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1994 ROCKY CAPE MARINE SEISMIC SURVEY

FINAL REPORT

PART B - SEISMIC INTERPRETATION

T/25P TASMANIA

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KMC9511011-DJK

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KMC9511011-DJK

ROCKY CAPE SEISMIC SURVEY - INTERPRETATION REPORT

SUMMARY

The 1994 Rocky Cape Seismic Survey was acquired in order to mature several leads which were identified by an interpretation on an interactive geophysical workstation, loaded with data from the 1992 Hunter, 1984 & 1985 Amoco, and several earlier seismic surveys. Some of these data had been reprocessed for the task.

The survey was recorded as a joint effort between T/18P and T/25P Permits and indeed one lead straddled the common border between them.

Previous work had identified more than 20 leads in T/25P all of which were not mature for drilling. The survey was only budgeted for 250km and therefore a selection of the most prospective leads were targeted in a "make or break" fashion rather than to strictly mature them to drillable status. The leads addressed were Clarke, Tourville, Actaeon and Warrego. In parallel to the 250 km Rocky Cape acquisition an 1800km reprocessing project was undertaken which involved migration of available stack data, scanning of some paper data and full reprocessing of key seismic lines unavailable in a digital format (Figure 1.0).

The project was largely successful for although the large Clarke lead failed as a result of the improved grid spacing, all other targeted leads were upgraded to prospect status by the Rocky Cape Survey. In addition the extra data including the reprocessed lines allowed mapping over several features such as Pelican Field and the Southwest Ramp province which improved our understanding of the geology and prospectivity of T/25P. The Veridian Lead and Eddystone Prospect, which were enhanced by the reprocessing, and the Tourville Prospect will be upgraded to drillable status in a 600 km seismic survey which will be acquired in the summer of 1995/1996.

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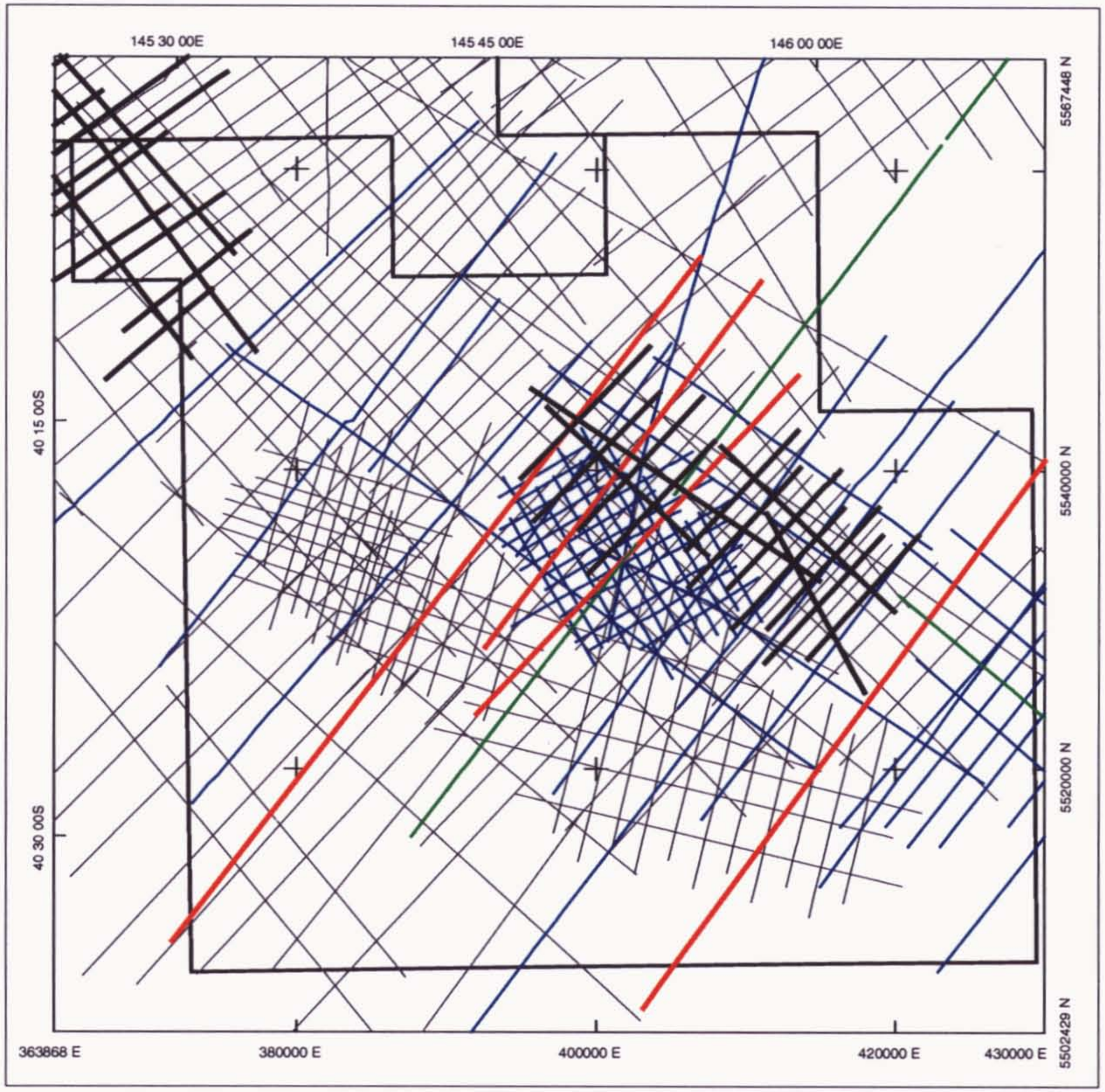
BORAL ENERGY



SEISMIC STATUS

- EXISTING
- FULLY PROCESSED
- MIGRATED
- SCANNED
- ROCKY CAPE SURVEY

0 5 10 15 20 25

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

SEISMIC LOCATION MAP

5 cm

13656.1195 Fig. 1.0

1. INTRODUCTION

1.1 Location

Permit T/25P is located in the offshore waters of Bass Strait, northwestern Tasmania, approximately 55 kilometres north of the coastal town of Burnie (Figure 1.1). The Permit is located on the southwestern flank of the Cretaceous and Tertiary aged Bass Basin covering an area of approximately 2810 square kilometres. Water depth within T/25P ranges from 50 metres in the southwestern corner to 80 metres in the northeast.

1.2 Current Permit Interests

Boral Energy Resources Limited (Previously called SAGASCO Resources Limited)	46.25%
Ampol Exploration Limited	31.25%
GFE Resources Ltd	12.5%
Cultus Timor Sea Pty Ltd	10.0%

1.3 Work Commitments & Permits Status

The 1994 Rocky Cape Seismic Survey reprocessing and interpretation projects were conducted to fulfil the requirements of Year 3 in the Work Commitment schedule (Table 1.1).

Table 1.1

EXPENDITURE & WORK COMMITMENT SUMMARY

		COMMITMENT		COST	
YEAR	ENDING	GOVERNMENT	ACTUAL	COMMITMENT	ACTUAL
1	1/12/92	1 well	1 well	6,500,000	
		500km seismic	500 + kms	600,000	
		1000km reproc	1000 + kms	100,000	
		Environ. G&G studies	reproc G&G	300,000	
2	1/12/93	G&G review	G&G	200,000	3,718,000
3*	1/12/94	250km seismic	287kms	300,000	
		G&G, gas marketing	G&G	200,000	487,417
4**	1/12/95	Data review		100,000	
5	1/12/96	500km seismic		500,000	
6	1/12/97	1 well		7,000,000	

Note:

1. Year 1 to 3 comprise a guaranteed work program and may not be reduced. Surrender may only be agreed if this total 3 year program is completed.

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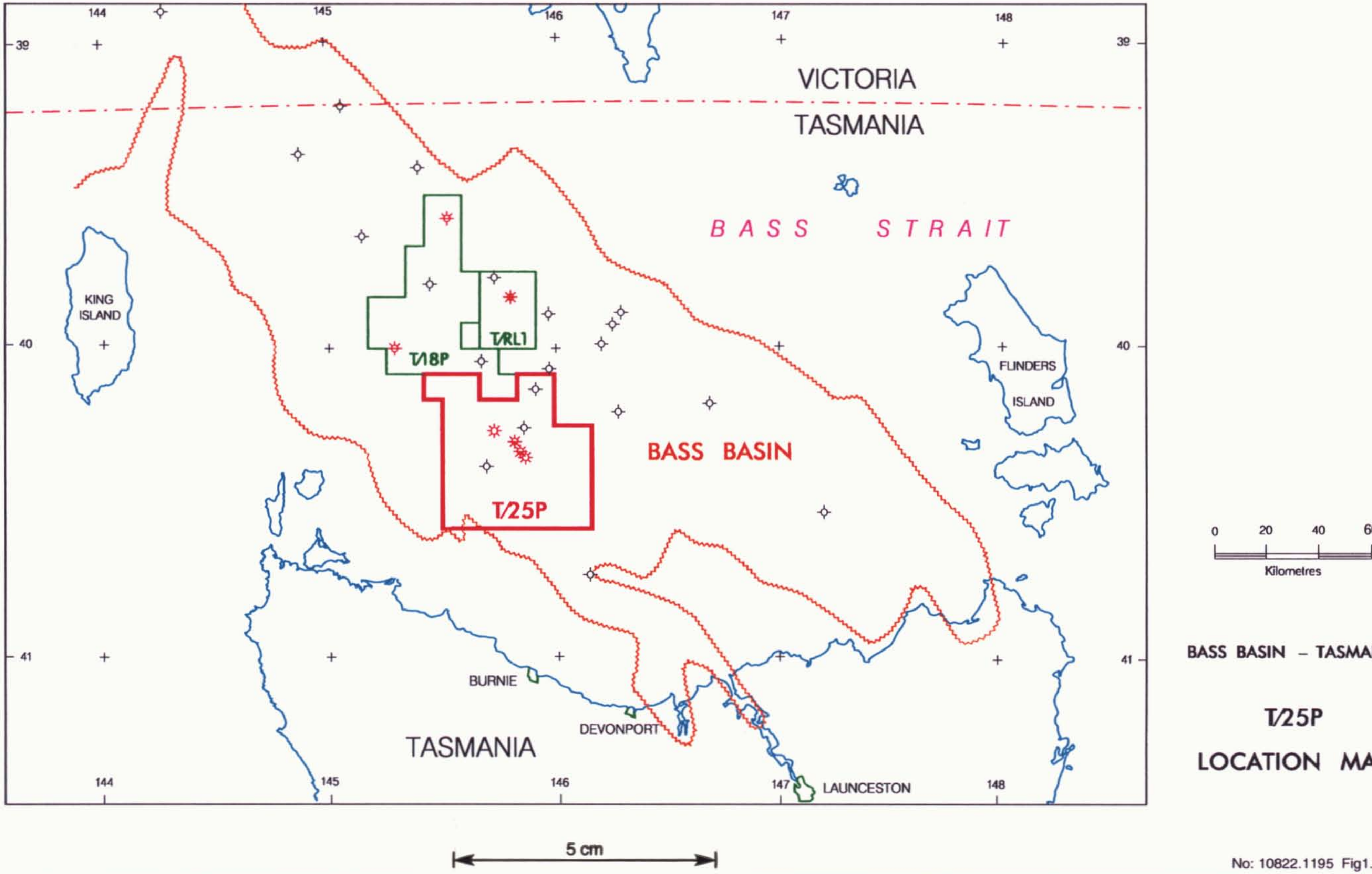
BORAL ENERGY



BASS BASIN – TASMANIA

T/25P

LOCATION MAP

No: 10822.1195 Fig1.1

2. No later than 3 months (or earlier than 6 months) before end of Year 3, a revised secondary work program may be submitted for consideration. If lower in work content and agreement cannot be reached, the permit may be surrendered.

3. On commencement of the 4th Year, the secondary program becomes guaranteed on a year by year basis and must be carried out in the designated year. Surrender is only possible if the guaranteed work for that year has been completed.

* The Joint Authority agreed on 3 December 1993 to vary the conditions of the permit by exchanging the Year 2 commitment for Year 3.

** The Joint Authority agreed on 30 November 1994 to vary the Year 4 and 5 conditions by deleting 3D seismic and 1 well respectively.

1.4 Previous Exploration

The T/25P Permit history and previous exploration are covered in some detail in the July 94 T/25P Permit Assessment Report produced by the Operator and hence only a summary will be presented here.

The permit is immature in regards to exploration. Shipborne magnetic and gravity data has covered the area with a 2 to 4km reconnaissance grid. Seismic coverage is variable with areas such as Pelican Field tightly covered with a 1 x 1km grid, whilst other zones, such as the southwest and northeast portions of the permit have only a regional spacing of 4 to 6km. The lines range in vintage from 1965 to 1994 (Table 1.2) although only lines from 1970 onwards have been used in the geophysical interactive workstation.

Drilling commenced within the permit area in 1970 and nine wells have subsequently been drilled (Table 1.3, Figure 1.2). Four of these were located within the Pelican Field closure with the only gas flow recorded in the permit coming from Pelican 5 drilled in 1985 when it produced at the subcommercial rate of 5.6 MMCFD with 302 to 441 BCPD. Flinders 1 was drilled in 1992 and essentially twinned the unsuccessful Pipipa 1 well although it targeted a deeper zone. This well was plugged and abandoned after encountering no shows and also drilling a 67m thick dolerite sill. Poonboon 1 and Narimba 1 were drilled in the 1970's and after minor shows were plugged and abandoned, while Pelican 3 also spudded in the same decade and located on the dominant structural culmination within T/25P was also unsuccessful, having no hydrocarbon shows. In essence only five independent structures have been tested in the permit.

Table 1.2

SEISMIC ACQUIRED: PERMIT T/25P

LINE PREFIXES	YEAR	OPERATOR	QUALITY
B	1965	Hematite	Poor
ES	1966	ESSO	Poor
EF	1968	ESSO	Poor
B70A	1970	ESSO	Poor
B71A	1971	ESSO	Poor
B72A	1972	ESSO	Poor
HB73A	1973	Hematite	Poor-Medium
HB75A	1975	Hematite	Medium
HB77A	1977	Hematite	Medium-Good
HB80A	1980	Hematite	Medium-Good
81BBS	1981	Bass Strait Oil & Gas	Medium-Good
81BCS	1981	Cue Minerals	Medium-Good
WB81	1981	Weaver	Medium-Good
WB82	1982	Weaver	Medium-Good
TNK4	1984	Amoco	Good
BB85	1985	Bridge	Good
TQH5	1985	Amoco	Good
S92A	1992	SAGASCO	Good
SB94A	1994	SAGASCO	Good

Table 1.3

WELLS DRILLED: PERMIT T/25P

YEAR	WELL NAME	OPERATOR	WELL TYPE	TARGET	TOTAL DEPTH (m) KB	STATUS	SHOWS
1970	Pelican 1	Esso	Expl	E. Eocene	3178.5	P&A	FITs recovered gas & condensate
1970	Pelican 2	Esso	Aprl	E. Eocene	3068.1	P&A	FITs recovered gas & condensate
1972	Pelican 3	Esso	Expl	E. Eocene	2906.9	P&A	-
1972	Poonboon 1	Esso	Expl	E. Eocene	3265.9	P&A	FITs recovered minor gas
1973	Narimba 1	Esso	Expl	E. Eocene	3353.7	P&A	FITs recovered minor gas
1979	Pelican 4	Hematite	Aprl	E. Eocene	3051.0	P&A	FITs recovered gas & condensate
1982	Pipipa 1	Hematite	Expl	E. Eocene	2115.0	P&A	Oil & Gas shows
1985	Pelican 5	Amoco	Aprl	E. Eocene/ Palaeocene	4267.0	P&A	5.6 MMCFD & 302-441 BCFD
1992	Flinders 1	SAGASCO	Expl	E. Eocene/ Palaeocene	2723.0	P&A	No shows

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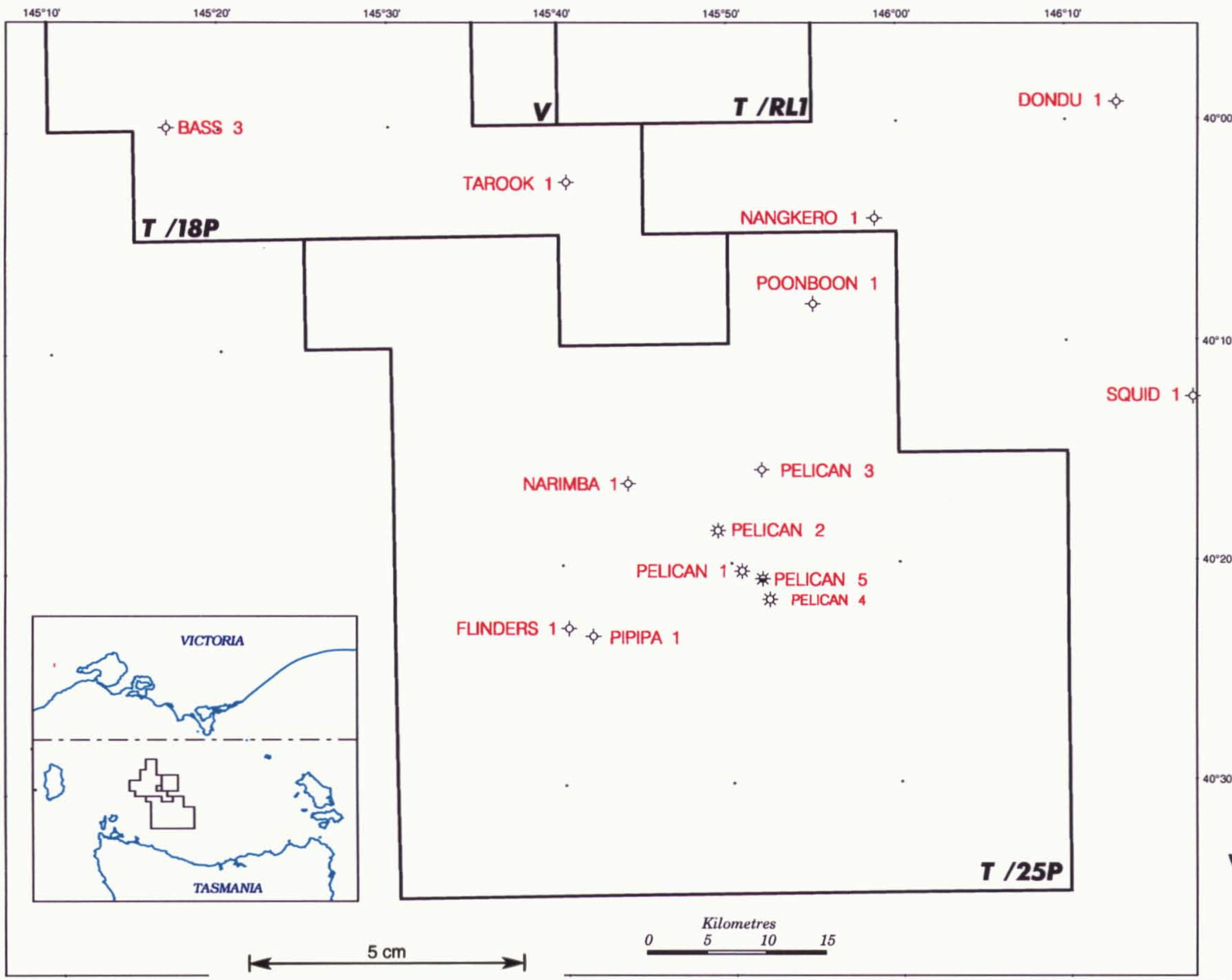
BORAL ENERGY



T /25P WELL LOCATIONS

No: 10814.1195 Fig. 1.2

1.5 Previous Mapping

An extensive 1:100000 series of maps was produced for the July 94 Permit Assessment Report. Most key levels were interpreted for this report and in summary these are:

Basement (smoothed)	Time Structure
Palaeocene	Time Structure
Lower M.diversus	Time Structure
Middle M.diversus	Time Structure
Upper M.diversus	Time Structure
Top EVCM	Time Structure
Demon's Bluff	Time Structure
Late Oligocene	Time Structure
Early Miocene	Time Structure
Late Miocene	Time Structure

Interval maps were also presented in the report. The interpretation that produced this mapping was continued with the incorporation of the Rocky Cape and associated reprocessed data.

2 INTERPRETATION

2.1 Stratigraphic Control

The well distribution as seen in Figures 1.1 & 1.2 provided reasonable control for the central and northern part of the permit. The southern and eastern zones have no well control and with the seismic correlatability being particularly poor the stratigraphy is poorly understood.

All wells except Pelican 3 have sonic logs to allow synthetic seismogram generation and these were generated within the geophysical workstation software SYNVIEW (part of the Geoquest software). Each well has checkshot data available, although detailed surveys were only carried out in Narimba 1, Pelican 4, Pipipa 1, Pelican 5 and Flinders 1. VSP data was acquired in Narimba 1, Pelican 5 & Flinders 1. VSP data handling is not possible with Geoquest at present, however the corridor stacks have very good correlatability with the synthetic seismogram character in this instance so the interpretation is not handicapped by this shortcoming.

Each well has detailed electric log suites, lithology and palynology descriptions available. A generalised stratigraphic table for the Bass Basin can be found in Figure 2.1, Well Information with Palynology in Appendix 1 and Checkshot Data in Appendix 2.

BORAL ENERGY

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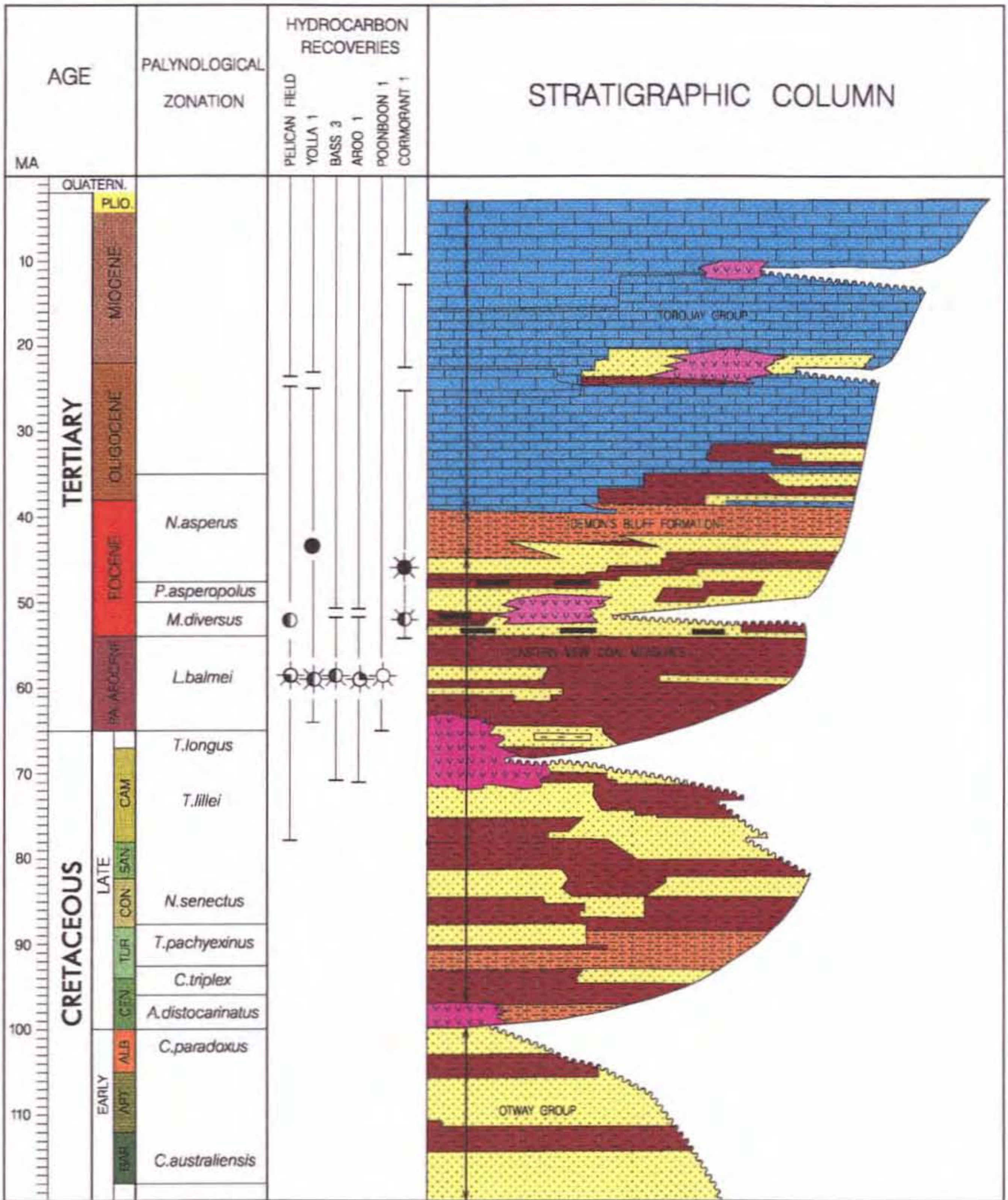
BASS BASIN - TASMANIA
STRATIGRAPHIC COLUMN



LEGEND

- ● OIL FLOW
- ⊖ OIL RECOVERY
- ◔ OIL TRACE
- GAS FLOW
- GAS RECOVERY
- GAS TRACE
- ◐ ASSOCIATED CONDENSATE
- TRACE CONDENSATE

5 cm

No: 10816.1195 Fig 2.1

2.2 Interpretation Method

The seismic character below the robust top EVCM marker is monotonous and at times poorly correlatable. This is particularly the case in the highly faulted Pelican Trough. No significant events correspond with any of the relevant palynological zones, hence several events were used in an effort to constrain the interpretation to be more robust and geologically reasonable. Due to the highly variable character chasing individual events was fraught with pitfalls and was often misleading. The method chosen proved to be very time consuming and it was not possible to resolve some problems in the southern-most area in the allowed timeframe. This area, however, is outside the zone of interest and may need to be re-examined at a later date. Most of these interpretation dilemmas could be resolved with better seismic coverage.

In the areas where well control is reasonable it became obvious early in the interpretation that the palynological zonation is at times inconsistent, and often allows latitude as far as picking "time lines" between wells is concerned. For this reason horizon terminology should be considered generalised, each name reflecting an arbitrary allocation of the top within a zone of it's possible location.

The data was interpreted on Geoquest software installed on a Sun Sparc 2 platform, which was upgraded to a Sparc 5 late in the interpretation.

The Rocky Cape data and the reprocessed lines contribute to some 4800km of migrated seismic data which have been interpreted in the T/25P region. Only the portion of this data particularly associated with the new data will be presented in this report. The interpreted horizons were loaded into the Sattlegger mapping system for analysis and presentation. Sattlegger grids and faults were loaded into the Petrosys package to produce high quality maps for this report.

2.3 Data Quality

Much reprocessing effort went into making available migrated stacks for most lines within the permit. Only post 1969 data was considered viable for workstation use. A few lines in this category proved elusive and it may be necessary to scan these in the future.

The 1994 Rocky Cape data is of generally good quality, however the restriction to short line lengths has degraded the percentage of well migrated data on these lines. The slightly "wormy" nature of the seismic character reflects the poor signal to noise ratio and continuity of the deeper EVCM data but may be a manifestation of a slightly too aggressive F-K filter. The 1992 Hunter Seismic Survey lines are similar in character to the Rocky Cape data but were recorded as longer lines in general and consequently were better migrated.

The Amoco 1984 & 1985 surveys set up a regional framework for interpretation within T/25P. The lines were shot with a 2 - 3km dip line and 4 -6km strike line spacing and line lengths up to 55km. This extensive grid is of fair to good quality with reasonably consistent character. There is probably a 90° phase difference between the 1984 & 1995 data and this leads to a small bulk time shift from one vintage to the other. The HB80A (1980) data from the Pipipa area had been fully reprocessed for the workstation and is of good quality.

Amoco was approached for any digital data from the T/25P area and were forthcoming with several stacks from 1970, 1972 and 1977. This data was disappointing with the quality well down from the later vintages. Some of the data was corrupted with low frequency bands of noise which may have been a transcription or transportation problem. These vintages were migrated with fair to poor results. Band pass filtering helped to improve the signal to noise ratio in most instances.

In addition some of the lines, which were not available as stacks, were scanned or fully reprocessed. The fully reprocessed lines were of reasonable quality given the limitation of the early acquisition parameters and systems and were much better than the retrieved Amoco stacks. The quality of scanned data obviously is highly dependent on the seismic section quality and format. Full waveform scanning was used for TQH5-78 and the results were fair, with the data ending up with quite different character to similar vintage "fully digital" lines. There was an obvious deficiency in the dynamic range of the scanned line. Due to their presentation limitations, "regular" scanning was used for early vintage lines. The results were acceptable given the reconnaissance emphasis on the chosen lines.

2.4 Mistie Analysis and Distribution

The Sattlegger system was used for mistie analysis and the subsequent mapping. Misties within vintages were generally small as would be expected with marine data, although some variability is present in the early vintage data. Additionally fault interpretation may indicate that some of these early lines are out of position, perhaps in a variable way. Following the loading of all lines into Geoquest their time shift compared to the regional TQH5 grid was compensated by a vintage consistent (generally) bulk shift. The Rocky Cape data was 30ms high (shallow) compared to the regional grid which may be due to a different reference being used but this has not been resolved yet. The intersections of all vintages were checked for misties in Sattlegger and bulk shift corrections were then computed and applied. These were generally quite small given the initial vintage adjustments and reflect the slight frequency and phase differences between surveys. Local residual misties due to high dips or faults were small and are reasonably compensated for in the gridding process.

3. RESULTS

3.1 Introduction

The Rocky Cape Seismic Survey and reprocessing spawned four mapping projects within T/25P which can be categorised (in order of completion) : Clarke Lead; Pelican Trough; Southwest Ramp Province and Veridian Lead. Various horizons were mapped for each area depending on the objectives and ease of interpretation. These are listed below:

Clarke Lead :

1. Top EVCM
2. Top Palaeocene
3. Top Cretaceous

Pelican Trough :

1. Top EVCM
2. Top Upper M.diversus
3. Top Middle M.diversus
4. Top Lower M.diversus
5. Top Palaeocene
6. The above horizons were also presented as prospect maps namely Warrego-Tourville-Actaeon, Pelican Field and Eddystone-Grindstone.

		7.	Interval maps were also produced between the above horizons
Southwest Ramp Province	:	1.	Top EVCM
		2.	Basal Lower N.asperus unconformity
		3.	Top Palaeocene
Veridian Lead	:	1.	Top Palaeocene

Time structure maps were produced for these levels, however a Top Middle M.diversus depth map was produced for Pelican Field and Eddystone, Grindstone, Tourville and Actaeon Prospects which was derived using a generalised time-depth curve taken from checkshot data within the Pelican Field.

Most of the conclusions presented in the July 1994 Permit Assessment Report have been validated by the extra data acquisition and subsequent interpretation. Better grid spacing allowed more robust mapping in several areas. This lead to: closure being mapped at the Pelican Field reservoir level for the first time; the Southwest Ramp Province being better understood; the discovery of significant updip potential from Poonboon 1 at Veridian Lead; and improved mapping of the leads Clarke, Tourville, Actaeon, Warrego, Eddystone and Grindstone. The prospects and leads will be discussed in detail later.

3.2 Regional Structure

3.2.1 Clarke Area

The Clarke Lead is located in northern T/25P and straddles the T/18P permit boundary. It falls where the northern end of the NW-SE trending ridge, which separates the Pelican Trough from the Yolla Trough, meets the basin edge ramp.

The Lead was thought to be a massive low-side fault closure against a major bounding fault prior to the Rocky Cape Survey. Unfortunately the greater infill coverage provided by the Rocky Cape data showed that the fault style is more likely to be a complicated arrangement of en echelon faults and relay ramps (Figures 3.1 to 3.4). Very little of the original closure remains after this interpretation however potential exists for stratigraphic traps in the Clarke area, particularly in the deeper section which onlaps the basement ramp.

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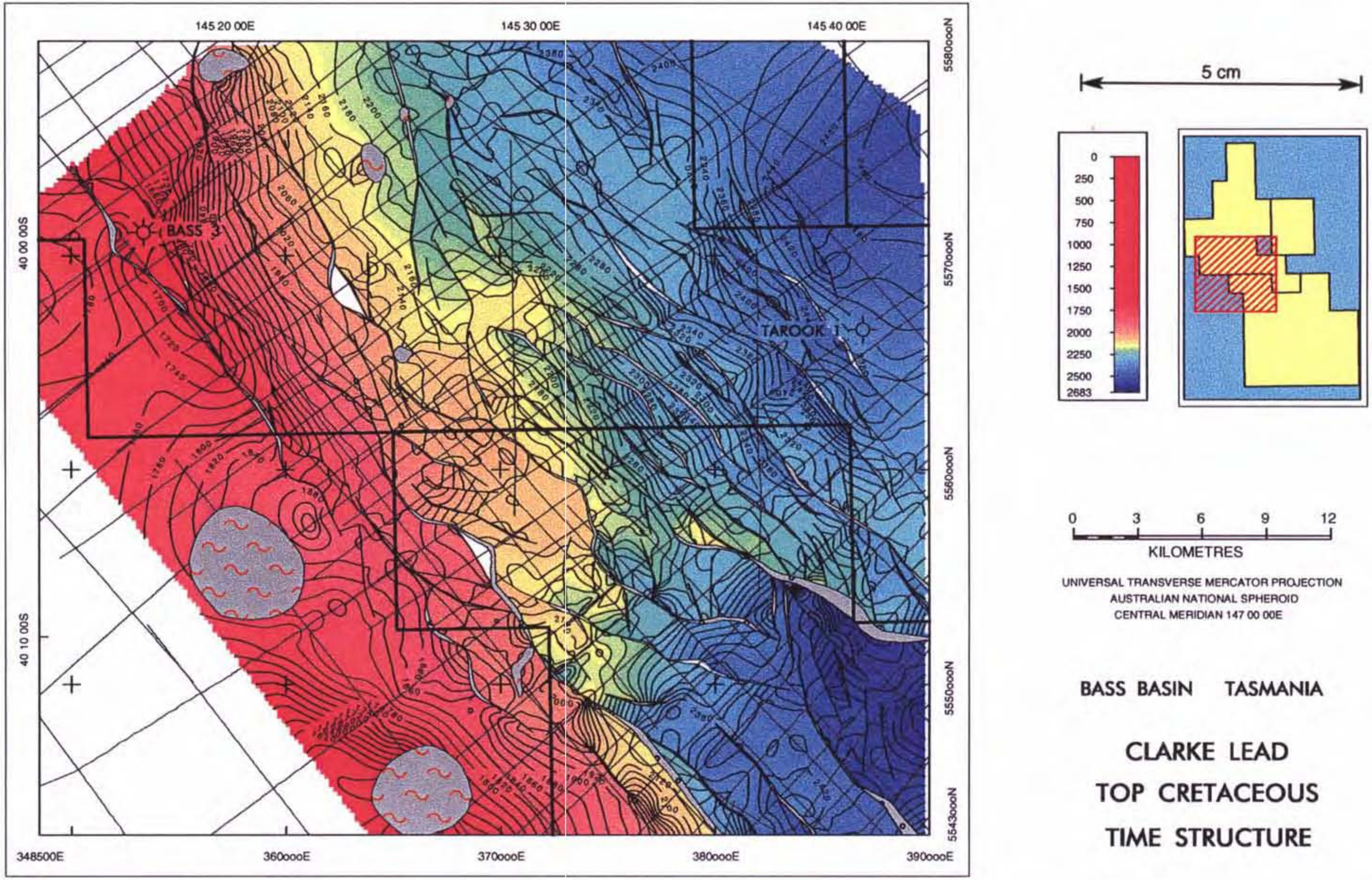

BASS BASIN TASMANIA

CLARKE LEAD
TOP CRETACEOUS
TIME STRUCTURE

13657.1195 Fig. 3.1

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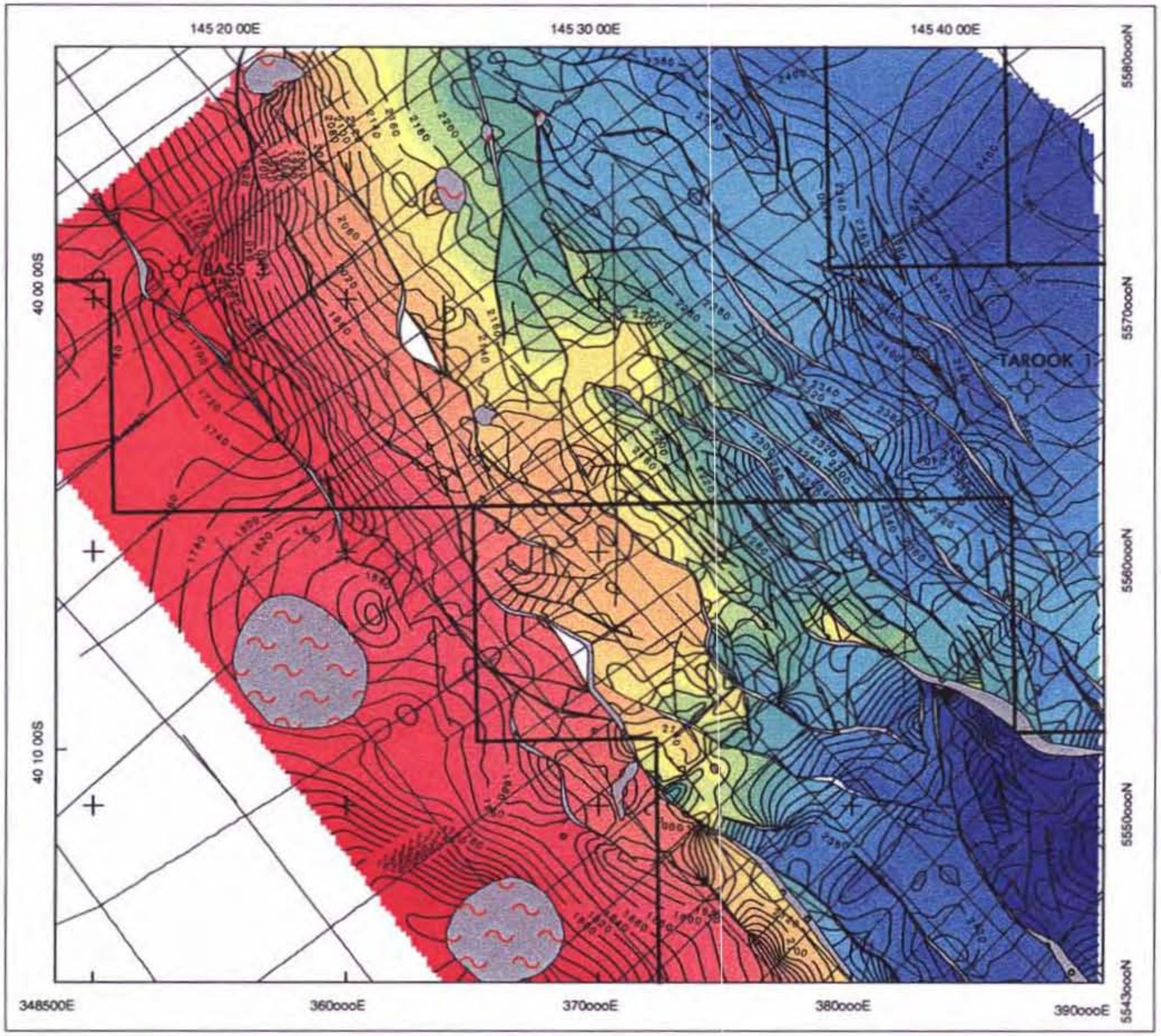

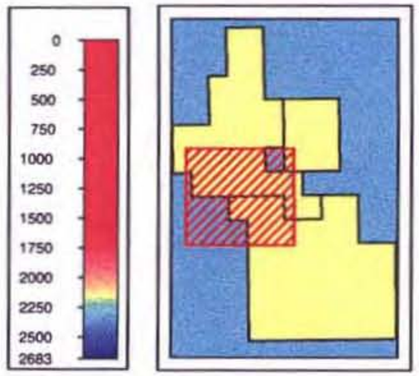

5 cm

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KILOMETRES

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AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BASS BASIN TASMANIA

CLARKE LEAD
TOP PALAEOCENE
TIME STRUCTURE

13658.1195 Fig. 3.2

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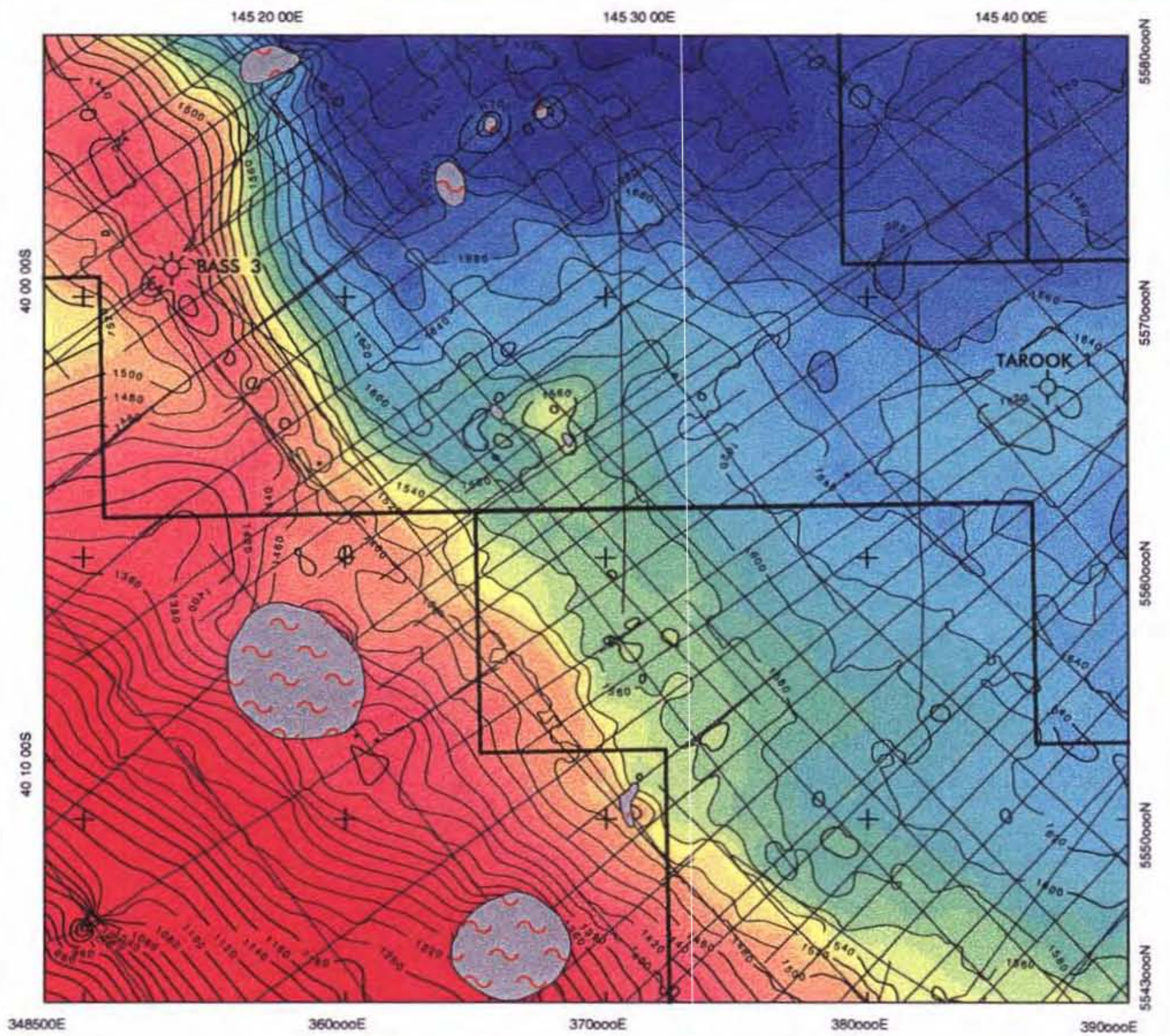

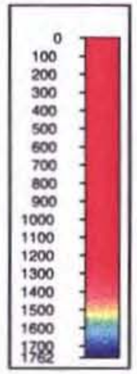

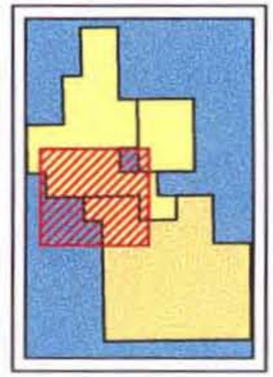

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KILOMETRES

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BASS BASIN TASMANIA

CLARKE LEAD
TOP EVCM
TIME STRUCTURE

13659.1195 Fig. 3.3

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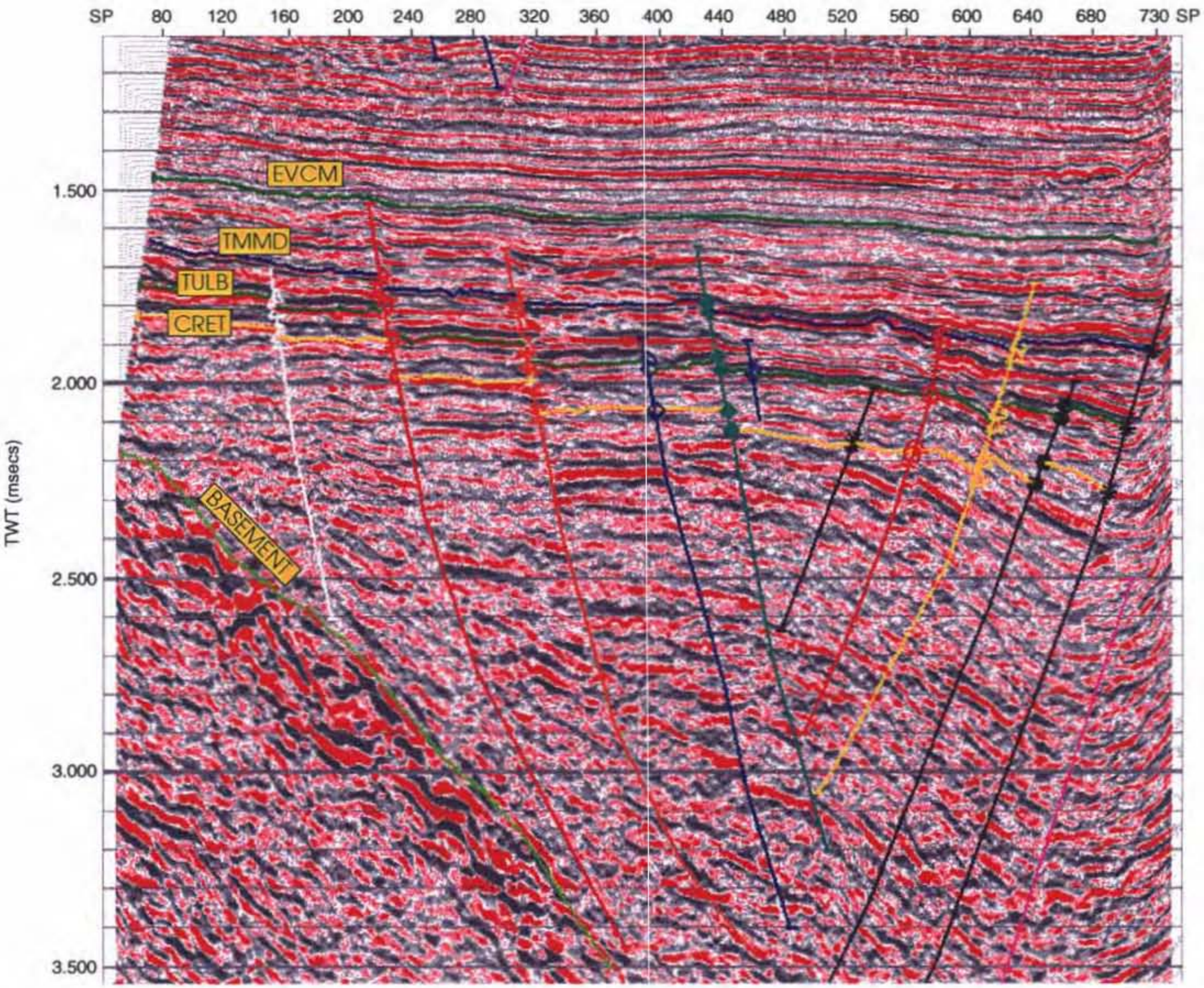

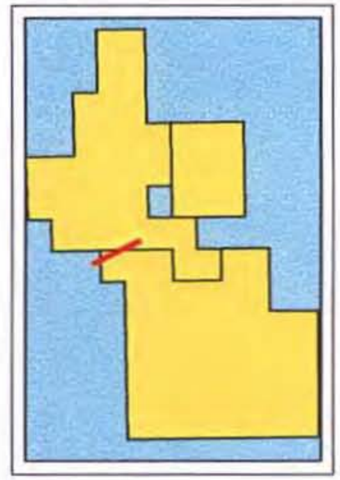

T/25P BASS BASIN TASMANIA

CLARKE LEAD

DIP LINE (SB94A–129)

5 cm

No. 13660.1295 Fig. 3.4

3.2.2 Pelican Trough

The mapped area comprises most of the eastern portion of T/25P and covers a large portion of the central Pelican Trough. The trough is of Early Cretaceous to Eocene age with basement probably consisting of Cambrian metasediments. Data quality below the Eocene strata are poor but an approximate basement pick is possible and has been presented in the July 1994 Permit Assessment Report. The Pelican Field, which sits on the floor of the Pelican Trough, is located centrally in the study area and is now seen to be, essentially, a dome cut by NW-SE faulting (Figure 3.5). The structure sits on the culmination of a monoclinal feature which is perpendicular to the trough grain. The monocline is cut by Palaeocene to Upper M.diversus aged faulting and it is the combination of these two grains that sets up the closure on structures such as Tourville, Eddystone, Grindstone and the Pelican Field. The monocline is an early feature of the Pelican Trough manifesting itself as a Lower M.diversus thin (Figure 3.6). Interestingly all the Pelican wells are located on the western margin of this thin. The terrace which sets up the Tourville and Actaeon highs was also active during Lower M.diversus deposition and is represented by a thin on the interval map. Deep troughs were present after the Palaeocene, are located near Narimba 1 and the other southeast of the central monocline. Another monocline trend may be present in the eastern part of the Pelican Trough but interpretation difficulties in this sparsely covered and poor data quality area prevent any conclusions at this stage. Broad trough areas were present southwest of the Pelican Trough deeps and it is possible they may have focussed tributary channels at Lower M.diversus time feeding the probable Pelican Trough main stream axis which is likely to have been restricted to immediately east of the Eddystone Fault.

The Top Lower M.diversus time structure map (Figure 3.7) shows most features of the Palaeocene map but with less relief, as would be expected. The Middle to Lower M.diversus time interval map (Figure 3.8) reflects this, however the erosional event at the top of the interval will contribute to the map's appearance as well. The Pelican Trough channel axis was much broader during Middle M.diversus time extending from the foot of the Grindstone Fault to the Tourville Fault. Once again the Tourville and Actaeon terrace would have been an interfluve environment although possible receiving alluvial fan deposits from the pronounced Pelican 3 high. Encouragingly the channel focus would have been over the prospective Eddystone structure in Middle M.diversus time giving this area a better chance of stacked cleaner sandstone deposits. The Middle M.diversus time structure map (Figure 3.9) shows lower structural maturity again with further reduction in relief. The Upper to Middle M.diversus time interval (Figure 3.10) shows a broad basin west of the Pelican 3 high and an indication that a slower subsidence post-rift basin phase had commenced at this time (Figure 3.11). The slow subsidence rate lead to broadening of the stream belt and a much higher density of channel deposits being preserved at Upper M.diversus time. Slow subsidence was also conducive to coal formation and hence a greater number of coal seams are observed on the logs. Some growth faulting was still present at the top of the Middle M.diversus (Figure 3.12) although some faults would have been mildly reactivated during a compressional event which lead to basin edge uplift and subcrop at basal N.asperus time. This event is manifested by a slight enhancement of structural relief on several culminations. Grindstone, Eddystone, Tourville, Actaeon and Warrego have been enhanced in this way which can be most clearly seen as thinning of the Top EVCM to Upper M.diversus time interval (Figure 3.13).

The Pelican Trough has no expression at the Top EVCM (Figure 3.14) which owes its structural relief to Early and Late Miocene events. The first of these events was associated with volcanism and emplacement of intrusives. The Flinders and Hunter Top EVCM culminations result from sill emplacement and the associated section thickening. The Early Miocene flexing has enhanced the Tourville structure being the only other feature with closure at the Top EVCM. The Early Miocene also corresponds to the likely time of hydrocarbon migration so it is useful to datum to a reflector corresponding to strata deposited just prior to this time in order to identify palaeomigration pathways and palaeostructures in which to trap moving hydrocarbons. Datuming to the Top EVCM achieves this result and the prospective levels are presented (Figures 3.15, 3.16 and 3.17). All the identified prospects are seen to have palaeorelief and are well placed to trap laterally migrating hydrocarbons. The faulting which sets up the Pelican Trough must also allow vertical migration, given the accumulation in Pelican Field. Prospective structures are well placed to capture these hydrocarbons given appropriate cross faults or fault plane seals (a risk not yet understood in the basin).

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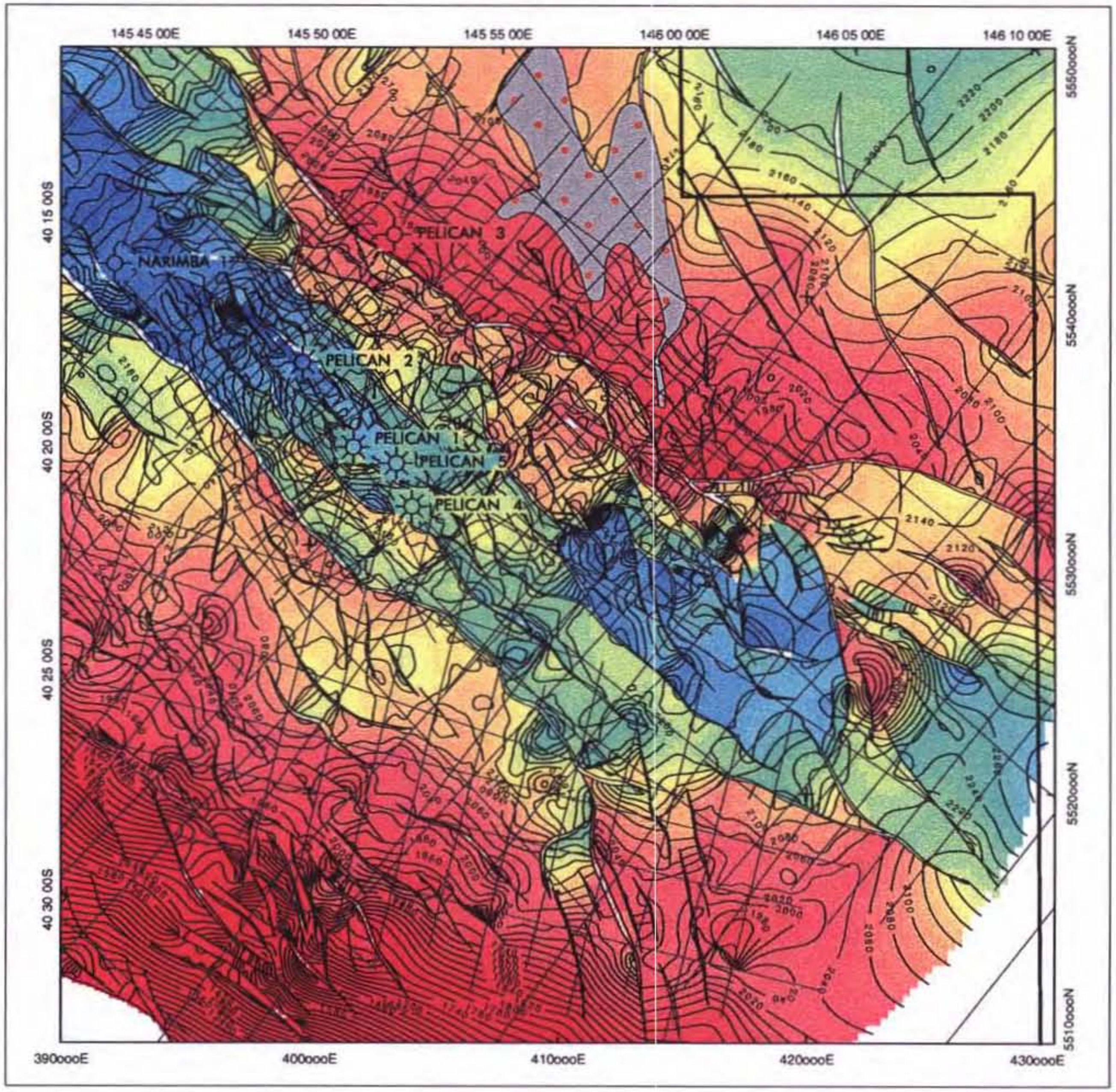
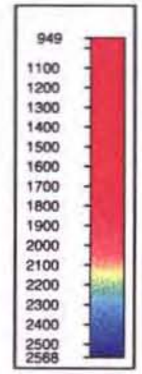
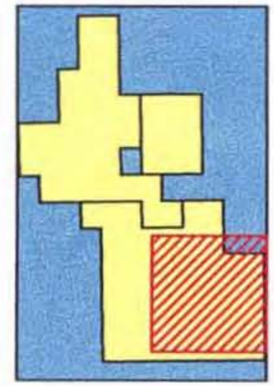


BORAL ENERGY





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KILOMETRES

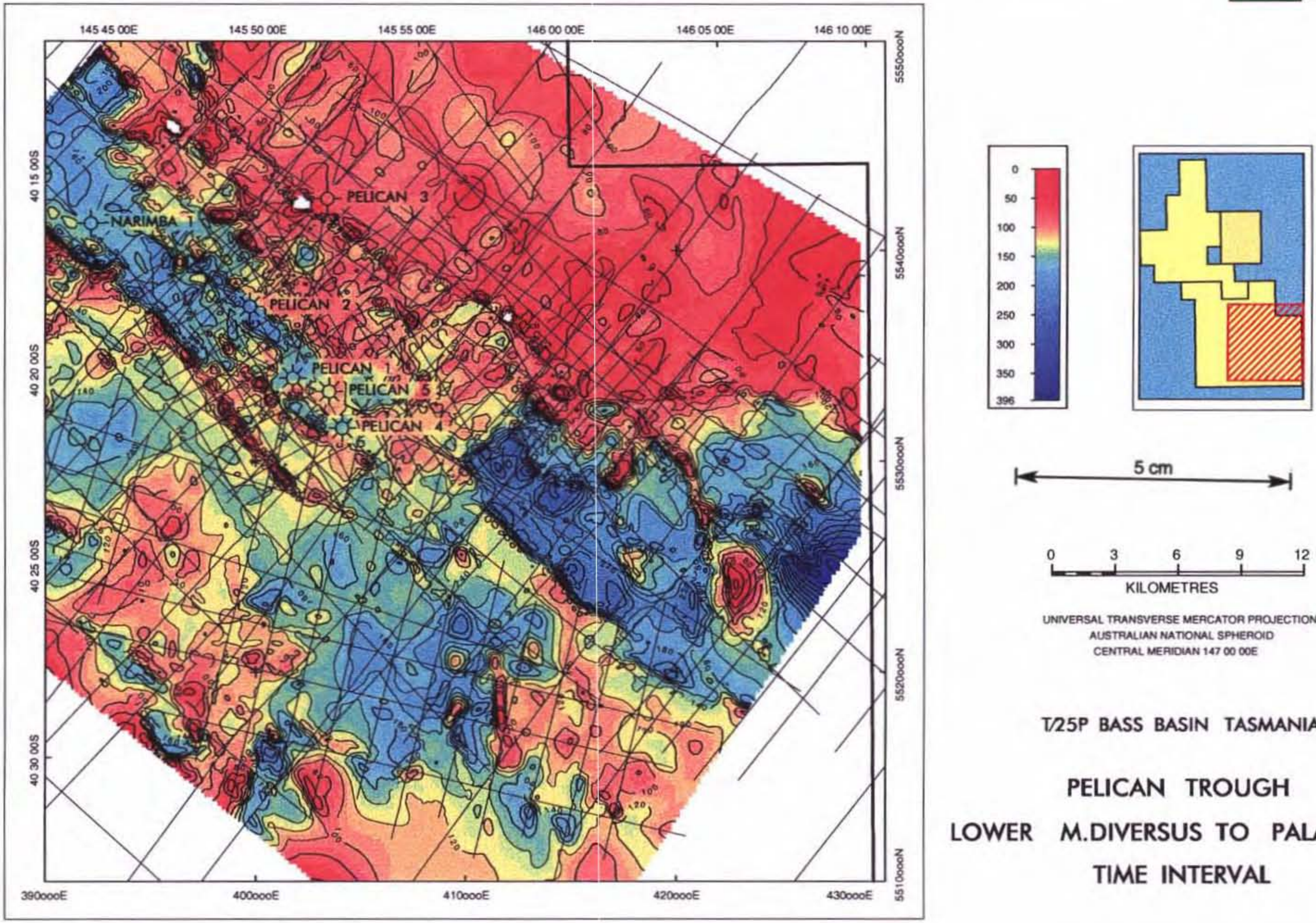
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BASS BASIN TASMANIA

PELICAN TROUGH
TOP PALAEOCENE
TIME STRUCTURE

13661.1195 Fig. 3.5

510026



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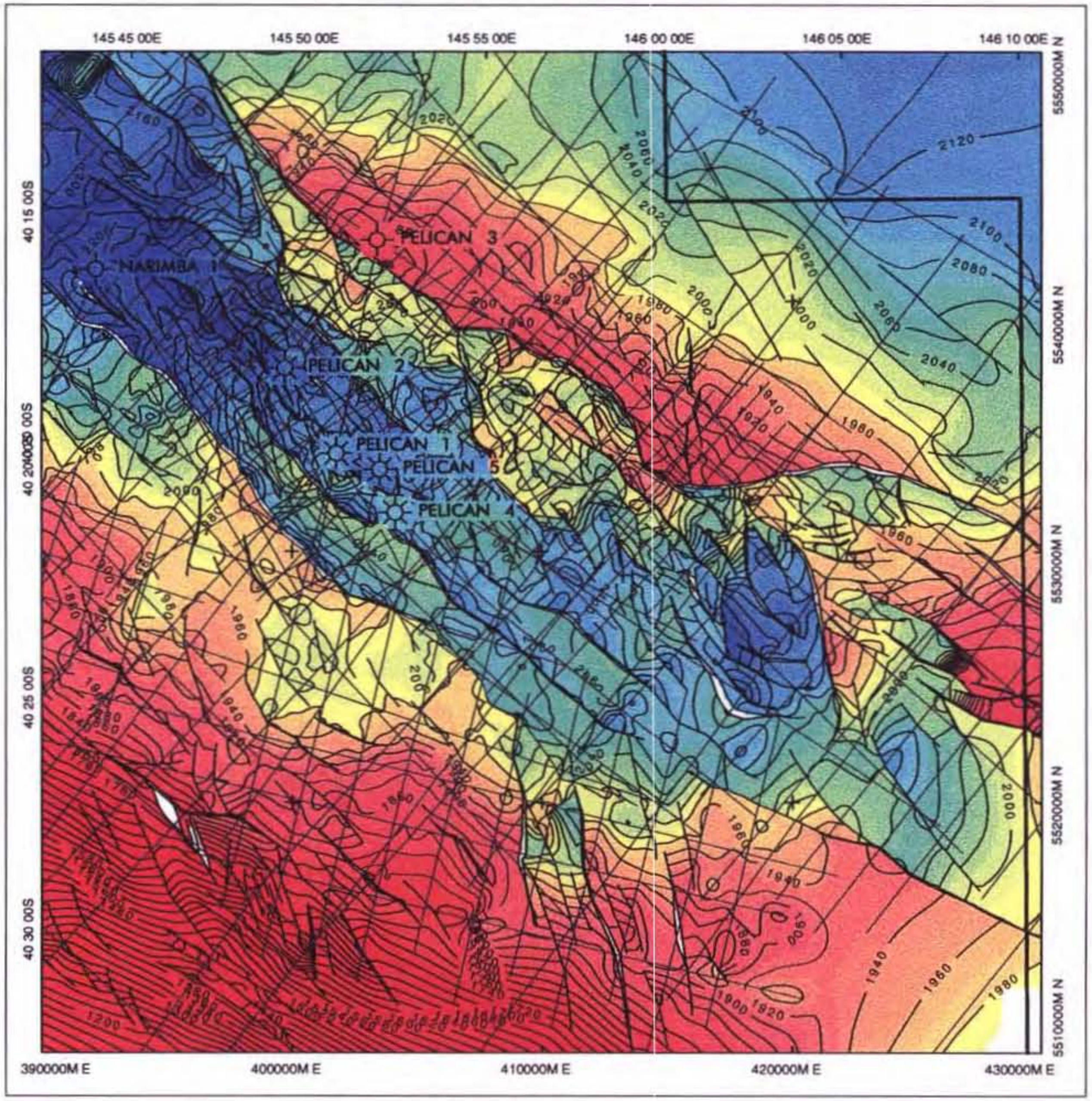
CENTRAL MERIDIAN 147 00 00E

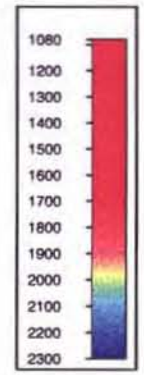
T/25P BASS BASIN TASMANIA

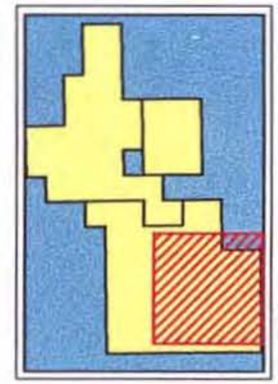
PELICAN TROUGH
LOWER M.DIVERSUS TO PALAEOCENE
TIME INTERVAL

13662.1195 Fig. 3.6

510027







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KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

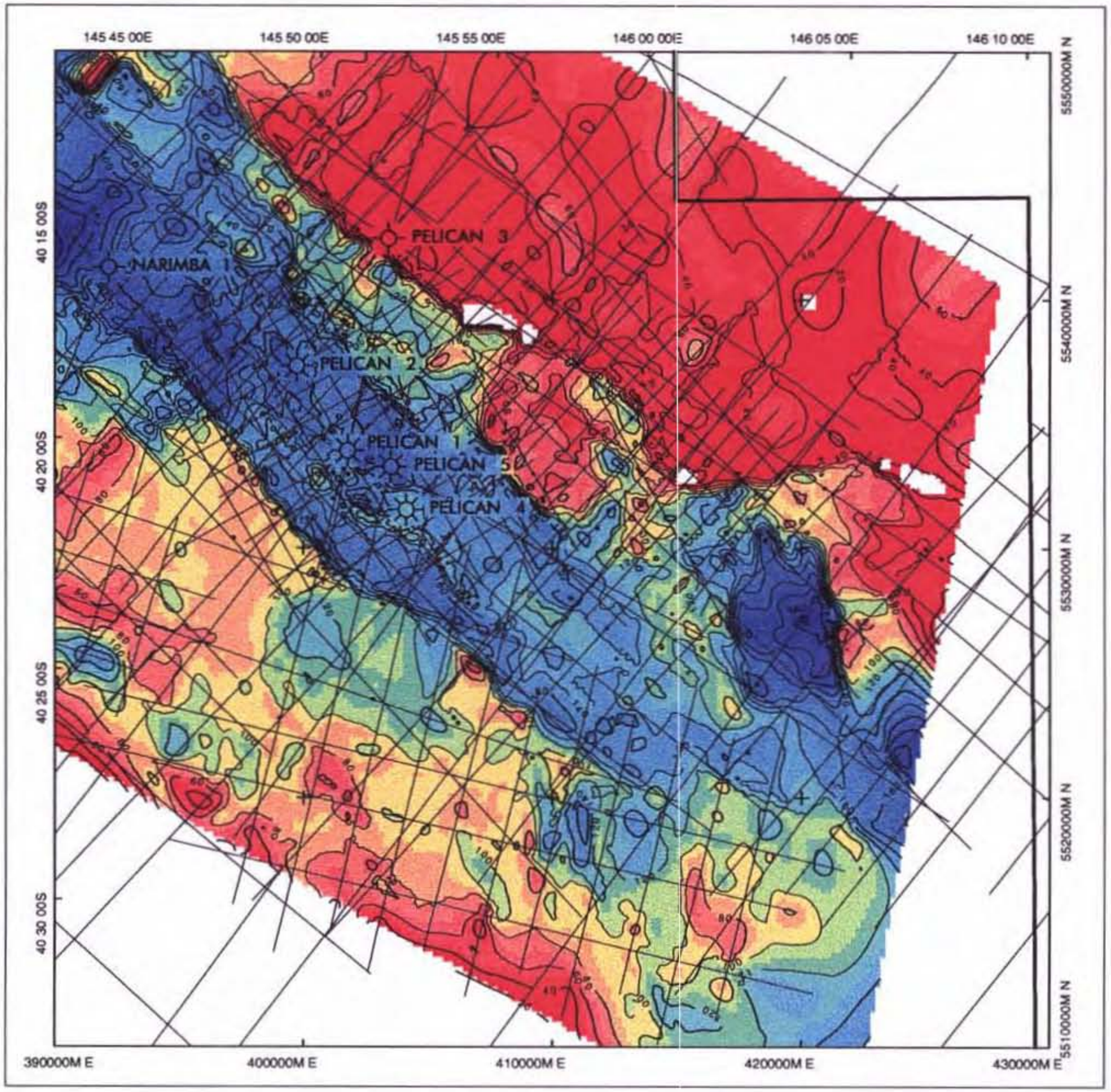
BORAL ENERGY

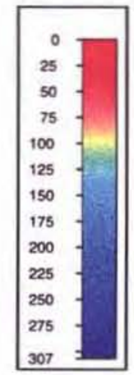
T/25P BASS BASIN TASMANIA

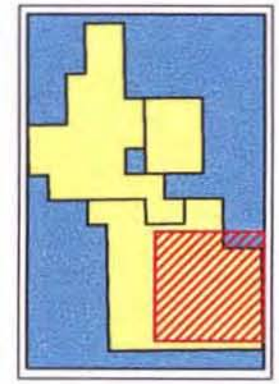
PELICAN TROUGH
TOP LOWER M.DIVERSUS
TIME STRUCTURE

13663.1195 Fig. 3.7

BORAL ENERGY







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0 3 6 9 12
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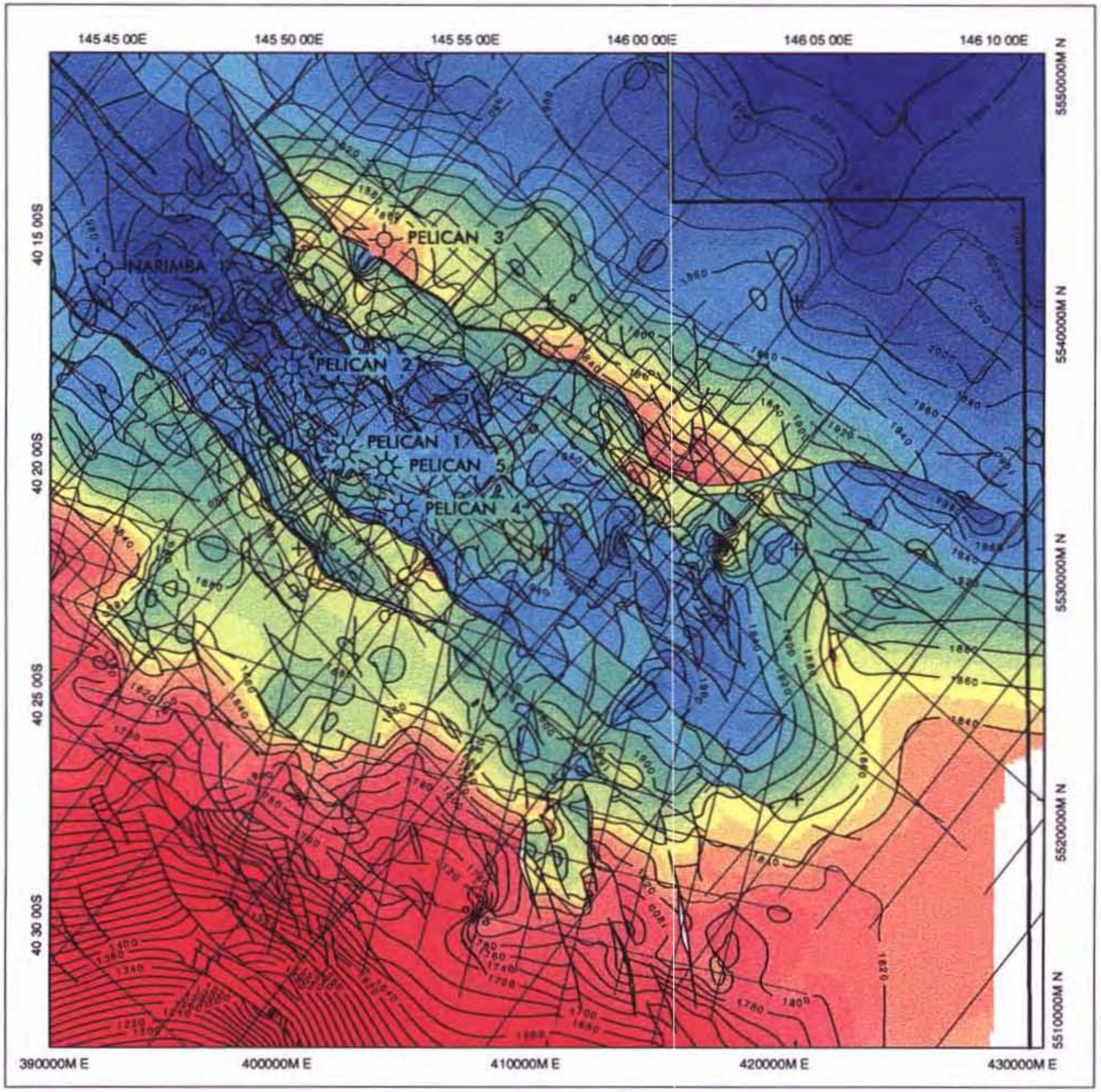
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

PELICAN TROUGH
MIDDLE TO LOWER M.DIVERSUS
TIME INTERVAL

13664.1195 Fig. 3.8

510029



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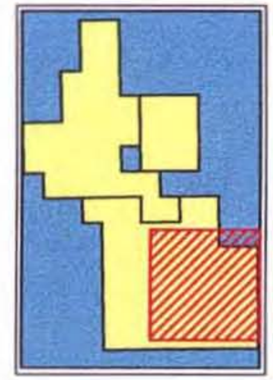

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KILOMETRES

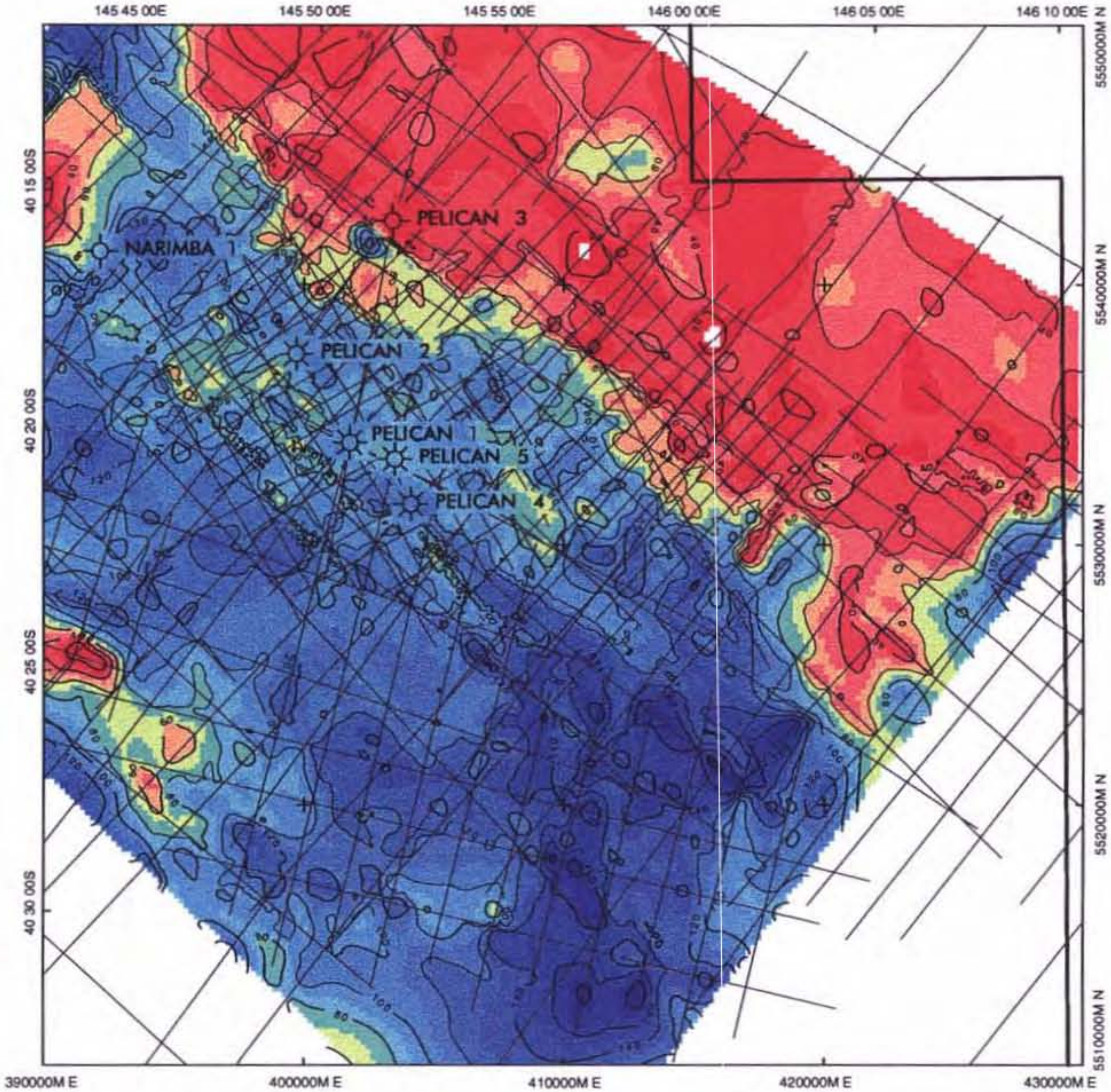
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

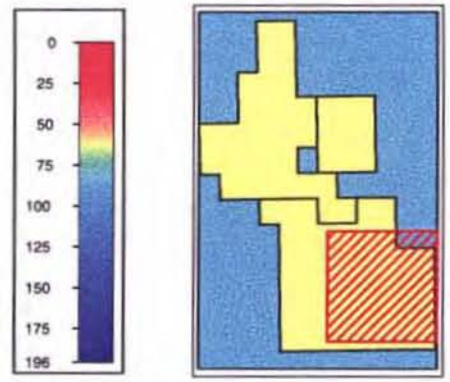
T/25P BASS BASIN TASMANIA

PELICAN TROUGH
TOP TO MIDDLE M.DIVERSUS
TIME STRUCTURE

13665.1195 Fig. 3.9

510030





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KILOMETRES

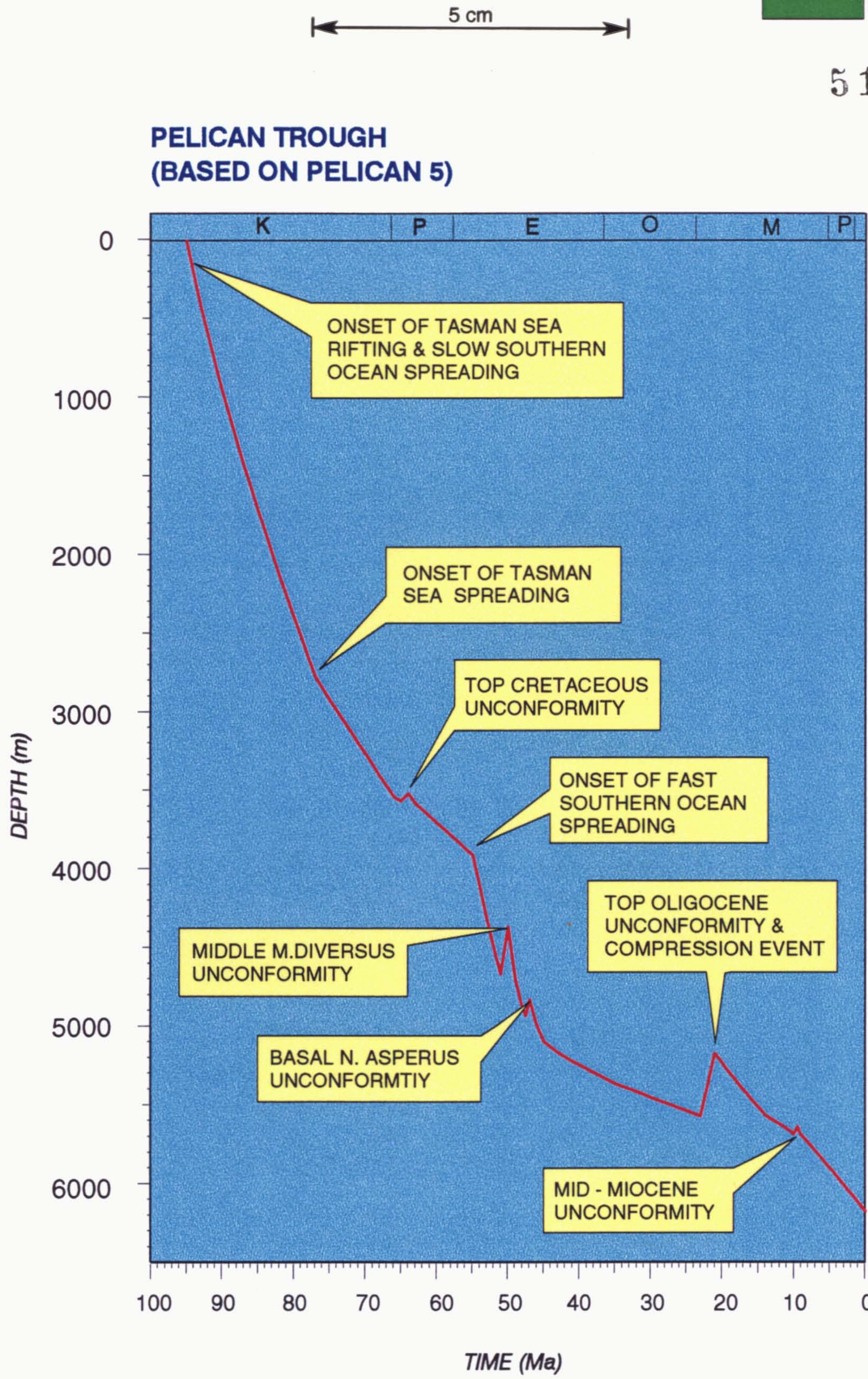
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

PELICAN TROUGH
UPPER TO MIDDLE M.DIVERSUS
TIME INTERVAL

13666.1195 Fig. 3.10

510031

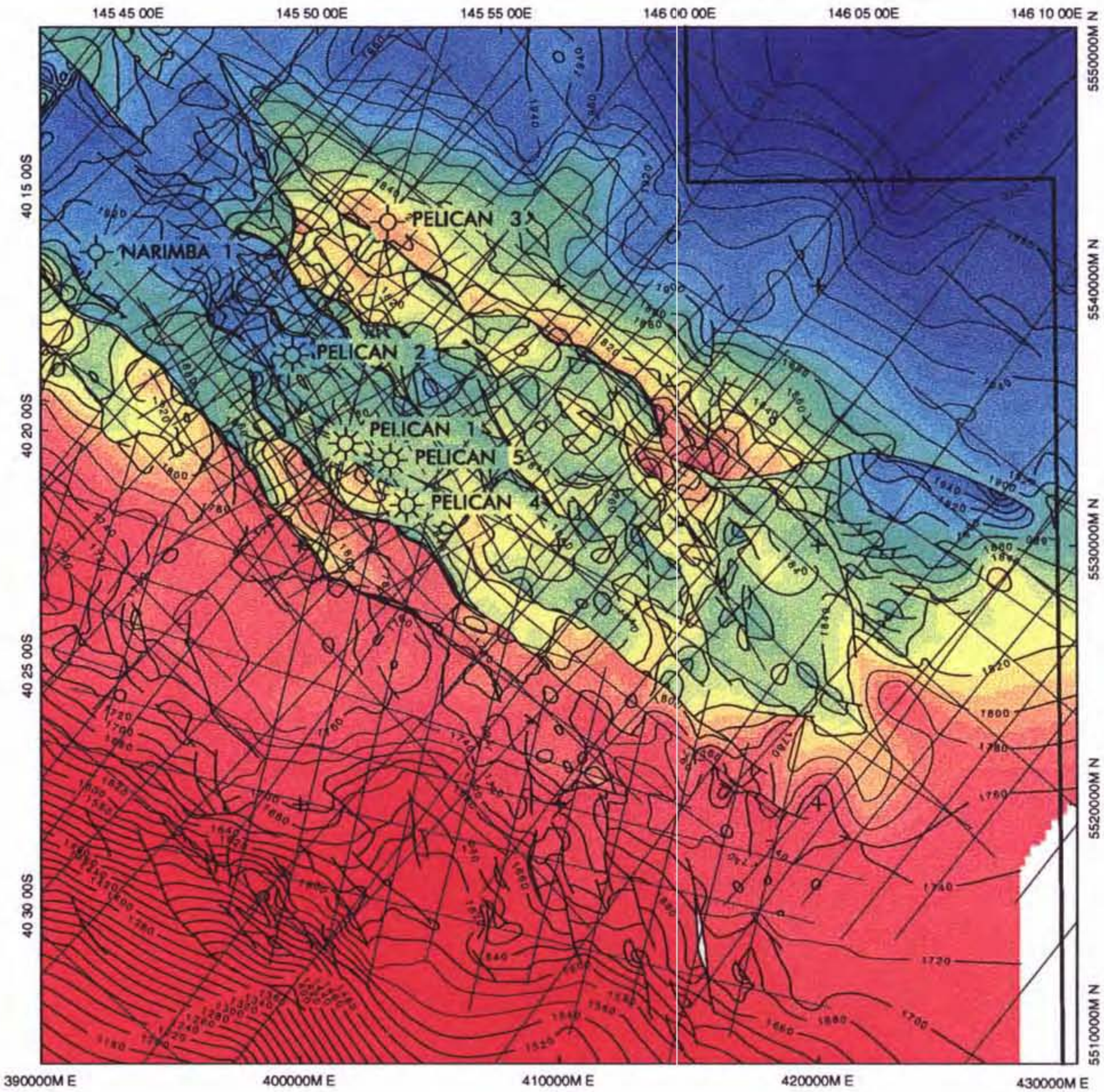


BASS BASIN
T/25P

PELICAN TROUGH SUBSIDENCE CURVE

13651.1195PRS Fig. 3.11

510032



BORAL ENERGY

5 cm

0 3 6 9 12

KILOMETRES

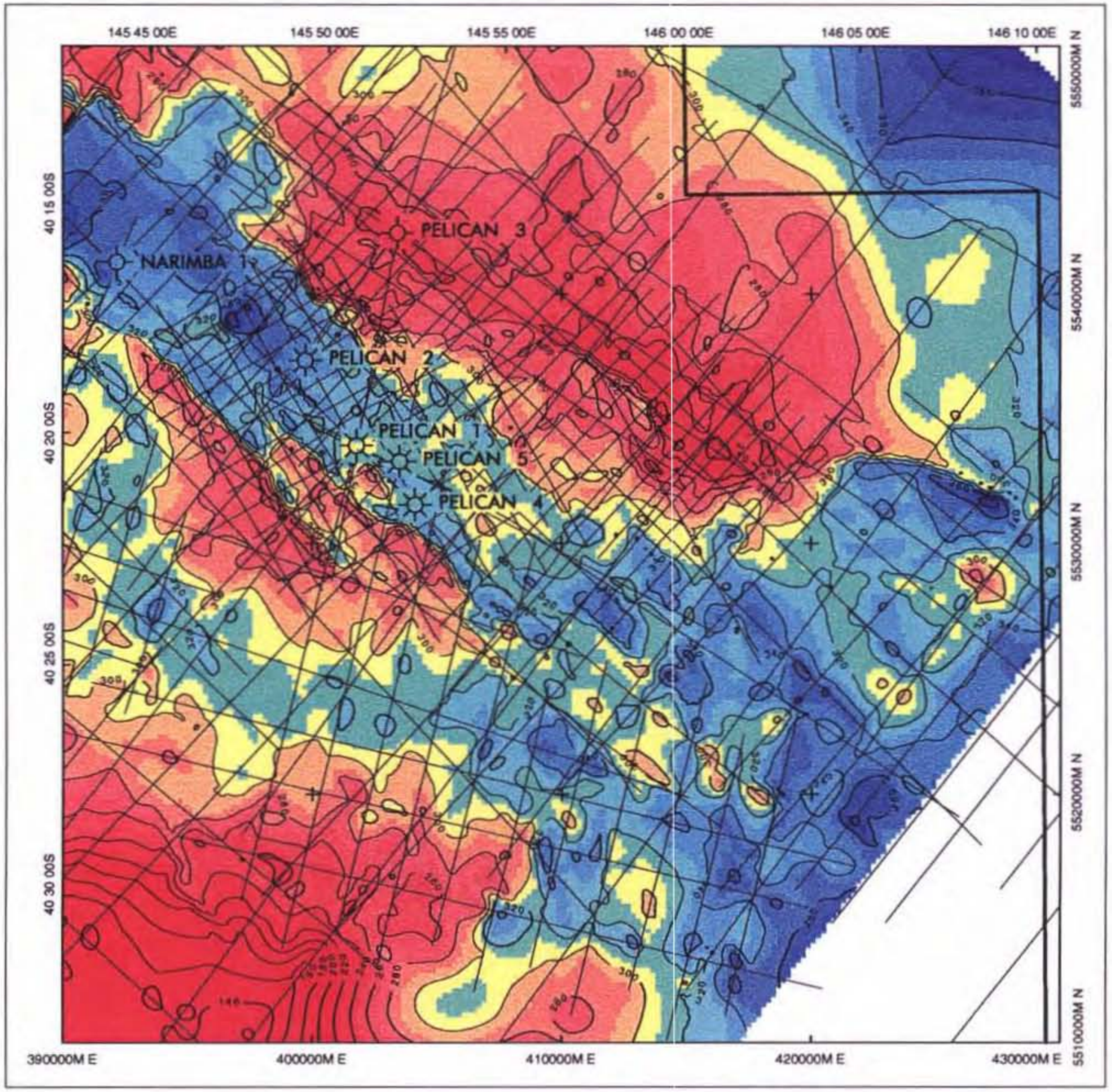
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

PELICAN TROUGH
TOP UPPER MIDDLE M.DIVERSUS
TIME STRUCTURE

13667.1195 Fig. 3.12

510033



BORAL ENERGY

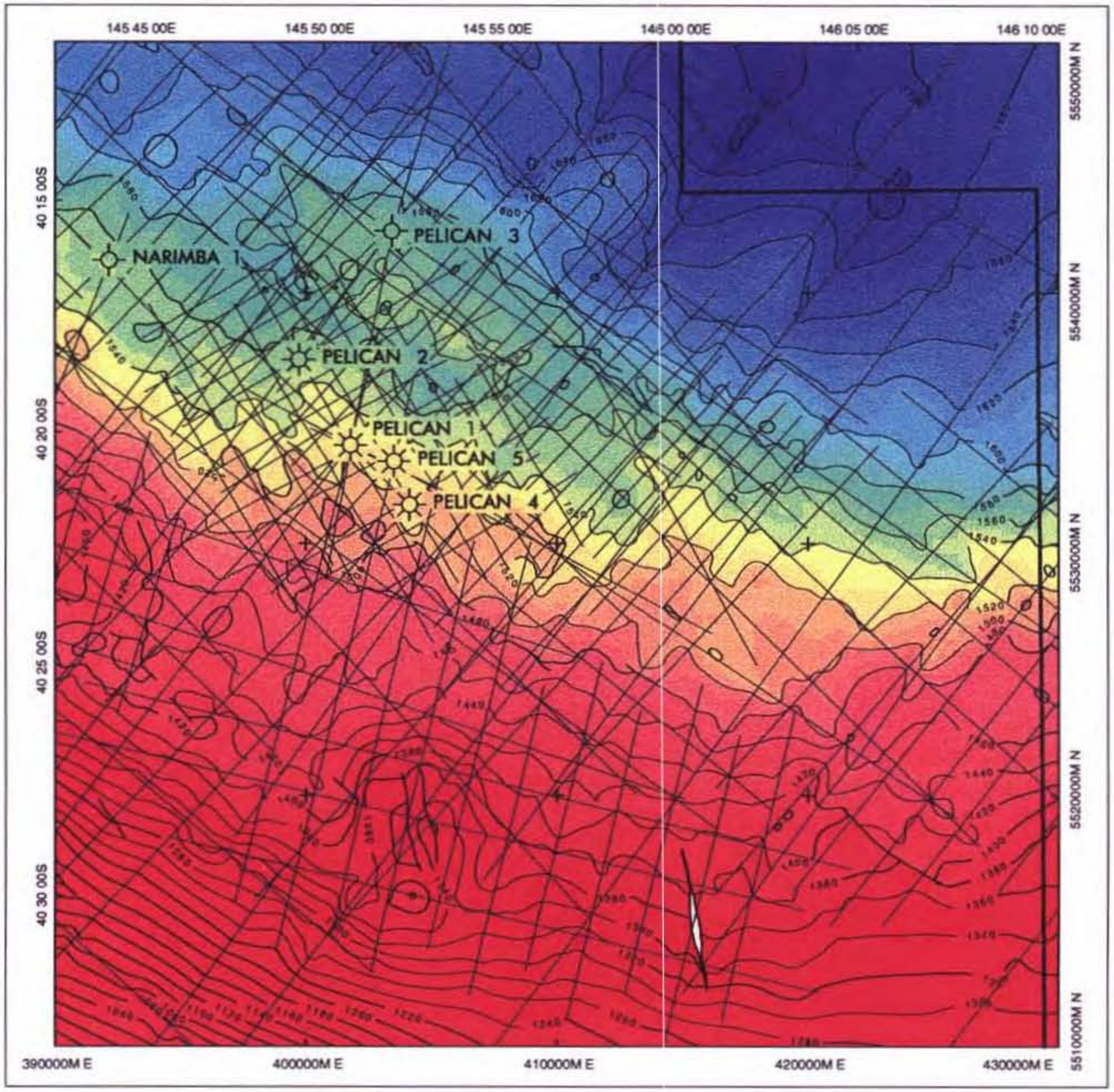
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

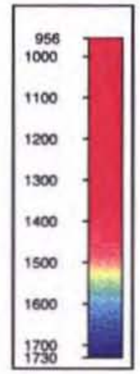
T/25P BASS BASIN TASMANIA

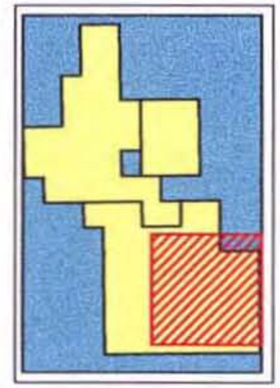
PELICAN TROUGH
TOP EVCM TO UPPER M.DIVERSUS
TIME INTERVAL

13668.1195 Fig. 3.13

510034







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0 3 6 9 12
KILOMETRES

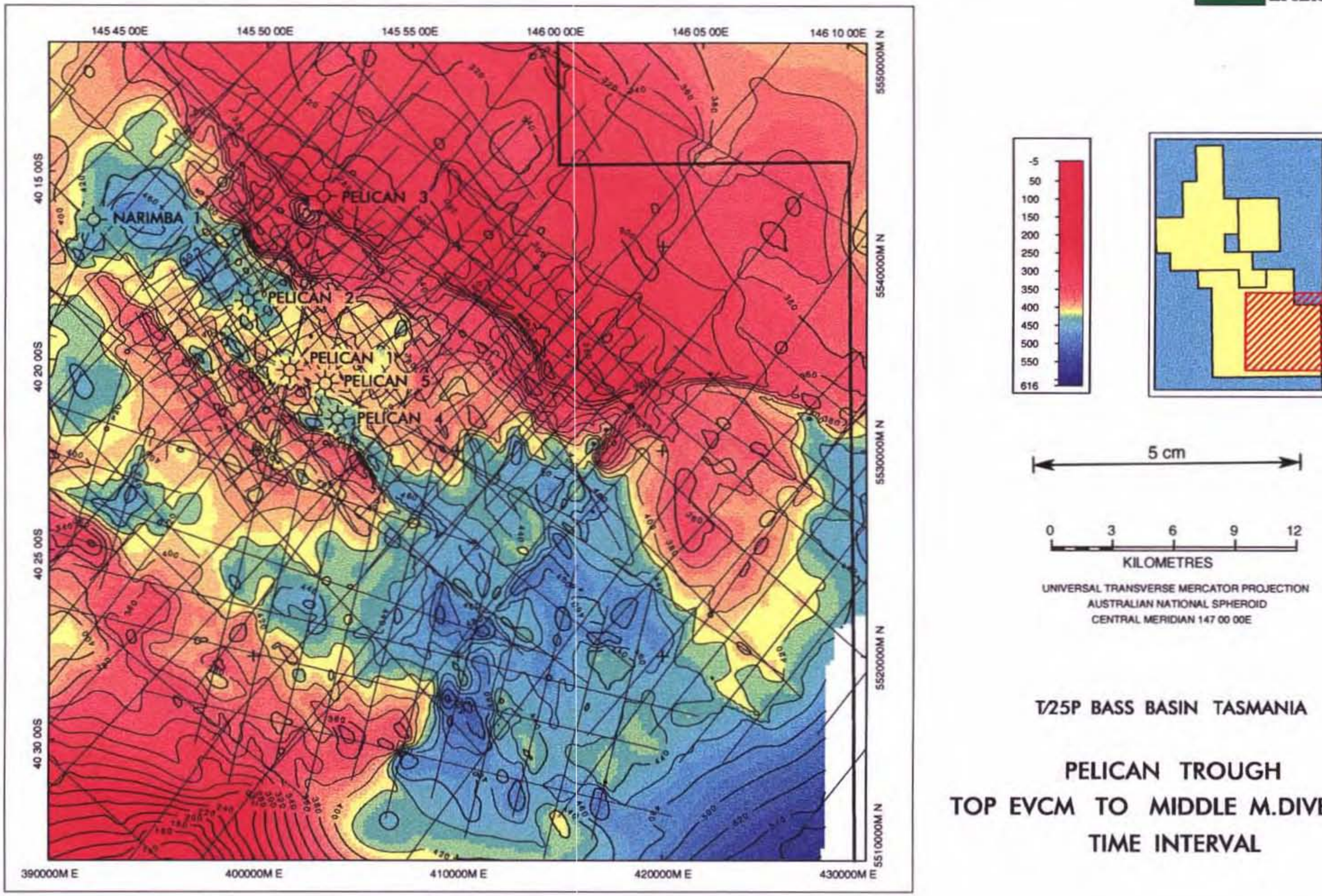
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

PELICAN TROUGH
TOP EVCM
TIME STRUCTURE

13669.1195 Fig. 3.14

510035



BORAL ENERGY

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

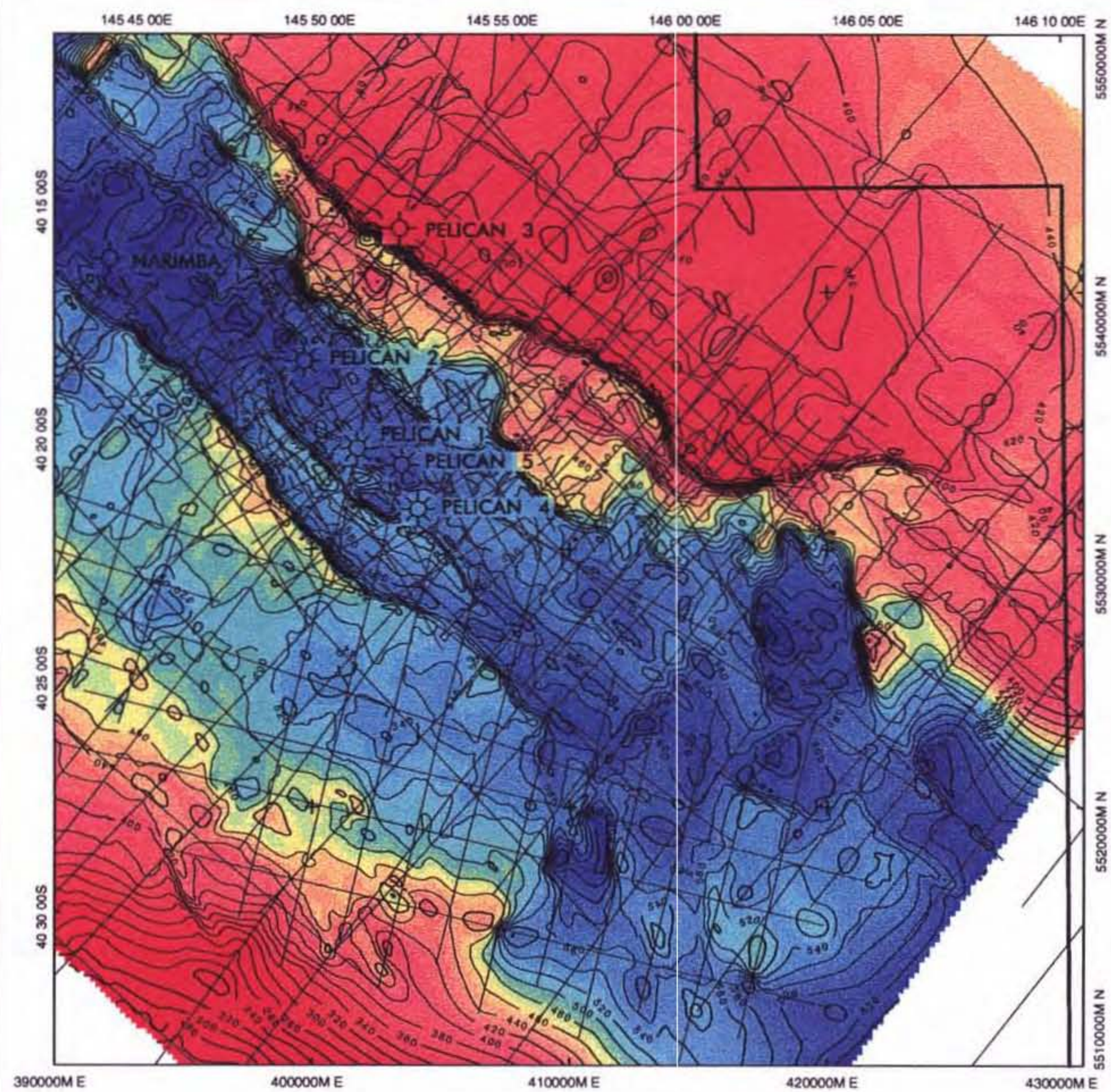
T/25P BASS BASIN TASMANIA

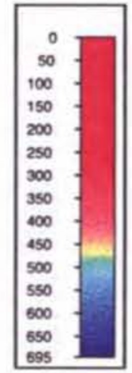
PELICAN TROUGH
TOP EVCM TO MIDDLE M.DIVERSUS
TIME INTERVAL

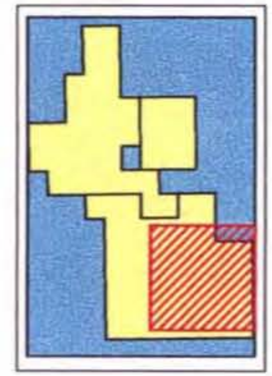
13670.1195 Fig. 3.15

510036

BORAL ENERGY







5 cm

0 3 6 9 12

KILOMETRES

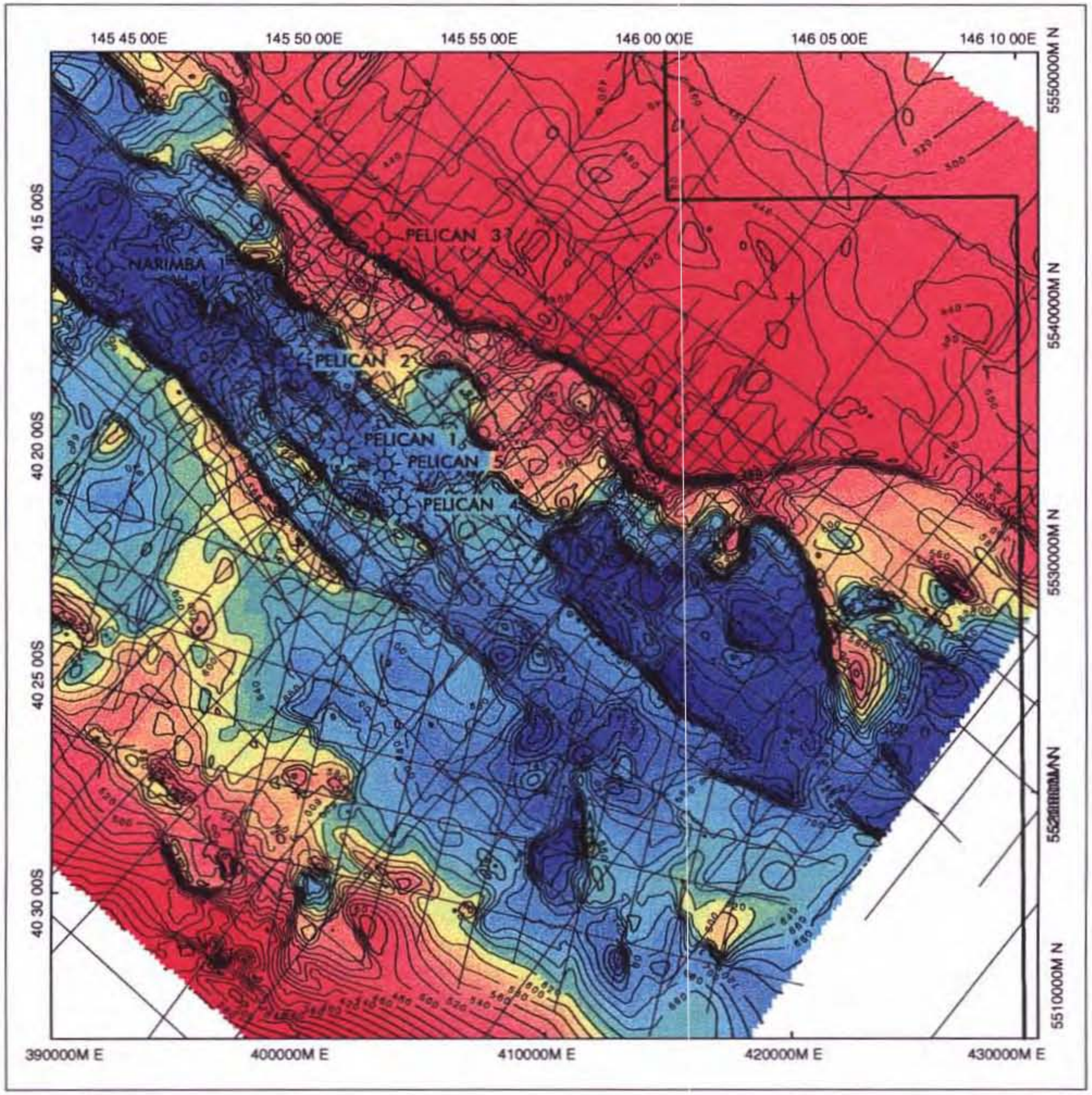
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

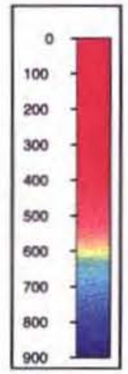
T/25P BASS BASIN TASMANIA

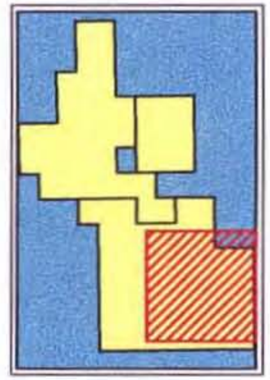
PELICAN TROUGH
TOP EVCM TO LOWER M.DIVERSUS
TIME INTERVAL

13671.1195 Fig. 3.16

510037







5 cm

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KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

PELICAN TROUGH
TOP EVCM TO PALAEOCENE
TIME INTERVAL

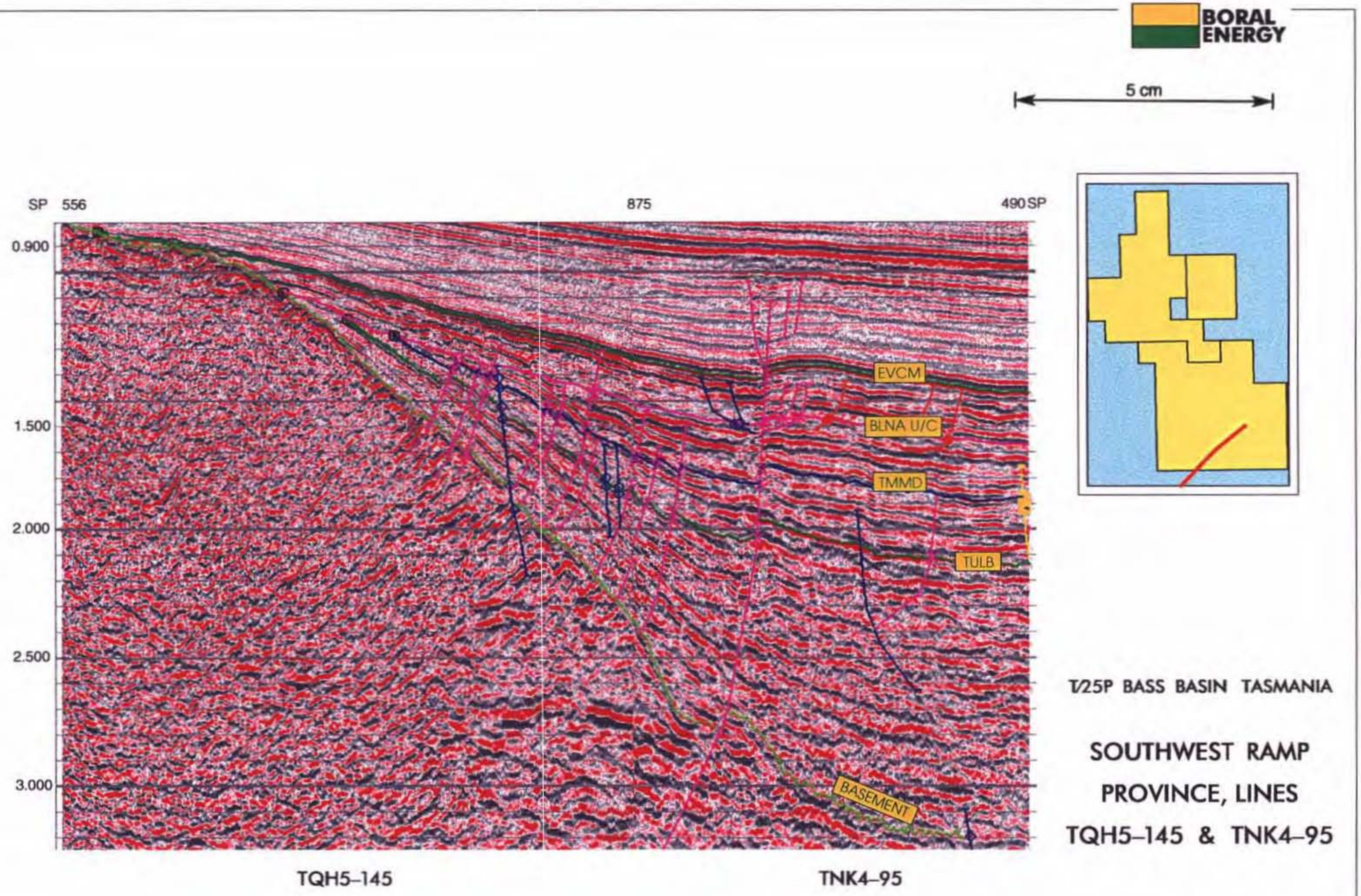
13672.1195 Fig. 3.17

3.2.3 Southwest Ramp Province

The southern edge of the Bass Basin encroaches on the southwestern portion of T/25P. The pinchout geometry is untested by drilling and poorly controlled by seismic having dip line spacing of 1.5 to 8.0 km and strike lines 4 to 8 km apart. Data quality is poor in some areas due to Miocene volcanics and interpretation is ambiguous due to the high dips and variable continuity. Basement varies in quality as a seismic event, but where present is a good aid to interpretation. Where data quality is reasonable, some dramatic and highly prospective geometries are visible (Figure 3.18). The apparent conformability of the EVCM elsewhere in the basin is misleading given the angular relationship the pre-basal N.asperus section has with the upper EVCM in this area. Clearly significant uplift occurred at the basin edge following P.asperopolus time.

Previous studies give the onset of hydrocarbon generation for the Palaeocene section as occurring at the Oligocene/Miocene boundary. For deeper source beds generation would have occurred earlier but given moderate levels of maturity even at basement in this area it is likely that the geometries present on the Southwest Ramp Province would pre-date the main phase of hydrocarbon migration. Where vertical migration into structures may pose a problem elsewhere in the basin in this area sealing units subcrop beneath the Basal Lower N.asperus unconformity possibly exposing deep conduit beds to the high quality reservoirs in the top EVCM which is top-sealed by the Demon's Bluff Formation. The high dips towards the basin edge, which often exceed 15°, must improve migration efficiency for the movement of hydrocarbons in this zone. For the source kitchen a substantial wedge of sediment is accessible by conduit beds which are focussed towards the basin edge.

510039



T/25P BASS BASIN TASMANIA

SOUTHWEST RAMP PROVINCE, LINES TQH5–145 & TNK4–95

No. 13673.1295 Fig. 3.18

The top EVCM play (Figure 3.19) is very poorly controlled in T/25P however possible four-way dip closures are present and an Upper EVCM pinchout may just fall within the permit boundary but it appears likely that this play may develop immediately south of T/25P. This lightly explored area probably represents the best opportunity to develop Top Latrobe style, Gippsland Basin plays in the Bass Basin, but needs a substantial seismic investment for the play to be progressed. The top EVCM closures at Flinders and Hunter fall significantly basinward of the subcrop margin and subsequently can not be included in this play type.

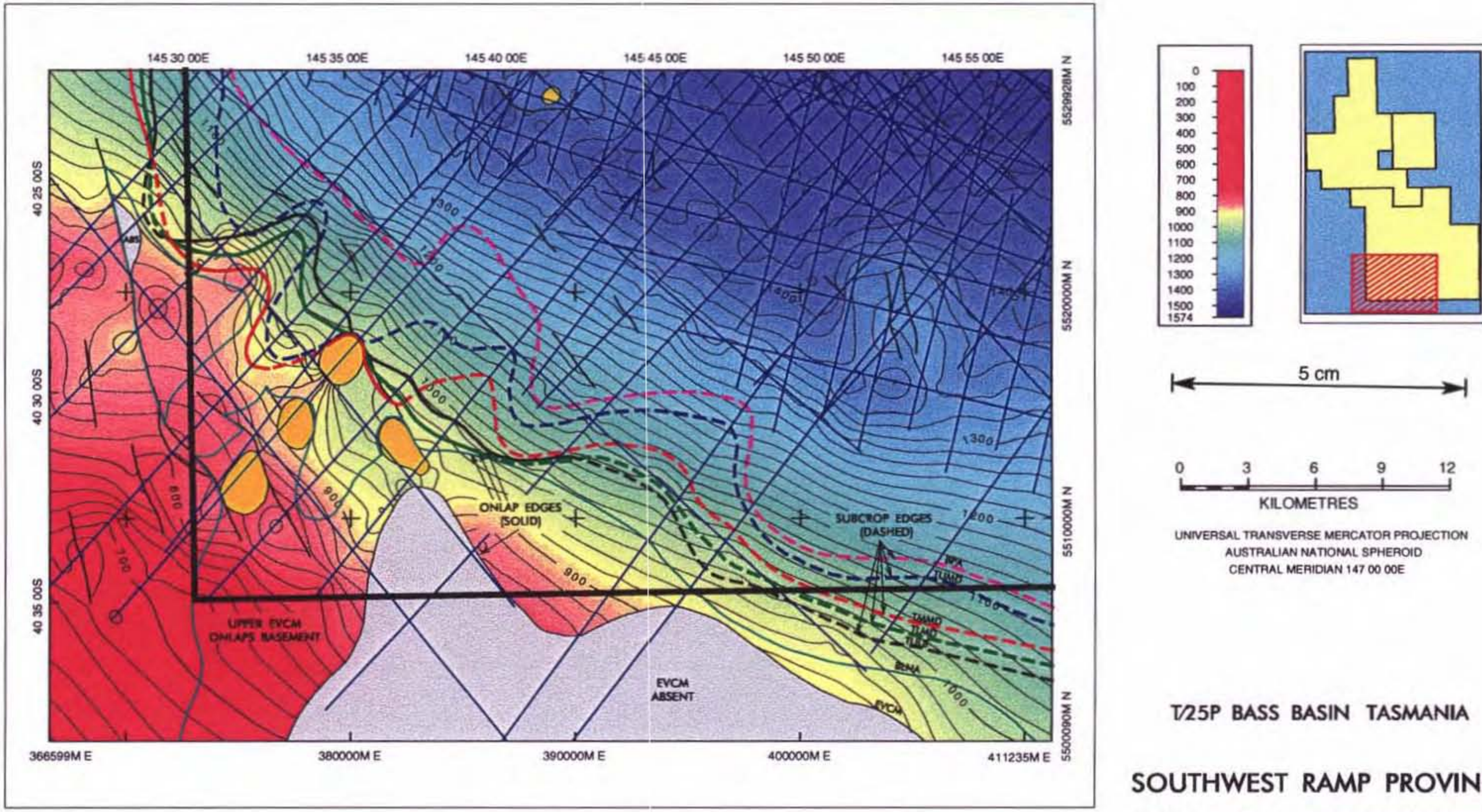
The basin edge onlap or subcrop pinchout geometries allow other possible stratigraphic trap configurations on the Southwest Ramp. Fortunately they are likely to develop within the T/25P permit particularly for the deeper units. Two examples of these play types are discussed below.

The onlap of the basal Lower N.asperus units against basement (Figure 3.20) may provide trapping geometries if a palaeosol was developed on the unconformity surface or if the Upper EVCM is more shaly on it's margin. Competent seals are also likely to be present in truncated units which gives another possible trapping configuration under the basal Lower N.asperus unconformity where this surface has been deformed into anticlinal geometries.

Several examples of these plays can be seen on the Basal Lower N.asperus time structure map. Additionally where carrier beds, which are encased in or overlain by shale, onlap basement robust traps can be developed. The required stratigraphy may be hard to predict but the appropriate onlap geometry can be demonstrated for the Palaeocene (Figure 3.21). Cretaceous strata are likely to onlap this entire margin leading to much greater trap sizes. Clearly the combination of onlap and sealed subcrop geometries can also lead to large trap sizes.

510041

BORAL ENERGY

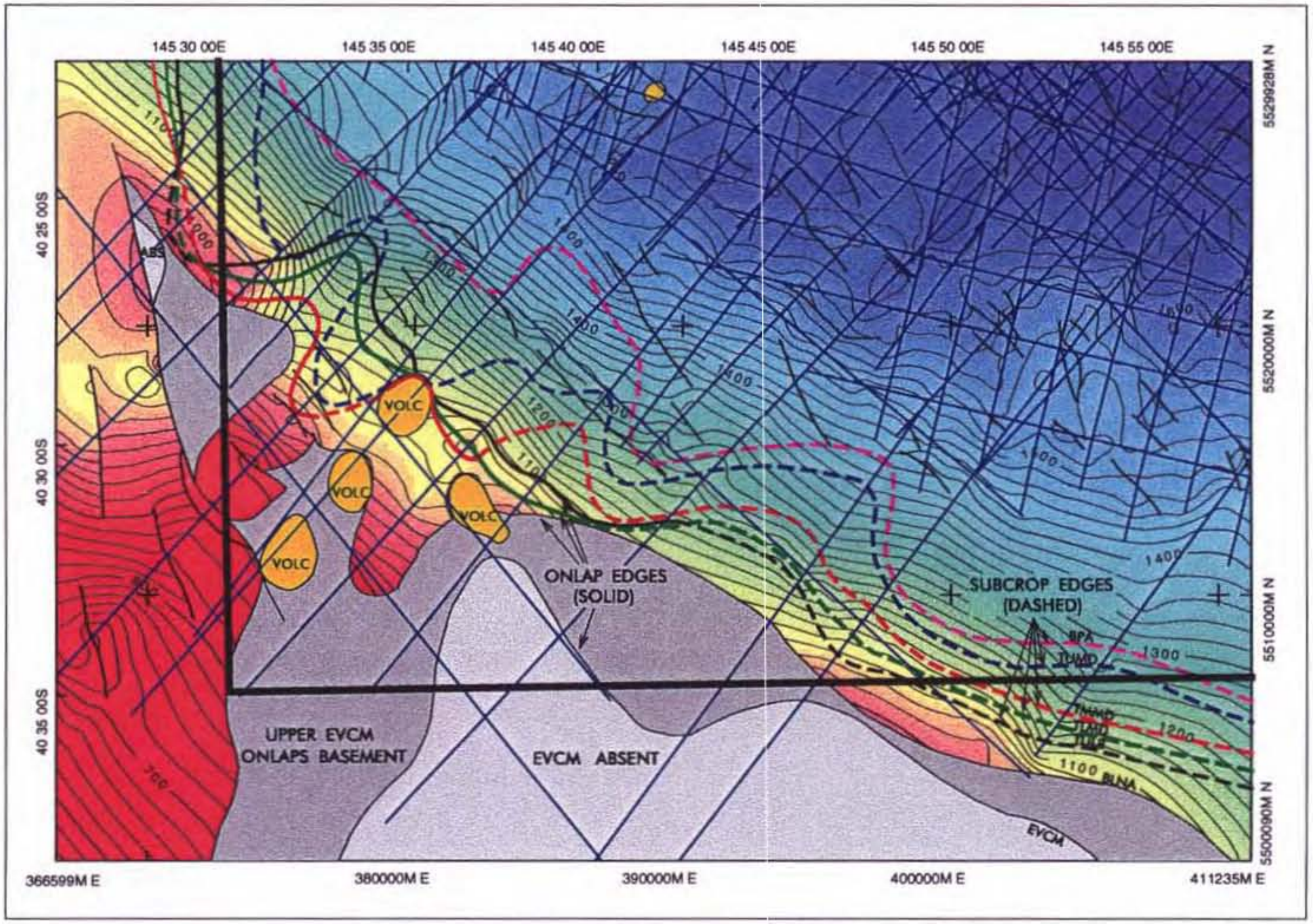


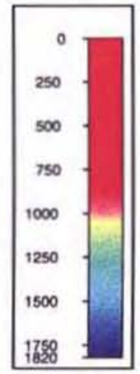
T/25P BASS BASIN TASMANIA

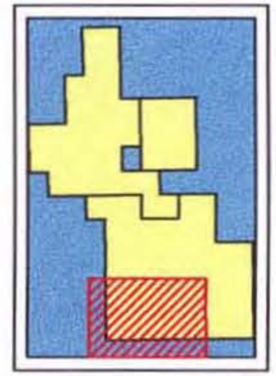
SOUTHWEST RAMP PROVINCE
TOP EVCM TIME STRUCTURE

13674.1195 Fig. 3.19

510042







5 cm

0 3 6 9 12

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

T/25P BASS BASIN TASMANIA

SOUTHWEST RAMP PROVINCE

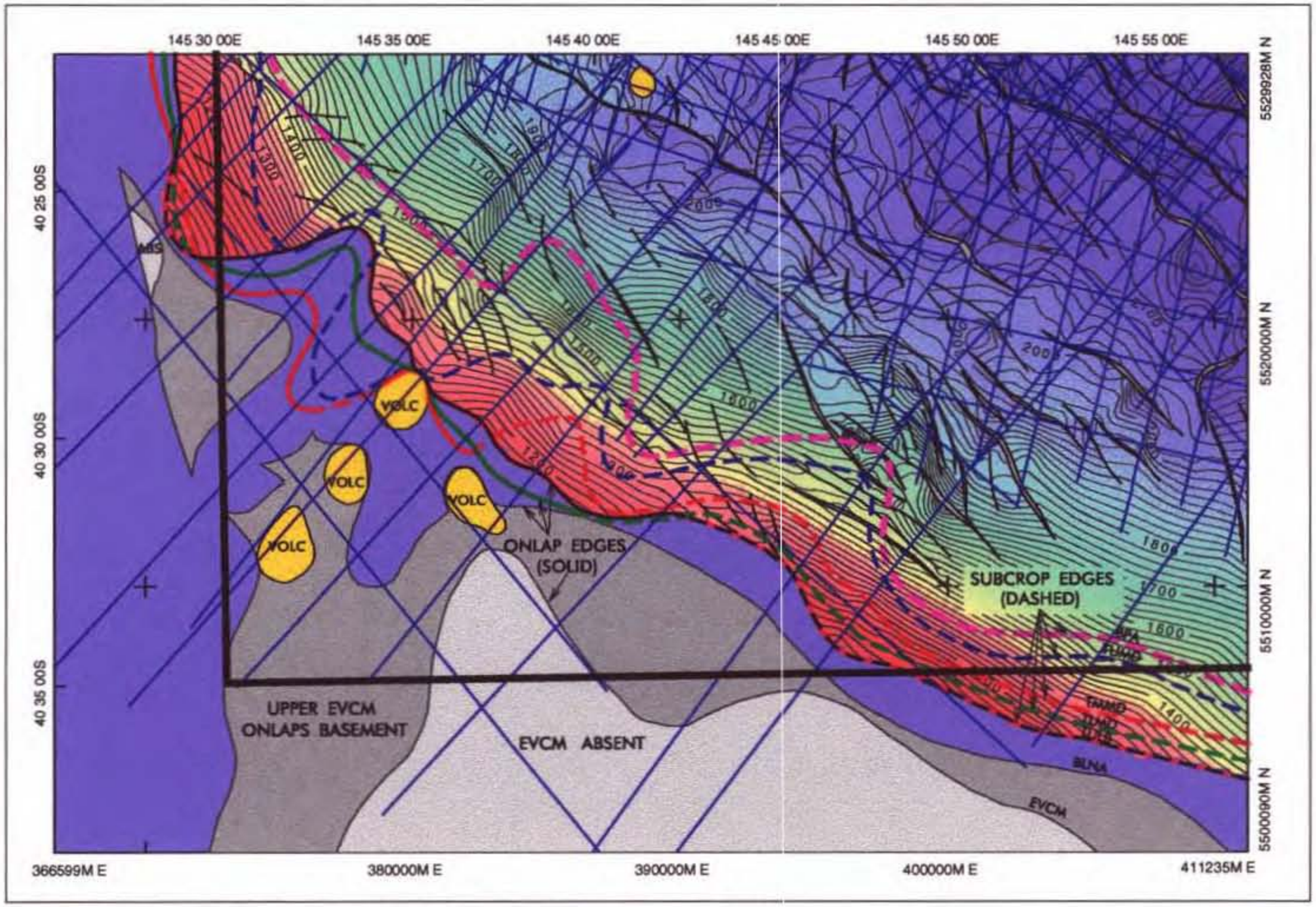
BASE LOWER N.ASPERUS

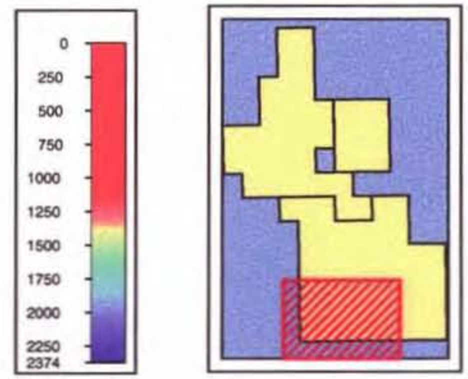
TIME STRUCTURE

13675.1195 Fig. 3.20

510043

BORAL ENERGY





5 cm

0 3 6 9 12

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

SOUTHWEST RAMP PROVINCE
PALAEOCENE
TIME STRUCTURE

13676.1195 Fig. 3.21

3.2.4 Veridian Area

The possibility of updip potential from Poonboon 1 was identified in mapping prior to the July 1994 Permit Assessment Report. Interpretation at that time was confined to a few 1984 and 1985 Amoco seismic lines. Encouragement that a more substantial structure might be present adjacent to Poonboon came from examining paper prints of 1970 and 1972 vintage seismic lines which were unfortunately of poor quality and shipborne gravity and magnetic data from the 1984 and 1985 Amoco Seismic Surveys (Figures 3.22 and 3.23).

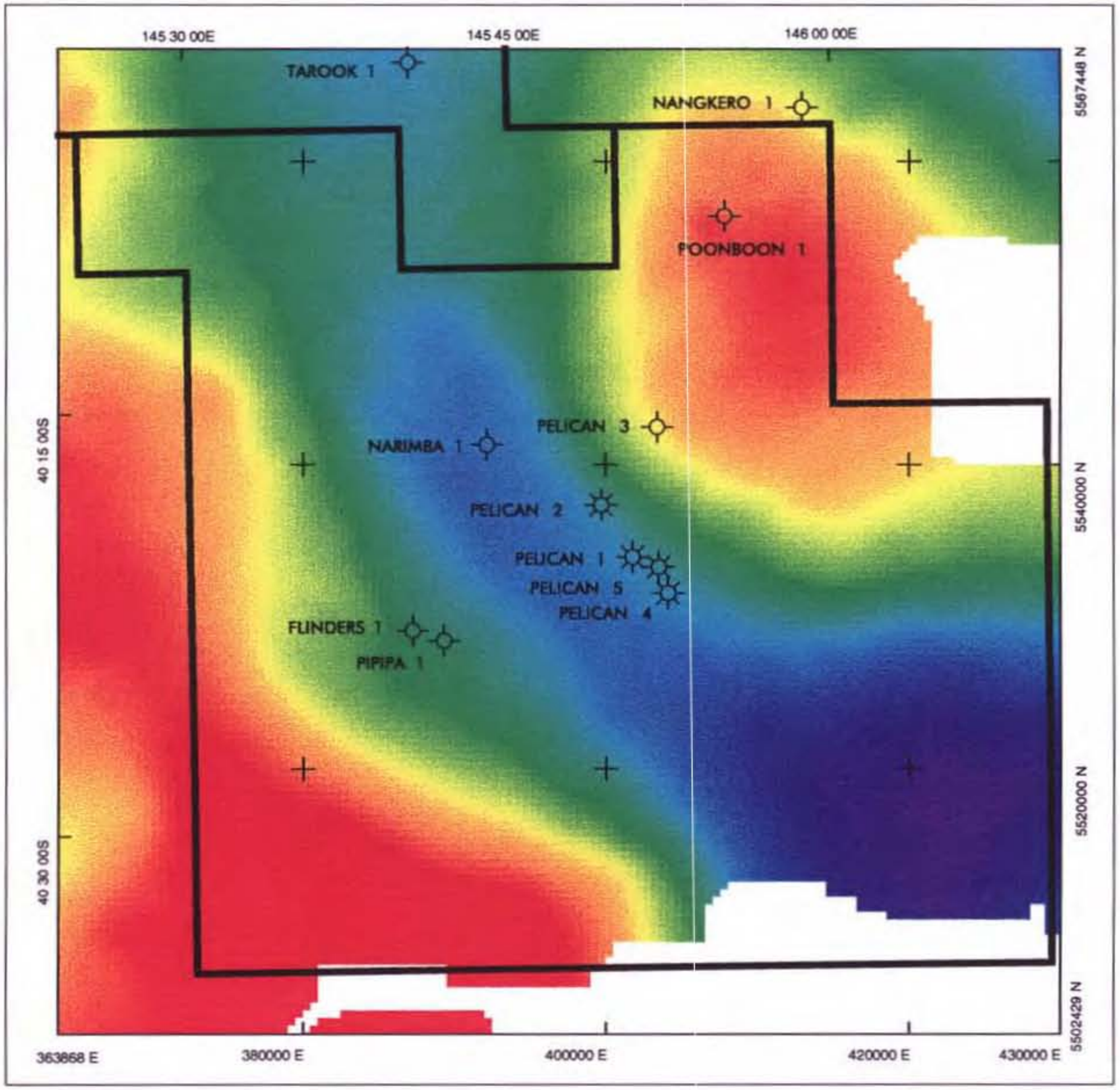
To enable a better interpretation of the Veridian area the 1970 and 1972 lines were reprocessed and loaded into Geoquest. Their quality remained poor to fair but the displays are much improved on the workstation. All the data available still adds up to a sparse grid in the Veridian area however there is a much better understanding of the structure and surrounding features now. The mapping can have different emphases placed upon it given the sparse grid, but if one assumes the regional NW-SE structural grain and non-connectivity of the small throw faults present the Veridian culmination at the Palaeocene level (Figure 3.24) exceeds 48 square kilometres in area.

Structurally Veridian sits on a N-S orientated ridge which connects the Yolla feature to the Pelican 3 high. It therefore sits between the Yolla Trough and an un-named Trough to the east. This eastern trough has less Tertiary sediment than the Cormorant, Yolla and Pelican Troughs but has a considerable thickness of Cretaceous section. This Cretaceous depocentre is bounded to the north west by the Yolla high to the north east by the Bassian Rise, to the south west by the Pelican 3 high and its southerly extension and it appears to be bound to the southeast by a ridge which separates this trough from the Duroon Basin. Given its different structural regime and isolation from other troughs by significant basement involved highs it is appropriate to formalise the naming of the eastern trough to the "Squid Trough". The trough has been reactivated in Late Miocene times as a sag basin and it falls on the axis of a major Top EVCM low.

Veridian is essentially a broad dome at the prospective Palaeocene level, complicated by a Lower N.asperus aged keystone graben which extends down to the Cretaceous section. Poonboon 1 unfortunately missed the crest of the structure and hit this collapsed graben structure. Miocene aged intrusive rocks have been implaced into the M.diversus section on the southern margin of the structure. Although post dating the structure and coinciding with the onset of hydrocarbon migration there is an unknown element of risk associated with the intrusives which, clearly, would have contact metamorphism associated with them. A large structure is likely to be present on the northern side of the keystone graben updip of the Nangkero 1 well. This structure is unaffected by intrusives.

510045

BORAL ENERGY



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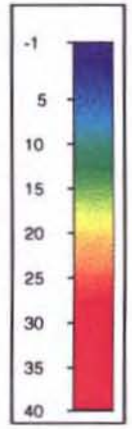


0 5 10 15 20 25

KILOMETRES

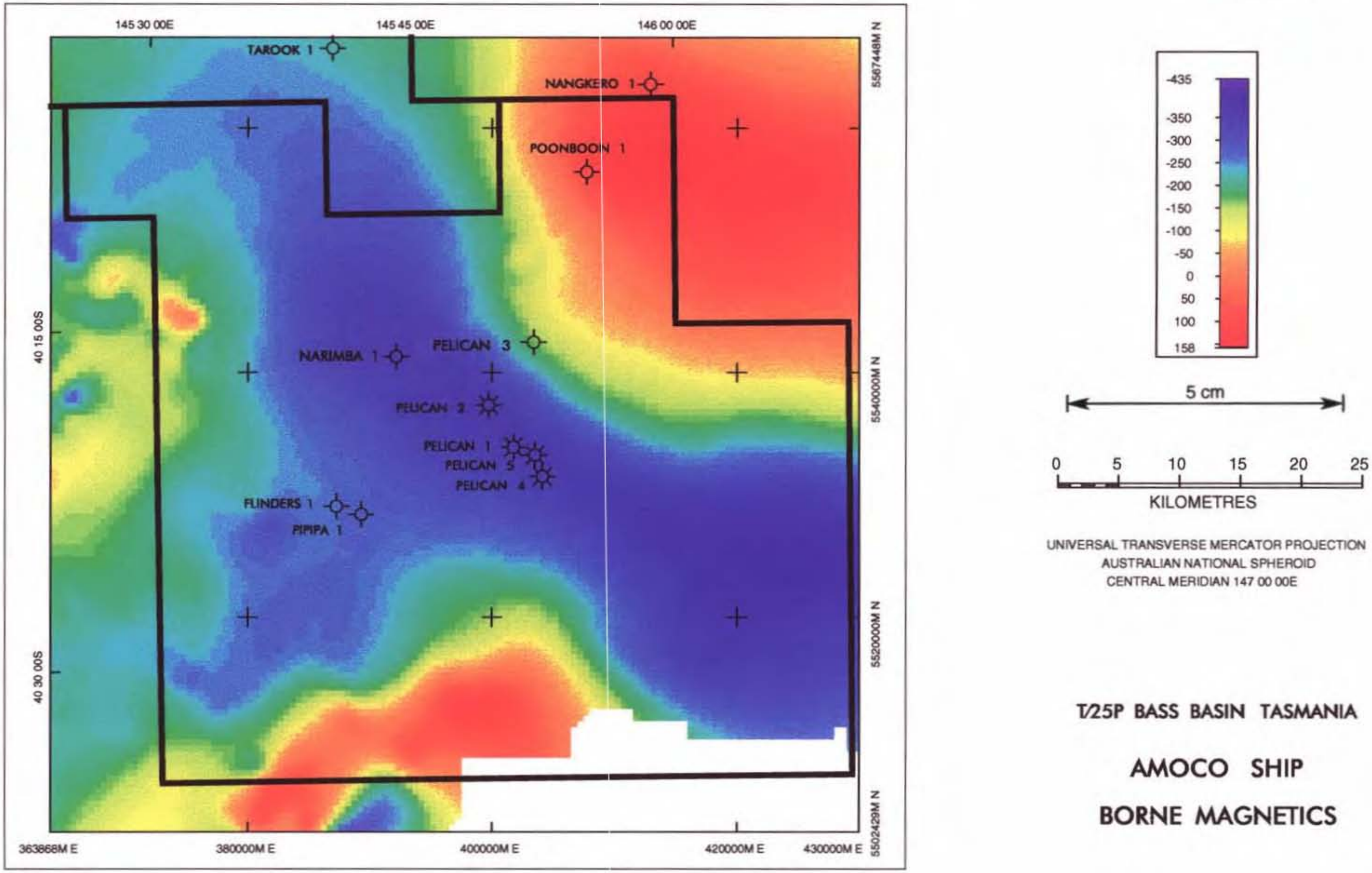
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

AMOCO SHIP
BORNE GRAVITY

13677.1195 Fig. 3.22

510046



UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

T/25P BASS BASIN TASMANIA

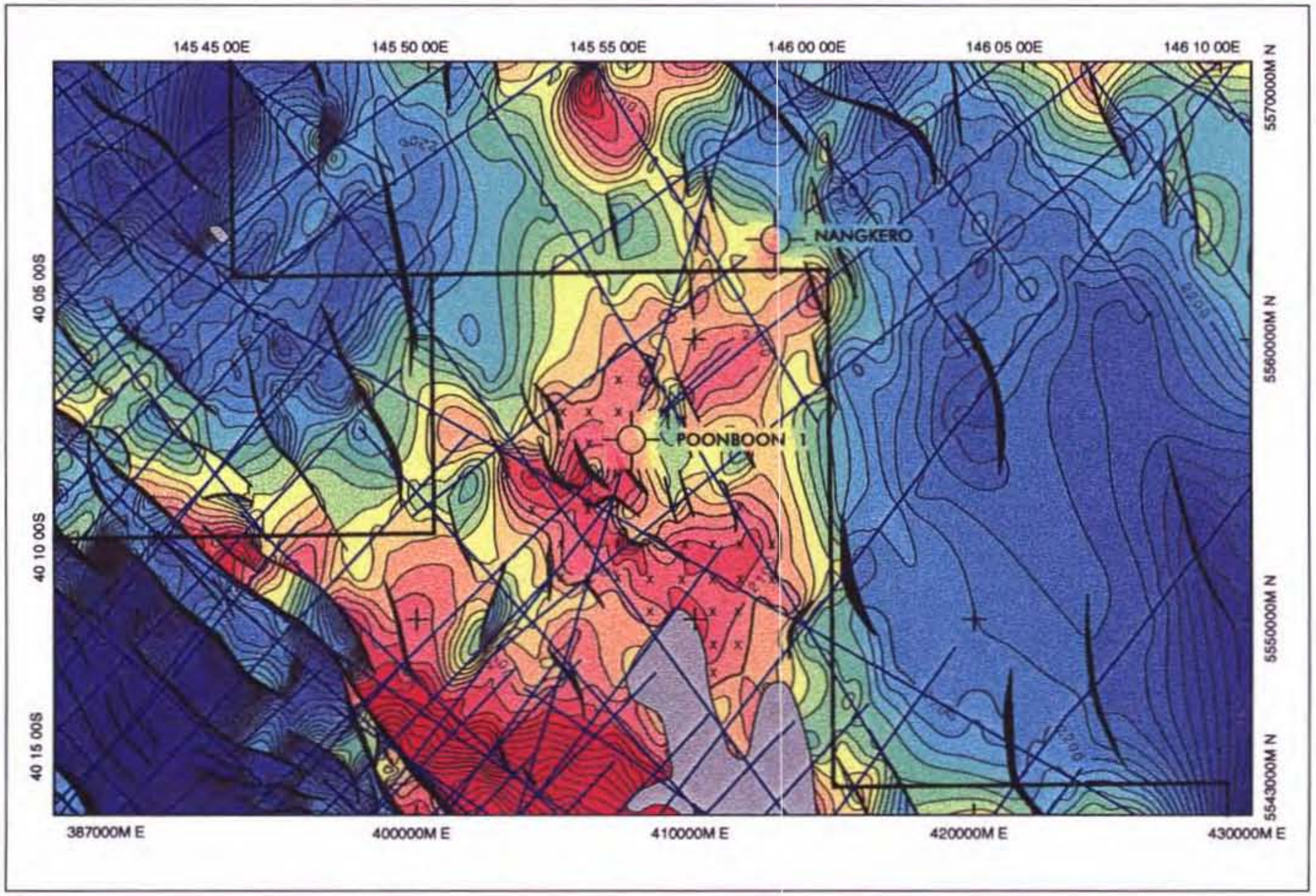
AMOCO SHIP

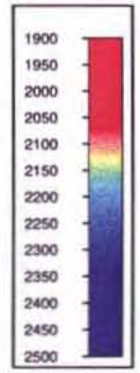
BORNE MAGNETICS

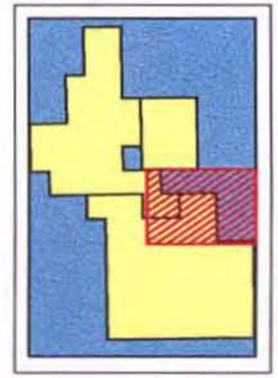
13678.1195 Fig. 3.23

510047

BORAL ENERGY







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0 3 6 9 12

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

T/25P BASS BASIN TASMANIA

VERIDIAN AREA
PALAEOCENE TIME STRUCTURE

13679.1195 Fig. 3.24

3.3 Prospectivity

The objective of the 1994 Rocky Cape Seismic Survey in T/25P was to evaluate the most prospective leads identified and described in the July 1994 Permit Assessment Report, highgrading them to prospect status. The reprocessing project also allowed leads not specifically targeted by the acquisition to be upgraded. Subsequently the most robust structures in the areas examined are: Eddystone, Grindstone, Tourville, Actaeon and Warrego Prospects. Large, strong leads are Veridian and Nangkero South. Potential Oil and Gas Reserves were recently calculated using a probalistic method (Table 3.1 and 3.2) and are the subject of a separate report by RJ Suttill (T/25P - Probalistic Potential Reserve Calculations and Prospect Ranking, internal BERL report dated October 1995). One risk with the probalistic approach is that the risk weighing due to limitations in knowledge at that time is not separately considered in the final presentation. Many of the risks which handicap potential volumes can be reduced by simply doing more work.

Given limitations in the amount of knowledge accessible for prospects in a "Greenfields" area we should probably be comparing their volumes close to the P10 percentile. In this instance the potential for significant commercial discoveries in T/25P is obvious from the tabulated volumes. Mapping in T/25P shows that there is scope for further commercial sized leads and prospects to be added to the inventory if the seismic coverage within the permit is significantly upgraded.

The geographic distribution of prospects and leads based upon the Palaeocene Time Structure map is presented in Figure 3.26.

POTENTIAL GAS RESERVES

PERMIT T/25P, BASS BASIN, TASMANIA

Prospect Objective	Potential Recoverable Gas Reserves Billion Cubic Feet (BCF)			Chance of Success
	P90	P50	P10	
Eddystone				
Eocene	166	536	1436	9.52
Palaeocene	109	288	706	8.57
Grindstone				
Eocene	23.8	97.7	284	9.52
Palaeocene	51.1	136	310	7.62
Tourville				
Eocene	271	464	726	6.67
Actaeon				
Eocene	55.4	223	517	6.67
Veridian				
Palaeocene	191	778	2009	11.6
Nangkero South				
Palaeocene	136	358	823	11.6
Warrego				
Palaeocene	104	283	632	8.82

Other prospects include:		
	Perkins	small, highly faulted
	Rochon	needs more seismic
	Cape Barren	straddles T/18P and T/25P
	Nangkero West	included in Veridian seismic prog
	Hunter	too small
	Tregaron	unknown reservoir, more seismic
	Flank 1 and 2	potentially very large, new play type need major seismic effort

Table 3.1

POTENTIAL OIL RESERVES

PERMIT T/25P, BASS BASIN, TASMANIA

Prospect Objective	Potential Recoverable Oil Reserves Million Standard Barrels (MMSTB)			Chance of Success *
	P90	P50	P10	
Eddystone				
Eocene	23.8	76.5	203	4.76
Palaeocene	22.3	59.3	144	4.29
Grindstone				
Eocene	5.15	21.3	62.4	4.76
Palaeocene	10.4	27.9	63.8	3.81
Tourville				
Eocene	58.6	101	160	3.33
Actaeon				
Eocene	12.2	49	114	3.33
Veridian				
Palaeocene	36.7	149	383	5.81
Nangkero South				
Palaeocene	26.4	68.1	156	5.81
Warrego				
Palaeocene	23.7	64.2	145	4.41

Other prospects include:

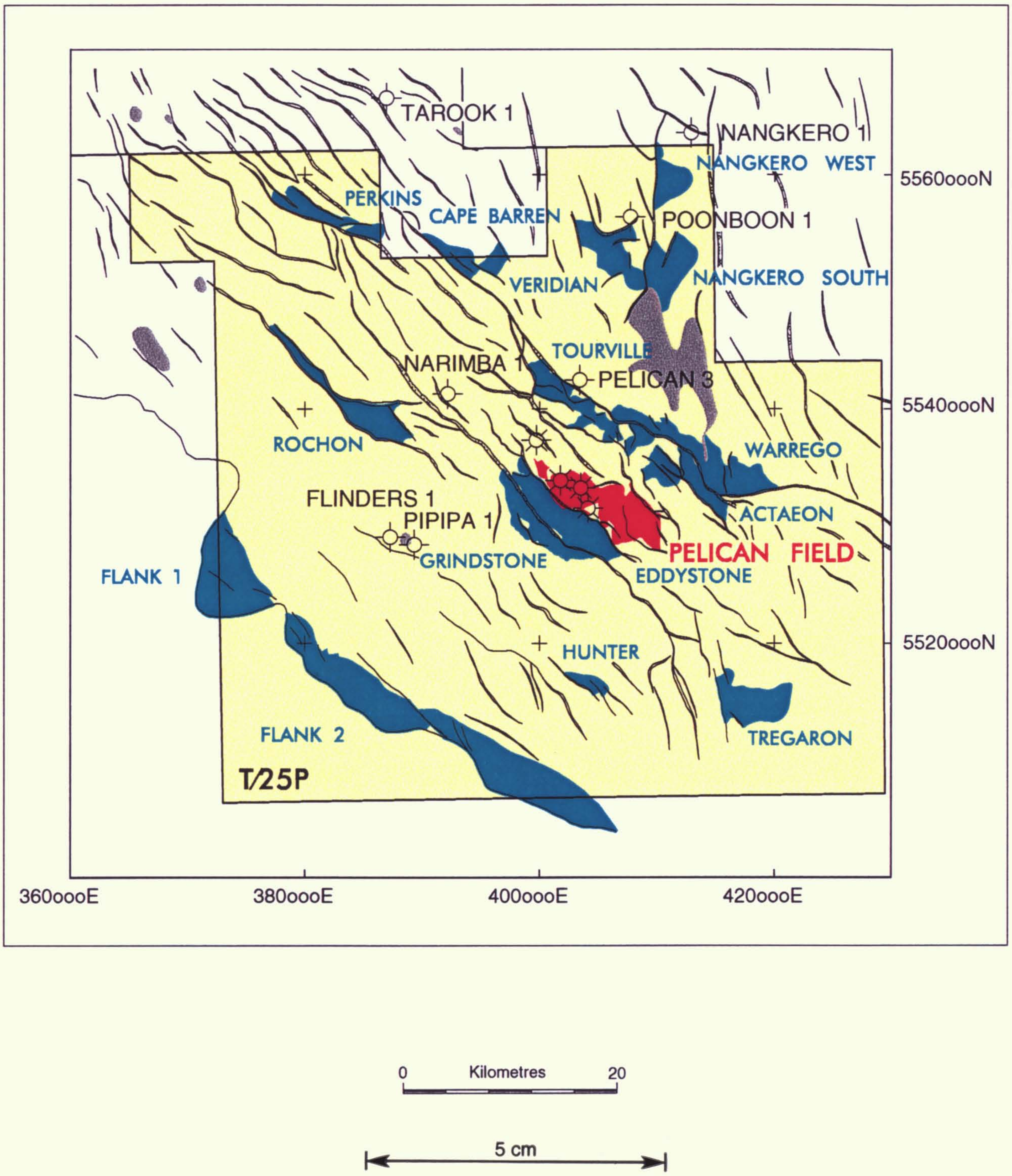
Perkins	small, highly faulted
Rochon	needs more seismic
Cape Barren	straddles T/18P and T/25P
Nangkero West	included in Veridian seismic prog
Hunter	too small
Tregaron	unknown reservoir, more seismic
Flank 1 and 2	potentially very large, new play type need major seismic effort

Note: * Chance of success estimated to be half that for gas

Table 3.2

BORAL ENERGY

510051



BASS BASIN
T/25P
LEADS & PROSPECTS

No. 13638.1195 Fig. 3.25

PROSPECT DATA SHEET

ACTAEON

CATEGORY	Strong Lead			
LOCATION	Seismic line TNK4-95 Sp 165 (Middle *M.diversus* and Palaeocene)			
DESCRIPTION OF TRAP	Tilted fault block against complex northwesterly and easterly trending fault system.			
PRIMARY OBJECTIVES	EVCM	-	Middle *M.diversus*	
		-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Middle *M.diversus*	21.9 square kilometres
		-	Palaeocene	7.0 square kilometres (55.8 square kilometres with Tourville)
SECONDARY OBJECTIVES	None			
DEPTH TO RESERVOIR	EVCM	-	Middle *M.diversus* 2210 mSS	
		-	Palaeocene 2528 mSS	

DESCRIPTION OF RISK ELEMENTS

SOURCE

Actaeon overlies the proven gas-condensate source kitchen of the Pelican Trough. At the location the middle *M.diversus* is predicted to be early mature to mid mature for oil generation, whilst the Palaeocene is mid mature for oil generation through to later mature for gas at basement.

Migration of hydrocarbons into Actaeon is most likely to be a result of vertical migration from mature source rocks up fault conduits or from short distance migration from mature source material downdip, particularly from areas along strike to the northwest and southeast of the prospect. Actaeon also provides an opportunity to test the possibility of face loading by Early to Late Cretaceous source rocks underlying the extension of the Pelican 3 high directly into reservoir units of the Palaeocene and middle *M.diversus*. The source risk at Actaeon for gas is considered to be low and for oil moderate.

RESERVOIR

Porosity versus depth profiles predict that the average porosity at Actaeon will be 21% on the middle *M.diversus* and 18% in the Palaeocene. Actaeon is approximately 100 metres updip of Pelican Field and therefore on this basis a slight improvement in permeability might be expected. However as Actaeon is located adjacent to the Pelican 3 basement high it is possible that reservoirs representing so far untested sequences such as alluvial fans shedding from the basement high or a localisation of fluvial channel facies may be present. The reservoir risk for Actaeon is considered to be very low for the middle *M.diversus*, and moderate to high for the Palaeocene.

SEAL

Closure at Actaeon relies on intraformational seals in the EVCM which have low risk and lateral faults which have moderate risk in the middle *M.diversus* and low to moderate risk in the Palaeocene. Reactivation of the basement involved Warrego Fault may have caused leakage although this is not considered a major risk as significant generation post dates fault movement. Juxtaposition of potential reservoir units with a probably predominantly shaly Late Cretaceous sequence is likely to be the main lateral sealing mechanism.

STRUCTURE

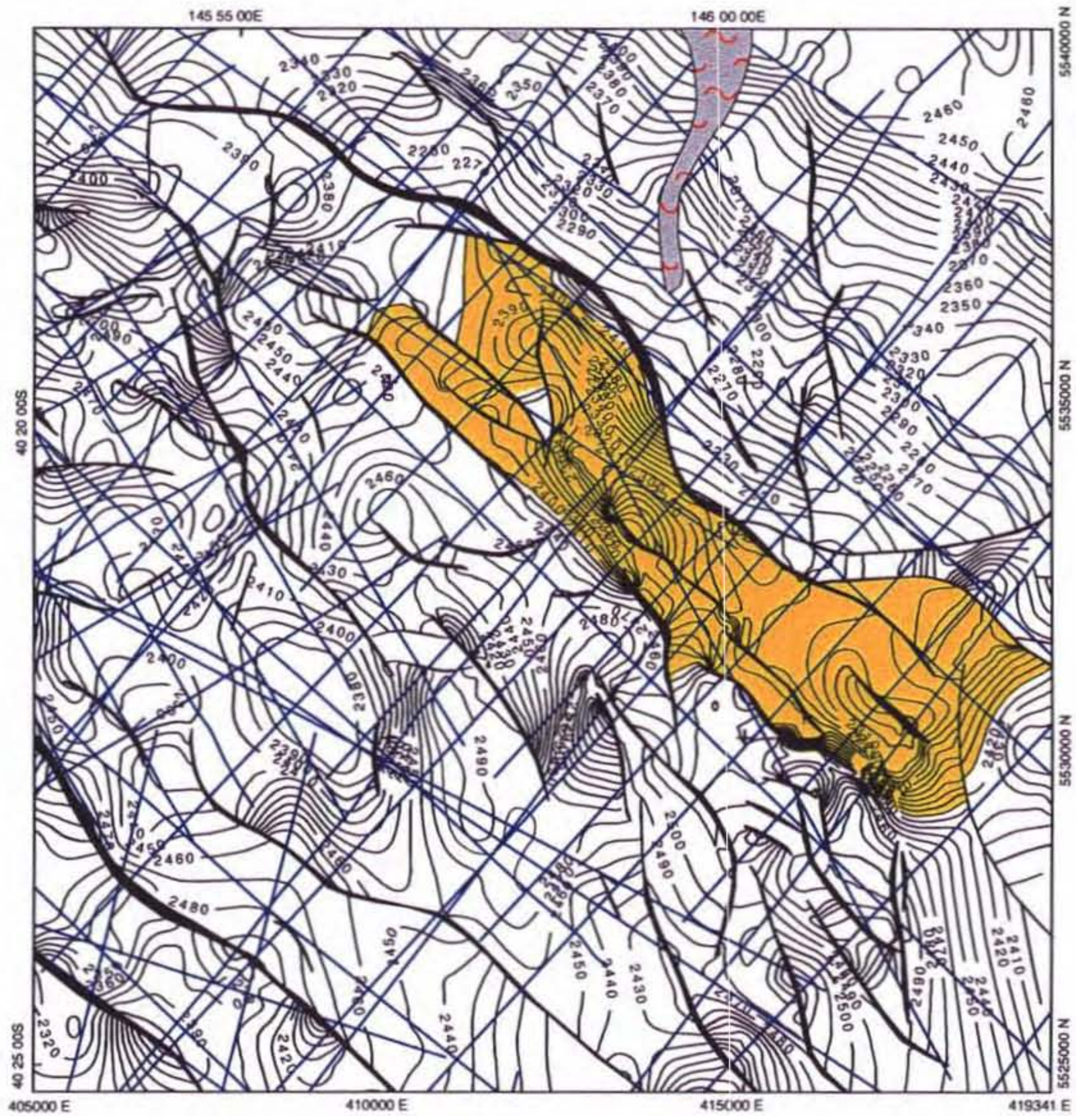
Faulting in the Actaeon area is fairly complex and therefore as closure is fault dependent, there is high structural risk. The trapping geometry at Actaeon was established at the end of the middle *M.diversus* at the Palaeocene level which is ranked as very high risk.

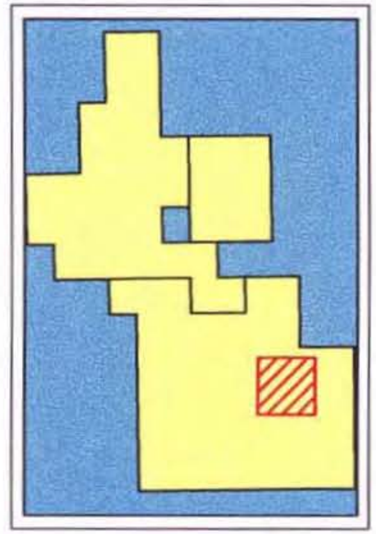
ADDITIONAL WORK REQUIRED

New seismic data was acquired as part of the Rocky Cape Seismic Survey during 1994, and the mapping of this has improved our structural understanding of the complex Actaeon structure, however there is still some ambiguity in the interpretations. More data acquisition is required to give improved dip line spacing and strike line positioning in order to upgrade the Actaeon Lead to a drilling candidate if required.

510054

BORAL ENERGY





1:100000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

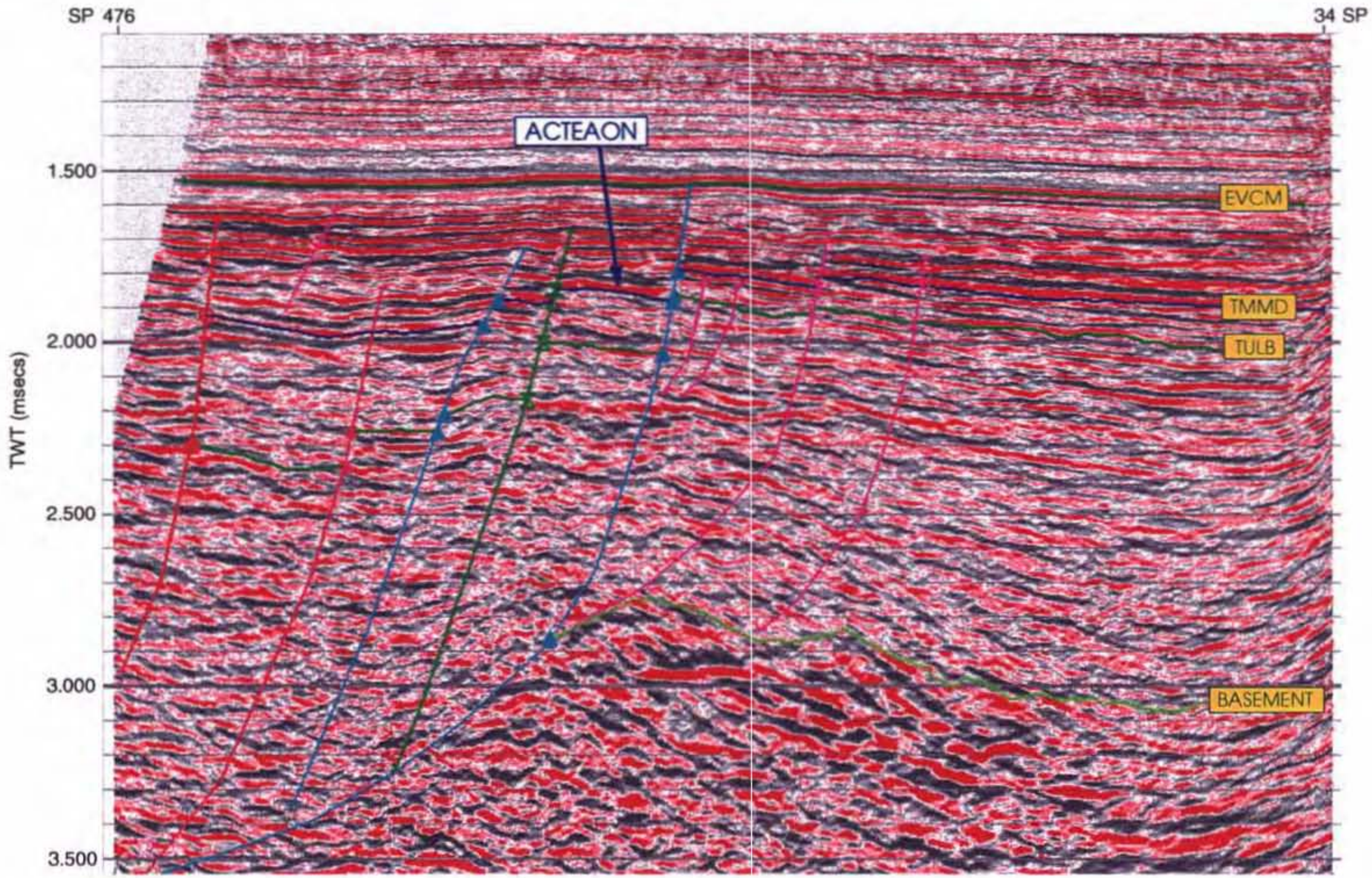
T/25P BASS BASIN TASMANIA

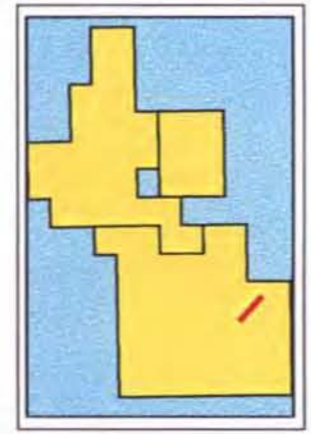
ACTAEON PROSPECT
TOP MIDDLE M.DIVERSUS
DEPTH STRUCTURE

13680.1195 Fig. 3.26

510055

BORAL ENERGY





5 cm

T/25P BASS BASIN TASMANIA

ACTAEON PROSPECT
DIP LINE (SB94A–157)

No. 13681.1295 Fig.3.27

PROSPECT DATA SHEET

EDDYSTONE

CATEGORY	Prospect			
LOCATION	Seismic line HB77A-332 Sp 105 (Middle *M.diversus*) Seismic line SB94A-147 Sp 65 (Palaeocene)			
DESCRIPTION OF TRAP	Large tilted fault block on the upthrown side of a northwest trending fault southwest of Pelican Field.			
PRIMARY OBJECTIVES	EVCM	-	Middle *M.diversus*	
		-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Middle *M.diversus*	18.03 square kilometres
		-	Palaeocene	22.15 square kilometres
SECONDARY OBJECTIVES	None			
DEPTH TO RESERVOIR	EVCM	-	Middle *M.diversus* 2260 mSS	
		-	Palaeocene 2715 mSS	

DESCRIPTION OF RISK ELEMENTS

SOURCE

Eddystone is located directly above the mature source kitchen for the Pelican Field gas and condensate accumulation and therefore is ideally located to receive hydrocarbon charge. At Eddystone the middle *M.diversus* is early to mid mature for oil generation increasing to mid mature at the top Palaeocene and late gas generation at basement.

Cross relay ramp faulting may pose a barrier to migration into the prospect from the north and south. Vertical migration is therefore considered the most likely charge model for Eddystone although there is potential for sourcing the lead from source rocks in the middle *M.diversus* and Palaeocene to reservoir sequences in the lower and middle *M.diversus* by face loading. Similarly source sequences in the Cretaceous and deeper Palaeocene could face load into Palaeocene reservoirs.

The simpler structural form of Eddystone, compared with the fault compartmentalised Pelican Field may also assist in providing simpler migration routes. Source rock is rated as low for gas charge, moderate to high for oil at the middle *M.diversus* and high for oil at the Palaeocene.

RESERVOIR

Regional porosity versus depth profiles predict an average porosity for the middle *M.diversus* of 21% and 18% for the Palaeocene. The lead is approximately 100 metres updip of Pelican Field at the top of middle *M.diversus* which provides the possibility of improved permeability preservation, compared to that which occurs in Pelican 5. Reservoir risk is therefore considered to be low at the middle *M.diversus* and high in the Palaeocene.

SEAL

Vertical sealing is considered low risk and is dependent on intraformational seals. All mapped closure is also dependent on fault plane sealing. Sealing risk is therefore considered to be moderate at the Palaeocene and moderate to high at the middle *M.diversus*.

STRUCTURE

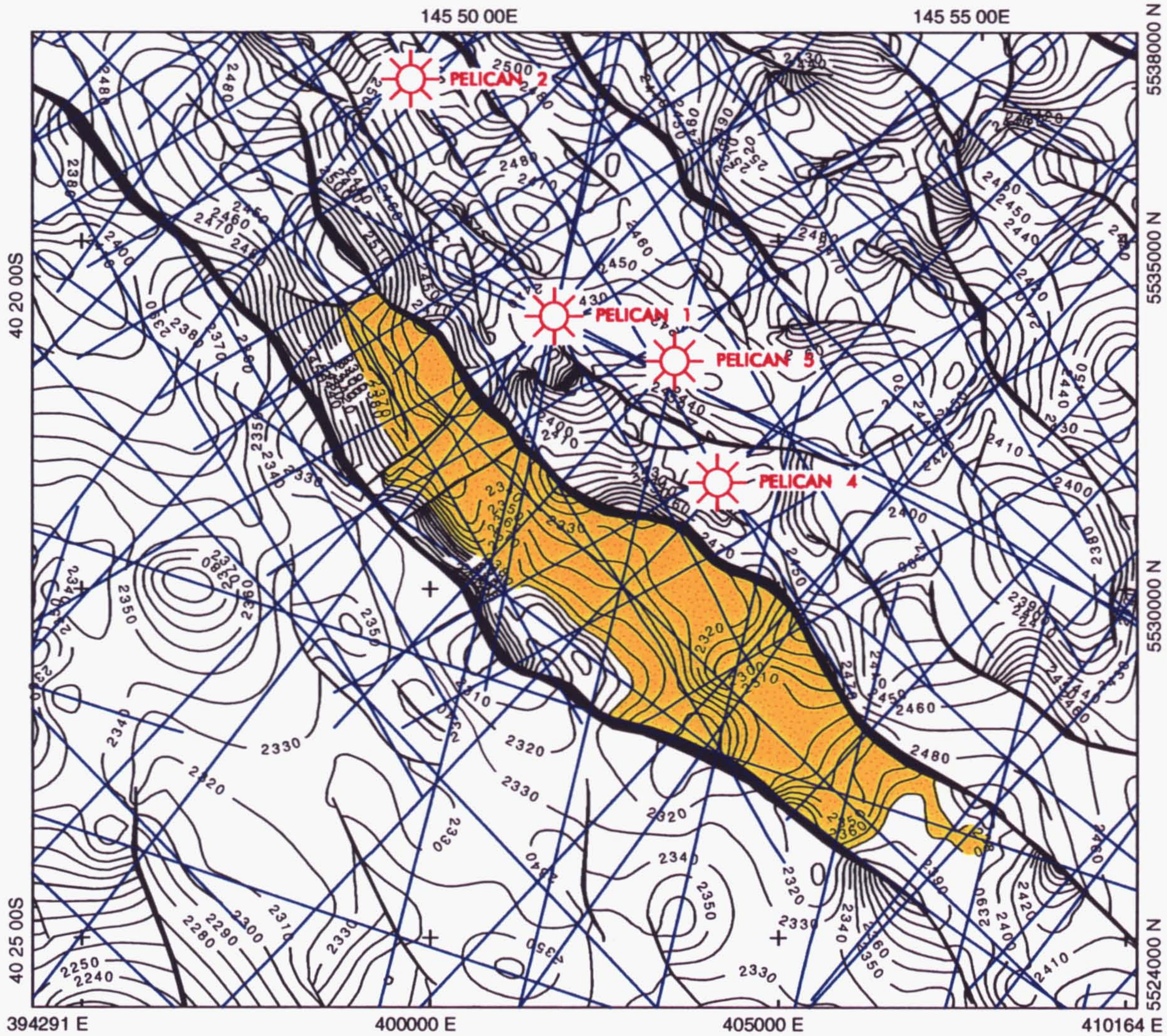
The current seismic grid provides a high level of confidence in the structural interpretation. Structural growth occurred along the bounding fault at Eddystone through to the near top of the EVCM. Trap development occurred at the top of the middle *M.diversus* but was enhanced at basal Lower N.asperus time. Eddystone provides a larger, shallower and more simple fault dependent closure than those tested in the nearby Pelican Field. Structural risk is rated as low.

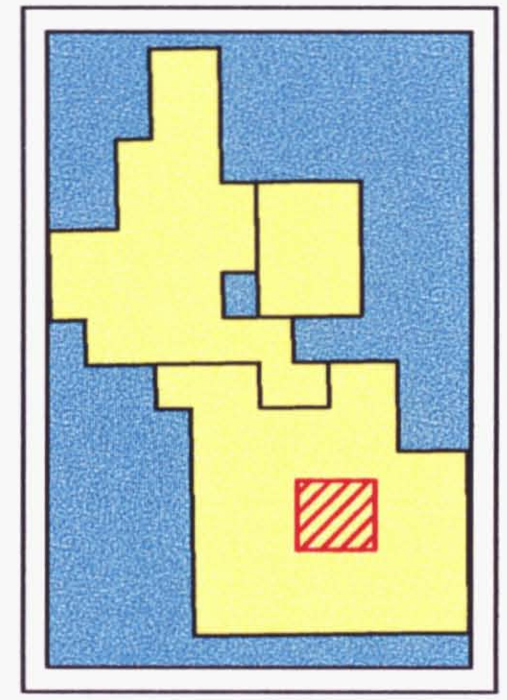
ADDITIONAL WORK REQUIRED

Seismic control is good and the lead matured to prospect status following remapping incorporating reprocessed seismic data. It will be upgraded to drillable status by further seismic infill scheduled as part of the 1996 Hummock Seismic Survey.

510058

BORAL ENERGY





0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

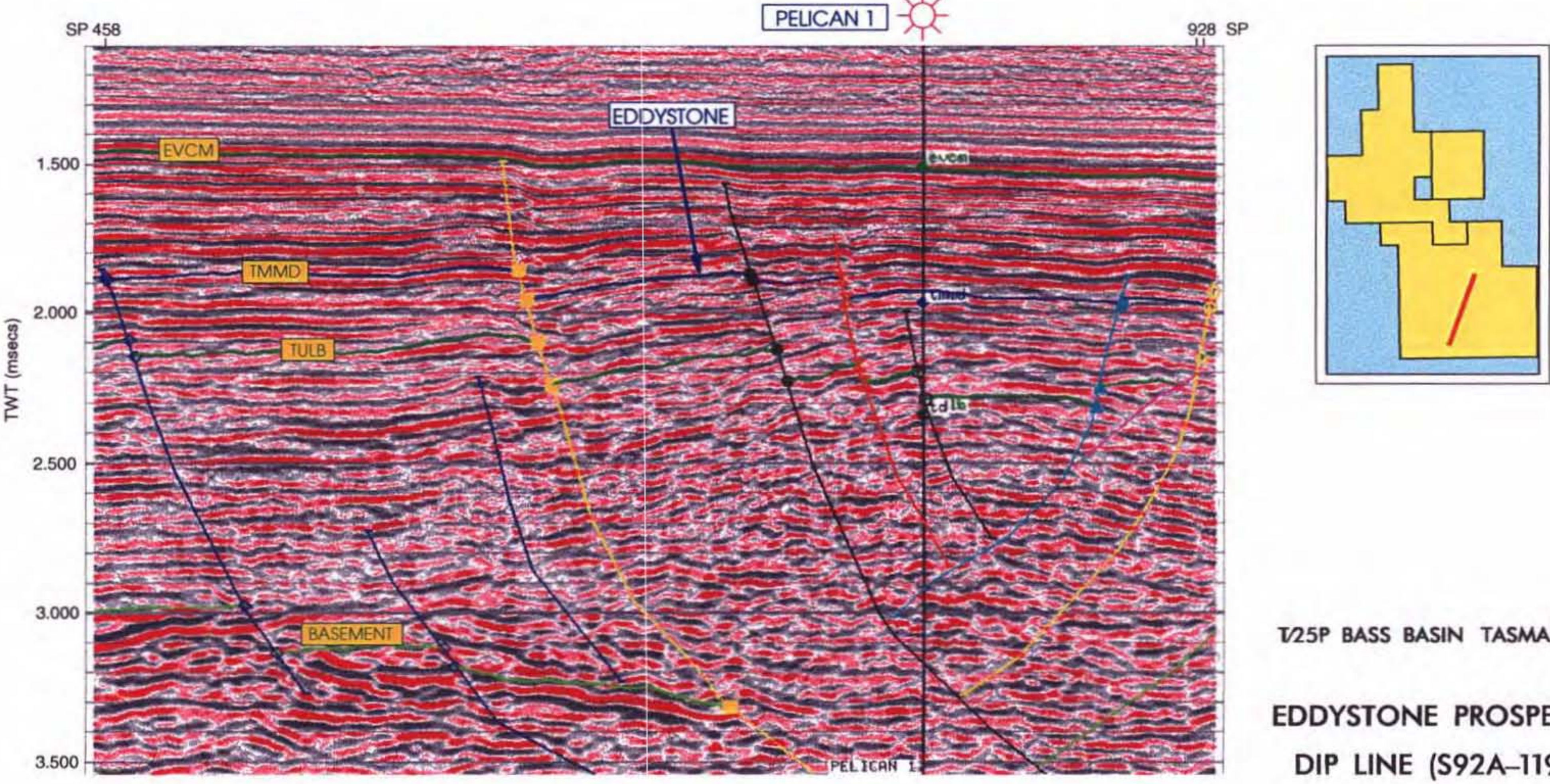
T/25P BASS BASIN TASMANIA

EDDYSTONE PROSPECT
TOP MIDDLE M.DIVERSUS
DEPTH STRUCTURE

13682.1195 Fig. 3.28

510059

BORAL ENERGY



T/25P BASS BASIN TASMANIA

EDDYSTONE PROSPECT
DIP LINE (S92A–119)

5 cm

No. 13683.1295 Fig. 3.29

PROSPECT DATA SHEET

GRINDSTONE

CATEGORY	Strong Lead			
LOCATION	Seismic line S92A-119 Sp 620 (Middle *M.diversus* and Palaeocene)			
DESCRIPTION OF TRAP	Tilted fault block on the upthrown side of a northwest trending fault southwest of Pelican Field.			
PRIMARY OBJECTIVES	EVCM	-	Middle *M.diversus*	
		-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Middle *M.diversus*	9.9 square kilometres
		-	Palaeocene	11.7 square kilometres
SECONDARY OBJECTIVES	None			
DEPTH TO RESERVOIR	EVCM	-	Middle *M.diversus* 2290 mSS	
		-	Palaeocene 2626 mSS	

DESCRIPTION OF RISK ELEMENTS

SOURCE

Grindstone is located directly above the mature source kitchen for the Pelican Field gas and condensate accumulation and therefore is ideally located to receive vertical hydrocarbon charge. At Grindstone the middle *M.diversus* is early mature for oil generation increasing to mid mature at the top Palaeocene and late gas generation at basement.

Migration to Grindstone is also possible from proximal mature source rocks downdip and along strike from the structure. Source risk is evaluated to be low for gas, high for oil at the Palaeocene and moderate to high for oil at the middle *M.diversus*.

RESERVOIR

Regional porosity versus depth profiles predict that the middle *M.diversus* will have an average porosity of 20% declining to 19% at the top of the Palaeocene. The porosity predictions reflect the fact that Grindstone although updip of Eddystone may have more "Flinders-like" reservoir.

Reservoir risk is evaluated to be high for the Palaeocene and moderate for the middle *M.diversus*.

SEAL

Vertical sealing is considered low risk and dependent on intraformational seals. All mapped closure is dependent on fault plane sealing. Seal risk is moderate to high for the middle *M.diversus* and moderate for the Palaeocene.

STRUCTURE

The current seismic grid provides a high level of confidence in the structural interpretation. Grindstone is possibly not large enough for a stand alone project but could form a useful addition to any development should Eddystone be successful. The igneous intrusive sill associated with the Flinders structure terminates before reaching Grindstone and does not affect prospectivity.

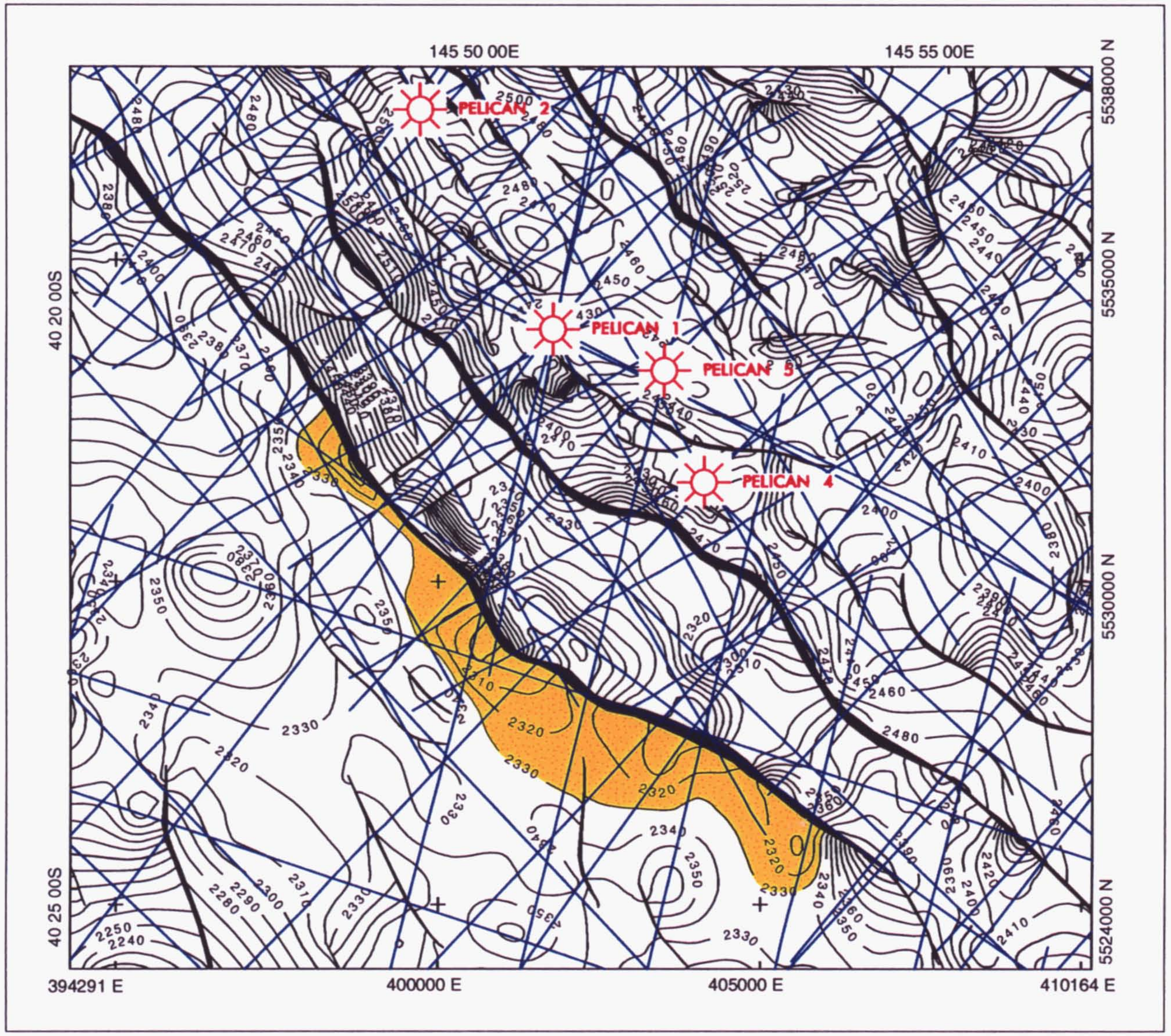
The trapping geometry at Grindstone developed at the lower *M.diversus*, with fault movement occurring until the top of the EVCM. The structure was enhanced by a mild compressional event at basal Lower N.asperus time. Structural risk is evaluated to be moderate.

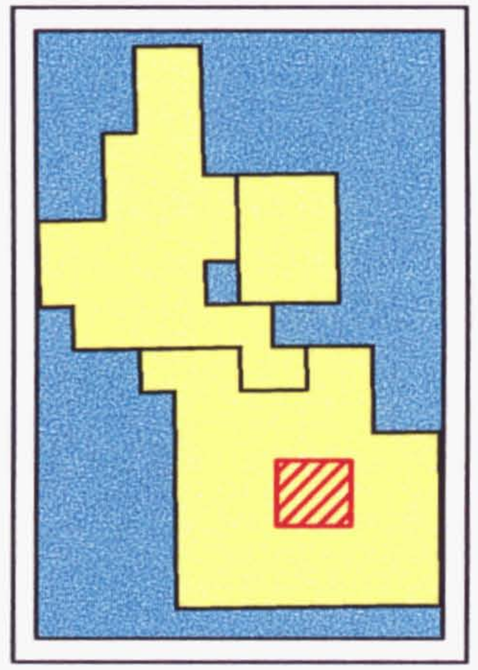
ADDITIONAL WORK REQUIREMENTS

Due to Grindstone's proximity to Eddystone it will gain infill seismic coverage during the 1996 Hummock Seismic Survey and is likely to be upgraded to a drillable prospect.

510062

BORAL ENERGY





0 1 2 3 4 5
KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

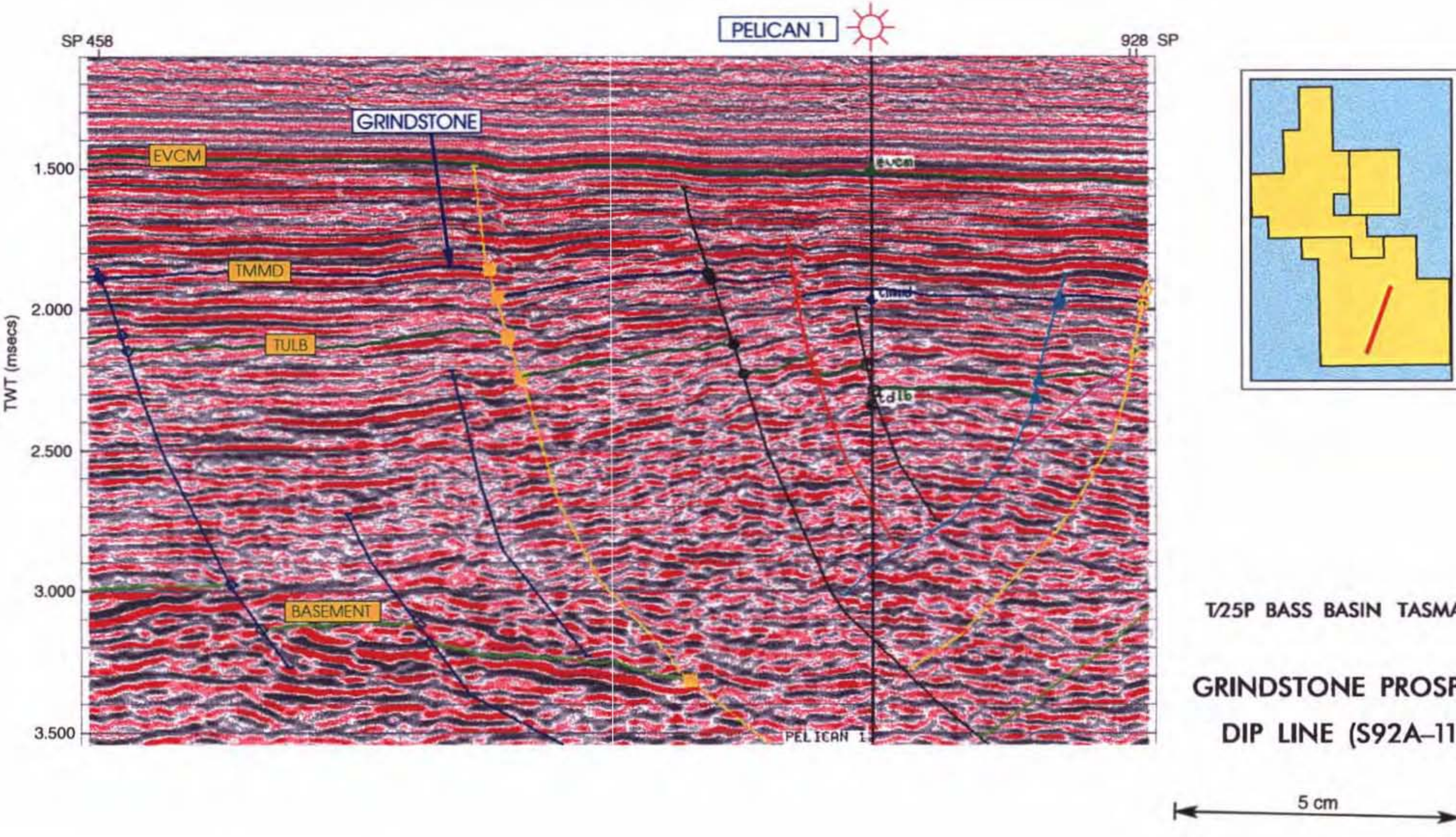
5 cm

T/25P BASS BASIN TASMANIA

GRINDSTONE PROSPECT
TOP MIDDLE M. DIVERSUS
DEPTH STRUCTURE

13684.1195 Fig. 3.30

510063



T/25P BASS BASIN TASMANIA

GRINDSTONE PROSPECT
DIP LINE (S92A–119)

No. 13685.1295 Fig. 3.31

PROSPECT DATA SHEET

TOURVILLE

CATEGORY	Strong Lead			
LOCATION	Seismic line SB94A-145 Sp 340 (Middle *M.diversus)* Seismic line TNK4-79 Sp 295 (Palaeocene)			
DESCRIPTION OF TRAP	Anticlinal closure exits at top EVCM and upper *M.diversus*, whilst the structure is predominantly fault controlled at deeper levels.			
PRIMARY OBJECTIVES	EVCM	-	Middle *M.diversus*	
		-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Upper *M.diversus*	24.0 square kilometres
		-	Middle *M.diversus*	24.86 square kilometres
		-	Palaeocene	13.0 square kilometres
SECONDARY OBJECTIVES	EVCM	-	top of formation	
		-	upper *M.diversus*	
DEPTH TO RESERVOIR	EVCM	-	Upper *M.diversus* 2199 mSS	
		-	Middle *M.diversus* 2270 mSS	
		-	Palaeocene 2608 mSS	

DESCRIPTION OF RISK ELEMENTS

SOURCE

Tourville at the middle *M.diversus* and Palaeocene levels is located on the first fault terrace stepping down from the Pelican 3 high and therefore has direct access to proven mature source rocks in the Pelican Trough. Maturity modelling predicts that the middle *M.diversus* sequence is early-middle mature for oil generation grading to middle mature at the Palaeocene and increasing to gas maturity at basement.

Tourville has the potential for cross-fault face loading of the Palaeocene reservoirs by mature upper Cretaceous source rocks. Similarly the middle *M.diversus* reservoirs could be charged across the fault from mature Palaeocene source intervals.

Migration of hydrocarbons into the upper EVCM and upper *M.diversus* reservoirs is considered high risk due to the difficulty in migrating vertically through the shaly sequences of the lower and middle *M.diversus*, therefore these targets are only carried as secondary objectives. Sourcing of gas to the primary objectives at Tourville is considered low risk, whilst oil is ranked as moderate risk.

RESERVOIR

Regional porosity versus depth profiles predict the upper *M.diversus* reservoirs will have average porosities of 25% declining to 21% at the middle *M.diversus* and 18% at the Palaeocene. There is therefore a good chance of developing reservoir quality sandstones with sufficient permeability to maintain offshore production rates, particularly within the upper and middle *M.diversus* zones. Reservoir risk is very low at the upper levels, low to moderate at the middle *M.diversus* and high at the Palaeocene.

SEAL

Tourville is dependent on the development of intraformational top seals and cross fault or fault plane seals. Sealing risk is very low at the upper EVCM, high at the upper *M.diversus*, moderate at the middle *M.diversus* and low to moderate at the Palaeocene.

STRUCTURE

Tourville has been upgraded to prospect status by the 1994 Rocky Cape Seismic Survey. Dip and line strike spacing varies from 1 to 2 km. The northern extension of the prospect is poorly controlled and requires more seismic. The current seismic interpretation therefore carries moderate risk.

A possible extension of closure down dip could result in a large closure which would include the Actaeon Prospect.

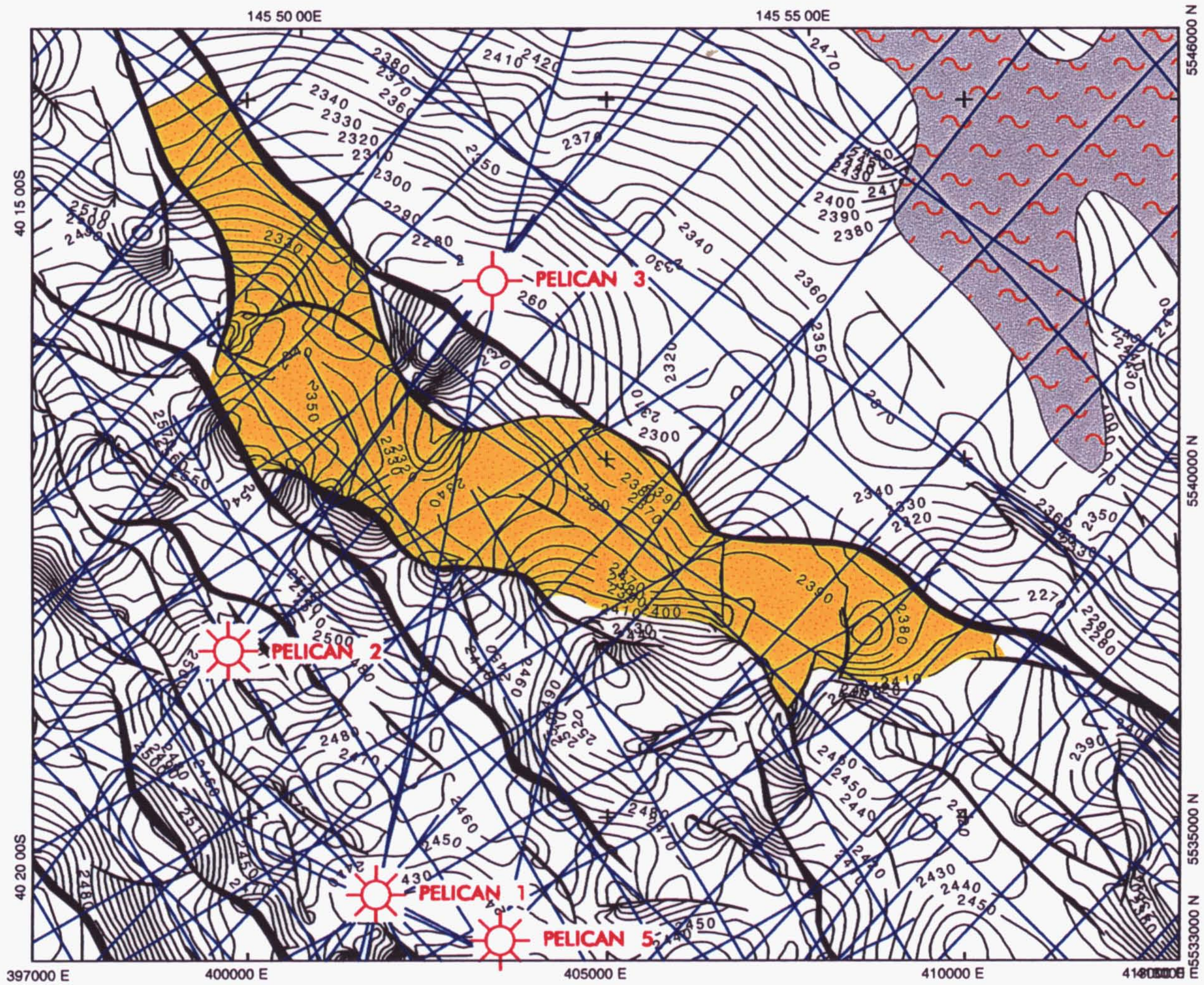
Faulting at Tourville was active until the middle *M.diversus*.

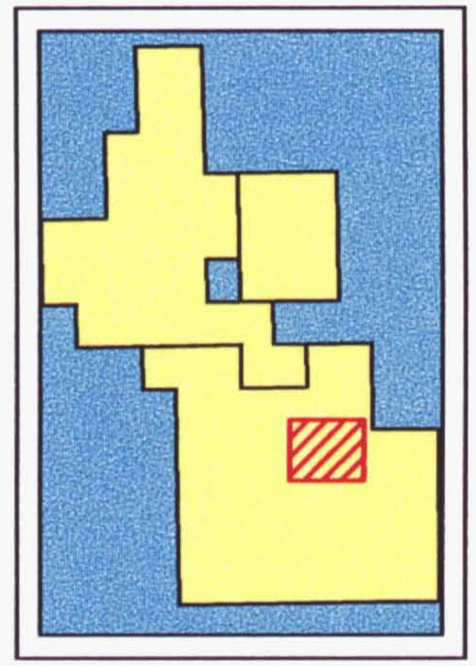
ADDITIONAL WORK REQUIREMENTS

The Tourville Terrace is particularly complicated structurally and has not been completely resolved by the extra Rocky Cape data. It has been proposed that the Tourville Prospect should be upgraded to drillable status and infill lines have been included in the planned 1996 Hummock Seismic Survey accordingly.

510066

BORAL ENERGY





0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

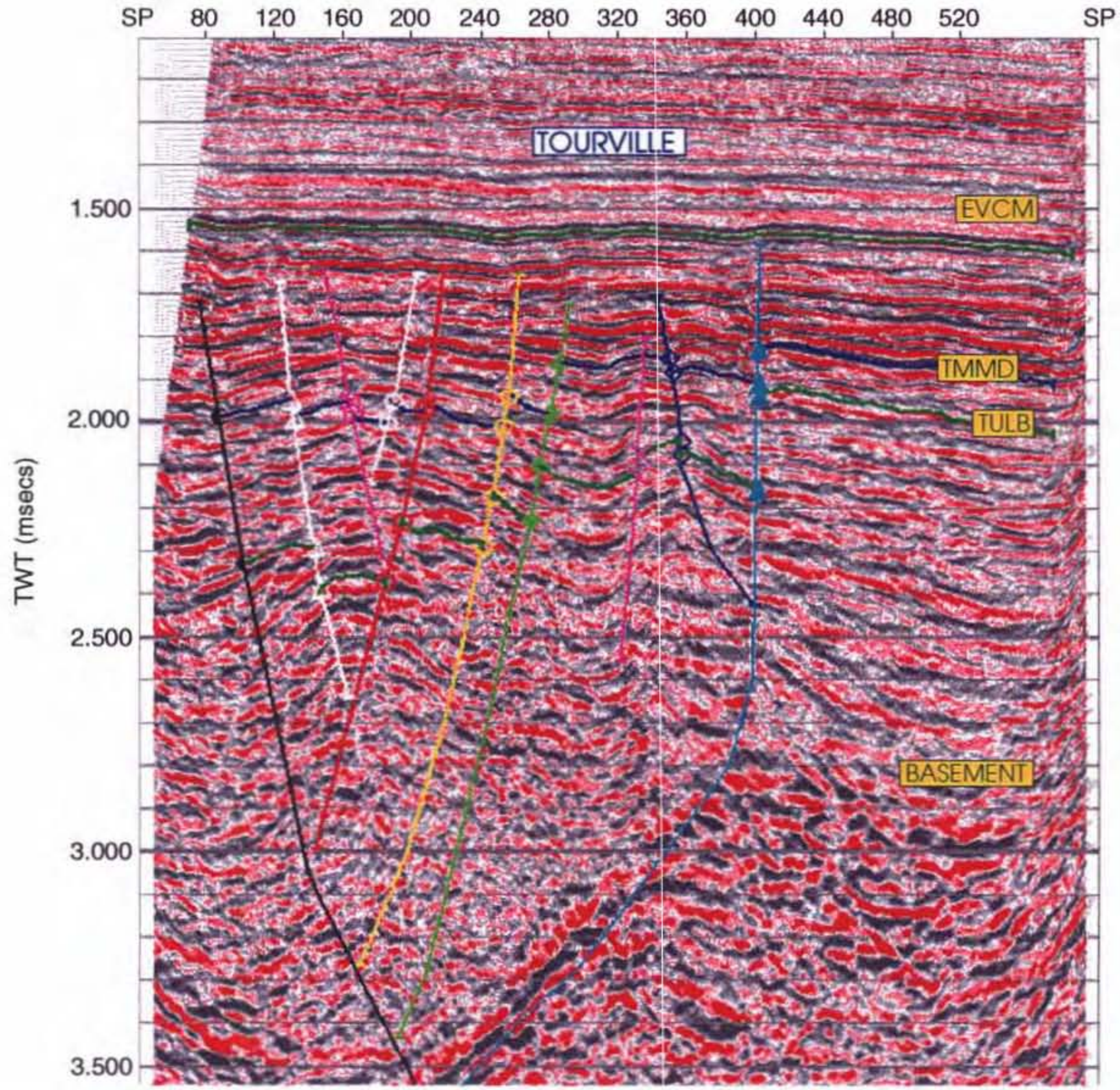
5 cm

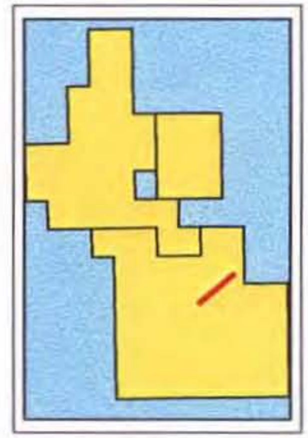
T/25P BASS BASIN TASMANIA

TOURVILLE PROSPECT
TOP MIDDLE M.DIVERSUS
DEPTH STRUCTURE

13686.1195 Fig. 3.32

510067





T/25P BASS BASIN TASMANIA

TOURVILLE PROSPECT

DIP LINE (SB94A–145)

5 cm

No. 13687.1295 Fig. 3.33

PROSPECT DATA SHEET

VERIDIAN

CATEGORY	Lead			
LOCATION	Seismic line TNK4-75 Sp 1183 (Palaeocene)			
DESCRIPTION OF TRAP	Low relief anticline.			
PRIMARY OBJECTIVES	EVCM	-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Palaeocene	48.29 square kilometres
SECONDARY OBJECTIVES	EVCM	- -	Middle *M.diversus* (possible closure) Cretaceous	
DEPTH TO RESERVOIR	EVCM	-	Palaeocene 2538 mSS	

DESCRIPTION OF RISK ELEMENTS

SOURCE

Veridian is located west of Poonboon 1 on the Poonboon Platform. The source potential of this structural province is untested as Poonboon 1 was drilled outside of closure at the objective Palaeocene level. At Veridian the middle *M.diversus* is early mature for oil generation grading to middle mature at the Palaeocene and gas window at basement. The Palaeocene level therefore has the potential for either an oil or gas charge both of which are rated as moderate risk.

Veridian is dependent either on vertical migration to charge the trap or on lateral migration from the Yolla or Squid Troughs.

RESERVOIR

Nangkero 1 and Poonboon 1 have shown that the Poonboon Platform is characterised by generally better reservoir quality than the wells drilled in the Pelican Trough. An average porosity of 21% is predicted for the Palaeocene targets at Veridian. Reservoir risk is considered to be moderate to high.

SEAL

If the anticlinal form of Veridian is confirmed by further seismic data then there is a very good chance that intraformational seals could provide viable traps. Sealing risk is rated as low.

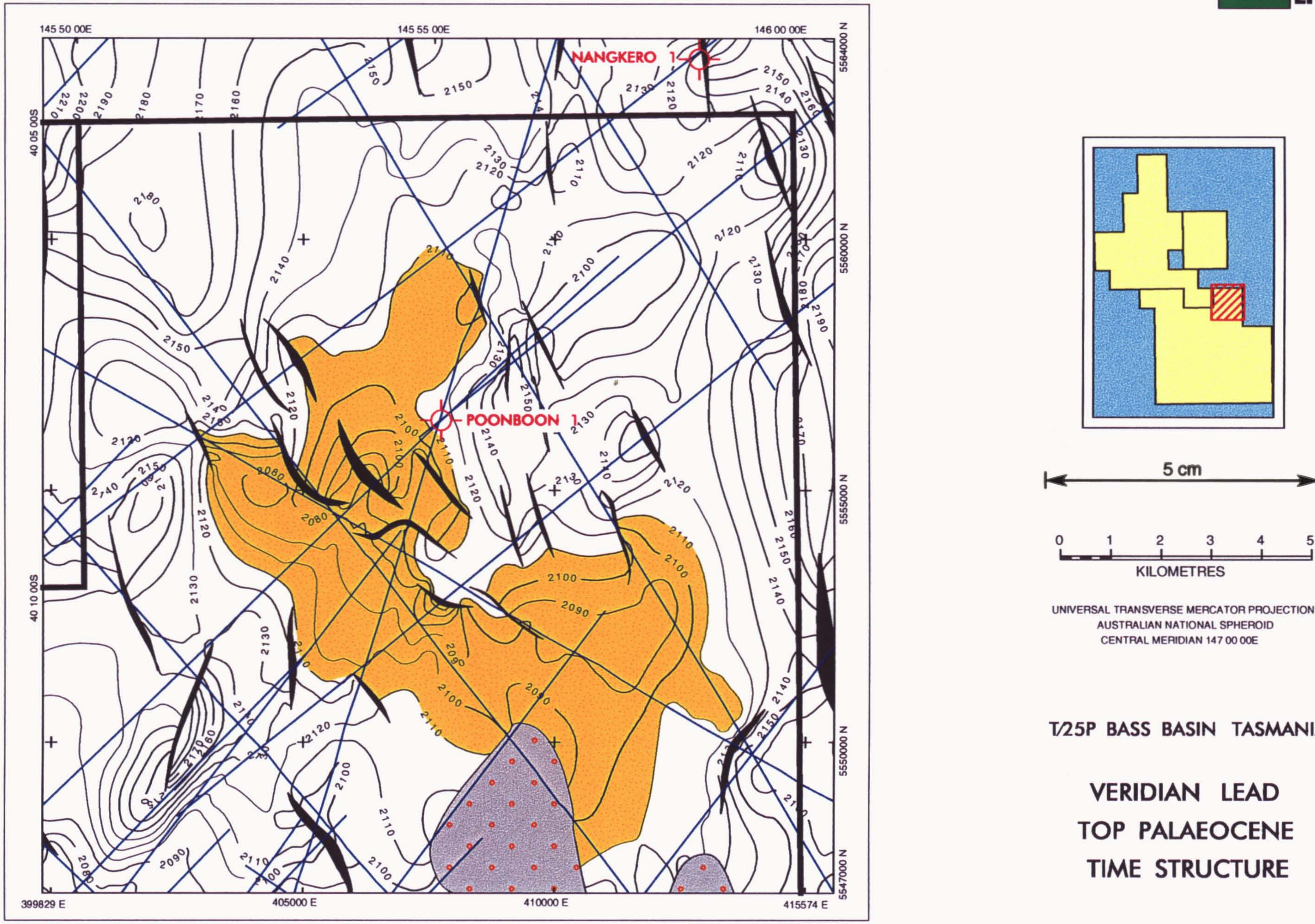
STRUCTURE

Veridian is very poorly controlled on a widely spaced regional seismic grid and could fragment into smaller closures with additional detailed seismic data. Structural closure is therefore rates as high risk.

ADDITIONAL WORK REQUIREMENTS

Veridian was not addressed by the Rocky Cape Seismic Survey. Additional seismic data has been programmed to upgrade Veridian to drillable status if robust closure is proven. This will be acquired as part of the 1996 Hummock Seismic Survey.

510070



UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

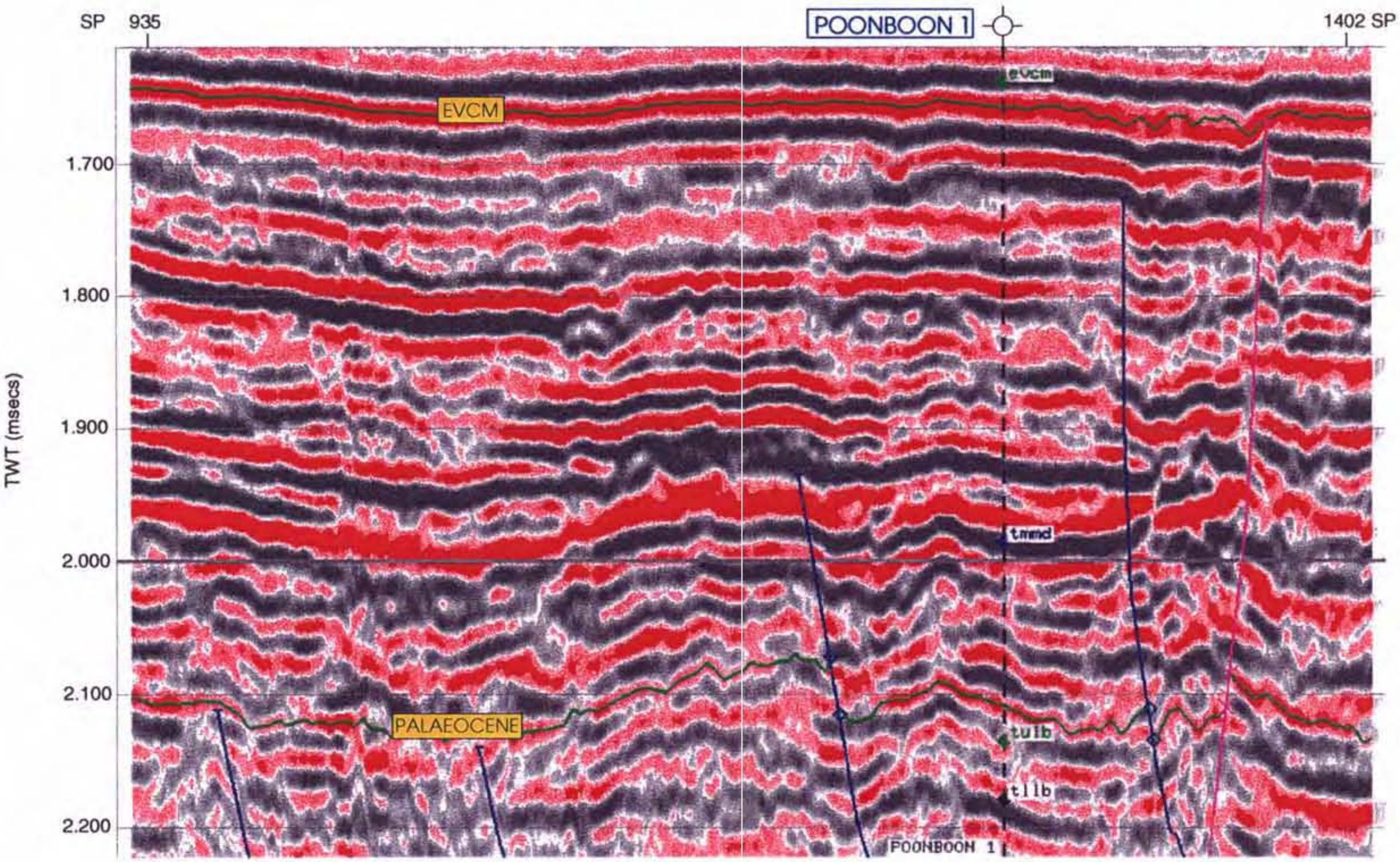
BORAL ENERGY

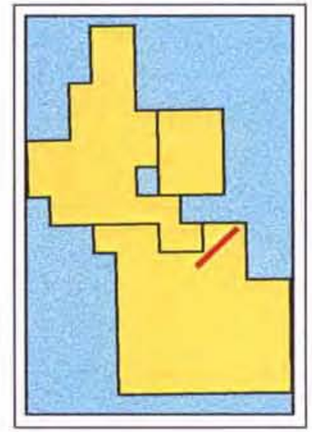
T/25P BASS BASIN TASMANIA

VERIDIAN LEAD
TOP PALAEOCENE
TIME STRUCTURE

13688.1195 Fig. 3.34

BORAL ENERGY





T/25P BASS BASIN TASMANIA

VERIDIAN LEAD
DIP LINE (TNK4–75)

5 cm

No. 13689.1295 Fig. 3.35

PROSPECT DATA SHEET

WARREGO

CATEGORY	Lead			
LOCATION	Seismic line SB94A-157 Sp 265 (middle *M.diversus*) Seismic line SB94A-157 Sp 270 (Palaeocene)			
DESCRIPTION OF TRAP	Complex tilted fault block			
PRIMARY OBJECTIVES	EVCM	-	Middle *M.diversus*	
		-	Palaeocene	
MAXIMUM CLOSURE	EVCM	-	Middle *M.diversus*	30.05 square kilometres
		-	Palaeocene	23.04 square kilometres
SECONDARY OBJECTIVES	None			
DEPTH TO RESERVOIR	EVCM	-	Middle *M.diversus*	2208 mSS
		-	Palaeocene	2215 mSS

DESCRIPTION OF RISK ELEMENTS

SOURCE

Warrego is located at the southern end of the Pelican 3 high, at the south western end of the Poonboon Platform, and updip of the Actaeon lead. For this reason the prospect is dependent on sourcing either from spillage from Actaeon, vertical migration up faults, or from migration from probable but unproven mature areas to the northeast of the lead. At Warrego the middle *M.diversus* is early-mature for oil generation grading to early-middle mature at Palaeocene and is in the late gas generation window at basement. Source risk for gas at Warrego is rated as low to moderate whilst oil charge is ranked as moderate.

RESERVOIR

At Warrego a similar stratigraphic sequence is predicted to that encountered in Pelican 3, that is a condensed Eocene sedimentary section overlying the Palaeocene. Therefore the middle *M.diversus* objective will be thin, but this will be partly compensated for by good reservoir preservation with average porosity of at least 25%. Similarly the Palaeocene has not been buried as deeply as in the Pelican Trough and average porosities of approximately 20% are predicted. With the exception of Pelican 3 to the north, well control is poor and there is scope for significant facies variations to occur at Warrego. For example Baillie *et al* (1991) postulated that upper delta plain stacked point-bar sequences might provide better reservoir targets in this southern part of the basin. Reservoir quality and distribution at Warrego is therefore considered low to moderate risk in the middle *M.diversus* and moderate risk in the Palaeocene.

SEAL

Closure at Warrego is dependent on proven intraformational top sealing units in the middle *M.diversus* and Palaeocene which have low risk, and fault plane seals or juxtaposition with shale units on at least two orthogonal faults which have high risk. The Palaeocene reservoir sequences are juxtaposed against potential sealing units in the middle and lower *M.diversus* across the Warrego Fault.

STRUCTURE

Warrego was targeted by the 1994 Rocky Cape Seismic Survey however, interpretation of the southern margin of closure remains ambiguous. The structural setting of Warrego is similar to Pelican 3 which failed as a trapping mechanism. However Warrego is updip of Pelican 3 at the Palaeocene and deeper levels and it is at the intersection of the northwest to southeast pervasive basin grain with a more east-west structural orientation in the southeastern part of the Pelican Trough which may enhance migration of hydrocarbons into the structure. Therefore the structural risk at Warrego is considered to be moderate to high. Fault movement along the bounding Warrego Fault is observed to have been active through until the deposition of the upper EVCM. At the northern margin of the structure a sequence of thin extrusive volcanics are observed on seismic near the top of the EVCM, however these deposits do not affect the mapped closures.

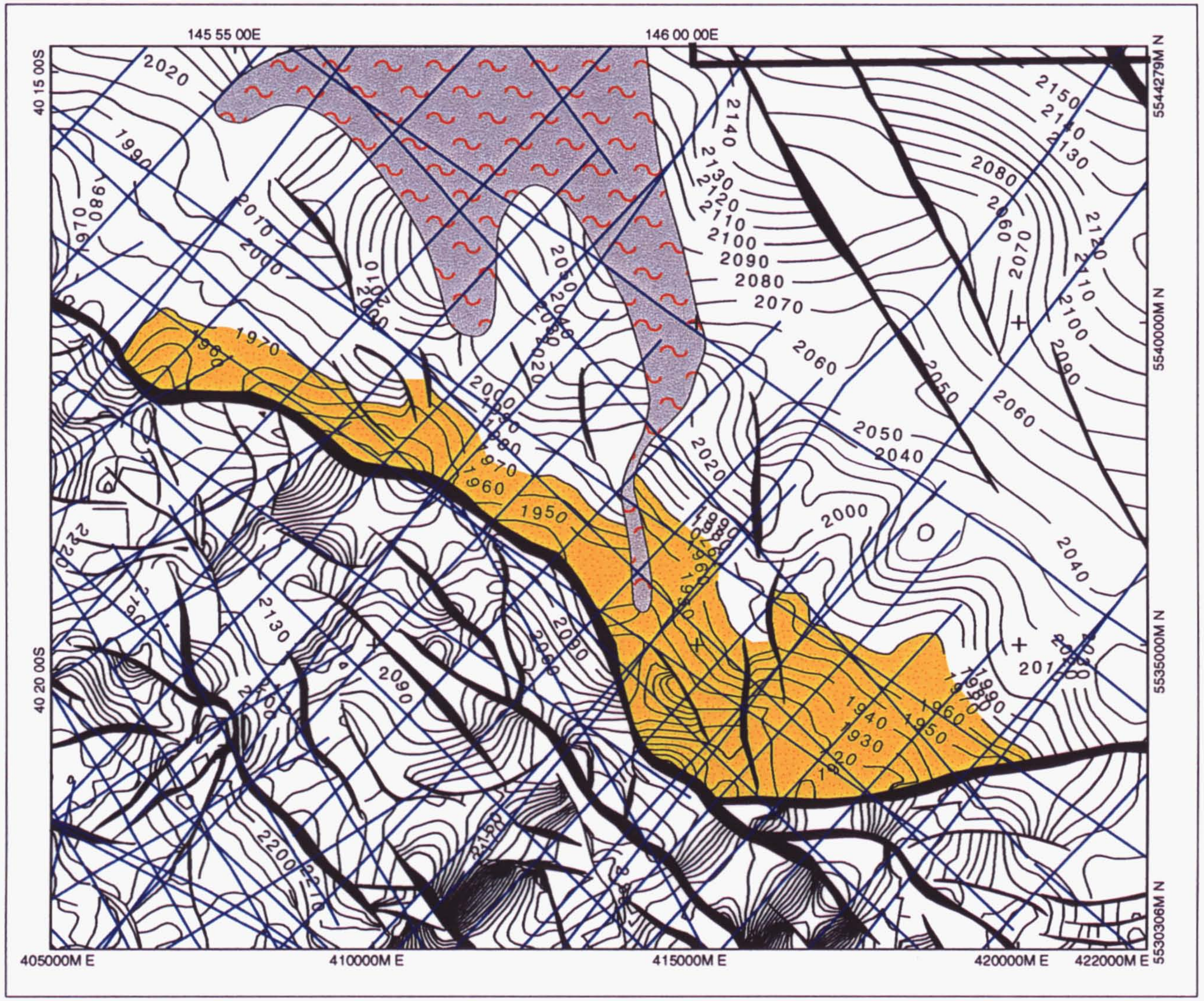
ADDITIONAL WORK REQUIREMENTS

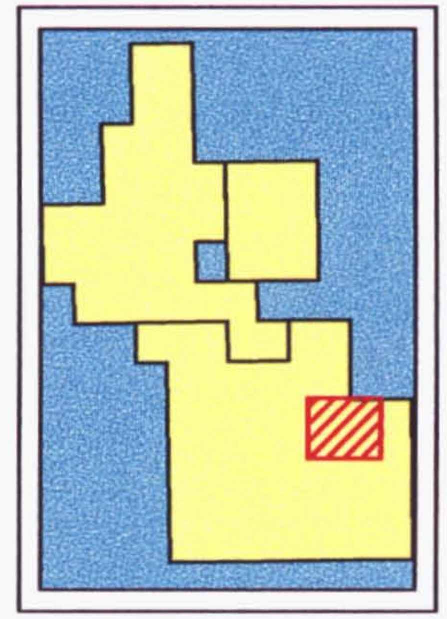
Warrego requires more seismic to provide better understanding of the southern portion of the closure and to upgrade the prospect to drillable status.

Due to the perceived similarity with the unsuccessful Pelican 3 structure no further work is proposed for the structure.

510074

BORAL ENERGY





0 1 2 3 4 5
KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

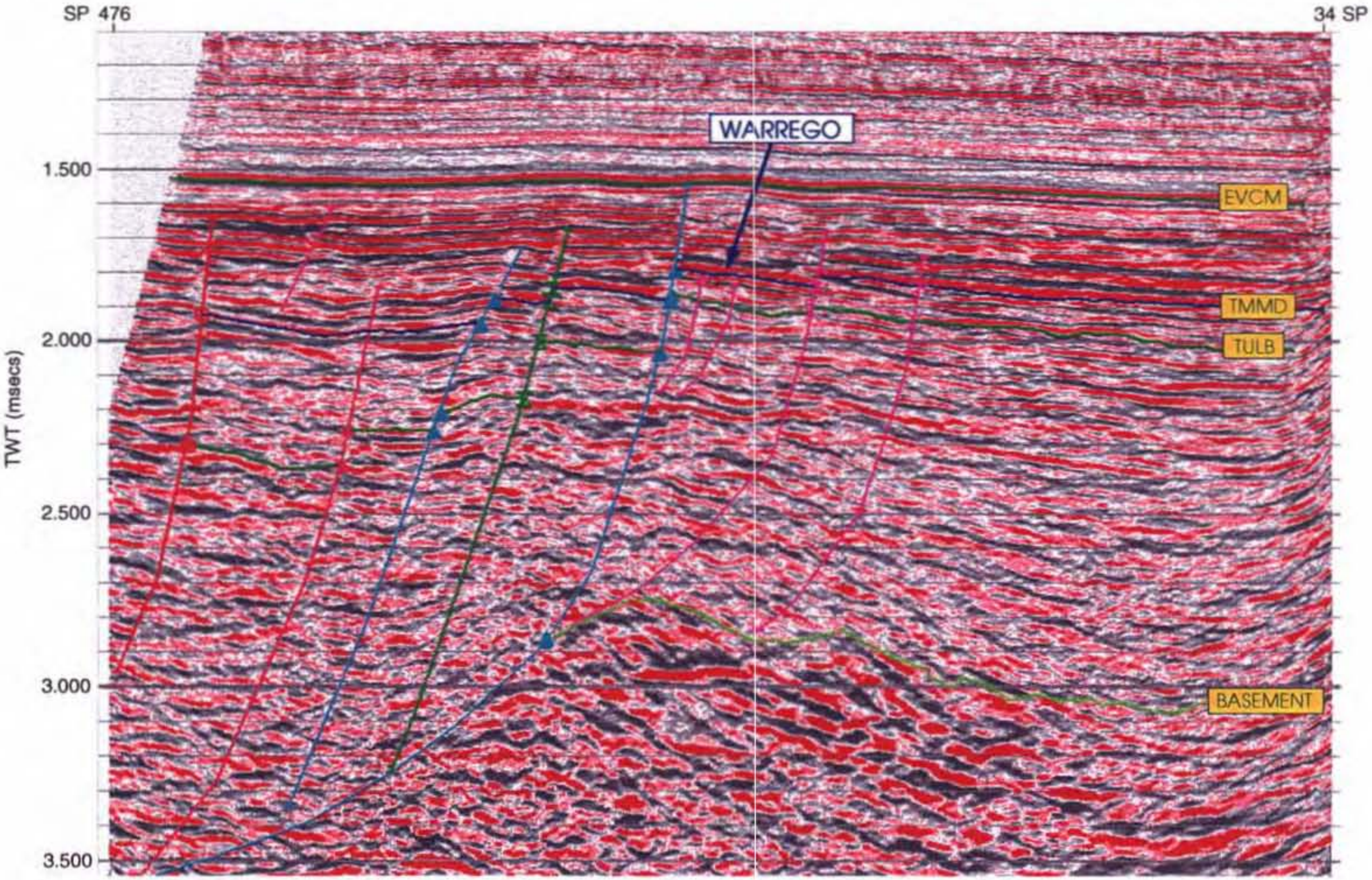
T/25P BASS BASIN TASMANIA

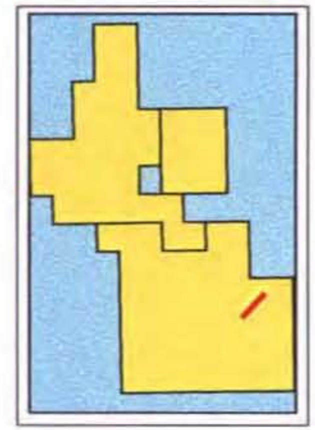
WARREGO PROSPECT
TOP PALAEOCENE
TIME STRUCTURE

13690.1195 Fig. 3.36

510075

BOARAL ENERGY





T/25P BASS BASIN TASMANIA

WARREGO PROSPECT
DIP LINE (SB94A–157)

5 cm

No. 13691.1295 Fig.3.37

4 CONCLUSIONS AND RECOMMENDATIONS

The 1994 Rocky Cape Seismic Survey and associated reprocessing successfully improved our understanding of several leads and prospects. The data quality from the new acquisition was good however line lengths were marginal in terms of allowing sufficient migration aperture. Future acquisition programs should consider more generous line lengths given the enhancement of structural resolution. The relatively low signal to noise ratio from the EVCM requires a more limited approach to post-stack enhancement than was used in the Rocky Cape Survey. In retrospect the data appeared more "wormy" than it should have.

The loss of Clarke from the prospect inventory is disappointing but it is more than compensated for by the addition of the prospective SW-Flank leads. The southern basin margin provides good "blue-sky" potential for the permit, however a large seismic program will be required to progress from the conceptual leads identified. The remaining structures which were targeted have firmed to be viable prospects and leads, three of which will be matured to drillable status by the 1996 Hummock Seismic Survey. These are the Eddystone and Tourville Prospects and the Veridian Lead. Each are very interesting in their own right. Eddystone is a robust simple tilted fault block with a structural history which would suggest middle M.diversus channel sandstones could be concentrated at the structure. Tourville has remained structurally high for all its history and is the axis for later regional flexuring such that it has top EVCM closure. The proximity of Tourville downthrown from the Pelican 3 high could allow it to receive alluvial fan deposits. Additionally it could be face loaded by deep mature source rocks from the Pelican 3 high. Veridian is a rare example, in the Bass, of a simple four-way-dip-closure. It is located in a zone of known good reservoir quality and robust intraformational seals so it lends itself to this style of trap. Each of these structures have aspects of risk attached to them. The structural risk will be reduced by the 1996 Hummock Seismic Survey but little additional work is possible to improve our understanding of source and reservoir risks given the sparsity of well control.

The T/25P permit is therefore viewed to have good prospectivity following the Rocky Cape Seismic Survey with moderate risk levels and reasonable chances of success for the prospects and leads identified.

APPENDIX 1: WELL INFORMATION WITH PALYNOLOGY

The palynology information provided was extracted from "PALYNOLOGICAL REVIEW OF PREVIOUS OIL DRILLING, BASS BASIN, AUSTRALIA" by Roger Morgan for Amoco Australia (20 February 1985). Pelican 5 palynology was taken from "PELICAN 5 FINAL WELL REPORT", March 1987 (section by Roger Morgan). Flinders 1 palynology was taken from "FLINDERS 1 WELL COMPLETION REPORT", April 1993 (section by Alan D Partridge and Roger Morgan).

All other information provided was taken from the well completion reports.

FLINDERS 1

GENERAL INFORMATION

Latitude:	40° 22' 51.810"	Longitude:	145° 40' 18.690" E
KB (RT):	22.3 m	WD:	69.25 m
TD:	2723 m	SPUD:	29 November 1992
RIG:	Ocean Epoch	STATUS:	P&A
Top Demons's Bluff:	1414.2 m	Top EVCM:	1523.7 m

PALYNOLOGY

Score:	0	=	Excellent, SWC or Core
	1	=	Good, SWC or Core
	2	=	Poor, SWC or Core
	3	=	Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus				
Lower N.asperus	5256' (1602m)	3	5256' (1602m)	3
P.asperopolus	(Carbonised samples between 1702-2304m)			
Upper M.diversus	(are Eocene in age but assemblages)			
Middle M.diversus	(cannot be confidently assigned to zones)			
Lower M.diversus	7761' (2365.5m)	3	7930' (2417m)	3
Upper L.balmei	8075' (2461m)	3	8075' (2461m)	3
Lower L.balmei	8216' (2504m)	3	8821' (2688.5m)	3

IGNEOUS ROCK OCCURRENCES

A 67m thick dolerite sill was encountered at 2185.7 mSS.

NARIMBA 1

GENERAL INFORMATION

Latitude:	40° 16' 18.080"S	Longitude:	145° 43' 53.581" E
KB (RT):	9.75 m	WD:	77.1 m
TD:	3353.7 m	SPUD:	31 August 1973
RIG:	Glomar Conception	STATUS:	Gas Shows, P&A
Top Demons's Bluff:	1644.7 mSS	Top EVCM:	1783.7 mSS

PALYNOLOGY

Score: 0 = Excellent, SWC or Core
1 = Good, SWC or Core
2 = Poor, SWC or Core
3 = Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5850' (1783.1m)	0	5850' (1783.1m)	0
Lower N.asperus	6160' (1877.6m)	2	7243' (2207.7m)	2
P.asperopolus	7434' (2265.9m)	1	7616' (2321.4m)	1
Upper M.diversus	7830' (2386.6m)	2	8210' (2502.4m)	1
Middle M.diversus	8335' (2540.5m)	1	9170' (2795.0m)	1
Lower M.diversus	9246' (2818.2m)	1	10770' (3282.7m)	2

IGNEOUS ROCK OCCURRENCES

Nil

PELICAN 1

GENERAL INFORMATION

Latitude:	40° 20′ 20.8"S	Longitude:	145° 50′ 37.1" E
KB (RT):	30.48 m	WD:	76.5 m
TD:	3178.5 m	SPUD:	19 March 1970
RIG:	Ocean Digger	STATUS:	Gas/Cond Discovery, P&A
Top Demons's Bluff:	1604.7 mSS	Top EVCM:	1725.2 mSS

PALYNOLOGY

Score: 0 = Excellent, SWC or Core
1 = Good, SWC or Core
2 = Poor Confidence, SWC or Core

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5748′ (1752.0m)	1	5933′ (1808.4m)	1
Lower N.asperus	6057′ (1846.2m)	2	6604′ (2012.9m)	1
P.asperopolus	6834′ (2083.0m)	1	7346′ (2239.1m)	1
Upper M.diversus	7527′ (2294.2m)	1	7752′ (2362.8m)	1
Middle M.diversus	8198′ (2498.8m)	1	9269′ (2825.2m)	1
Lower M.diversus	9282′ (2829.2m)	1	10315′ (3144.0m)	2
Upper L.balmei	10394′ (3168.1m)	1	10396′ (3168.7m)	2

IGNEOUS ROCK OCCURRENCES

Nil

PELICAN 2

GENERAL INFORMATION

Latitude:	40° 18' 28.426"S	Longitude:	145° 49' 12.27" E
KB (RT):	30.48 m	WD:	77.7 m
TD:	3068.1 m	SPUD:	28 July 1970
RIG:	Ocean Digger	STATUS:	Gas/Cond Appraisal, P&A
Top Demons's Bluff:	1644.1 mSS	Top EVCM:	1764.2 mSS

PALYNOLOGY

Score: 0 = Excellent, SWC or Core
1 = Good, SWC or Core
2 = Poor Confidence, SWC or Core

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5900' (1798.3m)	1	5949' (1813.3m)	2
Lower N.asperus	6242' (1902.6m)	1	6980' (2127.5m)	1
P.asperopolus	7340' (2237.2m)	2	7505' (2287.5m)	2
Upper M.diversus	7702' (2347.6m)	1	8323' (2536.9m)	2
Middle M.diversus	8740' (2664.0m)	1	9598' (2925.5m)	1
Lower M.diversus	9803' (2988.0m)	1	10009' (3050.7m)	1

IGNEOUS ROCK OCCURRENCES

Nil

PELICAN 3

GENERAL INFORMATION

Latitude:	40° 15' 44.99"S	Longitude:	145° 51' 50.60" E
KB (RT):	9.75 m	WD:	80.2 m
TD:	2906.9 m	SPUD:	1 May 1972
RIG:	Glomar Conception	STATUS:	Gas Shows, P&A
Top Demons's Bluff:	1657 mSS	Top EVCM:	1778 mSS

PALYNOLOGY

Score:	0	=	Excellent, SWC or Core
	1	=	Good, SWC or Core
	2	=	Poor, SWC or Core
	3	=	Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5460' (1664.2m)	1	5980' (1822.7m)	2
Lower N.asperus	6257' (1907.1m)	1	6628' (2020.2m)	2
P.asperopolus	6800' (2072.6m)	1	7100' (2164.1m)	3
Upper M.diversus	7320' (2231.1m)	3		
Middle M.diversus	-		7930' (2417.1m)	3
Lower M.diversus	-			
Upper L.balmei	7950' (2423.2m)	3	8285' (2525.3m)	1
Lower L.balmei	8300' (2529.8m)	3	9520' (2901.7m)	1

IGNEOUS ROCK OCCURRENCES

Nil

PELICAN 4

GENERAL INFORMATION

Latitude:	40° 21' 40.02"S	Longitude:	145° 52' 15.36" E
KB (RT):	25.0 m	WD:	77.4 m
TD:	3051 m	SPUD:	17 January 1979
RIG:	Ocean Endeavour	STATUS:	Gas/Cond Appraisal, P&A
Top Demons's Bluff:	1609.0 mSS	Top EVCM:	1710.0 mSS

PALYNOLOGY

Score:
0 = Excellent, SWC or Core
1 = Good, SWC or Core
2 = Poor, SWC or Core
3 = Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5700' (1737.4m)	0	5700' (1737.4m)	0
Lower N.asperus	6030' (1837.9m)	3	6120' (1865.4m)	3
P.asperopolus	6770' (2063.5m)	3	7370' (2246.4m)	3
Upper M.diversus	7600' (2316.5m)	3	7800' (2377.4m)	3
Middle M.diversus	8210' (2502.4m)	3	9350' (2849.9m)	0
Lower M.diversus	9363' (2853.8m)	0	9650' (2941.3m)	3
Upper L.balmei	9860' (3005.3m)	3	10009' (3050.7m)	3

IGNEOUS ROCK OCCURRENCES

Nil

PELICAN 5

GENERAL INFORMATION

Latitude:	40° 20' 43.472"S	Longitude:	145° 41' 49.296" E
KB (RT):	22.3 m	WD:	77 m
TD:	4267 m	SPUD:	16 April 1986
RIG:	Diamond M Epoch	STATUS:	Gas/Cond Appraisal, P&A
Top Demons's Bluff:	1608 mSS	Top EVCM:	1725 mSS

PALYNOLOGY

Score:
- 0 = Excellent, SWC or Core
- 1 = Good, SWC or Core
- 2 = Poor, SWC or Core
- 3 = Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5676' (1730m)	3	6073' (1737m)	3
Lower N.asperus	6191' (1887m)	3	7169' (2185m)	1
P.asperopolus	7326' (2233m)	1	7618' (2322m)	3
Upper M.diversus	7766' (2367m)	3	8268' (2520m)	3
Middle M.diversus	8390' (2557m)	1	9213' (2808m)	1
Lower M.diversus	9338' (2846m)	1	9981' (3042m)	1
Upper L.balmei	10365' (3159m)	3		
Lower L.balmei			11398' (3474m)	3
T.longua	11546' (3519m)	3	12930' (3941m)	1
T.lilliei	13045' (3976m)	2	13934' (4247m)	2

IGNEOUS ROCK OCCURRENCES

Nil

PIPIPA 1

GENERAL INFORMATION

Latitude:	40° 23' 14"S	Longitude:	145° 41' 45" E
KB (RT):	21 m	WD:	73 m
TD:	2115 m	SPUD:	23 May 1982
RIG:	Southern Cross	STATUS:	Oil & Gas Shows, P&A
Top Demons's Bluff:	1390 mSS	Top EVCM:	1502 mSS

PALYNOLOGY

Score: 0 = Excellent, SWC or Core
1 = Good, SWC or Core
2 = Poor, SWC or Core
3 = Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	4639' (1414.0m)		5009' (1526.7m)	?
Lower N.asperus	5052' (1539.8m)		5382' (1640.4m)	?
P.asperopolus	-		-	
Upper M.diversus	-		-	
Middle M.diversus	-		-	
Lower M.diversus	-		6558' (1998.9m)	?

IGNEOUS OCCURRENCES

Abnormal vitrinite reflectance values below 1750m indicates the presence of an igneous intrusive close to the well bore.

POONBOON 1

GENERAL INFORMATION

Latitude:	40° 08′ 15.19"S	Longitude:	145° 55′ 01.29" E
KB (RT):	9.75 m	WD:	78.9 m
TD:	3265.9 m	SPUD:	29 August 1972
RIG:	Glomar Conception	STATUS:	Gas Shows, P&A
Top Demons's Bluff:	1745 mSS	Top EVCM:	1882 mSS

PALYNOLOGY

Score:
- 0 = Excellent, SWC or Core
- 1 = Good, SWC or Core
- 2 = Poor, SWC or Core
- 3 = Fair, Cuttings

Zone	Preferred Top Range	Score	Preferred Base Range	Score
Middle N.asperus	5600′ (1706.9m)	1	6525′ (1988.8m)	1
Lower N.asperus	6600′ (2011.7m)	1	7200′ (2194.6m)	1
P.asperopolus	7300′ (2225.0m)	1	7602′ (2317.1m)	1
Upper M.diversus	7800′ (2377.4m)	1	7800′ (2377.4m)	1
Middle M.diversus	7960′ (2426.2m)	1	8118′ (2474.4m)	1
Lower M.diversus	8250′ (2514.6m)	1	8700′ (2651.8m)	1
Upper L.balmei	8788′ (2678.6m)	1	8980′ (2737.1m)	3
Lower L.balmei	9050′ (2758.4m)	3	10608′ (3233.3m)	1
T.longus	10654′ (3247.3m)	1	10715′ (3265.9m)	1

IGNEOUS OCCURRENCES

Nil

APPENDIX 2: CHECKSHOT DATA

FLINDERS 1

VSP DATA (SUBSET)

DEPTH (mSS)	TIME (ms OWT, BSL)
377.7	193.8
477.7	241.1
577.7	280.3
677.7	322.5
777.7	365.6
877.7	404.7
977.7	444.8
1077.7	489.8
1177.7	533.8
1277.7	574.9
1377.7	612.9
1477.7	651.9
1577.7	692.0
1677.7	725.0
1777.7	758.0
1877.7	792.0
1977.7	824.0
2077.7	857.0
2177.7	887.1
2277.7	909.1
2377.7	941.1
2477.7	969.1
2577.7	997.1
2682.7	1029.1

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NARIMBA 1

VSP DATA

DEPTH (m bsl)	TIME (ms OWT, BSL)	DEPTH (m, bsl)	TIME (ms OWT, BSL)
853	378	2326	917
1033	457	2347	923
1212	532	2370	933
1467	636	2395	939
1645	701	2413	944
1783	751	2431	948
1971	815	2461	960
1999	819	2495	969
2039	832	2537	980
2066	843	2573	987
2124	858	2592	992
2149	865	2664	1014
2168	869	2730	1032
2206	881	2835	1059
2215	885	2913	1080
2234	892	2994	1101
2246	896	3136	1137
2276	904	3215	1157
2310	913	3335	1188

PELICAN 1

CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
762	344
1183	521
1393	607
1606	686
2134	863
2530	981

PELICAN 2

CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
1175	519
1792	749
2149	869
2502	976
2856	1074
3063	1131

PELICAN 3

CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
953	429
1780	755
2225	896
2408	946
2771	1045

PELICAN 4

CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
77	52
700	319
1231	543
1337	589
1481	645
1613	691
1723	734
1842	772
1888	787
2139	863
2215	885
2285	906
2359	928
2416	948
2474	960
2688	1022
2764	1044
2810	1055
2836	1064
2888	1076
2933	1090
3023	1119

PELICAN 5

VSP DATA

DEPTH (mSS)	TIME (ms OWT, BSL)	DEPTH (mSS)	TIME (ms OWT, BSL)
1509	653	2649	1009
1549	668	2689	1021
1588	681	2729	1032
1629	695	2789	1051
1689	719	2829	1057
1729	734	2869	1066
1769	748	2909	1079
1809	761	2969	1095
1849	774	3009	1105
1889	787	3049	1116
1929	799	3089	1126
1969	811	3129	1137
2009	823	3169	1149
2049	835	3229	1165
2089	847	3269	1176
2129	860	3309	1186
2169	871	3349	1197
2209	884	3389	1207
2249	896	3429	1218
2289	908	3469	1230
2329	921	3509	1238
2369	933	3569	1255
2409	945	3609	1265
2443	955	3679	1285
2489	966	3779	1309
2529	977	3879	1341
2569	989	4129	1399
2609	999	4199	1416

PIPIPA 1

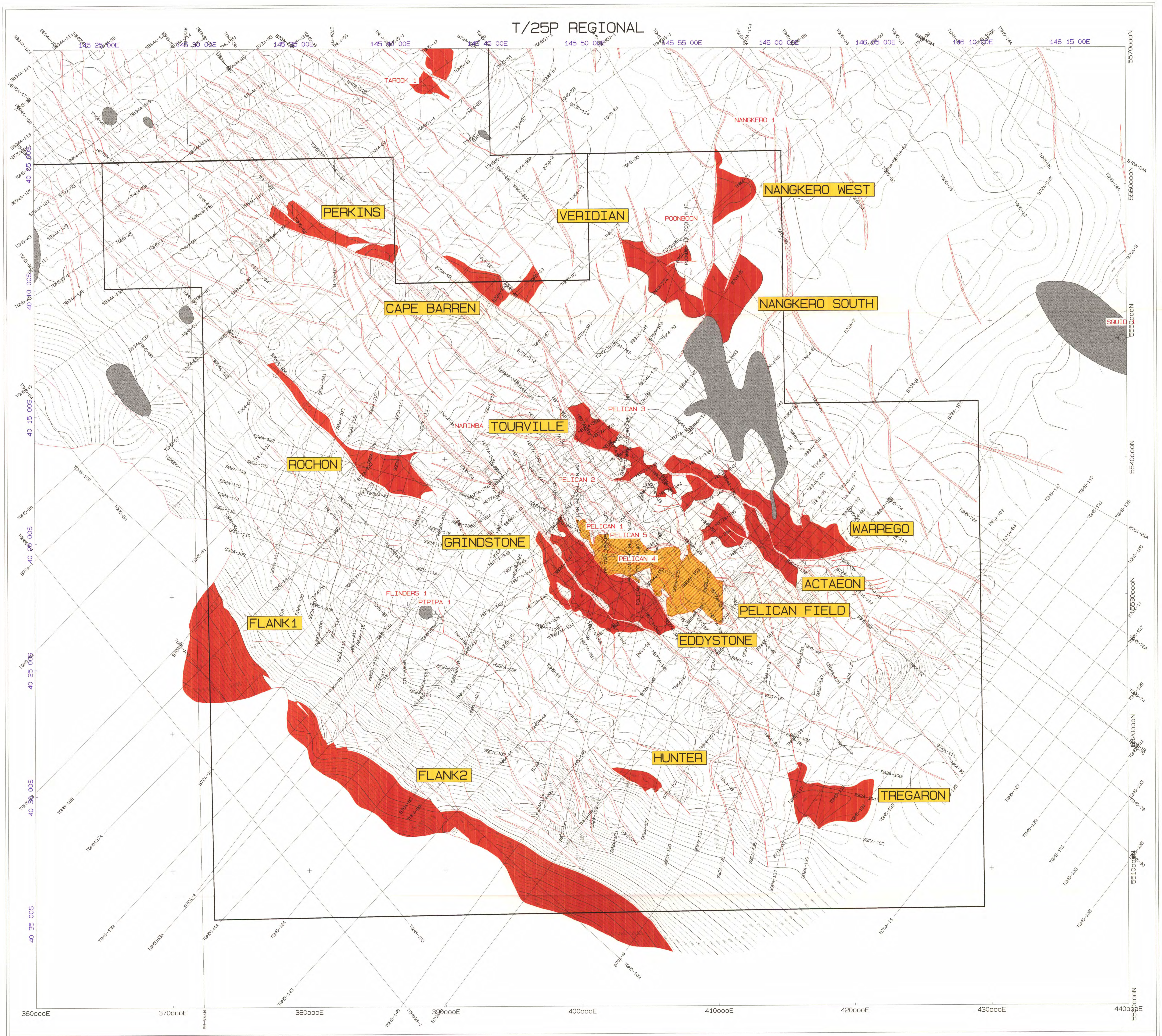
CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
73	49
192	111
379	201
599	290
729	344
845	393
932	427
1029	468
1119	510
1279	576
1389	617
1501	665
1716	736
1804	766
1904	797
2094	859

POONBOON 1

CHECKSHOT DATA

DEPTH (mSS)	TIME (ms OWT, BSL)
1203	539
1394	622
1745	751
1882	803
2160	893
2395	971
2672	1049
2681	1051
2819	1089
2972	1130
3124	1172
3246	1205



BORAL ENERGY

PERMIT T/25P, BASS BASIN
TASMANIA
LEADS AND PROSPECTS
PALAEOCENE TIME STRUCTURE

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Checked By :	Drawing No.:	Revised :

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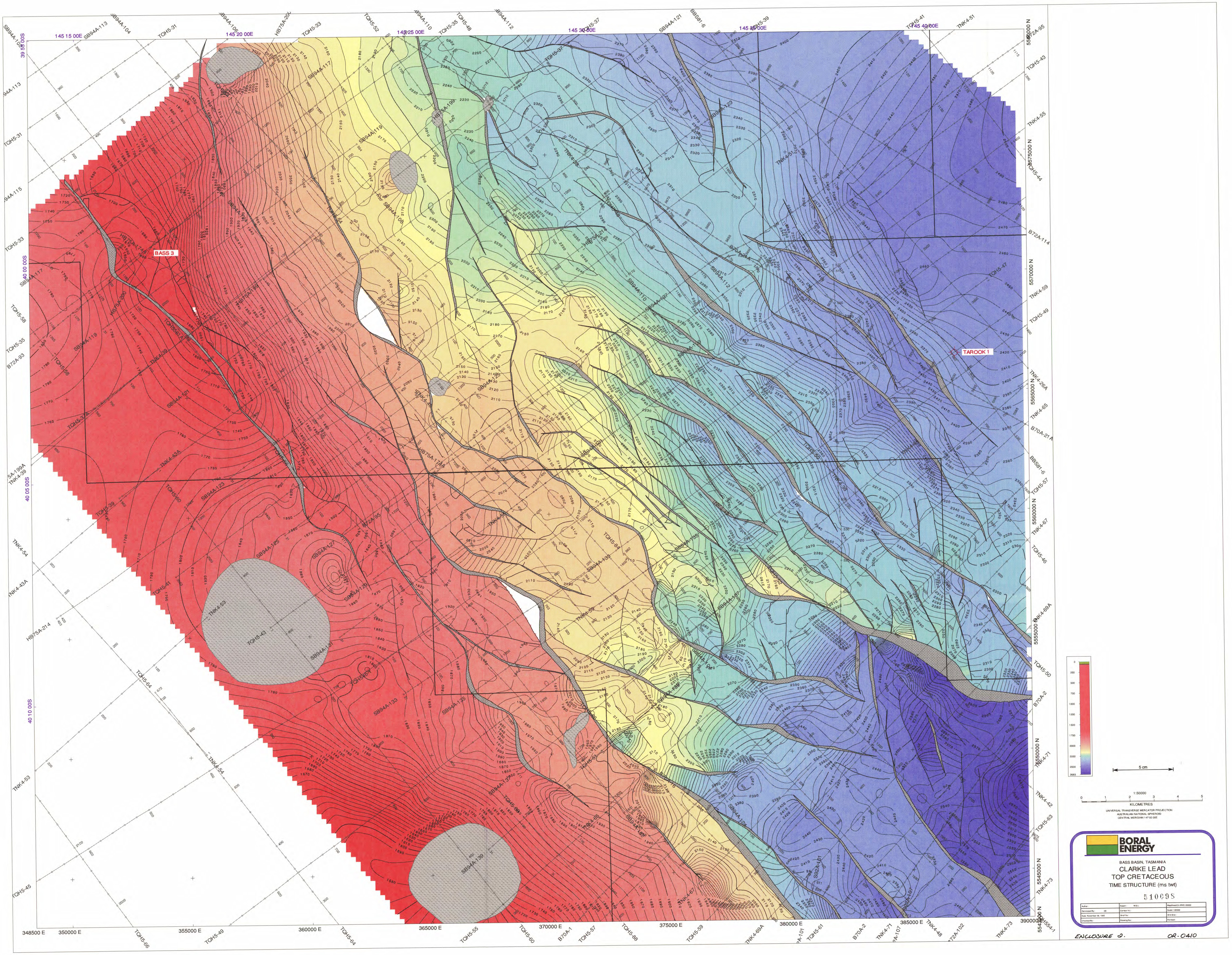
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UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E
BORAL ENERGY
BASS BASIN, TASMANIA
CLARKE LEAD
TOP CRETACEOUS
TIME STRUCTURE (ms twt)
510098
Author :
Datum : M.S.L.
MapSheet:CLARKE-50000
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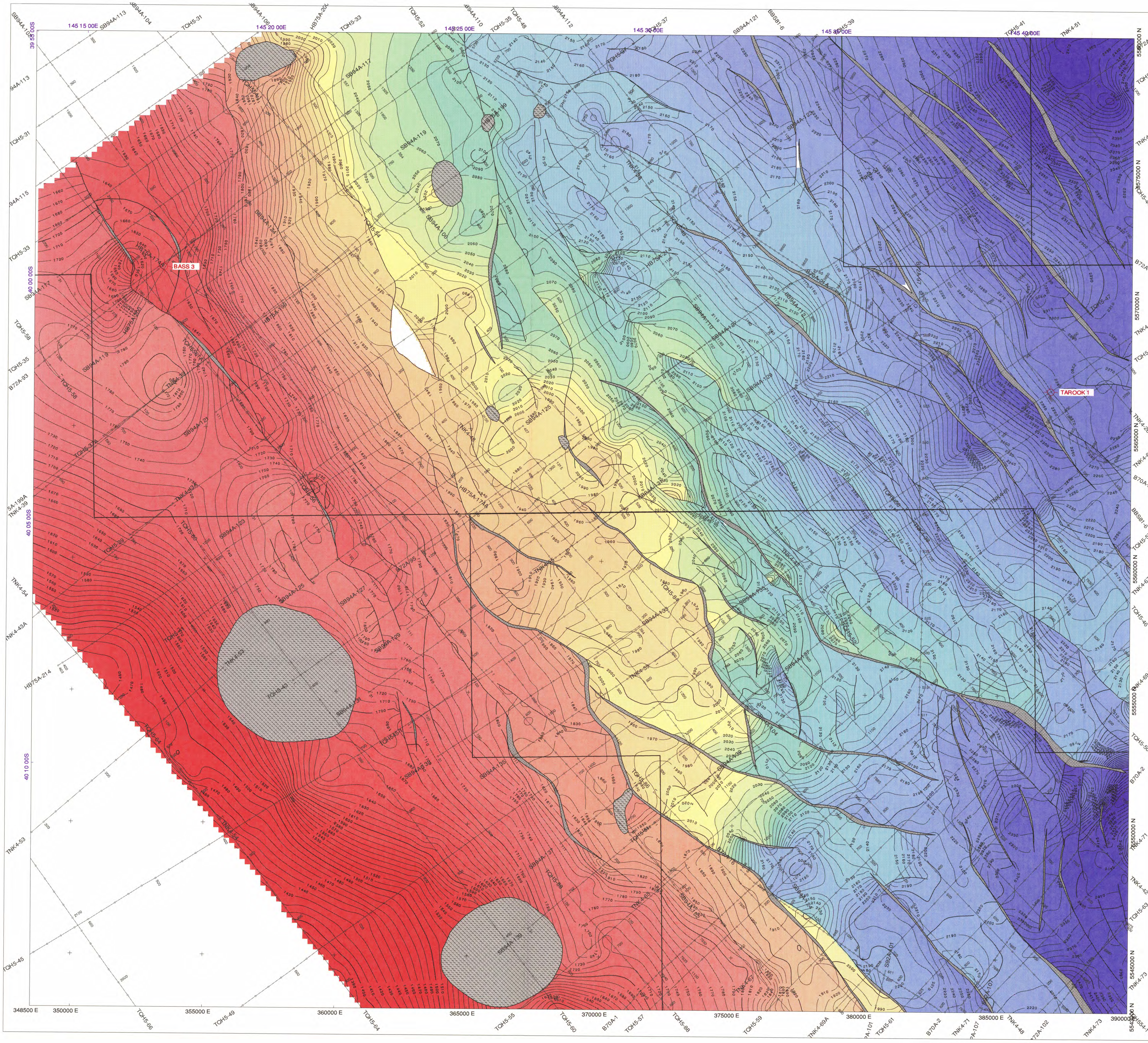
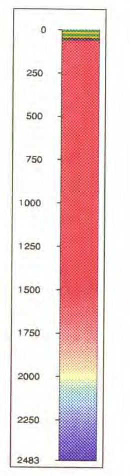
Revised :
ENCLOSURE 2.
OR-0410





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KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

510099

BORAL ENERGY

BASS BASIN, TASMANIA

CLARKE LEAD
TOP PALAEOCENE
TIME STRUCTURE (ms twt)

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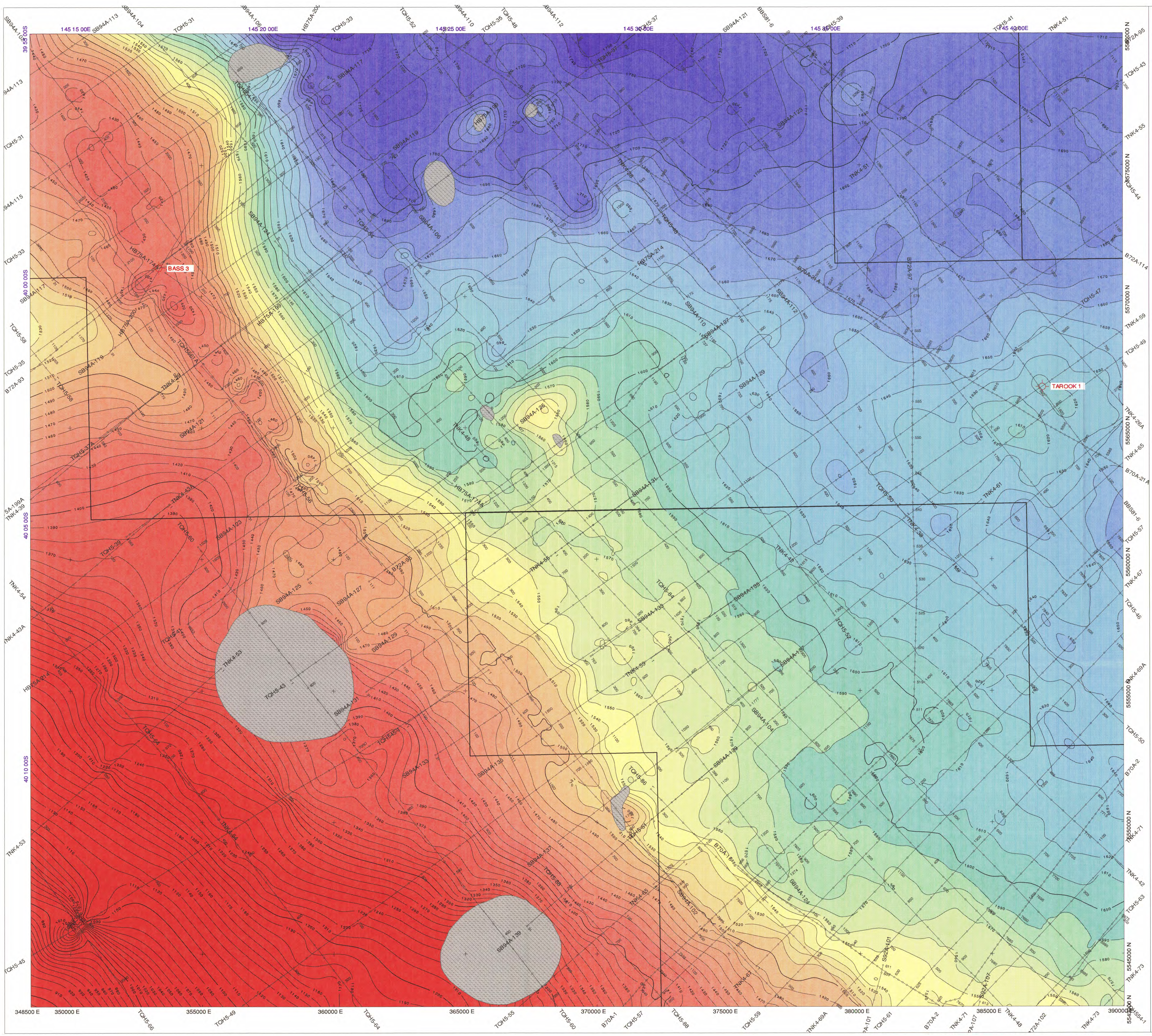

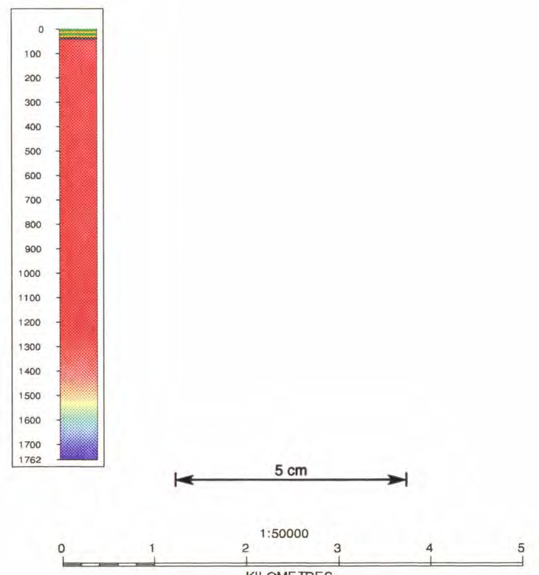

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

510100

BORAL ENERGY

BASS BASIN, TASMANIA

CLARKE LEAD
TOP EVCM

TIME STRUCTURE (ms twt)

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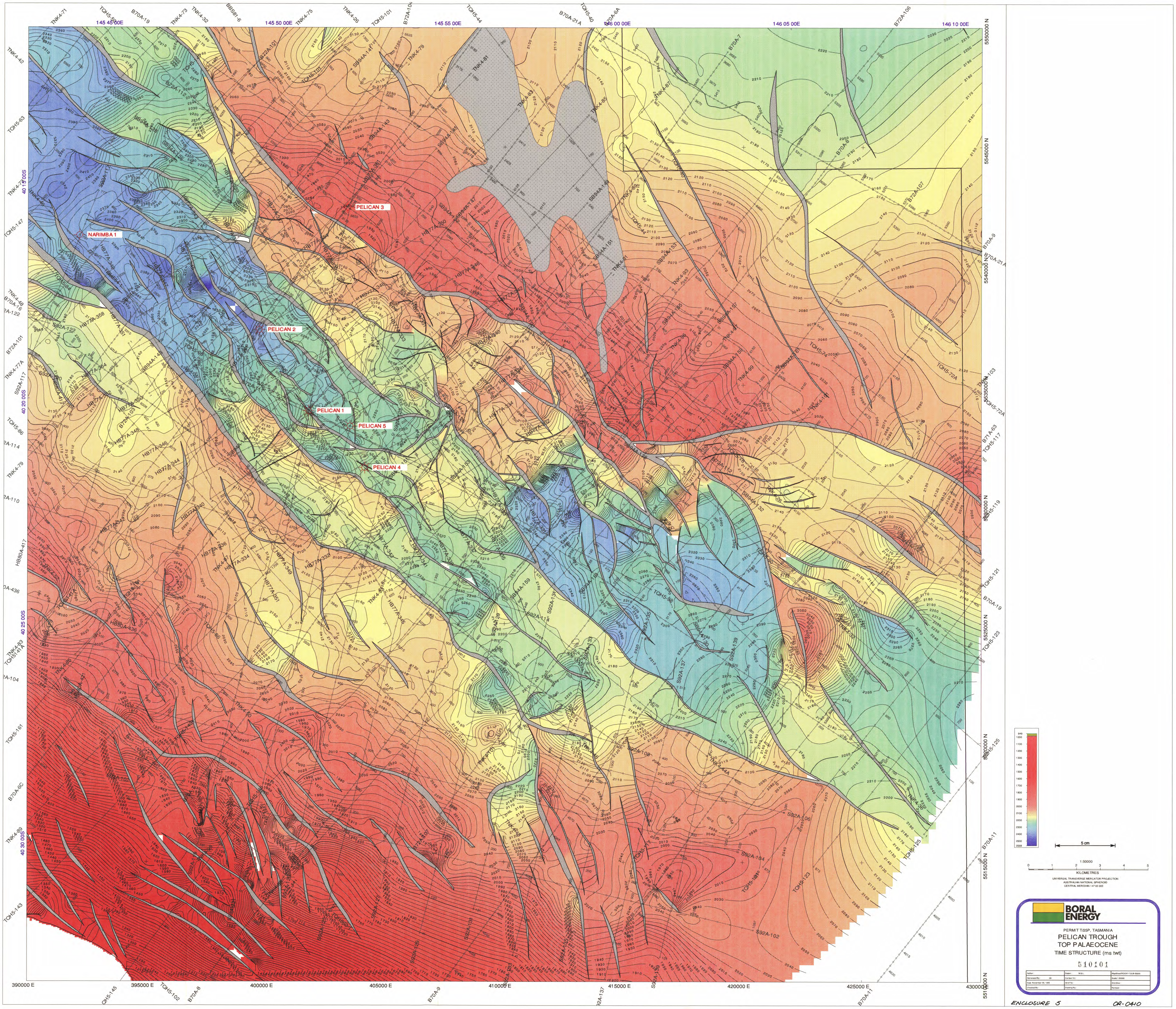
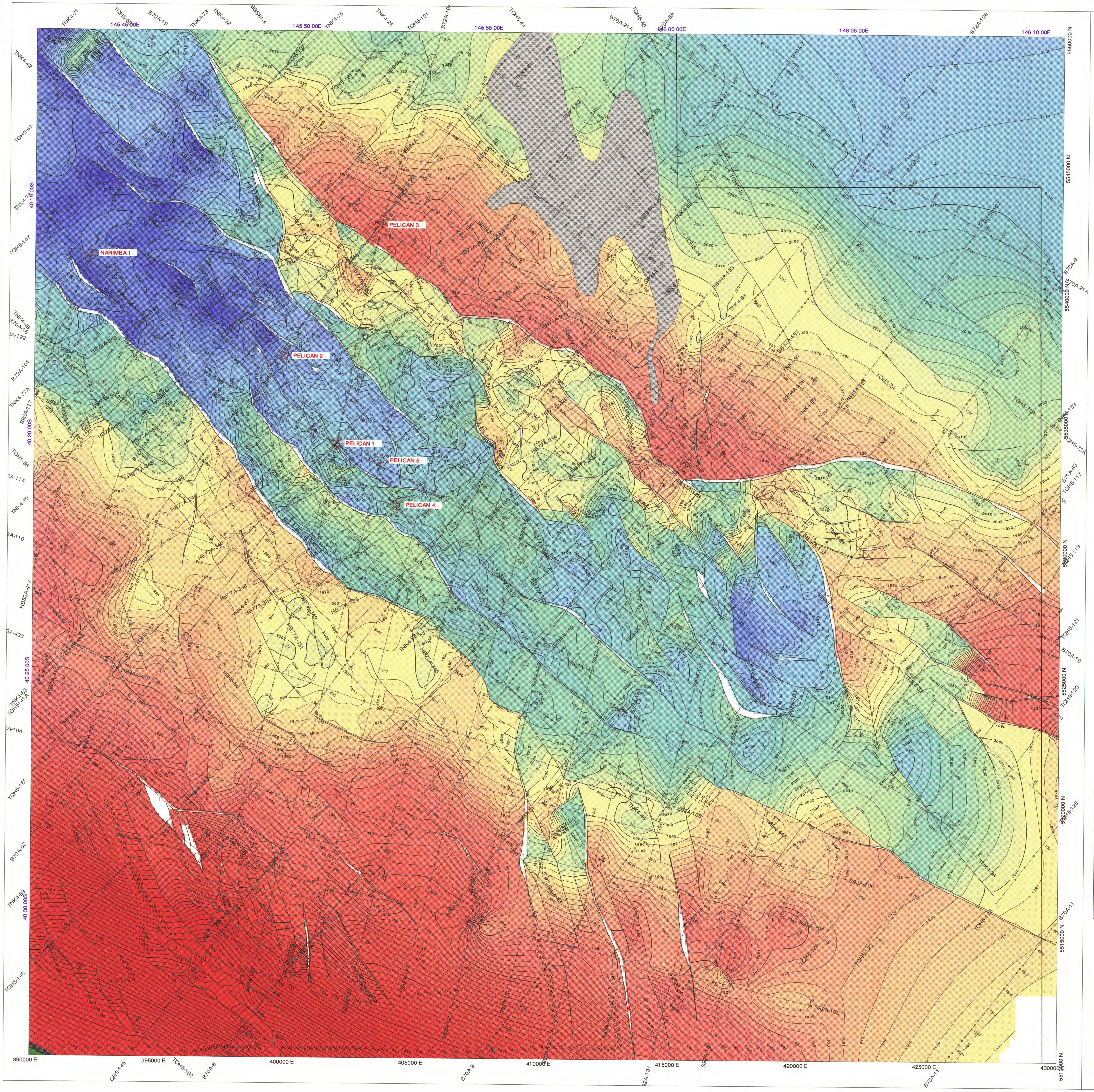
ENCLOSURE 4 OR-0410



ENCLOSURE 5 OR-0410



1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T/25P, TASMANIA

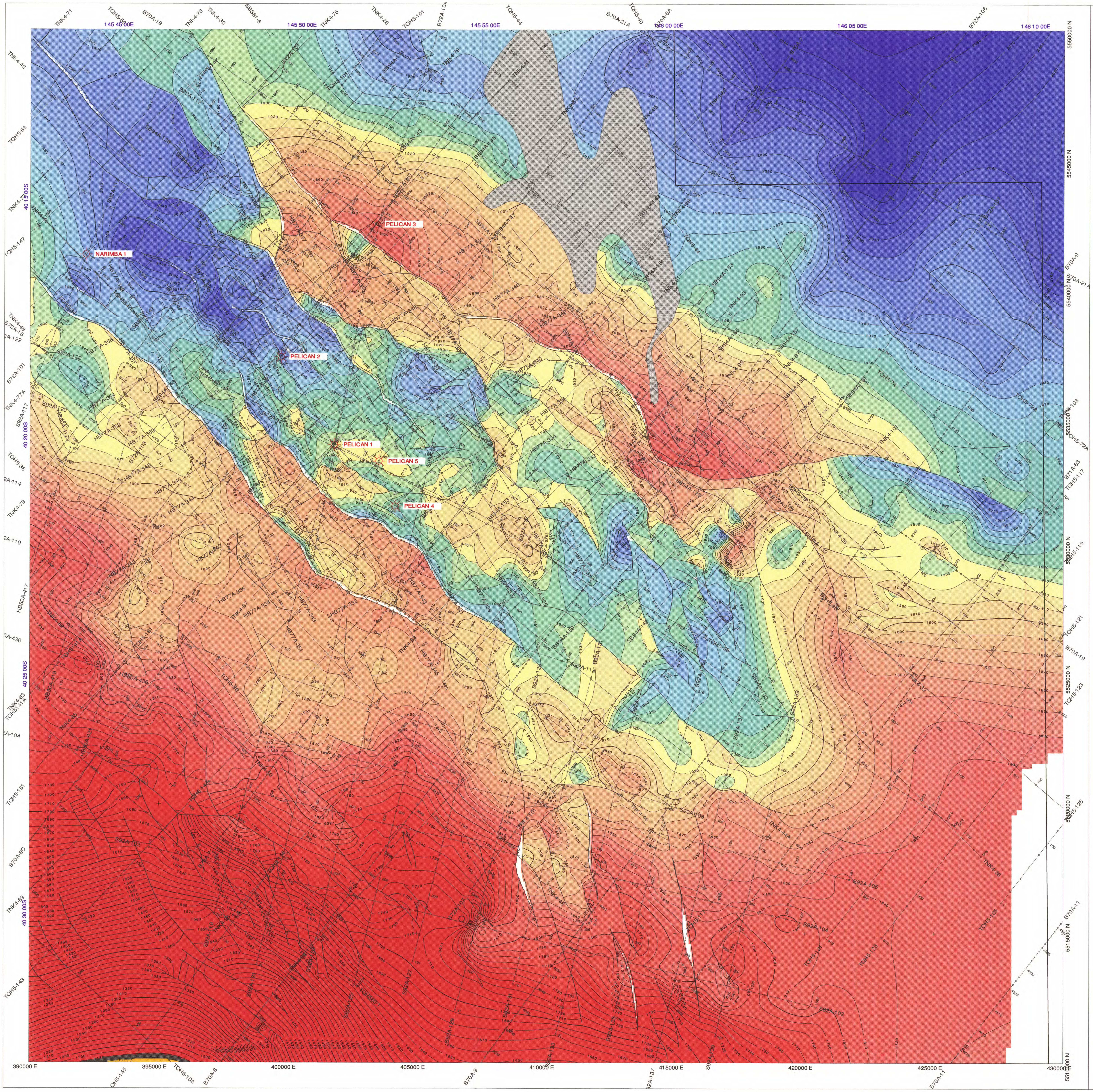
PELICAN TROUGH
TOP LOWER M.DIVERSUS
TIME STRUCTURE (ms twt)

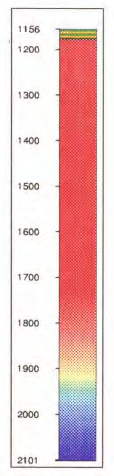
510102

Author :	Datum : M.S.L.	MapSheet:ROCKY-TULB-50000
Generated By : djk	Contour Int.:	Scale:1:50000
Date :November 29, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 6

OR-0410





1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T25P, TASMANIA

PELICAN TROUGH
TOP MIDDLE M.DIVERSUS

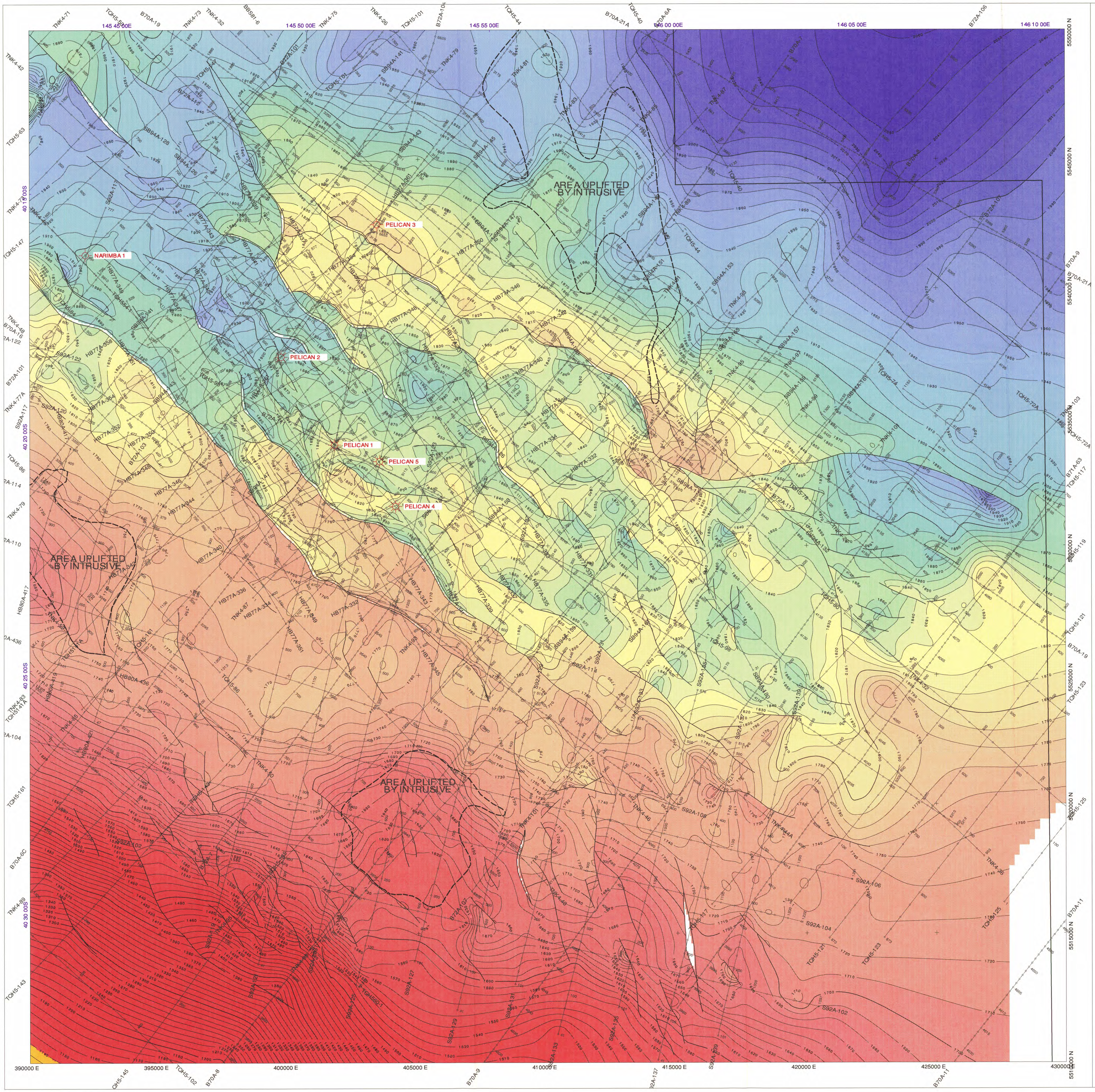
TIME STRUCTURE (ms twt)

510103

Author :	Datum : M.S.L.	MapSheet:ROCKY-TULB-50000
Generated By : djk	Contour Int.:	Scale:1:50000
Date :November 29, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 7.

OR-0410



5 cm

1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T/25P, TASMANIA

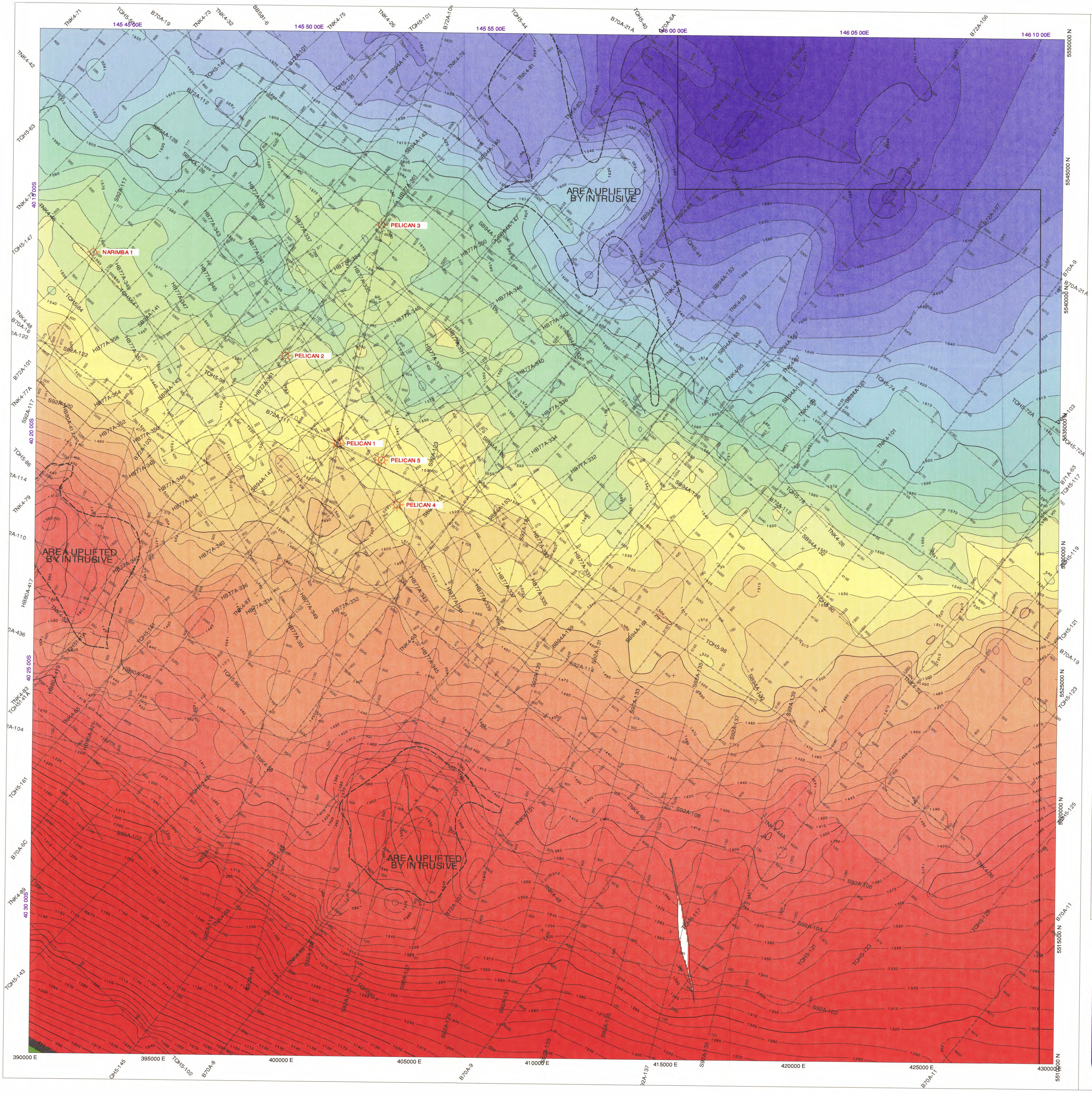
PELICAN TROUGH
TOP UPPER M.DIVERSUS

TIME STRUCTURE (ms twt)

510104

Author :	Datum : M.S.L.	MapSheet:ROCKY-TULB-50000
Generated By : djk	Contour Int.:	Scale:1:50000
Date :November 29, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 8. OR-0410



956
1000
1100
1200
1300
1400
1500
1600
1700
1730

5 cm

1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T/25P, TASMANIA

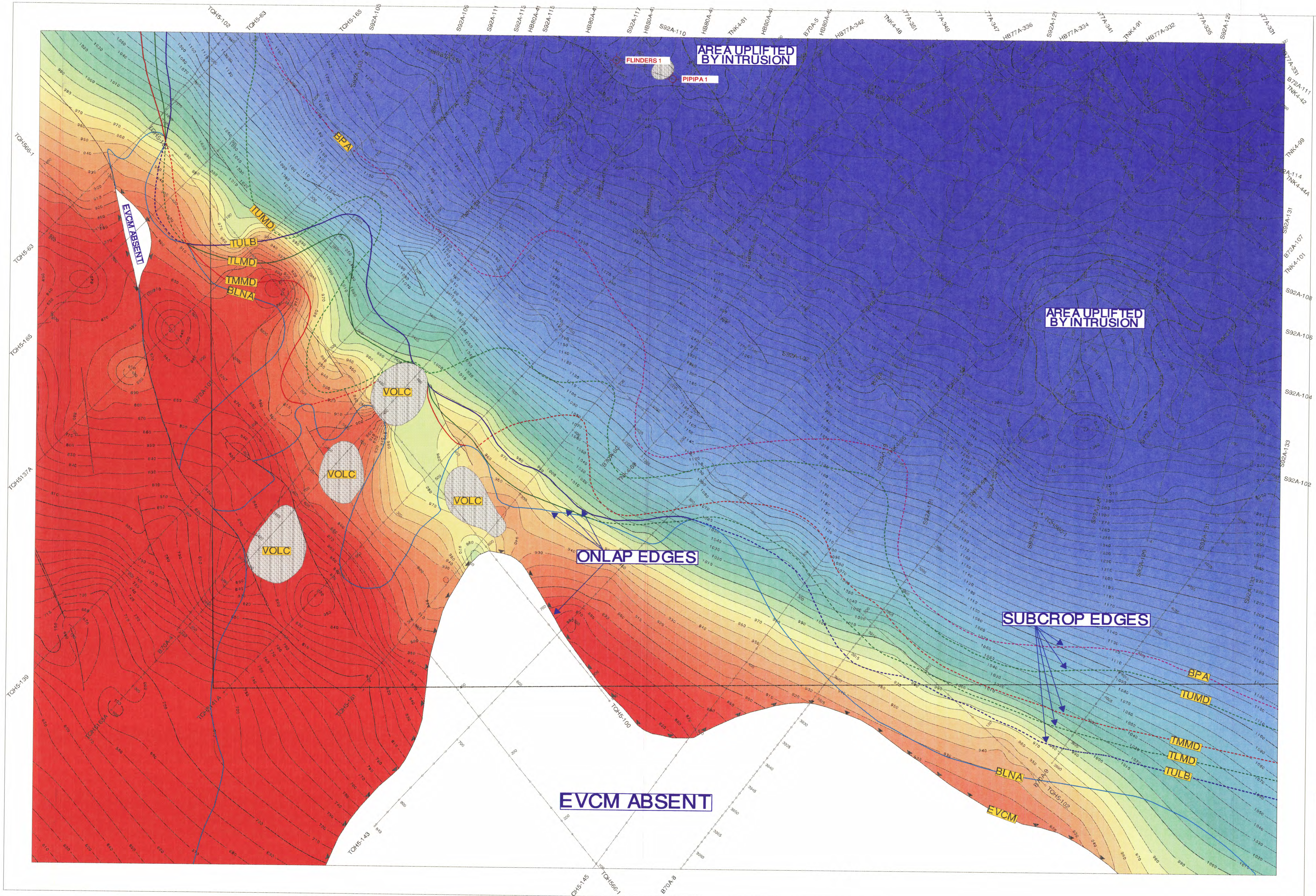
PELICAN TROUGH
TOP EVCM

TIME STRUCTURE (ms twt)

510105

Author :	Datum : M.S.L.	MapSheet ROCKY-TULB-50000
Generated By : djk	Contour Int.:	Scale:1:50000
Date :November 29, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 9 OR-0410



5 cm

1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

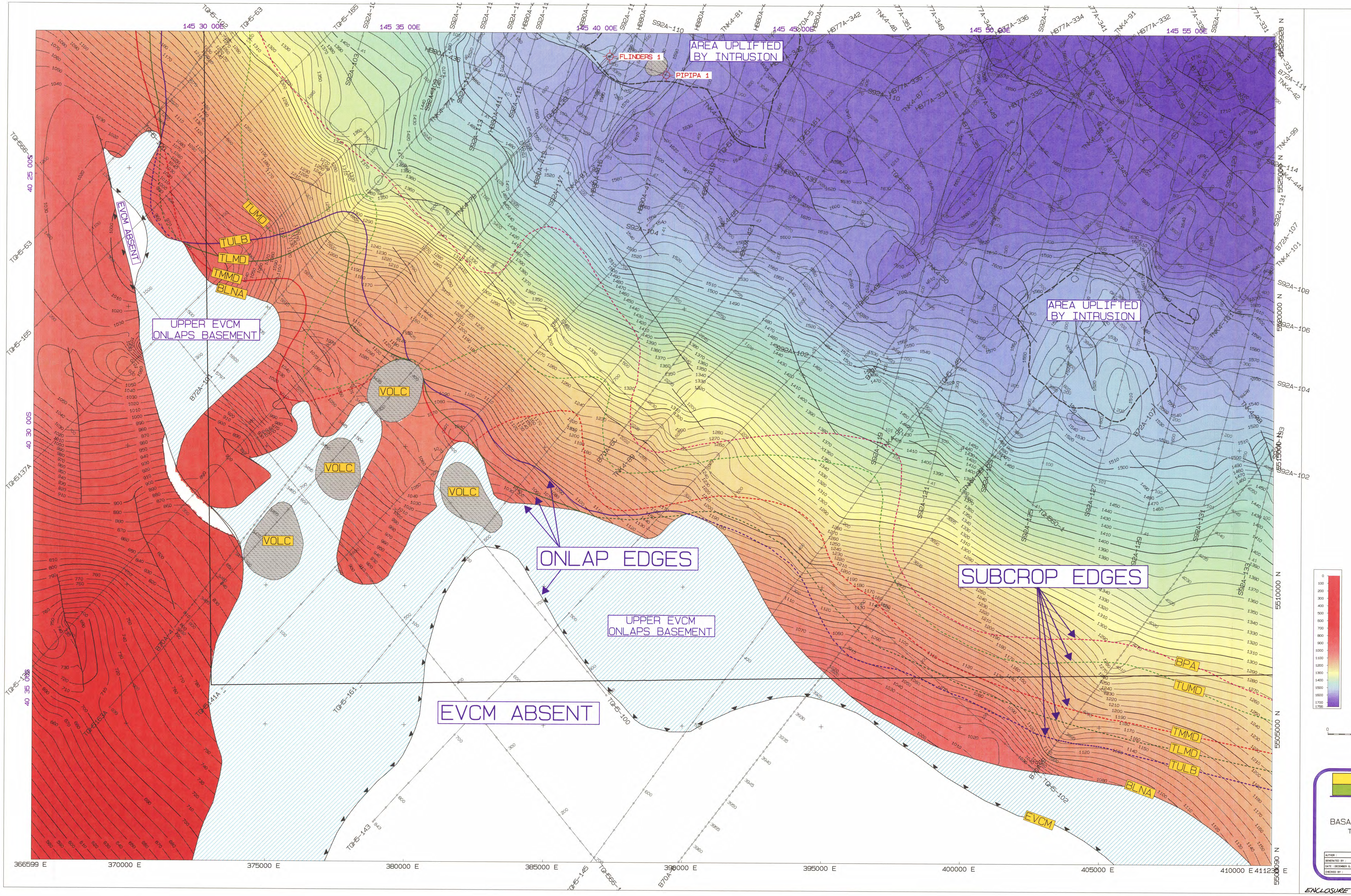
PERMIT T25P, TASMANIA

SOUTHWEST RAMP
TOP EVCM
TIME STRUCTURE (ms, twt)

510106

Author :	Datum : M.S.L.	MapSheet:SW-RAMP
Generated By : djk	Contour Int :	Scale:1:50000
Date :December 2, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 10 OR-0410



1: 50000

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T25P, TASMANIA

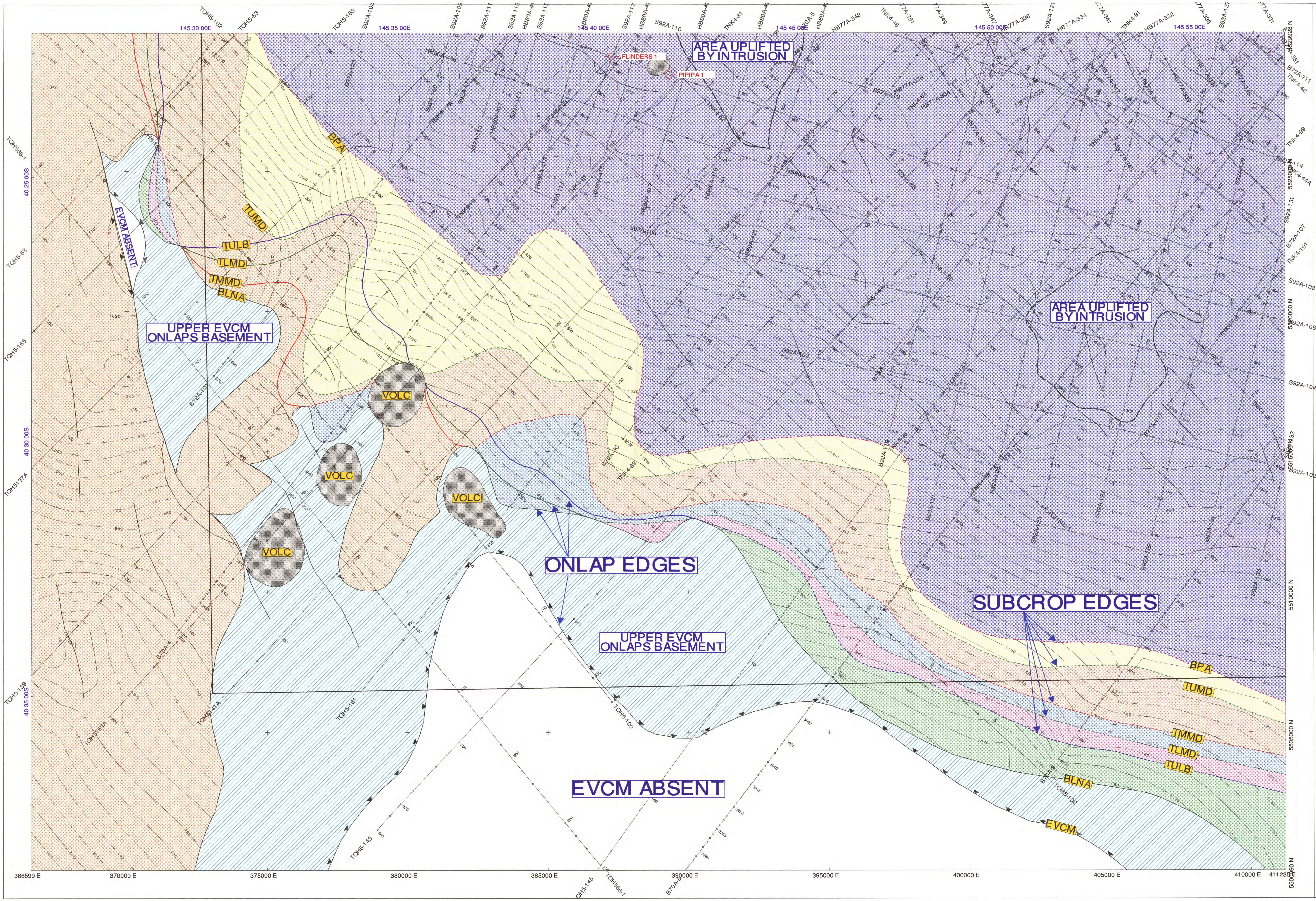
SOUTHWEST RAMP
BASAL LOWER N. ASPERUS U/C
TIME STRUCTURE (MS. TWT)

510107

AUTHOR :	DATUM : M.S.L.	MAPSHEET: SW-RAMP
GENERATED BY : DJK	CONTOUR INT.:	SCALE: 1: 50000
DATE : DECEMBER 6, 1995	GRID FILE :	GRID SIZE :
CHECKED BY :	DRAWING NO.:	REVISED :

ENCLOSURE 11

OR-0410



5 cm

1:50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

BORAL ENERGY

PERMIT T25P, TASMANIA

SOUTHWEST RAMP
BASAL LOWER N.ASPERUS U/C

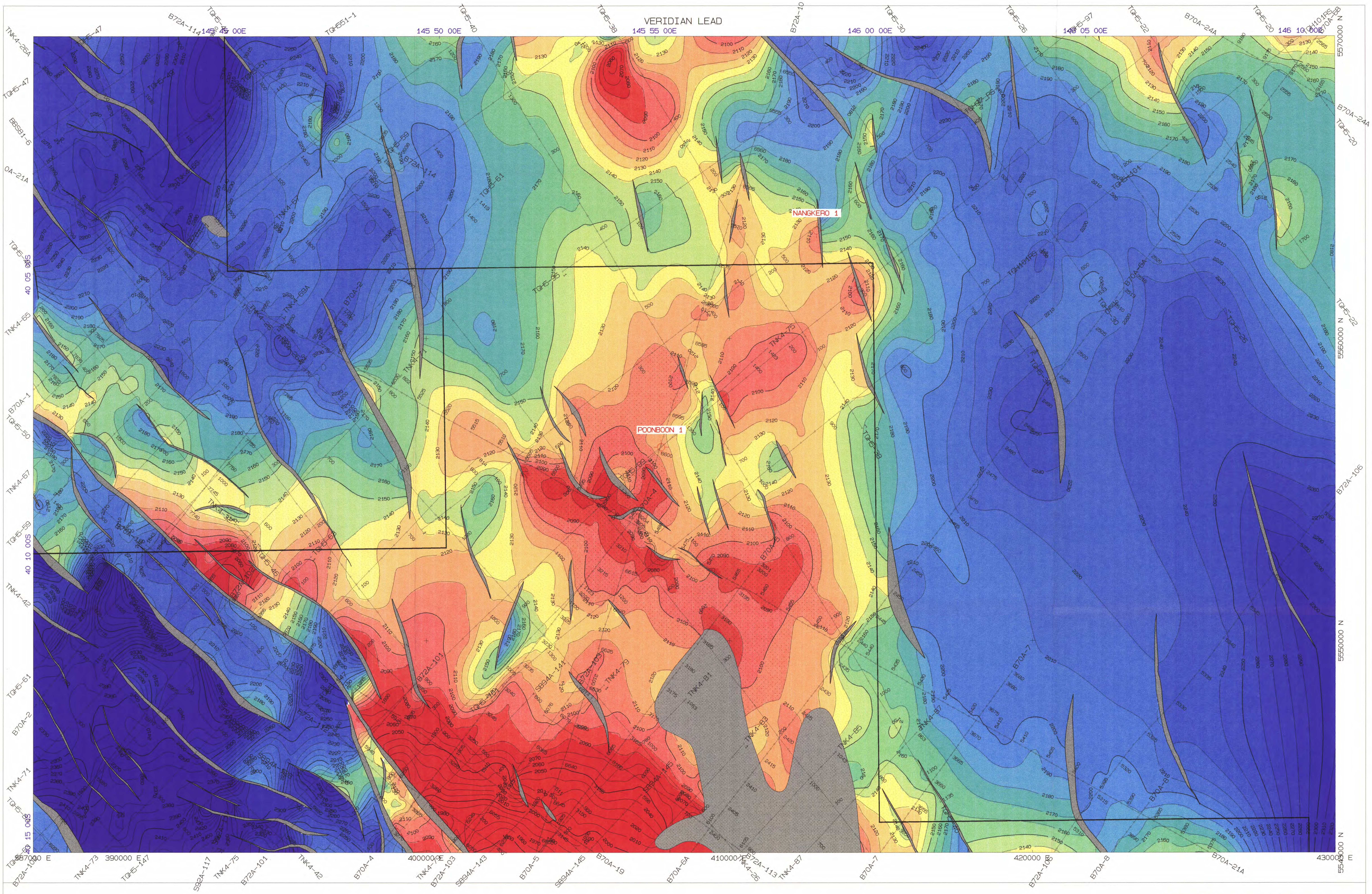
TIME STRUCTURE & SUBCROP

510108

Author :	Datum : M.S.L.	MapSheet:SW-RAMP
Generated By : djk	Contour Int.:	Scale:1:50000
Date :December 1, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 12 OR-0410


FLINDERS 1
PIPIPA 1
EVCM ABSENT
UPPER EVCM ONLAPS BASEMENT
VOLC
ONLAP EDGES
SUBCROP EDGES
EVCM ABSENT
BPA
LUMD
LTMD
TMMD
BLNA
ULCB
EVCM
BORAL ENERGY
PERMIT T25P, TASMANIA
SOUTHWEST RAMP
TOP PALAEOCENE
TIME STRUCTURE (MS. TWT)
510109
1: 50000
KILOMETRES
UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E
5 cm
ENCLOSURE 13
OR-0410



1: 50000

0 1 2 3 4 5

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

BORAL ENERGY

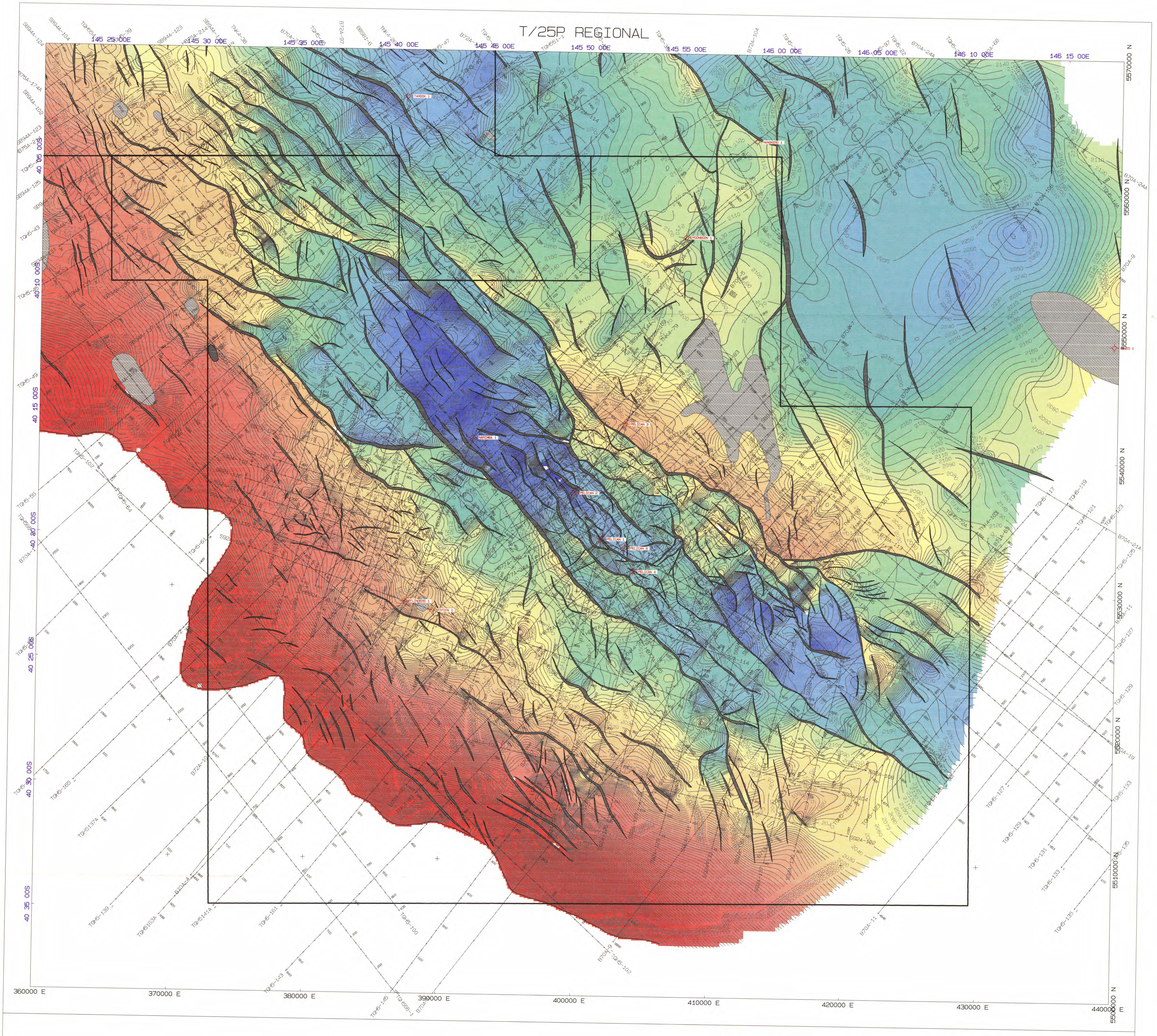
PERMIT T/25P, TASMANIA

VERIDIAN LEAD
PALAEOCENE TIME STRUCTURE
(ms twt)

510110

Author :	Datum : M.S.L.	MapSheet: VERIDIAN
Generated By : djk	Contour Int.:	Scale: 1: 50000
Date : December 1, 1995	Grid File :	Grid Size :
Checked By :	Drawing No.:	Revised :

ENCLOSURE 14 OR-0410



BORAL ENERGY

BASS BASIN, TASMANIA

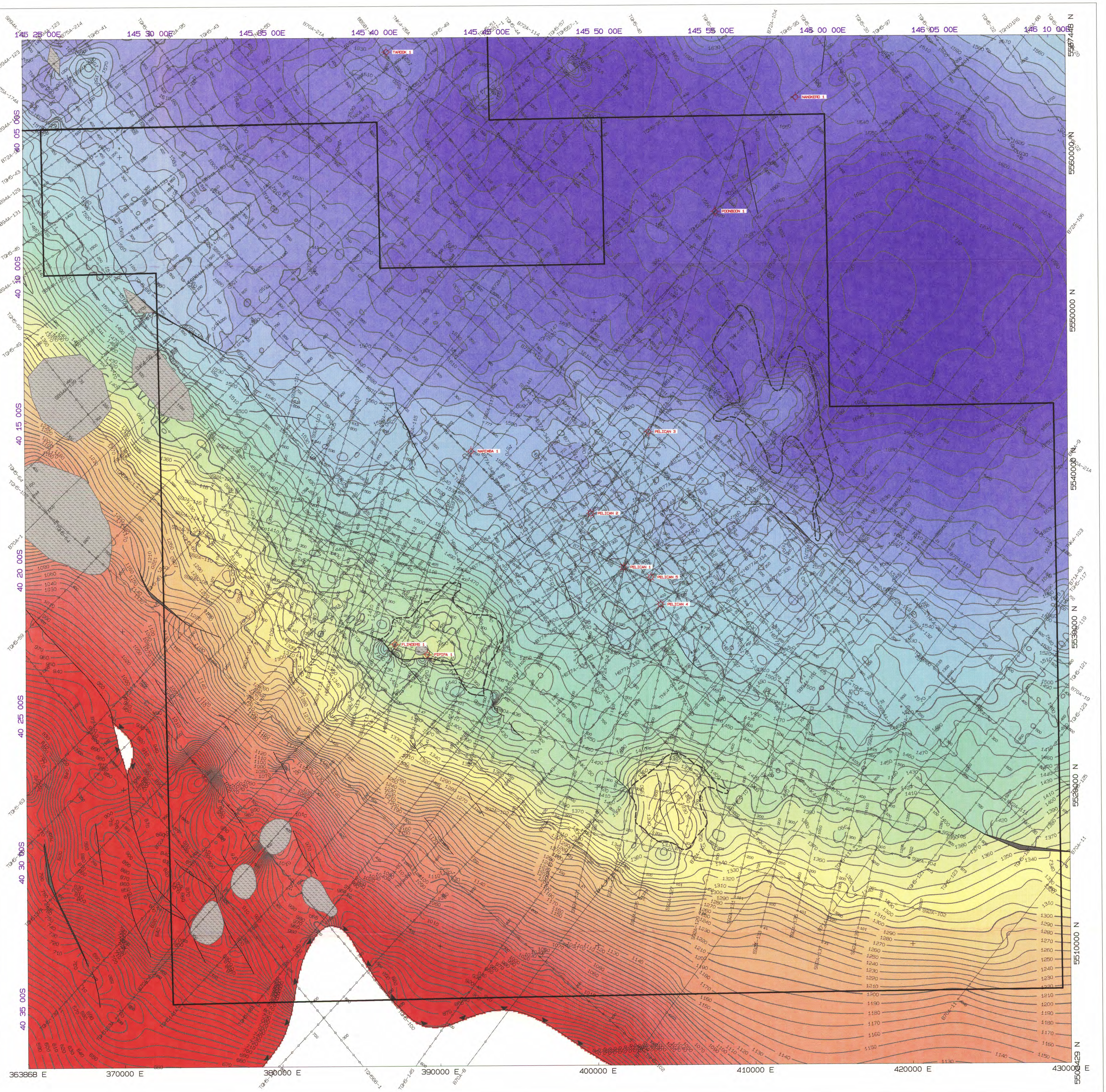
PERMIT T/25P PALAEOCENE TIME STRUCTURE

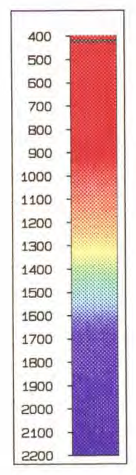
(MS TWT)

510111

AUTHOR :	DATUM : M.S.L.	MAPSHEET: T/25P
GENERATED BY : DJK	CONTOUR INT.:	SCALE: 1: 100000
DATE : DECEMBER 1, 1995	GRID FILE :	GRID SIZE :
CHECKED BY :	DRAWING NO.:	REVISED :

ENCLOSURE 15 OR-0410





1: 100000

0 2 4 6 8 10

KILOMETRES

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
AUSTRALIAN NATIONAL SPHEROID
CENTRAL MERIDIAN 147 00 00E

5 cm

BORAL ENERGY

BASS BASIN. TASMANIA

PERMIT T/25P
EVCM TIME STRUCTURE
(MS TWT)

510112

AUTHOR :	DATUM : M.S.L.	MAPSHEET: T25P-100000
GENERATED BY : DJK	CONTOUR INT.:	SCALE: 1: 100000
DATE : DECEMBER 5. 1995	GRID FILE :	GRID SIZE :
CHECKED BY :	DRAWING NO.:	REVISED :

ENCLOSURE 16 OR-0410