Natural Resources and Environment

AGRICULTURE • RESOURCES • CONSERVATION • LAND MANAGEMENT

DEPT NAT RES & ENV

PE906243

WELL SUMMARY

PERCH-1 (W515)

FILE COVER INSTRUCTIONS FOR ACTION OFFICERS

1 FOLIO NUMBERS ... file is to be given ... attaching officer ... attached to a file without ...

2 REFERRAL TO OTHER OFFICERS ... completes action on the ... required by some other ... 4 and on the next ... number in Column ... be forwarded in Column ... Column 3

REGISTRY MUST BE NOTIFIED ... MOVEMENTS BETWEEN OFFICERS

LOCATION

COMP 17-2-1960 ... 19

PERCH - 1. ESSO

T.D. 9406. 515 W.D. 138'. R.T.

IES.	RUN 1	683 – 2502	SEPARATE LOGS 2" AND 5".
"	" 2.	2467 – 5046.	" " 2" " 5"
"	" 3.	3600 – 8410.	" " 2" " 5"
"	. 4.	8372 – 9416.	" . 2" " 5"
B.H.C.S./GR.	R1.	683 – 2491.	" " 2" " 5"
B.H.C.S.	-2	2467 – 8410	" " 2" " 5"
"	"3.	8372 – 9416.	" " 2" " 5"
F.D.C./GR.	R1.	2467 – 5047.	" " 2" " 5"
"	2~~3~~	5047 – 8410.	" " 2" " 5"
	3~~4~~	8372 – 9416	" " 2" " 5"
SPON. POT.	R1.	2467 – 8410	" " 2" " 5"
C.D.M.	R1.	683 – 2498.	ONLY 5".
F.I.T.	R1.	TESTS 1 & 2.	
CORE LAB MUDLOG.		720' – 9406'.	
WELL SUMMARY.			
C.D.M.	R2.	2467' – 8400'.	FREQUENCY PLOT & SCHMIDT PLOT.
"	R2.	" – " .	COMBINED 2" & 5" SCALE.
"	R3.	8372' – 9413'.	" 2" " 5" " .

TDC.

CORE DESCRIPTIONS & S.W.C. DESCRIPTIONS

CORES 1, 3, 4 & 5	In store	shipped 17-4
CORE 6	" "	" 2-5
CUTTINGS	700' – 9400 " "	" 2-5

PETROGRAPHIC DESCRIPTION OF VOLCANICS BY J. BARRY HOCKIN

PALYNOLOGY REPORT BY L.E. STOVER. PLUS REVISION.

MICROPALAEONTOLOGY REPORT BY D. TAYLOR.

MAP. STRUCTURE CONTOURS LATROBE VALLEY UNCONFORMITY

WEEKLY REPORTS.

S.W.C. SHOT 149. REC 136.

Log Analysis 060882

PALYNOLOGY SHEET BY W.K. HARRIS

CORE No 2. 3750' – 68' Rec 2' MISSING.

No CUTTING OF CORE

No VELOCITY SURVE

C.D.M. R1 2" Scale.

EXECUTIVE
Secretary
Deputy
Executive
Executive
Executive
Executive
Executive
Executive
Executive
Executive

CORPORATE
General
Chief
Manager
Director
Director
Director
Director
Director
Manager
Manager
Manager
Manager
Manager
Manager

MINERAL
Manager
Manager
Manager
Manager
Manager
Manager

PRODUCTION
SCIENTIFIC
Manager
Manager
Chief
Director
Director
Director
Director

PERCH-1 (W515)

Well Summary Report

Table of Contents

Enclosures

WELL SUMMARY REPORT

PERCH A-1 - WELL SUMMARY.

TYPE OF WELL: Exploration Well.

PURPOSE OF WELL: Perch A1 well was located approximately 6.5 miles south-west of Dolphin A-1. The Dolphin and Perch features are culminations, separated by a deep saddle along a major north-east south-west trending faulted anticline. An Oligocene to Lower Miocene age is attributed to this faulting, which is normal.
The primary objective of the Perch A-1 well was to test for hydrocarbon accumulations in the sands at the top of the Latrobe Delta Complex. Seismically a maximum closure of 500 feet was mapped at the top of the Latrobe Delta Complex.

WELL STATISTICS:

Status : Plugged and abandoned.

Location : Latitude 38° 34' 37" S
Longitude 147° 19' 24" E
Shot point 9220 Line EC 169.

Elevation : Rotary Table 31 feet above mean sea level.

Water Depth : 138 feet.

Spudded : March 13, 1968.

Completed : May 2, 1968.

Drilling Time: 51 days.

Total Depth : 9406 feet.

Casing :
30 inch at 276 feet.
20 inch at 683 feet.
13 3/8 inch at 2467 feet.
9 5/8 inch at 8354 feet.

Plugs :
Plug No. 1: 8192 - 8500 feet.
Plug No. 2: 2300 - 2600 feet.
Plug No. 3: 190 - 390 feet.

Coring : Six conventional cores were cut from 3770 to 8754 feet. Continuous coring commenced in the sands of the Latrobe Delta Complex at 3720 feet and was stopped at 3860 feet after cutting 5 cores. The other core, designed for lithological control, was cut from 8726 to 8754 feet. Total footage cut was 166 feet and recovery was 113 feet or 69%.
In addition, 149 sidewall cores were shot and 136 of these were recovered.

2/.....

Mud Logs : The well was logged by Core Lab. from 720 feet to total depth.

Electric Logs:

IES	Run 1	683 - 2502 feet.
	Run 2	2467 - 5046 feet.
	Run 3	3600 - 8400 feet.
	Run 4	8372 - 9416 feet.
SGRC	Run 1	683 - 2491 feet.
Sonic	Run 2	2467 - 8410 feet.
	Run 3	8372 - 9416 feet.
FDCGR	Run 1	2467 - 5047 feet.
	Run 2	5047 - 8410 feet.
	Run 3	8372 - 9416 feet.
CDM	Run 1	683 - 2502 feet.
	Run 2	2467 - 8400 feet.
	Run 3	8372 - 9416 feet.

Velocity Survey at 8398 feet.

Hydrocarbons:

Interval	Gross	Net	Type
3706-3744	38 ft	20 ft	Oil

Gas readings from 3700 to 3720 feet:

Cuttings	12 to 14 units
Hot Wire	2 units
C1	6 units
C2	1 unit

The interval from 3720 to 3860 feet was continuously cored. Over the first 48 feet of coring the recovery was only 7 feet. Most of the sands over this interval had good odour and fluorescence, with the sands over the interval 3750 to 3752 feet appearing "wet".

Logs indicate the top of the Latrobe Delta Complex at 3706 feet and the oil water contact at 3744 feet. The interval 3706 to 3724 feet is shaley sand with poor oil indications. Below this the interval to the oil water contact appears to be a good oil sand with high resistivity.

The following results were obtained from core analysis:

Depth	Permeability	Porosity	Oil Saturation	Water Saturation
3721	201	25	9%	76%
3722	121	21	9%	73%
3723	0.1	21	2%	67%
3724	1.0	24	2%	75%
3725	16.0	20	6%	64%

3/.....

PERCH-1 3/4

TESTS:

Wireline Formation Tests:

FIT No. 1 3744 feet: Recovered 17,500 ccs water; 2,600 ccs mud and water with slight oil scum.

FIT No. 2 3740 feet: Recovered 0.8 c.ft gas; 5130 ccs oil; 2950 ccs oil, water and mud emulsion.

STRATIGRAPHY:

Formation	Age	Top (RT)	SubSea	Thickness
Gippsland	Miocene	169 ft	- 138 ft	3031 ft
Lakes Entrance Fm.	Oligocene	3200 ft	-3169 ft	506 ft
Latrobe Delta Complex.	Eocene	3706 ft	-3665 ft	1334 ft
Strezlecki Group(?)	Lower Cretaceous.	5040 ft(?)	-5009 ft	4366 ft +

Gippsland Formation:

720 - 1460 feet: Limestone: white to buff, skeletal to detrital, medium to coarse grained, fragments of fossils, slight argillaceous, glauconitic.

1460 - 2940 feet: Limestone and Sandstone.
Limestone: buff to grey-brown, detrital, firm, massive, granular matrix, very fine grained, skeletal, slightly argillaceous.
Sandstone: light grey, fine to coarse grained, sub-rounded to rounded, well sorted, traces of chert.

2940 - 3200 feet: Mudstone: light grey to light green, calcareous, trace of pyrite, fossiliferous, glauconitic.

Lakes Entrance Formation:

3200 - 3706 feet: Mudstone: light grey to light green, calcareous, pyritic, fossiliferous, glauconitic, argillaceous, soft to firm, slightly fissile.

Latrobe Delta Complex:

3706 - 3834 feet: Interbedded sandstone, shale and coal.
Sandstone: light to dark grey, firm, fine to coarse grained with pebble horizons, clear to frosted, sub-angular to sub-rounded, massive, poor sorting, glauconitic, pyritic, Argillaceous, micaceous, carbonaceous matrix. Scattered burrows.

4/....

Shale: black, very hard, silty, carbonaceous, pyritic, micaceous.
Coal: black, brittle, subconchoidal fracture. Seams up to 1 foot thick.

3834 - 4860 feet: Sandstone, shale and coal.
Sandstone: light to dark grey, argillaceous, fine to medium grained, poorly sorted.
Shale: black, firm, carbonaceous.

4860 - 4900 feet: Volcanics - basalt - mottled light to dark green and white, feldspar in fine grained matrix with some biotite.

4900 - 5040 feet: Sandstone; minor siltstone and coal.

Strezlecki Group (?):

5040 - 6450 feet: Lithic sandstone interbedded with shale and coal.
Sandstone: lithic, argillaceous to silty, very fine to medium grained, moderate sorting, sub-angular to sub-rounded.

6450 - T.D.: Interbedded sandstone, siltstone and coal.
Sandstone: lithic, light grey-green, fine to medium grained, calcareous, micaceous, carbonaceous, trace pyrite.
Siltstone: grey to grey-brown, very argillaceous to sandy, moderately hard, micaceous, carbonaceous, pyritic.

. . . . . .

MZ:JHM
May 15, 1968.

State	District	Basin
VIC	OFFSHORE	GIPPSLAND

Company	Well Name and No.
Esso/Hematite	PERCH No 1

Latitude: 38°34'37"S
Longitude: 147°19'24"E
Misc. Location Shot Point 9220 Line EC 169
Data:
Elev.: ~~Ground~~: R.T. 31' asl.
~~D.F.~~: Water Depth 138'

Permit:
License:

Samples
Cores
E.S.
M.L.C.
G.R.
Sonic
Neutron
Dipmeter
L.L.
S.W.C.
Other

Glomar III

Started	Completed	T.D.	Status
13 March 1968	8 May 1968	9406' 9416	Plugged + Abandoned.

Casing Record						
	Size	30"	20"	13 3/8"	9 5/8"	Plugged: 190-390' : 2300'-2600'
	Landed at	276'	683'	2467'	8354'	8192'-8500'

Formations & Markers	Drill Top	Hydrocarbon Occurrences	Cores & D.S.T.'s
Gippsland Limestone	169'	Oil Show.	Cores 1: 3720-3750' Rec 5'
Lakes Entrance Formation	3200'	3706'-3744' ic	2: 3750-3768' Rec 2'
Latrobe Valley Coal Measures	3706'	Gross 38' Net 20'.	3: 3768-3798 Rec 27'
		Quartz in shaley	4: 3798'-3828' Rec 27'
Strzelecki Group (?)	5040' (?)	sand 3706'-3724'	5: 3830'-3860' Rec 24'
		clean good sand 3724'	6: 8726-8754' Rec 28'
		-3744'	

Information Source:

Testing Results Fluid Analysis and Remarks

WELL INDEX SHEET

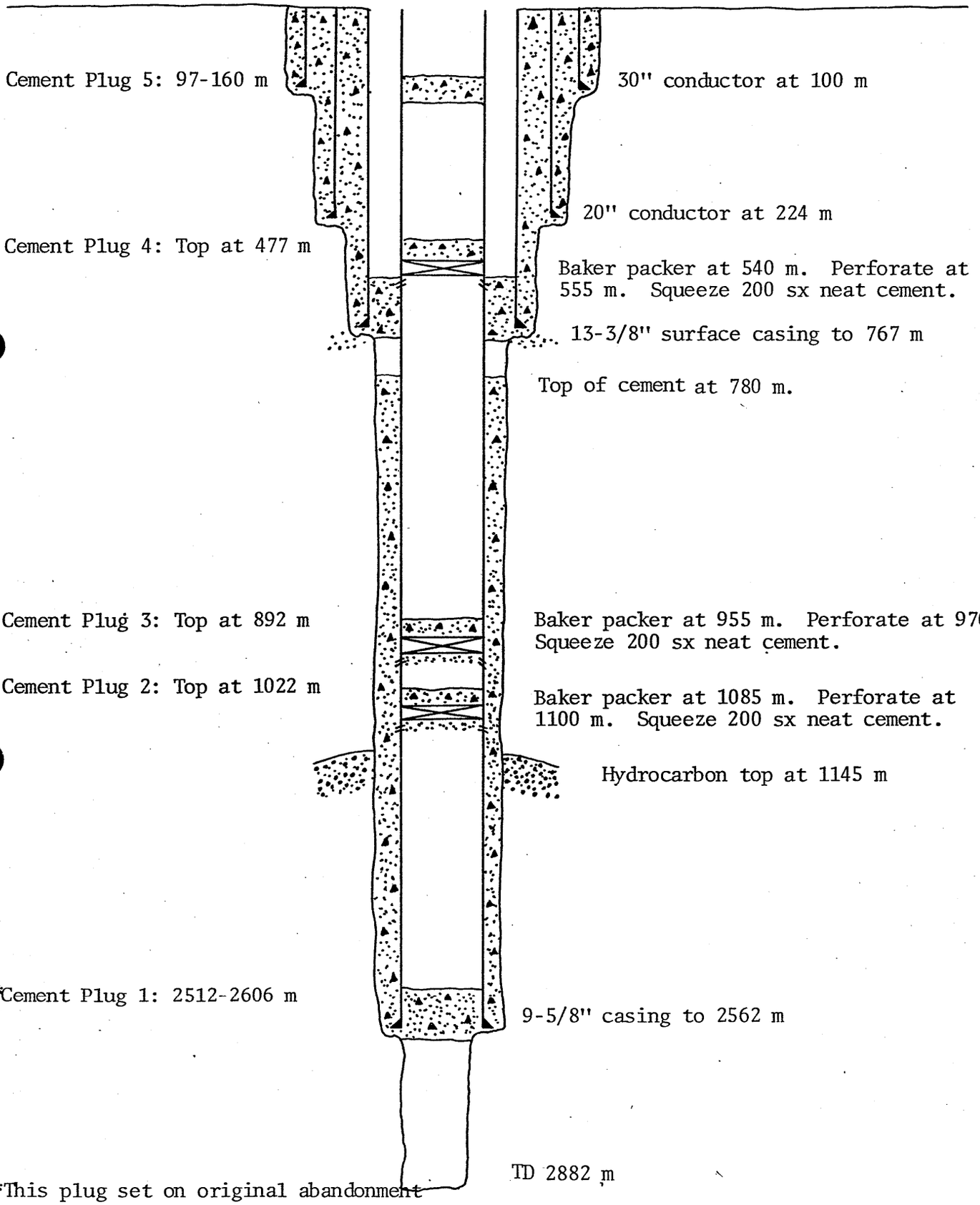
RGCJ

FINAL WELL SCHEMATIC

PERCH-1

NOTE: All depths relative to Ocean Endeavour kelly bushing. Wellhead removed and casing cut 9 m below seafloor

Water depth 42 m
Seafloor 67 m below KB



*This plug set on original abandonment

CORE DESCRIPTIONS

PERCH - 1 (see other)

CORE DESCRIPTIONS.

Core No.1 3720-3750 ft. Cut 30 ft. Rec. 5 ft.

Sandstone - dark grey with occasional laminae light grey to green patches, fine to coarse grained with occasional pebble bands, firm to slightly friable, clear to frosted grains, 10% matrix of silt and clay, abundant glauconite poor porosity but some good; poor to fair permeability, uneven good blue fluorescence, good taste and odour.

Core No.2 3750-3768 ft. Cut 18 ft. Rec 2 ft.

Sandstone: Unconsolidated, very fine to fine grained, clear to frosted, sub-angular to well-rounded small amount of matrix, good to excellent porosity and permeability. Uneven good blue fluorescence. Good odour.

Core No.3 3768-98 ft. Cut 30 ft. Rec 27 ft.

Shale: very hard, black, silty in part, scattered pyrite and carbonaceous material, mica, massive with occasional ¼" black coal bands.

Core No.4 3798-3828 ft. Cut 30 ft. Rec 27 ft.

Shale: as above with coal 3823-3825 ft.

Core No.5 3830-3860 ft. Cut 30 ft. Rec 24 ft.

1'	Coal brittle black.
3'	Shale black to brown, carbonaceous, hard, abundant thin silty laminae, with pyrite and mica.
7'	Sandstone dark grey, fine to coarse grained becoming fine towards bottom, firm to friable, clear to frosted grains, sub-angular to sub-rounded, poorly sorted.
7'	Sandstone light grey, very fine grained, argillaceous, firm.
6'	Sandstone fine to medium grained, pebbly, friable.

Core No.6 8726-8754 ft. Cut 28 ft. Rec 28 ft.

8726-8730'6"	Shale: black to green black, hard, occasional carbonaceous, laminae.
8730'6"-8740'	Sandstone ("quartzwacke") green to green grey, fine grained, sub-angular to sub-rounded, very argillaceous, silty abundant carbonaceous flecks, hard.
8740-8754 ft.	Shale black, hard, occasional carbonaceous laminae.

ESSO STANDARD OIL (AUSTRALIA) LTD.

13 JAN 1988

CORE DESCRIPTION

Core No. 1

WELL: Perch A-1

Interval Cored 3720 - 50 ft., **Cut** 30 ft., **Recovered** 5 ft., (16 %) **Fm.** Latrobe

Bit Type C - 20, **Bit Size** 8 5/16 in., **Desc. by** M.L. **Date** 24/3/88

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 2 4 3720 8 10			3720 - 25	Sandstone, mostly firm - sli friа, drk gry w/ occas. lt gry bands & grn patches. F - c grain w/ scat pebble bands. Clear - frosted, sa - sr. Poor - fair sorting. Massive.
25		•		Brown silt & clay matrix, sli dolomitic, mica, carbonaceous, mostly disseminated.
30		•		Abundant glauconite, f - c. grains, well scat & occas concentrations.
35				Scat burrows filled w/ c - pebble size qtz & glauc.
40				Φ poor - good, K poor - fair. Good odor & taste
45				Uneven good blue fluor at [redacted] 3722 & 3725.
50				

REMARKS:

2/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 2

WELL: Perch A-1

Interval Cored 3750-68 ft., Cut 18 ft., Recovered 2 ft., (11 %) Fm. Latrobe

Bit Type C-20, Bit Size 8 5/16 in., Desc. by H.L. Date 25/3/68

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 1 2 3 3750 4 5		•	3750-52	Sandstone, Unconsolidated, lt gry. vf-f grn. Clear-frosted, sa-wr., sli micaceous. At top of core ¼" poker chip coal & shale, lt gry. Massive ϕ Good-Excellent. K Good-Excellent. Good oder. Uneven good blue fluor.
55				Core poured out of barrel into sand pile. In spite of oil show, some of the sand has a "wet-appearance" This may be due to flushing or proximity to contact.
60				
65				
68				

REMARKS:

3/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 3

WELL: Perch A-1

Interval Cored 3768-98 ft., Cut 30 ft., Recovered 27 ft., (90 %) Fm. Latrobe

Bit Type C-8, Bit Size 7 3/4 in., Desc. by H.L. Date 25/3/68

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 2 4 3768 8 10			3768 - 3795	Shale, v. hard, black, silty, scat carbonaceous inclusions, pyrite, mica.
70			From 3771 - 3795	Numerous v. thin laminae, mostly silt-filled - some w/ v.f.g sd. Mostly even parallel, some discontinuous, some w/ micro cross-bedding. Scat burrows.
75			At 3787 & 3788	1" Sandstone beds, hard, vfg, silty, drk gry, sa-sr.
			3788	¼" coal bed, black
80				ϕ None K None No Show
85				
90				
95				
98				

REMARKS:

4/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 4

WELL: Perch A-1

Interval Cored 3798-3828 ft., Cut 30 ft., Recovered 28 ft., (90 %) Fm. Latrobe

Bit Type C-8, Bit Size 7 3/4 in., Desc. by K.L. Date 26/3/68

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
9 2 3 3798 3800 05 10 15 20 25 28			3798 – 3823	Shale, v. hard, black, silty, scat. carbonaceous inclusions, pyrite, mica. Numerous v. thin laminae, mostly silt-filled, some v.f.g. sd & v. rare pebbles, lt. grey, sa-sr. Mostly even parallel, some discontinuous, some w/ micro-cross-bedding & slump structures. Few seat burrows.
			3823 – 25	Coal, brittle, black.
				ϕ None K None No Shows

REMARKS:

5/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 5

WELL: Perch A-1

Interval Cored 3830 - 40 ft., Cut 30 ft., Recovered 24 ft., (80 %) Fm. Latrobe

Bit Type C-8, Bit Size 7 3/4 in., Desc. by H.L. Date 27/3/68

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 1 2 3 4 5 3830			3830-31	Coal, black, brittle.
35			3831-34	Shale, hard, black-brown, carb, silty. Abundant v. thin laminae, silt-filled, mostly even parallel, some discontinuous & some w/ appearance of micro-X-bedding. Trace mica & pyrite.
40			3834-41	Sandstone, carbonaceous, firm-friable, dark grey, f-c. grain, w/few pebbles, clear-frosted, sa-sr, poor sorting, becoming more f-g at bottom. Disseminated fine coal frags, micaceous & trace pyrite. Few v. thin parallel lamina-filled w/ black shale & abundant fine coal frags. Few burrows. Massive ϕ, 7-G K, 7-G.
45			3841-48	Sandstone, argillaceous, firm, lt grey, vf. grain, clear-frosted, sa-sr Chaotically churned, burrowed, v. silty, shalely, disseminated fine coal frags, micaceous, trace pyrite & lith frags. Massive ϕ & K poor.
50			3848-54	Sandstone, friable-unconsol, lt gry-tan, f-m grain, w/few pebbles, clear-frosted, sa-sr, poor-fair sorting, fine coal frags disseminated. Micaceous, trace pyrite & carb material. Massive. ϕ Good, K Good.
55				No show - No odor - No taste.
60				

REMARKS:

6/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

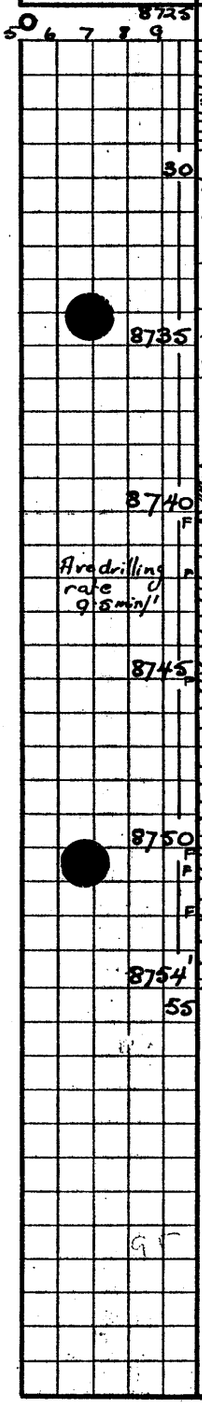
CORE DESCRIPTION

Core No. 6

WELL: Perch A-1

Interval Cored 8726 - 54 ft., Cut 28' ft., Recovered 28' ft., (100 %) Fm. Latrobe ?

Bit Type 95023 CA XVJ, Bit Size 7 3/4, 8 1/2 in., Desc. by A.K.S. Date 25/4/68



8726'-30'6" Shale: blk - grn blk, hard, well compacted, non calc, sub horizontal to horizontal bedding, distinguishable by v. subtle colour change in adjacent laminae. Minor more carbonaceous lamellae & coaly chips. 8726-28' have 2' of shale intraclasts - slightly elongate mud galls - of lighter colour, in matrix of identical lithology but slightly darker. Base of unit intraformational conglomerate, angular shale chips, multicoloured 2mm-5mm in shale-silty shale matrix. Calcite filled fine fractures (dip 50°) "C".

30'6"-40' Argillaceous silty quartz-lithic wacke. Green, olive grn gy, non calc, speckled due ab. fg carb. flecks, hard, massive to bedded, well compacted. Arenaceous material f.g - silty, a-r, m.w.s, qtz, fels, lithics (volc? & shale) in gy-grn argillaceous matrix. X bedding, L.F.R at top, U.F.R.? at base. Slump? structure producing a recumbant fold at 35', scour base. Base of sectn (40') v. sharp break, scour surface of blk shale d/l by wacke & intraclasts of shale, carb. lamellae. Calcite filled veins & fractures common at 50° dip.

40-54' Shale: blk, hard, sub fissile, dom. conchoidal fract, v. carb. in part, massive, poorly developed bedding. Bedding sub horizontal - horizontal, dom. horizontal. Slightly silty between 8742'-46' - minor influx of wacke type material. Non calc. Extensive slickensided faults, no calcite filled fractures.

REMARKS: Calcite filled fractures in upper shale & wacke related geometrically to faulting. Orientation of fractures complimentary to orientation of fault planes.

Direction of movement along slickensided faults not deductable, but in upper shale fault, direction of movement diagonally across fault plane in core. Direction of movement in lower shale faults in vertical sense.

SIDEWALL CORE DESCRIPTIONS

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

(A) page 1 of 9

SIDE WALL CORE DESCRIPTIONS.

Core No.....

13 JAN 1988

CST. - 3 RUNS.

WELL: PERCH A1.

Interval Cored.....ft., Cut.....ft., Recovered.....ft., (.....%) Fm.....

Bit Type....., Bit Size.....in., Desc. by..... Date.....

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0				RUN # 1 — SHOT 30 ; REC 29.
				RUN # 2 — " " ; REC 28.
				RUN # 3 — " 12 ; REC 12.
				TOTAL SHOT 72 ; REC 69.
			5050'	SANDSTONE & SHALE. layer of lt-med gy. Shale with pyrite, v. calc., sandstone, white-buff, v. crs to pebble sized fragments of qtz. Abundant white clay matrix, No d.l.
			4994'	CALC. SANDY SHALE. very calc. with red ferruginous clay clasts lt grn-grey soft. No show.
			4874'	Volcanics. — BASALT — weathered, mottled lt-dk green some white, anhedral feldspar in fine grained matrix. Very soft, crumbly occasional very thin calcite-dolomite vein lets crosscutting.
			4886'	VOLCANICS — BASALT — weathered, porphyritic feldspar in fine grn matrix lt green to white.
			4825'	SLTS., dk-med brown, resinous lustre, very argill, mica, rare v. thin wavy discontinuous laminae of clo material.
			4790'	SHALE, lt brown, waxy lustre, bedding planes have fossil plant fragments giving clo stringers. Soft to flaky.

REMARKS:

4720'. SANDSTONE, white v.f. grained, sr-sa, p. sorted, friable, trace porosity, no show.

4640' SHALE, lt grey to buff, waxy appearance, carbonized plant fragments along bedding planes. Soft, crumbly and flaky.

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B

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No.....

WELL:.....

Interval Cored.....ft., Cut.....ft., Recovered.....ft., (.....%) Fm.....

Bit Type....., Bit Size.....in., Desc. by..... Date.....

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0			4555'.	SHALE, lt. grey, v. sl. silty in part abundant ch plant fragments, sl. mica. Soft crumbly, no visible bedding planes.
			4462'.	SHALE. aa.
			4382'.	SILTY SHALE, off white to v. lt grey, sl. mica, scattered silt and v. fine sand sized qtz. Soft, crumbly waxy appearance.
			4325'.	SANDSTONE; variegated cream and lt gy. matrix. granular qtz grains, a., fractured clay matrix partly indurated.
			4133'.	SANDSTONE: pale yellow br., v. f.-gran, a-sr, poorly sorted, friable.
			4074'.	SHALE, lt grey br to buff, sl. mica, abundant plant fragments. Soft, crumbly, waxy appearance.
			3955'.	SLTS. laminated br. grey & buff, br. grey very argill, faint fissility. Soft to flaky.
			3770'.	SANDSTONE lt br. gy., vf to f., sa, well sorted, v. friable to unconsolidated, good d.
			3764'.	SANDSTONE aa
			3758'.	SANDSTONE., lt gy, vf to c.s., occ gran., a-sr, qtz grains, mod sorted, v. friable to uncons., fair to good d.

REMARKS: 3746'. SANDSTONE aa with very weak blue fluor

3744'. SANDSTONE. with SHALE laam., v.f. to c.s. grained, laminated, with carb. shale v. thin laminations and layers due to grain size variation. Grains a-sr mod sorted, fair to good d. Dull blue-white fluor, v. faint cut.

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ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No.....

WELL:.....

Interval Cored.....ft., Cut.....ft., Recovered.....ft., (.....%) Fm.....

Bit Type....., Bit Size.....in., Desc. by..... Date.....

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0			3743'. SANDSTONE, with SHALE lam.; v.f.–med, lt grey, sr to a, soft, friable to unconsolidated, mod well to well sorted, good porosity. Faint blue–white fluor, weak streamer cut. SHALE lam. dk br–gy, c/b fossils.	
			3742'. SANDSTONE, lt grey, v.f.–gran., sa–sr, p. sorted. Poor to good φ. Spotty weak fluor no cut, stain.	
			3741'. SANDSTONE, aa. with shale lam. Dull spotty blue–white fluor, no cut, stain.	
			3740'. SANDSTONE. lt grey, v.f. – med., occ c/g., sa–sr mod sorted, good – poor porosity. Dull, spotty blue white fluor, weak streamer cut.	
			3738'. SANDSTONE, lt grey, v.f–med, aa with some interstitual silt. Spotty blue–white fluor, faint cut.	
			3736'. SANDSTONE, aa lt grey to grey br. Badly affected by mud invasion. Spotty dull yellow fluor, flash cut, no stain.	
			3715'. SLTS., sandy, gy–br, occ v.f. sandy gy., v. argill., disseminated pyrite, rare glauconite, shale laminations, dk br. fine even lam. occ. discontinuous wavy lam.	
			~~3690~~ 3706'. Mudstone. v sandy, glauconitic, disseminated pyrite.	

REMARKS:

3702'. MUDSTONE; sandy; v. glauconitic, with disseminated pyrite, dk grey–br.

3700. MUDSTONE: aa glauconite up to 40%.

4/9

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No.....

WELL:.....

Interval Cored.....ft., Cut.....ft., Recovered.....ft., (.....%) Fm.....

Bit Type....., Bit Size.....in., Desc. by..... Date.....

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0			3671'. Glauconite. nearly 100% glauconite as fine separate grains, sl. calc. matrix v. sparse.	
			3690'. GLAUCONITIC MUDSTONE. dk grey - brn, abundant fine glauconite grains and pyritic concretions	
			3650'. GLAUCONITIC MUDSTONE, dk grey, abundant scattered fine glauconitic grains, v. calc.	
			3590'. MUDSTONE. lt. ol.-grey - med green grey very calc. rare glauconite, soft blocky.	
			3490'. MUDSTONE. aa	
			3390'. MUDSTONE aa, more green colour, occasional disseminated pyrite.	
			3290'. MUDSTONE lt green gy. Las abundant Bryozoan fragments.	
			3190'. MUDSTONE aa. fragments of detrital coal, Bryozoan fragments.	
			3100'. MUDSTONE aa	
			3090'. MUDSTONE. lt grey, v. calc., almost a marl	
			3036'. MUDSTONE — MARL aa, waxy appearance occasional silt sized fragment.	

REMARKS: 2930'. MUDSTONE — MARL. aa

2920'. MUDSTONE - MARL, aa rare Bryozoan fragments.

2830'. SANDY SILTY MUDSTONE. or MARL, scattered vol. v fine to med + silty qtz. lt. grey to off-white colour, v. calc Soft, crumbly.

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

5/9

Core No.....

WELL:.....

Interval Cored.....ft., Cut.....ft., Recovered.....ft., (.....%) Fm.....

Bit Type.....Bit Size.....in., Desc. by.....Date.....

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0			2730'. MUDSTONE - MARL. dk grey, pyritic, v. calc., sl. more indurated than above giving flaky appearance.	
			2630'. FOSSILIFEROUS Mudstone or MARL, v. lt grey to off-white, abundant Bryozoan fragments v. calc., soft crumbly.	
			2530'. MUDSTONE or MARL as	

REMARKS:

6/9

(C)

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. SWC
Shot 60 Rec 55

WELL: PERCA A-1

Interval Cored ..... ft., Cut ..... ft., Recovered ..... ft., (..... %) Fm. LATROBE

Bit Type ....., Bit Size ..... in., Desc. by R.V. Hicks Date 19 APRIL 1968

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0				#1 8245' Rec. 1" Mudstone, med. lt. grey, silty carbonaceous flecks, blocky, soft.
				#2 8245' Rec. 1" Mudstone aa.
				#3 8189' Rec 1" v. argillaceous siltstone, med lt grey, carbonaceous flecks, silt size white grains probably weathered feldspar, trace of silt size pyrite grains, veins (hairline) of gypsum.
				#4 8189' Rec 3/4" argillaceous siltstone aa
				#5 8189' Rec 7/8" " " "
				#6 8189' Rec 3/4" " " "
				#7 8189' Rec 3/4" " " "
				#8 8189 N.R.
				#9 8092 Rec 1 1/4" Mudstone med. lt. grey, silty, carbonaceous flecks, blocky, soft.
				#10 8092 3/4" interbedded siltstone and mudstone siltstone med grey, well sorted, firm to hard, finely laminated, vertical fractures, probably due to shattering by bullet No Show mudstone medium light grey silty, soft, blocky
				#11 8055' Rec 1/4" mudstone lt green grey, silty, calc. rare fossil fect. blocky, to weakly fissile firm, sticky
				#12 8010' Rec 1/4" quartz wacky mottled white light grey and dark grey very fine to fine grained subangular to sub rounded, well sorted, occ large coal fragment, quartz with abundant lithic fragments, white clay matrix, tight, No Show
				#13 7967' Rec 1/2" quartzwacky, very slightly calcareous, mottled white light grey, and dark grey very fine, subangular to rounded, well sorted,

REMARKS: abundant lithics, feldspars and quartz, white clay matrix firm; tight, Now Show

#14 7897' Rec 1/8" mudstone, argillaceous, silty, light grey, carbonaceous flecks, blocky, soft.

#15 7897' Rec 3/4" mudstone aa

#16 7827' Rec 1/2" quartz wacky, mottled white with light & dark grey, grains of quartz and lithic fragments floating in white clay matrix, soft

7/9

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. SWC
Shot 60 Rec 55

WELL: PERCH A-1

Interval Cored ..... ft., Cut ..... ft., Recovered ..... ft., (..... %) Fm. LATROBE

Bit Type ....., Bit Size ..... in., Desc. by R.V. Hicks Date 19 April 1968

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0				#17 7771' Rec ½" quartzwacky, very argillaceous, very mottled as above, grains as above with abundant white clay matrix, grains almost floating in clay matrix, weathered grains of feldspar, firm, tight, No Show.
				#18 7706 Rec ½" mudstone, calcareous, very light grey, blocky, soft
				#19 7625' Rec 1" mudstone, silty, very light grey, blocky,
				#20 7625' Rec ½" mudstone aa
				#21 7610' No Recovery
				#22 7595' Rec quartzwacky, mottled white with light and dark grey, abundant white clay matrix, quartz with abundant lithic grains, very fine to fine grained, sub angular to rounded, moderately well sorted, soft, tight, No Show
				#23 7566' No Recovery
				#24 7511' Rec ⅜" siltstone, very argillaceous, slightly calcareous, light grey, blocky to weakly laminated, firm No Show
				#25 7554' Rec ¾" siltstone, argillaceous, medium grey, abundant carbonaceous flecks, firm to medium hard, blocky, No show,
				#26 7430' Rec 1½" mudstone, silty, slightly calcareous, medium dark grey, carbonaceous flecks, blocky, soft.
				#27 7430' No Recovery
				#28 7408' Rec ⅜" quartzwacky, mottled, white, light grey and dark grey, lithics, quartz and weathered feldspar, some clay matrix, very fine to fine, angular to subrounded, moderately well sorted, firm, tight, No Show
				#29 7367' Rec ¾" quartzwacky, mottled white, light grey and dark grey with light green cast, quartz and lithic fragments floating in clay matrix, very fine to fine grained, sub angular to rounded, moderately sorted, soft to firm, tight, No Show
				#30 7319' Rec 1" Quartzwacky aa
				#31 7170' Rec ½" quartzwacky slightly calcareous, mottled white and dark grey, very fine grained, sub angular to rounded, well sorted, clay matrix, moderately indurated, tight, No Show, minor

REMARKS:

8/9

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. SWC

Shot 60 Rec 55

WELL: PERCA #1

Interval Cored ..... ft., Cut ..... ft., Recovered ..... ft., (..... %) Fm. LATROBE

Bit Type ....., Bit Size ..... in., Desc. by R.V. Hicks Date 19 April 1968

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0				#32 7170' Rec 1¼" mudstone, silty, light grey, soft, blocky
				#33 6985' Rec 1¼" mudstone, silty, very slightly calcareous, medium light grey, abundant carbonaceous flecks soft, blocky
				#34 6985' Rec 1⅛" mudstone, aa
				#35 6740' Rec 1¼" mudstone, silty, medium grey, finely laminated, abundant carbonaceous flecks,
				#36 6740' Rec 3¼" mudstone aa
				#37 6688' Rec 1" quartzwacky, mottled white medium grey and light grey, abundant clay matrix, grains almost floating in clay. quartz grains subrounded lithic grains rounded, moderately sorted, soft, crumbly, tight, No Show
				#38 6610' No Recovery
				#39 6522' Rec 1¼" mudstone, silty, medium dark grey, scattered carbonaceous flecks, weakly fissile, medium hard
				#40 6522 Rec 1⅛" mudstone aa
				#41 6420 Rec ½" quartzwacky, mottled white to dark grey, abundant quartz and lithic grains, occasional feldspar, white clay matrix, micaceous, grs very fine to fine, sub angular to rounded, moderately well sorted, firm, tight, No Show
				#42 6356 Rec ¼" quartzwacky, mottled white with light grey to dark grey, very fine to fine quartz and lithic grains, subrounded, moderately well sorted, abundant clay matrix, weakly laminated, firm, tight, NS
				#43 6332' Rec ⅜" mudstone, silty, very slightly calcareous, medium grey, carbonaceous, blocky firm
				#44 6332' Rec 1¼" mudstone aa
				#45 6192' Rec 1¾" quartzwacky, mottled white light grey and dark grey, very fine to fine quartz and lithic grains, with occasional feldspar, occasional medium

REMARKS: quartz grain, sub angular to sub rounded, moderately poor sorting, abundant clay matrix, soft to firm, tight, No Show

#46 6110 Rec 1" quartzwacky, mottled white, light grey, quartz lithic fragments with weathered feldspars, grains almost float in abundant clay matrix, very fine to fine, subrounded, moderately well sorted, firm, tight, No Show

#47 6054 mudstone, silty, light grey, soft, blocky

#48 6054 Rec 1¼" mudstone, aa

SIDEWALL CORE DESCRIPTIONS | WELL PERCH A-1 | 13 JAN 1988 | SERV.CO. Schl | D = 19/4/68 | LOG RUN NO. 2 | GEOLOGIST R.V. Hicks

REF.# | FIELD | STATE VICTORIA | ATT. [redacted] REC. 55 | PAGE 1 OF PAGES

NO.	DEPTH	REC	LITHOLOGY	COLOR	DISS CLAY	CONS	CALC	ODOR	FIDO	FLUORESENCE DIST	FLUORESENCE INT	FLUORESENCE COL	CUT QUAN	CUT COL	CUT FLUOR. INT	CUT FLUOR. COL	SHOW	PROB. PROD.
49	5925	1 1/4"	Mudstone, fissile w/ laminated coal	dk grey		firm	v. sl.											
			partings,															
50	5925	1 1/4"	Mudstone a.a.															
51	5814	1/4"	Mudstone	lt. grey		soft to firm	very											
52	5683	1 1/8"	Mudstone, silty, sandy	lt. grey		firm												
53	5683	3/4"	Mudstone aa															
54	5609	1"	Quartzwacky very fine to fine	mtld. wh dk & lt gy.	clay mtx	firm to hard	sl										NS	
			grained quartz, feldspar and															
			lithic fragments, angular to subrd.															
			moderately well sorted															
55	5502	1 1/4"	Mudstone, v silty, blocky	lt. grey		soft												
56	5502	1"	Mudstone aa															
57	5502	1"	Mudstone aa															
58	5582	3/4"	Mudstone aa															
59	5502	2"	Mudstone aa															
60	5502	1 1/2"	Mudstone aa															

PERCH-1. S.W.C. Descriptions. 9/9

PETROGRAPHIC REPORT

PERCH — 1.

PETROGRAPHIC DESCRIPTION OF VOLCANICS FROM 4,850-4,860 FEET IN ESSO'S PERCH 1 WELL

Sample: Chips selected by the writer from a cuttings sample taken at 4,850-4,860 feet in Esso's Perch 1 well, Gippsland Basin.

Thin Section No.: 9471 (V.M.D. collection)

- - - - -

HAND SPECIMEN - SUMMARY

The chips are from a fine-grained basic igneous rock, seemingly basaltic, and vary in color from olive grey (5Y 4/1) to olive black (5Y 2/1).

THIN SECTION DESCRIPTION

1. Introduction

There are observable variations in the mineral composition and texture of the 28 chips that make up the thin section. The most fundamental differences appear to be in phenocryst composition and pyroxene occurrence, and on this basis the chips are arbitrarily divided, for the purposes of description, into two groups:

Group 1: the phenocrysts are of brownish chlorophaeite and chlorite (refer Appendix); pyroxene is present, and may be common [15 definite specimens]

Group 2: the phenocrysts are of saponite mineral (refer Appendix); pyroxene is absent [11 definite specimens; the remaining 2 are doubtful].

An example of each group is described below, the variations within the groups are summarised, and the possible relationships are considered.

2. Group 1

2.1. Example Specimen

2.1.1. Review

The chip is a basic igneous rock that is inequigranular-porphyritic, holocrystalline and with ophitic texture. It consists of completely altered olivine phenocrysts set in a fine-grained groundmass dominated by plagioclase feldspar, pyroxene, iron ore, and chlorite and chlorophaeite. The relative proportions of these constituents, based on a very approximate visual estimate, are:

	%
Phenocrysts	25
Plagioclase	40
Pyroxene	25
Iron ore	5
Chlorite & chlorophaeite (groundmass)	5

2.1.2. Details

The phenocrysts have a maximum size of 1.7 mm. and are sometimes subhedral with hexagonal outlines. They are a variable green, green brown, yellow brown, to red brown color, and are to a large extent isotropic. It is found that they consist of the mineraloid chlorophaeite, a recognised alteration product of olivine, together with associated non-isotropic chlorite. Corroded remnants of this material sometimes show minor alteration to calcite.

The plagioclase feldspar is sodic labradorite which occurs as subhedral laths up to 0.8 mm. long (average 0.4 mm.) and as anhedral interstitial crystals.

The pyroxene is relatively fresh, pale mauve-colored titannugite in the form of laths up to 0.9 mm. long or else as more equant crystals. The titannugite ophitically encloses the feldspar laths.

Skeletal iron ore, scattered throughout as single crystals, aggregates, and needles up to 0.5 mm. long, appears to be ilmenite.

The remainder of the chip is made up of patches of green brown chlorite together with rare vesicular chlorophaeite.

2.2. Variations within Group

The example described above is perhaps the least altered of Group 1. Variations noted in the other specimens are as follows:

(1) Constituent percentages are variable

(2) Phenocrysts: usually smaller and less abundant; calcite replacement is well-established in some

(3) Pyroxene: usually less common, and almost absent in some chips; partial alteration to chlorite and, to a lesser extent, calcite is frequently observed

(4) Chlorophaeite-chlorite: tends to be quite abundant as a filling of vesicles and irregular cavities

(5) Chlorite: in rare cases there are patches up to 1 mm. across of green brown chlorite that is characterised by its microcrystalline, 'cherty-looking' habit; it is dark green under crossed nicols, almost isotropic in parts, and might be derived from the devitrification of volcanic glass

(6) Calcite: refer above under 'Phenocrysts'; may also replace much of the groundmass

3. Group 2

3.1. Example Specimen

3.1.1. Review

This chip is also a basic igneous rock that is inequigranular-porphyritic and holocrystalline, although the texture is pilotaxitic. The texture might have been ophitic, but the pyroxenes are lacking. The phenocrysts

consist of completely altered olivine in a fine-grained groundmass of plagioclase feldspar and iron ore. The rock is strongly chloritised. An approximate visual estimate of the basic constituents is given below.

	%
Phenocrysts	40
Plagioclase	20
Iron ore	5
Chlorite	35

3.1.2. Details

The phenocrysts are up to 2.2 mm. long. Their original outline could have been hexagonal but they are now strongly corroded, embayed, and fragmented. They consist of a fibrous saponite mineral that has been largely replaced by calcite, usually leaving only a narrow outer rim. The presence of saponite indicates that the original phenocrysts were of olivine.

The plagioclase feldspar is sodic labradorite. Its occurrence is as for Group 1, though in this particular specimen it has a maximum dimension of 0.5 mm. (average 0.2 mm.). It is obviously the most stable mineral of the rock and yet it, too, has been chloritised to some extent.

As mentioned, pyroxene is completely lacking. It is assumed that all of the pyroxene has been replaced by chlorite, even though no relic textures can be positively identified. A comparison of the two constituent percentage lists given above tends to support this assumption.

Skeletal iron ore is as for Group I except that some of the ilmenite has altered to leucoxene.

Yellow brown to green brown chlorite mineral is abundant. It is predominantly microcrystalline, but there are also minor developments of a fibrous variety. In addition, the latter is observed rarely as a layered vesicular filling. In one part of the chip the chlorite encloses numerous minute spherulites displaying extinction crosses under crossed nicols. It is of interest to note that a similar feature is illustrated by Kerr (1959, Fig.16-43(d)) who attributes it to the devitrification of volcanic glass.

3.2. Variations within Group

As with Group 1, not all chips are identical to the example specimen described. Some of the differences are:

(1) Constituent percentages are variable

(2) Phenocrysts: usually less abundant; calcite replacement is sometimes virtually complete

(3) Feldspar: commonly coarser-grained, that is, of comparable size to those of the Group 1 specimens

(4) Pyroxene: is present in some chips, but is extremely rare; in addition, it is partially altered to chlorite (or, occasionally, calcite), thus supporting the assumption made above (Section 3.1.2.).

(5) Chlorite: (a) in addition to the microcrystalline material, which is more abundant in the example specimen than in any other, gre[illegible] vesicular fillings may be common

cont'd.
(5) Chlorite: (b) the 'cherty-looking' material encountered in Group 1 chips (refer Section 2.2. (5)) is present, though not common, as patches up to 6.5 mm. across

(6) Calcite: refer above under 'Phenocrysts'; may also extensively replace parts of the groundmass

CONCLUSIONS

1. Classification: ALTERED OLIVINE BASALT (Group 1 & 2)

2. Comparison between Groups

The chips of both groups can be classed as altered olivine basalts, despite their apparent differences, for it is the nature and degree of the alteration that is largely, if not entirely, responsible for the differences.

Both chlorophaeite and saponite are derived from the deuteric alteration of olivine, though very little is known regarding the preferential development of one or the other. Furthermore, on the basis of this petrographic examination alone, one cannot explain why the Group 2 material is more altered, or whether it originally possessed an ophitic texture. Consequently, it is only possible to conclude that the Group 1 and 2 rock-types are closely related without actually establishing the degree of closeness.

3. Stratigraphic Implications

The Group 1 material fits within the context of the 'Older Volcanics' described by Edwards (1938). Edwards may have even referred to this rock type as 'iddingsite-titanaugite-basalt', since the chlorophaeite-chlorite phenocrysts bear superficial similarities to iddingsite.

There is a very strong resemblance between the Group 2 material of the Perch basalt and the volcanics from Core 4 (especially at 2,960 ft.) in Woodside's St. Margarets Island 1 well. The latter are considered by the writer as definite 'Older Volcanics'.

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APPENDIX . PETROGRAPHIC DESCRIPTION etc.

Nature and Nomenclature of Some Alteration Products of Olivine Basalts

In his paper on the 'Older Volcanics' of Victoria, Edwards (1938) had little to say about the alteration products of basaltic rocks, and yet alteration is common both in surface and subsurface sections in Gippsland. Aspects of the nature and nomenclature of certain of these alteration products are considered below.

1. 'Saponite'

A pleochroic mineral with micaceous appearance was described in basalts from Woodside's St. Margarets Island 1 well by Bowen (1966). It was identified by C.S.I.R.O. Applied Mineralogy, using X-ray diffraction, as a saponite mineral. It, or a virtually identical mineral, has subsequently been recognised by the writer in basalts from the Perch and Tuna wells (this report; also Hocking, 1968).

The optical properties are very closely those of bowlingite, perhaps the most commonly occurring saponite mineral, listed by Winchell (1933, p.437). Winchell notes that it is an alteration product of ferriferous olivine in basic igneous rocks, and he groups it with iddingsite. Baker & Haggerty (1967) actually class it - or, rather, a mineral with virtually identical properties - as "iddingsite" Type IV. Gay & Le Maitre (1961) comment that "it is possible that the processes which alter olivine to "iddingsite" or bowlingite cannot be sharply distinguished..".

In any case the writer proposes to refer to the massive variety of the mineral (or mineral class) discussed above as saponite. An analogous small-scale fibrous type is to be grouped with the chlorites (refer below).

2. Chlorophaeite

The only occurrence of this mineraloid so far recorded in the Gippsland volcanics is in the Perch sample described herein. Its properties, not mentioned in the standard textbooks, are listed by Peacock & Fuller (1928, especially p.369).

3. Chlorite

There is scope for misunderstanding of such terms as 'chlorite' and 'serpentine' when used by various authors. Winchell (1933, p.276) pointed out that minerals commonly assigned to the serpentine group are actually end members of the chlorite group and thus should be included in the latter. The present writer has adopted this usage and, unless a specific serpentine mineral such as antigorite can be positively identified, the single term chlorite is employed.

The optical properties and textural relationships of chlorite minerals in basaltic rocks, present as replacements of both olivine and the groundmass, are well described by Baker & Haggerty (1967). These authors refer to one type as "montmorillonite", the properties of which are in fact quite similar to those of 'saponite'. However, the latter term is reserved for the massive, or monocrystalline, replacement product of olivine alone.

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PETROGRAPHIC DESCRIPTION etc.

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Barry Hocking

J.B. Hocking
Geologist
Sedimentary Basin Studies Section

30th October, 1968.

PALYNOLOGY & PALAEONTOLOGY

INTERPRETATIVE

PALYNOLOGY REPORT

ON

PERCH -1

BY

LEWIS E. STOVER

Palynology Report 1970/15

June 1970.

INTRODUCTION

Samples from Perch -1 between 3750 and 3808 feet were examined for dinoflagellates as part of a regional study of microplankton from the Nothofagidites asperus Zone in the Gippsland Basin. The previous palynology report on Perch -1 (Dettmann, October 2, 1968) covers spore-pollen assemblages from samples below those used in this study.

SUMMARY

Sample	Drill Depth	Age	Dinoflagellate Zone
Core	3750 feet	Eocene	D. extensa
Core	3803 feet	"	"
Core	3808 feet	"	"

COMMENTS

The spore-pollen assemblages which contain fairly numerous and excellently preserved specimens of Deflandrea extensa are dominated by pollen of Nothofagidites. Other spore-pollen species, although sparse or rare, indicate that the assemblage can be assigned to the N. asperus Zone. Other occurrences of D. extensa in the Gippsland Basin are given in palynology report 1970/14 (Stover, June 1970).

BASIN GIPPSLAND DATE

WELL NAME PERCH -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.	T. bellus										
MIOC.	P. tuberculatus										
EOCENE	U. N. asperus										
EOCENE	L. N. asperus	3750	0				4074	2	3808	1	
EOCENE	P. asperopolus										
EOCENE	U. M. diversus										
EOCENE	L. M. diversus										
PALEO-CENE	L. balmei	4555	1				4640	2			
PALEO-CENE	T. longus	4720	2				4825	2			
LATE CRETACEOUS	T. lilliei										
LATE CRETACEOUS	N. senectus										
LATE CRETACEOUS	C. trip./T.pach.										
LATE CRETACEOUS	C. distocarin.										
LATE CRETACEOUS	T. pannosus										
EARLY CRETACEOUS	C. paradoxa	5683	1				6740	1			
EARLY CRETACEOUS	C. striatus	6885	1				8092	1			
EARLY CRETACEOUS	U. C. hughesii	8245	2					-			
EARLY CRETACEOUS	L. C. hughesii						8753	2			
EARLY CRETACEOUS	C. stylosus										
Pre-Cretaceous											

COMMENTS: Samples below 3808 feet not seen by ESOA palynologists; interpretations based on report by M. E. Dettmann, 1968.

T.D. 9417 (9410)

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./ A.D.F. DATE June 1971

DATA REVISED BY: L.E.S. DATE Dec. 1971

FORM No. R

INTERPRETATIVE

BASIN GIPPSLAND DATE

WELL NAME PERCH - 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
MIO-CENE	P. tuberculatus										
	U. N. asperus										
EOCENE	M. N. asperus	3750	0				3808	0			
	L. N. asperus	4074	2				4074	2			
	P. asperopolus										
	U. M. diversus										
	M. M. diversus										
	L. M. diversus										
PALEOCENE	U. L. balmei										
	L. L. balmei	4382	2	4555	1		4720	2			
	T. longus	4790	2				4825	2			
LATE CRETACEOUS	T. lilliei										
	N. senectus										
	C. trip./T.pach.										
	C. distocarin.										
	T. pannosus										
EARLY CRETACEOUS		5683	1				8753	2			
PRE-CRETACEOUS	T.D.	9417									

COMMENTS: Deflandrea extensa Dinoflagellate Zone 3750(1) — 3808(1)

EARLY CRETACEOUS ZONES:

C. paradoxa Zone 5683(1) — 6740(1)

C. striatus Zone 6885(1) — 8092(1)

C. hughesii Zone 8254(2) — 8753(2)

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.

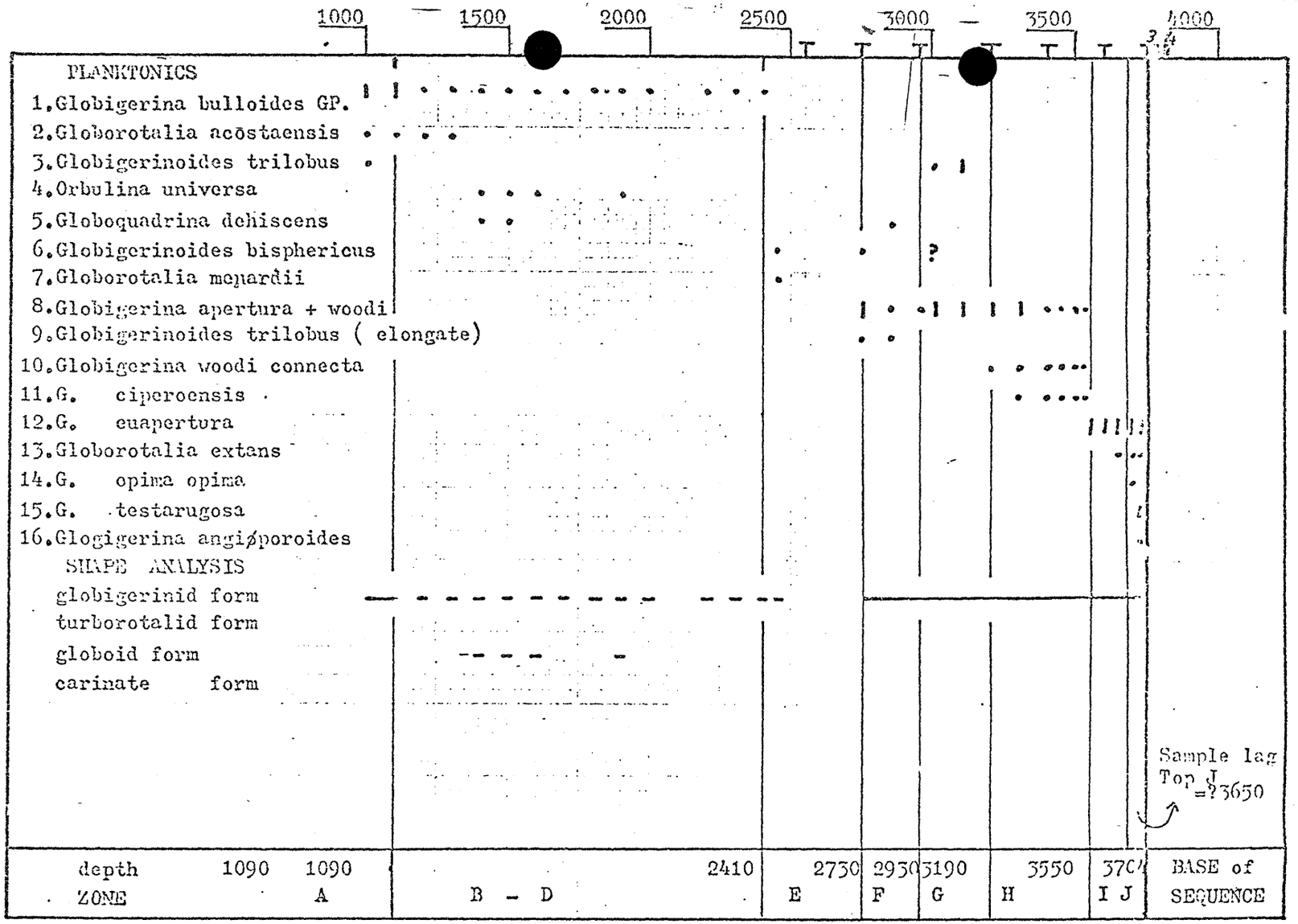
NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

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

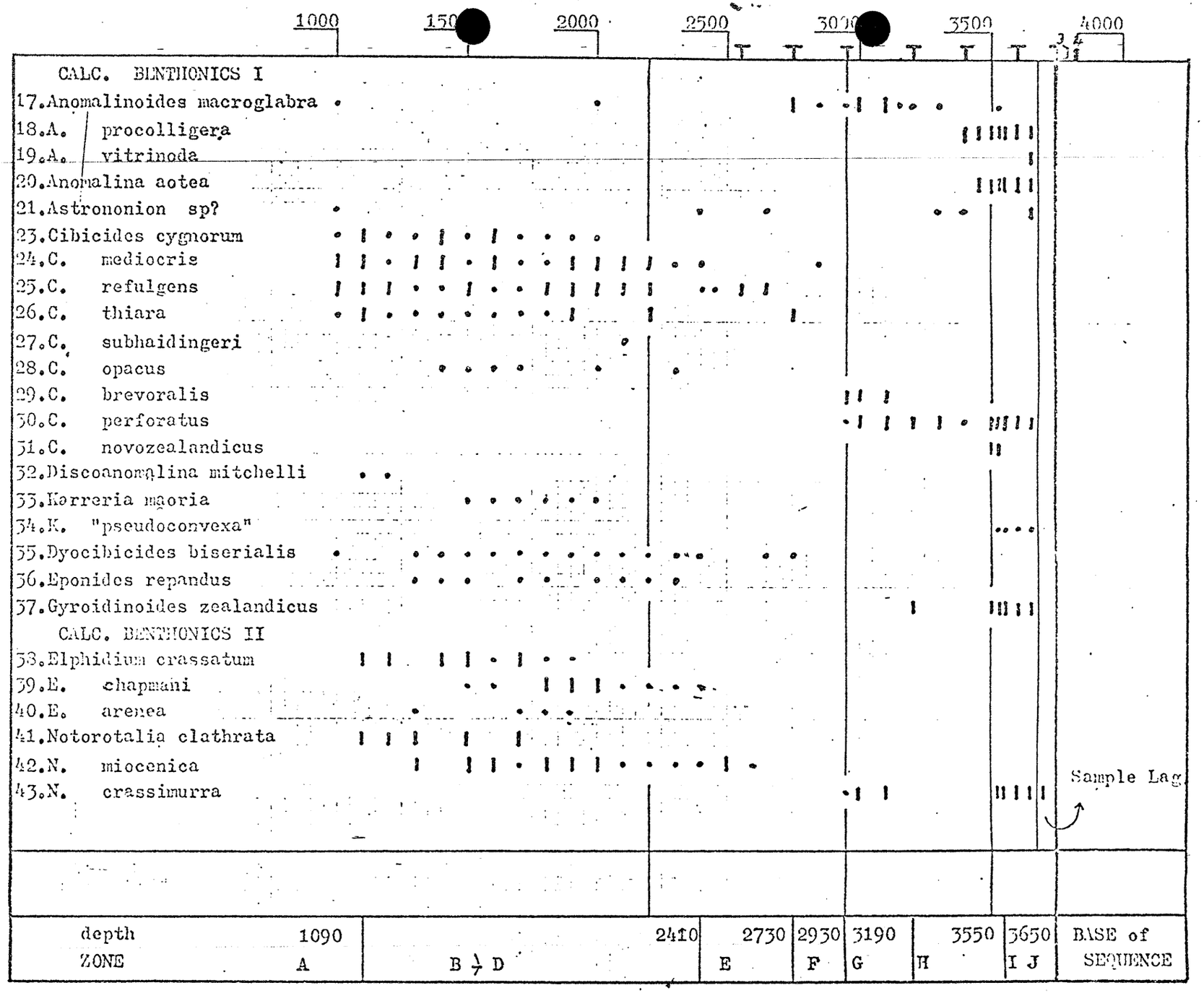
DATA REVISED BY: A.D.P. DATE Jan. 1975

FORM No R 315 12/72

PERCH



PERCH - 1. SPECIES LIST 1 of 3.



PERCH — 1. SPECIES LIST. 2/3

PE906247

This is an enclosure indicator page.
The enclosure PE906247 is enclosed within the container PE906243 at this location in this document.

The enclosure PE906247 has the following characteristics:

ITEM_BARCODE	= PE906247
CONTAINER_BARCODE	= PE906243
NAME	= Palynological List
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Palynological Species List (Page 3 of 3)
REMARKS	=
DATE_CREATED	= 30/06/70
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

Form R 193 3/77

BASIN Carnarvon Basin BY David Taylor

WELL NAME PERCH-1 DATE 20 April 1977 ELEV. +31'

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A				1000	3	
	Alternate						
	B	1090	3				
	Alternate						
	C						
	Alternate						
	D_1						
	Alternate						
	D_2						
	Alternate						
	E	2410	3		2700	3	
	Alternate						
	F	2720	1		2900	3	
	Alternate						
	G	2930	1		3100	3	
	Alternate						
	H_1	3190	1				
	Alternate						
	H_2				3500	3	
	Alternate						
OLIGOCENE	I_1	3550	3		3600	3	
	Alternate	3590	1		3590	1	
	I_2	3650	3		3700	3	
	Alternate						
	J_1	3750	4		3770	4	
	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 _____

By _____

UNION TEXAS AUSTRALIA INC.

GEOCHEMICAL ANALYSES OF WELLS FROM THE GIPPSLAND BASIN, AUSTRALIA

BARRACOUTA-1, HALIBUT-1, HAPUKU-1, KINGFISH-1, MORAY-1, PERCH-A1, PIKE-1, PISCES-1, SNAPPER-1, TUNA-1

W 515

Project No. 9/83/105

By

S. Sengupta, S. Hindmarsh and P.J. Bigg

January, 1984

Prepared by:

Gearhart Pty. Ltd.- Geodata
Unit 2
138 Musgrave Avenue
Welland, S.A. 5007
Australia

Prepared for:

Union Texas Australia Inc.
23rd Level
459 Collins Street
Melbourne, VIC 3000
Australia

BIOSTRATIGRAPHIC & PALEOENVIRONMENTAL DATA PACKAGE # 1 for GIPPSLAND BASIN.

PERCH-1

for: AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD.

July 20, 1983.

David Taylor
23 Ballast Point Road,
BIRCHGROVE, 2041.
AUSTRALIA. (02)810 5643.

and

Helene A Martin,
School of Botany,
University of New South Wales,
Box 1 P.O., KENSINGTON, 2033.
AUSTRALIA. (02)662 2954

THE STRATIGRAPHIC PALYNOLOGY OF SELECTED SAMPLES FROM BULLSEYE - 1 MORAY - 1 PERCH - 1 PIKE - 1, GIPPSLAND BASIN.

for: AUSTRALIAN AQUITAINE PETROLEUM PTY. LTD.

July, 1983.

Helene A Martin,
School of Botany,
University of New South Wales,
Box 1, P.O.,
KENSINGTON, 2033.
AUSTRALIA. (02)662 2954.

Log Analysis

P-2 (7-67)

ELECTRIC LOG ANALYSIS

OIL and GAS DIVISION

Well Porch A-1 | Microlog Run No. & Date | A. Commercial Producer 6 AUG 1982

Field WC | Electric Log Run No. & Date | B. Drill stem test hydrocarbon

County | Bit Size 12 1/2 | C. Hydrocarbon shows in cores or cuttings

State | Interpreted By | D. Drill stem test H_2O

E. No hydrocarbon shows in cores or cuttings

	Depth	Temp. °F	R_m Ωm	R_{mc} Ωm	R_{mf} Ωm
C.		156	.53		.43
D.					
E.					

Interval Investigated	Feet Sand	Microlog $R_{1½''}$	Microlog $R_{2''}$	Microlog $R_{1½''}/R_{mc}$	Microlog $R_{2''}/R_{mc}$	R_{xo}/R_{mc}	① R_{xo}	② R_{xos}/R_o	③ R_o	R_w	ϕ	F	Electric Log Neg Pos S.P.	Electric Log ④ Ind R	Electric Log ④ R	Electric Log ④ R	⑤ R_t/R_o	Resistivity Index ⑤ R_t/R_o	S_w	
3710						11.6		1.2	9.5	.36	17.5	27	-5	9.5			1		99	
3715						13.76		1.2	8.8	.36	16	32	-5	9.5			1.1		97	
3722						25.8		1.2	21	.36	12	60	-5	7			1.5		100	
3726						7.74		1.1	7	.6	21	18	+15	18			2.6		65	
3735						4.73		1.1	4.3	.6	27	11	+15	32			7.5		38	
3740						3.87		1.1	3.4	.6	29	9	+15	22			6.5		40	
3742						3.44		1.1	3.1	.6	31	8	+15	15			4.8		46	
3744						4.08		1.1	3.7	.6	28	9.5	+15	11			3		60	
3852						5.7		1	5.7	.375	24	13.5	+10	15			3.1		58	
3862						3.87		1	3.87	.375	28.5	7	+10	12.5			3		60	
4619						3.44		1.4	2.4	.8	30.5	8	+24	25			10		32	
4780						4.3		1.6	2.7	.93	27.5	10	+30	25			9		34	

	RW	Chl ppm
SP −5	.36	7500
SP +15	.6	4500
SP +10	.375	7200
SP +24	.8	3400
SP 30	.93	2600

3715
3740
3860
4620
4780

PE906246

This is an enclosure indicator page.
The enclosure PE906246 is enclosed within the container PE906243 at this location in this document.

The enclosure PE906246 has the following characteristics:

ITEM_BARCODE	= PE906246
CONTAINER_BARCODE	= PE906243
NAME	= Log Analysis Data
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Electrical Log Analysis Data from Perch-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 6/08/82
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

VITRINITE REFLECTANCE REPORT

PERCH NO.1

VITRINITE REFLECTANCE, DESCRIPTION OF DISPERSED ORGANIC MATTER AND TOTAL ORGANIC CARBON ANALYSES.

Australian Aquitaine Petroleum Pty. Ltd

F3/422/0-3420/83 December 1982

The Australian
Mineral Development
Laboratories

emington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

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amdel

17 December 1982

F3/422/0 - Part 1
3420/83

Australian Aquitaine Petroleum Pty. Ltd.,
Elf Aquitaine Centre,
99 Mount Street,
NORTH SYDNEY NSW 2060

Attention: Dr F. Borphy

REPORT F3420/83 (Part 1)

YOUR REFERENCE:	5471 KL:bf
MATERIAL:	Ten cuttings and two core samples
LOCALITY:	Perch No.1
IDENTIFICATION:	As marked
DATE RECEIVED:	9 December 1982
WORK REQUIRED:	Vitrinite reflectance, description of dispersed organic matter and total organic carbon analyses.

Investigation and Report by: Brian Watson

Chief - Fuel Section: Dr Brian Steveson
Manager, Mineral and Materials Sciences Division: Dr William G. Spencer

for Norton Jackson
Managing Director

cah

Head Office:
Flemington Street, Frewville
South Australia 5063,
Telephone (08) 79 1662
Telex: Amdel AA82520
Pilot Plant:
Osman Place
Thebarton, S.A.
Telephone (08) 43 8053
Branch Laboratories:
Melbourne, Vic.
Telephone (03) 645 3093
Perth, W.A.
Telephone (09) 325 7311
Townsville
Queensland 4814
Telephone (077) 75 1377

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1. INTRODUCTION

Twelve cutting samples from Perch No.1 were forwarded from Australian Aquitaine Petroleum Pty. Limited for organic analysis. This report contains vitrinite reflectance determinations, descriptions of dispersed organic matter and total organic carbon analysis.

2. EXPERIMENTAL METHODS

A representative portion of each sample was separated using a sample splitter and then mounted in cold setting astic resin in a 2.5 cm round mold. The block was ground flat using diamond impregnated laps and carborundum papers. This surface was then polished with aluminium oxide and finally magnesium oxide.

Reflectance measurements were taken using a Leitz MPV1.1 microphotometer fitted to a Leitz Ortholux microscope and calibrated against synthetic standards. All measurements were taken in oil immersion (n = 1.518) using incident monochromatic light with a wavelengths of 546 nm at a temperature of 23±1°C. Fluorescence observations were made using the same microscope utilizing a 3 mm BG3 exitation filter, a TK400 Dichroic mirror and a K510 suppression filter.

The mean maximum reflectance measurements taken on vitrinite are listed below.

3. REFLECTANCE MEASUREMENTS

Depth ft	Reflectance %	Standard Deviation	Range	Number of Measurements
3822-3825	0.36	0.03	0.30-0.41	34
4170-4180	0.42	0.04	0.32-0.50	33
4410-4420	0.47	0.05	0.38-0.56	44
4800-4810	0.47	0.06	0.34-0.57	46
5500-5530	0.49	0.06	0.39-0.63	32
6350-6360	0.53	0.04	0.47-0.60	29
6730-6740, 6880-6890	0.58	0.05	0.48-0.65	29
7170-7180	0.58	0.06	0.47-0.68	31
7670-7680	0.65	0.06	0.50-0.76	26
8200-8210, 8250-8260	0.70	0.07	0.58-0.86	33
8726-8731	0.81	0.08	0.65-0.99	31
9300-9310	0.81	0.07	0.65-0.94	30

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4. DISPERSED ORGANIC MATTER DESCRIPTIONS

Sample 1: 3822-3825 ft

This sample consists of a brown coal. In this coal huminite is much more abundant than exinite which is more abundant than inertinite.

Exinite is sparse to common in this coal. The exinite macerals present in order of abundance are sporinite (bright yellow green to bright yellow fluorescence), resinite (bright green to bright yellow and bright orange fluorescence), suberinite (moderate yellow to moderate orange and dull orange fluorescence), liptodetrinite (moderate orange fluorescence) and cutinite (moderate orange fluorescence). Sporinite, resinite, suberinite and liptodetrinite are sparse in the coal and cutinite is rare.

Sample 2: 4170-4180 ft

This sample also consists largely of brown coal. However, two types of coal are present in this sample. Approximately half of the coals are clarites and the remaining half are duroclarites. Some of these coals have slight oxidation rims. Siltstone grains occupy approximately 5% of the sample but contain no organic matter.

Exinite is common in these coals. The exinite macerals present in order of abundance are resinite (bright green to bright yellow and bright orange fluorescence), sporinite (bright yellow and moderate yellow to moderate orange fluorescence), suberinite (dull orange fluorescence), cutinite (moderate orange fluorescence), liptodetrinite (bright yellow and moderate orange fluorescence) and bitumen (dull orange fluorescence). Resinite is sparse to common in the coals. Sporinite and suberinite are sparse and are slightly more abundant than cutinite and liptodetrinite. Bitumen is very rare to trace.

Sample 3: 4410-4420 ft

This sample again consists largely of coals. Three types of coals are present in this sample, duroclarite, clarite and clarodurite. However, the majority of the coals are duroclarites and in the sample overall huminite is more abundant than inertinite which is more abundant than exinite. Some duroclarite grains have slight oxidation rims. Siltstone grains occupy approximately 1-2% of the sample but contain no organic matter.

Exinite is sparse to common in this sample and is abundant in some cuttings. The exinite macerals present in order of abundance are resinite (bright green to bright yellow and bright orange fluorescence), sporinite (bright yellow and moderate yellow fluorescence), cutinite (moderate orange fluorescence), suberinite (dull orange fluorescence), ?fluorinite (bright yellow fluorescence) and bitumen (dull orange fluorescence). Sporinite is sparse in these coals and is slightly less abundant than resinite. Cutinite is rare and is slightly more abundant than suberinite. Fluorinite and bitumen are present only in trace amounts.

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Sample 4: 4800-4810 ft

The majority of these cuttings are also coal grains. Approximately two-thirds of these coals are clarites the remaining coals are clarodurites. Overall in these coals vitrinite is more abundant than inertinite which is slightly more abundant than exinite. A large portion of the cuttings show marked oxidation rims and some grains are extensively oxidised.

Exinite is common in these coals. The exinite macerals present are sporinite (bright yellow and moderate orange fluorescence), resinite (bright green, bright yellow and moderate orange fluorescence) and suberinite (moderate to dull orange fluorescence).

Sample 5: 5500-5530 ft

The majority of these cuttings are siltstones and contain sparse to common dispersed organic matter. In these siltstones inertinite is more abundant than vitrinite which is more abundant than exinite. Organic matter is absent from approximately 10-20% of these siltstones. Organic matter is also absent from the sandstone grains which occupy approximately 5-10% of the sample. Coal grains occupy approximately 5-10% of the sample and contain abundant exinite. In these grains vitrinite is more abundant than exinite which is more abundant than inertinite.

Exinite is rare to sparse in this sample but is abundant in some coal grains. The exinite macerals present in order of abundance are sporinite (moderate orange fluorescence), cutinite (bright yellow and moderate orange fluorescence) and resinite (bright yellow-green to bright yellow fluorescence). Cutinite and resinite are rare and are slightly less abundant than sporinite.

Sample 6: 6350-6360 ft

This sample consists chiefly of arenaceous material. These grains generally contain rare inertinite. Siltstone grains occupy approximately 10-20% of the sample and generally contain common organic matter. In these grains inertinite is much more abundant than exinite which is slightly more abundant than vitrinite. Organic matter is absent from approximately one quarter of these siltstone grains. Coal grains also occupy approximately 10-20% of the sample and two coal types are present. Approximately half of the coal grains are vitrites. The remaining coals are clarites. Carbonaceous shale grains occupy approximately 5% of the sample and contain abundant organic matter. In these grains vitrinite is more abundant than inertinite which is more abundant than exinite.

Exinite is common in this sample and is present mostly in the coal and carbonaceous shale grains. The exinite macerals present are sporinite (bright yellow and moderate yellow to moderate orange fluorescence), resinite (bright yellow green to bright yellow and bright orange fluorescence) and cutinite (moderate to dull orange fluorescence). Cutinite is sparse and is slightly less abundant than resinite and sporinite.

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Sample 7: 6730-6740, 6880-6890 ft

The majority of these cuttings consists of siltstone with sparse organic matter. In these grains inertinite is much more abundant than exinite which is more abundant than vitrinite. However, organic matter is absent from approximately 5% of these siltstone grains. Two coal types are present in the sample and occupy approximately 5-10% of the volume. The majority of these coals are vitrites but a significant portion of the coals are clarites. A small number of these coal grains are extensively oxidised. Arenaceous material occupies approximately 5% of the sample volume and generally contains rare inertinite.

Exinite is sparse in this sample and is present mostly in the clarite grains. The exinite macerals present are sporinite (moderate yellow to moderate orange fluorescence), cutinite (moderate yellow to moderate orange fluorescence) and resinite (bright yellow fluorescence). Sporinite is sparse in the sample and is slightly more abundant than cutinite. Resinite is rare .

Sample 8: 7170-7180 ft

Organic matter is absent from the majority of these cuttings which consist chiefly of arenaceous material. Siltstone grains with sparse dispersed organic matter occupy approximately 20-30% of the sample. In these grains inertinite is more abundant than exinite which is slightly more abundant than vitrinite. Coal grains occupy approximately 10-15% of the sample. These coals are duroclarites.

Exinite is rare to sparse in this sample and occurs mostly in the duroclarite grains. The exinite macerals present are sporinite (moderate yellow to moderate orange fluorescence), cutinite (moderate yellow to moderate orange fluorescence), resinite (bright yellow-green to bright yellow, bright orange and moderate orange fluorescence), suberinite (dull orange fluorescence) and liptodetrinite (moderate orange fluorescence). Each of these exinite macerals is rare in the sample.

Sample 9: 7670-7680 ft

The majority of this sample consists of arenaceous material and contains rare to sparse inertinite. Siltstone grains occupy approximately 30-40% of the sample and contain sparse to common dispersed organic matter. In these grains inertinite is much more abundant than vitrinite which is slightly more abundant than exinite. Coal grains occupy approximately 5-10% of the sample. The majority of these coals are duroclarites. However, a few vitrite grains are also present.

Exinite is rare in this sample and is again present mostly in the coal grains. The exinite macerals present are sporinite (moderate orange to dull orange fluorescence), cutinite (moderate yellow to moderate orange and dull orange fluorescence), resinite (bright yellow-green to bright yellow and bright orange fluorescence), dinoflagellate/acritarchs (moderate yellow fluorescence), ?fluorinite (bright yellow-green fluorescence) and bitumen (moderate to dull orange fluorescence). Sporinite, cutinite and resinite are rare in the sample whereas dinoflagellate/acritarchs, fluorinite and bitumen are present only in trace amounts.

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Sample 10: 8200-8210, 8250-8260 ft

The majority of these cuttings again consist of arenaceous material but contain no organic matter. Siltstone grains with sparse to common dispersed organic matter occupy approximately 10-20% of the sample volume. In these grains inertinite is much more abundant than vitrinite which is more abundant than exinite. A few duroclarite grains are also present in the sample.

Exinite is rare in these cuttings. The exinite macerals present in order of abundance are sporinite (moderate orange fluorescence), cutinite (moderate yellow to moderate orange fluorescence), resinite (dull brown fluorescence), suberinite (dull yellow to dull orange fluorescence) and telalginite (bright yellow to bright orange fluorescence). Resinite is very rare and is slightly less abundant than sporinite and cutinite. Telalginite is present in trace amounts and is slightly less abundant than suberinite.

Sample 11: 8726-8731 ft

This core sample consists entirely of siltstone with sparse to common dispersed organic matter. In this siltstone inertinite is much more abundant than vitrinite which is more abundant than exinite.

Exinite is rare in this siltstone. The exinite macerals present are cutinite (moderate orange to dull orange fluorescence) and sporinite (moderate orange to dull orange fluorescence). Cutinite is slightly more abundant than sporinite.

Sample 12: 9300-9310 ft

These cuttings consist entirely of siltstone with only rare dispersed organic matter. In this siltstone inertinite is much more abundant than vitrinite which is slightly more abundant than exinite.

Exinite is rare to very rare in this siltstone. The exinite macerals present are cutinite (dull orange fluorescence), sporinite (moderate to dull orange fluorescence) and bitumen (moderate to dull orange fluorescence). Sporinite, cutinite and bitumen are very rare in the siltstone.

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5. DISCUSSION

Table 1 illustrates the relative abundances of the maceral groups in each sample. The table also shows the total organic carbon values, the abundance of exinite and the types of exinite present in each sample. Reflectance data presented in histogram form follows Table 1.

The reflectance data indicates that the sequence is marginally mature below approximately 6000 ft. The mean maximum reflectance measurements taken on samples 4410-4420 ft and 4800-4810 ft are probably marginally high due to the marked oxidation of these cuttings. The reflectance value of the sample from 9300-9310 ft is probably slightly low due to the high number of caved cuttings in this sample.

With this information taken into consideration the sequence is sufficiently mature for prolific oil and gas generation at approximately 8800 ft.

Exinite is generally rare to sparse in the sequence but is common in a number of samples. The major types of exinite present are sporinite resinite and cutinite. Suberinite is present in significant amounts towards the top of the sampled sequence. Fluorinite and bitumen are more common towards the base of the sampled sequence. As resinite and suberinite start to generate oil at approximately 0.4 to 0.45% $\overline{R}_v$ max the resinite rich samples towards the top of the sampled sequence show quite a high source rock potential. The main generation range for resinite and subertinite is 0.5-0.8% $\overline{R}_v$ max. Sporinite and cutinite begin to generate oil at approximately 0.6% $\overline{R}_v$ max. The main generation range of sporinite and cutinite is 0.7-0.9% $\overline{R}_v$ max. Therefore, prolific oil generation may occur from the sporinite and cutinite towards the base of the sampled sequence.

Fluorinite in sample 7670-7680 ft is primary oil and is direct evidence of hydrocarbon generation in this sample. The majority of these hydrocarbons are probably generated from the resinite in the sample. It is not clear whether the bitumen in this sample is indigenous.

Reflectance data is presented in histogram form and follows Table 1.

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TABLE 1: ORGANIC MATTER TYPE AND ABUNDANCE

Depth ft	Relative Maceral Group Volumes	Total Organic Carbon	Estimated Volume of Exinite	Exinite Macerals
3822-3825	*V >> E > I	63.7	spa-com	sp, res, sub, lipto, cut.
4170-4180	*V > E > I *V > I > E	45.8	com	res, sp, sub, cut, lipto, bmen
4410-4420	*V > I > E *V > E > I *I > V > E	41.3	spa-com	res, sp, cut, sub, ?fluor, bmen
4800-4810	*V > E > I *V > I > E	27.2	com	res, sp, sub
5500-5530	I > V > E *V > E > I	6.25	ra-spa	sp, cut, res.
6350-6360	I >> E > V *V > E > I	14.2	com	sp, res, cut
6730-6740, 6880-6890	I >> E > V	17.0	spa	sp, cut, res
7170-7180	I > E ≧ V *V > I > E	4.85	ra-spa	sp, cut, res, sub, lipto
7670-7680	I >> V > E V > I > E	2.82	ra	sp, cut, res, D/A, ?fluor, bmen
8200-8210, 8250-8260	I >> V > E *V > I > E	0.89	ra	sp, cut, res, sub, tela
8726-8731	I >> V > E	0.56	ra	cut, sp
9300-9310	I >> V > E	1.04	ra-vr	cut, sp, bmen

Key

V	Vitrinite
I	Inertinite
E	Exinite
sp	Sporinite
res	Resinite
cut	Cutinite
tela	telalginite
D/A	Dinoflagellate/Acritarch
lipto	Liptodetrinite
bmen	Bitumen
sub	Suberinite
fluor	Fluorinite
*	Coals
spa	Sparse
com	Common
ra	Rare
vr	Very rare

10/21

PERCH NO. 1

3822-3825 FT

SORTED LIST

.3 .31 .32 .33 .33 .33 .33 .34 .34 .34 .34 .35 .35 .35 .35 .35
.35 .35 .36 .36 .36 .36 .36 .37 .37 .37 .37 .37 .38 .39 .39 .4 .
4 .41

Number of values = 34

MEAN OF VALUES .355

ST. DEVIATION .025

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
30   |*
31   |*
32   |*
33   |****
34   |****
35   |********
36   |******
37   |******
38   |*
39   |**
40   |**
41   |*
```

11/21

PERCH NO. 1

4170-4180 FT

SORTED LIST

.32 .38 .38 .39 .39 .39 .39 .39 .4 .4 .4 .41 .41 .41 .41 .41 .4
.42 .42 .42 .43 .43 .43 .44 .44 .44 .45 .47 .48 .48 .48 .49 .5

Number of values = 33

MEAN OF VALUES .422
STD DEVIATION .037

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
 32  | *
 33  |
 34  |
 35  |
 36  |
 37  |
 38  | **
 39  | *****
 40  | ***
 41  | *****
 42  | ****
 43  | ***
 44  | ***
 45  | *
 46  |
 47  | *
 48  | ***
 49  | *
 50  | *
```

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PERCH NO. 1

4410-4420 FT

SORTED LIST

.38 .39 .39 .4 .4 .4 .41 .41 .42 .42 .43 .43 .43 .44 .44 .44 .4
4 .44 .45 .46 .46 .47 .47 .47 .47 .47 .48 .48 .48 .48 .48 .49 .4
9 .5 .51 .51 .52 .53 .53 .54 .54 .55 .56 .56

Number of values = 44

MEAN OF VALUES .465
STD DEVIATION .049

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
38   | *
39   | **
40   | ***
41   | **
42   | **
43   | ***
44   | ******
45   | *
46   | **
47   | ******
48   | ******
49   | **
50   | *
51   | **
52   | *
53   | **
54   | **
55   | *
56   | **
```

PERCH NO. 1

13/21

4800-4810 FT

SORTED LIST

.34 .36 .38 .38 .39 .39 .4 .4 .4 .41 .43 .43 .43 .43 .44 .44 .4
4 .45 .45 .45 .46 .46 .47 .47 .47 .47 .47 .48 .48 .48 .49 .49 .5
.5 .51 .51 .52 .52 .53 .54 .54 .54 .55 .55 .56 .57

Number of values = 46

MEAN OF VALUES .465
STD DEVIATION .056

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
34   | *
35   |
36   | *
37   |
38   | **
39   | **
40   | ***
41   | *
42   |
43   | ****
44   | ***
45   | ***
46   | **
47   | *****
48   | ***
49   | **
50   | **
51   | **
52   | **
53   | *
54   | ***
55   | **
56   | *
57   | *
```

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PERCH NO. 1

5520-5530 FT

SORTED LIST

.39 .39 .41 .43 .43 .44 .45 .45 .45 .46 .46 .46 .46 .47 .47 .48
.48 .49 .49 .5 .5 .52 .52 .52 .54 .55 .56 .57 .6 .6 .62 .63

Number of values = 32

MEAN OF VALUES .493
STD DEVIATION .063

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
 39   | **
 40   |
 41   | *
 42   |
 43   | **
 44   | *
 45   | ***
 46   | ****
 47   | **
 48   | **
 49   | **
 50   | **
 51   |
 52   | ***
 53   |
 54   | *
 55   | *
 56   | *
 57   | *
 58   |
 59   |
 60   | **
 61   |
 62   | *
 63   | *
```

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PERCH NO. 1

6350-6360 FT

SORTED LIST

.47 .47 .48 .48 .48 .49 .49 .5 .5 .5 .5 .51 .51 .51 .51 .52 .5

.54 .54 .55 .55 .55 .56 .57 .57 .58 .58 .59 .6

Number of values = 29

MEAN OF VALUES .525

STD DEVIATION .038

HISTOGRAM OF RESULTS

Values are reflectance multiplied by 100

```
47   | **
48   | ***
49   | **
50   | ****
51   | ****
52   | *
53   | *
54   | **
55   | ***
56   | *
57   | **
58   | **
59   | *
60   | *
```

PERCH NO. 1

16/21

6880-6890 FT

SORTED LIST

.48 .5 .5 .51 .52 .53 .53 .54 .55 .57 .57 .58 .59 .6 .6 .6 .6
.6 .6 .61 .61 .61 .61 .62 .62 .62 .64 .64 .65

Number of values = 29

MEAN OF VALUES .579
STD DEVIATION .046

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
48   | *
49   |
50   | **
51   | *
52   | *
53   | **
54   | *
55   | *
56   |
57   | **
58   | *
59   | *
60   | *******
61   | ****
62   | ***
63   |
64   | **
65   | *
```

PERCH NO. 1

17/21

7170-7180 FT

SORTED LIST

.47 .49 .5 .5 .5 .51 .52 .52 .53 .53 .55 .56 .56 .57 .58 .59 .5
.6 .6 .6 .6 .62 .62 .62 .63 .63 .64 .64 .64 .66 .68

Number of values = 31

MEAN OF VALUES .576
STD DEVIATION .056

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
47   | *
48   |
49   | *
50   | ***
51   | *
52   | **
53   | **
54   |
55   | *
56   | **
57   | *
58   | *
59   | **
60   | ****
61   |
62   | ***
63   | **
64   | ***
65   |
66   | *
67   |
68   | *
```

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PERCH NO. 1

7670-7680 FT

SORTED LIST

.5 .56 .57 .57 .58 .59 .59 .59 .62 .64 .65 .65 .66 .66 .66 .67
.67 .68 .68 .69 .7 .7 .7 .72 .72 .76

Number of values = 26

MEAN OF VALUES .645
STD DEVIATION .06

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
50  | *
51  |
52  |
53  |
54  |
55  |
56  | *
57  | **
58  | *
59  | ***
60  |
61  |
62  | *
63  |
64  | *
65  | **
66  | ***
67  | **
68  | **
69  | *
70  | ***
71  |
72  | **
73  |
74  |
75  |
76  | *
```

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PERCH NO. 1

8200-8260 FT

SORTED LIST

.58 .59 .59 .6 .63 .63 .64 .65 .65 .65 .67 .68 .68 .68 .68 .68
.69 .7 .71 .72 .72 .73 .73 .74 .75 .75 .76 .78 .78 .82 .83 .83 .
86

Number of values = 33

MEAN OF VALUES .702
STD-DEVIATION .072

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
  58  | *
  59  | **
  60  | *
  61  |
  62  |
  63  | **
  64  | *
  65  | ***
  66  |
  67  | *
  68  | *****
  69  | *
  70  | *
  71  | *
  72  | **
  73  | **
  74  | *
  75  | **
  76  | *
  77  |
  78  | **
  79  |
  80  |
  81  |
  82  | *
  83  | **
  84  |
  85  |
  86  | *
```

PERCH NO. 1

20/21

8726

SORTED LIST

.65 .69 .7 .71 .72 .72 .72 .74 .74 .77 .77 .79 .8 .8 .8 .82 .82
.83 .83 .84 .85 .85 .86 .86 .87 .88 .88 .89 .91 .92 .99

Number of values = 31

MEAN OF VALUES .807
STD DEVIATION .077

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
65  | *
66  |
67  |
68  |
69  | *
70  | *
71  | *
72  | ***
73  |
74  | **
75  |
76  |
77  | **
78  |
79  | *
80  | ***
81  |
82  | **
83  | **
84  | *
85  | **
86  | **
87  | *
88  | **
89  | *
90  |
91  | *
92  | *
93  |
94  |
95  |
96  |
97  |
98  |
99  | *
```

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PERCH NO. 1

9300-9310 FT

SORTED LIST

.65 .71 .73 .73 .73 .74 .74 .76 .76 .76 .77 .77 .77 .8 .8 .82
.82 .82 .83 .84 .84 .85 .85 .85 .87 .88 .91 .92 .93 .94

Number of values = 30

MEAN OF VALUES .806
STANDARD DEVIATION .07

HISTOGRAM OF RESULTS
Values are reflectance multiplied by 100

```
65   | *
66   |
67   |
68   |
69   |
70   |
71   | *
72   |
73   | ***
74   | **
75   |
76   | ***
77   | ***
78   |
79   |
80   | **
81   |
82   | ***
83   | *
84   | **
85   | ***
86   |
87   | *
88   | *
89   |
90   |
91   | *
92   | *
93   | *
94   | *
```

PE603590

This is an enclosure indicator page.
The enclosure PE603590 is enclosed within the container PE906243 at this location in this document.

The enclosure PE603590 has the following characteristics:

ITEM_BARCODE	= PE603590
CONTAINER_BARCODE	= PE906243
NAME	= Mud (Grapholog) Log
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= MUD_LOG
DESCRIPTION	= Mud Log (Grapholog) for Perch-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= CORE LABORATORIES AUSTRALIA LTD
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603591

This is an enclosure indicator page.
The enclosure PE603591 is enclosed within the container PE906243 at this location in this document.

The enclosure PE603591 has the following characteristics:

ITEM_BARCODE	= PE603591
CONTAINER_BARCODE	= PE906243
NAME	= Induction-Electrical Log, 1 of 4
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Induction-Electrical Log, 1 of 4, Perch-1
REMARKS	= No composite well log
DATE_CREATED	= 18/03/68
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603592

This is an enclosure indicator page.
The enclosure PE603592 is enclosed within the container PE906243 at this location in this document.

The enclosure PE603592 has the following characteristics:

ITEM_BARCODE	= PE603592
CONTAINER_BARCODE	= PE906243
NAME	= Induction-Electrical Log, 2 of 4
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Induction-Electrical Log, 2 of 4, Perch-1
REMARKS	=
DATE_CREATED	= 29/03/68
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603593

This is an enclosure indicator page.
The enclosure PE603593 is enclosed within the container PE906243 at this location in this document.

The enclosure PE603593 has the following characteristics:

ITEM_BARCODE	= PE603593
CONTAINER_BARCODE	= PE906243
NAME	= Induction-Electrical Log, 3 of 4
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Induction-Electrical Log, 3 of 4, Perch-1
REMARKS	=
DATE_CREATED	= 17/04/68
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603594

This is an enclosure indicator page.
The enclosure PE603594 is enclosed within the container PE906243 at this location in this document.

The enclosure PE603594 has the following characteristics:

ITEM_BARCODE	= PE603594
CONTAINER_BARCODE	= PE906243
NAME	= Induction-Electrical Log, 4 of 4
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Induction-Electrical Log, 4 of 4, Perch-1
REMARKS	=
DATE_CREATED	= 29/04/68
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906244

This is an enclosure indicator page.
The enclosure PE906244 is enclosed within the container PE906243 at this location in this document.

The enclosure PE906244 has the following characteristics:

ITEM_BARCODE	= PE906244
CONTAINER_BARCODE	= PE906243
NAME	= Time-Depth Curve
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Time-Depth Curve (interpretative) for Perch-1
REMARKS	=
DATE_CREATED	= 21/12/71
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906245

This is an enclosure indicator page.
The enclosure PE906245 is enclosed within the container PE906243 at this location in this document.

The enclosure PE906245 has the following characteristics:

ITEM_BARCODE	= PE906245
CONTAINER_BARCODE	= PE906243
NAME	= FIT Data
BASIN	= GIPPSLAND
PERMIT	= PEP38
TYPE	= WELL
SUBTYPE	= REPORT
DESCRIPTION	= Formation Tester Recovery Data for Perch-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W515
WELL_NAME	= PERCH-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)