112001

SEISMIC INTERPRETATION REPORT

on a

MARINE SEISMIC SURVEY

of

T/17P, TASMANIA

for

VAN DIEMEN'S LAND RESOURCES N.L.
17-23 Queensbridge Street
South Melbourne. 3205.

15 December 1981
Work Order: VAN 702

E. R. Denton
Geophysicist

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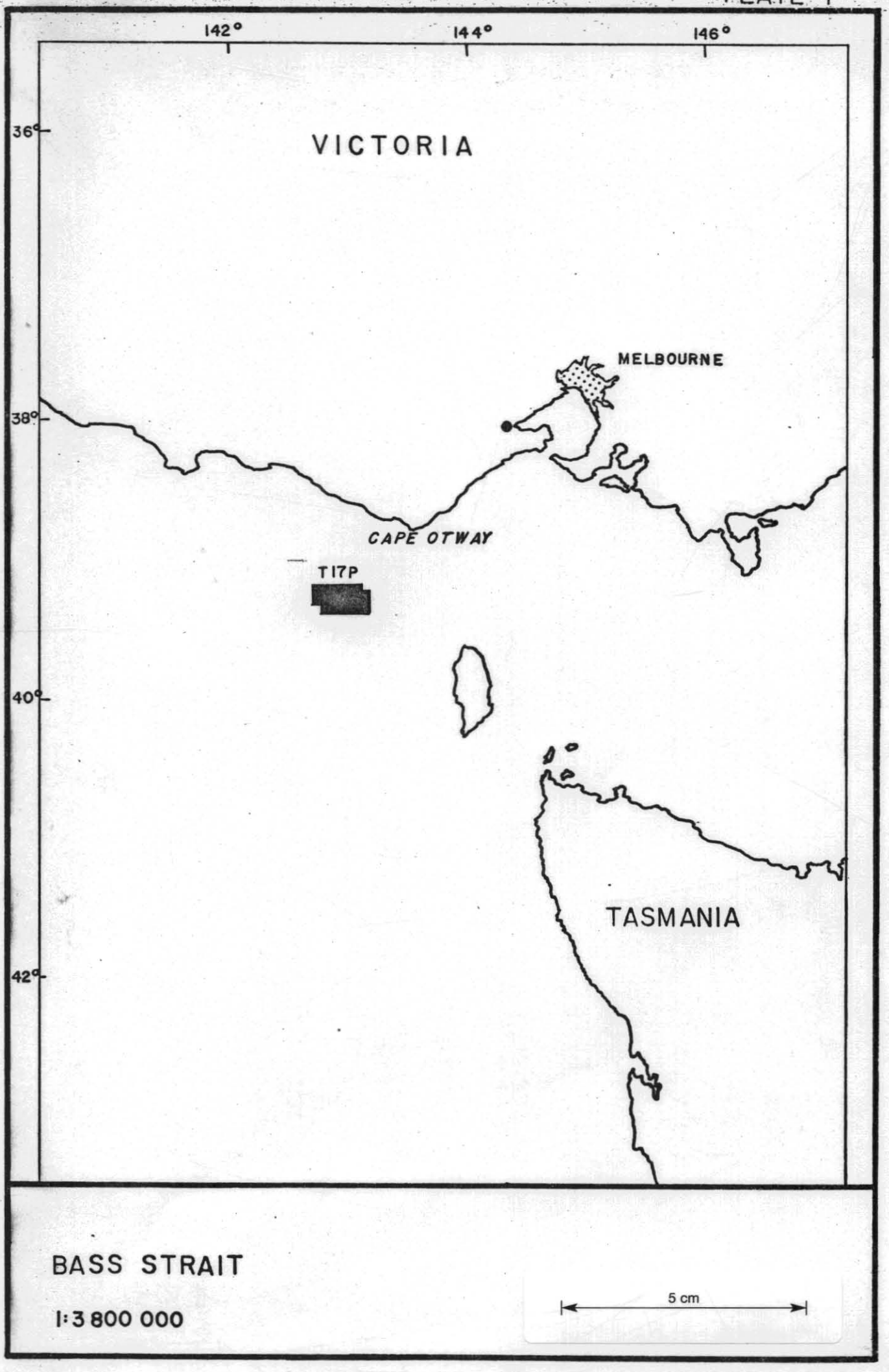
112003

PLATE 1



BASS STRAIT

1:3 800 000

5 cm

INTRODUCTION

A marine seismic survey was conducted for Van Diemen's Land Resources N.L. by the G.S.I. vessel, the MV Eugene McDermott II, during January 1981, in Exploration Permit for Petroleum T/17P of Tasmania. The area lies between:-

South latitudes	39°	05'	and	39° 25'
East longitudes	142°	40'	and	143° 10'

An index map appears in Plate 1.

A total of 137 line kilometres was shot and processed for 48 fold Common Depth Point coverage using:-

Seismic Source	23.76 litre airgun array
Streamer Cable	96 channel, 2400 metres
Instruments	DFS V
Shot Point Interval	25 metres
Navigation System	Maxiran

Data processing was done by G.S.I., Sydney, and both an operations report and a digital processing report have been submitted.

The programme was planned to provide six regional lines which would:-

1) Tie the Prawn A-1 well drilled to the Otway formation.

2) Tie seismic lines shot by Esso Exploration and Production Australia Inc. to the northwest which tie the Mussel 1 well which was drilled to the Waarre sandstone of the Sherbrook group.

3) Assist re-interpretation of previous seismic data in the area acquired by Hematite Petroleum Pty. Ltd..

Record sections supplied by Hematite Petroleum were from two surveys:-

H03 Survey	October 1973	245 kilometres
H04 Survey	November 1974	383 kilometres

A shot point location map is submitted with this report as Enclosure 1.

CONCLUSIONS AND RECOMMENDATIONS

A contour map in two way reflection time to the top of the Sherbrook unconformity appears in Enclosure 3. Attempts to establish continuity at horizons below the top of the Sherbrook were not successful. Deeper data recorded by the H03 and H04 surveys are very poor and the grid of the 1981 survey is widely spaced. It is recommended that additional seismic programme be shot to provide closer control so that maps of deeper horizons can be prepared and drilling prospects evaluated.

Several prospective leads in the deeper section have already been found and five of these are shown on the map submitted as Enclosure 4.

Anomaly A shows reflection time contours at the top of the Otway formation from Lines OBV 81 - 03 and 04 which intersect at the Prawn A-1 well location. It seems that the well was drilled off-structure. From interval velocities, recorded by the well geophone survey, the top of the Otway at the well location is over 150 metres lower than the crest of the anticline at Shot Point 1575 on Line OBV 81 - 04 around two kilometres to the southeast.

Anomaly B is shown as a closed anticline based on reflection continuity at a horizon at or near the top of the Otway. Althought its culmination seems to lie north of the T/17P boundary a detailed seismic survey may reveal several closed structures along its crest with prospects for a well location inside the permit area.

The remaining three anomalies are based on less control but they confirm that there are sufficient prospective leads in the area to the northeast of the shelf break (Water Depth Map, Enclosure 2) to warrant an extension of the 1981 seismic grid.

DISCUSSION OF RESULTS

Record quality

Data quality of all surveys used for this interpretation is fair to good down to the Tertiary - Sherbrook unconformity. Below this horizon data recorded by the H03 and H04 surveys are very poor and reliable maps could not be made for deeper horizons using the widely spaced grid of the OBV 81 survey. Deeper data recorded by the OBV 81 survey were much better than those recorded by the earlier surveys conducted for Hematite Petroleum. However, the 1981 record sections were adversely affected by high angle, low velocity noise trains believed to have been generated by a hard water bottom. G.S.I. have velocity filtering programmes designed to attenuate this noise and their use is recommended for future processing.

Horizon Mapping

The top of the Sherbrook horizon was identified by ties to the Prawn A-1 and Mussel 1 wells. A tabulation of well geophone data, made available by Esso, appears in Appendix I. The Sherbrook map is considered to be reliable as reflection quality was fair to good on most lines. The deltaic mode of Tertiary sedimentation also aided identification of the unconformity. The horizon shows regional dip to the southwest with a series of anticlinal noses plunging to the south.

Deep Anomalies

Although no deep continuous horizons have been mapped over the prospect area several indications of anticlinal structures below the top of the Sherbrook have been observed:-

Anomaly A

Identification of the reflection horizon at the top of the Otway was established at Prawn A-1. It has been correlated on Lines OBV 81 - 03 and 04 until interrupted by faulting. Reflection time contours indicate an anticline in this area with the Prawn A-1 location on its northern flank. The wells seem to be off structure. Interval velocities are at least 3500 metres per second near the top of the Otway so the well location appears to be over 150 metres below the crest of the anticline at Shot Point 1575 on Line OBV 81 - 04.

Anomaly B

A large anticlinal structure trending northwest to southwest has been contoured in two way reflection time. The horizon is believed to be at or near the top of the Otway formation from the loop tie made using lines:-

OBV 81 - 04
OBV 81 - 03
OBV 81 - 02
OBV 81 - 01

Two faults were postulated to tie this loop on the Otway and the correlation to Prawn A-1 is not considered reliable. Although the structure appears to culminate north of the permit boundary further seismic lines may indicate that it is more complex and may provide a drilling location in Permit Tas/17P.

Anomaly C

This anomaly is down dip from the anticline near the Prawn A-1 well location. It is confirmed only by turnover on Line OBV 81 - 04 around Shot Point 1100.

Anomaly D

Turnover south of a down to the north fault can be observed on a deep horizon with a crest at Shot Point 575 on Line OBV 81 - 01. An associated synclinal trough is also apparent to the south on Lines:-

H04 - 50
H04 - 10

Anomaly D

Turnover south of a down to the north fault can be observed on a deep horizon with a crest at Shot Point 575 on Line OBV 81 - 01. An associated synclinal trough is also apparent to the south on Lines:-

H04 - 50
H04 - 10

The reflection time to the crest is approximately 2.000 seconds.

Anomaly E

A possible anticlinal fold appears near the intersection of Lines H04 - 12 and 50. Steep dip to both the south and west is apparent but the anomaly is probably complicated by faulting north of its crest.

E. R. Denton

APPENDIX 1

Well Velocity Survey Data

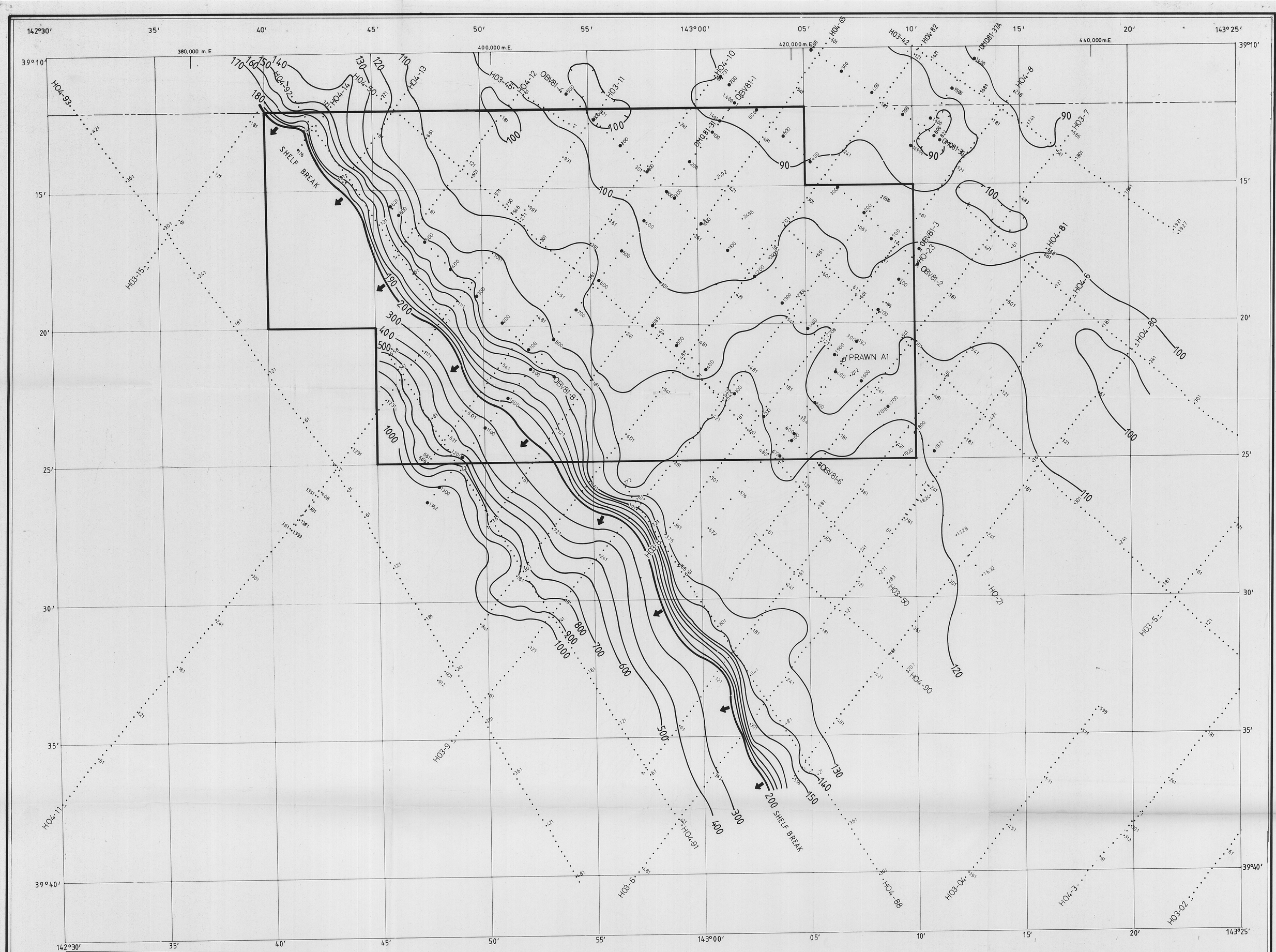
Datum: Sea Level

MUSSELL No. 1

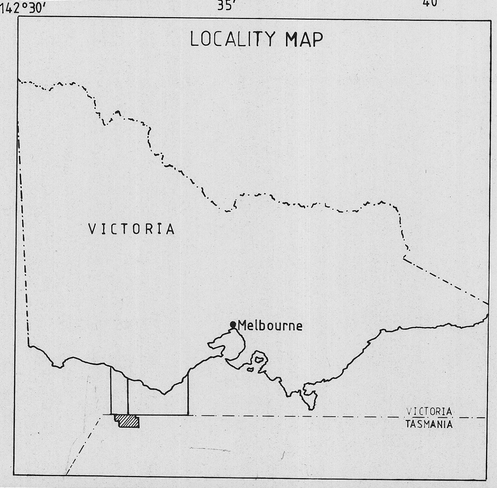
Formation	Reflection Time (millisecs)	Depth (metres)
Mepunga	805	956
Rivernook	985	1212
Pebble Point	1020	1268
Paaratte	1087	1372
Flaxmans	1488	1999
Waarre	1513	2055

PRAWN No. A-1

Clifton	710	707
Narrawaturk	720	725
Mepunga	846	895
Rivernook	1030	1159
Pebble Point	1044	1179
Top Sherbrook	1134	1238
Belfast	1630	2148
Flaxmans	1714	2201
Waarre	1986	2829
Otway	2026	2917



LOCALITY MAP



VAN DIEMEN'S LAND RESOURCES N.L.

T-17P

OTWAY BASIN

SEISMIC MAP

112010

WATER DEPTH

5 cm

Datum: Sea Level

Contour Int.: 10 metres & 100 metres

Scale 1:100,000

0 1 2 3 4 5 6 7 8 9 10

Kilometres

OR-01160

Author: E.R.D.	Date: Sep, 81	Enclosure: 2

142°30′ 35′ 40′ 45′ 50′ 55′ 143°00′ 05′ 10′ 15′ 20′ 143°25′

39°10′ 15′ 20′ 25′ 30′ 35′ 39°40′

380,000 m.E. 420,000 m.E. 440,000 m.E.

1000 950 1050 1100 800 850 900 950 1000 1050 1100 1100 1150 1200 1250 1300 1350 1400 1450 1500 1550 1600 1650 1700 1750 1800 1850

PRAWN A1

OBV81-1 OBV81-2 OBV81-3 OBV81-5 OBV81-6 OBV81-8 OBV81-31A OBV81-37A OM081-30

HO-23 HO-21

HO4-93 HO4-92 HO4-50 HO4-14 HO4-13 HO4-12 HO4-10 HO4-11 HO4-91 HO4-90 HO4-88 HO4-81 HO4-80 HO4-46 HO4-8 HO4-65 HO3-42 HO4-82 HO3-7 HO3-15 HO3-8 HO3-11 HO3-46 HO3-9 HO3-6 HO3-50 HO3-04 HO4-3 HO3-02 HO3-5

LOCALITY MAP

VICTORIA

Melbourne

VICTORIA TASMANIA

VAN DIEMEN'S LAND RESOURCES N.L.

T-17P

OTWAY BASIN

SEISMIC MAP

112011

TOP OF SHERBROOK UNCONFORMITY

5 cm

Datum: Sea Level

Contour Int.: 50m sec

Scale 1:100,000

0 1 2 3 4 5 6 7 8 9 10

Kilometres

CR-1160

Author: E.R.D.	Date: Oct, 81	Enclosure: 3

142°30′ 35′ 40′ 45′ 50′ 55′ 143°00′ 05′ 10′ 15′ 20′ 143°25′

39°10′ 15′ 20′ 25′ 30′ 35′ 39°40′

380,000 m.E. 400,000 m.E. 420,000 m.E. 440,000 m.E.

STRONG SW DIP

ANOMALY A

ANOMALY B

ANOMALY C

ANOMALY D

ANOMALY E

PRAWN A1

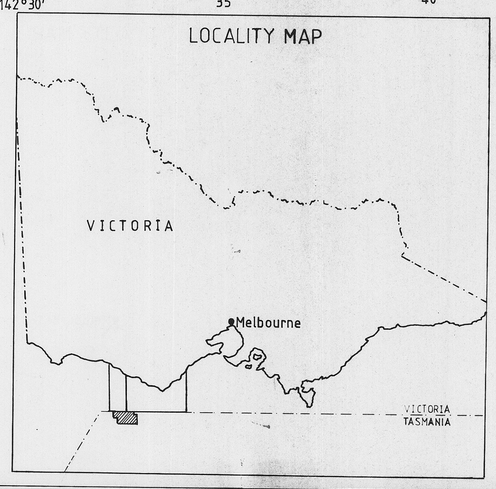
OBV81-1 OBV81-2 OBV81-3 OBV81-4 OBV81-5 OBV81-6 OBV81-7 OBV81-8 OBV81-9 OBV81-10 OBV81-11 OBV81-12 OBV81-13 OBV81-14 OBV81-15 OBV81-16 OBV81-17 OBV81-18 OBV81-19 OBV81-20 OBV81-21 OBV81-22 OBV81-23 OBV81-24 OBV81-25 OBV81-26 OBV81-27 OBV81-28 OBV81-29 OBV81-30 OBV81-31 OBV81-32 OBV81-33 OBV81-34 OBV81-35 OBV81-36 OBV81-37A

HO-21 HO-22 HO-23

HO4-1 HO4-2 HO4-3 HO4-4 HO4-5 HO4-6 HO4-7 HO4-8 HO4-9 HO4-10 HO4-11 HO4-12 HO4-13 HO4-14 HO4-15 HO4-16 HO4-17 HO4-18 HO4-19 HO4-20 HO4-21 HO4-22 HO4-23 HO4-24 HO4-25 HO4-26 HO4-27 HO4-28 HO4-29 HO4-30 HO4-31 HO4-32 HO4-33 HO4-34 HO4-35 HO4-36 HO4-37 HO4-38 HO4-39 HO4-40 HO4-41 HO4-42 HO4-43 HO4-44 HO4-45 HO4-46 HO4-47 HO4-48 HO4-49 HO4-50 HO4-51 HO4-52 HO4-53 HO4-54 HO4-55 HO4-56 HO4-57 HO4-58 HO4-59 HO4-60 HO4-61 HO4-62 HO4-63 HO4-64 HO4-65 HO4-66 HO4-67 HO4-68 HO4-69 HO4-70 HO4-71 HO4-72 HO4-73 HO4-74 HO4-75 HO4-76 HO4-77 HO4-78 HO4-79 HO4-80 HO4-81 HO4-82 HO4-83 HO4-84 HO4-85 HO4-86 HO4-87 HO4-88 HO4-89 HO4-90 HO4-91 HO4-92 HO4-93

HO3-1 HO3-2 HO3-3 HO3-4 HO3-5 HO3-6 HO3-7 HO3-8 HO3-9 HO3-10 HO3-11 HO3-12 HO3-13 HO3-14 HO3-15 HO3-16 HO3-17 HO3-18 HO3-19 HO3-20 HO3-21 HO3-22 HO3-23 HO3-24 HO3-25 HO3-26 HO3-27 HO3-28 HO3-29 HO3-30 HO3-31 HO3-32 HO3-33 HO3-34 HO3-35 HO3-36 HO3-37 HO3-38 HO3-39 HO3-40 HO3-41 HO3-42 HO3-43 HO3-44 HO3-45 HO3-46 HO3-47 HO3-48 HO3-49 HO3-50 HO3-51 HO3-52 HO3-53 HO3-54 HO3-55 HO3-56 HO3-57 HO3-58 HO3-59 HO3-60 HO3-61 HO3-62 HO3-63 HO3-64 HO3-65 HO3-66 HO3-67 HO3-68 HO3-69 HO3-70 HO3-71 HO3-72 HO3-73 HO3-74 HO3-75 HO3-76 HO3-77 HO3-78 HO3-79 HO3-80 HO3-81 HO3-82 HO3-83 HO3-84 HO3-85 HO3-86 HO3-87 HO3-88 HO3-89 HO3-90 HO3-91 HO3-92 HO3-93

LOCALITY MAP



VAN DIEMEN'S LAND RESOURCES N.L.

T-17P

OTWAY BASIN

SEISMIC MAP

112012

PROSPECTIVE LEADS

5 cm

Datum: Sea Level

Contour Int.:

Scale 1:100,000

0 1 2 3 4 5 6 7 8 9 10

Kilometres

OR-01162

Author: E.R.D.	Date: Dec, 81	Enclosure: 4