of seismic reflection data within the next 5 years. In addition, gravity readings will be taken along each of the lines. The intended outcome is for a regional seismic grid – nominal 20km centres, over the Tasmania Basin and prospect level grids in the vicinity of seeps

PHASE 1: Initial Survey Objectives:

The initial survey aims to fulfil the following objectives:

1. To assess the extent and thickness of source and reservoir horizons and deduce migration pathways.
2. Identify the geometry, extent and thickness of dolerite intrusions and their proximity to reservoir and source horizons.
3. To identify structural traps on the seismic lines and supplement them with further cross lines at 90 degrees to obtain 3D information on fold closure over potential structural traps.
4. In addition the initial survey will give spatial information regarding the positions and geometries of the basin margins.

Consequent Results of Seismic Programme:

1. Aquifer Definition
2. Obtain important features beneath the Tasmania Basin such as extent and fine structure of the mineral rich Cambrian Mt. Read Volcanics correlates and the potential Pb-Zn-Ag deposits in the Ordovician Gordon Group limestones.

Gas and Oil Tasmania Ltd
PROPOSED SEISMIC LINES

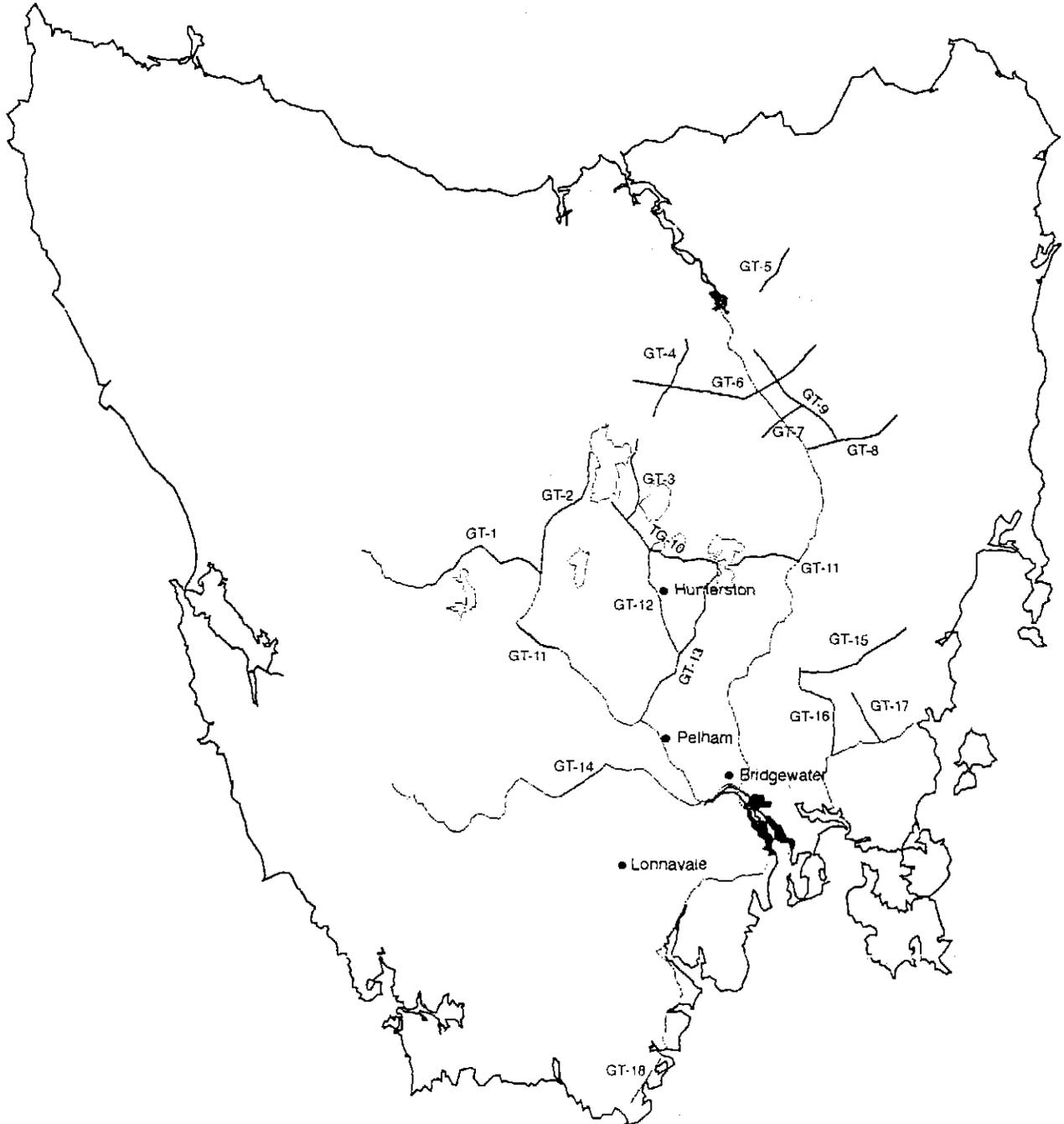


Figure 1

Seismic Work:

As much ground as possible will be covered using a vibroseis source. In areas of poor coupling, excessive reverberation style multiples and or rugged terrain, a single shot hole with a 'dynamite' charge will be used. A nominal charge size between 500g to 2 kg will be used, subject to field testing.

Initial field reconnaissance has been completed to assess accessibility, topography, vegetation, GPS suitability and thickness of the weathered layer. Background case studies on the masking problems associated with the high velocity dolerite cover are currently being carried out by Jonathan Knight and Gregory Kunda.

Knight and Kunda have proposed the following lines, see figure 1, to fulfil the minimum requirements of the above stated objectives. These lines where possible follow straight roads to maximise production and minimise environmental impact.

The lines are arbitrarily numbered 98GT-1 to 98GT-18, with no order of priority implied. The line locations are proposed in terms of covering objectives and will be changed as a result of further work, and discussion with potential contractors.

Line 98GT-12 is presently proposed in conjunction with field testing over the Hunterston drill hole. Hunterston has been proposed to make use of future uphole shot velocities, and give stratigraphic and structural control, to fine tune the survey parameters.

Broadly lines 98G-1 through to 98GT-5 'join' to form a regional cross section across the basin to enable modelling, in conjunction with gravity and magnetics, of the geometries of the basin margins and depth to basement.

Line 98GT-11 will tie to the AGSO seismic line 95AGS-T4 which lies north-south, along the stock route from Ross to Woodbury.

Line 98GT-11, 14 and 18 are proposed to attempt to delineate potential source rocks within the Ordovician Gordon Group limestones, in addition to the more general, overall objectives of the survey.

Lines 98GT-6 through to 9 and 98GT-15 through to 17 are proposed specifically to test for potential reservoir extent and thickness within the Permian Liffey and Faulkner Group siliciclastics, also in addition to the overall objectives of the survey.

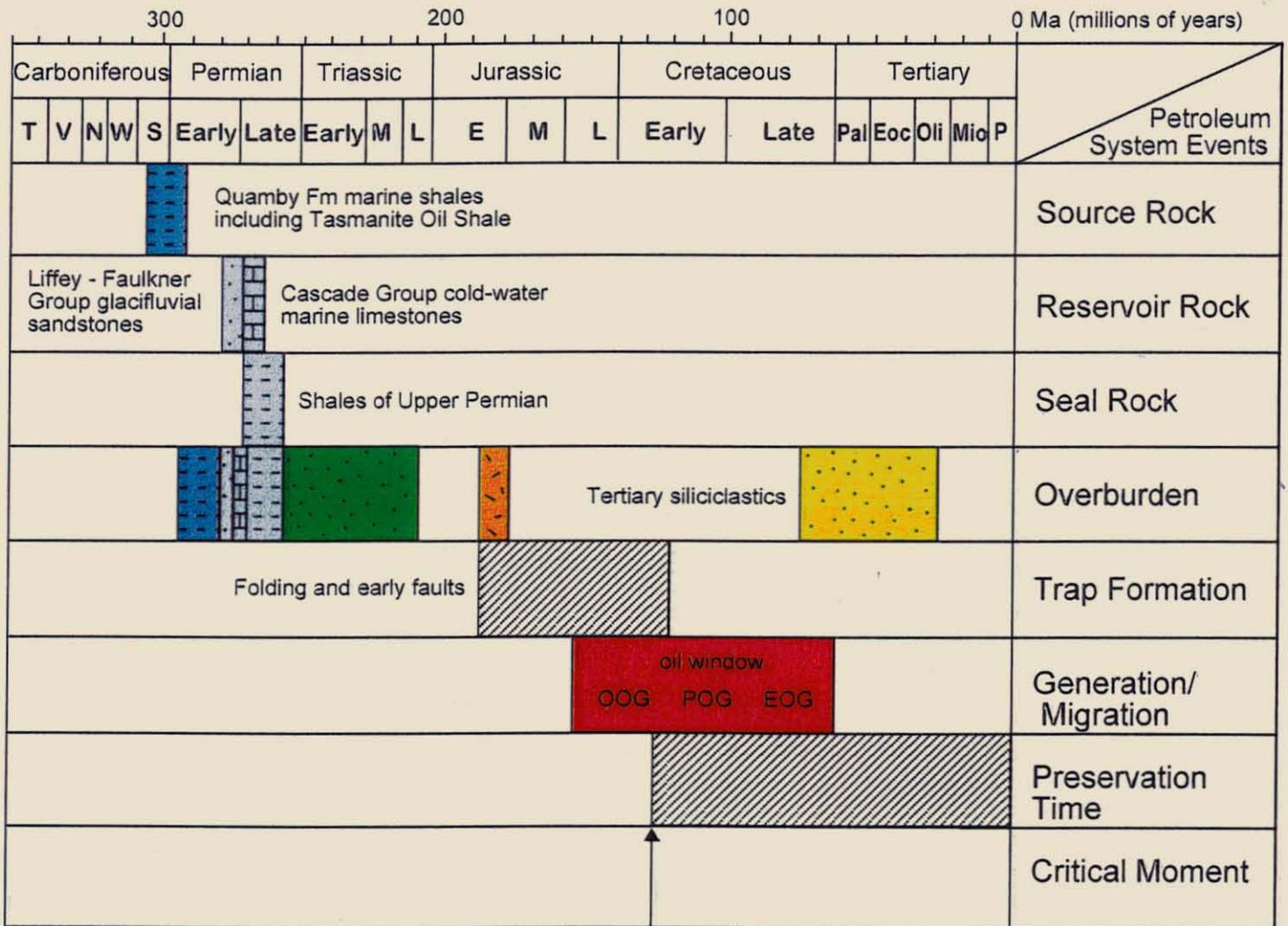
PHASE 2: Target Definition:

Following the initial regional scale work the most prospective areas will be covered with closely spaced seismic grids. The location of infill seismic to define prospects is not known at this stage and will be defined after interpretation of the regional seismic.

Drilling program :

Holes at Hunterston and Lonnavale have been drilled to 336 m and 557 m respectively.

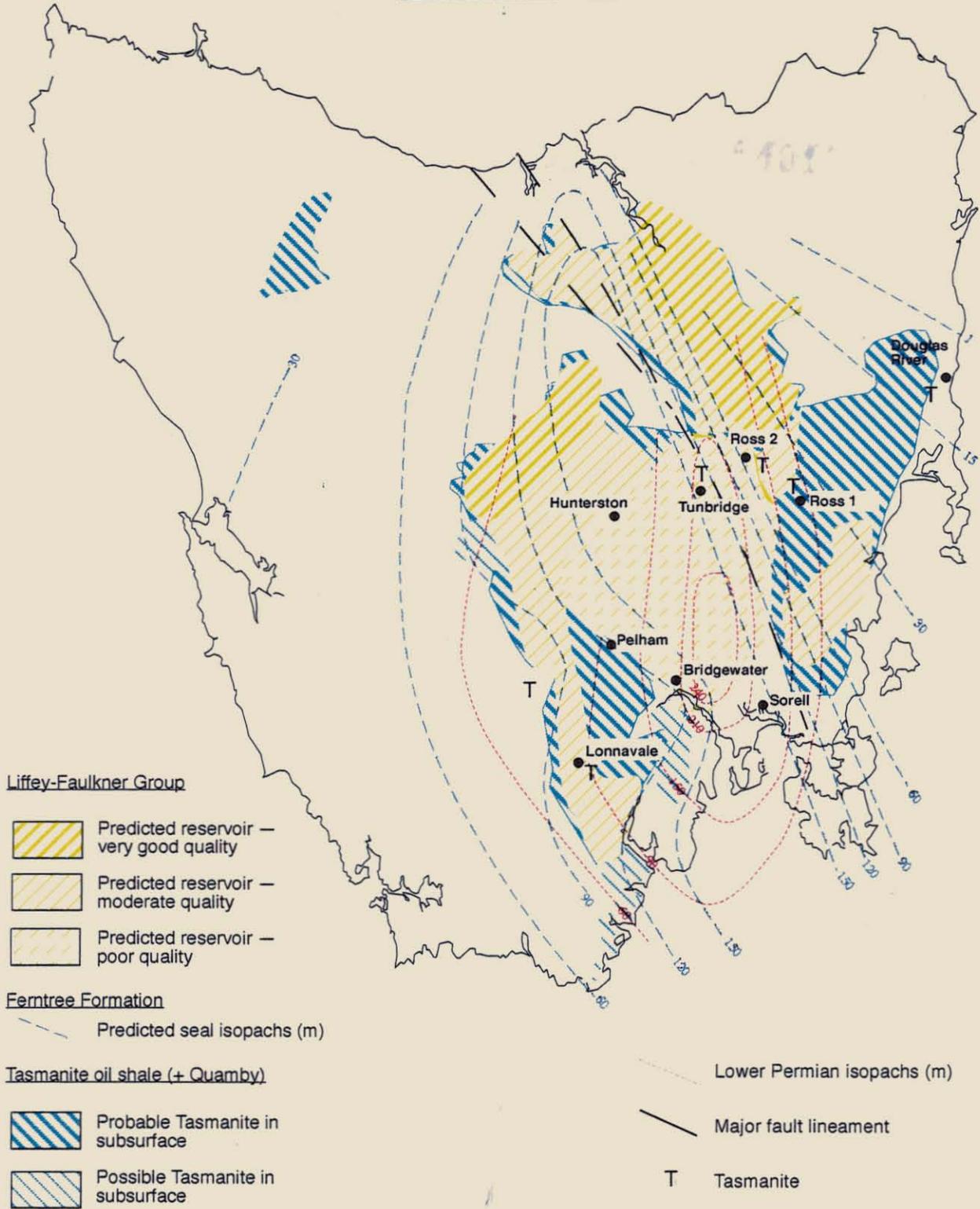
- 1 Subject to the seismic survey confirming the optimum location of the existing precollar, GSLM will complete the stratigraphic hole at Hunterston, provided hole conditions permit, which will be the first deep hole in the Central Plateau area. This will give important information on both source and reservoir rocks within the Parmeener Supergroup and also information on the underlying Larapintine Supersystem or on the Tasmania Basin 'basement'. Further the hole will give geological and velocity control, to enable fine tuning of the acquisition parameters of the seismic survey.
- 2 After initial seismic work, drilling will continue at Lonnavale to gain information on source and reservoir potential within the Quamby and Liffey-Faulkner Groups. The hole will be drilled to below the Parmeener Supergroup, should hole conditions permit, to test for source rock and reservoir potential within the Gordon Group limestones (if present).
- 3 Potential structural traps will be drilled, following the interpretation of the seismic survey in synthesis with the continuing geological, geochemical and geophysical research.



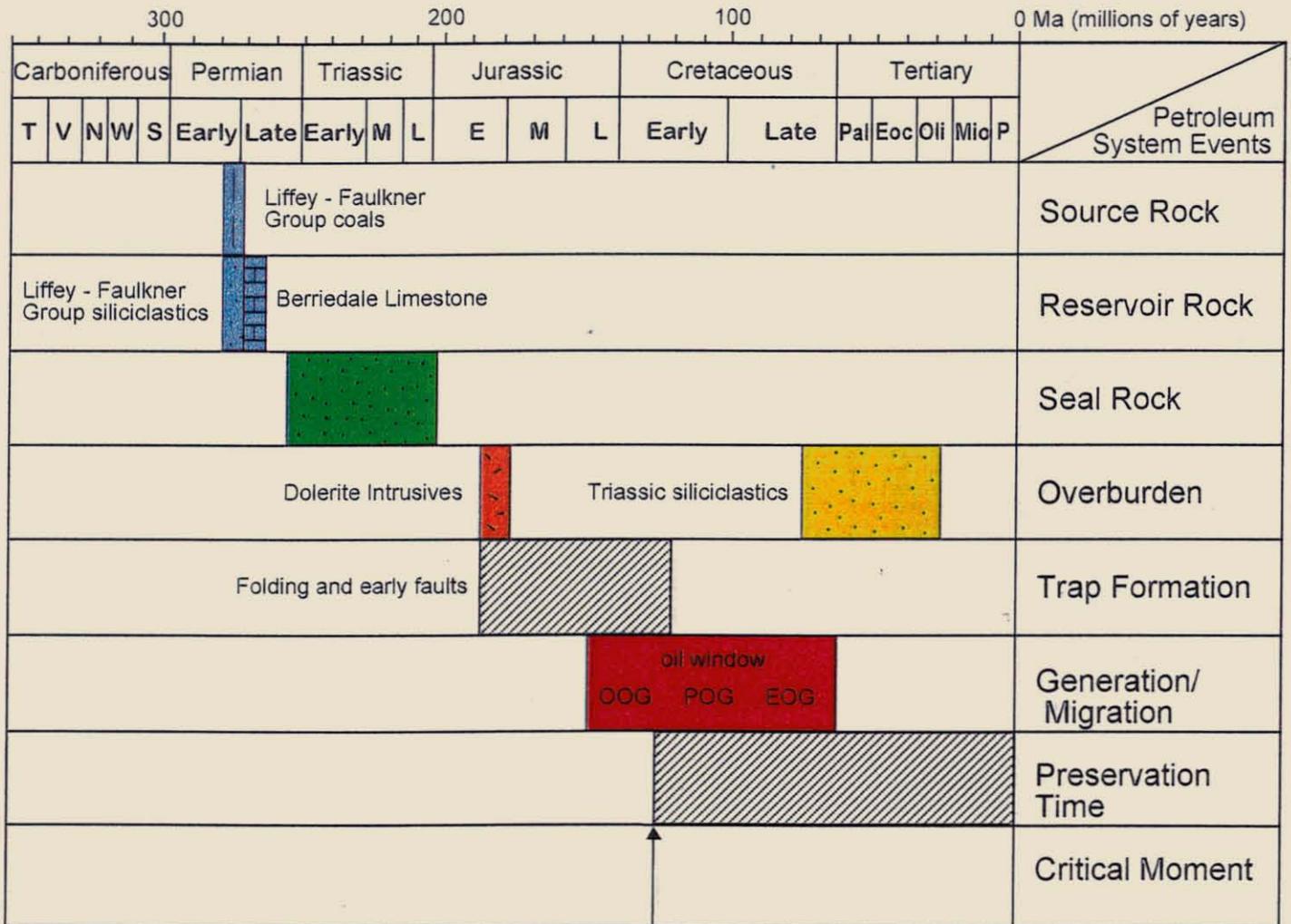
OOG = onset oil generation
 POG = peak oil generation
 EOG = end oil generation

Timing Risk chart for the Gondwana 1 petroleum system, within the Tasmanian Basin.

Gondwana 1



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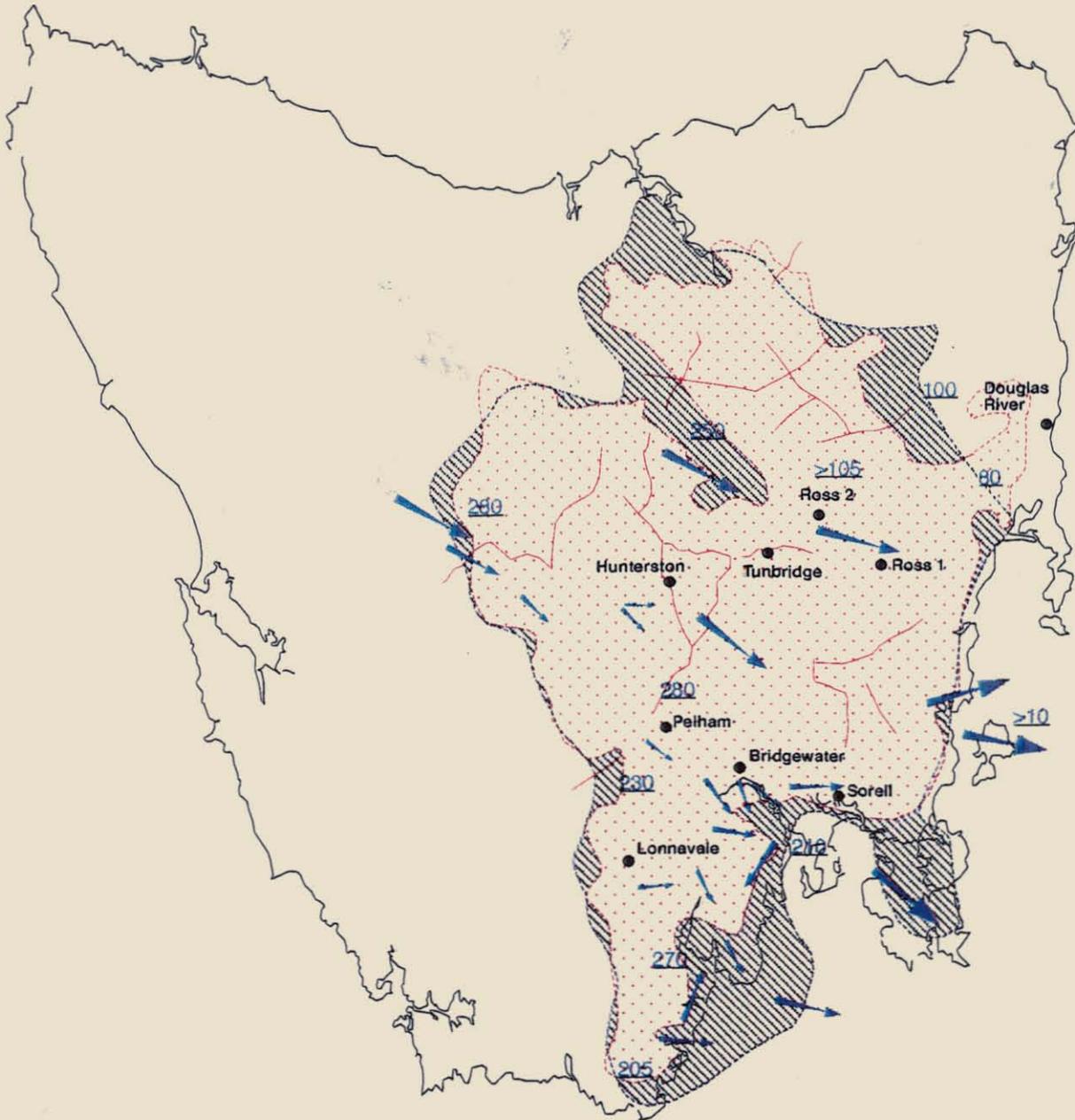
OOG = onset oil generation

POG = peak oil generation

EOG = end oil generation

Timing Risk chart for the Gondwana 2 petroleum system, within the Tasmanian Basin.

Gondwana 2



Source

approximate limit of 'middle' Permian Coals

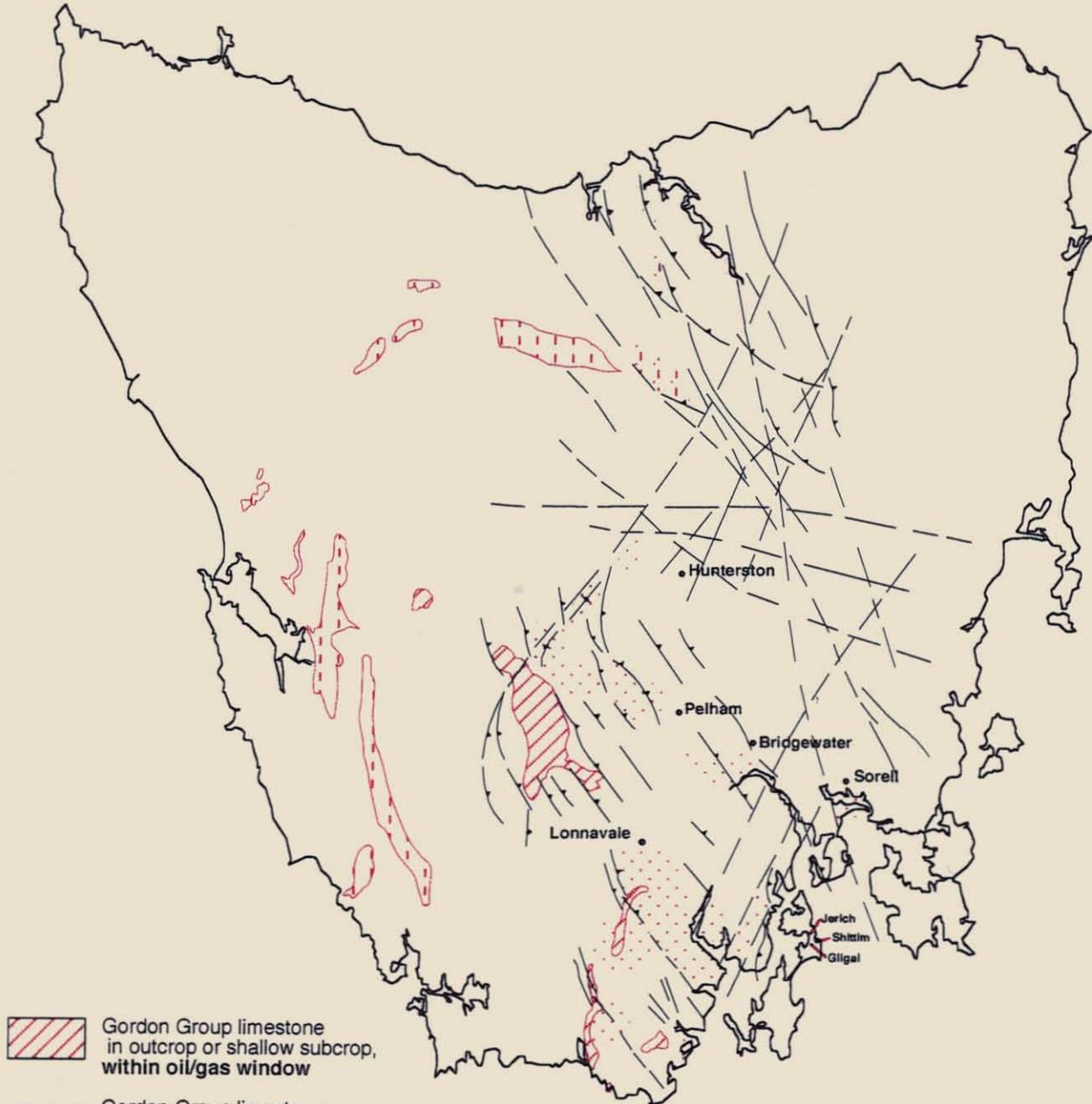
Reservoir

Lower Triassic Quartz Sandstone (Thickness in meters)



Paleocurrent indicators

Larapintine 2



- 
 Gordon Group limestone in outcrop or shallow subcrop, **within oil/gas window**
- 
 Gordon Group limestone in outcrop or shallow subcrop, **overmature (CAI 5+)**
- 
 Subcrop of Ordovician, mainly Gordon Gp limestone, predicted by D.E.Leaman and C.Burrett
Probably within oil/gas window
- 
 Subcrop of Ordovician, mainly Gordon Gp limestone, predicted by D.E.Leaman.
Probably overmature (CAI 5+)

Structural interpretation beneath the Tasmanian Basin by D.E.Leaman 1991

- 
 Major thrust fault with upper plate indicated
- 
 fold axis, syncline / anticline

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APPENDIX 2

RESOURCE ESTIMATES - COMPARISONS WITH SIMILAR BASINS

It has been noted that the Tasmania Basin is geologically similar to parts of the Southern Oman Basin and the Cooper Basin.

Some statistics and production data for these basins are provided in Table 1:

BASIN:	SOUTH OMAN	COOPER/ EROMANGA
Area – square km	55,000	130,000
Exploration started	1937	1954
First commercial discovery	1956	1963
Wells drilled	200+	800
Oil fields	50+	55
Gas fields		119
Seismic - km		85,267
Oil production – daily ¹	300,000 bbl/day	
Crude oil ²		441 MMbbl
Natural Gas ²		2637 Bcf
LPG + Condensate ²		1122 MMbbl
Total Gas resource ³		4520 PJ

¹ Southern Palaeozoic Basin only – total Oman production 800,000 bbl/day

² Santos estimate of total remaining reserves as at 1/1/94, Cooper & Eromanga Basins

³ BMR estimate 31/12/89

Table 1 – Comparison with South Oman & Cooper Basins

While the above figures provide some indication of the upside potential of the Tasmania Basin, it is worth noting that an annual production of only 10 Bcf of gas plus 1 MMbbl of oil would be valued at about A\$42 million. A State Government royalty of 12% would generate \$5 million per annum on this minimal production.

The Tasmanites oil shale has the capacity to produce approximately 2 barrels of oil and 2,700 cubic feet of gas per cubic metre.

Assuming a source rock generation potential of 1 bbl per cubic metre with a source rock thickness averaging 10 metres over a 30,000 km² area of the Basin, and conservatively assuming 1% of the hydrocarbons generated have been retained, the Tasmania Basin may have retained 3 billion barrels of oil and 4 Tcf of gas.

As a comparison, the Cooper/Eromanga Basin is estimated to contain a gas resource of 4.5 Tcf (BMR, 1989), from a productive area similar in size to the Tasmania Basin.

APPENDIX 3



Appraisal Date:

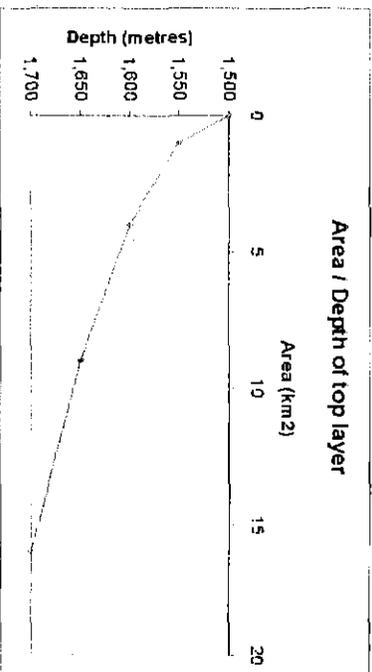
Field / Prospect Name: Hunterston #1

Comment: Potential Gas Reserves (assuming a Gas Expansion Factor of 200)

Appraised by: G Kunda

Area / Depth description of top layer 1

Layer	Depth metres	Area km ²
Contour	1,500.0	0.0
Contour 1	1,600.0	1.0
Contour 2	1,600.0	4.0
Contour 3	1,600.0	9.0
Contour 4	1,700.0	16.0
Contour 5		
Contour 6		
Contour 7		
Contour 8		



Petrophysical description by layer

Layer #	Type	Thickness metres	net/gross %	porosity net/res %	SOI %	sgas %	PVF of Expansion factor of gas	GOOC metres	GMWC metres	GMVC metres	Layer Name
1	reservoir	36.00	20	10	56	60	1.3	200	1690.00		Layer Name
2	not-defined	0.00									
3	not-defined	0.00									
4	not-defined	0.00									
5	not-defined	0.00									
6	not-defined	0.00									
7	not-defined	0.00									
8	not-defined	0.00									
9	not-defined	0.00									
10	not-defined	0.00									

Notes:

Volume figures by layer

Layer #	Type	Bulk Rock Volume X 10 ⁶ m ³	Pore volume water saturation at waste gas Mthosa	STOIP Mthosa	GLIP Bot	Roa %	RF-gas %	Reserves (oil) Mthosa	Reserves (gas) Bcf
1	reservoir	426	9	0.00	0.00	0.00	30	0.00	29.43
2	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
3	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
4	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
5	not-defined	0	3	0.00	0.00	0.00		0.00	0.00
6	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
7	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
8	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
9	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
10	not-defined	0	0	0.00	0.00	0.00		0.00	0.00
Totals		426	9	0.00	0.00	0.00	36.0	0.00	29.43



Appraisal Date:

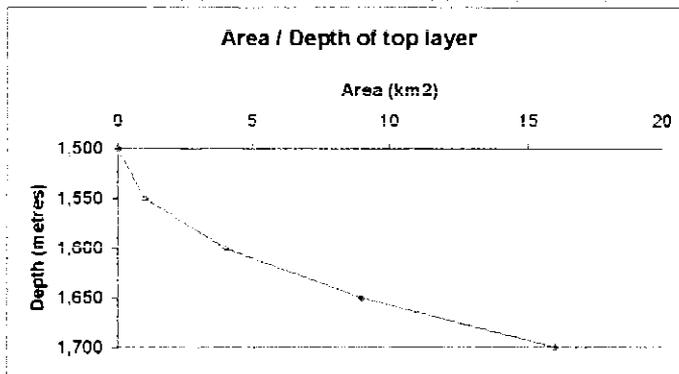
Field / Prospect Name: **Hunterson #1**

Comment: **Potential Oil Reserves**

Appraised by:

Area / Depth description of top layer 1

Unit	Depth metres	Area km ²
Cum.	1,500.0	0.0
Contour 1	1,550.0	1.0
Contour 2	1,600.0	4.0
Contour 3	1,650.0	9.0
Contour 4	1,700.0	18.0
Contour 5		
Contour 6		
Contour 7		
Contour 8		



Petrophysical description by layer

Layer #	Type	thickness metres	net/gross %	Porosity net res. %	Soil %	Sgas %	PVF oil	Expansion factor of gas	GOC metres	GWC metres	CWC metres	Layer Name
1	reservoir	36.00	20	10	55	60	1.3	200				1690.00 Liffey-Faulmer Gp
2	not-defined	0.00										
3	not-defined	0.00										
4	not-defined	0.00										
5	not-defined	0.00										
6	not-defined	0.00										
7	not-defined	0.00										
8	not-defined	0.00										
9	not-defined	0.00										
10	not-defined	0.00										

Notes:

Volume figures by layer

Layer #	Type	Bulk Rock Volume X 10E5 m ³	Pore volume X 10E5 m ³	wastezone oil MMbbl	wastezone gas Bcf	STOIP MMbbl	GIIP Bcf	Rfoil %	RFgas %	Reserves (oil) MMbbl	Reserves (gas) Bcf
1	reservoir	425	9	0.00	0.00	22.83	0.00	20	65	4.53	0.00
2	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
3	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
4	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
5	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
6	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
7	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
8	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
9	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
10	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
Totals		425	9	0.0	0.0	22.8	0.0			4.5	0.0



Tetra Firms Technology

Appraisal Date:

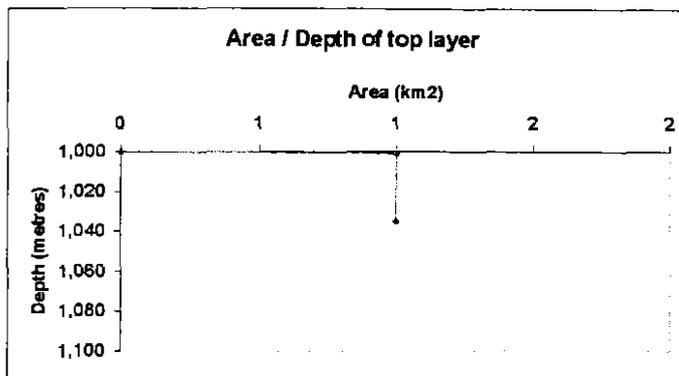
Field / Prospect Name: **Generic**

Comment: **A 'Generic' Fault Block for the Tasmania Basin**

Appraised by:

Area / Depth description of top layer 1

Units	Depth metres	Area km2
Culm	1,000.0	0.0
Contour 1	1,000.0	0.0
Contour 2	1,001.0	1.0
Contour 3	1,035.0	1.0
Contour 4		
Contour 5		
Contour 6		
Contour 7		
Contour 8		



Petrophysical description by layer

Layer #	Type	Thickness metres	net/gross %	Porosity net res. %	Soil %	Sgas %	FVF oil	Expansion factor of gas	GOC metres	GWC metres	OWC metres	Layer Name
1	reservoir	35.00	20	10	55	60	1.3	200		1035.00		Litley-Faulkner Gp
2	not-defined	0.00										
3	not-defined	0.00										
4	not-defined	0.00										
5	not-defined	0.00										
6	not-defined	0.00										
7	not-defined	0.00										
8	not-defined	0.00										
9	not-defined	0.00										
10	not-defined	0.00										

Notes:

Volume figures by layer

Layer #	Type	Bulk Rock Volume X 10E6 m3	Pore volume X 10E6 m3	waterzone oil MMbbl	waterzone gas Bcf	STOIP MMbbl	GIIP Bcf	Rfoil %	RFgas %	Reserves (oil) MMbbl	Reserves (gas) Bcf
1	reservoir	35	1	0.00	0.00	0.00	2.92	20	65	0.00	1.90
2	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
3	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
4	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
5	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
6	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
7	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
8	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
9	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
10	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
Totals		35	1	0.0	0.0	0.0	2.9			0.0	1.9



Appraisal Date:

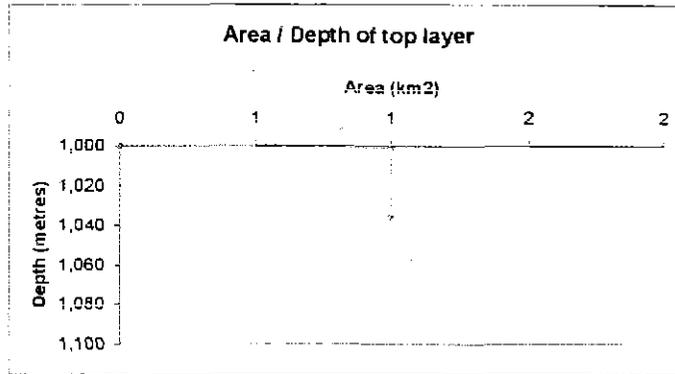
Field / Prospect Name: Generic

Comment: A 'Generic' Fault Block for the Tasmania Basin

Appraised by:

Area / Depth description of top layer 1

Unit:	Depth metres	Area km2
Culm:	1,000.0	0.0
Contour 1	1,000.0	0.0
Contour 2	1,001.0	1.0
Contour 3	1,005.0	1.0
Contour 4		
Contour 5		
Contour 6		
Contour 7		
Contour 8		



Petrophysical description by layer

Layer #	Type	thickness metres	net/gross %	Porosity net res. %	Soil %	Sgs %	PVF oil	Expansion factor of gas	GOC metres	GWC metres	OWC metres	Layer Name
1	reservoir	35.00	20	10	55	60	1.3	200				1035.00 Liffey-Faulkner Gp
2	not-defined	0.00										
3	not-defined	0.00										
4	not-defined	0.00										
5	not-defined	0.00										
6	not-defined	0.00										
7	not-defined	0.00										
8	not-defined	0.00										
9	not-defined	0.00										
10	not-defined	0.00										

Notes:

Volume figures by layer

Layer #	Type	Bulk Rock Volume X 10ES m3	Pore volume X 10ES m3	waterzone oil MMbbl	waterzone gas Bcf	STOIIP MMbbl	GIIP Bcf	Rfoi %	RFgas %	Reserves (oil) MMbbl	Reserves (gas) Bcf
1	reservoir	35	1	0.00	0.00	1.84	0.00	20	65	0.37	0.00
2	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
3	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
4	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
5	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
6	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
7	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
8	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
9	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
10	not-defined	0	0	0.00	0.00	0.00	0.00			0.00	0.00
Totals		35	1	0.0	0.0	1.8	0.0			0.4	0.0

APPENDIX 4

Key to Subject Code

C = Geochemistry – general

CT = Geochemistry of Tasmanian samples

T = Thesis

P = Physical Measurements (porosity / permeability, etc.)

Gen = General Geology (relevant)

IR = Independent Reports

H = Historical

GSLM = Great South Land Minerals (internal reports)

C/C = Condor or Conga internal reports

GP = Geophysics

Tas = Tasmanian Geology

Misc = Miscellaneous

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APPENDIX 5

TABLE 1

554046

ANALYSIS OF ORGANIC MATTER BY ROCK-EVAL PYROLYSIS

PREOLENNA COAL

GEOTECH

<i>Samples</i>	<i>Tmax</i>	<i>S1</i>	<i>S2</i>	<i>S3</i>	<i>S1+S2</i>	<i>S2/S3</i>	<i>PI</i>	<i>TOC</i>	<i>HI</i>	<i>OI</i>
1.0	438	3.71	135.23	8.28	138.94	16.33	0.03	64.30	210	13

TMAX = Max. temperature S2

S1+S2 = Potential yield

OI = Oxygen Index

S1 = Volatile hydrocarbons (HC)

S3 = Organic carbon dioxide

TOC = Total organic carbon

nd = no data

S2 = HC generating potential

PI = Production index

HI = Hydrogen index

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FILE ID < A1056 >

554047

PREOLENNA COAL,
Pyrolysis Gas Chromatogram

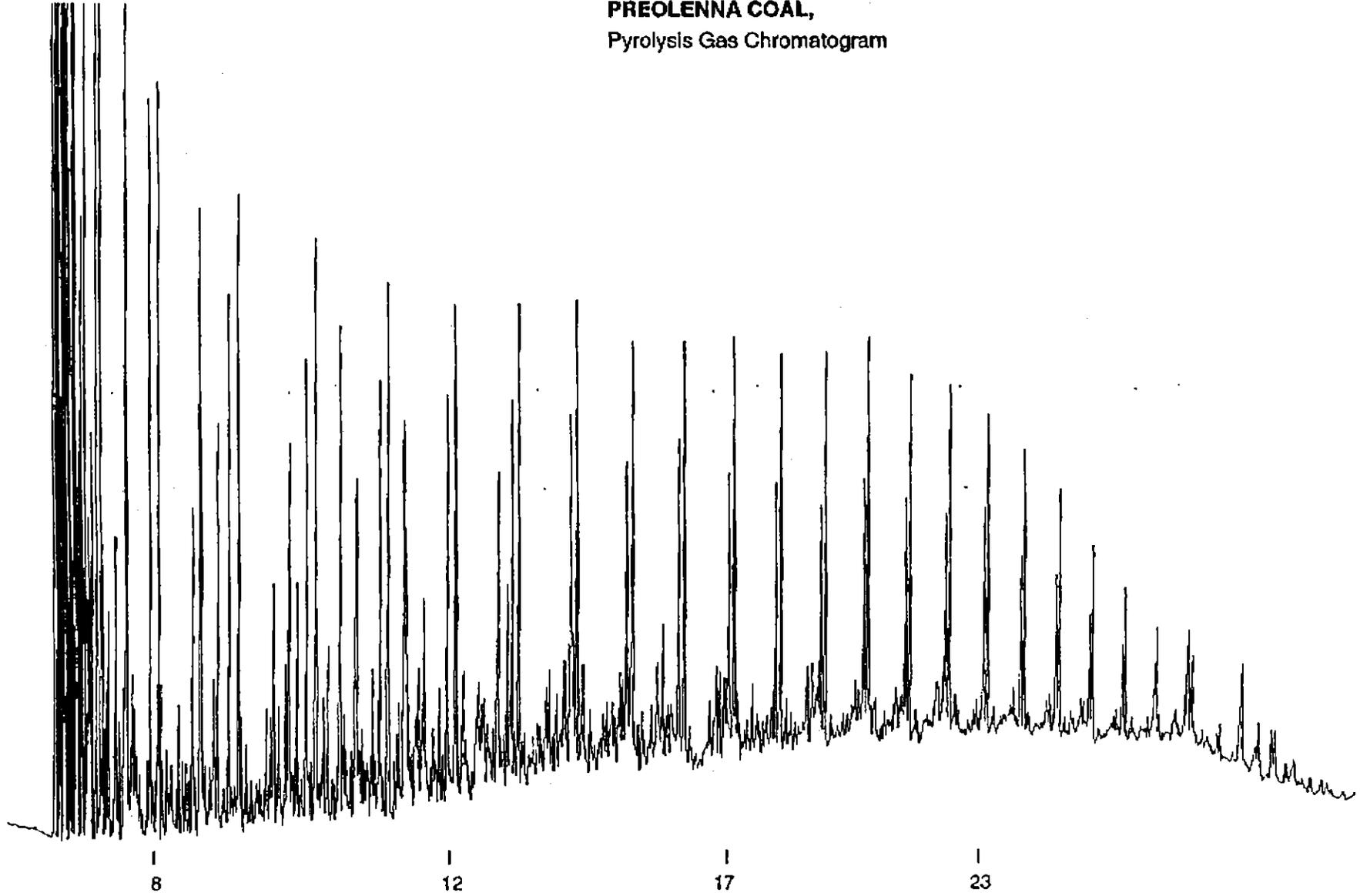


TABLE 2-1

554048

ALKENE AND ALKANE COMPONENT ANALYSIS FROM PYROLYSIS-GC

PREOLENNA COAL

Nov-98

Carbon No.	---Alkane + Alkene---			-----Alkane-----			-----Alkene-----			Alkane/Alkene
	A	B	C	A	B	C	A	B	C	
1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
2	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
4	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
5	2.528	3.419	0.053	1.431	1.935	0.030	1.097	1.483	0.023	1.30
6	2.464	3.332	0.052	1.250	1.690	0.026	1.214	1.642	0.026	1.03
7	2.495	3.374	0.052	1.366	1.847	0.029	1.129	1.527	0.024	1.21
8	2.022	2.734	0.043	1.068	1.444	0.022	0.954	1.280	0.020	1.12
9	1.752	2.369	0.037	0.969	1.310	0.020	0.783	1.059	0.016	1.24
10	1.632	2.207	0.034	0.937	1.267	0.020	0.695	0.940	0.015	1.35
11	1.656	2.239	0.035	0.984	1.331	0.021	0.672	0.909	0.014	1.46
12	1.634	2.210	0.034	0.980	1.325	0.021	0.654	0.884	0.014	1.50
13	1.502	2.031	0.032	0.832	1.125	0.017	0.670	0.908	0.014	1.24
14	1.125	1.521	0.024	0.769	1.040	0.016	0.356	0.481	0.007	2.18
15	0.906	1.225	0.019	0.578	0.782	0.012	0.328	0.444	0.007	1.76
16	1.310	1.772	0.028	0.787	1.064	0.017	0.523	0.707	0.011	1.50
17	1.008	1.363	0.021	0.620	0.838	0.013	0.388	0.525	0.008	1.60
18	1.064	1.439	0.022	0.620	0.838	0.013	0.444	0.600	0.009	1.40
19	0.982	1.328	0.021	0.663	0.897	0.014	0.319	0.431	0.007	2.08
20	1.030	1.393	0.022	0.638	0.863	0.013	0.392	0.530	0.008	1.63
21	0.965	1.305	0.020	0.592	0.801	0.012	0.373	0.504	0.008	1.59
22	0.836	1.131	0.018	0.554	0.749	0.012	0.282	0.381	0.006	1.96
23	0.864	1.168	0.018	0.521	0.705	0.011	0.343	0.484	0.007	1.52
24	0.741	1.002	0.016	0.452	0.611	0.010	0.289	0.391	0.006	1.56
25	0.591	0.799	0.012	0.367	0.496	0.008	0.224	0.303	0.005	1.64
26	0.473	0.640	0.010	0.283	0.383	0.006	0.190	0.257	0.004	1.49
27	0.328	0.444	0.007	0.205	0.277	0.004	0.123	0.166	0.003	1.67
28	0.177	0.239	0.004	0.120	0.162	0.003	0.057	0.077	0.001	2.11
29	0.115	0.156	0.002	0.048	0.065	0.001	0.067	0.091	0.001	0.72
30	0.098	0.133	0.002	0.057	0.077	0.001	0.041	0.055	0.001	1.39
31	0.099	0.134	0.002	0.099	0.134	0.002	0.000	0.000	0.000	nd

nd = no data

A = % of resolved compounds in S2

B = mg/g Rock (Rock-Eval)

C = (mg/g Rock)/TOC

TABLE 4-1

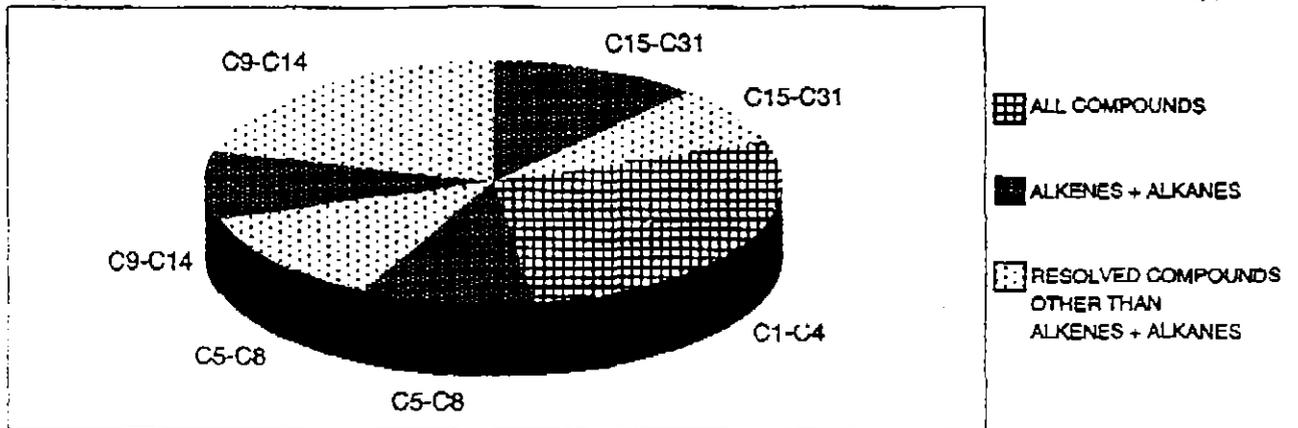
554049

PARAMETER SUMMARY FOR PYROLYSIS GAS CHROMATOGRAPHY

PREOLENNA COAL

Nov-98

Parameter	-----Value-----			
	A	B	C	D
C1-C4 abundance (all compounds)	28.36	38.38	0.60	
C5-C8 abundance (all resolved compounds)	22.04	29.80	0.46	
C5-C8 abundance (alkanes + alkenes)	9.51	12.88	0.20	
C9-C14 abundance (all resolved compounds)	30.05	40.83	0.63	
C9-C14 abundance (alkanes + alkenes)	8.30	12.58	0.20	
C15-C31 abundance (all resolved compounds)	19.55	26.44	0.41	
C15-C31 abundance (alkanes + alkenes)	11.59	15.87	0.24	
C9-C31 abundance (all resolved compounds)	49.60	67.07	1.04	
C9-C31 abundance (alkanes + alkenes)	20.89	28.25	0.44	
C5-C31 abundance (all resolved compounds)	71.64	96.87	1.51	
C5-C31 abundance (alkanes + alkenes)	30.40	41.11	0.64	
C5-C31 alkane abundance	17.79	24.08	0.37	
C5-C31 alkene abundance	12.61	17.05	0.27	
C5-C8 alkane/alkene				1.16
C9-C14 alkane/alkene				1.43
C15-C31 alkane/alkene				1.64
C5-C31 alkane/alkene				1.41
(C1-C5)/C6+				0.49
R				1.51



nd = no data
 A = % of resolved compounds in S2
 B = mg/g Rock (Rock-Eval)
 C = (mg/g Rock)/TOC
 D = no units
 R = m+p-xylene/n-octene

TABLE 3-1

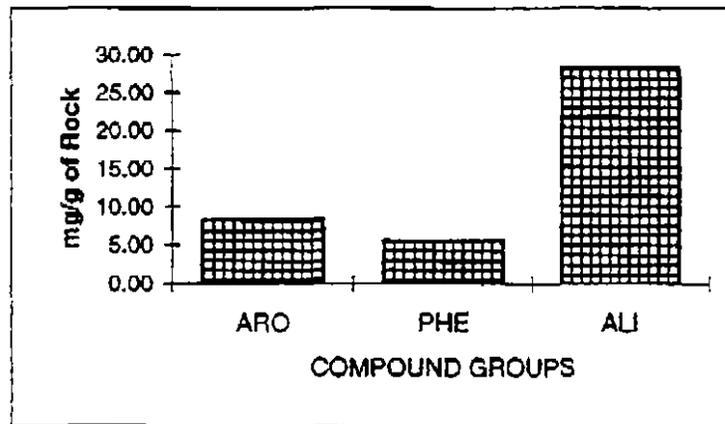
554050

AROMATIC AND PHENOLIC COMPONENT ANALYSIS FROM PYROLYSIS-GC

PREOLENNA COAL

Nov-98

Key	Compound Name	Value		
		A	B	C
A.	Benzene	1.204	1.628	0.025
B.	Toluene	2.092	2.829	0.044
C.	Ethylbenzene	0.541	0.732	0.011
D.	m- + p-xylene	1.438	1.945	0.030
E.	Styrene	0.237	0.320	0.005
F.	o-xylene	0.596	0.806	0.013
G.	Phenol	0.888	1.198	0.019
H.	o-cresol	0.991	1.340	0.021
I.	m- + p-cresol	1.012	1.389	0.021
J.	C2 phenol	0.827	1.118	0.017
K.	C2 phenol	0.446	0.603	0.009



nd = no data
 A = % of resolved compounds in S2
 B = mg/g Rock (Rock-Eval)
 C = (mg/g Rock)/TOC
 ARO = aromatic compounds (A to F)
 PHE = phenolic compounds (G to K)
 ALI = aliphatic compounds (C9 to C31 alkenes + alkanes)

TABLE 4-1

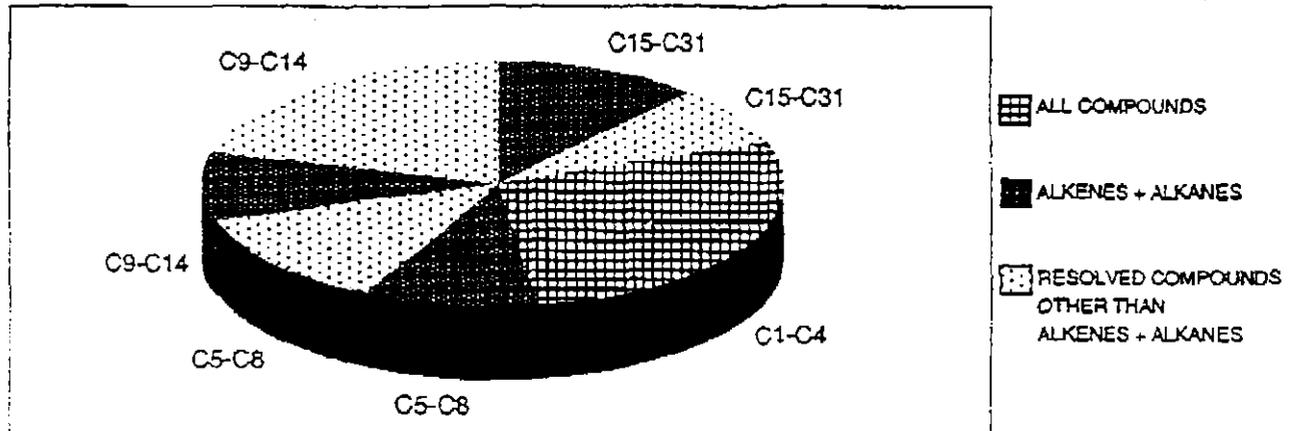
554051

PARAMETER SUMMARY FOR PYROLYSIS GAS CHROMATOGRAPHY

PREOLENNA COAL

Nov-98

Parameter	Value			
	A	B	C	D
C1-C4 abundance (all compounds)	28.36	38.36	0.60	
C5-C8 abundance (all resolved compounds)	22.04	29.80	0.46	
C5-C8 abundance (alkanes + alkenes)	9.51	12.88	0.20	
C9-C14 abundance (all resolved compounds)	30.05	40.63	0.63	
C9-C14 abundance (alkanes + alkenes)	9.30	12.58	0.20	
C15-C31 abundance (all resolved compounds)	19.55	26.44	0.41	
C15-C31 abundance (alkanes + alkenes)	11.59	15.87	0.24	
C9-C31 abundance (all resolved compounds)	49.60	67.07	1.04	
C9-C31 abundance (alkanes + alkenes)	20.89	28.25	0.44	
C5-C31 abundance (all resolved compounds)	71.64	96.87	1.51	
C5-C31 abundance (alkanes + alkenes)	30.40	41.11	0.64	
C5-C31 alkane abundance	17.79	24.06	0.37	
C5-C31 alkene abundance	12.61	17.05	0.27	
C5-C8 alkane/alkene				1.16
C9-C14 alkane/alkene				1.43
C15-C31 alkane/alkene				1.64
C5-C31 alkane/alkene				1.41
(C1-C5)/C6+				0.49
R				1.51



nd = no data
 A = % of resolved compounds in S2
 B = mg/g Rock (Rock-Eval)
 C = (mg/g Rock)/TOC
 D = no units
 R = m+p-xylene/n-octene

554052

APPENDIX 6

SEISMIC PROGRAMME FIELD RECONNAISSANCE NOTES

4TH TO 5TH MARCH 1998

SUMMARY

The purpose of the reconnaissance was to obtain details of prospective seismic lines, ahead of a visit to a prospective seismic contractor, with respect to planning a seismic exploration programme in the Tasmania Basin. The details cover road suitability, topography, vegetation, GPS response and weathered layer (Wx) estimates. A set of colour photos goes with this report.

The reconnaissance was restricted to roads, but sufficient information was gathered for the consideration of off-road seismic. For convenience, the report is broken up into sections representing possible seismic lines (see location map). Comments are also included on those sections reconnoitred, but not considered to be prospective seismic lines.

Section R88-1: Strathgordon Gate to National Park (B61) 12 kms

Strathgordon Gate (National Park boundary) to Maydena, railway lost, use straight, sealed road. Tall forest each side, verge ok, 2kms. P1/9-10.

Maydena to National Park, road too bendy. P1/11 shows approach to Maydena from the east. Disused railway offers relatively straight line with adjacent road access for much of length. Flat topo. Pine forest and open pasture. Moderate to thick Wx over sediment. P1/12-16.

Limited from the bridge east of National Park by bendy road in narrowing gorge.

Possible GPS response limitations for most of line.

Westerway, Ellerslie, to Lyell Highway (C608)

Very bendy, hilly. P1/19, 1/21

Lyell Highway to Meadowbank (A10)

Very bendy, very hilly, at times scrubby, no road access to Westerway. P1/22-23

Lyell Highway near Pelham (A10)

Very bendy, hilly, mainly open pasture. P1/24

Section R88-2: Hamilton to Bothwell (partly B110)

25 kms

Hamilton to Boomer Tier, ascending gravel minor road, open pasture, moderate to thin Wx over dolerite. P1/26-28.

Boomer Tier to Mt. Clark (Trig Point), fairly flat, open, narrow gravel road. Thin Wx over dolerite. P1/29.

Windy track down gully around Mt Clark, ok for access but not line. P1/30. Line can run over saddle to south of Mt Clark and down on to Montacute plain. P1/31, P1/33.

Montacute plain to B110. Ascending gravel road, open, moderate to thin Wx over sediment and dolerite. P1/34-36.

B110 to Bothwell, fairly straight sealed road, flat, open pasture, moderate Wx. over sediment and dolerite.

No GPS problems

Section R88-3: Bothwell to Lake Crescent (C528)

30 kms

Can be considered as continuing R88-2, by shooting through Bothwell. First 12 kms through open pasture, bendy gravel road, moderate topo., thin Wx over dolerite. P2/0 taken 8 kms from Bothwell and P2/1 from 13 kms. From 13 - 15 kms, ascending, windy, open forest, (passing to north of Wood's Quoin). P2/2-3, 2/8.

Wood's Quoin to Lake Crescent, open, flat, fairly straight, thin to zero Wx over dolerite. P2/4-5.

Possible GPS problems around Wood's Quoin

Section R88-4: Bothwell to Hunterston (A5)

20 kms

Fairly straight sealed road, gently undulating, open pasture, moderate Wx largely over sediment. High tension lines parallel both sides of road for 8 kms. P2/9-10.

Road cutting 1 km south of Hunterston exposes faulted Permian section. P2/12

Section R88-5: Hunterston crossline

8 kms

To the east and west of the highway, open pasture, fairly flat. Gravel road access to the east. East of the Hunterston drill hole, steeper topo and some light bush towards the head of the valley. To the west, access across open flat pasture. Expect Wx to be quite thick to the west, and thin to the east. P2/13-17.

Section R88-6: Hunterston to Miena (A5)

35 kms (130)

First 10 kms fairly bendy sealed road, starting with a 2 km climb on to next "step" undulating, with wide clear verges, and moderate to thick bush beyond, over dolerite. P2/19-21.

Another 2 kms step up to St Patrick's Plains (16 kms from Hunterston), where bush gives way to open flat plain and straight road. P2/22. Expect thicker Wx on the plain, still over dolerite.

Bitumen ends at Poatina turnoff (B51). Light bush and rocky surface for 10 kms. Thin Wx. Possible GPS problems. Last few kms to Miena, straight, flat, open. P2/23-24.

Miena to Bronte turnoff (B11)

Bendy, sealed road along lakeside, with shacks or light scrub. Probably too bendy to shoot. P2/25, P3/0.

Section R88-7: Bronte to Reynolds Neck (B11 and A5)

44 kms less 8 km gap

B11 from Lyell Highway (A10) to Bronte Park is unsealed, very bendy. Trig point at A10:B11 junction. The Serpentine Creek (Rivulet) valley offers possible line, starting flat, broad and open (P3/4), and narrowing beyond Bronte Park (P3/3). Expect thick Wx. and possible side swipe problems from dolerite north of Bronte Park. Contact with sediment exposed in road cutting (P3/3). Road continues to wind uphill through increasing bush (Boral private forest) to head of Serpentine Creek 10 kms north of A10. P3/5. North from here scrub is thick, road is bendy, and doglegs to right before ascending to Little Pine Lagoon. P3/2.

From here to A5, open plain low easy scrub, straight road. P3/1. Ouse River crossing 4 kms south of A5. Light, low scrub. P3/6-8

30kms total from A10 to A5, with possible 8 km gap below Little Pine Lagoon. May be possible to head across country from Lagoon to A10, east of Derwent Bridge (approx. 15 kms) This would achieve a straighter overall line, and would avoid problems of dogleg, and bush in head of Serpentine Creek.

1 km short cut through light scrub links B11 to A5, west of intersection.

A5 from B11 to Reynolds Neck. 14 kms across open, flat plain over dolerite. Expect variable Wx. P3/9-10. Probably the end of line since road north is bendy, light forest and very rocky boulders) ground.

Breona to Liffey, winding road through steep topo. Descent off the Tiers. P3/12. Good access road but very bendy hilly to base of Liffey valley. P3/15-16

Section R88-8: Blackwood Creek to Carrick

30 kms

This line (SW to NE) crosses an extensive flat plain drained by creeks and major rivers to the north. The sealed roads (C514 and C513) consist of straight sections and occasional small sharp doglegs, but pass between the Liffey and Macquarie Rivers, avoiding any major

crossings. Expect variable to thick Wx over sediments with dolerite patches. P3/17-25 show the open farmland. The only town on this section is Bishopsbourne which is on a dog leg which would logically be by-passed (2km?) to the west through pasture.

Section R88-9: Crossline

20 kms

P3/20-21 show the possible lie of an E-W (roughly) 20 km line to cross R88-8.

Poatina to the plateau

P4/0 shows the abrupt end of the plain against the Western Tiers, and the penstocks falling to the Poatina power station. The next section is in line with R88-8, and there would be a 10 km gap between them.

Section R88-10: B51 across plateau to A5.

25 kms

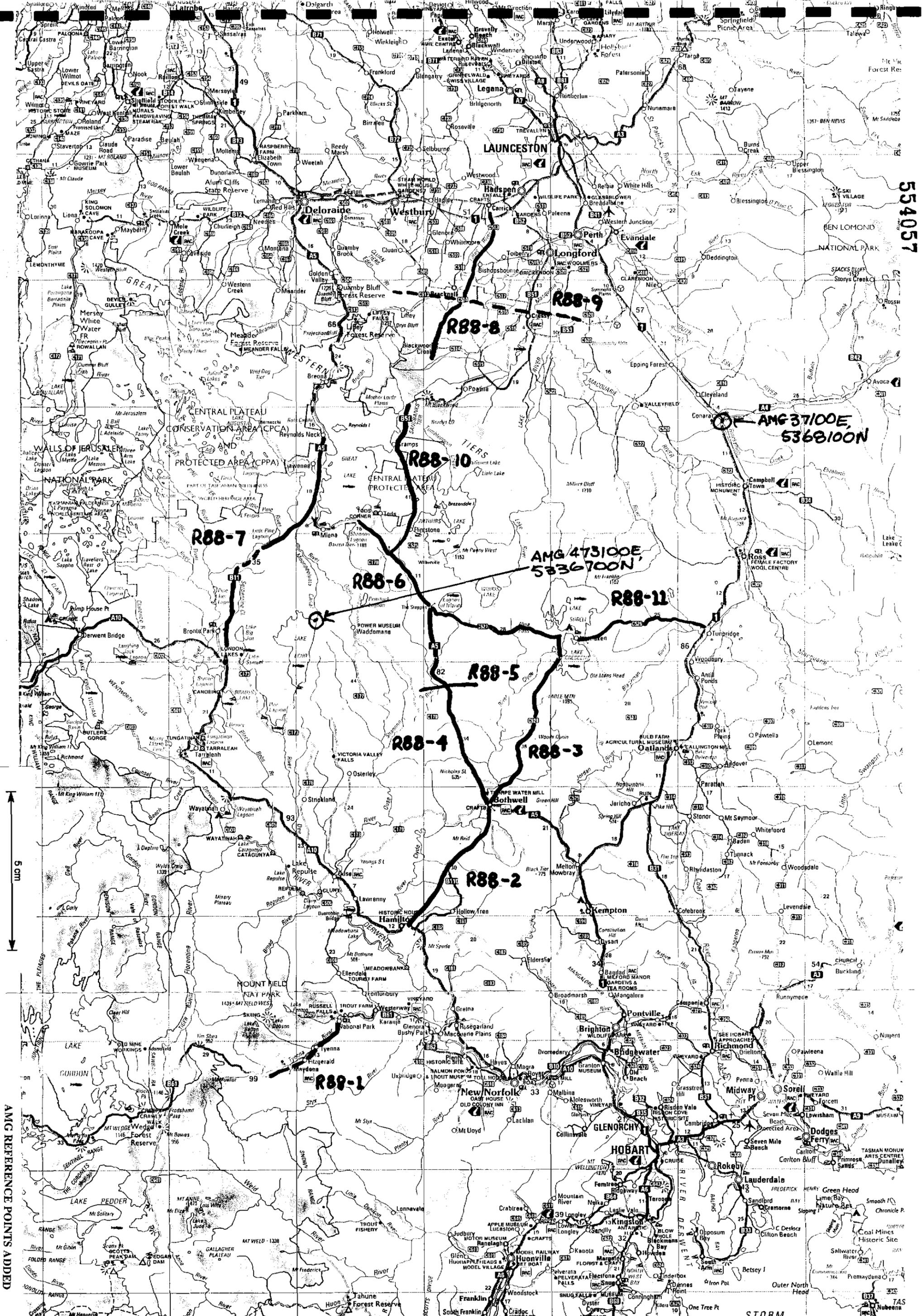
Good roadside exposure of Permian and Triassic sediments up to the plateau from Poatina. P4/1. Dolerite appears conformable over sediments, just below plateau edge, and it may be possible to estimate its thickness (guess 100 to 200 metres). Good sealed road, moderately bendy, thick low bush, boulders, expect Variable to thin Wx, possible GPS problems. Last 4 kms open flat plain. Should be able to follow High tension lines. P4/3.

Section R88-11: C527 and C526 from Steppes to Tunbridge 53 kms less 11 kms gaps

First 7 kms from Steppes flat, fairly straight, open. P4/4. Then gets bendy, undulating and forest. Possible GPS problems. 3km steep winding descent through forest towards Interlaken. Possible gap. 5 km flat stretch to western boundary of Interlaken Lake Reserve. Possible 5 km gap to eastern boundary. Road is twisty through flat, fairly open country, some houses.

3kms east of the boundary the road gets twisty, open forest. P4/5. Shortly after, P4/6, the road descends very steeply (hairpins) down Tunbridge Tier through rough fairly open forest to the plains west of Tunbridge. Expect a 3km (straight line) gap. The last 11 kms are across flat open plains (fenced pasture) to the Midlands highway, P4/7. This section crosses the AGSO line 95AGS-T4 (north south along stock route) 4.5 kms from the highway (approx. Station 4295), near P4/8

This section is largely underlain by dolerite. Wx will be variable to thin on the plateau, and thicker near Tunbridge.



AMG REFERENCE POINTS ADDED

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APPENDIX 7

MRT's Bruny Island Offshore Seismic Data Held in MRT Petroleum Archive (as at 18/6/98)

Box	No of Tapes	Tape No	Tape No	
Box 1	11	78/470	to	78/480
Box 2	11	78/481	to	78/491
Box 3	10	78/492	to	78/401
Box 4	11	78/502	to	78/512
Box 5	11	78/513	to	78/523
Box 6	11	78/524	to	78/534
Box 7	12	78/535	to	78/536
Box 8	11	78/547	to	78/557
Box 9	11	78/558	to	78/568
Box 10	12	refer over page of contents (Labeled Box 24)		

Total	111
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NB: all field tapes with the exception of those listed below

<u>Tape</u>	<u>info</u>	<u>period of acquisition</u>	
78/491	BMR Marine Seismic field tape SEG-Y format 9 track phase encoded fold 24 Date recorded: 3/4/88	Start	78.094.032042
		Stop	78.094.033810
78/492	BMR Marine Seismic field tape SEG-Y format 9 track phase encoded fold 24 Date recorded: 3/4/88	Start	78.094.033829
		Stop	78.094.035557
78/511	BMR Marine Seismic field tape SEG-Y format 9 track phase encoded fold 24 Date recorded: 3/4/88	Start	78.094.0917
		Stop	78.094.0935
78/519	BMR Marine Seismic field tape SEG-Y format 9 track phase encoded fold 24 Date recorded: 3/4/88	Start	78.094.1131
		Stop	78.094.1149
78/531	to 78/534 self loading tapes, no other description	Observer: J.Meehan	

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Contents of Box 10

Line No	Processing Parameters ??
16P1	SHE VLT 3.12.2.2. 01
15P1	SHE VLT 3.12.2.2. 02
14P1	SHE VLT 3.12.2.2. 03
17P2	SHE VLT 3.12.2.2. 04
17P1	SHE VLT 3.12.2.2. 05
16P2	SHE VLT 3.12.2.2. 06
18P2	SHE VLT 3.12.2.2. 07
18P1	SHE VLT 3.12.2.2. 08
17P1	SHE VLT 3.12.2.2. 09
18P5	SHE VLT 3.12.2.2. 10
18P4	SHE VLT 3.12.2.2. 11
18P3	SHE VLT 3.12.2.2. 12

APPENDIX 8

ATTN: GREG KUNDA.

Kestrel InSight
Kestrel Access

D3BSHE - GEOPHYSICAL TAPE8 ACCESS-LIST V2.2088

9/ 0/98 Page 1

CTY PERMIT	LINE PREFIX	LINE NUMBER	LINE SUFFIX	REEL NUMBER	TAPE TYPE	PRO-CESS	PRO-YEAR	FIRST SP CON	LAST SP PROC	MED	FOR-IA	SHO-HAT	YEAR CON	PROJ SHOT	NO BAS	SURVEY NAME / NUMBER	REMARKS
AUS XXX		14	P1	L14ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		15	P1	L15ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		16	P2	L162ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		16	P1	L161ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		17	P3	L173ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		17	P2	L172ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		17	P1	L171ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		18	P4	L184ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		18	P3	L183ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		18	P2	L182ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		18	P1	L181ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX		18	P5	L185ARC	TRCE STK	XXX		0.0	0.0				UNI 1978			UNI BMR SURVEY 78	
AUS XXX	BMR78	15		EX0034	TRCE HIQ	UNI 1991		101.0	980.0				UNI 1978			UNI BRUNY ISLAND	
AUS XXX	BMR78	15		EX0034	TRCE STK	XXX 1991		101.0	980.0				UNI 1978			UNI BRUNY ISLAND	
AUS XXX	BMR78	17	PART3	EX0034	TRCE HIQ	UNI 1991		2402.0	3005.0				UNI 1978			UNI BRUNY ISLAND	
AUS XXX	BMR78	17	PART3	EX0034	TRCE STK	XXX 1991		2402.0	3005.0				UNI 1978			UNI BRUNY ISLAND	
AUS XXX	BRUNY ISLAND			TAPE-1	FTCO	GSI 1990		210.0	1.0				UNI	EX0034		UNI BRUNY ISLAND	

*** END OF REPORT ***

Records printed : 17
Items printed : 15

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APPENDIX 9

Review of the Petroleum Potential of the Tasmania Basin

A draft proposal from the

National Centre for Petroleum Geology and Geophysics (NCPGG)
Adelaide

October 1998

Scope of Project

The National Centre for Petroleum Geology and Geophysics (NCPGG) proposes to investigate the hydrocarbon resource potential of the Tasmania Basin on behalf of the government of Tasmania. The proposal comprises a comprehensive study of the petroleum prospectivity of one of the few truly "frontier" onshore basins remaining in Australia, and indeed, in the western world. The study will form the basis for an industry-driven exploration programme that will culminate with the drilling of commercial wells by 2001. The proposed work programme will independently provide the Government of Tasmania and its industry clients with the fundamental geoscientific information required to evaluate the economic feasibility of developing hydrocarbon resources within the State. Key deliverables will include play fairway maps and exploration risk element maps for the whole of the Tasmania Basin. Detailed recommendations for the new-data acquisition programme will be prepared on the basis of a review of existing data and in collaboration with the Australian Geological Survey Organization (AGSO), Mineral Resources Tasmania (MRT), the University of Tasmania and Great South Land Minerals Limited (GSLM), the exploration title holder. The NCPGG will act as principal contractor for all pre-commercial data acquisition, including new seismic and potential field data sets, stratigraphic well data and for all geochemical, petrographic and petrophysical analyses in consultation with the Government of Tasmania and GSLM.

Deliverables

A final report will be presented to the Tasmanian Government by Dec 1 2001 and will comprise:

- Review of the hydrocarbon (liquids and gas) potential of the Tasmania Basin
- Play fairway maps of the Tasmania Basin at 1:100000 scale
- Common-risk-segment maps of the Tasmania Basin at 1:100000 scale
- Maps at appropriate scale of the main leads identified
- A digital data-base of all data acquired during the programme
- Presentation material for use by the government of Tasmania

Interim reports will be presented to Government at regular intervals. Each interim report will be accompanied by an interactive workshop; the workshops are designed as forums to both present results at each critical stage of the work program as well as to receive feedback from Government and/or its designated interested parties. Interim reports and related workshops will focus, in detail, on various aspects of the Tasmania Basin petroleum systems, including:

- Source rock characterisation

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- Hydrocarbon migration timing and direction (report and maps)
- Reservoir quality distribution (report and maps)
- Trap timing and configuration
- Top-seal and fault-seal evaluation for capacity, geometry and integrity

All deliverables (eg reports, maps, cross-sections, data-bases, etc) produced by the programme will be treated as open file data unless instructed otherwise instructed the Government of Tasmania. All data initially received by the NCPGG from any source are to be treated as commercial in confidence, with specific Co-operative Agreements of Confidentiality (CAC) arranged between NCPGG and the provider of the data. Such CAC's are understood to be valid for an unlimited period unless explicitly released by written agreement.

Additional Benefits to Tasmania

In addition to deliverables, a number of spin-off benefits to the State will ensue from this effort:

- Should the exploration efforts be successful and commercial hydrocarbons be discovered, there will be significant royalty revenue to State Government as well as the potential of significant income to Tasmania from petroleum industry activity
- Proposed programme activities will provide a stimulus to economic growth and generate new employment opportunities. Local Tasmanian services and subcontractors will be selected preferentially for all aspects of the programme, whenever possible. For example, transport and accommodation of field crews will provide a significant boost to local businesses, and around 30% of the seismic program expenditure (\$2.4m) will remain in Tasmania.
- A petrophysical laboratory and equipment will be set up at the MRT Core Store, and an NCPGG office, staffed locally, will be established at the University of Tasmania.
- Major elements of research will be carried out jointly by NCPGG and University of Tasmania personnel. This will result in additional researchers, students and funding. There will be a net increase in the level of hydrocarbon understanding by academia, which will result in better preparation of Tasmanian students for petroleum industry employment.
- It is expected that new potential field and seismic data could be of great commercial value to mineral exploration. It is expected that thrust slices of the richly mineralised Cambrian Mt Read Volcanics will be recognised on the seismic sections beneath the Tasmania Basin and possibly beneath the Ordovician Larapintine petroleum system. These seismic data, and any mineral industry-relevant results obtained from drilling, will be passed on to MRT and to the ARC SRC Centre for Exploration and Ore Deposit Studies (CODES) in the School of Earth Sciences, University of Tasmania for further evaluation.
- Activities will increase of awareness of the petroleum sector by Tasmanian industry, academia and general population.

Technical Programme

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Introduction

The Tasmania Basin consists of Upper Carboniferous to Triassic glacio-marine/lacustrine deposits with a rich (*Tasmanite*) source rock towards the base (Figs 1 & 2). The basin sits unconformably on a folded Cambrian to Devonian succession consisting of marine siliciclastics, carbonates and volcanics. Significant deformation and erosion occurred prior to deposition in the Tasmania Basin.

The succession is intruded by Jurassic dolerite in the form of laterally extensive sills (av. thickness = 300 m). Extension associated with rifting and break-up around Tasmania occurred from the Jurassic into the Tertiary. Fission track data are consistent with significant erosion between 100 and 50 Ma.

Petroleum Systems

Although elements of petroleum systems are present, no proven systems have yet been identified. Three potential petroleum systems have been proposed by Great South Land Minerals Ltd (GSLM, 1998) following the terminology of the Australian Geological Survey Organisation (AGSO) (e.g., Bradshaw, 1993).

SYSTEM and Source Rock	Reservoir	Seal	Trap Formation	Timing Oil Generation	Critical Moment
GONDWANA 2					
'middle' Permian Liffey and Faulkner Group coals	'middle' Permian siliciclastics and limestone, U. Perm. To U. Triassic siliciclastics	Upper Triassic siliciclastics	M. Jur. To E. Cret.	L. Jur. To Cret.	120 Ma
GONDWANA 1					
Lower Permian <i>Tasmanites</i> unit and Quamby Formation	'middle' Permian siliciclastics and limestone	Upper Permian shales	M. Jur. To E. Cret.	L. Jur. To Cret.	120 Ma
LARAPENTINE 1					
Gordon Group Limestone (Ordovician.)	Gordon Gp. Reef karst Parmeener Gp.	Eldon Gp. (Silur.) Shales	Devonian and M. Jur. To E. Cret.	L. Jur. To Cret.	120 Ma

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Larapintine 1 System. The presence of source rock is inferred from oil seeps on which geochemical evidence suggests correlation with organic-rich parts of the Ordovician Gordon Limestone. Reservoir is suggested to occur in the Gordon Limestone and sandstones of the Silurian Eldon Group or clastics in the overlying Parmeener Supergroup. Compressional structures formed in the late Devonian Tabberabberan Orogeny are likely traps. Generation is thought to have occurred in the Jurassic to Cretaceous (GSLM, 1998) although could have been during the orogeny.

Gondwana 1 & 2 Systems. There are fair to excellent potential source rocks comprising coal measures, coaly shales, and the very rich *Tasmanites* algal shales. The *Tasmanites* algal shale is already famous for forming large oil-shale deposits (e.g., at Preolinn). Potential clastic reservoir rocks are very thin at the base of the section but thicker in the Triassic coal measures. Permian seal lithologies are present and are inferred for the Triassic. Structural traps may have been provided by Jurassic to Cretaceous extensional tectonics which affected the basin (Dumitru et al. 1991). Around 300m of preserved Upper Carboniferous to Triassic sediments have been recorded by the sparse drilling although very little sub-surface information is available.

Major uncertainties associated with these petroleum systems

Many aspects of the three potential petroleum systems in the Tasmania Basin are not well understood because of the relatively unexplored nature of the basin. In particular, there is insufficient knowledge about the presence of reservoir within the Permian and Triassic section, source rock quality (particularly in the Palaeozoic system), and seal distribution and quality. The three petroleum systems also have significant uncertainty in the timing of petroleum generation because of the interplay of dolerite intrusion, and Jurassic - Cretaceous and Tertiary thermal events (and the Tabberabberan Orogeny for the Larapintine 1 system).

Immediate Problems Facing Explorers

The main risks facing present exploration at prospect level is structural closure and presence of reservoir. This is linked to the lack of seismic data across the basin and also to the lack of a sequence stratigraphic framework. The Permo-Carboniferous only has good outcrop around the margins of the basin and little is known of the distribution of the environments of deposition within the basin. The very extensive intrusion of Jurassic dolerites throughout the area introduces complications into the interpretation of structure, regional maturity patterns and correlation.

Necessity for Investment in Seismic and Potential Field Surveys

Due to the expense and uncertainty attached to lead delineation onshore in the Tasmania Basin, very little seismic work has previously been carried out. Most drilling has been based on surface mapping, a situation that is less than optimal. Exploration will continue at its present under-capitalised level until sufficient subsurface information is available to interest significant capital investment. The onshore seismic and potential-field surveys proposed as a part of the current programme constitute a modest investment by the State to stimulate such interest. The South Australian and West Australian exploration initiatives have shown the positive effect such investment can have on capital investment in each State. The 2000 line km seismic survey constitutes the bare minimum data requirement for a basin of the size and complexity of the Tasmania Basin. The proposed survey would be sufficient to give a very broad line spacing, enough to indicate major stratigraphic and structural elements, but not enough to provide commercial prospect delineation. This is an appropriate level of investigation funded by State investment and should stimulate more detailed commercial investigation in areas of interest. Four new stratigraphic drill holes will allow dating of the major surfaces identified by the

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seismic survey. The potential field survey (gravity and magnetics) is essential in areas covered by dolerite sills, and here again, the line spacing will be sufficient to indicate the broad regional subsurface elements. Additional commercial surveys will be necessary over areas of interest.

Specific questions to be addressed by the proposed programme**A. Larapintine petroleum system.**

1. What is the structure and distribution of pre-Devonian sediments currently hidden beneath the post-Carboniferous cover? How did the Devonian Tabberabberan Orogeny affect the thermal maturity of the pre-Devonian source rocks?
2. What is the distribution and quality of potential reservoir rocks, including carbonates and siliciclastics?

B. Gondwana petroleum systems.

1. How do the post-Triassic events (extension, burial, dolerite intrusion, denudation, breakup) affect the timing of petroleum generation in the Tasmania Basin?
2. What is the potential for structural traps given the post-Triassic tectonic regime?
3. What is the potential of the Carboniferous and Permian glacial and peri-glacial sediments as reservoir rocks in the Tasmania Basin?
4. What is nature and potential of the reservoir-seal relationship offered by the Triassic coal measures beneath Jurassic dolerite?

Work Programme

1. Comprehensively and critically review the existing literature and data concerning the Tasmania Basin
2. Carry out field work in Tasmania to examine critical sections and well data together with structural mapping
3. Re-evaluate existing potential field data and model the magnetics using 3D inverse modelling software to delineate the subsurface dolerite extent and possible sub-dolerite sediment thicknesses
4. Plan and submit acquisition parameters in consultation with GSLM for new seismic and potential field investigations on the basis of the results from the above studies
5. Manage and QC the sub-contracted seismic and potential field surveys. It is likely that the most efficient acquisition of seismic data will be accomplished by integrating the proposed surveys with those to be carried out by GSLM, the exploration license holder. Although it would be desirable to have interpreted results of new potential field data to define general subsurface structural configuration, overall project timing constraints would make this option untenable. However, it should be possible to accelerate recording of some initial regional data in early 1999 by sharing costs and establishing of consistent recording parameters with GSLM crew. This would allow faster interpretation of the new data, with concomitant cost savings.
6. Process and interpret the new data and prepare an intermediate report

7. Prepare a sequence stratigraphic interpretation of the Tasmania Basin
8. Establish the stratigraphic context for the potential sources, reservoirs and seals
9. All available cored drill hole intersections will need to be logged by an experienced sedimentologist to establish a consistent interpretation of the environments of deposition and the likely distribution of the facies recognised within the basin. The limited seismic data will need to be incorporated into this study.
10. Sample potential reservoir lithologies for petrophysical properties and detailed petrography. During the logging of the available cores, any possible reservoir intervals should be sampled. All of these samples should have plug porosity and permeability determinations carried out together with detailed petrographic analysis to determine the present reservoir quality and its variation through time. Petrographic analysis will include:
 - thin section description;
 - petrographic image analyses of the pore system;
 - XRD determination of the mineralogy;
 - SEM analysis for porosity description and clay mineral distribution;
 - CL analysis for determination of cement history;
 - micro-probe analysis;
 - fluid inclusion studies;
 - isotope analyses.
 - fluid inclusion studies and isotope analyses for the determination of absolute timing of diagenetic events through links to geohistory and time-temperature curves.
11. Determine the nature of potential traps in each petroleum system. A review of the structural geology of the Palaeozoic sequences and the Permo-Triassic rocks will provide a list of the types of structures to be expected in each of the petroleum systems. This should be expanded by some surface mapping in key localities where current knowledge is limited and by re-interpretation of the existing seismic profiles.
12. Evaluation of the seal capacity of potential sealing units including alteration zones at the base of dolerite sills.
13. Carry out further organic chemical investigations on seep-source rock correlation.
14. Determine the location and drilling targets for four new stratigraphic drill holes, sub-contract drilling activity.
15. Sub-contract and QC wireline logging activity in the stratigraphic boreholes. Existing holes are also to be logged where possible using the same suite of logging tools. Logs to include gamma-spectrometry, continuous temperature logs, deviation surveys, porosity logs, induction logging.
16. Collection of all available maturity data (vitrinite reflectance, TAI, CAI, MPI, fission track data, coal assays) and assessment of regional trends. New maturity data will be collected to assess regional and local trends. In particular a study will be undertaken to assess the

thermal effects of the dolerite intrusions using maturity parameters to complement the theoretical studies by Woods (1995).

17. Plan, execute and interpret a new temperature/heat flow survey
18. Determination of geohistory and thermal history for each petroleum system in a number of areas in the basin, using Lawrence Livermore National Laboratories kinetics rather than Lopatin methods (TAI). Predictions of hydrocarbon generation will be made from experimentally determined source rock kinetics.
19. Study of potential migration paths
20. Prepare play fairway maps
21. Combine all the results in the form of summary 'common-risk-segment maps' at 1:100000 scale. These maps point directly to lowest exploration risk in the area under investigation and simplify decision making.
22. Prepare draft report, interact with client and submit final report

Timing - (with programme start date Dec. 1 1998)

Activity	Milestone/Deliverable	Date
	Workshop with clients	Jan 1999
1. Comprehensive and critical review of existing literature and data concerning the Tasmania Basin	Report	May 1999
3. Carry out field work in Tasmania to examine critical sections and well data together with structural mapping	Report, maps and sections	August 1999
4. Evaluate existing potential field data and model the magnetics using 3D inverse modelling software to delineate the subsurface dolerite extent and possible sub-dolerite sediment thicknesses	Report and model results	Feb 1999
5. Plan and submit acquisition parameters for new seismic and potential field investigations on the basis of the results from the above studies	Tender document for seismic and potential field surveys	Jan 1999
6. Manage and QC the sub-contracted seismic and potential field surveys - in consultation with GSLM	New geophysical data package	Dec 1998 - Mar 1999; May '99-Aug '99
	Workshop with clients	Jun. 1999
7. Process and Interpret the new data and prepare an intermediate report	Interpretation report	April 2000
8. Prepare a sequence stratigraphic interpretation of the Tasmania Basin	Maps, sections and report	March 2000 and March 2001
	Workshop with clients	Jan 2000
9. Establish the stratigraphic context for the potential sources, reservoirs and seals	Maps, sections and report	May 2000 and Jan 2001
10. Log all available cored drill hole intersections	Core logs, ichnofabric reports, sedimentary environments, hydrocarbon shows	June 1999 and Feb 2001
11. Sample potential reservoir lithologies for petrophysical properties and detailed petrography. Carry out minipermeameter, plug porosity and permeability determinations, and petrographic analyses.	PIA/petrographic report Petrophysics report	June 1999 and Feb 2001
12. Evaluation of potential traps	Report on structural traps	May 2000
13.	Workshop with clients	Jun. 2000
14. Evaluation of potential seals (including weathered dolerite)	Report on seal potential	May 2000

15. Further organic chemical investigations will be carried out on seep source rock correlation.	Report on number of sources and origin of seeps	Sept. 1999
16. Determine the location and drilling targets for four new stratigraphic drill holes, sub-contract drilling activity.	Coordinates for stratigraphic drill-hole locations, tender documents, well completion reports.	April 2000 and August 2000
17. Sub-contract and QC wireline logging activity in the stratigraphic boreholes. Existing holes are also to be logged using the same suite of logging tools. Logs to include gamma-spectrometry, continuous temperature logs, deviation surveys, porosity logs, induction logging.	Tender documents, well completion reports. Report on logging results.	Dec 2000
18. Collection of all available maturity data together with new determination where needed.		Sept. 1999 and March 2001
19. Plan, execute and interpret new temperature/heat flow survey		Sept. 1999 and Feb 2001
20. Determination of geohistory and thermal history for each petroleum system in a number of areas in the basin.		April 2001
	Workshop with clients	Feb. 2001
21. Study of potential migration paths		May 2001
22. Prepare play fairway maps		Aug. 2001
23. Prepare common-risk-segment maps		Sept. 2001
	Workshop with clients	Aug 2001
24. Prepare / submit draft report; Submit final report		March 2001 Dec. 2001
	Workshop with clients	Dec 2001

References

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About the NCPGG

The National Centre for Petroleum Geology and Geophysics (NCPGG) is the key centre for excellence in petroleum geoscience in Australia. NCPGG was set up in Adelaide in 1986, and is administered as a joint venture between the University of Adelaide and the University of South Australia. NCPGG is a partner and founding member of the Australian Petroleum Cooperative Research Centre (APCRC). NCPGG is an independent organization whose mission is to provide state-of-the-art technical expertise in petroleum geoscience to industry, government and academia. This excellence is realized through research, training and technical services.

Research at the NCPGG is designed to be practical and applied to both the short and long term needs of industry and government. Research projects are designed to focus on relevant issues and comprise latest technologies. Present initiatives include techniques to better understand petrophysics, sequence stratigraphy, pore geometry and seal evaluation. In addition, NCPGG researchers are conducting thermal history studies, detailed reservoir characterization projects and are involved in leading-edge structural and stratigraphic modelling. Research projects may include independent quality assurance of work done by other parties, or initial assessment of resource potential for government and/or industry. The research staff at the Centre are dynamic and enthusiastic scientists who are dedicated to adding value through their expertise. There is a strong link between NCPGG and other earth science centres in Australia and overseas, and collaborative projects are the norm.

Training is an important function of NCPGG. We have seen a growing demand for continuing education because technology in the field of petroleum geoscience is evolving so rapidly that the majority of individuals working for companies are simply not able to keep abreast of the majority of new advances. The "regular" course work provided to Honours and MSc students is presented in modular format, and individuals from industry or government are encouraged to audit any part of the curriculum. Dynamic interaction between research staff and students on active projects forms the basis of the programme outside the normal course curriculum. All projects undertaken by NCPGG involve technology transfer to students and researchers from both Adelaide and participating institutions.

Technical services are undertaken for the purpose of augmenting ongoing activities within NCPGG and/or the sponsoring organization. Often, these projects have the breadth to become Honours, Masters or PhD thesis topics. Technical service projects generally have a short turnaround, with specific deliverables and defined timetables, and students are taught to focus their work to these timelines. It is the responsibility of the Centre's staff and resources to ensure that high quality results are integral to the product.

Contractual Arrangements

It is envisaged that there will be an agreement between the Government of Tasmania and the NCPGG (either through NCPGG Pty, or Luminis or Adelaide University). This will be a research agreement with a schedule setting out the scope of the program.

Any significant variation to the work program as set out in the proposal shall be subject to agreement between the Government of Tasmania and NCPGG

The program will include a number of sub-contracts dealing with data acquisition, processing and interpretation of potential field data, seismic surveys, test drilling and wireline logging. These sub-contracts are likely to be for substantial sums and consideration will need to be given as to the contract principals and their liabilities. If the NCPGG is a principal then consideration may need to be given to obtaining adequate insurance cover for such matters as environmental damage, OH&S etc. Such costs might be large enough to justify a separate budget line.

Parameters for all aspects of pre-commercial survey design, analyses, tender assessment, contractor selection and supervision will be determined by NCPGG who will consult with and take into account views and recommendations of the Government of Tasmania and GSLM (the exploration license holder). However, ultimate responsibility will be borne by NCPGG.

It is intended that a Cooperation Agreement will be concluded between NCPGG and GSLM to establish *inter alia* rights of access and to ensure optimal operational synergy with the exploration programme, including seismic survey operations proposed to be carried out concurrently by GSLM.

At present, only estimated costs have been included here. These cost estimates are for the initial budgeting process only, as it is not possible to state specifically how many of the major surveys and test drill holes described will actually be required until the initial work programme commences.

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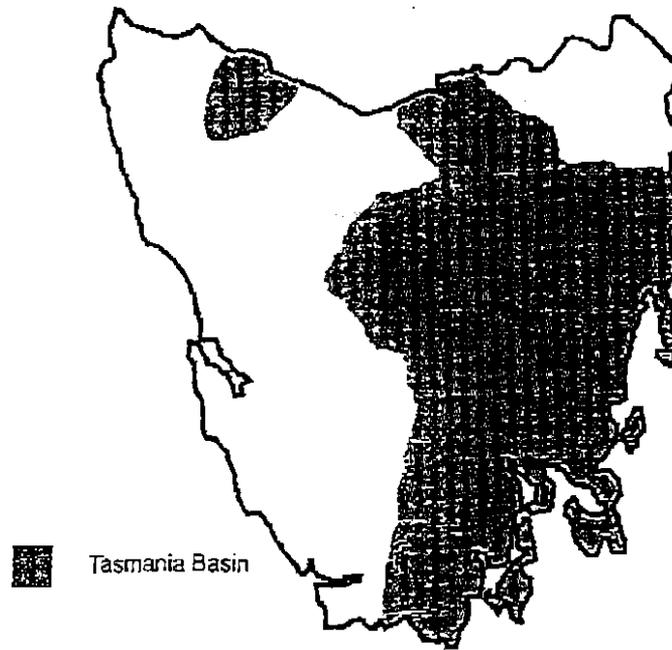


Figure 1. Map showing the extent of the Tasmania Basin.

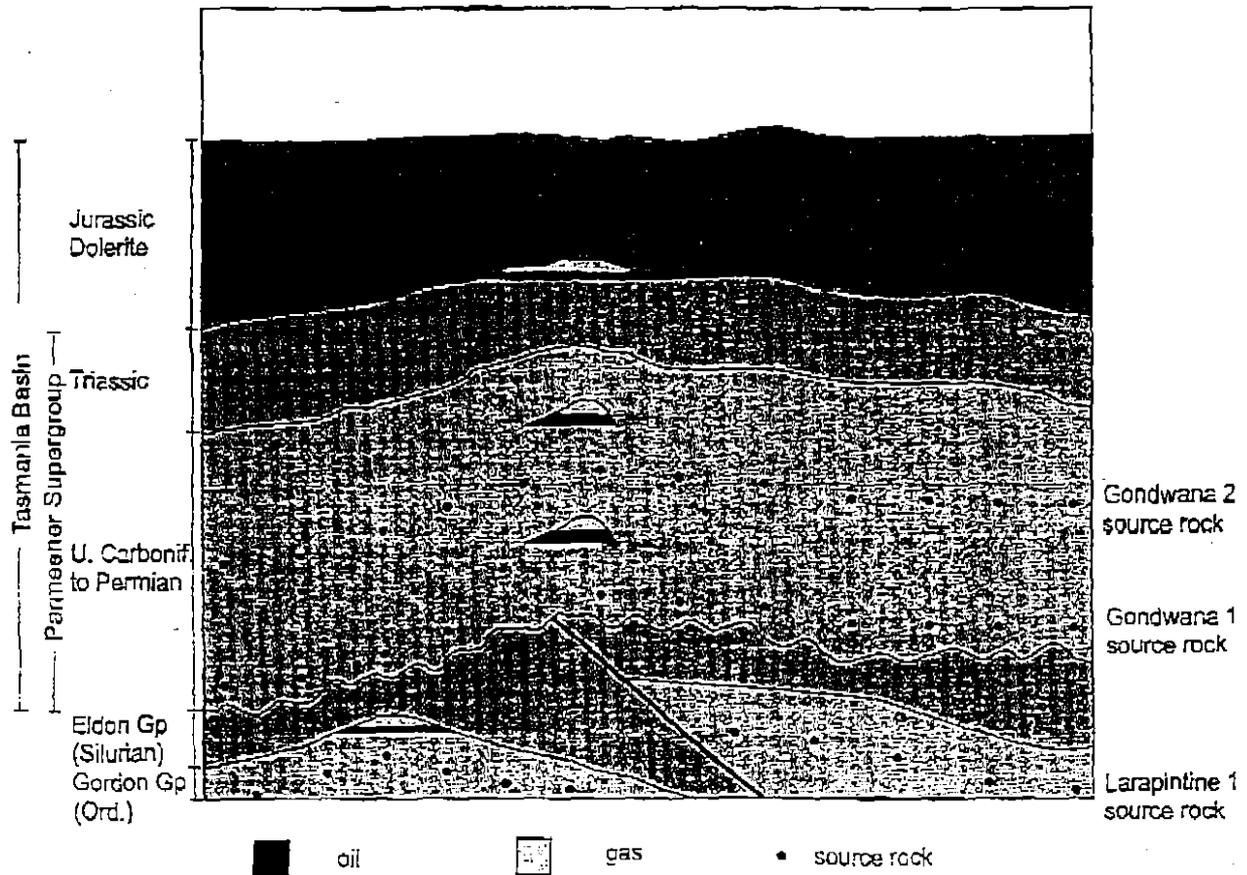


Figure 2. Schematic diagram showing proposed petroleum systems associated with the Tasmania Basin and underlying sequence.

BUDGET - TASMANIA BASIN PROPOSAL

	Commitment(years)	Annual salary	Salary + oncosts	1999	2000	2001	Sub-Totals	TOTALS
Personnel								
Programme manager	3	90,000	180,000	180,000	180,000	180,000	540,000	
Admin/Technical Officer	3	35,000	70,000	70,000	70,000	70,000	210,000	
Geophysicist/Petrophysicist	3	90,000	180,000	180,000	180,000	180,000	540,000	
Research Associate (Geochemistry)	3	70,000	140,000	140,000	140,000	140,000	420,000	
Research Associate (Structure)	3	70,000	140,000	140,000	140,000	140,000	420,000	
Research Associate (Stratigraphy)	3	70,000	140,000	140,000	140,000	140,000	420,000	
Research Associate (Petrography)	3	70,000	140,000	140,000	140,000	140,000	420,000	
Student projects (PhD/MSc)	9	25,000	50,000	150,000	150,000	150,000	450,000	
						Sub-Total	3,420,000	3,420,000
Admin/Contract Fees								
				50,000				50,000
Office & Lab. Space								
Stand-alone secure office accomodation at NCPGG				25,000	25,000	25,000	75,000	
Stand-alone secure office & lab. space at Uni. of Tas.				25,000	25,000	25,000	75,000	
						Sub-Total	150,000	150,000
Travel								
40 interstate economy return flights @ \$800 each				32,000	32,000	32,000	96,000	
120 nights accomodation @ \$100 night				12,000	12,000	12,000	36,000	
						Sub-Total	132,000	132,000
Field Work								
	Days	People per person cost						
Structural mapping	60	2	200	24,000	24,000		24,000	
Core logging	40	2	200	16,000	16,000		16,000	
Section measurement	30	2	200	12,000	12,000		12,000	
Sampling (Geochem)	30	2	200	12,000	12,000		12,000	
Sampling (Reservoir rocks)	30	2	200	12,000	12,000		12,000	
Sampling (Seals)	30	2	200	12,000	12,000		12,000	
		Total		88,000	88,000	Sub-Total	88,000	88,000

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Sample analysis							
	200 petrographic descriptions @ \$300 each			60,000			60,000
	Source rock, oil and gas, and oil seep organic geochemical analysis			150,000			150,000
	Thermal modelling software			25,000			25,000
	25 apalite fission track samples @ 3000 each			75,000			75,000
						Sub-Total	310,000
Seismic Acquisition & Processing							
	2000 km @ 4000/km			8,000,000			8,000,000
Potential field data acquisition/interpretation							
	Aeromag/DTM/Radiometric/gravity						
	2600 line km over 200 km x 300 km	\$150/line km		400000			400000
	Mobilisation						50000
	Interpretation 3 months @ \$10000/month						40000
						Sub-Total	500000
Stratigraphic Drilling & Coring							
	4 strat. Holes @ \$400,000 each			1,600,000			1,600,000
Downhole Logging							
	Mobilisation of equip. to Tasmania			50,000			50,000
	Logging 8 holes (GR-N-R-SP-DD-Sonic + Temp. log plus well shoot and deviation survey) @ 75,000 each (= 4 new holes and 4 currently drilling)			600,000			600,000
						Sub-Total	650,000
Computer Equipment and Software							
	Seismic interpretation software - GeoQuest	1	120,000	120,000	21,000	21,000	162,000
	Pentium NT workstations w. 20" screens	5	6,000	30,000			30,000
	SGI workstations	1	50,000	50,000			50,000
						Sub-Total	242,000
PorPerm (Petrophysical) Equipment/Analyses							
				300,000			300,000
GRAND TOTAL							15,442,000

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APPENDIX 10

GREAT SOUTH LAND MINERALS LIMITED

ANECDOTAL NOTES ON OIL SEEPS

David Tanner - 1st December 1998

554081

LONNAVALE

1. Timber Mill

There was a sawmill several hundred metres northeast of the present Lonnavale #1 drillsite operated by Trevor Watson from the 1930's through to the early 1950's. His son, Paul Watson, now in his 60's and living at Bermuda Road, Glen Huon recalls working at his fathers mill as a 16 year-old boy. He saw an oil seep exposed in a log chute above the mill where the horses dragged logs down to the mill. A sump was dug and buckets of oil were collected and carried down to the mill to lubricate the skids, racks and other machinery. Paul still had a drum of the oil in his yard until about four years ago, when it was taken to the tip for disposal.

2. Forestry Quarry

This dolerite quarry on the Russel Road some 2km northwest of the Lonnavale #1 well was opened up in the 1960's by Forestry Tasmania. An oil seep was discovered in this quarry in 1996 by Ralph Bottril of MRT, and tests were carried out by Amdel and CSIRO which indicated this oil was sourced from *Tasmanite* oil shale.

Duggans excavator operator, Andrew Francis, who was working for us last year on drillsite preparation at Lonnavale, reported that his brother, Dennis Francis (now 55) was operating his 10 yard dump truck out of the Forestry Quarry about 25-30 years ago. He and his workmates noticed an oil seep flowing from a mudstone/sandstone outcrop not far south of the quarry. They talked of collecting enough to filter and try in their truck engines!

Andrew also mentioned in passing that his father-in-law had collected a bitumen sample south of Allonah on Bruny Island many years ago, and that the Mines Department had confirmed that it was derived from a crude oil seep.

HUNTERSTON

When we were drilling the precollar at Hunterston #1 wellsite last year, property owner Neil Monks of 'Hunterston', whom I have known for many years, told me of a seep that was uncovered back in the 1960's in a gravel pit only a few hundred metres northwest of the wellsite. His brother was operating Boy Reardon's D6 dozer in opening up the gravel pit when oil was observed seeping up from the floor of the pit. PWD engineers came in to look at it, and called in someone from the Mines Department to investigate. Apparently no action was taken, and the flow stopped shortly afterwards. I have spoken to some retired DMR personnel who were working in the area at the time, but they have been unable to uncover any documented evidence of the event.

D Tanner 1.12.98