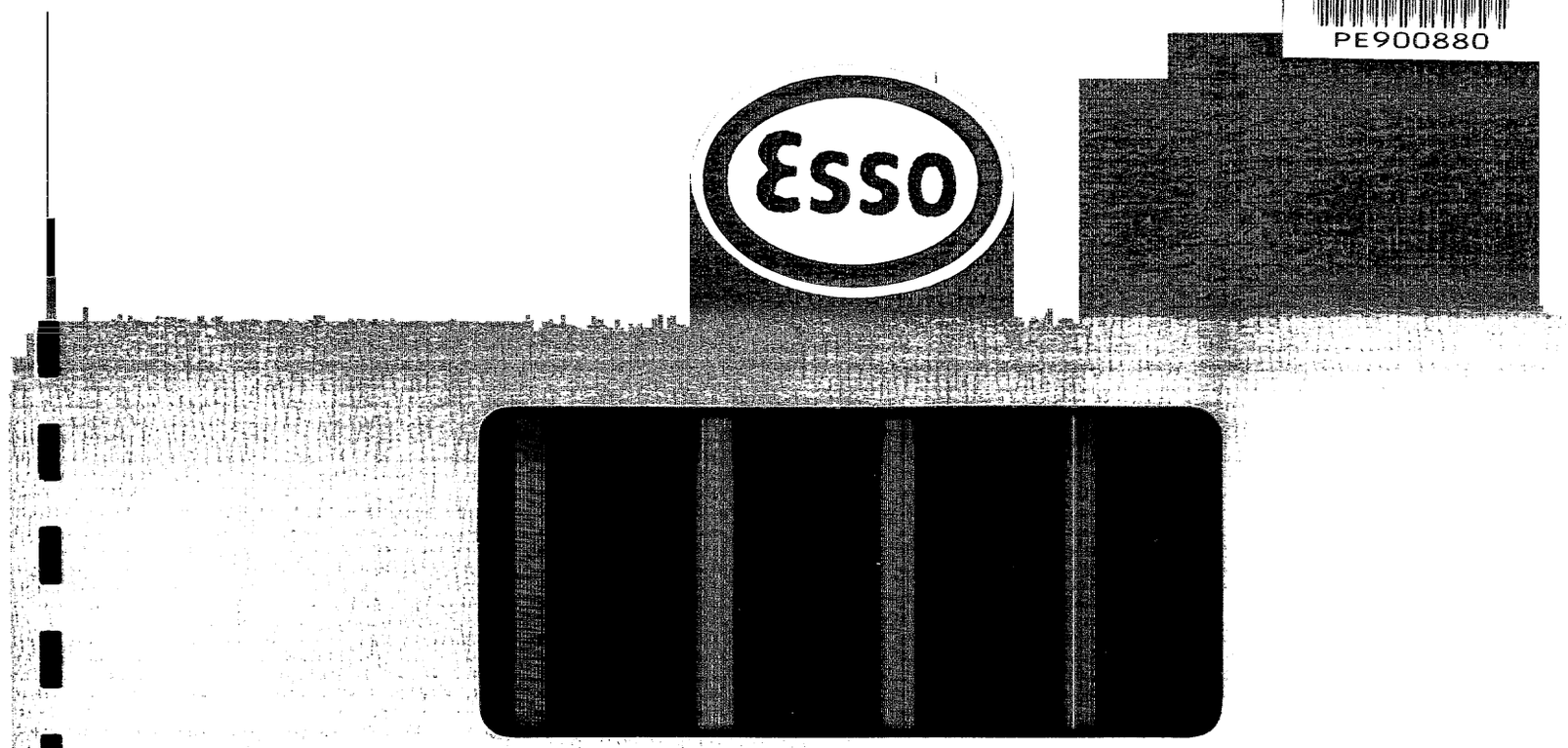


WCR VOL 2

SMILER-1

W1122

Esso Australia Ltd.

WELL COMPLETION REPORT

SMILER 1

VOLUME 2

INTERPRETATIVE DATA

GIPPSLAND BASIN, VICTORIA

ESSO AUSTRALIA LTD

Author: C.C. Jenkins
Compiler: Ben Hayes
December 1995

WELL COMPLETION REPORT

VOLUME 2: INTERPRETATIVE DATA

CONTENTS

TABLES

FIGURES

APPENDICES

ENCLOSURES

ATTACHMENT

1. *SUMMARY OF WELL RESULTS*

Smiler-1 was spudded on 2 July 1995. The vertical well is situated in 122m water depth and was designed to test a primary target at the Top of Latrobe Group.

The Top of Latrobe Group was intersected at 2507m KB some 44m low to prognosis. No hydrocarbon shows were recorded during drilling, with the exception of 20% yellow/green oil fluorescence in one sidewall core at 2509m KB. Due to a lack of significant hydrocarbon shows the programmed conventional cores were not cut. Formation tops are summarised in Table 1 below.

The secondary objective comprised shoreface sandstones directly underlying the marine mudstone/siltstone in the Orange to Magenta Seismic Marker Sequence. The base of the marine mudstone was intersected at 2550m KB, some 29m low to prognosis. No hydrocarbon shows were encountered and the well was drilled to a total depth of 2607m KB. A logging suite was recorded comprising resistivity, gamma, neutron, density, sonic and dip meter tools together with a VSP and sidewall core runs.

Log interpretation indicated that both primary and secondary targets were water saturated and no hydrocarbon pay is mapped.

Smiler 1 was plugged and abandoned on 16 July 1995.

Table 1 : Prognosed vs Actual Formation Tops

Formation/Horizon	Predicted Depth (mss TVD)	Actual Depth (mss TVD)
Sea Floor	- 110	-122
Base High Velocity Limestone	-2225	-2221
Lakes Entrance Formation	-2292	-2283
Top of Latrobe Group Unconformity	-2438	-2482
Orange Seismic Marker (Base Marine Shale)	-2496	-2525
Total Depth	-2650	-2582

KB Height = 25m

2. *INTRODUCTION*

Smiler 1 is an exploration well located in VIC/L5 in some 122m water depth. The well was sited primarily to test a Top of Latrobe Group erosional remnant, some 4km northeast of the Mackerel Oil Field Platform (Figure 1). A secondary target was identified within the Orange to Magenta Seismic Marker Sequence, where a marine shale seal was interpreted to subcrop the Top of Latrobe Group Unconformity to form a combination subcrop/erosional remnant trap.

Smiler 1 was the third exploration well of three drilled during the 1995 drilling program and incorporated structure mapping from the 1992 South Marlin Channel 3D grid.

3. *STRUCTURE*

At a regional scale, the Smiler feature is situated to the southwest of the main Latrobe Group rift axis which formed during an extensional structural phase, associated with the opening of the Tasman Sea some 80 million years before present. The southern side of the Latrobe Group rift basin is dominated by a series of major NW-SE trending, north easterly dipping basement involved extensional faults. The "floor" of the rift basin occurs some 10km to the northeast of the Smiler 1 location and is largely unstructured and coincides with the Eocene age South Marlin Channel canyon axis. The northern side of the Latrobe Group rift basin is also dominated by NW-SE trending extensional faults but they dip to the southwest instead.

These faults exhibit both "dogleg" and relay patterns in map view, typical of extensional basins, and show evidence of structural growth during Latrobe Group deposition. Due to their orientation parallel to the main post-Latrobe Group compressional stress field (NW-SE), they have not reactivated and inverted as do the older more favourably oriented E-W and NE-SW trending Golden Beach Group faults, on the northern margin.

The Smiler feature is a small erosional remnant situated on the northeastern flank of the large Mackerel Field Top of Latrobe Group erosional topographic high. The Smiler structure results from a major NW-SE trending down to basement extensional fault which throws to the northeast and directly underlies the Top of Latrobe Group remnant. This fault extends to the northwest across the northern flank of Mackerel Oil Field.

The Smiler feature is situated on the upthrown block of the fault. The magnitude of erosional relief is demonstrated by the Mid Miocene Datum surface to Top of Latrobe Group isochron shown in Enclosure 1. Erosional relief is pronounced in all directions except to the west where a spur-line isochron thin connects the Smiler feature to the Mackerel structure. The closed isochron thin that defines the Smiler structure is only 4-5ms two way time, which represents some 8m of structural closure at the time of the Mid Miocene datum surface.

Drape and compaction over the Mackerel structure as well as post Mid Miocene regional tilt of the datum surface modified the closure to form the present day structure.

Pre-drill analyses of the Smiler structure interpreted the primary target at the Top of Latrobe Group to have some 32 metres of vertical closure with an areal extent of 0.83km^2 The crest of the structure was interpreted to be at -2438mss, which is 41m below the Mackerel Field original oil/water contact (Enclosure 2).

The secondary target was interpreted to have a trap geometry defined by a Paleocene age marine mudstone unit subcropping the Top of Latrobe Group Unconformity. Erosional relief at the Top of Latrobe Group Unconformity defined 3 way dip closure against a

southwesterly dipping marine shale (Enclosure 3). Some 25m of vertical closure was mapped at this level. The crestal locations of the primary and secondary targets were interpreted to be offset by 400 metres. The vertical well was designed to intersect the primary target at the crest and the secondary target some 17m downdip from the crest.

Post-drill structural analysis indicates the Smiler feature is not closed at Top of Latrobe Group level, and forms a structural nose plunging to the east off the Mackerel structure. Likewise, the secondary target has no structural closure at the Smiler 1 location. The variation in pre-drill versus post-drill structural models and depth conversion methodology is explained under the Geophysical Discussion section.

4. *STRATIGRAPHY*

A thick succession (2161m) of Gippsland Limestone (Mid Miocene to Recent age) was penetrated by Smiler 1 (Figure 2). No cuttings were collected down to 760m KB as this section was drilled without a riser and cuttings were ejected at the sea floor. Below this depth the Gippsland Limestone comprises light grey to olive grey fossiliferous calcilutite with interbeds of micritic calcarenite. The limestone changes to a marl with depth due to progressive increase in clastic content.

The Lakes Entrance Formation (Oligocene to Middle Miocene age) is 199m thick and comprises light brown calcareous claystone with traces of fossil fragments and carbonaceous detritus.

The Latrobe Group (Late Cretaceous - Tertiary age) is some 100m+ thick in Smiler 1 and the youngest section confirmed by palynological data, is Paleocene age, corresponding to the L. Balmei spore-pollen zone (Appendix 1). The chronostatigraphic section encountered was as predicted from the Collaborative Research Project, with the partially eroded Paleocene age Orange to Magenta Sequence (Upper L. Balmei) penetrated directly under the Top of Latrobe Group Unconformity (Enclosure 4).

The Lithology of the Latrobe Group at Smiler 1 is dominated by sandstones with only minor mudstone and siltstone. Much of the sandstone units are upper and lower shoreface facies associated with Paleocene age stacked highstand systems tracts. A 2m thick section of glauconitic claystone was intersected directly under the Top of Latrobe Group Unconformity and although not dated by palynology, is interpreted from log response, cuttings and sidewall core descriptions to be Gurnard Facies of probable Eocene age.

The only significant siltstone and mudstone section encountered was the distal marine lowstand/transgressive section within the Orange to Magenta Sequence. This unit was 15m thick but only a 1m thick mudstone section encompassing the downlap surface, had a shaliness greater than 40%. The remainder of this unit was siltstone. The underlying Blue grey to Orange Sequence comprised upper shoreface sandstones of the highstand systems tract and some 57m+ of this sequence was penetrated at Smiler 1.

The oldest section penetrated at Smiler 1 which is dated by palynology is lower Paleocene age, corresponding to the Lower L. Balmei spore-pollen zone.

5. *HYDROCARBONS*

No significant hydrocarbon shows were encountered within the Gippsland Limestone or Lakes Entrance Formation in Smiler 1. Background gas levels within this section varied typically from 5-25 units, comprising 98% methane, 1% ethane and 1% propane.

Below the Top of Latrobe Group Unconformity from 2505-2509m KB a small gas peak of 5 units over a background of 2 units was recorded in the uppermost sandstones. The peak comprised 94% methane, 4% ethane and 2% propane. No hydrocarbon fluorescence was observed in this zone with the exception of a sidewall core at 2509m KB which exhibited 20% moderately bright, patchy yellow/green fluorescence with a trace cut. This sample represents top of porosity for the Top of Latrobe Group primary target and was recovered from directly below the 2m thick glauonitic claystone unit (Gurnard Facies).

Ditch gas remained at background levels down to total depth at 2607m KB, with the exception of a small gas peak of 5 units over a background of 2 units at 2546m KB. This corresponded to the base of the Orange to Magenta Sequence Marine mudstone secondary objective. The gas composition comprised 90% methane, 7% ethane and 3% propane. No hydrocarbon fluorescence was recorded over this zone.

Log interpretation and show evaluation indicated all reservoir sandstones are water saturated and no hydrocarbon pay is mapped in Smiler 1 (Appendix 2). The minor oil show at the Top of Latrobe Group is attributed to residual hydrocarbon saturation, possibly associated with a migration pathway up the Smiler structural nose.

6. *GEOPHYSICAL DISCUSSION*

The Smiler feature was defined as a drillable prospect using the 1992 South Marlin Channel 3D grid. Data coverage was excellent over the prospect.

The pre-drill seismic pick for the Top of Latrobe Group primary target was interpreted to be at the lower zero crossing of the lead trough for quadrature phase data. The pick assumed that low impedance Lakes Entrance Formation would directly overlie high impedance Latrobe Group, with the high impedance Oligocene Wedge (penetrated in some of the nearby Fortescue wells), expected to be absent.

Depth conversion was recognised as a key pre-drill risk due to the location of the Smiler structure directly under a Miocene age high velocity limestone channel. The high velocity channel is oriented northwest-southeast and has a width of some 2.5km extending across the Smiler time closure.

At the Top of Latrobe Group primary target the Smiler feature has 7 ms of two way time closure, with a spill point to the west up to Mackerel Oil Field (Enclosure 5). Pre-drill depth conversion utilised well velocity-time functions derived from Mackerel Field to depth convert to the base of high velocity channel and then down to the Top of Latrobe Group. Overall an average velocity map from seismic datum to Top of Latrobe Group was constructed. The conventional stacking velocity approach for depth conversion was abandoned due to the rapid vertical and lateral velocity changes within the areally restricted high velocity channel, which render seismic velocities unstable due to severe raypath distortion within the seismic spread. Initially, the well function derived from the nearby Mackerel 3 well did not predict the correct depth model for the Mackerel A11A production well, which is situated some 4km northwest of Smiler 1. This velocity function proved too slow and did not tie the well.

An amplitude map generated at the base of the high velocity channel indicated spatial control on relative variations in high velocity channel fill at the limestone/marl interface. In the vicinity of Mackerel A11A, extremely high amplitude was correlated with high velocity channel fill directly overlying low velocity marl, which contrasted with the Mackerel 3 control well, used to derive the velocity function. In order to solve the mistie with the development well, the pre-drill average velocity map was hand contoured to apply faster velocities in the vicinity of Mackerel A11A in order to tie the well (Enclosure 6). The impact on the Smiler structure was to create a depth closure of 32 metres from a time closure of 7 ms two way time. The pre-drill assumption was that high velocity channel fill caused time pull up across the spill point of the Smiler feature, distorting a more robust depth closure. An isochron thin of 4-5 ms two way time was reported pre-drill between the Mid Miocene datum surface and Top of Latrobe Group suggesting erosional relief across the Smiler feature (Enclosure 1).

The pre-drill seismic pick for the base of the Orange to Magenta Sequence marine shale was at the lower zero crossing of a strong peak as defined at Mackerel 2. The Orange to Magenta secondary target was depth converted using an isopach from the pre-drill Top of Latrobe Group depth structure map down to the target horizon. An interval velocity for the Intra-Latrobe Group was derived from the nearby Mackerel 1, 2 and 3 wells.

The Top of Latrobe Group was prognosed at -2438 mss and intersected at -2482 mss, some 44 metres low to prognosis. The latter represents a depth error of 1.8% outside the 1% tolerance generally accepted for Top of Latrobe Group depth conversion in mature areas of the Gippsland Basin (Table 2). No hydrocarbon column was intersected in the well.

Post-drill analyses indicates the reasons for failure of Smiler 1 were structural, due to a lack of closure on the western flank of the Smiler feature.

The time pick at the Top of Latrobe Group was correct, being at the lower zero crossing of the lead trough for quadrature phase data. The seismic pick is shown on the seismic traverse in Enclosure 7 and on the synthetic seismogram in Enclosure 8. No Oligocene Wedge was penetrated at Smiler 1. A comparison of the check shot data with actual seismic time indicates the seismic lag is equivalent to +7 ms two way time at the Top of Latrobe Group horizon.

The depth error could be attributed to the velocity function used. The pre-drill velocity was 2827 m/sec from seismic datum to Top of Latrobe Group which varies by 51 m/sec from the actual velocity of 2878 m/sec (Table 2). Whilst the velocity map was correct at the Mackerel A11A location it was clearly too slow at Smiler 1. The difficulty in predicting the velocity trends accurately in areas of rapid lateral velocity change highlights the need for a more geological approach to depth conversion in difficult areas.

Table 2 : Smiler 1 Depth Conversion Comparison

Unit	Top of Latrobe Group	Base of Marine Shale
Pre-Drill Seismic Time (sec TWT)	1.725	1.758
Post-Drill Seismic Time (sec TWT)	1.725	1.749
Check Shot Corrected Time (sec TWT)	1.718	1.742
Pre-Drill Depth (mss)	-2438	-2496
Post-Drill Depth (mss)	-2482	-2525
Error (m)	44 Low	29 Low
Pre-Drill Average Velocity (m/sec)	2827	-
Post-Drill Average Velocity (m/sec)	2878	-
Pre-Drill Interval Velocity (m/sec)	-	3550
Post-Drill Interval Velocity (m/sec)	-	3583

Post-drill analyses incorporates a geologically restrained approach referred to as the 'isopach method'. This method takes the Mid Miocene datum to Top of Latrobe Group isopach which is added to the Mid Miocene datum depth map (based on well control) to give depth to Top of Latrobe Group. The method has the advantage that it is independent of sea floor canyons and short period high or low velocity layers which effect seismic stacking velocities used for depth conversion. The well function approach was unable to predict rapid velocity changes away from well control due to inadequate spatial sampling of these units. Whilst the depth map to Mid Miocene datum also lacks spatial control due to limited wells, this surface (in the Smiler 1 area) is relatively unstructured other than for local drape and compaction effects and a post Mid Miocene regional tilt to the east (Enclosure 9).

The Mid Miocene datum to Top of Latrobe Group isochron indicated a 4-5 ms two-way time closed thin existed over the Smiler structure at the time of the datum being deposited (Enclosure 1). This equates to an 8 metre closed thin using an interval velocity of 3109 m/sec, derived from Smiler 1. The isopach clearly indicates only subtle erosional relief at this time. Regional tilt of the Gippsland Basin associated with compressional uplift of the northern and western margins resulted in a pronounced post depositional easterly dip of the datum surface. Although well control is limited to the east of Smiler 1 the regional tilt was predicted from the Mackerel and Blackback wells and the datum surface was intersected at -2283 mss, some 9 metres high to prognosis (0.4% depth error). The datum surface occurs at -2204 mss at Mackerel 3 versus -2283 at Smiler 1, indicating a local depth gradient across the spill point of the Smiler structure. As a result the subtle 8 m closure established by erosion prior to regional tilt was opened out to the west into the greater Mackerel structure, resulting in an easterly plunging structural nose at the Top of Latrobe Group primary target. The plunging nose probably acted as a migration pathway, channelling hydrocarbons from the east up to Mackerel Oil Field. This is evidenced by a minor oil show recorded in a sidewall core shot at top of porosity. Unfortunately, lack of local closure negated the accumulation of hydrocarbons in the primary Top of Latrobe Group target.

As a result of post-drill analyses the Smiler feature is interpreted to be an easterly plunging structural nose, on which the well intersected the Top of Latrobe Group at -2483 mss. Lack of hydrocarbons in the primary objective is attributed to lack of structural closure (Enclosure 10).

The secondary target at the base of the Orange to Magenta sequence marine shale was intersected at -2525 mss some 29 m low to prognosis (1.1% depth error). Depth error is mainly due to the incorrect prediction of Top of Latrobe Group depth because the secondary objective depth conversion was based on an isopach added to the Top of Latrobe Group depth map. The interval velocity for the Intra-Latrobe Group section at Smiler 1 was predicted pre-drill to be 3550 m/sec (based on Mackerel 1, 2 and 3), which is slower than the actual velocity of 3583 m/sec (Table 2).

The depth error is compounded by a post-drill variation in the seismic time pick. The base of the Orange to Magenta sequence marine shale was picked at the lower zero crossing of the trailing peak (for quadrature phase) by correlation with Mackerel 3, whereas the actual pick is near the top of the peak, some 9 ms two way time higher (Enclosures 7 and 8). The latter results in part from locally cemented sandstones directly under the base of the marine shale unit.

This resulted in a thicker time interval pre-drill which combined with a slower velocity partially compensated for the depth error at the Top of Latrobe Group, hence the secondary target was only 29 m low to prognosis. For closure to exist at the secondary target, the eastern side of the Smiler feature needed to be high in depth to create a trapping geometry at the subcrop edge of the Orange to Magenta Sequence marine shale. The intersection of the Top of Latrobe Group and Orange marine shale, 44 metres and 29 metres deeper, respectively than prognosed resulted in the structural dip direction of the Orange to Magenta Sequence marine shale being to the south, negating closure against the subcrop edge (Enclosure 11).

As a result of post-drill analysis it is interpreted that no closure exists at the secondary target level at the Smiler 1 location. Although the seal quality of the Orange to Magenta sequence marine shale was poor, the primary reason for failure at the Smiler 1 secondary target is due to inadequate trap geometry.

7. *GEOLOGICAL DISCUSSION*

Although, lack of structural closure was the primary cause of failure for both targets at Smiler 1, it is instructive to compare pre- versus post-drill analysis of the geological assessment parameters seal and reservoir. The Top of Latrobe Group target was adequately sealed by 199m thick calcareous claystones of the Lakes Entrance Formation. Reservoir quality was expected to be excellent pre-drill with Paleocene age shoreface facies providing a reservoir section similar to Mackerel Field. The nearest well (Mackerel 3) had time equivalent reservoir with 100% net/gross and average porosity of 21%. At Smiler 1, the same reservoir has thinned to 28m and the upper section contains 2m of glauconitic claystone (non reservoir) as well as 13m of pyritic cemented sandstone with common argillaceous matrix. As a result net/gross is reduced to 69% and average porosity is 18%. The cemented sandstones are concentrated mainly in the upper part of this reservoir with better sandstones in the lower section having porosities up to 22%.

For the secondary objective the Orange to Magenta Sequence marine mudstone is present, with the 15m thick section prognosed being intercepted by the well. Unfortunately, this unit is silt-prone and has only a 1 m thick zone with shale volume greater than 40% contrasting with the nearby Mackerel 3 well, which has some section with shaliness greater that 50%. Due to lack of structural closure, seal integrity at this level remains untested. Even if the marine mudstone/siltstone was an adequate seal it is possible that the thin veneer of glauconitic claystone (Gurnard Facies) intersected by Smiler 1 may be a potential 'thief zone', if it extends across the subcrop trap.

The reservoir section under the marine mudstone seal comprised well developed coarse grained shoreface sandstones. The top 4 metres was partly cemented, otherwise the reservoir was excellent quality with a net/gross of 98% and average porosity of 20% (Enclosure 12). The pre-drill assessment of a net gross at 70% and average porosity of 18% was based on the Mackerel 3 well which had more pervasive cementation in the sandstones at this level.

The subcrop play remains untested in this area with the exception of some of the Mackerel production wells, which indicate that marine mudstones/siltstones can provide seals during production life of a field and may also be suitable seals over geological time. Developing suitable trap geometry remains a challenge for this play.

PE905016

This is an enclosure indicator page.
The enclosure PE905016 is enclosed within the container PE900880 at this location in this document.

The enclosure PE905016 has the following characteristics:

ITEM_BARCODE	= PE905016
CONTAINER_BARCODE	= PE900880
NAME	= Locality Map
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= GENERAL
SUBTYPE	= PROSPECT_MAP
DESCRIPTION	= Location Map for Smiler-1
REMARKS	= A4, Coloured
DATE_CREATED	= 9/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= SMILER-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

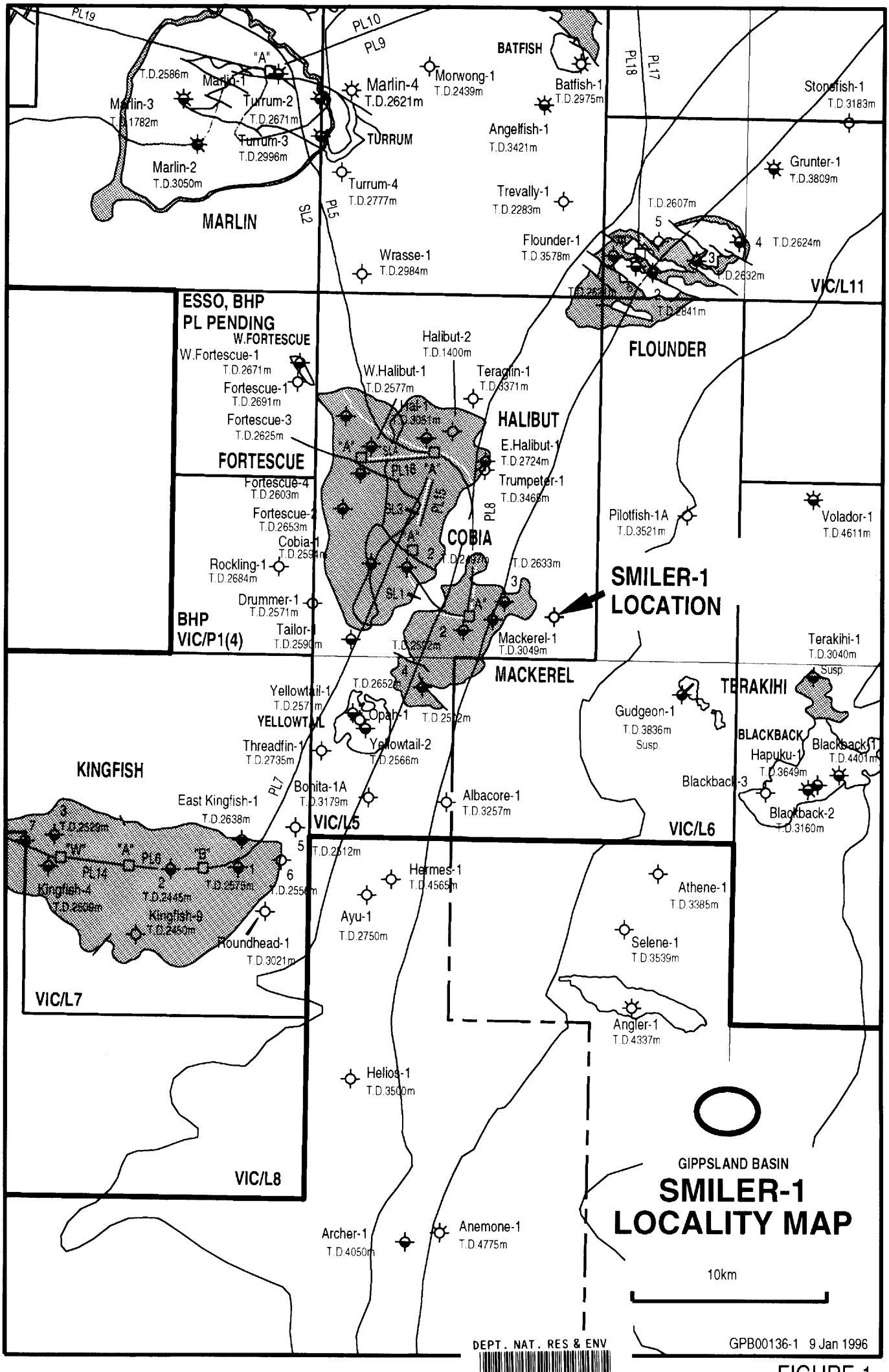
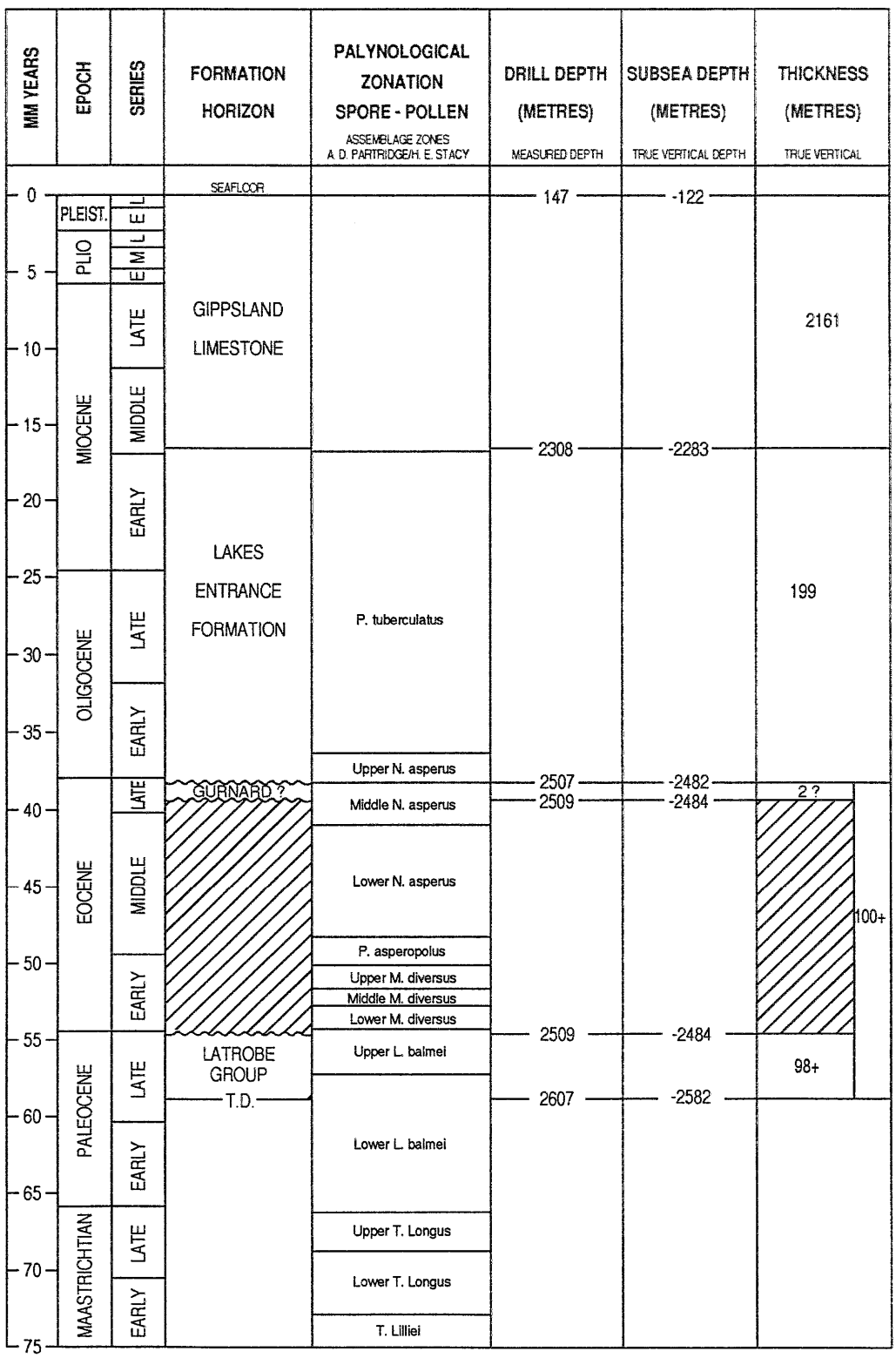

PL19
PL10
PL9
PL18
PL17
BATFISH
Batfish-1
T.D.2975m
Morwong-1
T.D.2439m
Stonefish-1
T.D.3183m
Marlin-1
T.D.2586m
Marlin-3
T.D.1782m
Turrum-2
T.D.2671m
Turrum-3
T.D.2996m
Marlin-2
T.D.3050m
Marlin-4
T.D.2621m
TURRUM
Angelfish-1
T.D.3421m
Grunter-1
T.D.3809m
Turrum-4
T.D.2777m
Trevally-1
T.D.2283m
MARLIN
SL2
PL5
Wrasse-1
T.D.2984m
Flounder-1
T.D.3578m
T.D.2607m
T.D.2624m
T.D.2632m
VIC/L11
ESSO, BHP
PL PENDING
W.FORTESCUE
W.Fortescue-1
T.D.2671m
Fortescue-1
T.D.2691m
Fortescue-3
T.D.2625m
FORTESCUE
Halibut-2
T.D.1400m
W.Halibut-1
T.D.2577m
Teraglin-1
T.D.3371m
HALIBUT
E.Halibut-1
T.D.2724m
Trumpeter-1
T.D.3465m
FLOUNDER
Fortescue-4
T.D.2603m
Fortescue-2
T.D.2653m
Cobia-1
T.D.2594m
Rockling-1
T.D.2684m
COBIA
PL8
Pilotfish-1A
T.D.3521m
Volador-1
T.D.4611m
T.D.2633m
SMILER-1
LOCATION
Drummer-1
T.D.2571m
BHP
VIC/P1(4)
Tailor-1
T.D.2590m
Mackerel-1
T.D.3049m
MACKEREL
Terakihi-1
T.D.3040m
Susp.
TERAKIHI
Yellowtail-1
T.D.2652m
YELLOWTAIL
Opah-1
T.D.2502m
Yellowtail-2
T.D.2566m
Gudgeon-1
T.D.3836m
Susp.
BLACKBACK
Blackback-1
T.D.4401m
Hapuku-1
T.D.3649m
Blackback-3
Blackback-2
T.D.3160m
Threadfin-1
T.D.2735m
KINGFISH
PL7
Bonita-1A
T.D.3179m
East Kingfish-1
T.D.2638m
Albacore-1
T.D.3257m
VIC/L5
VIC/L6
PL14
PL6
Kingfish-4
T.D.2445m
Kingfish-9
T.D.2450m
Hermes-1
T.D.4565m
Athene-1
T.D.3385m
Ayu-1
T.D.2750m
Selene-1
T.D.3539m
Roundhead-1
T.D.3021m
VIC/L7
Angler-1
T.D.4337m
Helios-1
T.D.3500m
VIC/L8
GIPPSLAND BASIN
SMILER-1
LOCALITY MAP
Archer-1
T.D.4050m
Anemone-1
T.D.4775m
10km
DEPT. NAT. RES & ENV
PE905016
GPB00136-1 9 Jan 1996

FIGURE 1

GIPPSLAND BASIN
SMILER-1 STRATIGRAPHIC SECTION
FIGURE 2



K.B. = 25.3m

9 Jan '96 GPC00255

APPENDIX 1

APPENDIX 1

SMILER-1

Palynological Analysis

Palynological Analysis of Smiler-1, Gippsland Basin.

by

Alan D. Partridge

Biostrata Pty Ltd
A.C.N. 053 800 945

Biostrata Report 1995/17

25 August 1995

CONTENTS

INTERPRETATIVE DATA

BASIC DATA

INTERPRETATIVE DATA

Introduction

Eighteen sidewall cores were analysed in Smiler-1. The author selected, split and cleaned the sidewall cores and forwarded them to Laola Pty Ltd in Perth for processing to prepare the palynological slides. Lithological units and palynological zones recognised in the Latrobe Group and overlying Seaspray Group are given in the following summary. The interpretative data with zone identification and Confidence Ratings are recorded in Table 1 and basic data on residue yields, preservation and diversity are recorded on Tables 2 and 3. All species which have been identified with binomial names are tabulated on the palynomorph range chart. Relinquishment list for palynological slides and residues from samples analysed in Smiler-1 are provided at the end of the report.

Palynological Summary for Smiler-1

AGE	UNIT/FACIES (metres)	SPORE-POLLEN ZONES (MICROPLANKTON ZONES)	DEPTHS (metres)
	SEASPRAY GROUP 147-2507m		
PLIOCENE TO LATE MIOCENE	Gippsland Limestone	*M. lipsis - M. galeatus* (*Operculodinium* Superzone)	1242 (1242)
OLIGOCENE	Lakes Entrance Formation	*P. tuberculatus* (*Operculodinium* Superzone)	2475-2505 (2475-2505)
	LATROBE GROUP Pyritic claystone 2507-2508.5m		
EOCENE	Unnamed coarse grained glauconitic sandstone 2508.5-2520.5m	Eocene assemblages which are Zone indeterminate	2507.5-2520
	LATROBE GROUP Undifferentiated coarse clastics 2520.5-2611.5m.	*L. balmei*	2544-2547
PALEOCENE		Lower *L. balmei*	2595

T.D. 2611.5mKB (logger)

Between 5 to 13 grams (average 8.9 grams) of the sidewall cores were processed for palynological analysis. Residue yields were mostly low to very low except for Latrobe Group samples between 2544-2595m and two samples from the Seaspray Group (Table 2). Palynomorph concentration on the slides was moderate to high in the eight samples from the Seaspray Group but only very low to moderate from

the Latrobe Group with several samples effectively barren (Table 3). Spore-pollen diversity was generally moderate in the Seaspray Group averaging 19+ species per sample but very variable in the Latrobe Group from barren to moderate. Microplankton diversity was moderate to high in Seaspray Group (average 11+ species/sample) but essentially negligible in the Latrobe Group.

Geological Comments

1. The palynological results from Smiler-1 are similar to wells on the adjacent Mackerel field in that age dating of the sandy section at the top of Latrobe Group was unsuccessful. Instead the Paleocene *L. balmei* Zone was identified in two siltstone/shale beds within the Latrobe Group, and the basal 37 metres of the Seaspray Group was analysed and assigned to Oligocene part of the *P. tuberculatus* Zone.

2. In addition the shallowest sidewall core in the well at 1242m on analysis gave a surprisingly young latest Miocene to Pliocene age. Based on the current correlation to the Haq *et al.* (1987, 1988) the sample would be approximately 5 million years and indicate depositional rates in excess of 200 metres/million years within the Late Neogene. This result is comparable with the thickness of the foraminiferal zones in Hapuku-1 but is in significant conflict with the current zonation in the closer Mackerel-1 and 2 wells. The shallowest sample analysed in Mackerel-3 at 2133m is Middle Miocene in age.

3. The basal 35 metres of the Seaspray Group is sampled by seven sidewall cores which are overwhelmingly dominated by dinoflagellates (53% to 85% of spore-pollen and microplankton count). Other marine fossils in the samples are the chitinous inner liners of foraminifera and rare scolecodonts. The assemblages are typical of the *P. tuberculatus* Zone and *Operculodinium* Superzone and are considered to represent a deep water open marine environment. As there is only a 2 metre sampling gap between the deepest sample and the log pick for the top of Latrobe it considered unlikely that the newly recognised *F. leos* microplankton Zone (Partridge 1994, 1995) is present.

4. The top of the Latrobe Group is marked by a 1.5 metre thick spike on the density log from 2507-2508.5m. The two sidewall core shot in this unit where pyritic claystones which gave extremely low yields and are considered barren of diagnostic palynomorphs. The absence of abundant glauconite in

the samples suggests a lithological correlation to the Flounder Formation rather than the Gurnard Formation.

5. A 12 metres thick light grey to pale green coarse grained quartz sandstone with a trace to ~20% glauconite was sampled in four sidewall cores over the log interval 2508.5-2520.5m. Although kerogen was extracted from all four samples palynomorphs in the assemblages were either very rare or appeared mainly to be contaminants from the overlying Seaspray Group. The best estimate is that the section is probably Early Eocene in age. Notwithstanding the glauconite content the lithology of the unit is overall too coarse grained to be assigned to the Gurnard Formation.

6. Two siltstone/shale beds were sampled in the 90 metres of Latrobe Group coarse clastics penetrated below 2520m. The shallowest bed between 2534.5-2550m contained assemblages derived from non-marine environments and the overall similarity between the samples suggest the bed was probably rapidly deposited. The deeper bed between approximately 2593.5-2598.5m at the base of the logged interval gave a marine assemblage assigned to the Lower *L. balmei* Zone.

Biostratigraphy

Zone and age determinations are based on the spore-pollen zonation scheme proposed by Stover & Partridge (1973), and the dinoflagellate zonation scheme published in outline by Partridge (1975, 1976). Although other modifications and embellishments to both zonation schemes can be found in the many palynological reports on the Gippsland Basin wells drilled by Esso Australia Ltd this work is not collated or summarised in a single report.

Author citations for most spore-pollen species can be sourced from Stover & Partridge (1973, 1982) or other references cited herein whilst dinoflagellates author citations can be found in the index of Lentin & Williams (1993). Species names followed by "ms" are unpublished manuscript names.

***Monotocidites galeatus* to *Myrtaceidites lipsis* spore-pollen Zones.**
Interval: 1242.0 metres
Age: Late Miocene to Early Pliocene (= B1-A4 foram. zones)
The shallowest sidewall core recovered in Smiler-1 contained a high diversity spore-pollen suite in a palynomorph assemblage dominated by microplankton (> 67%). A latest Late Miocene to earliest Pliocene age is assigned to the sample based on both species abundances and key first appearances. The composition of the spore-pollen assemblage comprises nearly equal abundances of spores and

angiosperm pollen (~45% each) but only a moderate abundance of gymnosperm pollen (< 10%). *Cyathidites* spp., *Gleicheniidites* spp. and *Laevigatosporites* spp. are the dominant spores while amongst the angiosperms *Casuarina* pollen (= *Haloragacidites harrisii*) at ~22% dominates with *Chenopodipollenites chenopodiaceoides* (9%) and *Tubulifloridites antipodica* (3.2%) the next most abundant types. The abundance of *Nothofagidites* spp. in contrast is conspicuously low at less than 2% of total count. These abundances are characteristic of the transition zone above the *Cingulatisporites bifurcatus* Zone and the succeeding *Myrtaceidites lipsis* Zone (Partridge 1975, 1988). This assignment on relative abundances is supported by the first or oldest occurrences of *Cingulatisporites bifurcatus* (Couper) Martin 1973 and *Monotocidites galeatus* Macphail, Partridge & Truswell, 1993.

The *M. galeatus* Zone was defined from Murray Basin by Macphail & Truswell (1993) as the interval from the earliest appearance of eponymous species and/or consistent *M. lipsis* to the earliest consistent (or abundant) appearance of *Tubulifloridites pleistocenicus* Martin 1973. As such the definition overlaps with concept of the *Myrtaceidites lipsis* Zone established in the Gippsland Basin which in its strictest sense is the interval from the oldest occurrence of *M. lipsis* to oldest abundant occurrence of *Tubulifloridites* spp. including *T. pleistocenicus*. However, *Monotocidites galeatus* occurs below the base of *M. lipsis* in the Gippsland Basin but does not extend to the base of the *C. bifurcatus* Zone as implied by Macphail & Truswell (1993, fig.1).

Because *M. lipsis* was not recorded in Smiler-1 this sample does not strictly conform to the zone of that name. However, it also does not conform to character of underlying *C. bifurcatus* Zone which typically has *Nothofagidites* abundances of between 5% to 10%. Instead it must lie in either the as yet inadequately documented transition between the *C. bifurcatus* and *M. lipsis* Zones as found in Flounder-5 (Partridge, 1988) or belong to the younger zone even though the eponymous species is absent.

The associated microplankton assemblage is dominated by *Operculodinium* spp. > 40% (all considered different species to *O. centrocarpum*) and *Spiniferites* spp. ~35%. Although diverse the assemblage is largely undocumented or undescribed. The assemblage readily conforms to *Operculodinium* Superzone but is clearly high within this microflora based on the oldest occurrence of *Melitasphaeridium choanophorum*.

***Proteacidites tuberculatus* spore-pollen Zone.**
Interval: 2475.0-2505.0 metres
Age: Oligocene.
The seven sidewall cores analysed from the basal 35 metres of the Lakes Entrance Formation of the Seaspray Group all contain the spore *Cyatheacidites annulatus* which is diagnostic of the *P. tuberculatus* Zone. Other index species are a single specimen of *Granodiporites nebulosus* in the basal sample at 2505m which is considered diagnostic of the Lower *P. tuberculatus* Zone and key index spore species *Foveotriletes lacunosus* (at 2497m) and *Cyathidites subtilis* (at 2495m) which are both diagnostic of the Middle *P. tuberculatus* Zone. Although the spore-pollen assemblages in individual samples are of moderate diversity (17+ species/sample), with an overall diversity of 40+ species for the zone, most species are long ranging.

The associated microplankton assemblages belonging to the *Operculodinium* Superzone are either dominated by abundant *Spiniferites* spp. as at 2475m and 2487m (41% and 59% respectively) or abundant *Operculodinium centrocarpum* between 2495-2505m (average 48%). The next most common and consistent species is *Tectatodinium scabroellipticus* ms which has a maximum abundance of 13% at 2487m. The consistent presence of *Protoellipsodinium simplex* ms and somewhat less consistent but often frequent occurrence of *Pyxidinopsis pontus* ms and *Dapsilidinium pseudocolligerum* suggest that this section is somewhat younger than the *Fromea leos* microplankton Zone of Partridge (1994, 1995) found in the wells Blackback-3 and Gudgeon-1 to the southeast of Smiler-1.

Frequent to abundant microforaminiferal inner liners in all samples and rare but consistent scolecodonts (chitinous mouthparts or teeth of marine annelid worms) support the abundant microplankton in indicating a distal open marine environment of deposition.

Zone indeterminate interval: 2507.5-2520.0 metres.
Age: Eocene.
The six sidewall cores over this interval were either barren of palynomorphs or those identified were mostly considered to be contaminants. The highest sample at 2507.5m contained virtually nothing on the kerogen slide while the oxidised slide was a sparse mixture of amorphous kerogen (~75%) and biodegraded terrestrial kerogen (~25%). The few palynomorphs recorded are all considered contaminants. In the next sample at 2508m the kerogen slide appeared to be mostly organically bound clumps of fine pyrite crystals while the oxidised slide was composed of either a chemical reaction product or organic pseudomorphs of the pyrite crystal clumps. The next three samples at 2509m, 2511.5m and 2514m

were all fairly similar. The slides contained clumps of amorphous or biodegraded terrestrial kerogen which were heavily impregnated with very fine pyrite. These clumps are possibly derived from the glauconite grains in the sample which may have originated as faecal pellets. Most of the few palynomorphs identified in the samples are probably contaminants from the overlying Seaspray Group section. The exceptions are single fragments of the dinoflagellates *Glaphrocysta* sp. at 2511.5m and *Homotryblium tasmanense* at 2514m. Neither of these specimens can be taken as zone diagnostic although the latter would suggest an Early Eocene age. The deepest sample at 2520m contained the largest recorded assemblages but all are long ranging species and could all be contaminants from the overlying Seaspray Group.

***Lygistepollenites balmei* spore-pollen Zone.**
Interval: 2544.0-2547.0 metres
Age: Paleocene.

The three sidewall cores analysed from the siltstone/shale bed evident on the gamma and density/porosity logs between 2534.5-2550m gave high yields with relatively high palynomorph concentrations. Average diversity was 20+ species/sample and total diversity 33+ species. All three samples were very similar in composition being dominated by the two gymnosperm pollen *Phyllocladidites mawsonii* (average 35%) and *Lygistepollenites balmei* (average 22%). The abundance of the latter species together with the rare occurrence of *Gambierina rudata* provides confident assignment to the undifferentiated *L. balmei* Zone. Strangely, other key index spore-pollen species and microplankton were absent. Neither the preservation nor the concentrations of the palynomorphs on the slides is considered to be a significant factor in their absence. Another feature of the spore-pollen species composition is the absence of high abundances of the gymnosperm pollen species *Araucariacites australis* and *Dilwynites granulatus/tuberculatus* which were found associated with high microplankton abundances and diversity at shale/siltstone beds interpreted to represent condensed section in Roundhead-1 (Partridge 1989).

Combining these observations the three assemblages in Smiler-1 are interpreted to reflect non-marine environments. The striking similarity between the assemblages also suggests that the siltstone/shale bed was relatively rapidly deposited. It is uncertain, however, whether the non-marine character of the assemblages is consequence of the provenance of the sediments or is reflecting the environment of deposition. The former interpretation is a distinct possibility considering the palaeoshoreline location of Smiler-1 during the Paleocene. In contrast it is considered highly unlikely that the siltstone/shale bed could represent a condensed section.

Lower *Lygistepollenites balmei* spore-pollen Zone.
Interval: 2595.0 metres
Age: Paleocene.

The deepest sidewall core in Smiler-1 at 2595m from a shale at the base of the electric log readings gave a moderate yield with low palynomorph concentrations but did contain a single specimen of the index pollen species *Proteacidites angulatus* as well as the dinoflagellates *Deflandrea speciosus, Glaphrocysta retiintexta* and *Senegalinium dilwynense* and can confidently be assigned to the Lower *L. balmei* Zone. In contrast to the siltstone/shale between 2534.5-2550m this basal shale is clearly marine and could represent a condensed section. Unfortunately the microplankton are not zone diagnostic.

References

HAQ, B.U., HARDENBOL, J. & VAIL, P., 1987. Chronology of fluctuating sea levels since Triassic. *Science 235*, 1156-1167.

HAQ, B.U., HARDENBOL, J. & VAIL, P., 1988. Mesozoic and Cenozoic chronostratigraphy and cycles of sea-level change. *SEPM Special Publication No. 42*, 71-108.

LENTIN, J.K. & WILLIAMS, G.L., 1993. Fossil Dinoflagellates: Index to genera and species, 1993 Edition. *AASP Contribution Series No. 28*, 1-856.

MACPHAIL, M.K., PARTRIDGE, A.D. & TRUSWELL, E.M., 1993. Appendix 1. Taxonomy. In *Palynostratigraphy of the Bookpurnong Beds and related Late Miocene-Early Pliocene facies in the central west Murray Basin, part 2: spores and pollen*, M.K. Macphail & E.M. Truswell, *AGSO Journal of Australian Geology & Geophysics 14/4*, 392-409.

MACPHAIL, M.K. & TRUSWELL, E.M., 1993. Palynostratigraphy of the Bookpurnong Beds and related Late Miocene-Early Pliocene facies in the central west Murray Basin, part 2: spores and pollen. *AGSO Journal of Australian Geology & Geophysics 14/4*, 383-409.

MARTIN, H.A., 1973. The palynology of some Tertiary Pleistocene deposits, Lachlan River Valley, New South Wales. *Aust. Jour. Botany, Supplementary Series, Supplement no. 6*, 1-57.

PARTRIDGE, A.D., 1975. Palynological zonal scheme for the Tertiary of the Bass Strait Basin (Introducing Paleogene Dinoflagellate Zones and Late Neogene Spore-Pollen Zones). *Geol. Soc. Aust. Symposium on the Geology of Bass*

Strait and Environs, Melbourne, November, 1975. *Esso Aust. Ltd. Palaeo. Rept. 1975/17* (unpubl.).

PARTRIDGE, A.D., 1976. The geological expression of eustacy in the early Tertiary of the Gippsland Basin. *APEA J. 16* (1), 73-79.

PARTRIDGE, A.D., 1988. Late Neogene palynology, Gippsland Basin, south-eastern Australia. *Abstracts, 7 International Palynological Congress Brisbane*, p.127.

PARTRIDGE, A.D., 1989. Palynological analysis of Roundhead-1, Gippsland Basin. *Esso Aust. Ltd. Palaeo. Rept. 1989/17*, 1-26.

PARTRIDGE, A.D., 1994. Palynological analysis of Blackback-3, Gippsland Basin. *Biostrata Report 1994/6*, 1-23.

PARTRIDGE, A.D., 1995. Palynological analysis of sidewall cores between 3012.1m to 3057.1m in Gudgeon-1, Gippsland Basin. *Biostrata Report 1995/10*, 1-11.

STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Proc. R. Soc. Vict. 85*, 237-286.

STOVER, L.E. & PARTRIDGE, A.D., 1982. Eocene spore-pollen from the Werillup Formation, Western Australia. *Palynology 6*, 69-95.

Table-1: Interpretative Palynological Data for Smiler-1, Gippsland Basin.

SAMPLE TYPE	DEPTH (Metres)	Spore-Pollen Zone (Microplankton Zone)	*CR	Comments and Key Species
SWC 30	1242.0	*M. lipsis-M. galeatus* (*Operculodinium* Sz)	B1 B2	Microplankton 67%. FAD *Monotocidites galeatus*.
SWC 27	2475.0	*P. tuberculatus* (*Operculodinium* Sz)	B2 B2	Microplankton 78%. LAD *Dapsilidinium pseudocolligerum*
SWC 25	2487.0	*P. tuberculatus* (*Operculodinium* Sz)	B2 B2	Microplankton 82%. *Selenophemphix nephroides* present.
SWC 23	2495.0	Middle *P. tuberculatus* (*Operculodinium* Sz)	B2 B2	Microplankton 85%. FAD *Cyathidites subtilis*.
SWC 22	2497.0	Middle *P. tuberculatus* (*Operculodinium* Sz)	B2 B2	FAD *Foveotriletes lacunosus*.
SWC 20	2501.0	*P. tuberculatus* (*Operculodinium* Sz)	B2 B2	Microplankton 81%. *Selenophemphix nephroides* present.
SWC 19	2503.0	*P. tuberculatus* (*Operculodinium* Sz)	B2 B2	
SWC 18	2505.0	Lower *P. tuberculatus* (*Operculodinium* Sz)	B2 B2	Microplankton 53%. LAD *Granodiporites nebulosus* FAD *Cyatheacidites annulatus*.
SWC 17	2507.5	Indeterminate		All fossils are contaminants.
SWC 16	2508.0	Indeterminate		No fossils recorded.
SWC 15	2509.0	Indeterminate		No fossils recorded.
SWC 14	2511.5	Indeterminate		All fossils are contaminants.
SWC 13	2514.0	Indeterminate		Single specimen of *Homotryblium tasmaniense*.
SWC 12	2520.0	Indeterminate		Most fossils recorded are contaminants.
SWC 7	2544.0	*L. balmei*	B2	*Phyllocladidites mawsonii* 27%. *Lygistepollenites balmei* 28%
SWC 6	2545.0	*L. balmei*	B2	*P. mawsonii* 38%. *L. balmei* 22%.
SWC 5	2547.0	*L. balmei*	B2	*P. mawsonii* 41%. *L. balmei* 17%.
SWC 1	2595.0	Lower *L. balmei*	B2	*Proteacidites angulatus* present with dinoflagellates *Glaphrocysta retiintexta* and *Senegalinium dilwynense*.

Sz = Superzone

* Confidence Rating
LAD = Last Appearance Datum
FAD = First Appearance Datum

Confidence Ratings

The concept of Confidence Ratings applied to palaeontological zone picks was originally proposed by Dr. L.E. Stover in 1971 to aid the compilation of micropalaeontological and palynological data and to expedite the revision of the then rapidly evolving zonation concepts in the Gippsland Basin. The original scheme which mixed confidence in fossil species assemblage with confidence due to sample type gradually proved to be rather limiting as additional refinements to existing zonations were made. With the development of the STRATDAT computer database as a replacement for the increasingly unwieldy paper based Palaeontological Data Sheet files a new format for the Confidence Ratings was proposed. These are given for individual zone assignments on Table 1, and their meanings are summarised below:

Alpha codes: Linked to sample type

- **A** Core
- **B** Sidewall core
- **C** Coal cuttings
- **D** Ditch cuttings
- **E** Junk basket
- **F** Miscellaneous/unknown
- **G** Outcrop

Numeric codes: Linked to fossil assemblage

1. **Excellent confidence:** High diversity assemblage recorded with key zone species.
2. **Good confidence:** Moderately diverse assemblage recorded with key zone species.
3. **Fair confidence:** Low diversity assemblage recorded with key zone species.
4. **Poor confidence:** Moderate to high diversity assemblage recorded without key zone species.
5. **Very low confidence:** Low diversity assemblage recorded without key zone species.

BASIC DATA

Table 2: Basic Sample Data - Smiler-1, Gippsland Basin.

SAMPLE TYPE	DEPTH (Metres)	REC (cm)	LITHOLOGY	SAMPLE WT (g)	RESIDUE YIELD
SWC 30	1242.0	3.0	Medium grey calcilutite - well cleaned.	12.8	Moderate
SWC 27	2475.0	2.0	Medium grey calcareous claystone - moderately well cleaned.	7.2	Low
SWC 25	2487.0	<1.5	Medium grey calcareous claystone - poorly cleaned.	5.5	Low
SWC 23	2495.0	2.3	Dark grey calcareous claystone. Firm - moderately well completed.	10.3	Low
SWC 22	2497.0	2.0	Medium-dark grey calcilutite. Friable sample - poorly cleaned.	7.8	Very low
SWC 20	2501.0	2.5	Medium grey calcareous claystone - moderately well cleaned.	9.7	Moderate
SWC 19	2503.0	~2.0	Brown-grey calcareous claystone. Sample broken - poorly cleaned.	7.4	Very low
SWC 18	2505.0	1.5	Medium grey calcareous claystone - poorly cleaned.	7.3	Very low
SWC 17	2507.5	~1.5	Mottled brown green pyritic claystone with minor glauconite - poorly cleaned.	9.6	Very low
SWC 16	2508.0	1.5	Dark grey pyritic claystone with floating coarse quartz grains. Sample broken - poorly cleaned.	11.5	Very low
SWC 15	2509.0	3.3	Light grey to pale green coarse grained quartz sandstone with ~10-20% glauconite and white clay matrix - moderately well cleaned.	13.6	Moderate
SWC 14	2511.5	<2.5	Light grey to pale green coarse grained quartz sandstone with ~15% glauconite - poorly cleaned.	10.4	Very low
SWC 13	2514.0	~2.5	Off white coarse grained quartz sandstone with ~10% glauconite. Rare pebbles up to 6mm diameter - moderately well cleaned.	8.1	Very low
SWC 12	2520.0	<2.0	Coarse quartz sandstone with light brown matrix (~40%) and trace (<5%) glauconite. Poorly cleaned - some mud contamination.	6.0	Low
SWC 7	2544.0	~2.0	Dark grey/brown siltstone. Sample broken - poorly cleaned.	8.5	High
SWC 6	2545.0	~1.5	Dark grey/brown siltstone. Moderately well cleaned.	8.8	Moderate
SWC 5	2547.0	~2.0	Dark grey siltstone. Sample well cleaned.	9.4	High
SWC 1	2595.0	<1.5	Medium grey, medium to coarse grained sandstone with argillaceous matrix. Not cleaned.	6.7	Moderate

Table-3: Basic Palynomorph Data for Smiler-1.

SAMPLE TYPE	DEPTH (Metres)	Palynomorph Concentration	Palynomorph Preservation	Number S-P Species*	Microplankton Abundance	Number MP Species*
SWC 30	1242.0	High	Poor-good	39+	Abundant	10+
SWC 27	2475.0	High	Poor-fair	15+	Abundant	12+
SWC 25	2487.0	High	Poor-good	17+	Abundant	13+
SWC 23	2495.0	High	Poor-good	17+	Abundant	13+
SWC 22	2497.0	High	Poor-fair	9+	Abundant	11+
SWC 20	2501.0	Moderate	Poor-fair	19+	Abundant	12+
SWC 19	2503.0	High	Poor-fair	19+	Abundant	7+
SWC 18	2505.0	Moderate	Poor-fair	25+	Abundant	12+
SWC 17	2507.5	Very low	Poor	(4+)	NA	
SWC 16	2508.0	Barren				
SWC 15	2509.0	Barren				
SWC 14	2511.5	Very low	Poor	(3+)	Rare	(3+)
SWC 13	2514.0	Very low	Poor		Very rare	2+ (1)
SWC 12	2520.0	Low	Very poor-good	11+	Frequent	(5+)
SWC 7	2544.0	Low	Poor-fair	19+	NR	
SWC 6	2545.0	Moderate	Fair	21+	NR	
SWC 5	2547.0	Moderate	Poor-fair	19+	NR	
SWC 1	2595.0	Low	Poor-fair	13+	Rare	3+

NR = Not recorded
( )* = Caved S-P or MP Species

Diversity:

Very low	= 1-5	species
Low	= 6-10	species
Moderate	= 11-25	species
High	= 26-74	species
Very high	= 75+	species

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: SMILER-1
PREPARED BY: A.D. PARTRIDGE
DATE: 9 AUGUST 1995 Sheet 1 of 2

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC 30	1242.0	P196798	Kerogen slide: filtered/unfiltered
SWC 30	1242.0	P196799	Oxidised slide 2: 8μm filter
SWC 30	1242.0	P196800	Oxidised slide 3: 8μm filter
SWC 30	1242.0	P196801	Oxidised slide 4: 15μm filter - 1/2 cover slip
SWC 27	2475.0	P196802	Kerogen slide: filtered/unfiltered
SWC 27	2475.0	P196803	Oxidised slide 2: 8μm filter - 1/2 cover slip
SWC 25	2487.0	P196804	Kerogen slide: filtered/unfiltered
SWC 25	2487.0	P196805	Oxidised slide 2: 8μm filter - 1/2 cover slip
SWC 23	2495.0	P196806	Kerogen slide: filtered/unfiltered
SWC 23	2495.0	P196807	Oxidised slide 2: 8μm filter - 18mm cover slip
SWC 22	2497.0	P196808	Kerogen slide: filtered/unfiltered
SWC 22	2497.0	P196809	Oxidised slide 2: 8μm filter - 18mm cover slip.
SWC 20	2501.0	P196810	Kerogen slide: filtered/unfiltered
SWC 20	2501.0	P196811	Oxidised slide 2: 8μm filter
SWC 19	2503.0	P196812	Kerogen slide: filtered/unfiltered
SWC 18	2505.0	P196813	Kerogen slide: filtered/unfiltered
SWC 18	2505.0	P196814	Oxidised slide 2: 8μm filter - 1/4 cover slip.
SWC 17	2507.5	P196815	Oxidised slide 2: 8μm filter - 1/2 cover slip.
SWC 17	2507.5	P196816	Kerogen slide: filtered/unfiltered - 1/4 cover slip.
SWC 16	2508.0	P196817	Kerogen slide: filtered/unfiltered - 1/4 cover slip.
SWC 16	2508.0	P196818	Oxidised slide 2: 8μm filter - 1/2 cover slip.
SWC 15	2509.0	P196819	Kerogen slide: filtered/unfiltered - 18mm cover slip
SWC 15	2509.0	P196820	Oxidised slide 2: 8μm filter
SWC 15	2509.0	P196821	Oxidised slide 3: 8μm filter
SWC 14	2511.5	P196822	Kerogen slide: filtered/unfiltered
SWC 14	2511.5	P196823	Oxidised slide 2: 8μm filter - 1/2 cover slip.
SWC 13	2514.0	P196824	Kerogen slide: filtered/unfiltered
SWC 13	2514.0	P196825	Oxidised slide 2: 8μm filter - 1/2 cover slip.
SWC 12	2520.0	P196826	Kerogen slide: filtered/unfiltered
SWC 12	2520.0	P196827	Oxidised slide 2: 8μm filter - 1/2 cover slip.

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: SMILER-1
PREPARED BY: A.D. PARTRIDGE
DATE: 9 AUGUST 1995

Sheet 2 of 2

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC 7	2544.0	P196828	Kerogen slide: filtered/unfiltered
SWC 7	2544.0	P196829	Oxidised slide 2: 8μm filter
SWC 7	2544.0	P196830	Oxidised slide 3: 8μm filter
SWC 7	2544.0	P196831	Oxidised slide 4: 15μm filter
SWC 7	2544.0	P196832	Oxidised slide 5: 15μm filter
SWC 6	2545.0	P196833	Kerogen slide: filtered/unfiltered
SWC 6	2545.0	P196834	Oxidised slide 2: 8μm filter
SWC 6	2545.0	P196835	Oxidised slide 3: 8μm filter
SWC 5	2547.0	P196836	Kerogen slide: filtered/unfiltered
SWC 5	2547.0	P196837	Oxidised slide 2: 8μm filter
SWC 5	2547.0	P196838	Oxidised slide 3: 8μm filter
SWC 5	2547.0	P196839	Oxidised slide 4: 15μm filter
SWC 5	2547.0	P196840	Oxidised slide 5: 15μm filter
SWC 1	2595.0	P196841	Kerogen slide: filtered/unfiltered - 1/4 cover slip.
SWC 1	2595.0	P196842	Oxidised slide 2: 8μm filter
SWC 1	2595.0	P196843	Oxidised slide 3: 8μm filter
SWC 1	2595.0	P196844	Oxidised slide 4: 15μm filter - 1/2 cover slip.

RELINQUISHMENT LIST - PALYNOLOGY RESIDUES

WELL NAME & NO: SMILER-1
PREPARED BY: A.D. PARTRIDGE
DATE: 14 AUGUST 1995 Sheet 1 of 1

SAMPLE TYPE	DEPTH (M)	DESCRIPTION
SWC 15	2509.0	Oxidised residue
SWC 7	2544.0	Kerogen residue
SWC 7	2544.0	Oxidised residue
SWC 6	2545.0	Kerogen residue
SWC 5	2547.0	Kerogen residue
SWC 5	2547.0	Oxidised residue

PE900803

This is an enclosure indicator page.
The enclosure PE900803 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900803 has the following characteristics:

ITEM_BARCODE	= PE900803
CONTAINER_BARCODE	= PE900880
NAME	= Palynomorph Range Chart
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Palynmorph Range Chart for Smiler-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= SMILER-1
CONTRACTOR	= BIOSTRATA PTY LTD
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 2

APPENDIX 2

SMILER-1

Quantitative Formation Evaluation

Esso Australia Ltd

Exploration Department

SMILER-1

Formation Evaluation

Log Analysis Report

Petrophysicist: L.J. Finlayson

September 1995

SMILER-1 LOG ANALYSIS

Smiler-1 wireline logs have been analysed for effective porosity and water saturation over the interval 2500m to 2590m. Analysis was carried out using LASER derived total porosity and a Dual Water saturation model.

Note that all depths quoted below are MDKB unless specified otherwise.

DATA

Logs Acquired

Suite 1

LDT-AS-GR	170m to 757m

Suite 2

DLL-MSFL-AS	746.5m to 2608m (MSFL to 2417m)
LDT-CNL-NGT-SHDT	2411m to 2611m (LDT to 746.5m)
CSAT	742m to 2606m
CST	1242m to 2595m, 30/30 recovered

Note: All logs acquired conventionally on wireline.

Log Quality and Processing

- All curves were found to be of acceptable quality, allowing processing to proceed with no corrections other than environmental required.
- The NGT curves were environmentally corrected for barite and potassium in the mud by Schlumberger using the ALPHA filtering option.
- Schlumberger ALPHA processed hi-res bulk density curve HNRH was used with TNPH in LASER porosity calculations.
- An Rt curve was derived from borehole and invasion corrections to the dual laterolog curves.
- An estimate of the environmental correction to the TNPH curve was made by applying a gain of 1.1 below 2550m. Above this depth the TNPH curve was used without further correction.

INTERPRETATION

Logs Used

LLD, LLS, MSFL, HNRH, HPEF, TNPH, POTA, THOR (Schlumberger).

Analysis Parameters

a	1
m	1.7
n	2
Apparent Shale Porosity (PHISH)	0.15
Shale Resistivity (RSH)	15 ohmm
Formation Water Resistivity (RW)	0.075 ohmm (35,000 ppm NaCleq)
Bottom Hole Temperature	84 DEGC

Total Porosity

Total porosity was derived from LASER using a 4 mineral model based on quartz, feldspar, illite and pyrite.

Shale Volume

The Volume of Wet Clay derived from LASER was used as VSH in effective porosity and water saturation calculations.

Free Formation Water Resistivity

Free formation water resistivity was derived from RWA calculations in clean water sands. The value selected (0.075 ohmm) equates to a salinity of 35,000 ppm NaCleq, and is consistent with produced water in the area.

Water Saturations

Total water saturation was calculated using LASER total porosity in the Dual Water programme DWGP. Effective porosity and effective water saturation were calculated using the LASER VWCL as VSH. Invaded zone saturation, SXO, was calculated from effective porosity and the MSFL using an apparent mud filtrate salinity of 0.03 ohmm.

Water saturation was set to 1 and porosity set to 0 in coals and carbonaceous shales.

RESULTS

1. All sands are interpreted as water bearing.

2. The invaded-zone saturation curve, SXO, also suggests there are no intervals with quantifiable hydrocarbon saturations.

Attached are the following presentations of results:

Summary Table
Log Analysis Listing
Log Analysis Depth Plot
Laser Parameters

SMILER 1 SUMMARY OF RESULTS

Net Porosity Cut-off: 12%

Depth (m)	Gross (m)	Net (m)	N/G %	Mean Porosity	Std. Dev. Porosity	Mean Sw	Comments
2508.5-2520.0	11.5	7.5	65	15.0%	1.8%	97.0%	Water
2520.0-2535.0	15.0	14.4	96	19.0%	2.0%	99.0%	Water
2550.0-2590.0	40.0	38.3	96	22.0%	2.4%	97.0%	Water

LASER PARAMETERS: SMILER - 1 4 MINERAL MODEL

CURVE		NAME	GAIN	OFFSET
Density Linear	INPUT	HNRH	1	0
Photoelectric Linear	INPUT	HPEF	1	0
Photoelectric Linear	INPUT	HNRH	1	0
CNL Piecewise-Linear	INPUT	TNPH	1	0
K weight fraction	INPUT	POTA	1	0
Th weight fraction	INPUT	THOR	1	0

CONSTRAINT TABLE

INPUT	CONSTRAINT	ERROR
	sum=1	0.005
BULK DENSITY	Density Linear	0.030
VOL.PHOTO XSECTION	Photoelectric Linear	2.000
NEUTRON POROSITY	CNL Piecewise-Linear	0.030
ELEMENTAL YIELD	K weight fraction	0.500
MINERAL VOLUME	Th weight fraction	3.000
CLAY BOUND WATER	0.01	

CONSTRAINT PARAMETER EXCEPTION TABLE

CONSTRAINT	PARAMETER	NAME	VALUE
ALL	rho	PHIE	1.020
ALL	rho	VCLB	1.020
Density Linear	rho	KFEL	2.540
Density Linear	rho	ILLT	2.770
Photoelectric Linear	U	PHIE	0.740
Photoelectric Linear	U	VCLB	0.740
Photoelectric Linear	U	KFEL	7.290
Photoelectric Linear	U	ILLT	8.370
K weight fraction	K	KFEL	10.500
K weight fraction	K	ILLT	4.910
K weight fraction	mode	mat3	3.000
K weight fraction	rho	KFEL	2.540
K weight fraction	rho	ILLT	2.770
Th weight fraction	Th	PHIE	2.500
Th weight fraction	Th	VCLB	2.500
Th weight fraction	Th	QRTZ	2.500
Th weight fraction	Th	KFEL	2.500
Th weight fraction	Th	ILLT	30.000
Th weight fraction	mode	mat3	3.000
Th weight fraction	rho	KFEL	2.540
Th weight fraction	rho	ILLT	2.770
CLAY BOUND WATER	coeff	VCLB	-1.000
CLAY BOUND WATER	coeff	ILLT	0.150
CNL Piecewise-Linear	CNL 0	KFEL	-0.001
CNL Piecewise-Linear	CNL 0	ILLT	0.250
CNL Piecewise-Linear	CNL 5	PHIE	0.003

CNL Piecewise-Linear	CNL 5	VCLB	0.003
CNL Piecewise-Linear	CNL 5	QRTZ	0.018
CNL Piecewise-Linear	CNL 5	KFEL	0.062
CNL Piecewise-Linear	CNL 5	ILLT	0.304
CNL Piecewise-Linear	CNL 10	PHIE	0.008
CNL Piecewise-Linear	CNL 10	VCLB	0.008
CNL Piecewise-Linear	CNL 10	QRTZ	0.059
CNL Piecewise-Linear	CNL 10	KFEL	0.113
CNL Piecewise-Linear	CNL 10	ILLT	0.354
CNL Piecewise-Linear	CNL 20	PHIE	0.016
CNL Piecewise-Linear	CNL 20	VCLB	0.016
CNL Piecewise-Linear	CNL 20	QRTZ	0.153
CNL Piecewise-Linear	CNL 20	KFEL	0.204
CNL Piecewise-Linear	CNL 20	ILLT	0.439
CNL Piecewise-Linear	CNL 40	PHIE	0.022
CNL Piecewise-Linear	CNL 40	VCLB	0.022
CNL Piecewise-Linear	CNL 40	QRTZ	0.354
CNL Piecewise-Linear	CNL 40	KFEL	0.372
CNL Piecewise-Linear	CNL 40	ILLT	0.574
Photoelectric Linear	U	PYRI	
CNL Piecewise-Linear	CNL 0	PYRI	-37.700
CNL Piecewise-Linear	CNL 5	PYRI	0.372
CNL Piecewise-Linear	CNL 10	PYRI	0.494
CNL Piecewise-Linear	CNL 20	PYRI	0.623
CNL Piecewise-Linear	CNL 40	PYRI	0.747
Th weight fraction	Th	PYRI	1.000

SMILER 1 LOG ANALYSIS LISTING

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
2500	95	1.5	2.52	0.267	0.268	0.000	1.000
2501	94	1.5	2.553	0.244	0.257	0.000	1.000
2502	85	1.8	2.584	0.196	0.206	0.000	1.000
2503	73	2.5	2.643	0.175	0.160	0.000	1.000
2504	89	1.6	2.545	0.237	0.205	0.000	1.000
2505	87	2.4	2.706	0.187	0.204	0.000	1.000
2506	95	1.9	2.621	0.228	0.222	0.000	1.000
2507	86	2.0	2.549	0.229	0.130	0.000	1.000
2508	78	0.7	3.087	0.232	0.199	0.010	1.000
2509	80	1.7	2.388	0.152	0.056	0.169	0.942
2510	78	2.3	2.543	0.145	0.103	0.140	0.969
2511	84	2.0	2.428	0.146	0.101	0.144	0.981
2512	83	8.5	2.556	0.088	0.156	0.060	0.882
2513	83	2.7	2.468	0.115	0.157	0.098	1.000
2514	79	1.5	2.334	0.163	0.115	0.167	0.997
2515	74	2.0	2.374	0.174	0.109	0.163	0.884
2516	65	1.7	2.399	0.136	0.103	0.140	1.000
2517	78	2.2	2.417	0.154	0.156	0.132	0.973
2518	70	1.7	2.393	0.161	0.120	0.142	1.000
2519	76	2.5	2.511	0.143	0.144	0.114	1.000
2520	99	2.8	2.674	0.143	0.240	0.045	1.000
2521	70	1.2	2.292	0.158	0.060	0.194	1.000
2522	78	1.1	2.318	0.168	0.084	0.187	1.000
2523	87	1.1	2.298	0.212	0.096	0.209	0.946
2524	95	1.2	2.278	0.218	0.128	0.209	0.902
2525	103	1.6	2.388	0.209	0.156	0.165	0.968
2526	89	1.2	2.279	0.213	0.114	0.201	0.948
2527	64	1.2	2.357	0.171	0.062	0.185	1.000
2528	66	1.1	2.342	0.166	0.032	0.195	1.000
2529	65	1.1	2.396	0.158	0.029	0.174	1.000
2530	65	1.0	2.364	0.156	0.040	0.182	1.000
2531	75	1.0	2.34	0.178	0.056	0.196	1.000
2532	88	0.9	2.292	0.204	0.086	0.211	1.000
2533	83	1.0	2.322	0.2	0.097	0.202	1.000
2534	83	0.9	2.267	0.179	0.091	0.205	1.000
2535	129	4.2	2.477	0.149	0.324	0.061	1.000
2536	127	3.0	2.459	0.153	0.336	0.065	1.000
2537	127	3.5	2.509	0.149	0.359	0.047	1.000
2538	134	3.6	2.496	0.162	0.384	0.052	1.000
2539	147	3.7	2.519	0.155	0.378	0.043	1.000
2540	156	3.4	2.45	0.169	0.355	0.066	1.000
2541	158	3.7	2.517	0.152	0.341	0.053	1.000
2542	159	3.8	2.508	0.181	0.376	0.065	1.000
2543	150	2.9	2.46	0.172	0.316	0.086	1.000
2544	168	4.5	2.555	0.18	0.420	0.035	1.000
2545	167	5.3	2.534	0.178	0.397	0.048	1.000
2546	166	5.0	2.543	0.172	0.449	0.024	1.000

DEPTH (mRKB)	GR api	RT ohmm	RHOB g/cc	NPHI frac	VSH frac	PHIE frac	SWE frac
2547	179	6.5	2.553	0.184	0.521	0.006	1.000
2548	165	4.7	2.536	0.179	0.504	0.011	1.000
2549	148	5.0	2.529	0.161	0.444	0.022	1.000
2550	92	2.2	2.468	0.132	0.220	0.087	1.000
2551	76	2.4	2.415	0.123	0.109	0.124	0.989
2552	75	2.5	2.451	0.114	0.085	0.117	1.000
2553	79	1.8	2.373	0.139	0.087	0.143	1.000
2554	74	1.5	2.399	0.134	0.068	0.147	1.000
2555	65	1.1	2.35	0.168	0.063	0.182	1.000
2556	68	1.0	2.269	0.203	0.054	0.222	0.990
2557	62	1.0	2.296	0.206	0.049	0.223	0.948
2558	62	1.0	2.311	0.186	0.045	0.207	1.000
2559	59	1.1	2.303	0.18	0.031	0.210	1.000
2560	60	1.1	2.362	0.167	0.039	0.187	1.000
2561	61	1.1	2.321	0.177	0.045	0.201	1.000
2562	63	1.0	2.312	0.175	0.034	0.201	1.000
2563	60	1.1	2.319	0.176	0.022	0.207	1.000
2564	69	0.9	2.308	0.182	0.025	0.213	1.000
2565	69	0.9	2.313	0.194	0.032	0.216	1.000
2566	71	0.9	2.251	0.211	0.033	0.238	0.975
2567	71	0.9	2.252	0.218	0.033	0.243	0.946
2568	68	0.9	2.262	0.212	0.030	0.240	0.950
2569	71	0.9	2.27	0.19	0.017	0.231	0.971
2570	74	0.9	2.276	0.235	0.014	0.261	0.893
2571	75	0.9	2.246	0.221	0.007	0.255	0.928
2572	78	1.0	2.261	0.229	0.021	0.250	0.907
2573	79	0.9	2.249	0.24	0.041	0.256	0.923
2574	76	0.9	2.259	0.229	0.050	0.249	0.934
2575	82	1.0	2.199	0.207	0.023	0.250	0.923
2576	87	0.8	2.236	0.257	0.068	0.259	0.942
2577	79	0.8	2.252	0.239	0.050	0.252	0.959
2578	83	1.0	2.292	0.222	0.063	0.229	0.931
2579	83	1.0	2.242	0.249	0.047	0.257	0.885
2580	86	0.9	2.078	0.235	0.000	0.260	0.853
2581	85	0.8	2.244	0.233	0.050	0.250	0.952
2582	77	1.0	2.233	0.228	0.040	0.253	0.893
2583	70	1.0	2.289	0.206	0.050	0.227	0.967
2584	78	0.9	2.246	0.215	0.053	0.234	0.974
2585	79	0.9	2.303	0.212	0.062	0.219	1.000
2586	80	0.9	2.171	0.227	0.031	0.227	0.954
2587	91	0.9	2.286	0.223	0.054	0.235	0.940
2588	88	1.0	2.298	0.231	0.037	0.241	0.929
2589	77	1.0	2.327	0.212	0.024	0.228	0.954
2590	81	1.0	2.317	0.21	0.020	0.099	0.980

PE600705

This is an enclosure indicator page.
The enclosure PE600705 is enclosed within the container PE900880 at this location in this document.

The enclosure PE600705 has the following characteristics:

ITEM_BARCODE	= PE600705
CONTAINER_BARCODE	= PE900880
NAME	= Formation Evaluation log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Formation Evaluation log
REMARKS	=
DATE_CREATED	= 27/09/95
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURES

ENCLOSURE 1

SMILER-1

Mid Miocene to Top of Latrobe Group Isochron (Pre-Drill)

PE900881

PE900881

This is an enclosure indicator page.
The enclosure PE900881 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900881 has the following characteristics:

ITEM_BARCODE	= PE900881
CONTAINER_BARCODE	= PE900880
NAME	= Mid Miocene Marker to Top of Latrobe Isochron (Pre Drill)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= ISOCHRON_MAP
DESCRIPTION	= Mid Miocene Marker to Top of Latrobe Isochron (Pre Drill)
REMARKS	=
DATE_CREATED	= 1/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

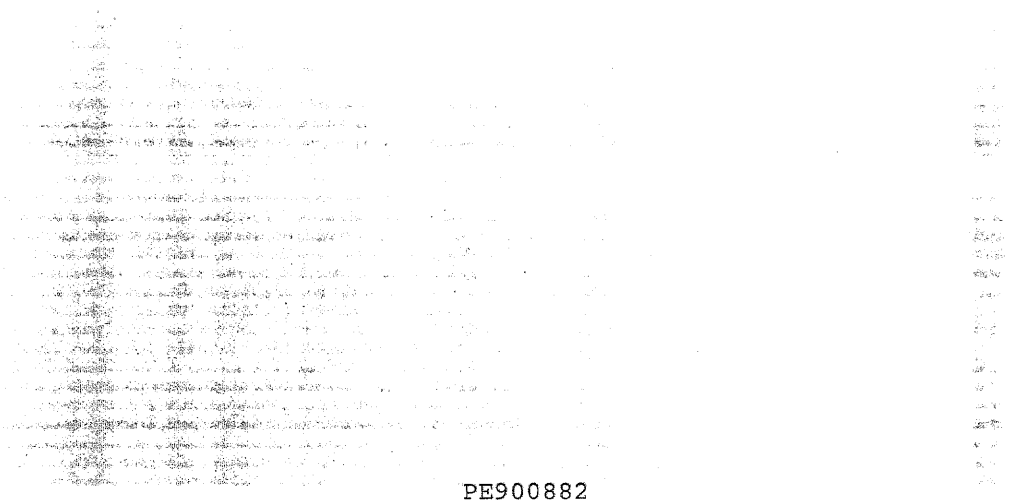
(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 2

SMILER-1

Top of Latrobe Group Depth Structure (Pre-Drill)

PE900882



PE900882

This is an enclosure indicator page.
The enclosure PE900882 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900882 has the following characteristics:

ITEM_BARCODE	= PE900882
CONTAINER_BARCODE	= PE900880
NAME	= Top of Latrobe Depth Structure (Predrill)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Top of Latrobe Depth Structure (Predrill)
REMARKS	=
DATE_CREATED	= 1/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 3

SMILER-1

Orange to Magenta Sequence, Base Marine Shale Depth Structure (Pre-Drill)

PE900883

PE900883

This is an enclosure indicator page.
The enclosure PE900883 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900883 has the following characteristics:

ITEM_BARCODE	= PE900883
CONTAINER_BARCODE	= PE900880
NAME	= Orange to magenta sequence base marine shale depth Structure
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Orange to magenta sequence base marine shale depth Structure
REMARKS	=
DATE_CREATED	= 1/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 4

SMILER-1

Gippsland Basin Chrostratigraphy

PE900884

PE900884

This is an enclosure indicator page.
The enclosure PE900884 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900884 has the following characteristics:

ITEM_BARCODE	= PE900884
CONTAINER_BARCODE	= PE900880
NAME	= Chronostratigraphy of the Gippsland Basin (enc 4)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Chronostratigraphy of the Gippsland Basin (enc 4)
REMARKS	=
DATE_CREATED	= 3/11/95
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

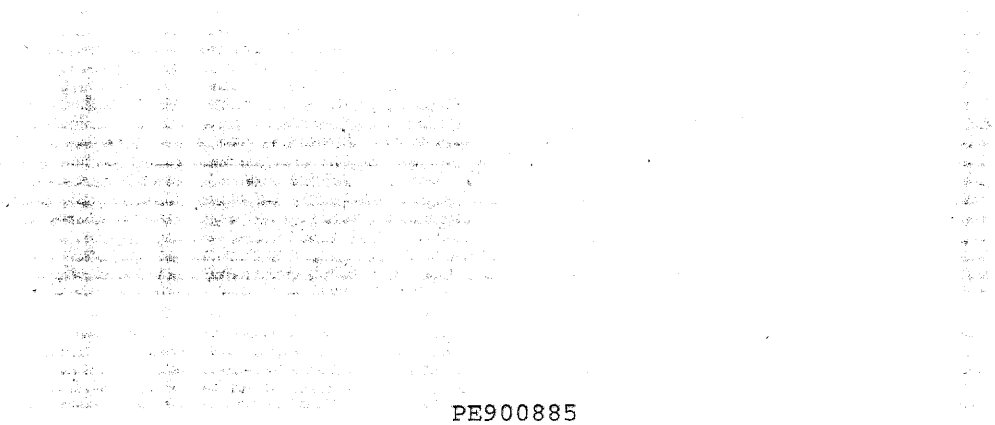
(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 5

SMILER-1

Top of Latrobe Group Time Structure (Pre-Drill)

PE900885



PE900885

This is an enclosure indicator page.
The enclosure PE900885 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900885 has the following characteristics:

ITEM_BARCODE	= PE900885
CONTAINER_BARCODE	= PE900880
NAME	= Top of Latrobe group Time Structure (Predrill)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Top of Latrobe group Time Structure (Predrill)
REMARKS	=
DATE_CREATED	= 3/11/95
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

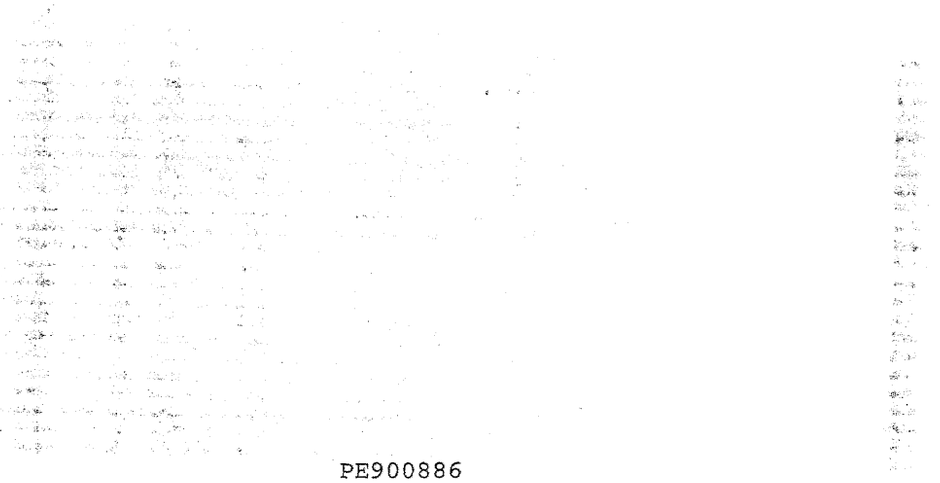
(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 6

SMILER-1

Average Velocity to Top of Latrobe Group (Pre-Drill)

PE900886



PE900886

This is an enclosure indicator page.
The enclosure PE900886 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900886 has the following characteristics:

ITEM_BARCODE	= PE900886
CONTAINER_BARCODE	= PE900880
NAME	= Average Velocity to Top of Latrobe Group (predrill)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Average Velocity to Top of Latrobe Group (predrill)
REMARKS	=
DATE_CREATED	= 3/11/95
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

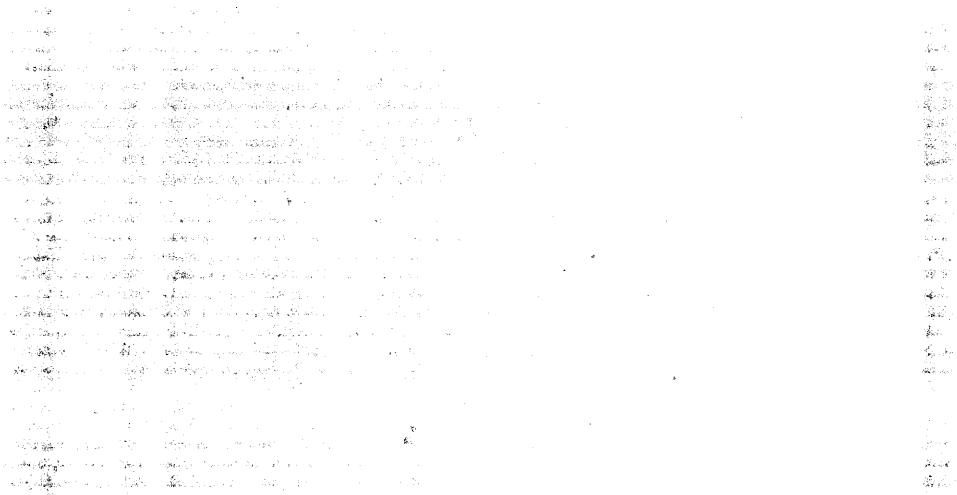
(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 7

SMILER-1

Seismic Traverse

PE 900887



PE900887

This is an enclosure indicator page.
The enclosure PE900887 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900887 has the following characteristics:

ITEM_BARCODE	= PE900887
CONTAINER_BARCODE	= PE900880
NAME	= Seismic traverse
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= SECTION
DESCRIPTION	= Seismic traverse
REMARKS	=
DATE_CREATED	= 1/09/94
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 8

SMILER-1

Synthetic Seismogram

PE900888

PE900888

This is an enclosure indicator page.
The enclosure PE900888 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900888 has the following characteristics:

ITEM_BARCODE	= PE900888
CONTAINER_BARCODE	= PE900880
NAME	= Synthetic Seismogram
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAM
DESCRIPTION	= Synthetic Seismogram
REMARKS	=
DATE_CREATED	= 15/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 9

SMILER-1

Mid Miocene Depth Structure (From Well Data)

PE902040

PE902040

This is an enclosure indicator page.
The enclosure PE902040 is enclosed within the container PE900880 at this location in this document.

The enclosure PE902040 has the following characteristics:

ITEM_BARCODE	= PE902040
CONTAINER_BARCODE	= PE900880
NAME	= Smiler Prospect Mid Miocene Depth Structure
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Smiler Prospect Mid Miocene Depth Structure
REMARKS	=
DATE_CREATED	= 15/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 10

SMILER-1

Top of Latrobe Group Depth Structure (Post-Drill)

PE900890

PE900890

This is an enclosure indicator page.
The enclosure PE900890 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900890 has the following characteristics:

ITEM_BARCODE	= PE900890
CONTAINER_BARCODE	= PE900880
NAME	= Top of Latrobe Depth (Post drill)
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Top of Latrobe Depth (Post drill)
REMARKS	=
DATE_CREATED	= 8/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 11

SMILER-1

Orange to Magenta Sequence, Base Marine Shale Depth Structure (Post Drill)

PE900891

PE900891

This is an enclosure indicator page.
The enclosure PE900891 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900891 has the following characteristics:

ITEM_BARCODE	= PE900891
CONTAINER_BARCODE	= PE900880
NAME	= Orange Magenta Marine Shale Depth Structure
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Orange Magenta Marine Shale Depth Structure
REMARKS	=
DATE_CREATED	= 8/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 12

SMILER-1

Structural Cross Section Mackerel-3 to Smiler-1

PE900892

PE900892

This is an enclosure indicator page.
The enclosure PE900892 is enclosed within the container PE900880 at this location in this document.

The enclosure PE900892 has the following characteristics:

ITEM_BARCODE	= PE900892
CONTAINER_BARCODE	= PE900880
NAME	= Structural Cross Section Mackarel 3 to Smiler 1
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Structural Cross Section Mackarel 3 to Smiler 1
REMARKS	=
DATE_CREATED	= 11/01/98
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

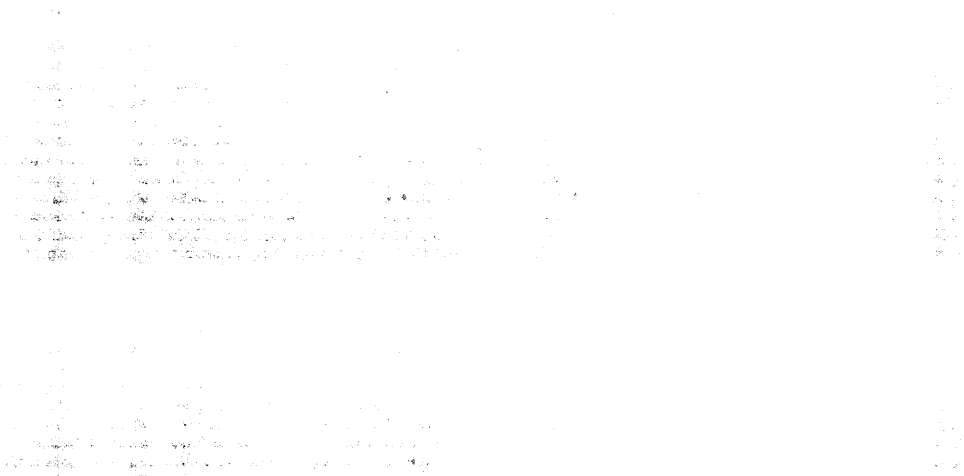
ATTACHMENTS

ATTACHMENT 1

SMILER-1

Well Completion Log

PE600706



PE600706

This is an enclosure indicator page.
The enclosure PE600706 is enclosed within the container PE900880 at this location in this document.

The enclosure PE600706 has the following characteristics:

ITEM_BARCODE	= PE600706
CONTAINER_BARCODE	= PE900880
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Well Completion Log
REMARKS	=
DATE_CREATED	= 9/01/96
DATE_RECEIVED	= 16/01/96
W_NO	= W1122
WELL_NAME	= Smiler-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)