



## EARLIER FILES

## LATER FILES

## RECORDS DISPOSITION

DRY + ABANDONED

SPUD. 20-9-65

38° 21' 43" S.

COD-1 (EGS-3)  
ESSO.

ABANDONED. 2-12-65.

147° 58' 30" E

T.D. 9540'

494

GLOMAR III  
W.D. 195

EARLIER FILES	LATER FILES	RECORDS DISPOSITION
IES. Run 1.	714 - 3295'	separate Logs 2" and 5"
" " 2.	3251 - 6508'	" " 2" " 5"
" " 3.	6200 - 8493	" " 2" " 5"
" " 4.	8300 - 9513	" " 2" " 5"
BHCS/GR " 1.	714 - 3286.	" " 2" " 5"
" " " 2.	3251 - 6500.	" " 2" " 5"
" " " 3.	6200 - 8480.	" " 2" " 5"
" " " 4.	8300 - 9502.	" " 2" " 5"
MLL " 1.	714 - 3295.	" " 2" " 5"
" " 2.	3249 - 6508.	" " 2" " 5"
" " 3.	6200 - 8492.	" " 2" " 5"
" " 4.	8300 - 9513.	" " 2" " 5"
CDM " 1	714 - 3290.	2" scale
" " 2	3247 - 6500.	2" and 5" graphic
" " 3	6398 - 9510.	2" graphic
" " 1	714 - 3290.	2" + 5" graphics
" " 1	" "	computer printout. Reference 6431
" " 2	3247 - 6500	computer printout. Reference 6434
FIT " 1.	Tests 1-3.	
Core Lab. Mudlog.	3240 - 7700.	8000 - 9180' 9200'
Cores. 7 off. Cut 165'. Rec. 143'.		
Core Analysis and Descriptions		WELL SUMMARY
S.W.C. Descriptions	5997-9514? 7862?	" "
Core Record.		" "
Lithology	830 - 9540.	" "
Core Lab. Core Analysis. Cores 4, 5, 6 & 7.		
<del>S.W.C. Cut 30. Rec. 22.</del>		
WELL SUMMARY.		+ 2 unrestricted
Composite Logs. 0' - 9450'.		separate Logs 1" and 2"
Palynological Report by Mary Dettmann. Uni. of Queensland.		
" " " L. E. Stover. Plus revision.		
Palaeontology " " D. Taylor.		VITRINITE REFLECTANCE BY AMOCO, 2204-86
The Mid-Tertiary Foraminiferal Sequence by D. Taylor.		
Biostratigraphic Reappraisal & Facies Study " " "		
Map. Contour on Reflector near Top of Latrobe Valley.		
Weekly Reports.		

No mudlog 830 - 3240. 7700 - 8000  
Cores Cut 30 & S.W.C. received?

**COD-1**

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PE904824

This is an enclosure indicator page.  
The enclosure PE904824 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE904824 has the following characteristics:

- ITEM\_BARCODE = PE904824
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Well Card
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = WELL\_CARD
- DESCRIPTION = Cod 1 Well Completion Report Card
- REMARKS =
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

## 2.0 WELL SUMMARY

~~RESTRICTED COPY~~

494

~~NOT FOR GENERAL RELEASE~~

RE-NAMED  
(AUG. 1968)  
**COD 1**



ESSO GIPPSLAND SHELF-3

WELL SUMMARY

by

J.S. Bain

UST-41

Esso Exploration Australia, Inc.,  
Sydney, N.S.W. Australia.

1968-12-13-1065

ESSO GIPPSLAND SHELF-3

WELL SUMMARY

Type of Well: Exploratory Test

Purpose of Well: Test seismic anticlinal feature A-2 with closure from Upper Cretaceous through Lakes Entrance. Latrobe Valley and post-ulated sands in Lakes Entrance Formation as main reservoir objectives. Secondary objectives Upper Cretaceous sands.

Well Statistics:

Status: Dry and abandoned

Location: Latitude 38°21'43"S  
Longitude 147°58'33"E

Water Depth: 202 feet

Spudded: September 20, 1965

Abandoned: December 2, 1965

Total Depth: 9540 feet

Casing: 30" @ 338 feet; 20" @ 714 feet; 13-3/8" @ 3250 feet

Plugs: 7700 to 7900 feet  
6200 to 6400 "  
3130 to 3400 "  
260 to 460 "

Coring: Seven conventional cores totalling 165 feet cut and 143 feet recovered. Thirty sidewall cores cut and 22 recovered.

Mud Logging: Core Lab from 830 feet to total depth

Electric Logging: IES, SGRC, MLL, CDM. 714 feet to 9515 feet

Hydrocarbons: No significant shows. Slight petroleum odour in Cores 5 & 6. Logs showed sands to be wet and this was confirmed by wire line tests. Also slight mud log evidence of heavier hydrocarbons (C<sub>2</sub> & C<sub>3</sub>) between 9200 and 9500 feet. Electric logs showed these sands to be wet also.

Testing: Three tests were made with the Schimberger wire line tester as follows:-

<u>Depth</u>	<u>Recovery</u>	<u>Sampling Pressure</u>	<u>Sampling Time</u>	<u>Shut In Pressure</u>	<u>Hydrostatic Pressure</u>
1. 6295	2-3/4 gal. water 7200ppm (filtrate)	2250 psi	12 min.	2750 psi	3550 psi
2. 6369	2-3/4 gal. water 6200ppm (filtrate)	2650 psi	10 min.	2800 psi	3560 psi
3. 6415	2-3/4 gal. water 14000ppm (mostly filtrate)	3050 psi	8 min.	3580 psi	4790 psi

Cont'd...

Geology

Stratigraphy:

<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>	<u>Predicted Top</u>
Water	S.L.	-202	202	
Pleistocene-Upper Miocene	Ocean Floor	2760(-2729)?	2527	Ocean Floor
Gippsland Formation	2760(-2729)?	5385(-5354)	2625	-3200
Lakes Entrance Formation	5385(-5354)	6247(-6216)	862	-5300
Latrobe Valley Formation	6247(-6216)	7831(-7800)	1584	-6200
Upper Cretaceous	7831(-7800)	9540+(-9509)	1709+	-7650

Lithology:

No sample returns above 830 feet.

Pleistocene-Upper Miocene

- 830-1400 Marl; mottled, light grey-medium, grey green, very arenaceous in upper part. Slightly calcareous and glauconitic, fossiliferous. Minor orange chert.
- 1400-1460 Limestone; light grey-green grey skeletal, detrital, micritic, very glauconitic and very fossiliferous.
- 1460-2678 Marl; light grey, very argillaceous, fossiliferous and glauconitic.
- 2678-2760 Dolomite; light brown, micritic, skeletal, finely glauconitic, slightly fossiliferous.

Gippsland Formation

- 2760-2840 Limestone; light grey and light grey-light brown, detrital, skeletal, argillaceous, finely glauconitic.
- 2840-3020 Limestone; as for 2760-2840 but very argillaceous.
- 3020-4230 Limestone; argillaceous in parts, light grey-light brown grey, abundant fine grains of glauconite and pyrite, fossiliferous, dense and fairly hard. Minor marl.
- 4230-4545 Marl; light-medium grey, fossiliferous, dense, glauconitic, Minor limestone as above.
- 4545-5385 Calcareous Shale; medium grey, very soft, fossiliferous, dense, with minor amount of marl.

Lakes Entrance Formation

- 5385-5800 Calcareous Shale; medium grey-olive green grey-dark grey, soft, glauconitic, pyritic, fossiliferous.
- 5800-6200 Calcareous Shale; as for 5385-5800 but becoming more glauconitic and with minor light grey dense soft limestone and trace of light brown dense dolomite.
- 6200-6247 Siltstone; brown grey-dark grey dense, very glauconitic, pyritic, non calcareous and trace of random quartz grains in siltstone. Shale calcareous as for 5800-6180.

Latrobe Valley Formation

- 6247-6300 Sandstone; (see Core No. 4) Quartzose, medium grey-brown grey, very fine to medium, made up of clear and clean sub-angular to sub-rounded, poorly to fairly well sorted quartz. Porosity estimated 20%. Low Permeability, pyritic and glauconitic, non calcareous and micaceous, sparse microfossils.

Cont'd...



Latrobe Valley Formation (Cont'd.)

6300-7070 Dominantly Quartz Sandstone; (see Core Nos. 5 & 6) Medium grey-dark grey made up of very fine-coarse, sub-angular to rounded clean and clear quartz in fine sandy-silt matrix, micaceous and non calcareous. Minor gravel made up of clear well rounded quartz granules. Good porosity and permeability. Also beds of black coal and minor brown-grey brown carbonaceous and micaceous siltstone.

7070-7851 Interbedded Sandstone, Siltstone and Coal:

Sandstone; quartzose, light-medium grey, very fine to coarse sub-angular to rounded, poor to fair sorting. Trace of mica and pyrite, non fossiliferous, and non calcareous.

Siltstone; brown grey-reddish brown, micaceous, carbonaceous - grading to shale.

Coal; black dense with conchoidal fracture.

Upper Cretaceous

7821-9540 Interbedded Sandstone, Siltstone, Shale and Coal: (See Core No. 7)

Sandstone; light grey-medium dark grey, fine-coarse, angular to sub-rounded, fairly well sorted, friable. Dominantly quartz with clay (kaolin) matrix and possible trace feldspar, non calcareous, non fossiliferous, trace pyrite, mica and carbonaceous fragments.

Siltstone; brown grey-dark brown micaceous, carbonaceous, pyritic, grading to shale. Minor green grey shale.

Coal; black dense.

Structure

The seismic structure was a north-northwest anticlinal feature approximately 10 miles long and 3 miles wide. Approximately 28 square miles of horizontal closure and 400 feet of vertical closure is present at the top of the Latrobe Formation. Similar amounts of closure were present at the top of the Upper Cretaceous and Lakes Entrance Formation.

Paleontology

(see attachment)

Paleontology has been done by D.J. Taylor, Victorian Department of Mines. Results are summarised below:-

<u>Depth</u>	<u>Taylor's Zone Classification</u>	<u>Age</u>
790-1000	A	Upper Miocene
1000-1700	B	Upper Miocene
1700-2800	C	Middle Miocene
2800-3600	D	Middle Miocene
3600-4000	E	Middle Miocene
4000-4700	F & G (missing in EGS-1)	Lower Miocene
4700-5300	H	Lower Miocene
5300-5900	I	Upper Oligocene
5900-6040	J	Lower Oligocene
6040-6250	K	Lower Oligocene -
		Upper Eocene
6250-6438		Upper Eocene

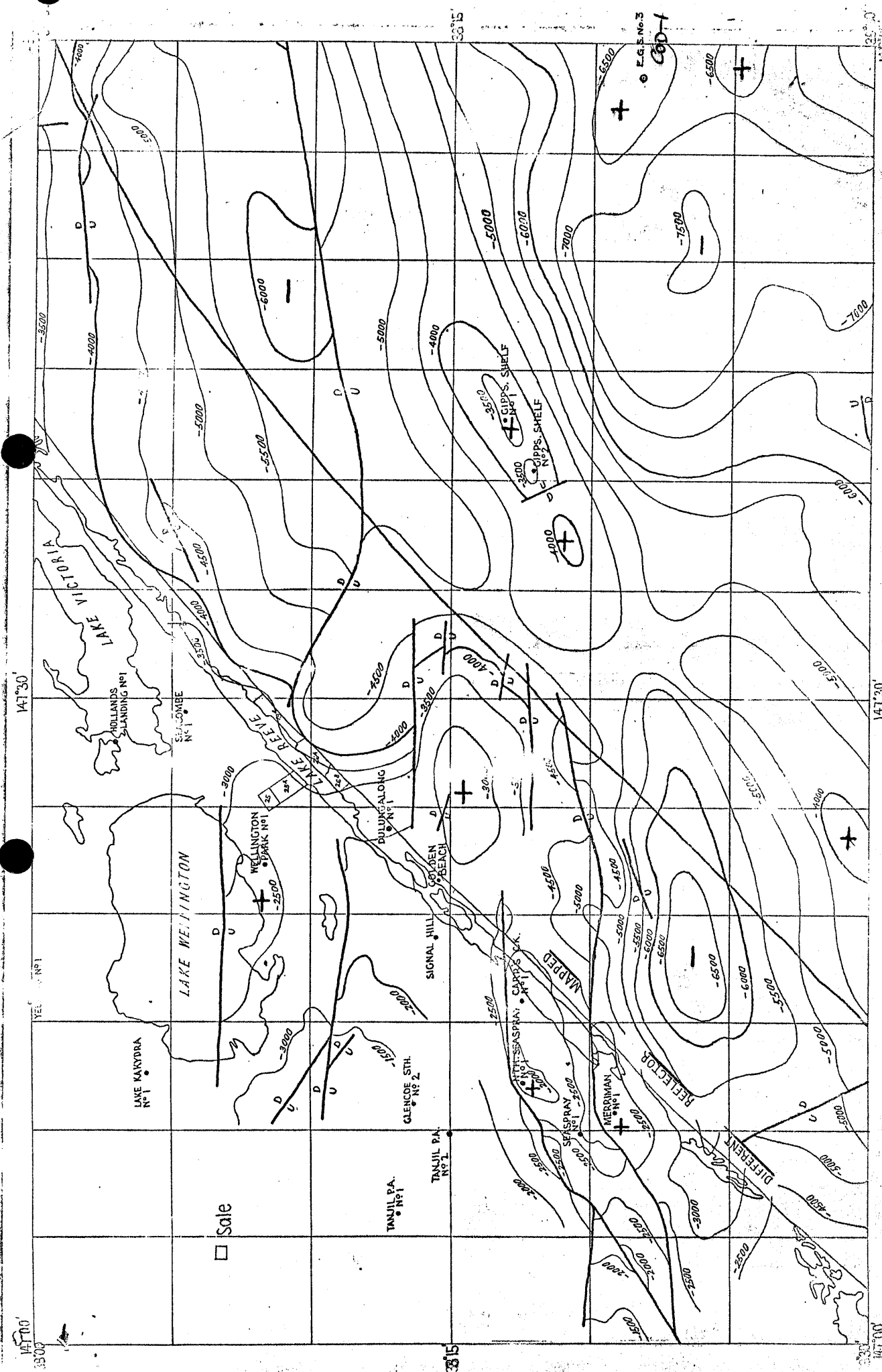
No marine fossils below 6438 feet

Cont'd...

Conclusions:

The following pertinent information was obtained from this well:

1. The well did not show any evidence of commercial hydrocarbons throughout the entire section drilled.
2. Reflections within the Lakes Entrance Formation postulated as discrete sand bodies were found to be velocity contrasts only within a homogeneous shale-marl section.
3. The Latrobe Valley Formation reservoired salt water throughout. This is the first occurrence of salt water within these sediments.



CONTOURS ON REFLECTOR NEAR TOP OF LATROBE VALLEY COAL MEASURES  
 4 MILES TO 1 IN.  
 Compiled from Geologic Surveys by A.P.C.C. - Woodside, Hornblende, Esso & Woodside 1960-64

### 3.0 CORE RECORD/DESCRIPTIONS

CORE RECORD - ESSO GIPPSLAND SHELF - 3

<u>No.</u>	<u>Interval</u>	<u>Cut</u>	<u>Recovered</u>
1	3500-3528	28	28
2	4725-4738	13	9
3	5603-5621	18	12
4	6248-6278	30	30
5	6387-6412	25	24
6	6412-6437	25	14
7	8319-8345	26	26

ESSO EXPLORATION AUSTRALIA, INC.

ESSO GIPPSLAND SHELF - 3

Core Descriptions

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Core No.1 (3500-3528) Recovered 28'

3500-3528

Argillaceous Limestone: light brown grey and brown grey; micritic; very tough and compact; dense. Continual abundant fine grains of glauconite, finely disseminated through out; finely disseminated pyrite and mica; carbonaceous flecks.

Rock has streaked appearance; discontinuous lensoid streaks and bands of light brown grey very very finely granular limestone in brown grey micritic matrix; light brown grey streaks contain coarsely crystalline, light grey to white calcite of secondary origin (?).

White calcareous fragments disseminated through out: bryozoa, pelecypods (?), foraminifera (?), echinoids (?), also small amount of silt size particles in residues.

Core No.2 (4725-4738) Recovered 9'

4725-4734

Very calcareous mudstone: olive grey in hand specimen - appears light brown grey to buff under microscope - wet. Fairly soft; core crumbles with sub-conchoidal fracture. Contains finely disseminated pyrite and pyritized fossil fragments - fine carbonaceous flecks and grains.

Fossils: pelecypods, echinoids, foraminifera, bryozoa (?). Abundant pyritised worm impressions (?).

Very sparse quartz sand grains and silt size grains in residue.

Core No.3 (5603-5621) Recovered 12'

5603-5615

Mudstone-Shale: medium grey to medium dark grey and dark grey, with few mottled brown grey; dense and calcareous, fossiliferous (shell fragments and microfossils); soft, buggy in places.

A few scattered random very fine to fine quartz grains; trace glauconite and pyrite (one chunk about 1" across at 5606').

Brown grey pieces are slightly harder and probably slightly dolomitic although effervescing in the same way. No apparent dip.

Core No.4 (6248-6278) Recovered 30'

6248-6251

Siltstone & Sandstone: medium dark grey to dark grey, extremely glauconitic, pyritic, hard, dense; non-calcareous, non-fossiliferous, mottled appearance in part due to concretion like balls which are slightly different colour possibly siderite (?).

- 6248-6251 (cont.) Possibly secondary but more probably primary. Low porosity. No permeability.
- 6251-6254 Sandstone: brown grey some constituents as 6254-6278 but slightly browner colour due to more silty matrix. Low porosity. Low permeability. Very glauconitic, pyritic, etc.
- 6254-6278 Glauconitic Sandstone: green grey to olive grey, made up dominantly of very fine to fine clean clear sub-angular to sub-rounded quartz and glauconite. About 1% clear, medium to very coarse, sub-rounded to rounded quartz grains randomly disseminated, fair sorting apart from these large grains. Extremely pyritic to disseminated and as nodules, fairly hard, mostly non-calcareous, few pieces slightly calcareous, non-fossiliferous. Brown patches throughout due to brown silty material. Nodule concretion at 6262'. (?) Siderite or other  $FeCO_3$ . Good porosity and fair permeability. No apparent dip. No fluorescence or cut.

Core Analysis

Sample No.	Depth feet	Horizontal Permeability	Density	Porosity %	Oil % Pore	Total Water % Pore
1	6251	.01	2.50	15.9	0	91
2	6253	.01	2.69	13.5	0	95
3	6254	2.2	2.34	27.1	0	80
4	6255	.01	2.38	25.8	0	86
5	6257	1.6	2.27	25.6	0	80
6	6258	.75	2.27	22.6	0	80
7	6260	4.3	2.22	27.0	0	80
8	6261	3.3	2.28	25.8	0	76
9	6264	2.5	2.44	26.9	0	76
10	6266	4.8	2.26	27.3	0	74
11	6269	4.3	2.26	23.4	0	71
12	6271	3.3	2.35	23.8	0	72
13	6273	1.1	2.33	21.0	0	75
14	6275	3.9	2.27	22.4	0	71
15	6277	3.0	2.29	26.0	0	75
16	6278	.01	2.43	21.9	0	74

Core No. 5 (6387-6412) Recovered 24'

- 6387-6392 Sandstone: medium grey to medium dark grey, made up of very fine to fine, sub-angular to rounded, clean and clear well sorted quartz (98%). Accessory mica and pyrite, very friable, non-calcareous, non-fossiliferous. Brown colour due to filtrate; very porous and permeable.
- 6392-6393 Sandstone as above with thin interbeds and lenses of brown micaceous siltstone. Apparent dip Flat-2°.
- 6393-6410 Sandstone as above 6387-6392. At 6394' there is a 3" gravel section made up of clear and white, rounded to well rounded, coarse to granular (few larger) quartz grains set in very fine to fine sand as previously, very poorly sorted, and glauconitic and pyritic.

No fluorescence throughout the core.  
Sweet hydrocarbon odour throughout the core.

Core Analysis

Sample No	Depth feet	Horizontal Permeability	Density	Porosity %	Oil % Pore	Total Water % Pore
17	6388	319	1.89	25.6	0	82
18	6390	250	1.96	28.3	0	77
19	6392	135	2.00	26.7	0	75
20	6394	130	2.20	29.2	0	73
21	6396	172	2.08	27.1	0	77
22	6398	224	2.18	31.3	0	77
23	6400	158	2.16	29.8	0	79
24	6402	317	2.16	31.8	0	83
25	6404	152	2.08	27.3	0	84
26	6406	*	2.17	33.5	0	73
27	6408	164	2.09	29.3	0	75
28	6410	235	2.09	27.6	0	76
29	6411	69	2.24	30.6	0	77

Core No. 6 (6412-6437) Recovered 14'

6412-6413 Sandstone: medium grey to medium dark grey, made up of clean clear very fine to medium, mainly fine, sub-angular to rounded, well sorted quartz. Pyrite and mica accessories to glauconitic. Very porous and permeable.

6413-6414 Gravel: medium grey to medium dark grey, made up of medium granule sub-rounded to well rounded clear and white quartz. Very little fine grained sand. Extremely porous and permeable. Trace mica.

6414-6420 Sandstone as for 6412-6413.

6420-6421 Gravel as for 6413-6414.

6421-6424 Sandstone as for 6412-6413.

6424-6426 Siltstone and Shale: brown grey to dark brown, micaceous, carbonaceous, dense.

Apparent Dip Flat to 2°.  
Slight hydrocarbon odour (not as much as Core No. 6)  
Good hydrocarbon taste.  
Waring Blender test on pieces to chromatograph gave  
C<sub>1</sub> - 7; C<sub>2</sub> - 2.

Core Analysis

Sample No.	Depth Feet	Horizontal Permeability	Density	Porosity %	Oil % Pore	Total Water % Pore
30	6413	332	2.35	22.0	0	74
31	6414	1650	2.26	20.3	0	67
32	6415	260	2.24	31.6	0	80
33	6416	193	2.15	30.0	0	83
34	6417	165	2.13	30.0	0	82
35	6418	260	2.14	28.9	0	86
36	6419	183	2.21	27.9	0	89
37	6420	193	2.21	29.6	0	86
38	6421	*	2.43	18.7	0	77
39	6422	385	2.30	18.5	0	69
40	6423	272	2.19	26.8	0	84
41	6424	99	2.50	23.7	0	89



- Core No.7 (8319-8345) Recovered 26'
- Megascopic:
- 8319-8335 Sandstone: light grey, friable, with thin laminae of carbon material, rare.
- 8335-8341 Thin discontinuous laminae of coal, shale, and siltstone (approximate dip 0 - 2°).
- 8341-8345 Sandstone: light grey, friable, uniform.
- Microscopic:
- 8319-8320 Sandstone: quartz mottled, light grey to medium dark grey, fine, sub-rounded to sub-angular to angular, fairly well sorted, white clay matrix, no fluorescence, no stain, etc., thin bands of carbonaceous laminae, fine to coarsely micaceous and silty.
- 8320-8325 Sandstone: quartz, light grey, medium to fine, fairly well sorted, sub-rounded to sub-angular, friable, 2% clay matrix, good porosity 20-25%, with occasional carbonaceous grains, possible trace feldspar (flesh coloured), non-calcareous, occasional nodules of clay material, few possible feldspar grains: medium dark grey, rare nodules green clay material.
- 8325-8327 Sandstone as above, porosity 10-20%.
- 8327-8334 Sandstone as above, porosity 25-30%.
- 8334-8336 Sandstone as above, porosity 10-20%.
- 8336-8339 Thin interlamination of light grey siltstone, argillaceous and medium grey shale.
- 8339-8341 Shale: medium grey to black with thin laminae (pencil line) and nodules (medium to coarse, grain size) with some pyrite grading to pyritic. Some shale as above, medium grey to light reddish brown cast in part.
- 8341-8342 Sandstone: mottled, light grey to medium grey, fine to very fine to medium, fair sorted, sub-rounded to sub-angular, silicious in part, white clay matrix, non-calcareous, (tight, up to 10% porosity).
- 8342-8344 Sandstone as above, fair sorted, porosity 10%.
- 8344-8345 Sandstone as in 8341-8342 above, with high clay content, tight.  
At 8344' a 3" band of hard siltstone as in 8336-8339.
- 8345-

Core Analysis

Sample No.	Depth Feet	Horizontal Permeability	Density	Porosity %	Oil % Pore	Total Water % Pore
42	8320	99	2.43	22.4	0	77
43	8321	88	2.41	23.0	0	82
44	8322	10	2.37	20.4	0	78
45	8323	175	2.33	22.8	0	79
46	8324	23	2.25	15.4	0	70
47	8325	4.3	2.32	16.1	0	65
48	8326	3.8	2.37	17.0	0	83
49	8327	3.8	2.34	17.2	0	66
50	8328	137	2.25	18.4	0	78
51	8329	116	2.31	21.5	0	86

Core Analysis (Cont.)

Sample No.	Depth Feet	Horizontal Permeability	Density	Porosity %	Oil % Pore	Total Water % Pore
52	8330	157	2.34	22.2	0	78
53	8331	137	2.20	21.4	0	82
54	8332	204	2.27	20.3	0	83
55	8333	110	2.29	21.1	0	85
56	8334	54	2.18	20.0	0	78
57	8335	120	2.18	18.2	0	85

### 3.1. CORE ANALYSIS RESULTS

**BASIC**

CORE LABORATORIES, INC.  
 Petroleum Reservoir Engineering  
 DALLAS, TEXAS

**RE-NAMED**  
**(AUG. 1968)**

**COD 1**

Page 1 of 3  
 X  
 in  
 Well  
 Summary

Company ESSO EXPLORATION AUSTRALIA Formation \_\_\_\_\_  
 Well GIPPSLAND SHELF NO. 3 Cores #4 File FL 115-4k  
 Field COD-1 Drilling Fluid XP. 20/SPERSENE Date Report 17/10/65  
 County \_\_\_\_\_ State VICTORIA Elevation 31' K.B. Analysts T.H./A.M./D.N.  
 Location LAT 38° 21' 43" S Remarks \_\_\_\_\_  
LONG 147° 58' 33" E

**CORE ANALYSIS RESULTS**

(Figures in parentheses refer to footnote remarks)

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PERCENT	RESIDUAL SATURATION		PROBABLE PRODUCTION DENSITY	REMARKS
		HORIZONTAL	VERTICAL		OIL % VOLUME	TOTAL WATER % PORE		
1	6251	<.01		15.9	1.9	91	2.50	
2	6253	<.01		13.5	0	95	2.69	
3	6254	2.2		27.1	0	80	2.34	
4	6255	<.01		25.8	0	86	2.38	
5	6257	1.6		25.6	0	80	2.27	
6	6258	.75		22.6	0	80	2.27	
7	6260	4.3		27.0	0	80	2.22	
8	6261	3.3		25.8	0	76	2.28	
9	6264	2.5		26.9	0	76	2.44	
10	6266	4.8		27.3	0	74	2.26	
11	6269	4.3		23.4	0	71	2.26	
12	6271	3.3		23.8	0	72	2.35	
13	6273	1.1		21.0	0	75	2.33	
14	6275	3.9		22.4	0	71	2.27	
15	6277	3.0		26.0	0	75	2.29	
16	6278	<.01		21.9	0	74	2.43	

## NOTE:

(\*) REFER TO ATTACHED LETTER.  
 (1) INCOMPLETE CORE RECOVERY—INTERPRETATION RESERVED.

(2) OFF LOCATION ANALYSES—NO INTERPRETATION OF RESULTS.

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc., and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

COD-1

Company ESSO EXPLORATION, AUSTRALIA Formation \_\_\_\_\_ Page 2 of \_\_\_\_\_  
Well GIPPSLAND SHELF #3 Cores #5 & #6 File FL 115-4L  
Field \_\_\_\_\_ Drilling Fluid XP20/SPERSENE Date Report 18/10/65  
County \_\_\_\_\_ State VICTORIA Elevation 31' K.B. Analysts T.H./A.M./D.N.  
Location LAT 38° 21' 43" S Remarks \_\_\_\_\_  
LONG 147° 58' 33" E

## CORE ANALYSIS RESULTS

(Figures in parentheses refer to footnote remarks)

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PERCENT	RESIDUAL SATURATION		PROBABLE PRODUCTION DENSITY	REMARKS
		HORIZONTAL	VERTICAL		OIL % VOLUME % PORE	TOTAL WATER % PORE		
17	6388	319		25.6	0	82	1.89	*-NOT SUITABLE FOR ANALYSIS
18	6390	250		28.3	0	77	1.96	
19	6392	135		26.7	0	75	2.00	
20	6394	130		29.2	0	73	2.20	
21	6396	172		27.1	0	77	2.08	
22	6398	224		31.3	0	77	2.18	
23	6400	158		29.8	0	79	2.16	
24	6402	317		31.8	0	83	2.16	
25	6404	152		27.3	0	84	2.08	
26	6406	*		33.5	0	73	2.17	
27	6408	164		29.3	0	75	2.09	
28	6410	235		27.6	0	76	2.09	
29	6411	69		30.6	0	77	2.24	
30	6413	332		22.0	0	74	2.35	
31	6414	1650		20.3	0	67	2.26	
32	6415	260		31.6	0	80	2.24	
33	6416	193		30.0	0	83	2.15	
34	6417	165		30.0	0	82	2.13	
35	6418	260		28.9	0	86	2.14	
36	6419	193		27.9	0	89	2.21	
37	6420	193		29.6	0	86	2.21	
38	6421	*		18.7	0	77	2.43	
39	6422	385		18.5	1.8	69	2.30--OIL PROBABLY FROM TR OF	
40	6423	272		26.8	0	84	2.19 CARB. MAT IN SAMPLE	
41	6424	99		23.7	0	89	2.50	

## NOTE:

(\*) REFER TO ATTACHED LETTER.  
(1) INCOMPLETE CORE RECOVERY—INTERPRETATION RESERVED.

(2) OFF LOCATION ANALYSES—NO INTERPRETATION OF RESULTS.

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc., and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

COD-1

3 of 3.

Company ESSO EXPLORATION, AUSTRALIA Formation \_\_\_\_\_ Page 3 of \_\_\_\_\_  
 Well GIPPSLAND SHELF #3 Cores #7 File FL115-4L  
 Field \_\_\_\_\_ Drilling Fluid XP20/SPERSENE Date Report 28/10/65  
 County \_\_\_\_\_ State VICTORIA Elevation 31' K.B. Analysts T.H./D.N.  
 Location LAT 38° 21' 43" S Remarks \_\_\_\_\_  
LONG 147° 58' 33" E

**CORE ANALYSIS RESULTS**

*(Figures in parentheses refer to footnote remarks)*

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS		POROSITY PERCENT	RESIDUAL SATURATION		PROBABLE PRODUCTION DENSITY	REMARKS
		HORIZONTAL	VERTICAL		OIL % VOLUME	TOTAL WATER % PORE		
42	8320	99		22.4	0	77	2.43	
43	8321	88		23.0	0	82	2.41	
44	8322	10		20.4	0	78	2.37	
45	8323	175		22.8	0	79	2.33	
46	8324	23		15.4	0	70	2.25	
47	8325	4.3		16.1	0	65	2.32	
48	8326	3.8		17.0	0	83	2.37	
49	8327	3.8		17.2	0	66	2.34	
50	8328	137		18.4	0	78	2.25	
51	8329	116		21.5	0	86	2.31	
52	8330	157		22.2	0	78	2.34	
53	8331	137		21.4	0	82	2.20	
54	8332	204		20.3	0	83	2.27	
55	8333	110		21.1	0	85	2.29	
56	8334	54		20.0	0	78	2.18	
57	8335	120		18.2	0	85	2.18	
58	8341	1.7		16.3	0	72	2.42	
59	8343	3.3		16.4	0	77	2.54	

NOTE:

- (\*) REFER TO ATTACHED LETTER.
- (1) INCOMPLETE CORE RECOVERY—INTERPRETATION RESERVED.
- (2) OFF LOCATION ANALYSES—NO INTERPRETATION OF RESULTS.

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4.0 PALYNOLOGY

W494

*Stover*

INTERPRETATIVE

PALYNOLOGY REPORT

ON

COD -1

BY

LEWIS E. STOVER

Palynology Report 1970/20

June 1970.



DINOFLAGELLATES IN COD -1, CORE 2

A single sample from Core 2 between 6248-78 feet (exact depth of sample not known) contained a sparse and not well preserved dinoflagellate assemblage. The forms that are present, however, indicate the association is Late Eocene and most likely from the Oligosphaeridium diktyoplokus Zone. A list of species is included below:

Specimens from Cod -1, core 2

Baltisphaeridium nanum

Chiropterygium sp. of C. aspinum

Deflandrea sp. cf. D. biornata

Deflandrea sp. cf. D. phosphoritica

Reticulodinium sp.

Schematophora sp.

Systematophora sp.

Hystrichosphaeridium cf. H. complex.

INTERPRETATIVE

W494  
PALYNOLOGICAL REPORT ON ESSO GIPPSLAND SHELF No.3 WELL

AT 6425 FEET

The sample examined from core 6 at 6425 feet in Esso Gippsland Shelf No.3 well provided sparse numbers of reasonably well preserved spores and pollen. Species identified include:

Araucariacites australis Cookson  
Beaupreaidites elegansiformis Cookson  
Myrtacidites tenuis Harris  
Nothofagidites emarcida (Cookson)  
Nothofagidites cf. brachyspinulosa (Cookson)  
Phyllocladidites mawsonii Cookson  
Proteacidites cf. adenanthoides Cookson  
Proteacidites annularis Cookson  
Proteacidites ornatus Harris  
Proteacidites subscabratus Couper  
Tricorites harrisii Couper  
Tricolporites prolata Cookson

RE-NAMED  
(AUG. 1968)

COO 1

The presence of a single specimen of Beaupreaidites elegansiformis may indicate equivalence of the microflora with the Duplopollis orthoteichus Assemblage described by Harris (1965) from upper horizons of the Dilwyn Clay in western Victoria. However, the index of Harris's assemblage was not observed in Gippsland Shelf No.3 well at 6425 feet. Thus, correlation of the Gippsland microflora with those described by Harris cannot be made with certainty. Nevertheless, the available palynological evidence does suggest a Lower Tertiary, possibly Upper Paleocene, age for sediments at 6425 feet in Gippsland Shelf No.3 well. An Upper Paleocene age was suggested (Dettmann 1965) for sediments between 6935 feet and 7150 feet in Esso Bass No.1 well.

References

- Dettmann, M.E. 1965. Palynological report on Esso Bass No.1 well, 6740 - 7695 feet. Unpublished report submitted to Esso Exploration Australia Inc. 18/10/65.  
Harris, W.K. 1965. Basal Tertiary microfloras from the Princetown area, Victoria, Australia. Palaeontographica, 115B, 75-106.

1st November, 1965

Mary E. Dettmann,  
Department of Geology,  
University of Queensland,  
St. Lucia, Queensland.

*This is an unpublished Report to Esso Exploration Aust. Inc.*

PALEONTOLOGICAL REPORT ON SIDEWALL CORES FROM BETWEEN  
7785 FEET AND 9514 FEET IN ESSO  
GIPPSLAND SHELF No. 3 WELL

23

COD-1

Seven sidewall cores taken from between 7785 feet and 9514 feet in Esso Gippsland Shelf No.3 well form the basis of this report. All of the samples yielded plant microfossils, the preservation and concentration of which varied from fair in some samples to good in others. These contained microfossils comprise microfloral assemblages that have been described by Harris (1965) and Cookson and Eisenack (1965) from Lower Tertiary deposits in western Victoria. Moreover, the microfloral evidence obtained from the present investigation substantiates the belief (Dettmann 1965a,b) that horizons at 8336-7 feet are uppermost Cretaceous or Lower Tertiary in age and that the deposit at 6425 feet is of Upper Paleocene age.

The occurrence of selected spore, pollen, and microplankton species in each of the samples investigated is documented in Table 1 and a discussion of the individual microfloral assemblages is presented below.

Microfloral Assemblages and Correlations

The sample from 9514 feet yielded Triorites edwardsii Cookson & Pike which Cookson (1954) and Harris (1965) recorded from Middle and Upper Paleocene strata in western Victoria. Evans (1962) has also observed T. edwardsii in Paleocene deposits but notes that the species may extend into the uppermost Cretaceous (Senonian or later). The absence of Parabollus orthoteichus (Cookson & Pike) from the sample may indicate that the microflora conforms with Harris's (1965) Triorites edwardsii Assemblage. As such the microflora is equivalent to that obtained from Gippsland Shelf No. 3 well at 8695 feet. It has already been indicated (Dettmann 1965a)

that this deposit is similar in age to that from 8336-7 feet in Gippsland Shelf No.5 well.

The sample from 8360 feet contains Dacrydiomites balmei Cookson and Duplopollis orthoteichus. These species were not found associated together by Harris (1965) who states that the former species occurs only in his Tricrites edwardsii Assemblage, whilst D. orthoteichus first appears in stratigraphically higher deposits in western Victoria. The two species exhibit similar preservation in the residues from 8360 feet, but it may be possible that D. orthoteichus is a contaminant from higher horizons.

The two succeeding samples from 8038 feet and 7946 feet yielded microfloras composed of spores and pollen grains that are Lower Tertiary in aspect. However, none of the diagnostic species of Harris's Assemblages was present.

Microplankton were observed in samples from 7836 feet and 7843 feet. These include the following species of Cookson and Eisenack (1965): Paltisphaeridium taylori, Kenleyia leptocerata, K. lophophora, and Wetmorella hyperacantha. A similar association has been described by Cookson and Eisenack (1965) from the Dartmoor Formation in western Victoria. This formation is considered to be equivalent to the Rivernock Member of the Milwyn Clay, to which a Middle to Upper Paleocene age has been ascribed (see Harris 1965, p.100) and from which Harris (1965) recorded his Tricrites edwardsii - Duplopollis orthoteichus Assemblage. Very few spores and pollen were observed in the Gippsland Shelf No.3 samples that contain microplankton, but D. orthoteichus is present at 7836 feet. Thus, sediments between 7836 and 7843 feet in Gippsland Shelf No.3 well can be regarded as Middle to Upper Paleocene in age.

The deposit from 7785 feet provided a diverse microfloral assemblage

composed of spores and pollen. These include Proteacidites grandis Cockson which Harris (1965) records only from horizons containing his Upper Paleocene Dunlopollis orthoteichus Assemblage. An Upper Paleocene age was suggested (Dettmann 1965b) for the deposit at 6425 feet in Gippsland Shelf No.3 well and horizons between 6935 and 7150 feet in Base No.1 well.

References

- Cockson, H.C. 1954. A palynological examination of No.1 bore, Birregurra, Victoria. Proc. Roy. Soc. Vict., 66, 119-128.
- Cockson, H.C. and Eisenack, A. 1965. Microplankton from the Dartmoor Formation, SW. Victoria. Proc. Roy. Soc. Vict., 79, 133-137.
- Dettmann, M.E. 1965a. Palynological Report on Esso Gippsland Shelf No.3 well at 8386 and 8357 feet. Unpublished report submitted to Esso Exploration Australia, Inc. 8/11/65.
- Dettmann, M.E. 1965b. Palynological report on Esso Gippsland Shelf No.3 well at 6425 feet. Unpublished report submitted to Esso Exploration, Australia, Inc. 1/11/65.
- Evans, P.R. 1962. Palynological observations on F.B.H. Flaxman's Hill No.1 well. Bur. Min. Resourc. Aust. Rec. 1962/57.
- Harris, W.K. 1965. Basal Tertiary microfloras from the Princetown area, Victoria, Australia. Palaeontographica, 115B, 75-106.

17th December, 1965.

Mary E. Dettmann,  
Department of Geology,  
University of Queensland,  
St. Lucia, Queensland.

Depth (feet)	7783'	7836'	7843'	7913'	8053'	8360'	9514'	
Spores	+	+	+	+	+	+	+	1. <i>Cyathidites australis</i> and/or <i>C. minor</i>
	+	+	+	+	+	+	+	2. <i>Cyathidites splendens</i>
	+	+	+	+	+	+	+	3. <i>Gleicheniidites cercinidites</i>
	+	+	+	+	+	+	+	4. <i>Laevigatosporites ovatus</i>
	+	+	+	+	+	+	+	5. <i>Trilites tuberculiformis</i>
Pollen	+	+	+	+	+	+	+	6. <i>Microcachyridites antarcticus</i>
	+	+	+	+	+	+	+	7. <i>Podocarpidites ellipticus</i>
	+	+	+	+	+	+	+	8. <i>Dacrydiumites balmei</i>
	+	+	+	+	+	+	+	9. <i>Dacrydiumites florinii</i>
	+	+	+	+	+	+	+	10. <i>Phyllocladidites mawsonii</i>
	+	+	+	+	+	+	+	11. <i>Triorites edwardsii</i>
	+	+	+	+	+	+	+	12. <i>Nothofagidites emarcida</i>
	+	+	+	+	+	+	+	13. <i>Duplopollis orthoteichus</i>
	+	+	+	+	+	+	+	14. <i>Proteacidites</i> cf. <i>P. similis</i>
	+	+	+	+	+	+	+	15. <i>Proteacidites annularis</i>
	+	+	+	+	+	+	+	16. <i>Proteacidites subscabratus</i>
Microplankton	+	+	+	+	+	+	+	17. <i>Proteacidites grandis</i>
	+	+	+	+	+	+	+	18. <i>Proteacidites dilwynensis</i>
	+	+	+	+	+	+	+	19. <i>Tricolporites prolata</i>
	+	+	+	+	+	+	+	20. <i>Tricolporites scabratus</i>
	+	+	+	+	+	+	+	21. <i>Myrteacidites eugeniodes</i>
	+	+	+	+	+	+	+	22. <i>Baltisphaeridium taylori</i>
	+	+	+	+	+	+	+	23. <i>Kenleyia leptocerata</i>
	+	+	+	+	+	+	+	24. <i>Kenleyia lophophora</i>
	+	+	+	+	+	+	+	25. <i>Wetzelliella hyperacantha</i>
	+	+	+	+	+	+	+	26. <i>Hystriochosphaeridium</i> sp.

Table 1: Distribution of selected spore, pollen, and microplankton species in Esso Gippsland Shelf No.3 well between 7783 feet and 9514 feet.

+ = species present

PALYNOLOGICAL REPORT ON ESSO GIPPSLAND SHELF No.3 WELL  
AT 8336 AND 8337 FEET

The two samples examined (from 8336 and 8337 feet) of core 7 in Esso Gippsland Shelf No.3 well yielded poor concentrations of poorly preserved spores and pollen grains. Species identified in the samples include:

Cyathidites minor Couper  
Dacrydiumites balmei Cookson (8337 feet only)  
Dacrydiumites ellipticus Harris (8337 feet only)  
Dacrydiumites florinii Cookson (8337 feet only)  
Gleicheniidites sp.  
Laevigatosporites ovatus (Wilson & Webster) (8337 feet only)  
Nothofagidites emarcida (Cookson)  
Nothofagidites cf. brachyspinulosa (Cookson)  
Phyllocladidites mawsonii Cookson  
Podocarpidites ellipticus Cookson  
Proteacidites scaboratus Couper  
Proteacidites subscabratus Couper  
Stereisporites antiquasporites (Wilson & Webster)

The presence of Dacrydiumites balmei Cookson, and Dacrydiumites ellipticus Harris at 8337 feet suggests that the microflora belongs to Harris's (1965) Middle Paleocene Triorites edwardsii Assemblage. However, the index, Triorites edwardsii Cookson & Pike, of Harris's Assemblage was not observed in either of the samples. It should be noted that the lower age limit of the T. edwardsii Assemblage has not been determined precisely although Evans (1962) indicates that T. edwardsii extends into the Upper Cretaceous (Senonian or later). Thus, the sample from 8337 feet could be either uppermost Cretaceous (Senonian or later) or Lower Tertiary (Lower to Middle Paleocene) in age. A similar age was suggested (Dettmann 1965a) for sediments in Gippsland Shelf No.1 well at 8695 feet, whilst it was indicated (Dettmann 1965b) that the deposit at 6425 feet in Gippsland Shelf No.3 well contains a microflora of younger (Upper Paleocene) aspect.

The sample from 8336 feet in Gippsland Shelf No.3 well did not yield

either Dacrydiumites balmei or D. ellipticus, but in other respects the microflora is essentially similar to that obtained from 8337 feet.

References

Dettmann, M.E. 1965a. Palynology of core nos. 16 and 21 from Esso Gippsland Shelf No.1 well. Unpublished report submitted to Esso Exploration Australia, Inc. 29/6/65.

Dettmann, M.E. 1965b. Palynological report on Esso Gippsland Shelf No.3 well at 6425 feet. Unpublished report submitted to Esso Exploration Australia, Inc. 1/11/65.

Evans, P.R. 1962. Palynological observations on F.B.H. Flaxman's Hill No.1 well. Bur. Min. Resourc. Aust. Rec. 1962/57.

Harris, W.K. 1965. Basal Tertiary microfloras from the Princetown area, Victoria, Australia. Palaeontographica, 115B, 75-106.

8th November, 1965.

Mary E. Dettmann,  
Department of Geology,  
University of Queensland,  
St. Lucia, Queensland.



W494

BASIN GIPPSLAND BASIN

BY David TAYLOR

WELL NAME COD-1

DATE 19 April 1971

ELEV. +31'

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A				1000	3	
		Alternate					
		1100	3		1600	3	
	B	Alternate					
		1700	3		2700	3	
	C	Alternate					
		2800	3		3800	3	
	D <sub>1</sub>	Alternate					
		3900	3		4738	0	
	D <sub>2</sub>	Alternate					
		4760	3		4800	3	
	E	Alternate					
	5000	3		5150	3		
F	Alternate						
	5200	3		5621	0		
H <sub>1</sub>	Alternate						
	5650	3		5750	3		
H <sub>2</sub>	Alternate						
	5800	3		5850	3		
OLIGOCENE	I <sub>1</sub>	Alternate					
		5900	3		5950	3	
	J <sub>1</sub>	Alternate					
		5999	0		5999	0	
J <sub>2</sub>	Alternate						
EOC.	K	Alternate			6192	0	
		6192	0				
	Pre K						
		6248	2		6248	2	

COMMENTS:

Note: If highest or lowest data is a 3 or 4, then an alternate 0, 1, 2 highest or lowest data will be filled in if control is available.

If a sample cannot be interpreted to be one zonule, as apart from the other, no entry should be made.

- 0 SWC or Core - Complete assemblage (very high confidence).
- 1 SWC or Core - Almost complete assemblage (high confidence).
- 2 SWC or Core - Close to zonule change but able to interpret (low confidence).
- 3 Cuttings - Complete assemblage (low confidence).
- 4 Cuttings - Incomplete assemblage, next to uninterpretable or SWC with depth suspicion (very low confidence).

Date Revised \_\_\_\_\_

By \_\_\_\_\_

BASIN GIPPSLAND DATE \_\_\_\_\_  
 WELL NAME COD -1 ELEVATION + 31 feet

AGE	PALYNOLOGIC ZONES	HIGHEST DATA				LOWEST DATA					
		Preferred Depth	Rtg	Alternate Depth	Rtg	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
MIOC.	<u>T. bellus</u>										
	<u>P. tuberculatus</u>										
Eocene	<u>U. N. asperus</u>										
	<u>L. N. asperus</u>	6248	0			1370	6438	2			1-376
	<u>P. asperopolus</u>										
	<u>U. M. diversus</u>										
	<u>L. M. diversus</u>	7752	1			1658	7862	1			1-675
Eocene	<u>L. balmei</u>	7946	1			1613	9514	1			1-762
	<u>T. longus</u>										
LATE CRETACEOUS	<u>T. lilliei</u>										
	<u>N. senectus</u>										
	<u>C. trip./T.pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS	<u>C. paradoxa</u>										
	<u>C. striatus</u>										
	<u>U. C. hughesii</u>										
	<u>L. C. hughesii</u>										
	<u>C. stylosus</u>										
Pre-Cretaceous											

COMMENTS: 'L. N. asperus "A" at 6248 feet.

ID. 9540' (1,970)

- RATINGS: 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.  
 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.  
 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.  
 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spores and pollen or microplankton, or both.  
 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATE RECORDED BY: L. E. S. DATE DEC. 1971  
 DATA REVISED BY: \_\_\_\_\_ DATE \_\_\_\_\_

W 694  
 BASIN GIPPSLAND

DATE \_\_\_\_\_

WELL NAME COD - 1

ELEVATION + 31 feet

AGE	PALYNOLOGIC ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
Eocene	<u>P. tuberculatus</u>										
	<u>U. N. asperus</u>										
	<u>M. N. asperus</u>										
	<u>L. N. asperus</u>	6238	2	6263	1		6278	1			
	<u>P. asperopolus</u>	6387	1				6438	1			
	<u>U. M. diversus</u>										
	<u>M. M. diversus</u>										
	<u>L. M. diversus</u>	7752	1				7862	0			
Paleocene	<u>U. L. balmei</u>	8208	1				8345	1			
	<u>L. L. balmei</u>	9514	1				9514	1			
	<u>T. longus</u>										
Cretaceous	<u>T. lilliei</u>										
	<u>N. senectus</u>										
	<u>C. trip./T. pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS											
PRE-CRETACEOUS											

COMMENTS: Dinoflagellate Zones:  
Deflandrea heterophylcta Zone 6263 (1) - 6278 (1)  
Wetzeliella hyperacantha Zone 7862 (1)

- RATINGS: 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.  
 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.  
 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.  
 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spore and pollen or microplankton, or both.  
 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATA RECORDED BY: L.E.S./A.D.P. DATE June 1971; Dec. 1971

DATA REVISED BY: A.D.P. DATE January 1975.

4.1 THE MID-TERTIARY FORAMINIFERAL  
SEQUENCE

W494

RE-NAMED  
(AUG. 1968)  
COD 1

THE MID-TERTIARY FORAMINIFERAL SEQUENCE

ESSO GIPPSLAND SHELF NO. 3 WELL

BY

David J. Taylor

Geological Survey of Victoria .

Unpublished Report 47/1965

30th November, 1965.

## INTRODUCTION:

Esso Gippsland Shelf No. 3 Well was drilled in 202 feet of water, 32½ miles due south of Lakes Entrance, on the southeast flank of the "Gippsland Shelf No. 1 structure" some 18½ miles from the No. 1 well.

All depths, discussed here, were those shown on the submitted samples. The datum for all samples was taken from the rotary table at +31 feet M. S. L.

Cutting samples, 7 cores and 8 side wall cores, were examined. Cores 1 to 5 contained foraminifera, although rare and sporadic in cores 4 and 5. The 20" casing shoe was at 714 feet with first "returns" at 783 feet. The caliper log shows considerable wash out immediately below the 13-3/8" casing shoe at 3,250 feet. This wash out was responsible for heavy contamination in the marl sequence below 4,300 feet. Contamination has even penetrated core 2 (4,725 - 38 feet), possibly due to the action of the heavy mud on the marl, which is very plastic in a saturated state.

The Esso Gippsland Shelf No. 1 foraminiferal sequence has been established by Taylor (1965) as a standard biostratigraphic sequence for the offshore Gippsland Basin. This report is mainly a biostratigraphic and palaeocological comparison between the No. 3 and No. 1 sequences.

## BIOSTRATIGRAPHIC CORRELATION:

UPPER MIOCENE : ? to 1,700 feet. The Zonule A fauna is present in the first returns (at 790 feet) and persist<sup>s</sup> to 1,000 feet. This fauna is characterised by the absence of Globorotalia spp. and an abundance of Uvigerina sp. 1 and Baggina philipinensis. Globorotalia menardii first appear at 1,000 feet. The base of the upper Miocene is almost a horizontal surface between the three wells, suggesting uniform sedimentation and structural relationships.

MIDDLE MIOCENE: 1,700 to 4,000 feet.

Zonule C - 1,700 to 2,800 feet. Globorotalia mayeri is first recorded at 1,700 feet and Uvigerina sp. 4 and U. sp. 5 occur within the unit.

Zonule D - 2,800 to 3,600 feet. Bolivina sp. 9 and B. sp. 10 and Globorotalia barisanensis are recorded at 2,800 feet, whilst G. conica is present below 3,000 feet.

The dense, partially recrystallized limestone of Core 1 (3,500 to 3,528 feet) revealed in thin section two distinct faunas:-

(i) An abundant planktonic fauna, including Orbulina universa, O. suturalis, Globigerinoides glomerosa, G. rubra, and Globoquadrina dehiscens. This fauna is contained within the fine-grained matrix.

(ii) Concentrations of larger foraminifera in coarse limestone fragments which are algal encrusted. The larger foraminifera include Austrillina, Cycloclpeus and Lepidocyclina.

As discussed by Taylor (1965), the highest range of Lepidocyclina does not reach the initial appearance of O. universa. Therefore the faunas are mixed, and the Lepidocyclina fauna is obviously derived. The planktonic fauna in this core suggests that it is near the base of Zonule D. Derived larger foraminifera are present near the base of Zonule D and in Zonule E, in both previous Gippsland Shelf wells.

Zonule E - 3,600 to 4,000 feet. Contains similar bolivinid and uvigerinid faunas to above Zonule, but shows an increased percentage of Globigerinoides spp.

LOWER MIOCENE: 4,000 to 5,300 feet.

An abrupt change in the benthonic faunas is evident at 4,000 feet. Astrononion centroplax, Cibicides brevoralis, C. perforatus, Gyroidinoides sp. 4 and the large costate uvigerinid, "Uvigerina" sp. 9. The planktonic fauna is rich in Globigerinoides spp (sensu stricto). At 4,550 feet the arenaceous fauna is both rich and distinctive including Karrerriella sp., Vulvulina sp., and Haplophragmoides rotundata.

Zonule F and G cannot be separated because of lack of core in the interval 4,000 to 4,700 feet, but they are certainly present.

Zonule H - 4,700 to 5,300 feet. Although there is heavy contamination in Core 2 (4,725 to 4,738 feet), the planktonic fauna is dominated by Globigerina woodi and Globigerinoides triloba immatura, rather than by Globigerinoides spp. (sensu stricto). This, together with the appearance of such benthonic forms as Uvigerina sp. 10, Elphidium centrifulagis and Quinqueloculina ornithopetra, strongly indicate Zonule H and the base of the Miocene.

UPPER OLIGOCENE: 5,300 to 5,900 feet.

Zonule I - 5,300 to 5,900 feet. A rich planktonic and benthonic fauna, but with the presence of Globorotalia opima opima and Globigerina euapertura. Bolivina sp. 12 is also recorded.

LOWER OLIGOCENE: 5,900 to 6,040 feet.

Zonule J - 5,900 to 6,040 feet. Rich planktonic fauna including Globorotalia testarugosa and Globigerina angipora suggest Zonule J and the former species correlates it with Jenkins (1960) "pre-Globoquadrina dehiscens dehiscens" Zone, which is at the base of the marl section in the Lakes Entrance area. It is of interest that in the Gippsland Shelf No. 3 Section, Globoquadrina dehiscens praedehiscens is associated with Globorotalia testarugosa although Jenkins does not record it.

LOWER OLIGOCENE to UPPER EOCENE: 6,040 to 6,438 feet.

Zonule K - 6,040 to 6,250 feet. Poor and sporadic faunas within these glauconitic rich sands. Both the benthonic and planktonic faunas are similar to those of Zonule K, but with the addition of Chiloguembelina cubensis and Globigerina linaperta. The top two feet of Core 4 (6,248 to 6,278 feet) contain this fauna.

Upper Eocene - 6,250 to 6,438 feet. Two feet from the top of Core 4, there is a rich arenaceous fauna of Ammobaculites sp., Bathysiphon sp. and Haplophragmoides spp. Below this level (both in core and side wall core) fauna is very rare and mainly arenaceous. This fauna suggests the beginning of a marine transgressive sequence, and although nondescript, is upper Eocene as it precedes the distinctive

Side wall core at 6,438 feet probable contains poor Paleocene fauna.  
 50. 6,438 feet to T. D. No fauna was found in side wall cores below  
 U. Eocene 6,438 feet, nor was any fauna found in Core 7 (8,319 to 8,345 feet).  
 is associated 50 6,250-  
 6,410. No species that range above 6,438 feet were found in rotary cuttings  
 below that level.  
 6,410 - ? TIME RANGE of the Gippsland No. 3 sequence: It is concluded  
 = Paleocene that the initial Tertiary marine transgression commenced in the upper  
 Eocene at or about the 6,438 feet level in the Gippsland Shelf No. 3  
 sequence. Marine sedimentation persisted to at least the upper Miocene.

No break in sequence is observed between 6,438 and 783 feet.

DEPOSITIONAL HISTORY:

Marine deposition commenced in the upper Eocene with the onset of the mid-Tertiary transgression. Marine circulation was restricted, as is evident by the purely arenaceous faunas and the abundance of glauconite at the base of the section. By the early Oligocene, oceanic currents were unrestricted, bringing in abundant planktonic faunas.



At 5,997 feet (side wall core 30), planktonic specimens constitute some 80% of the fauna, suggesting that the benthonic fauna was not fully established after the more restricted environment below 6,000 feet. Deposition was at a fairly shallow depth, but during the upper Oligocene and lower Miocene, there is some evidence of a gradual deepening in depth. The upper Oligocene and lower Miocene were obviously well removed from the detrital source areas. The arenaceous foraminifera consist of fine-grained material, and even utilize sponge spicules (e. g. Trochammina sp. in Core 2). The upper Oligocene and lower Miocene marls were probably deposited in outer shelf conditions, when compared with similar marls in the Gippsland Shelf 1 and 2 wells.

The persistence of arenaceous forms in abundance to 4,550 feet, despite the scarcity of sand-sized detrital material, is curious. From other faunal evidence, the abundance of arenaceous forms cannot be attributed to shallow water conditions, restricted circulation conditions or deep water conditions (three of the conditions which apparently contribute to abundance of arenaceous forms).

There is an abrupt change in the depositional sequence at the 4,000 foot level. The benthonic fauna becomes less robust and the planktonic is smaller and less abundant. More open oceanic conditions prevailed and a subtle, indeterminate change has happened on the depositional surface. The supply of <sup>135e</sup>decimated detrital material had ceased, but large fragments of reworked lower Miocene limestone were introduced into the environment. Inundation was slow enough for these fragments to be algal encrusted, and were incorporated into a matrix of precipitated  $\text{CaCO}_3$  and the remains of planktonic organisms. This <sup>d</sup>misplacement of material was probably due to sliding down the depositional slope. Taylor (1965) has recorded that on the culmination of the Gippsland Shelf No. 1 structure (e. g., Gippsland Shelf No. 1 section), derived lower Miocene limestone fragments were introduced into a middle Miocene shallow water deposit. This material probably spilled down the slope and came to rest on a deeper depositional surface where a hiatus is not apparent.

During the middle Miocene, deposition became shallower, until the upper Miocene when the deposition took place above 300 feet below sea level.

The depositional history is fairly similar to that of the Gippsland Shelf No. 1 and 2 wells, except that sedimentation continued throughout

the lower Miocene in this section, and that early middle Miocene deposition took place in a deeper environment.

GEOLOGICAL SETTING:

Particularly during the lower and middle Miocene, this section was down slope, both structurally and environmentally, from the Gippsland Shelf No. 1 and 2 wells. It has already been shown (Taylor, 1965) that the Gippsland Shelf No. 1 structure was moving upwards during the lower Miocene, culminating with a hiatus. Deposition resumed early in the middle Miocene with the addition of lower Miocene fragmentary material. In this section, there is no apparent hiatus, but fragmentary lower Miocene derived material is present in the middle Miocene sediments. Mobility on the Gippsland Shelf No. 1 structure is apparent during the lower Miocene and early middle Miocene.

The initial marine transgression took place at much the same time in all three Gippsland Shelf wells, as in parts of the onshore Gippsland Basin. (Hocking and Taylor, 1964). However, the basal sandy sediments (6,438 to 6,040 feet) are thicker in this section than in the other Gippsland Shelf wells. This increase in thickness is assumed to be related to structural position.

The transitional unit, between the non-marine Latrobe Valley Group (including brown coal) and the calcareous Gippsland Formation, was defined and named by Crespin (1943) as the Lakes Entrance Formation. This formation consists of basal sands with glauconite and an upper "micaceous marl." Difficulty is apparent in defining this unit away from the type area (Lakes Entrance) because of (i) only in the Lakes Entrance area is there a close granite and metamorphic rock source for the basal sand constituents and for the mica in the marls; and (ii) an "E-Jog" has never been run in a well within this type area. To some degree, Crespin's rock unit was defined on faunal characters. But although they are faunal they are not biostratigraphic as they are inherent characters within the rock, not governed by time; i. e., facies. The basal sandy unit of the Lakes Entrance Formation is marine to an extent, but by no means open marine. This is the case above 6,438 feet in Gippsland Shelf No. 3. Crespin's "micaceous marl" is rich in arenaceous foraminifera, which are now regarded more of environmental than biostratigraphic significance. Therefore, in the Gippsland Shelf No. 3 section, I would place the top of the Lakes Entrance Formation at 4,550 feet, where arenaceous foraminifera cease to be a dominant factor,

This designation of the top and bottom of the Lakes Entrance Formation is based on bio-facies and must be regarded as provisional until "E-logs" are run in the Lakes Entrance area. Studies by Hocking and Taylor (1964) suggest that the base and the top of the Lakes Entrance Formation are not time planes, and are diachronous.

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4.2 BIOSTRATIGRAPHIC REAPPRAISAL  
AND  
FACIES STUDY

W 494

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BIOSTRATIGRAPHIC REAPPRAISAL and FACIES STUDY - COD-A-1.

This report is the result of a micropaleontological analysis of thin sections recently submitted by Ease. The sections are of core-1 & core-2 from Cod-A-1 ( see tabulation - p.3). The thin sections of core-2 (4725-4738), all contained identifiable sections of Orbulina (probably O. universa) and Globigerinoides glomeratus which indicates Zonule D and a middle Miocene age. Therefore my original report ( Geol. Surv. Vict., unpubl. rep. 47/1965) was incorrect. I dismissed the middle Miocene planktonic fauna as being contamination which somehow penetrated core-2. At that stage of our knowledge, 3000' of middle Miocene was too much to accept in Victoria. Instead I accepted the lower Miocene fauna ( listed below) as being in place. With the new evidence and the experience of the Kingfish-A-1 section I must now revise my earlier determinations. On page 6 I conclude that the mixing of faunas is due to channelling and filling within the lower Miocene during middle Miocene times.

Due to the nature of this cutting and filling, it is impossible to designate the middle/lower Miocene boundary with any accuracy. In core-2, the middle Miocene species comprised 50% of the planktonic fauna, with 40% ubiquitous middle/lower Miocene species ( eg. Globigerina apertura, G. woodi & Globigerinoides trilobus) and 10% of the progenitor morphotype of Globoretalia scitula ( early form of G. scitula praescitula). The benthonic fauna is almost completely of lower Miocene aspect, including such forms as Astrononion centronax, Cibicides broveralis, Gyrogoninoides sp.4, Uvigerina sp. 9, U. sp.10 and Vulvulina granulosa. Most of these benthonic forms are present from 4000'. Naturally the percentage of lower Miocene species increases towards the base of the channel. There is no core or side wall core between 4738' and 5603' ( core-3). Rotary cutting samples below 5200' are almost completely dominated by Zonule H faunas as listed above.

INTERPRETATIVE

Core-2 is now regarded as basal Zonule D (Globigerinoides trilobus being present) and cutting samples at 5200' are probably Zonule H (lower Miocene). Core-3 (5603') is Oligocene, Zonule I. Because of swamping by lower Miocene forms it is impossible to designate the interval between 4738' and 5200'. Basal middle Miocene Zonule E is probably present. The two higher lower Miocene Zonules F & G do not appear to be present; their diagnostic species are not noted as mud contaminants below 5200'. Therefore a lower Miocene hiatus probably occurred, as in Barracouta and Kingfish.

Zonule G & F faunas are noted in sections of core-1 (3500-28'), but are probably recycled material from further afield.

Revision of the mid-Tertiary biostratigraphic log for Cod-A-1 is given below.

ZONULE A	..... ? - 1000'	.....UPPER MIOCENE
ZONULE B	..... 1000 - 1700'	..... " "
ZONULE C	..... 1700 - 2800'	.....MIDDLE MIOCENE
ZONULE D	..... 2800 - 4738'	..... " "
	..... 4738' - ?	
*ZONULE E	..... ? ? ?	..... " "
*ZONULE F	..... P.N.P.	.....LOWER MIOCENE
*ZONULE G	..... P.N.P.	..... " "
*ZONULE H	..... ? + 5200'	..... " "
	..... 5200 - 5450'	
ZONULE I	..... 5450 - 5900'	.....OLIGOCENE
ZONULE J	..... 5900 - 6040'	..... " "
ZONULE K	..... 6040 - ?	.....uppermost EOCENE

\* interval 4738' to 5200' difficult to designate.

P.N.P. = probably not present.

FACIES UNITS ( see pages 3 - 5):

"battered Robulus" facies unit ..... 2700' - 74500'

"sponge spicule" facies unit ..... 74500' - ? 50000'.

"Lakes Entrance calcareous" facies unit.....?50000' - 59000'

INTERPRETATIVE

THIN SECTION ANALYSIS:

Ten thin sections of Core-1 and three of Core-2 in Cod-A-1, were analysed for fossil content in a manner similar to that applied to Kingfish-A-1 thin sections. The resultant areal percentages are tabulated below

Slide	total count	plank forams	benth forams	sponge spicules	bryozoa	unident. debris	?inorganic
<u>Core-1</u>							
3506.5	500	4% <del>5%</del>	10%	2%	22%	10%	52%
3508	500	—	—	—	—	68%	32%
3509	600	5%	10%	—	—	50%	35%
3510	500	8%	—	2%	—	50%	40%
3511	800	5%	—	7%	16%	56%	16%
3512	1000	3%	20%	2%	20%	20%	35%
* M1438	500	15%	5%	10%	—	60%	10%
* M1438-A							
- (I)	1000	2%	20%	3%	20%	50%	5%
- (II)	1000	15%	2%	10%	—	70%	3%
* M1438-B							
- (I)	600	5%	25%	5%	20%	35%	10%
- (II)	1000	10%	5%	6%	7%	66%	16%
* M1438-D	500	20%	12%	14%	—	40%	14%
<u>Core-2</u>							
4725	1000	14%	5%	30%	—	40%	11%
4728	500	10%	2%	14%	—	68%	8%
4731	1000	13%	3%	18%	—	54%	12%

\* = B.H.P. slides (unstained). Other slides are ESSO stained slides.

The quality of the two sets of slides were different. The Esso stained slides were thinner; almost too thin for paleontological work. The B.H.P. set were the right thickness, so that the results should be regarded as more reliable and certainly were more interesting. However, the stained slides were useful in quickly distinguishing arenaceous and siliceous ( eg. foraminifera and sponge spicules) from calcareous organic material. Siliceous material does not take up the stain.

**INTERPRETATIVE**

4

INTERPRETATION of THIN SECTION ANALYSIS:

Core-1 ( 3500-3528; rec.1001):—Perusal of the tabulated percentages suggests two distinct associations:—

- (I) Dominant percentages of benthonic foraminifera and bryozoal fragments. Planktonic foraminifera and sponge spicules are minor elements, if present at all.
- (II) Dominant percentages of planktonic foraminifera and sponge spicules. Benthonic foraminifera and bryozoa are minor elements, if present at all.

These two distinct associations can be distinguished on a single slide; eg. M1438A, where two distinct micro-textural areas can be seen with the naked eye. Association (I) is in a coarse grained, skeletal, white limestone, while association (II) is in a much finer grained grey micritic limestone.

Association (I) contains an abundance of larger foraminifera, including Anatrilina, Cyclochaus, Lepidocyclus, Ammonia and a large pustulate Robulus. Association (II) contains a rich planktonic fauna, including Orbulina universa and O. suturalis, indicating Zone D in the middle Miocene. Biostratigraphically, these two faunas are incompatible, as the first three listed species of Association (I) do not range above, and are in fact restricted to, Zone F at the top of the lower Miocene.

Paleoecologically, these two associations are also incompatible. Association (I) is indicative of shallow, temperate seas, whilst the high proportion of planktonic foraminifera and sponge spicules suggests deep, cold water conditions for Association (II).

As Association (I) is the oldest, obviously it has been recycled into a younger deep water deposit. Submarine slides could have been responsible for this incompatible faunal association.

The pustulate Robulus sp., recorded in Association (I) ( see marked slide M1438A) is also recycled. This Robulus marks a definite horizon in Marlin sections ( as already reported as the "battered Robulus level").

INTERPRETATIVE



5.

Examination of washed samples, showed that the "battered Robulus" (including the pustulate species) were present below 2300' and abundant from 2700' to below core-1. The base of this "battered Robulus" facies unit is placed at approximately 4500', partially on the scarcity of the pustulate species below this level, partially on its absence in core-2 (4725-38), and partially on the highest appearance of the "sponge spicule" facies unit of core-2.

Core-2 (4725-38: sec. 8):— In all three slides the dominant association is that of planktonic foraminifera and sponge spicules. Bryozoa are absent. Deep, cold water conditions are evident. Sections of Orbulina sp. ? O. universa and Globigerinoides glomerosus were present in the slides. In some areas of the slides, elongate axial sections of sponge spicules, show a preferred orientation, suggesting current action.

Examination of washed material from Core-2, reveals up to 60% recycled species. As already mentioned there is a mixture of lower and middle Miocene forms. The recycled species are mainly lens shaped Cibicides spp. discoidal Astrononion centroplax and large tapered uvigerinids. Larger foraminifera and "battered Robulus spp." are absent. Arenaceous species are common and are probably not recycled. They suggest deep water conditions. Many specimens have incorporated sponge spicules into their walls, as quartz and other mineral grains are virtually absent. This observation is confirmed from the thin section examination.

This core is an example of the "sponge spicule" facies unit. The incorporation of sponge spicules in arenaceous foraminiferal tests, makes it possible to identify the top of this facies unit in rotary cuttings. In Cod-A-1 the top of the unit is placed at 4500'. It is believed that in the Cod-A-1 the "battered Robulus" and "sponge spicule" are distinct facies units. In both cases these two facies are lithofacies and not bio-facies, although they are designated on fossil content. The "battered Robulus" are recycled, thus are detrital material. The arenaceous foraminifera use sponge spicules because of an absence of detrital quartz etc., thus the "sponge spicule" facies unit is dictated by the nature of detrital material. It should be noted that arenaceous species in the "battered Robulus" facies unit (including core-1) have quartz incorporated in their tests and not sponge spicules.

INTERPRETATIVE

CONCLUSIONS:

This reappraisal of the Cod-A-1 section has revealed 43000' of middle Miocene ( Zonule D = at least 2000'). This would appear extremely thick, but is less than in Kingfish-A-1 where Taylor reports 4000' of middle Miocene. The micropaleontological work confirms the accepted explanation that the thick middle Miocene, Kingfish section is the result of channelling and filling. The same explanation must now be evoked for the middle Miocene at Cod-A-1.

In Cod-A-1, channel developpe probably commenced in late lower Miocene to early middle Miocene times, reworking the lower Miocene, richly foraminiferal calcareous shales. They must have been a depositional hiatus towards the top of the lower Miocene. Zonule G & F (lower Miocene) have only been associated with middle Miocene species. Zonule H ( base of lower Miocene) is of greatly reduced thickness and the high percentage of Zonule H species in the base of the definite middle Miocene (eg. core-2 at 4725-4738'), so that strong reworking of Zonule H sediment is obvious.

The facies study shows two pharases of channel fill:-

Pharase I - the silt and foraminiferal debris from the underlying lower Miocene calcareous shale. Apart from foraminifera, coarse detritus was not available, as evident from the composition of the arenaceous foraminifera. This pharase is shown in the "sponge spicule" facies unit from approximately 5000' to 4500' and is well demonstrated in core-2 (4725-4738').

Pharase II - apparent collapse of channel sides at higher relative levels (either in immediate vicinity or "up-stream"), bringing in, by submarine slides, coarse limestone material which contained the Zonule G & F species. These slides also bore arenaceous material, which could have been of the same provenance as the middle Miocene sand body of the Barracouta structure. This pharase is shown in the "battered Robulus" facies unit from approximately 4500' to 2700' with indications extending to 2300'. The facies is well demonstrated in core-1 ( 3500-3528).

During both these pharases the depositional site was in fairly deep water - outer shelf or even slope.

10th August, 1967

**INTERPRETATIVE**

5.0. VITRINITE REFLECTANCE MEASUREMENTS

OIL & GAS

Jack Dawe

RECD  
22.4.86  
KSO



**Amoco Australia Petroleum Company**

(Inc. in Delaware, U.S.A., with Limited Liability - Registered as a Foreign Company in Tasmania)

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April 16, 1986

The Director of Mines,  
Department of Minerals and Energy,  
East Tower, Princes Gate,  
151 Flinders Street,  
Melbourne. Vic. 3000

**OIL and GAS DIVISION**

22 APR 1986

Dear Sir,

Re: Gippsland Basin Vitrinite Reflectance Measurements  
MISC-AUP-141-L-310-SCB

In 1985 Amoco Australia Petroleum Company collected core and cutting samples from thirteen Gippsland Basin wells for vitrinite reflectance determinations. The following attachments are a summary of the work.

Yours faithfully,

COD-1

S.C. Bane  
Exploration Manager

SCB/lrc

Attach.

Depth (ft)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
<u>ALBACORE -1</u>				
9380&9390	0.42	0.04	0.31-0.48	42
9720&2730	0.46	0.06	0.36-0.59	36
10070	0.46	0.04	0.36-0.55	39
10320	0.47	0.04	0.38-0.54	34
<u>BARRACOUTA-3</u>				
7310-7320	0.54	0.05	0.46-0.63	35
8590	0.60	0.08	0.43-0.71	35
9100-9120	0.62	0.10	0.41-0.80	41
9330-9360	0.64	0.10	0.43-0.93	36
9540-9560	0.73	0.05	0.63-0.84	33
<u>BATFISH-1</u>				
7560-7570	0.61	0.05	0.53-0.69	34
8170-8180	0.64	0.05	0.56-0.75	34
8640-8650	0.69	0.05	0.55-0.81	31
9170-9190	0.76	0.04	0.66-0.81	28
9430-9450	0.76	0.05	0.69-0.90	41
<u>BONITA-1A</u>				
9780-9790	0.54	0.06	0.46-0.68	36
10050	0.56	0.05	0.47-0.64	36
10280-10290	0.55	0.04	0.47-0.64	47
<u>BREAM-2</u>				
8070-8090	0.63	0.05	0.52-0.70	39
8380-8390	0.67	0.06	0.53-0.80	41
8933-8944	0.73	0.05	0.62-0.85	43
9730-9750	0.83	0.07	0.71-0.98	38
10638-10641	0.88	0.11	0.62-1.13	42

Depth (ft)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
<u>COD-1</u>				
7100-7120	0.63	0.06	0.53-0.81	41
8333-8339	0.59	0.05	0.47-0.67	34
9030-9060	0.75	0.06	0.61-0.85	32
9460-9470	0.77	0.06	0.61-0.86	41
<u>FLOUNDER-1</u>				
7430	0.44	0.05	0.36-0.56	39
8783-8795	0.64	0.04	0.56-0.77	36
9140	0.61	0.06	0.52-0.77	42
10395-10400	0.72	0.06	0.58-0.80	34
11350-11356	0.90	0.05	0.76-0.97	36
11676-11682	0.90	0.07	0.78-1.04	44
<u>HALIBUT-1</u>				
7888-7891	0.49	0.07	0.37-0.67	39
8450-8460	0.54	0.04	0.47-0.61	31
9250-9260	0.57	0.06	0.46-0.66	43
9630-9640	0.61	0.04	0.54-0.69	35
9870-9880	0.63	0.06	0.47-0.75	52
<u>MACKEREL-1</u>				
8760-8780	0.63	0.05	0.52-0.71	31
9630-9650	0.66	0.05	0.69-0.76	25
9870-9890	0.65	0.02	0.60-0.73	28

Depth (ft)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
<u>MARLIN-1</u>				
7070-7080	0.65	0.08	0.52-0.80	32
7497-7501	0.65	0.04	0.54-0.72	38
7780-7800	0.67	0.09	0.47-0.88	39
8230-8240	0.71	0.07	0.64-0.79	4
8455-8461	0.70	0.06	0.56-0.79	32
<u>NANNYGAI-1</u>				
7760-7670	0.052	0.07	0.39-0.65	33
8320-8340	0.50	0.05	0.42-0.65	32
9450-9470	0.64	0.04	0.57-0.71	35
9860-9880	0.64	0.06	0.51-0.75	31
<u>SALMON-1</u>				
7670-7690	0.50	0.06	0.38-0.64	35
8030-8050	0.56	0.05	0.45-0.67	37
8860	0.60	0.05	0.45-0.67	33
9250-9260	0.64	0.06	0.54-0.79	36
9856-9862	0.80	0.05	0.68-0.87	37
<u>SNAPPER-1</u>				
7280-7300	0.56	0.06	0.43-0.69	37
7754-7760	0.56	0.09	0.38-0.73	38
9254-9257	0.68	0.03	0.60-0.72	33
9900-9903	0.86	0.10	0.62-0.96	17
10140-10200	0.81	0.10	0.58-1.01	31
10495-10507	0.99	0.06	0.81-1.06	35

6.0 ENCLOSURES



PE603176

This is an enclosure indicator page.  
The enclosure PE603176 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603176 has the following characteristics:

ITEM\_BARCODE = PE603176  
CONTAINER\_BARCODE = PE904825  
NAME = Cod 1 Composite Log  
BASIN = GIPPSLAND  
PERMIT = PEP 38  
TYPE = WELL  
SUBTYPE = COMPOSITE\_LOG  
DESCRIPTION = Cod 1 1" Composite Log Sheet 0-2000'  
REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.  
DATE\_CREATED =  
DATE\_RECEIVED =  
W\_NO = W494  
WELL\_NAME = Cod-1  
CONTRACTOR =  
CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603177

This is an enclosure indicator page.  
The enclosure PE603177 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603177 has the following characteristics:

ITEM\_BARCODE = PE603177  
CONTAINER\_BARCODE = PE904825  
NAME = Cod 1 Composite Log  
BASIN = GIPPSLAND  
PERMIT = PEP 38  
TYPE = WELL  
SUBTYPE = COMPOSITE\_LOG  
DESCRIPTION = Cod 1 1" Composite Log Sheet  
2000-4000'  
REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.  
DATE\_CREATED =  
DATE\_RECEIVED =  
W\_NO = W494  
WELL\_NAME = Cod-1  
CONTRACTOR =  
CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603178

This is an enclosure indicator page.  
The enclosure PE603178 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603178 has the following characteristics:

- ITEM\_BARCODE = PE603178
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Composite Log
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = COMPOSITE\_LOG
- DESCRIPTION = Cod 1 1" Composite Log Sheet  
4000-6000'
- REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603179

This is an enclosure indicator page.  
The enclosure PE603179 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603179 has the following characteristics:

ITEM\_BARCODE = PE603179  
CONTAINER\_BARCODE = PE904825  
NAME = Cod 1 Composite Log  
BASIN = GIPPSLAND  
PERMIT = PEP 38  
TYPE = WELL  
SUBTYPE = COMPOSITE\_LOG  
DESCRIPTION = Cod 1 1" Composite Log Sheet  
6000-8000'  
REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.  
DATE\_CREATED =  
DATE\_RECEIVED =  
W\_NO = W494  
WELL\_NAME = Cod-1  
CONTRACTOR =  
CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603180

This is an enclosure indicator page.  
The enclosure PE603180 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603180 has the following characteristics:

ITEM\_BARCODE = PE603180  
CONTAINER\_BARCODE = PE904825  
NAME = Cod 1 Composite Log  
BASIN = GIPPSLAND  
PERMIT = PEP 38  
TYPE = WELL  
SUBTYPE = COMPOSITE\_LOG  
DESCRIPTION = Cod 1 1" Composite Log Sheet  
8000-9540'  
REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.  
DATE\_CREATED =  
DATE\_RECEIVED =  
W\_NO = W494  
WELL\_NAME = Cod-1  
CONTRACTOR =  
CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603229

This is an enclosure indicator page.  
The enclosure PE603229 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603229 has the following characteristics:

- ITEM\_BARCODE = PE603229
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Composite Log
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = COMPOSITE\_LOG
- DESCRIPTION = Cod 1 2" Composite Log Sheet 0-2000'
- REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603230

This is an enclosure indicator page.  
The enclosure PE603230 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603230 has the following characteristics:

- ITEM\_BARCODE = PE603230
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Composite Log
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = COMPOSITE\_LOG
- DESCRIPTION = Cod 1 2" Composite Log Sheet  
2000-4000'
- REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603231

This is an enclosure indicator page.  
The enclosure PE603231 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603231 has the following characteristics:

- ITEM\_BARCODE = PE603231
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Composite Log
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = COMPOSITE\_LOG
- DESCRIPTION = Cod 1 2" Composite Log Sheet  
4000-6000'
- REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)



PE603232

This is an enclosure indicator page.  
The enclosure PE603232 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603232 has the following characteristics:

ITEM\_BARCODE = PE603232  
CONTAINER\_BARCODE = PE904825  
NAME = Cod 1 Composite Log  
BASIN = GIPPSLAND  
PERMIT = PEP 38  
TYPE = WELL  
SUBTYPE = COMPOSITE\_LOG  
DESCRIPTION = Cod 1 2" Composite Log Sheet  
6000-8000'  
REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.  
DATE\_CREATED =  
DATE\_RECEIVED =  
W\_NO = W494  
WELL\_NAME = Cod-1  
CONTRACTOR =  
CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603233

This is an enclosure indicator page.  
The enclosure PE603233 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603233 has the following characteristics:

- ITEM\_BARCODE = PE603233
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Composite Log
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = COMPOSITE\_LOG
- DESCRIPTION = Cod 1 2" " Composite Log Sheet  
8000-9540'
- REMARKS = ESSO Gippsland Shelf 3 well, renamed  
Cod 1.
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE603175

This is an enclosure indicator page.  
The enclosure PE603175 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE603175 has the following characteristics:

- ITEM\_BARCODE = PE603175
- CONTAINER\_BARCODE = PE904825
- NAME = Cod 1 Grapholog
- BASIN = GIPPSLAND
- PERMIT = PEP 38
- TYPE = WELL
- SUBTYPE = MUD\_LOG
- DESCRIPTION = Cod 1 Grapholog (Mud Log)
- REMARKS =
- DATE\_CREATED =
- DATE\_RECEIVED =
- W\_NO = W494
- WELL\_NAME = Cod-1
- CONTRACTOR = Core Laboratories International Ltd.
- CLIENT\_OP\_CO = Esso Australia Ltd.

(Inserted by DNRE - Vic Govt Mines Dept)

PE906425

This is an enclosure indicator page.  
The enclosure PE906425 is enclosed within the  
container PE904825 at this location in this  
document.

The enclosure PE906425 has the following characteristics:

ITEM\_BARCODE = PE906425  
CONTAINER\_BARCODE = PE904825  
    NAME = FIT Data  
    BASIN = GIPPSLAND  
    PERMIT = PEP38  
    TYPE = WELL  
    SUBTYPE = FIT  
DESCRIPTION = Formation Tester Recovery and  
              Interpretation data for Cod-1  
REMARKS =  
DATE\_CREATED =  
DATE\_RECEIVED =  
    W\_NO = W494  
    WELL\_NAME = COD-1  
CONTRACTOR =  
CLIENT\_OP\_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)