W543

DEPT. NAT. RES & ENV
PE904967

Natural Resources and Environment

AGRICULTURE • RESOURCES • CONSERVATION • LAND MANAGEMENT

MACKEREL-1

WELL SUMMARY

OFFSHORE

G.B.

1 Folio No	2 Referred to	3 Date	4 Clearing Officer's Initials	1 Folio No.	2 Referred to	3 Date	4 Clearing Officer's Initials

FILE COVER INSTRUCTIONS FOR ACTION OFFICERS

(1) FOLIO NUMBERS: Each subject paper attached to a file is to be given a consecutive number by the attaching officer. Papers must not be removed from or attached to a file without approval.

(2) REFERRAL TO OTHER OFFICERS: When an Officer completes action on the file and further action is required by some other Officer, please initial Column (4) and on the next vacant line, enter the relevant folio number in Column (1), indicate to whom the file is to be forwarded in Column (2) and record the date in Column (3).

(3) BRING UP MARKINGS: When action on a file is required at a later date, the officer will initial Column (4) and, on the next vacant line, enter the relevant folio number in Column (1), then write "B/U" followed by the action officer's name in Column (2) and the date the file is required in Column (3).

(4) PUTAWAY MARKINGS: When ALL action on a file is completed the officer concerned will initial Column (4) and, on the next vacant line, write "P/A" in column (2).

REGISTRY MUST BE NOTIFIED OF ANY FILE MOVEMENTS BETWEEN OFFICERS

LOCATION

EARLIER FILES	LATER FILES	RECORDS DISPOSITION

ABANDONED. OCEAN DIGGER. SPUD [illegible]-3-69
COMPLETE 23-4-69

38° 28' 54" S
148° 21' 26" E

MACKEREL-1

ESSO. Vic L/5. NFWC. 543. T.D. 10,003' W.D. 326

IES	Run 1.	931-3464.	Separate logs for 2" and 5"	
"	" 2.	3444-8724.	" " " 2"	5"
"	" 3.	8500-9996	" " " 2"	5"
BHCS/GR.	" 1.	931-3458	" " " 2"	5"
BHCS	" 2.	3444-8722	" " " 2"	5"
"	" 3.	8500-9993	" " "	5"
FDC	" 1.	3444-8725	" " " 2"	5"
"	" 2.	8500-9996	" " " 2"	5"
GRN	" 1	7700-8200.	" " " 2"	5"
FIT	" 1.	Tests 1-5		

Exploration's Mudlog 1012-10,003
Cores No 2,3,4. No recovery No 1. 7903'-8053'.
Core Descriptions 1,2,3 & 4. Esso
" Analysis 1,2,3 & 4. Exploration Logging
S.W.C. Descriptions. 4300'-9980'.
Cuttings 1030'-10,000'
Completion Report
Core Analysis Results. Cores 2,3 & 4 by B.M.R.
IES 2" Completion Log
Time depth curve (Needs marking) +1c +1c 1/2 scale
Map. Topographic Surface Latrobe Delta
Geologic Map of after drilling picture
Cross section " " " "
Palaeontology Report by D. J. Taylor.
Palynological " " L. E. Stover & A. D. Partridge
Weekly Reports
Cuttings 1030' - 10,003' were received by B.M.R. 5/12/74
Hydrocarbon Report - Subsurface Oil EPR 70 - PS5.
Palynology Report Revision by A. D. Partridge.
PALYNOLOGICAL SHEET BY W.K. HARRIS
VITRINITE REFLECTANCE BY AMOCO. 22-4-86

[illegible] M 34 [illegible] 03
No copy [illegible]

MACKEREL-1

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ESSO STANDARD OIL (AUSTRALIA) LTD.

COMPLETION REPORT

1 WELL DATA RECORD

Date 24.6.70.

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
MACKEREL -1	Victoria	Victoria L/5	Gippsland	NFWC

CO-ORDINATES	Lat.	Long.	X	Y	MAP PROJECTION	GEOGRAPHICAL DESCRIPTION
Surface	38°28'54"	148°21'26"	624,964	253.265	Australian Transverse Mercator	Offshore 6 miles SE of Halibut
Bottom Hole						

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Avg. Angle
Ground	326 feet	M.D. 10,003 Feet	
KB 99		T.V.D.	
	PLUG BACK DEPTH	**REASONS FOR P.B.**	
RT	475 Feet	Abandonment	
Braden Head			
Top Deck Platform			

DATES

MOVE IN	RIG UP	SPUDDED
24.3.69.	25.3.69.	26.3.69.
RIG DOWN COMPLETE	**RIG RELEASED**	**PROD.UNIT - Start Rigging Up**
23.4.69.	23.4.69.	

PROD.UNIT - Rig Down Complete	I.P. ESTABLISHED

MISCELLANEOUS

OPERATOR	PERMITTEE or LICENCEE	ESSO INTEREST	OTHER INTEREST
Esso	Esso	50%	Hematite 50%

CONTRACTOR	RIG NAME	EQUIPMENT TYPE
ODECO	OCEAN DIGGER	SEMI-SUBMERSIBLE DRILLING VESSEL

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
29.9	238103		

LAHEE WELL CLASSIFICATION		
	Before Drilling	New Field Wildcat
	After Drilling	Abandoned with shows of hydrocarbon.

P.M. COONEY

Geologist

WELL MACKEREL 1

IV	CASING - LINER - TUBING RECORD						
Type	Size	Weight	Grade	Thread	No. Joints	Amount	Depth
Conductor	30"	310 & 196		Vetco	3	122.98	541.98
Conductor	20"	94	H-40	Vetco	12	512.95	931
Surface	13-3/8"	68	J-55	Butt.	2		
	13-3/8"	54.5	J-55	Butt.	76	3021.50	3445

V	CEMENT RECORD		
String	30"	20"	13-3/8"
Type of Cement	400 sx w/2% $CaCl_2$	640 sx w/1.5% Gel & 300 sx w/2% $CaCl_2$	1300 sx neat
Number of FT^3	472	1288	1534
Average weight of slurry	15.6	14.2/15.6	15.6
Cement Top	Sea Floor	Sea Floor	1350'± Calc.
Casing Tested with	0	500 psi	1500 psi
Number of Centralizers	0	0	7
Number of Scratchers	0	0	0
Stage Collar etc.	0	0	0
Remarks	Pulled loose on trip w/26"H.O.	Gel Prehydrated	

R.L. Wood
Engineer

WELL Mackerel -1

VII SAMPLES, CONVENTIONAL CORES, SW CORES

INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
1012-10,003	Cuttings	Sampled every 10'			
4300-9980	Sidewall Cores	41 shot 38 recovered			
7903-7923	Conventional Cores	0			
7926-7956	"	28			
7956-7996	"	17			
7998-8053	"	17			

VIII WIRELINE LOGS AND SURVEYS (Incl. FIT)

Type & Scale	From To	Type & Scale	From To
IES 2" and 5"	0931- 9997		
BHCS/GR 2" and 5"	0931- 9996		
FDC " "	3500-10,003		
GRN " "	3506- 8753		
CDM " "	3444-10,003		
Velocity Survey	3470- 9980		
FIT (5)	7916, 7920, 7956, 7962, 8022.		

P.M. COONEY
Geologist

543

BASIC

COMPLETION REPORT

GENERAL

Name of Well:	Mackerel 1
Location:	Gippsland Basin, Victoria, Australia. Vic. L-5.
	Latitude 38° 28' 54" S
	Longitude 148° 21' 26" E
Elevation:	Mean Sea Level, Rotary Table + 99'
Water Depth:	322'
Total Depth:	10,003'
Spud Date:	March 27, 1969
Completion Date:	April 23, 1969
Well Status:	Suspended as a successful oil discovery
Cores:	Number: 4
	Total Footage: 145'
	Recovery: 59'
	% Recovery: 41%
Mud Logs:	Logged by Exploration Logging Inc., from 1012' to 10,003'
Casing and Cement:	See Completion Log for details
Electric Logs:	I.E.S. 10,003'
	B.H.C.S.-G.R. 10,003'
	F.D.C. 3,500'-10,003'
	G.R.N. 3,506'- 8,753'
	C.D.M. 3,444'-10,003'
Tests:	A total of five F.I.T.'s were run; a test at 8,022' failed, tests at 7,916' and 7,962' recovered only filtrate and tests at 7,956' and 7,920' recovered gas and oil. See Completion Log for test details.

GEOLOGIC SUMMARY

Formation	Depth
Gippsland Formation	Ocean Floor
Lakes Entrance Formation	7,650 (-7,551') 2331.7
Latrobe Delta Comples	7,900 (-7,801') 2407.9
L. balmei	7,900 (-7,801')

Lithologic Description:

The Gippsland Formation consists of skeletal and micritic limestones grading downward into marls.

Lakes Entrance lithology consists of marls and light grey to green calcareous shales, glauconitic in part.

Lithology of Latrobe sediments are predominantly quartzose sandstone, fine to coarse grained, excellent porosity and permeability, with occasional interbedded thin coals and carbonaceous siltstones.

Zonation:

Foraminiferal Zonation (David J. Taylor):

Zone	Top
B	1100'
C	1600'
C	3000'
E	7000'
F	7200'
G	7350'
H	7550'
I (Top Lakes Entrance)	7650'
J	7850'

INTERPRETATIVE

Palynology (P.R. Evans)

L. balmei (Top Latrobe) 7900'.

GEOLOGY OF FEATURE

Mackerel 1 was drilled on the crest of a northeast-southwest trending anticline which is breached by the north-south Lakes Entrance submarine canyon. Mapping below the base of the Miocene is complicated by the presence of a Miocene canyon on the north flank of the structure.

Southwest of the well, Latrobe sediments dip southwest nearly parallel to the dip of the Latrobe Topographic Surface. To the northeast of the well, southwest dipping beds at the top of the Latrobe have been truncated by the Lakes Entrance channel and the unconformity at the top of the Latrobe dips northeast providing closure. Seals are formed by the Lakes Entrance shales in the canyon and by Lakes Entrance mudstones over the remainder of the feature.

Even though the well was drilled on intra-Latrobe closure as presently mapped, and encountered good reservoir rocks, effective hydrocarbon traps were absent due to lack of good intra-Latrobe seals.

An additional well may be required to determine whether this pool is an economic venture.

HYDROCARBONS

An oil column was encountered at the top of the Latrobe Delta Complex in the interval 7,900' to 7961'.

Reservoir Description: Sandstones within the reservoir are quartzose, very coarse to medium size pebble grains, angular to well rounded, poorly sorted, massive and friable with excellent permeability averages in excess of 2,000 md and porosity better than 20%. As the environment of deposition is interpreted to be braided stream, it is currently ~~felt~~ the good sandstones of the reservoir should be fairly widespread and extend over the entire field.

Enclosures:

1. Latrobe Delta Topographic Surface Structure map.
2. Mackerel 1 Time-Depth curve.
3. Composite electric log.

2.0 CORE DESCRIPTIONS

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

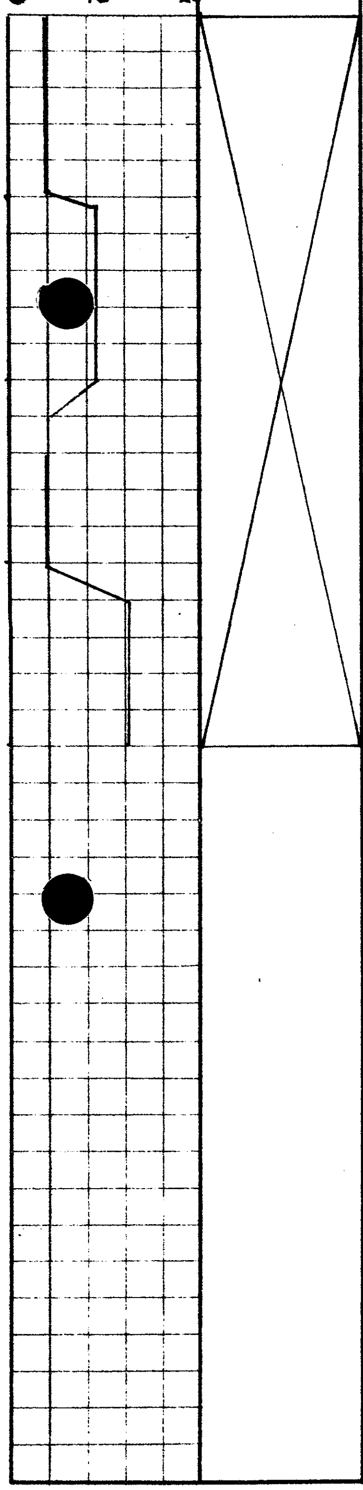
Core No. 1

WELL: MACKEREL #1

Interval Cored 7903-7923 ft., Cut 20 ft., Recovered 0 ft., (0 %) Fm. LATROBE D.C.

Bit Type 1420 CA, Bit Size $8\frac{5}{16}$" in., Desc. by H.S. Date 8/4/69.

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 10 25			7903'	
				No Recovery.
			7923'	



REMARKS: Drop Plug broke in two places after seating allowing the mud to circulate directly down the barrel & to wash-out the core. Also broken pieces of plug jammed under the bit.

ESSO STANDARD OIL (AUSTRALIA) LTD.

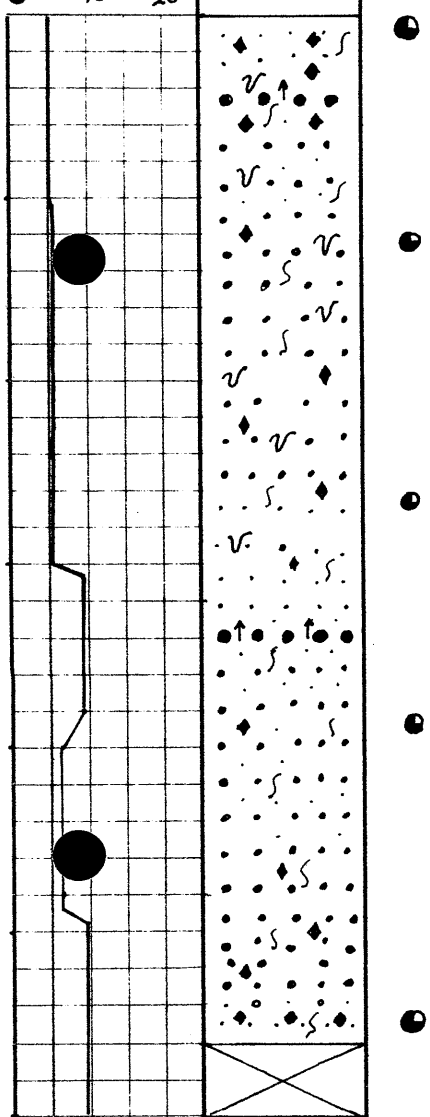
CORE DESCRIPTION

Core No. 2.

WELL: MACKEREL #1.

Interval Cored 7926 - 7956 ft., Cut 30 ft., Recovered 28 ft., (94 %) Fm. LATROBE. D.C.

Bit Type 2371 C.A. , Bit Size 8 5/16 in., Desc. by H.S. Date 8/4/69.

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 10 20				
			7926'	100% Sandstone, lt. buff; clear-frosted qtz w/tr. of smoky-black qtz gr.; f-vc-pebble gr.; angular-well rounded, the finer gr. fraction ang.-sub. ang., pebble fraction w. rounded; poor-mod. sorting; massive; graded bedding; m. hard - v. friable; Matrix consists of v. small amounts of clay & locally pyritic & glauc infilling.; Burrows infilled by qtz pebbles in a white clay matrix w/ pyrite & glauc. Fair - excellent φ & P. Water saturation approx. 30% - 80%. Entire core showed strong - even blue-white fluor; strong blue-white cut; lt. tan stain; strong pet. odour.
			7954'	Tight lt gy. sand; strong uneven fluor, strong cut;
				No recovery.
			7956'	

REMARKS:

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 3

WELL: Mackerel #1

Interval Cored 7956 - 7996 ft., Cut 40 ft., Recovered 17 ft., (42 %) Fm. Latrobe

Bit Type , Bit Size in., Desc. by BJW Date 8 - 4 - 69

Depth & Coring Rate (./ft./hr.) 10 20	Graphic (1" = 5')	Shows	Interval (ft.)		Descriptive Lithology
		Nil	7956' - 7960'	Breccia (?)	Soft lt gy mudstone w/ rd & ang frags md - dk gy mudstone
		Strong fluor Good Cut	7960' - 7964'	Sandstone	Massive, friable, lt-md gy, m-c gr, rd-srd, md sorted, qtzose w/ minor lithics Porous & perm
		Nil	7964' - 7970'	Sandstone	Hd, md gy, m-c gr, rd-srd, poor sorted, qtzose w/ lithics. Wavy laminated pyritic & dolomitic. Fairly tight.
			7970' - 7970' 4"	Shale	Soft, rd bn, wavy laminated.
		Nil	7970'4" - 7973	Sandstone	Massive, friable, lt gy, m-c gr rd-srd, md sorted, qtzose w/ lithics Porous & perm. Some clay matrix
	No Recovery		7973 - 7996	No Recovery	
			7996		

REMARKS:

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 4

WELL: Mackerel #1

Interval Cored 7998 - 8053 ft., Cut 55 ft., Recovered 14 ft., (27 %) Fm. Latrobe

Bit Type , Bit Size in., Desc. by BJW Date 9-4-69

Depth & Coring Rate (/ft.)hr)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 20 40				
			7998 - 8003	Sandstone Massive, friable, lt gy, m-cgr, sd-srd, md std, qtzose. Porous + perm. Water wet
		Nil	8003 - 8010	Sandstone Ltd, md gy, f-cgr, sd-srd, prly std, qtzose clayey. Wavy laminated, w/ evidence of churning & burrowing
			8010 - 8012	Sandstone Massive friable, lt gy, m-cgr; sd-srd, md std, qtzose. Porous & perm.
	No Recovery		8012 - 8053	No Recovery
			8038	

REMARKS:

RECEIVED
- 9 JUN 1969
MINES DEPT.

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

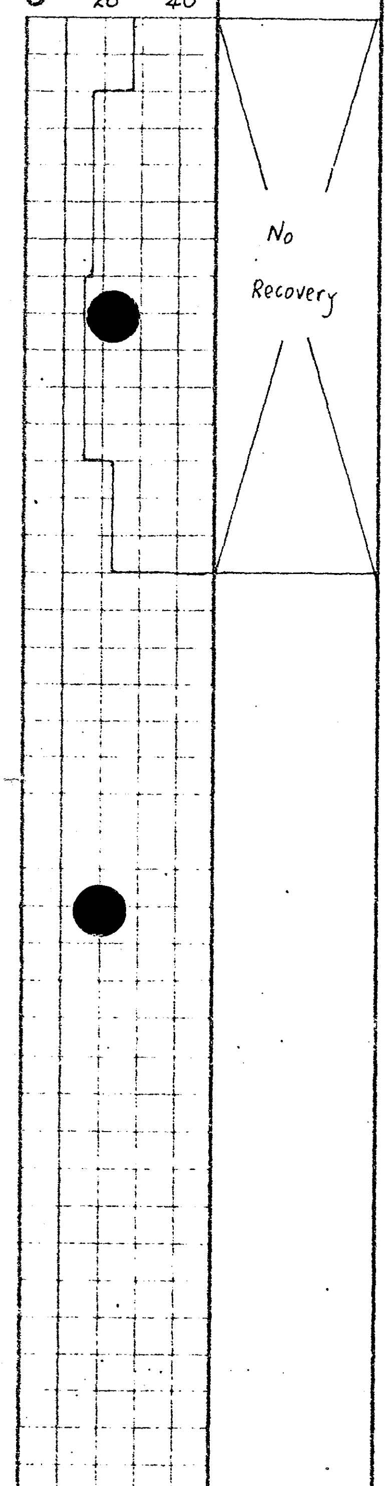
Core No. 4

WELL: Mackerel #1

Interval Cored 7998 - 8053 ft., Cut 55 ft., Recovered 17 ft., (27 %) Fm. Latrobe

Bit Type ...., Bit Size ...... in., Desc. by BJW Date 9 - 4 - 69

Depth & Coring Rate (min./ft.)/hr.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 20 40			8038 - 8053	No Recovery
			8053	



REMARKS:

2.1 SIDEWALL CORE DESCRIPTIONS

SIDEWALL CORE DESCRIPTIONS

MACKEREL-1

A.P. Whittle
April 16, 1969.

GUN -1
SHOT 30 RECOVERIES 27

DEPTH		RECOVERY	DESCRIPTION
9980	3041.8 m	¼"	Shale, light-medium grey, slightly calcareous firm, micaceous, slightly silty.
9948		N/R	
9850		½"	Shale, Dark grey, non calcareous, soft, micaceous argillaceous, slightly silty.
9694		½"	Siltstone, dark green, highly glauconitic, soft, with fine grained glauconitic granules. Minor pyrite.
9604		½"	Sandstone, grey, very fine - fine grained, well-sorted, soft, slightly calcareous, micaceous, wirh traces glauconite. Silty and argillaceous.
9442		½"	Sandstone, as above.
9315		3/4"	Siltstone, dark grey firm, calcareous, micaceous with trace pyrite.
9202	2804.76 m	½"	Shale, silty, dark grey, firm very micaceous, argillaceous.
9112		½"	Sandstone, very fine to fine grained, well sorted, firm, calcareous quartz, angular, appears shattered perhaps due to shot. Abundant pyrite, argillaceous material.
8946		½"	Sandstone, fine-very coarse grained, angular, well rounded, poorly sorted, soft-firm, slightly argillaceous, with mica and biotite flakes. Glauconitic trace pyrite.
8746		3/4"	Shale, silty, light grey to light brown, slightly calcareous, with trace mica, and trace coal, black brittle occuring as thin 1mm laminae.
8557		N/R	
8494		½"	Sandstone, silty very fine-fine grained, well sorted, light grey, pyritic glauconitic and calcareous, argillaceous.
8365		N/R	Will reshoot
8320		¼"	Sandstone, light grey-brown, very fine-fine grained, silty, wellsorted, argillaceous, sub-angular grains, trace mica, pyritic, slightly calcareous.
8149		¼"	Sandstone, light grey, fine grained, poor sorting, subangular to subrounded argillaceous with trace pyrite, glauconite, mica. Non-calcareou tight.

....../2

2 of 3

MACKEREL-1 Sidewall Core Description cont'd.

Gun-1 16/4/69

DEPTH	RECOVERY	DESCRIPTION
8072	¼"	Sandstone, as above, with trace more glauconite.
8010	¼"	Sandstone, as above, soft less glauconite.
7890'	2"	Shale?, silty, grey-brown, argillaceous, firm, Marl, trace disseminated pyrite, very calcareous.
7850	1½"	Shale? slightly silty, grey-brown, soft-firm, slight trace disseminated pyrite, very calcareous. Marl.
7750	1"	Shale? as above. Marl.
7650	1½"	Shale? As above Marl.
7550	1"	Shale? as above, trace mica. pyrite absent. Marl.
7350	1½" sl	Shale? Light grey brown soft argillaceous slightly silty trace very fine grained disseminated pyrite, very calcareous. Marl.
7250	1½"	Marl, light grey, soft.
7200	2"	Marl, as above, with stain, trace glauconite pellets, dark lithic fragments.
7180	1"	Marl, light grey homogenous
7000	½"	Marl, as above
6800	1"	Marl, as above
6600	¼"	Marl, as above.

SIDEWALL CORE DESCRIPTIONS

MACKEREL-1

A.P. Whittle
April 16, 1973

GUN-2

DEPTH	RECOVERY	DESCRIPTION
8936	½" g	Siltstone, light grey, very fine to fine grained, grading to sandstone, well sorted, trace mica, slightly calcareous.
8365	½"	Siltstone, as above, but not quite as sandy.
6400	1"	Marl, dark grey, firm homogeneous.
6200	1¼"	Marl, medium grey, firm, homogeneous.
6100	1½"	Marl, as above
6000	½"	Marl, as above with forams.
5900	1¼"	Marl, as above.
5800	½"	Marl, as above.
5200	1"	Marl, as above.
4800	1"	Marl, as above.
4300	¼"	Marl, as above.

2.2 CORE ANALYSIS REPORT / RESULTS

CORE #1

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS: 69 GREAT EASTERN HIGHWAY, VICTORIA PARK, WESTERN AUSTRALIA
PHONE: 61 4437
CABLE: EXLOGG, PERTH

CORE ANALYSIS REPORT

COMPANY ESSO-BHP

WELL MACKEREL 1

LOCATION/FIELD OFFSHORE, GIPPSLAND BASIN

COUNTY

STATE VICTORIA

COUNTRY AUSTRALIA

REMARKS CUT 20 FEET; NO RECOVERY

DATE APRIL 7, 1969

DEPTH 7903 FT TO 7923 FT

GEO-ENGINEER ALBERT/WATT

SAND
SILTY SAND
SILTST.
SHALE
LIME
CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME		GRAVITY OIL °API	TOTAL CL⁻ G/G	REMARKS
				OIL	WATER			

ANALYSIS GRAPH

PERMEABILITY MD. O—O

POROSITY % X—X
8 6 4 2 0
40 30 20 10 0

WATER SATURATION % PORE O—O
100 80 60 40 20 0

OIL SATURATION % PORE X—X
0 20 40 60 80 100

2 94

C #2

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS: 69 GREAT EASTERN HIGHWAY, VICTORIA PARK, WESTERN AUSTRALIA
PHONE: 61 4437 CABLE: EXLOGG PERTH

CORE ANALYSIS REPORT

COMPANY: ESSO-BHP
WELL: MACKEREL-1
LOCATION/FIELD: OFFSHORE, GIPPSLAND BASIN
COUNTY: STATE: VICTORIA
COUNTRY: AUSTRALIA

DATE: APRIL 8, 1968
DEPTH: 7926' TO 7956'
GEO-ENGINEER: ALBERT & WATT

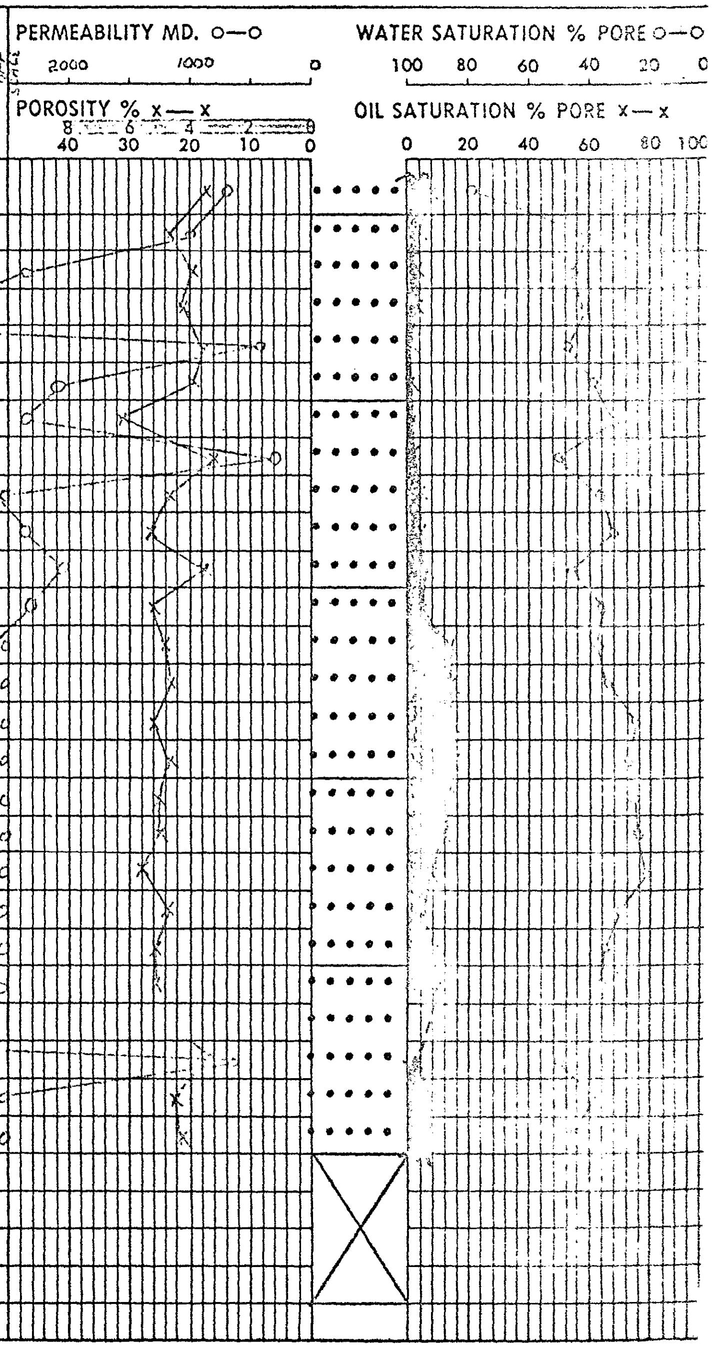
REMARKS: CUT 30' REC. 26' SANDSTONE: VERY COARSE, VERY FRIABLE & PERMEABLE. SOME INTERSTITIAL CLAY, BURROWINGS, SA-SR. STRONG OIL ODOR, EXCELLENT CUT, VIVID BLUE-WHITE FLOR. SATUR. THROUGHT. EXCELLENT OIL SHOW.

SAND — LIME
SILTY SAND — CONGL.
SILTST.
SHALE

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME OIL	WATER	GRAVITY OIL °API	TOTAL CL⁻ G/G	REMARKS
1	7926.5	690	16.7	8.0	79.8			
2	7927.5	992	23.1	4.0	40.8			
3	7928.5	2350	19.7	3.3	45.8			
4	7929-5	7000	20.9	3.4	41.7			7000
5	7930.5	435	17.7	2.1	48.3			
6	7931.5	2090	19.4	1.7	39.1			
7	7932.5	2360	31.1	1.9	32.7			
8	7933.5	288	16.3	4.1	49.7			
9	7934.5	2590+	22.8	4.1	37.1			
10	7935.5	2370+	26.5	6.4	32.0			
11	7936.5	2040	17.7	5.0	46.1			
	7937.5	2320+	26.1	13.5	36.9			
13	7938.5	2500+	24.1	13.6	38.5			
14	7939.5	2000+	23.3	15.0	34.4			
15	7940.5	2500+	26.2	15.4	25.7			
16	7941.5	2500+	23.2	14.6	28.0			
17	7942.5	2500+	24.8	12.6	26.3			
18	7943.5	2500+	25.2	11.8	25.5			
19	7944.5	2500+	28.5	8.7	22.0			
20	7945.5	2500+	23.6	6.2	30.9			
21	7946.5	2500+	24.5	9.7	34.8			
22	7947.5	2500+	24.8	10.3	35.6			
23	7948.5	TOO FRIABLE TO HANDLE OR ANALYIZE						
24	7949.5	650	17.5	3.5	49.8			
25	7950.5	2500+	22.3	7.5	38.8			
26	7951.5	2500+	20.9	7.2	45.3			
27	NO RECOVERY							
	NOTE: SANDS SO FRIABLE THAT HAND CUT PLUGS							
	WERE REQUIRED. CONSEQUENTLY PERMEABILITIES							
	7956	ARE ONLY APPROXIMATE.						

ANALYSIS GRAPH



CORE #3

EXPLORATION LOGGING OF AUSTRALIA, INC.
A Geological-Engineering Service
PERTH ADDRESS: 69 GREAT EASTERN HIGHWAY, VICTORIA PARK, WESTERN AUST[RALIA]
PHONE: 61 4437
CABLE: EXLOGG PERTH

CORE ANALYSIS REPORT

COMPANY: ESSO-BHP
WELL: MACKEREL-1
LOCATION/FIELD: OFFSHORE, GIPPSLAND BASIN
COUNTY:
STATE: VICTORIA
COUNTRY: AUSTRALIA
DATE: APRIL 8, 1969
DEPTH: 7956' TO 7996'
GEO-ENGINEER: CRAIG & WATT

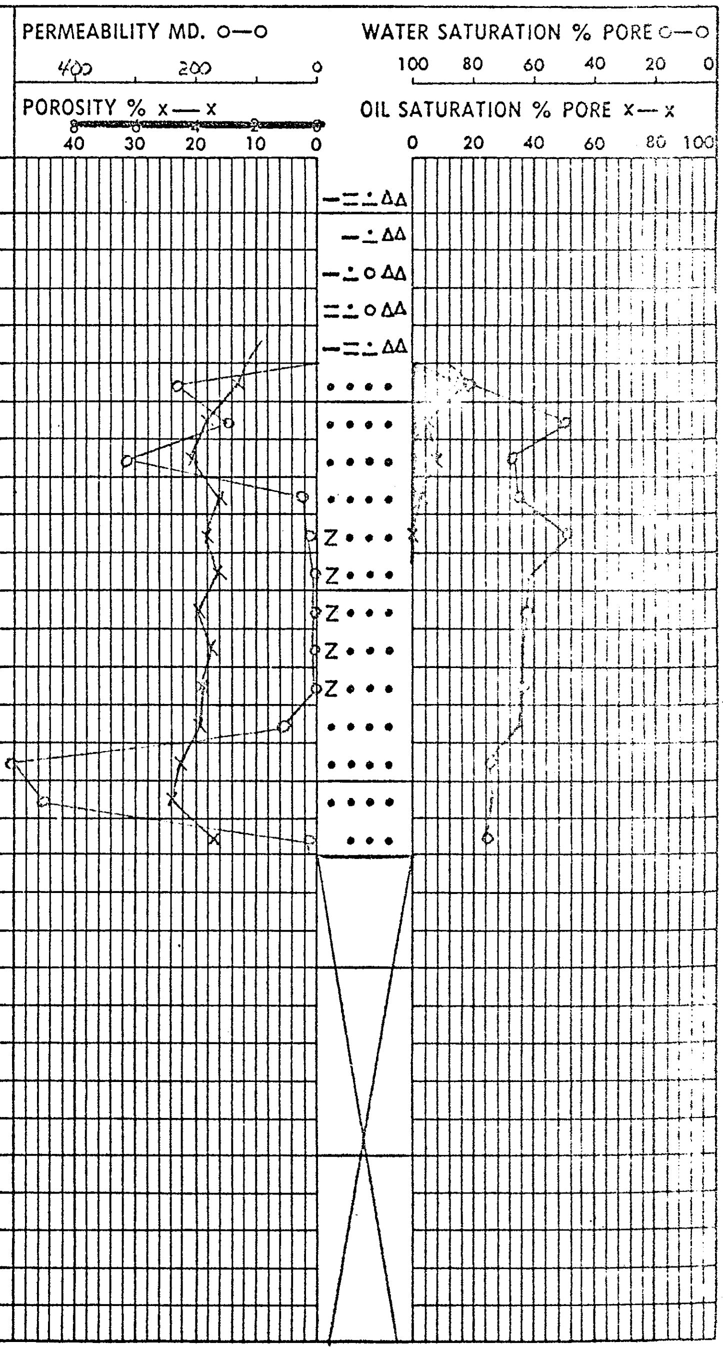
REMARKS: CUT 40' REC 17' BRECCIA: SOFT MUDSTONE WITH FRAGMENTS OF GREY & BROWN MUDSTONE SANDSTONE: FRIABLE, PERM, COARSE, OIL SATURATED AS IN CORE #2 SANDSTONE: HARD, DIRTY, TIGHT, DOLOMITIC & PYRITIC SANDSTONE: AS OIL SAND BUT WATER WET. BRIGHT ORANGE FLOR.

Legend			
SAND	LIME		
SILTY SAND	CONGL.		
SILTST.			
SHALE			

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME OIL	FLUID SATURATION % PORE VOLUME WATER	GRAVITY OIL °API	TOTAL CL⁻ G/G	REMARKS
	7956							
1	7961	230	13.0	16.3	83.0			
2	7962	146	18.0	4.4	49.6			
3	7963	316	20.6	7.4	67.3			
4	7964	23	15.8	2.4	65.5			
5	7965	10	18.1	TR	49.4			
6	7966	3.2	16.4	-				
[illegible]	7967	2.3	19.4	0	62.3			
8	7968	2.1	17.4	-				
9	7969	1.2	18.6	0	63.5			
10	7970	53	19.2	-				
11	7971	505	22.3	0	74.5			
12	7972	450	23.6	-				
13	7973	11	17.3	0	75.5			
	NO RECOVERY							

ANALYSIS GRAPH



CORE #4

EXPLORATION LOGGING OF AUSTRALIA, INC.

A Geological-Engineering Service

PERTH ADDRESS: 69 GREAT EASTERN HIGHWAY, VICTORIA PARK, WESTERN AUSTRALIA
PHONE: 61 4437 CABLE: EXLOGCO PERTH

CORE ANALYSIS REPORT

COMPANY: ESSO-BHP
WELL: MACKEREL 1
LOCATION/FIELD: OFFSHORE, GIPPSLAND BASIN
COUNTY: STATE: VICTORIA
COUNTRY: AUSTRALIA
REMARKS: CUT 55 FT; RECOVERED 14 FT LIGHT TO MEDIUM GREY, FRIABLE, MEDIUM TO COARSE GRAIN, MOD-WELL SORTED SANDSTONE. NO SHOWS. NO FLUOR.

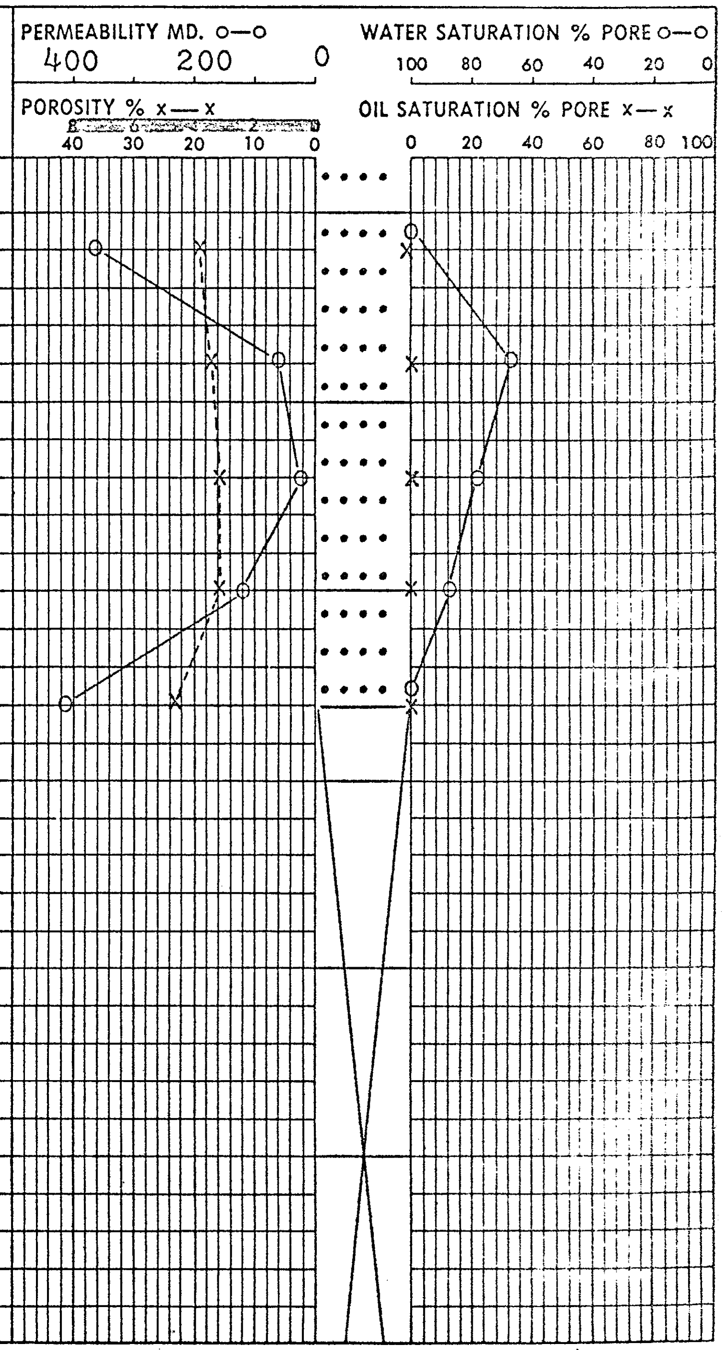
DATE: APRIL 9, 1969
DEPTH: 7998 FT TO 8053 FT
GEO-ENGINEER: WATT

SAND · SILTY SAND · SILTST. · SHALE · LIME · CONGL.

TABULAR DATA

SAMPLE NUMBER	DEPTH FEET	AIR PERM. MD.	POROSITY PERCENT	FLUID SATURATION % PORE VOLUME		GRAVITY OIL °API	TOTAL CL⁻ G/G	REMARKS
				OIL	WATER			
	2438.4							
1	8000	360	18.5	0	100			
2	8003	60	16.7	0	67			
3	8006	22	15.6	0	78			
4	8009	119	16.4	0	89			
5	8012	412	22.7	0	100			
	8013-8053': NO RECOVERY							

ANALYSIS GRAPH



Page 1 of 2

20 DEC 1973
MINES

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. MACKEREL NO. 1

DATE ANALYSIS COMPLETED NOVEMBER 1973

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	Sample "cut" in tetrachloroethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
2	7926	7927	Sst;m.gr. to c.gr.	22.5	498	502	2.07	2.66	NIL	3.5	N.D.	strong	dull white	good
2	7932	7933	As above sl. pyr	25.8	6887	6352	1.99	2.68	NIL	7.7	N.D.	very strong	bright white	very good
2	7938	7939	As above	24.9	2476	6602	2.01	2.67	NIL	5.9	N.D.	very strong	even spotted yellow	very good
2	7944	7945	Sst;m.gr. to c.gr.	24.1	1932	N.D.	2.04	2.70	NIL	8.3	N.D.	very strong	bright white	very good
2	7952	7953	Sst; m.gr. to v.c.gr	23.9	1860	N.D.	2.03	2.67	NIL	10.7	N.D.	very strong	uneven white	very good
3	7961	7962	Sst;m.gr. carb arg	19.3	54	97	2.13	2.64	23.6	4.0	N.D.	very strong	spotted yellow	nil
3	7967	7968	Sst;f.gr. slty.arg.	20.9	74	308	2.11	2.67	1.36	2.7	N.D.	strong	nil	trace
4	7999	8000	Sst;m.gr. to v.c.gr.	23.6	194	709	2.05	2.69	1.76	0.4	N.D.	nil	nil	nil

Remarks: - Core No 1 - No recovery

General File No. [illegible] 72/2914
Well File No.

Page 1 of 2

2 of 2

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. MACKEREL NO. 1

DATE ANALYSIS COMPLETED NOVEMBER 1973

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	Sample "cut" in tetrachloroethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
4	8005	8006	Slst;arg aren.	16.8	5.7	3.3	2.22	2.67	2.67	1.0	N.D.	fair	nil	nil
4	8011	8012	Sst;f.gr to c.gr. arg.	22.1	98	801	2.10	2.68	3.16	0.4	N.D.	nil	nil	nil

Remarks: -

General File No. ~~62/300~~ 72/2914
Well File No.

2/2

Plean file
BRT.

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST

TELEPHONE: 630321

JCK:MB

An. FF,DL,TI, 7/3

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

22nd March, 1972

Report on Samples Nos. 313, 314/72

Sample : Oil-well Drillings

Locality : Bass Strait

Sender : J. Le-Page,
Oil & Gas Branch,
Mines Department.

Details of Samples:

Two samples of oil-well drillings were received for examination. The samples were from Mackerel No.1 Well drilled in Bass Strait, one being from depth 7933 feet and the other from 7945 feet.

It was requested that total calcium be determined and also magnesium (as an indication of dolomite), also that clay below 5 micron be determined together with sand above (62½ micron) and silt between 5 & 62½ micron).

Results:

Mackerel No.1 Well

Lab. No.	313	314
Depth	7933 feet	7945 feet
Calcium (Ca)	0.053%	0.048%
Magnesium (Mg)	Nil	0.015%

The very small amount of clay and silt was separated from the sand with the following results:-

	313	314
Sand	95.5%	98.2%
Clay & Silt	4.5%	1.8%

	Screen Test on Sand Fraction	
	%	%
+36 B.S.S.	33.9	38.0
-26 + 52	14.0	26.4
-52 + 72	39.4	24.1
-72 (= 211 micron)	12.7	11.5

The fraction "clay" and silt" was too small for a hydrometer-estimation of particle size to be made. However, this fraction was examined under the microscope and would be classed mainly as silt. In the case of Sample No.313, 4/5 of the sample would be +75 micron and 1/5 -75 micron, and in the case of Sample No.314, there would be equal parts of + and -75 micron.

John C. Kennedy

Chief Chemist.

3.0 PALYNOLOGY

BASIN *GIPPSLAND* DATE

WELL NAME *MACKEREL - 1* ELEVATION *+99 feet*

AGE	PALYNOLOGIC ZONES	HIGHEST DATA Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	LOWEST DATA Preferred Depth	Rtg	Alternate Depth	Rtg.	2 way time
OLIG-MIO.	P. tuberculatus										
	U. N. asperus										
EOCENE	M. N. asperus										
	L. N. asperus										
	P. asperopolus										
	U. M. diversus										
	M. M. diversus										
	L. M. diversus										
PALEOCENE	U. L. balmei	2426.8 7962	2	2440.2 8006	1		8006	1			
	L. L. balmei	2549.65 8365	0				2954.73 9694	0			
	T. longus										
LATE CRETACEOUS	T. lilliei										
	N. senectus										
	C. trip./T.pach.										
	C. distocarin.										
	T. pannosus										
EARLY CRETACEOUS											
PRE-CRETACEOUS											

COMMENTS: *Dinoflagellate Zones:*
Eisenackia crassitabulata 8365 (1) — 8494 (1)
Trithyrodinium evittii 9604 (1) — 9694 (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: *LES/ADP; ADP* DATE *Dec. 1971; Jan. 1973.*

DATA REVISED BY: *ADP* DATE *Jan. 1975.*

FORM No R 315 12/72

BASIN GIPPSLAND DATE

WELL NAME MACKEREL-1 ELEVATION + 99 feet

AGE	PALYNOLOGIC ZONES	HIGHEST DATE Preferred Depth	Rtg	Alternate Depth	Rtg	2 way time	LOWEST DATA Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
OLIG. MIOC.	T. bellus										
	P. tuberculatus										
EOCENE	U. N. asperus										
	L. N. asperus										
	P. asperopolus										
	U. M. diversus										
	L. M. diversus										
PALEO- NE	L. balmei	2440.22M 8006	1	2426.8M 7962	2		2954.73M 9694	1			
	T. longus										
LATE CRETACEOUS	T. lilliei										
	N. senectus										
	C. trip./T.pach.										
	C. distocarin.										
	T. pannosus										
EARLY TACEOUS	C. paradoxa										
	C. striatus										
	U. C. hughesii										
	L. C. hughesii										
	C. stylosus										
Pre-Cretaceous											

COMMENTS:

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. Stover/A.D. Partridge DATE December 1971

DATA REVISED BY: A.D. Partridge DATE January 1973

FORM NO. [illegible]

Form R 193 3/71 543

BASIN GIPPSLAND BY D.J. TAYLOR

WELL NAME MACKEREL-1 DATE 20/4/71 ELEV. +99'

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A						
	Alternate						
	B						
	Alternate						
	C				3100	3	
	Alternate						
	D_1	3200	3		5900	2	
	Alternate						
	D_2	6000	0		7000	1	
	Alternate						
	E	7100	0		7250	0	
	Alternate						
	F	7350	0		7350	0	
	Alternate						
	G	7500	3		7500	3	
	Alternate						
	H_1	7550	1				
	Alternate						
	H_2				7700	3	
	Alternate						
OLIGOCENE	I_1	7750	0		7810	3	
	Alternate						
	I_2						
	Alternate						
	J_1	7850	0		7890	1	
	Alternate						
	J_2						
	Alternate						
EOC.	K						
	Alternate						
	Pre K						

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 14/6/72

By DJT/ADP

MACKEREL-1. PALYNOLOGICAL DATA. Page 1 of 1

WELL NAME: MACKERAL # 1

DEPTH (FT)	SAMPLE TYPE	PRESER-VATION	DIVERSITY	SPORE/POLLEN ZONE	DINOFLAGELLATE ZONE	CONFIDENCE LEVEL	ENVIRONMENT
7962	Core 3	Good	High	Upper L. balmei	Indeterminate	5	Marginal marine
8006	Core 4	Good	Moderate	L. balmei	Indeterminate	5	Marginal marine
8365	SWC 2	Poor	Moderate	L. balmei	Indeterminate	5	Non-marine
8494	SWC 13	Poor	Low	?L. balmei	?I. druggii	5	Marginal marine
8746	SWC 11	V. Poor	Moderate	?L. balmei	Indeterminate	5	Marginal marine
8946	SWC 10	V. Poor	Low	indet	-	-	-
9202	SWC 8	Fair	High	L. balmei	Indeterminate	5	Marginal marine
9315	SWC 7	Fair	High	L. balmei	Indeterminate	5	?Non-marine
9604	SWC 5	Fair	Moderate	L. balmei	Indeterminate	5	Marginal marine
9694	SWC 4	Poor	Moderate	L. balmei	? T. evittii	5	Marg marine to ne[illegible] shore.

W543

OIL and GAS DIVISION - 3 FEB 1983

BY W.K. HARRIS

FOR AQUITAINE, PHILLIPS & SHELL

PE904968

This is an enclosure indicator page.
The enclosure PE904968 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904968 has the following characteristics:

ITEM_BARCODE =	PE904968
CONTAINER_BARCODE =	PE904967
NAME =	Mackerel 1 Species List
BASIN =	GIPPSLAND
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	DIAGRAM
DESCRIPTION =	Mackerel 1 Species List. Page 1 of 4. From section 3 of Well Summary.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	
W_NO =	W543
WELL_NAME =	Mackerel-1
CONTRACTOR =	
CLIENT_OP_CO =	Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

PE904969

This is an enclosure indicator page.
The enclosure PE904969 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904969 has the following characteristics:

ITEM_BARCODE = PE904969
CONTAINER_BARCODE = PE904967
NAME = Mackerel 1 Species List
BASIN = GIPPSLAND
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Mackerel 1 Species List. Page 2 of 4. From section 3 of Well Summary.
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W543
WELL_NAME = Mackerel-1
CONTRACTOR =
CLIENT_OP_CO = Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

PE904970

This is an enclosure indicator page.
The enclosure PE904970 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904970 has the following characteristics:

```
     ITEM_BARCODE = PE904970
CONTAINER_BARCODE = PE904967
             NAME = Mackerel 1 Species List
            BASIN = GIPPSLAND
           PERMIT = VIC/L5
             TYPE = WELL
          SUBTYPE = DIAGRAM
      DESCRIPTION = Mackerel 1 Species List. Page 3 of 4.
                    From section 3 of Well Summary.
          REMARKS =
     DATE_CREATED =
    DATE_RECEIVED =
             W_NO = W543
        WELL_NAME = Mackerel-1
       CONTRACTOR =
     CLIENT_OP_CO = Esso Standard Oil (Australia) LTD.
```

(Inserted by DNRE - Vic Govt Mines Dept)

PE904971

This is an enclosure indicator page.
The enclosure PE904971 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904971 has the following characteristics:

ITEM_BARCODE = PE904971
CONTAINER_BARCODE = PE904967
NAME = Mackerel 1 Species List
BASIN = GIPPSLAND
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Mackerel 1 Species List. Page 4 of 4. From section 3 of Well Summary.
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W543
WELL_NAME = Mackerel-1
CONTRACTOR =
CLIENT_OP_CO = Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

4.0 VITRINITE REFLECTANCE MEASUREMENTS

Oil & Gas

Jack Dunn

RECD 22.4. KG.

Amoco Australia Petroleum Company
(Inc. in Delaware, U.S.A., with Limited Liability — Registered as a Foreign Company in Tasmania)

15 Blue Street, North Sydney
P.O. Box 126, North Sydney 2060
Phone (02) 957 4500
Telex AA23359
Facsimile (02) 922 4886

April 16, 1986

22 APR 1986

OIL and GAS DIVISION

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

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,

MACKEREL-1

S.C. Bane

S.C. Bane
Exploration Manager

SCB/lrc

Attach.

VITRINITE REFLECTANCE

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

VITRINITE REFLECTANCE

Depth (ft)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
COD-1				
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
FLOUNDER-1				
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
HALIBUT-1				
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
MACKEREL-1				
2670 – 2671 8760-8780	0.63	0.05	0.52-0.71	31
2935.2 – 2941.3 9630-9650	0.66	0.05	0.69-0.76	25
3008.3 – 3014.4 9870-9890	0.65	0.02	0.60-0.73	28

VITRINITE REFLECTANCE

Depth (ft)	Mean Maximum Reflectance (%)	Standard Deviation	Range	Number of Determinations
MARLIN-1				
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
NANNYGAI-1				
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
SALMON-1				
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
SNAPPER-1				
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

5.0 FORMATION TOPS

WELL MACKEREL 1

IX	FORMATION TOPS/Zones					
NAME	Tops		Gross Interval (ft)	Net Pay (ft).		REMARKS
	M.D.	Sub-sea		Gas	Oil	
Gippsland Fmn.	Sea Floor	-326	7225			
Lakes Entrance Fmn.	7650	-7551	250			
Latrobe Complex	7900	-7801				
L. balmei	7900	-7801			55	7900-796[illegible]

INTERPRETATIVE

X GEOLOGIC ANALYSIS (Pre Drilling prognosis Vs actual results)

Pre-drilling:

Depth	Formation
0- 322	Water
322-7420	Gippsland Formation
- -5695	Base Miocene Channel
7420-7800	Lakes Entrance
7800-T.D.	Latrobe Group

Note: All depths are subsea; for drill depths add 99 feet for height to rotary table.

As mapped on the top of the Latrobe Group, the primary objective, the proposed location of Mackerel 1 is on or near the crest of a large north-east-southwest trending anticline that has been breached by a north-south trending Lakes Entrance canyon that is probably shale filled. Beds within the Latrobe, southwest of the proposed Mackerel location, dip southwest nearly parallel with the dip of the Latrobe Topographic Surface. Northeast of the location, southwest dipping beds at the top of the Latrobe have been truncated by the Lakes Entrance channel and the unconformity on the Latrobe Group Topographic Surface dips northeast, thus providing closure.

Post-drill: Formation Tops as in section IX.

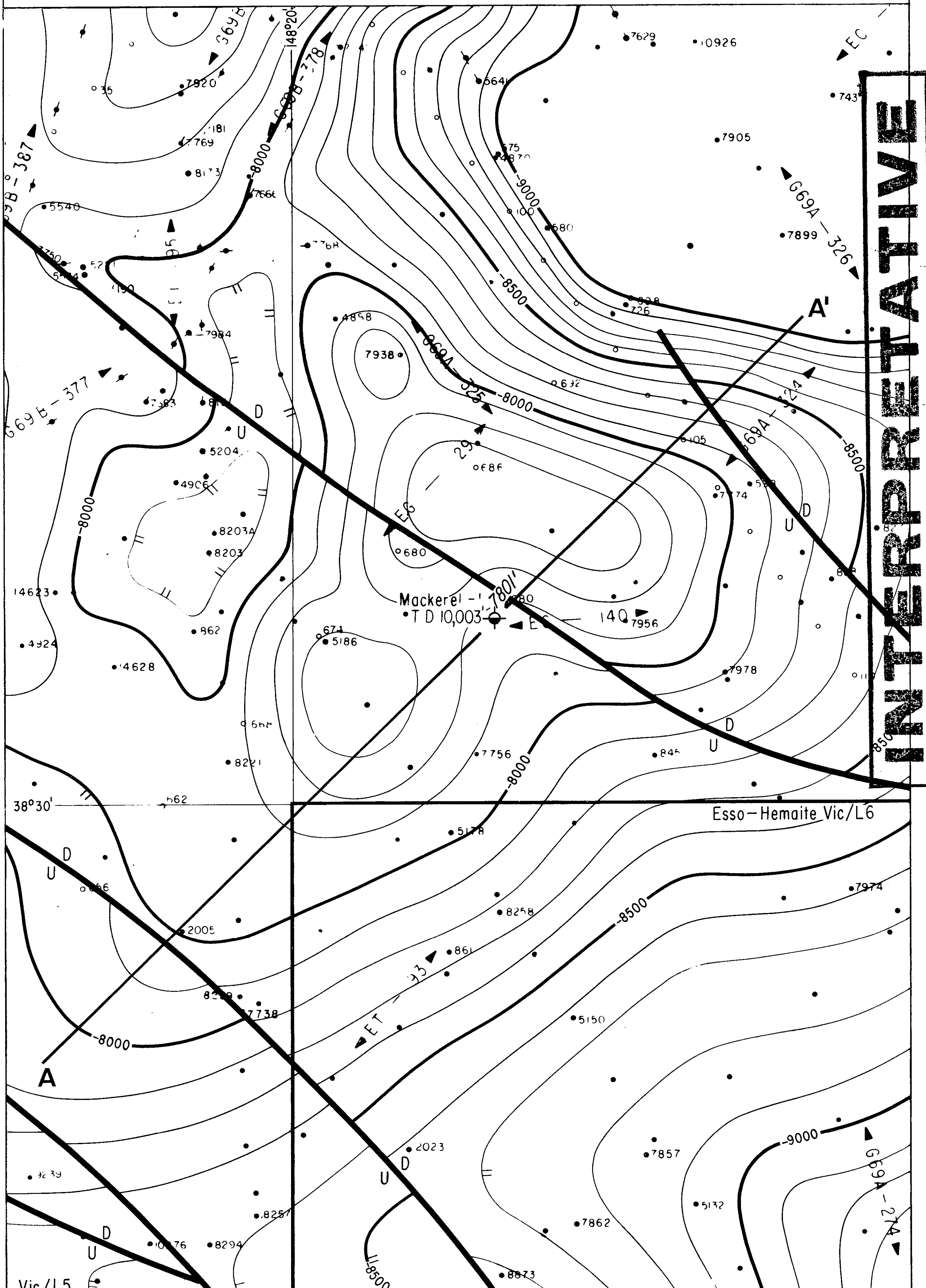
The Latrobe structural configuration is as predicted with a thin oil column at the top. At this time the hydrocarbon accumulation is not considered significant.

Even though the well was drilled on intra-Latrobe closure as presently mapped, and encountered good reservoir rocks, effective hydrocarbon traps were absent due to lack of good intra-Latrobe seals.

P.M. Cooney
Geologist

WELL MACKEREL-1

GEOLOGIC MAP OF AFTER DRILLING PICTURE



STRUCTURE MAP ON TOP OF LATROBE GROUP

SCALE 1 : 50,000

1 0 1

MILES

CONTOUR INTERVAL: 100'

DATUM: SEA LEVEL

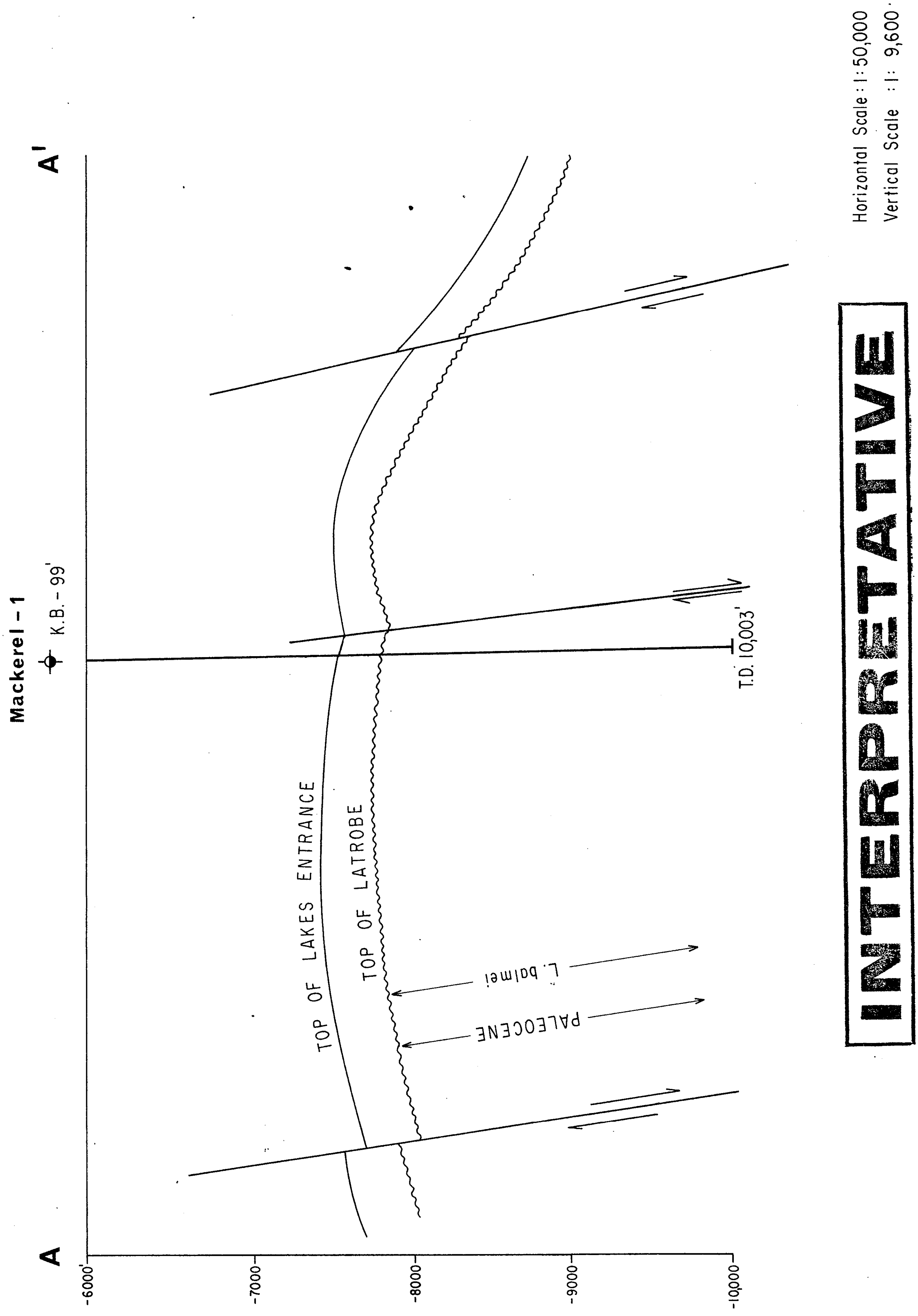
P.M.Cooney

Geologist

Dwg 1149/OP/8

WELL: **Mackeral - 1**

CROSS SECTION OF AFTER DRILLING PICTURE



P. M. Cooney

Geologist

Dwg: 1149/OP/7

5.1 SOUTH CHANNEL MAPPING REPORT

BY. ESSO

D. GARRAD

"South Channel Mapping Report" By Esso. (D. Garrad)

14 JUN 19

Doc. 2927L/10

TABLE: 1 DEPTH TO MAPPED HORIZONS

D E P T H (MSS) 14 JUN 1988

HORIZON	CODE	TERAGLIN-1	EAST HALIBUT-1	PILOTFISH-1A	HALIBUT-1	FLOUNDER-1	FLOUNDER-2	FLOUNDER-3	FLOUNDER-6	MACKERAL-1	MACKERAL-3
Water bottom	0001	79	85	206	72	87	99	111	93	98	100
Miocene unit	1000	nl	684	nl	497	615	628	820	218	556	nl
" " "	1200	nl	827	1179	748	719	806	1040	817	826	863
" " "	1520	996	1015	1436	1066	848	879	1233	889	1210	1182
" " "	1300	1077	1121	1565	1186	927	940	t	956	1396	1371
" " "	1350	1302	1501	1619	1587	1136	1193	1288	1213	np	np
" " "	1400	1583	1791	1914	np	1287	1348	t	1369	np	np
" " "	1450	1732	1919	2153	np	1393	1436	1457	1427	np	np
Base of Limestone	1500	2024	1968	2352	1758	1603	1702	1718	1630	1661	1770
Lakes Entrance Fm	1600	2114	2146	2520	2058	1787	1813	1829	1853	2139	2145
" " "	1700	2279	2284	2622	2173	np	np	–	np	2297	2304
Top of Latrobe	2000	2400	2374	2894	2275	1899	1938	1967	1907	2376	2368
Base Marlin Chan.	2100	2406	nt	2904	nt	nt	nt	nt	nt	t	t
61Ma Unconformity	2610	2647	np	t	2840	t	t	t	t	2751	np
63Ma Unconformity	2680	2842	np		3032	2400	2408	2407	2368	2885	np
68Ma Unconformity	2680	2974	np		np	2540	2536	2544	2745	2956	np
Intra-T. Longus Seismic Marker	2710	3281	np	3122	np	2791	np	np	np	np	np

NOTE: nl – not logged

np – not pentrated

t – trucated

APPENDIX 1

RAYVNMO MODELLING

14 JUN 1988

The RAYVNMO program uses interval thickness and interval velocity pairs to perform raytracing. The program assumes a simple layercake model, and therefore gives no indication of dip effects and raypath distortions that may be inherent in the real data. An anisotropy factor may be included in any layer. Cable paramenters are input according to the parameters used by the particular seismic survey being matched.

Results of the RAYVNMO raytracing are given in the following table.

An anisotropy factor (k) of 1.0 was used in the Lakes Entrance Formation (between 1500 and 2000).

WELL NAME	TERAGLIN-1			EAST HALIBUT-1			PILOTFISH-1A		
HORIZON Code	Z above	VINT above	VNMO	Z above	VINT above	VNMO	Z above	VINT above	VNMO
0001	79	1480	1480	85	1480	1480	206	1480	1480
1000				599	2303	2209			
1200				143	2860	2338	973	2446	2263
1250	917	2490	2404	188	3159	2484	257	3253	2429
1300	81	3115	2460	106	3072	2526	129	3685	2522
1350	225	3571	2648	380	3707	2790	54	3724	2555
1400	281	3512	2777	290	3625	2900	295	3734	2704
1450	149	3634	2837	128	4000	2961	239	3464	2772
1500	292	3539	2923	49	3500	2973	199	3184	2817
1600	90	3333	2942	178	3236	2996	168	3111	2812
1700	165	2973	2950	138	3000	3000	102	2615	2831
2000	121	3361	2969	90	3214	3011	272	3126	2849

* TABLE CONTINUED OVER.

APPENDIX 1 CONTINUED

14 JUN 1988

WELL NAME	MACKEREL-1			MACKEREL-3		
HORIZON	Z	VINT	VNMO	Z	VINT	VNMO
Code	above	above		above	above	
0001	98	1480	1480	100	1480	1480
1000	458	2195	2091			
1200	270	2784	2329	762	2490	2371
1250	384	2833	2449	319	2774	2468
1350						
1400						
1450						
1500	265	3581	2718	399	3746	2830
1600	478	3274	2844	375	3318	2915
1700	158	2926	2854	159	3057	2931
2000	79	2981	2862	64	3047	2934

APPENDIX 1 CONTINUED

14 JUN 1988

WELL NAME HORIZON Code	HALIBUT-1 Z above	HALIBUT-1 VINT above	HALIBUT-1 VNMO	FLOUNDER-1 Z above	FLOUNDER-1 VINT above	FLOUNDER-1 VNMO	FLOUNDER-2 Z above	FLOUNDER-2 VINT above	FLOUNDER-2 VNMO	FLOUNDER-3 Z above	FLOUNDER-3 VINT above	FLOUNDER-3 VNMO	FLOUNDER-6 Z above	FLOUNDER-6 VINT above	FLOUNDER-6 VNMO
0001	72	1480	1480	88	1480	1480	99	1480	1480	111	1480	1480	93	1480	1480
1000	426	2201	2123	527	2234	2149	528	2211	2111	709	2419	2301	524	2185	2094
1200	252	3231	2573	167	2738	2305	178	2871	2311	220	3142	2499	199	2745	2271
1250	317	3202	2695	66	3000	2373	73	3174	2387	193	3477	2640	72	3200	2368
1300	120	3076	2719	79	3038	2421	62	3100	2423				67	3116	2406
1350	401	3713	2932	209	3190	2544	252	3252	2564	55	3235	2658	257	3294	2563
1400				151	3471	2641	155	3299	2634			156	3319	2613	
1450				106	3365	2683	88	3385	2670	169	3347	2718	58	3412	2657
1500	171	3842	3007	210	3043	2715	266	3148	2730	261	3089	2759	203	3147	2705
1600	300	3209	3040	184	319	2755	111	3171	2757	111	3041	2776	223	3186	2762
1700	105	3134	3047												
2000	111	3083	3053	112	3200	2782	125	3205	2787	138	2968	2785	54	3176	2774

TABLE CONTINUED OVER

14 JUN 1988
Doc. 2927L/11

TABLE 2. WELL TWO-WAY-TIMES AND LAGS TO LATROBE HORIZONS

14 JUN 1988

HORIZON	TOP OF LATROBE (2000)			61MA (2610)			65MA (2635)			68MA (2680)			INTRA-T. LONGUS (2710)		
	DEPTH (MSS)	TRUE TWT	LAG (TWT)	DEPTH (MSS)	TRUE TWT	LAG (TWT)	DEPTH (MSS)	TRUE TWT	LAG (TWT)	DEPTH (MSS)	TRUE TWT	LAG (TWT)	DEPTH (MSS)	TRUE TWT	LAT (TWT)
TERAGLIN-1	2400	1.700	24	2647	1.828	25	2842	1932	23	2974	1.994	31	3281	2.143	24
EAST HALIBUT-1	2374	1.662	5	np	–	–	np	–	–	np	–	–	np	–	–
PILOTFISH-1A	2894	2.146	18	t	–	–	t	–	–	–	–	–	3122	2.265	25
HALIBUT-1	2275	1.602	7	2.840	1.906	14	3032	2.002		np	–	–	np	–	–
FLOUNDER-1	1899	1.439	20	t	–	–	2400	1.734		2510	1.793	30	2791	1.947	30
FLOUNDER-2	1938	1.472	20	t	–	–	2408	1.746		2536	1.812	20	np	–	–
FLOUNDER-3	1967	1.468	15	t	–	–	2407	1.726		2544	1.806	24	np	–	–
FLOUNDER-6	1907	1.451	28	t	–	–	2368	1.711		2474	1.769	31	np	–	–
MACKEREL-1	2376	1.716	21	2751	1.916	22	2885	1.982		2956	2.02	28	np	–	–
MACKEREL-3	2368	1.696	-8*	np	–	–	np	–	–	np	–	–	np	–	–

* The anomalous lag at Mackerel-3 may be due to poor checkshot data. To avoid creating an anomalous trend on the Vavg map seismic time (lagged) was used to calculate Vavg at Mackerel-3

TABLE 3: VELOCITIES AND CONVERSION FACTORS TO TOP OF LATROBE GROUP

14 JUN 1988

WELL	VNMO	VAVG	CF
Teraglin-1	2995	2823	0.9426
East Halibut-1	3019	2857	0.9463
Polotfish-1A	2855	2697	0.9447
Halibut-1	3010	2840	0.9435
Flounder-1	2775	2639	0.9510
Flounder-2	2772	2633	0.9500
Flounder-3	2717	2680	0.9513
Flounder-6	2780	2628	0.9426
Mackerel-1	2930	2775	0.9471
Mackerel-3	2970	2835	0.9545

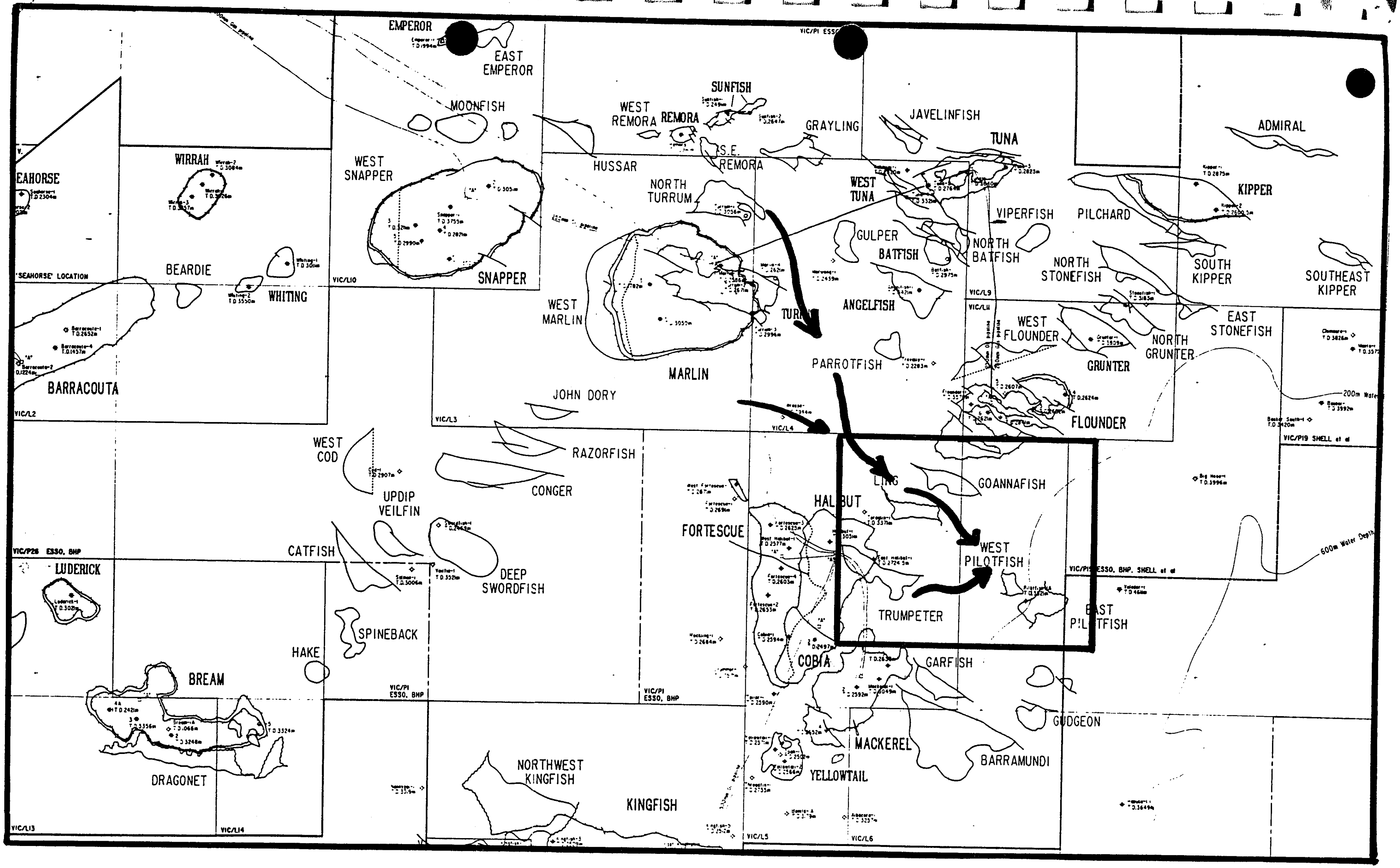


FIG. 1 : Locality map. Arrows indicate trend of Marlin Channel, and Top Latrobe Group channelling.

14 JUN 1988

6.0 FORMATION INTERVAL TEST (F.I.T)

DATA.

PE904972

This is an enclosure indicator page.
The enclosure PE904972 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904972 has the following characteristics:

ITEM_BARCODE = PE904972
CONTAINER_BARCODE = PE904967
NAME = Mackerel 1 F.I.T. Data
BASIN = GIPPSLAND
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = FIT
DESCRIPTION = Mackerel 1 Formation Interval Test (F.I.T.) Data. Tests 1-5. From section 6 of Well Summary.
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W543
WELL_NAME = Mackerel-1
CONTRACTOR = Schlumberger
CLIENT_OP_CO = Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

7.0 ENCLOSURES

PE601497

This is an enclosure indicator page.
The enclosure PE601497 is enclosed within the container PE904967 at this location in this document.

The enclosure PE601497 has the following characteristics:

ITEM_BARCODE = PE601497
CONTAINER_BARCODE = PE904967
NAME = Induction Electrical Log/Completion Log
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = COMPLETION_LOG
DESCRIPTION = Induction Electrical Log/Completion Log (enclosure from Well Summary) for Mackeral-1
REMARKS =
DATE_CREATED = 15/04/69
DATE_RECEIVED =
W_NO = W543
WELL_NAME = Mackerel-1
CONTRACTOR = Schlumberger
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE603292

This is an enclosure indicator page.
The enclosure PE603292 is enclosed within the container PE904967 at this location in this document.

The enclosure PE603292 has the following characteristics:

ITEM_BARCODE =	PE603292
CONTAINER_BARCODE =	PE904967
NAME =	Mackerel 1 Mud Log
BASIN =	GIPPSLAND
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MUD_LOG
DESCRIPTION =	Mackerel 1 Mud Log. Enclosure 7.2 of Well Summary.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	9/06/69
W_NO =	W543
WELL_NAME =	Mackerel-1
CONTRACTOR =	Exploration Logging INC.
CLIENT_OP_CO =	Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

PE902863

This is an enclosure indicator page.
The enclosure PE902863 is enclosed within the container PE904967 at this location in this document.

The enclosure PE902863 has the following characteristics:

```
     ITEM_BARCODE = PE902863
CONTAINER_BARCODE = PE904967
             NAME = Time Depth Curve
            BASIN = GIPPSLAND
           PERMIT =
             TYPE = WELL
          SUBTYPE = VELOCITY_CHART
      DESCRIPTION = Time Depth Curve Mackerel 1
          REMARKS =
     DATE_CREATED =
    DATE_RECEIVED =
             W_NO = W543
        WELL_NAME = Mackerel-1
       CONTRACTOR = ESSO
     CLIENT_OP_CO = ESSO
```

(Inserted by DNRE - Vic Govt Mines Dept)

PE904973

This is an enclosure indicator page.
The enclosure PE904973 is enclosed within the container PE904967 at this location in this document.

The enclosure PE904973 has the following characteristics:

ITEM_BARCODE =	PE904973
CONTAINER_BARCODE =	PE904967
NAME =	Mackerel 1 Structure Map
BASIN =	GIPPSLAND
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MAP
DESCRIPTION =	Mackerel 1 Structure Map - Latrobe Delta Topographic Surface for Kingfish - Mackerel - Halibut Area. Enclosure 7.4 of Well Summary.
REMARKS =	
DATE_CREATED =	31/08/69
DATE_RECEIVED =	
W_NO =	W543
WELL_NAME =	Mackerel-1
CONTRACTOR =	Esso Exploration and Production Australia INC.
CLIENT_OP_CO =	Esso Standard Oil (Australia) LTD.

(Inserted by DNRE - Vic Govt Mines Dept)