

SUNFISH-1

WELL COMPLETION REPORT

I. F. CRISS
L. J. BROOKS
April, 1974.

WELL COMPLETION REPORT

SUNFISH-1

LIST OF CONTENTS

SECTION

1. Well Data Record
2. Initial Production Record (Not Applicable)
3. Perforating Record (Not Applicable)
4. Casing Record
5. Cement Record
6. Subsurface Completion Equipment (Not Applicable)
7. Samples, Conventional Cores, Sidewall Cores
8. Wireline Logs and Surveys
9. Formation Tops/Zones
10. Geological Analysis

APPENDICES

1. Sample Descriptions
2. Sidewall Core Descriptions
3. Palaeontological Data Summary
4. Palynological Report
5. Well Log Analysis
6. Core Descriptions
7. Formation Test Results

PLATES

- I. Structure Map Top Latrobe
- II. Structure Map Intra Latrobe
- III. Structure Map Top Upper Cretaceous
- IV. Well Completion Log
- V. Cross Section A-A'
- VI. Time-Depth Curve
- VII. Mud Log
- VIII. Formation Tester

} Added by DNCE
31/5/99

COMPLETION REPORT

I WELL DATA RECORD

Date April 23, 1974

LOCATION

WELL NAME SUNFISH-1	STATE VICTORIA	PERMIT or LICENCE Vic/P1	GEOLOGICAL BASIN Gippsland	FIELD
CO-ORDINATES Surface Lat. 38° 08' 25.836" S Long. 148° 13' 37.577" E Bottom Hole X= 607,533 m.E Y= 5,777,869 m.N		MAP PROJECTION AMG Zone 55	GEOGRAPHICAL DESCRIPTION 4.55 m NNW of Turrum-1 9.25 m WNW of Tuna-2 5.3 m from 24" pipeline from Marlin	
<u>ELEVATIONS & DEPTHS</u>				
ELEVATIONS Ground KB 32' RT Braden Head Top Deck Platform	WATER DEPTH 194'	TOTAL DEPTH M.D. T.V.D. 8175'	Avg. Angle Straight Hole.	
	PLUG BACK DEPTH 300'	REASONS FOR P.B. Abandonment		
<u>DATES</u>				
MOVE IN February 6, 1974	RIG UP February 6, 1974	SPUDED February 7, 1974		
RIG DOWN COMPLETE March 1, 1974	RIG RELEASED March 3, 1974	PROD. UNIT - Start Rigging Up		
PROD. UNIT - Rig Down Complete		I.P. ESTABLISHED		
<u>MISCELLANEOUS</u>				
OPERATOR Esso Australia Ltd.	PERMITTEE or LICENCEE Hematite	ESSO INTEREST 50%	OTHER INTEREST 50% Hematite	
CONTRACTOR Global Marine A/Asia Pty.Ltd.	RIG NAME GLOMAR CONCEPTION	EQUIPMENT TYPE Floating Drilling Vessel		
TOTAL RIG DAYS 25.9	DRILLING AFE NO. 234-101	COMPLETION NO.	TYPE COMPLETION	
LAHEE WELL	Before Drilling	New Field Wildcat		
CLASSIFICATION	After Drilling	Abandoned with shows of Hydrocarbons		

L.J. BROOKS
Geologist

IV CASING-LINER-TUBING RECORD							
Type	Size	Weight	Grade	Thread	No. Joints	Amount	Depth
KB ELEVATION ABOVE CASING HEAD						217.00	217.00
	24"	PILE JOINT				36.30	253.30
	20"	129#	X-52	JVxCC	1	23.55	276.85
	20"	94#	X-52	JV	8	320.66	597.51
	20"	129#	X-52	JV	1 + Float Shoe	24.95	622.46
KB ELEVATION ABOVE HANGER						223.00	223.00
	13-3/8"	72#	N-80	Butt	1	352.22	575.22
	13-3/8"	68#	J-55	Butt	54 + Float Collar	2105.32	2680.54
	13-3/8"	72#	N-80	Butt	1 + Float Shoe	42.68	2723.22

V CEMENT RECORD			
Ring	20"	13-3/8"	
Type of Cement	650 sx Aust N + 350 sx Aust N + 2% CaCl ₂	700 sx Aust N + 1% CaCl ₂	
Number of FT ³	1180	826	
Average Weight of Slurry	15.6 ppg	15.6 ppg	
Cement Top	Sea floor	1200'	
Casing Tested with	-	1500 psi	
Number of Centralizers	6	10	
Number of Scratchers	-	-	
Stage Collar, etc.	-	-	
Remarks		Tested formation to 13.5 ppg equivalent	

Engineer

WELL SUNFISH-1

VII SAMPLES, CONVENTIONAL CORES, SW CORES					
INTERVAL	TYPE	RECOVERED	INTERVAL	TYPE	RECOVERED
720-8175	5 sets washed & dried samples	Every 10 feet.			
720-8175	1 set unwashed samples	Every 10 feet.			
720-8175	Canned samples	Every 100 feet.			
	Sidewall cores	29 ex 30			
7360-7386	Core 1	26 ft. (100%)			
7386-7416'7"	Core 2	30'7" (100%)			
8128-8158	Core 3	30ft. (100%)			

VIII WIRELINE LOGS AND SURVEYS Incl. FIT)					
Type & Scale	From	To	Type & Scale	From	To
BHCS/GR 2" & 5"	2784	-622	BHCS	FIT 10	6191
Caliper	2784	-194	GR	FIT 11	7349
ISF-SP 2" & 5"	2784	-622		FIT 12	5187
FDC/CNL/GR 2" & 5"	7559	-2786		FIT 13	5618
	7564	-5300		FIT 14	6572
4 arm dipmeter 10"=100"	7564	-2620	GR	FIT 15	6514
BHCS 2" & 5"	7521	-5300		FIT 16	6439
BHCS 2" & 5"	7513	-2786		FIT 17	6036
ISF-SP 2" & 5"	8167	-7300		FIT 18	6098
FDC-GR 2" & 5"	8156	-7250		FIT 19	5975
Velocity Survey	8175	-7156		FIT 20	8113
7 levels	7500	-3026		FIT 21	8117
FIT 1	7361				
FIT 2	6773				
FIT 3	6738				
FIT 4	6643				
FIT 5	7450				
FIT 6	7350				
FIT 7	7020				
FIT 8	6363				
FIT 9	6320				

Geologist

IX	FORMATION TOPS/Zones :					REMARKS	
	NAME	Tops		Gross: Interval (ft)	Net Pay (ft).		
		M.D.	Sub-sea		Gas		Oil
Gippsland Fm. MIOCENE		194'	5289'				
Latrobe Group EOCENE							
Lower <u>M. diversus</u> PALEOCENE	5515'	5483'	237'		4'		
<u>L. balmei</u> <u>T. longus</u>	5752' 6442'	5720' 6410'	690' 903'	200'	17'		
UPPER CRETACEOUS							
<u>T. lilliei</u> <u>N. senectus</u>	7345' 7770'	7313' 7738'	425' 155'	21'	34'		
LOWER CRETACEOUS							
Strzelecki Gp	7925'	7893'	282'				

X GEOLOGIC ANALYSIS (Pre Drilling prognosis Vs actual results)

Pre-Drill

Sunfish-1 was proposed to test the intra Latrobe Paleocene and upper Upper Cretaceous section in a compressional anticlinal structure north of Marlin Field, and west of Tuna field.

Significant thinning of Eocene and Paleocene section over the Sunfish structure created optimum conditions for entrapment of any early migrating hydrocarbons.

The structural similarity and timing of the north bounding fault at Sunfish to that at Emperor suggested that the Sunfish fault had a very good chance of affording a lateral seal, thereby greatly increasing the maximum vertical closure of the prospect.

Good quality reservoir sands and interbedded siltstones were expected to provide adequate intra Latrobe seals. Sunfish-1 was proposed to test the stratigraphic section equivalent to the a) Marlin A-6 oil pay, 6 m. S.
b) Turrum gas pays, 4.5 m. SSE
c) Tuna T-1 oil pay, 9.25 m. ESE.

Post-Drill

Sunfish-1 intersected the Latrobe Group at -5483' and penetrated some 2410 feet of Latrobe sediments before reaching a T.D. at -8143' in Lower Cretaceous Strzelecki sediments. Numerous hydrocarbon shows were detected within the whole Latrobe sequence.

The well intersected the Top Latrobe some 157 feet above the predicted depth of -5640'; the well velocity survey subsequently proved the average velocity to top of Latrobe to be some 250 ft./sec. slower than predicted.

The Latrobe sequence comprises interbedded sandstones, siltstones and minor coals. The gross interval from Top Latrobe to T.D. (8175'KB) contains at least five separate hydrocarbon zones totalling 221 ft., of net gas and 55 ft., of net oil. Many of the gas sands are rich in condensate and the hydrocarbon zones are separated by water bearing sands. A 50 ft., (Upper Paleocene L. balmei) gas sand at -6118' exhibits good correlation both from seismic and log analysis with the 55 ft., net gas sand at 7391' (subsea) in Turrum-1.

The most significant oil sand, a 34' net pay at -7313' assigned palynologically to T. lilliei, is trapped beneath some highly weathered volcanics. This oil sand has been re-interpreted to be stratigraphically equivalent to the T-1 oil reservoir in the Tuna field.

Geologist

X GEOLOGIC ANALYSIS (Pre Drilling prognosis vs actual results)

Post-Drill (Cont'd)

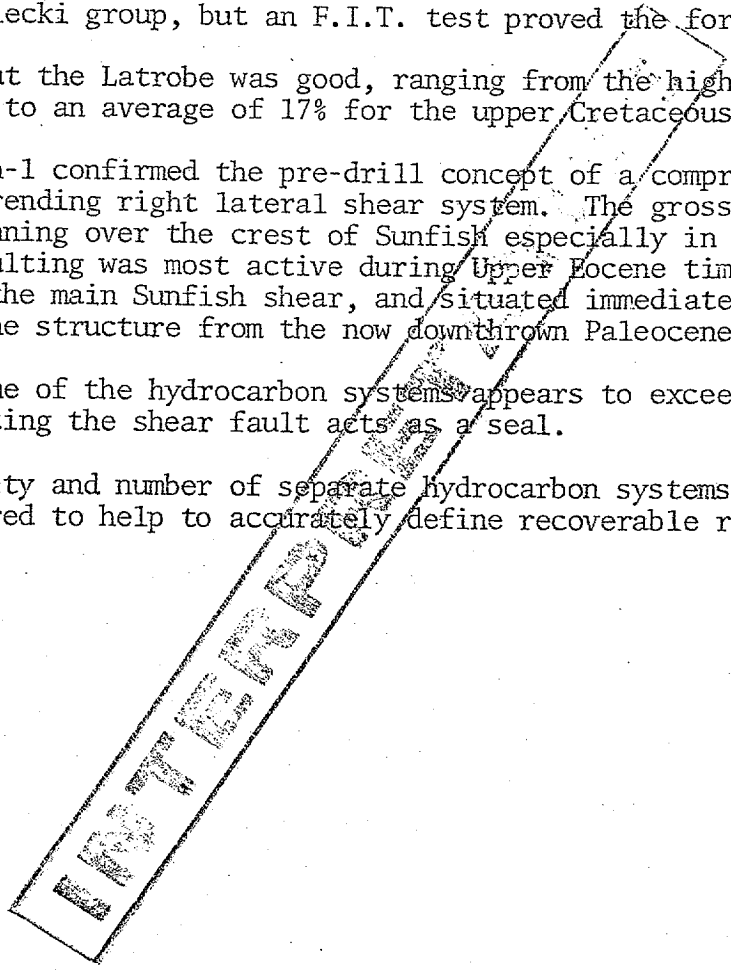
Further indications of hydrocarbons were identified from log analysis in the basal Upper Cretaceous N.senectus zone. Gas kicks were also detected from within the Lower Cretaceous Strzelecki group, but an F.I.T. test proved the formation tight.

Sand porosity throughout the Latrobe was good, ranging from the high twenties in L.balmei Latrobe sands to an average of 17% for the upper Cretaceous oil sands.

The drilling of Sunfish-1 confirmed the pre-drill concept of a compressional structure against an east-west trending right lateral shear system. The gross Latrobe sequence shows considerable thinning over the crest of Sunfish especially in Lower Eocene M.diversus time. Faulting was most active during Upper Eocene time. A large splinter fault associated with the main Sunfish shear, and situated immediately to the south of Sunfish separates the structure from the now downthrown Paleocene anticlinal axis.

The gross column in some of the hydrocarbon systems appears to exceed the structural closure mapped, suggesting the shear fault acts as a seal.

Because of the complexity and number of separate hydrocarbon systems, a stepout well will probably be required to help to accurately define recoverable reserves.



SUMMARY OF HYDROCARBON OCCURRENCES IN SUNFISH-1 WELL

The well intersected the Top of the Latrobe Group at 5515 ft. KB and penetrated interbedded sandstones, siltstone and minor coal to TD (8175 ft. KB). Numerous hydrocarbon shows were reported while drilling this section.

The oil and gas occurrences in the well have been grouped into five zones, totalling 221 ft. of net gas and 55 ft. of net oil.

Zone 1 contained 4' of net oil from 5616 ft. to 5620 ft. KB.

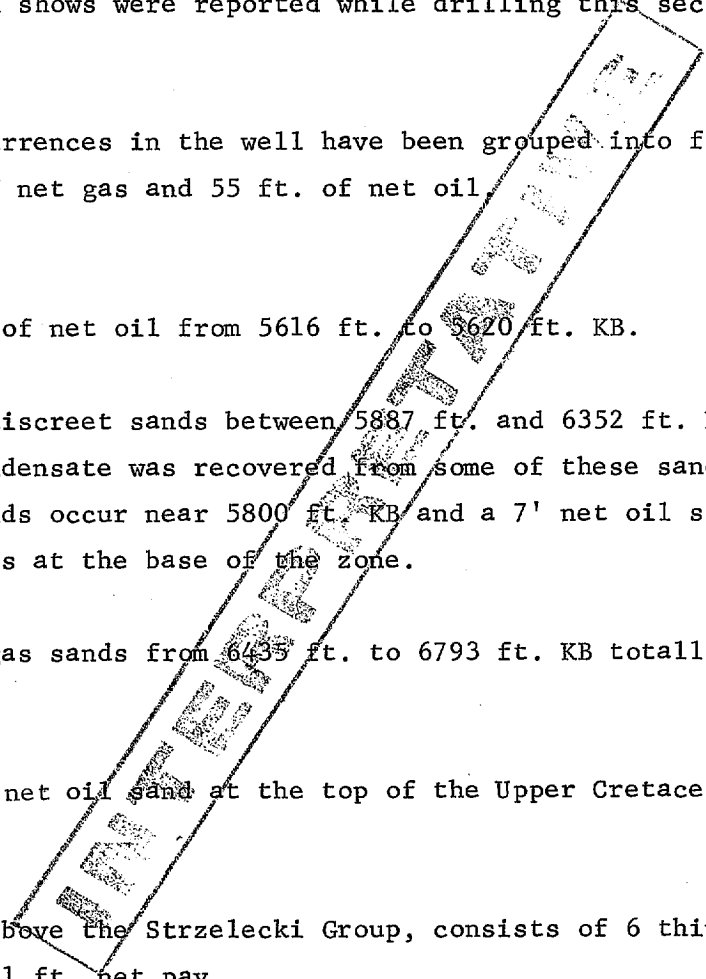
Zone 2 includes 12 discreet sands between 5887 ft. and 6352 ft. KB totalling 83 ft. net gas. Condensate was recovered from some of these sands. Two shaley 5 ft. oil sands occur near 5800 ft. KB and a 7' net oil sand from 6360 ft. to 6367 ft. KB occurs at the base of the zone.

Zone 3 includes 11 gas sands from 6455 ft. to 6793 ft. KB totalling 117' net gas.

Zone 4 comprises 34' net oil sand at the top of the Upper Cretaceous beneath a volcanic section.

Zone 5, lying just above the Strzelecki Group, consists of 6 thin gas sands totalling at least 21 ft. net pay.

Hydrocarbon shows were also present at TD. A washed out hole prevented interpretation.



SUNFISH-1

WELL COMPLETION REPORT

APPENDIX I

SAMPLE DESCRIPTIONS

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SUNFISH-1

WELL COMPLETION REPORT

APPENDIX I

SAMPLE DESCRIPTIONS

SAMPLE DESCRIPTION

DEPTH	%	SAMPLE DESCRIPTION
		26" hole to 680' 20" casing to 629'
720- 750		Cement
750- 780	90	Cement
	10	Fossil fragments - coral, etc., and red cherty volcanic fragments, light grey when dry.
780- 810	80	Cement
	20	Fossil fragments - bivalves, forams, and abundant red cherty volcanic (?) fragments with white inclusions. Trace of calcarenite
810- 840		As above, and some gastropods, no calcarenite
840- 870		As above, with coral
870- 900		As above, with trace grey micrite; trace plant remains
900- 930	90	Cement
	10	Fossil fragments, some red volcanics (chert)
930- 960	90	Cement,
	10	Fossil shell and coral fragments. Occasional fragments, red chert, rare yellow limonite. Rare plant fragments. Trace of pyrite, micrite
960- 990	80	Cement,
	10	Calcarenite, Occasional fragments red chert; Trace glauconite
	10	Fossil fragments
990-1020	40	Cement
	10	Fossil fragments. Occasional fragments red chert; limestone; Trace pyrite
	50	Calcarenite with glauconite
1020-1050	60	Calcarenite, fine grained, with glauconite inclusions; trace pyrite, mica. Abundant fossil fragments and chert; trace micrite
	40	Cement
1050- 080	30	Calcarenite, fine grained with trace glauconite. Abundant fossil fragments (forams, coral, spicules) and some chert
	20	Marl, light grey, slightly calcareous, moderately soft, silty
	50	Cement
1080-1110	50	Calcarenite, fine to medium grained, light grey, firm, trace glauconite inclusions. Trace plant remains. Some chert and fossil fragments, marl
	50	Cement
1110-1140	60	Calcarenite - as above with some calcite
	40	Marl - light grey, moderately firm Abundant cement cavings
1140-1170	100	Calcarenite - fine grained, light grey, firm with dark inclusions, trace fossil fragments. Abundant cement cavings
1170-1200	80	Calcarenite - as above
	20	Marl, silty, grey, with fossil fragments, moderately soft; cement cavings
1200-1230	90	Calcarenite - as above with trace pyrite, micrite
	10	Fossil fragments (coral, forams, etc); some chert and calcite
1230-1260		as above with some marl (silty)

SAMPLE DESCRIPTIONS

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
1260-1290		As above, with some marl and cement cavings
1290-1320	80	Calcarenite, medium grained, firm, light grey with dark (glauconite) inclusion and some chert, pyrite
	20	Fossil fragments - as above
1320-1350	80	Calcarenite - as above; and pyrite
	20	Fossil fragments, coral, gastropods, etc., and some chert. Cement cavings
1350-1380	80	Calcarenite as above with pyrite
	20	Fossil fragments (gastropod, clams, etc.,) Occasional fragments red chert, quar coal, limonite and cement cavings
1380-1410		Poor Samples, Fossil fragments and cement. Formation probably very soft marl and some calcarenite
1410-1440		As above
1440-1470		As above
1470-1500		As above
1500-1530		Poor Sample - unconsolidated fine grained, calcareous light grey (very soft marl?)
1530-1560		As above and some fossil fragments
1560-1590		As above and fossil fragments and chert - fine grains as above with dark inclusions (calcarenite grains?)
1590-1620		Good Sample Quality, fine grains of light grey (with dark inclusion) calcarenite unconsolidated; Fossil fragments, coral shells, etc. Trace light brown, slight calcareous silt
1620-1650		As above
1650-1680		As above
1680-1710		As above
1710-1740	100	very fine to fine grained, light grey unconsolidated calcarenite; fossil fragments, forams, shells, etc.; trace glauconite
1740-1770		As above. Fossil fragments including corals, shells, and rare plant remains; trace glauconite in calcarenite; trace pyrite. Cement cavings
1770-1800	100	Fine grained, calcarenite, fossil fragments, cephalopods, etc., trace glauconite, occasional ooid. Cement cavings.
1800-1830		As above, trace glauconite, cement cavings, trace red chert
1830-1860		Very fine grain to fine grained, calcarenite, fossil fragments - brachiopods, gastropods, some glauconite. Cement cavings
1860-1890	100	Calcarenite - as above, with fossils and calcite and cement cavings
1890-1920		Calcarenite - as above, with glauconite and fossil fragments - coral, shell, spicules, etc., and some calcite and red chert.

DEPTH	%	SAMPLE DESCRIPTION
1920-1950		As above - <u>calcarenite</u> - white to light grey
1950-1980		<u>Calcarenite</u> - white to light grey, dark inclusions with quite abundant glauconite, firm. Some very soft marl, light grey. Abundant fossil fragments (and some whole cephalopods), cement cavings
1980-2010		As above but with some isolated quartz fragments, (clear and milky, subangular and some with xtal. faces). No marl
2010-2040		As above
2040-2070	100	<u>Calcarenite</u> - fine grained, light grey with dark inclusions and quite abundant glauconite, soft to firm. Minor extremely soft marl - white. Fossil fragments and occasional whole fossils (cephalopods). Rare quartz grain, some cement cavings
2070-2100		As above with some yellow (stained?) limestone; platy calcite as well. Fossil fragments
2100-2130		As above, few fossil fragments
2130-2160	100	<u>Calcarenite</u> - light grey, firm with abundant black and glauconite inclusions. Traces of milky quartz and dark silt. Some fossil fragments
2160-2190		As above with coral, spicules and other fossils
2190-2220		As above with some light green limestone - fossils, cephalopods, bryozoa, corals. Some soft white calcareous material
2220-2250		As above; abundant glauconite; fossils, corals, cephalopods
2250-2280		As above
2280-2310	100	<u>Calcarenite</u> - light grey to white with abundant glauconite and dark inclusions some large light to dark green grains of limestone. Abundant fossils - coral, bryozoa, etc., shell fragments
2310-2340		As above
2340-2370		As above
2370-2400	100	<u>Calcarenite</u> , fine grained, light grey, firm; abundant large light to dark green grains of limestone; fossils - cephalopods, bryozoa
2400-2430		As above; soft white marl; fossils - cephalopods, corals, etc.; abundant glauconite
2430-2460		As above, calcarenite very light to light grey; Green limestone grains are fewer. Isolated quartz grains - clear, subangular; Fossils; marl - soft, white
2460-2490		As above; fossils - gastropods, brachiopods; abundant glauconite. No quartz
2490-2520	100	<u>Calcarenite</u> - white and light grey, fine to medium grained with black and glauconite inclusions. Some fossil fragments. Some green fine grained limestone
2520-2550		As above with some light grey moderately soft marl
2550-2580		As above and some calcite - calcarenite very fine grained
2580-2610	90	<u>Calcarenite</u> - light grey, very fine grained, few dark, glauconite inclusions; fossil fragments
	10	Marl - white to grey, soft
2610-2640	100	<u>Calcarenite</u> - as above - soft to moderately firm
MUDDING UP		

SAMPLE DESCRIPTIONS

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
2640-2670	90	<u>Calcarenite</u> - fine to medium grained with abundant black and glauconite inclusions, white to light grey, firm
	10	<u>Marl</u> - as above
2670-2700		As above very fine grained calcarenite
2700-2730	80	Medium grey, fine grained calcarenite, half of that present having dark inclusions and glauconite
	20	Extremely soft, very light to medium light grey marl; occasional fragments of green (glauconite - rich) limestone. Some fossil fragments. Trace of pyrite (present on calcarenite)
2730-2760	90	Calcarenite - very fine to fine grained with black and glauconite inclusions in the larger grain size portion (30%). Fossil fragments
	10	Marl, as above
2760-2780	70	Calcarenite - as above
	30	Marl - light grey, very soft
		POH @ 2784' TO RUN LOGS & CASING
		13-3/8" CASING TO 2725'
2780-2790		Cement
2790-2820		Cement
2820-2850		Calcarenite - light grey with glauconite and black inclusions, soft to firm; an cavings cement, etc.
2850-2880		As above; some fossil fragments
2880-2910		As above
2910-2940		Calcarenite as above with some very soft very light to light grey marl; some fossils and fragments of fossils; and cement. Also some white translucent limestone with glauconite inclusions
2940-2970		Fossiliferous limestone - bryozoa, coral, etc., some with glauconite replacement. Some calcarenite, marl, and cement, shoe cavings.
		POH @ 2983' - CHANGE BIT
2970-3000		As above
3000-3030		Limestone - translucent to very light grey, abundant glauconite inclusions with occasional glauconite grains, fossiliferous (coralline); some glauconite replacement of fossil fragments.
3030-3060	80	Limestone as above; Fossil fragments
	20	Marl - light grey, very soft
3060-3090	100	Marl - as above; occasional trace of glauconitic limestone, fossil fragments
3090-3120	100	Marl - as above. Trace of glauconitic limestone
3120-3150	100	Marl
3150-3180	100	Marl - very soft to fairly firm, very light to light grey, the very soft variety seems to be the lighter coloured
3180-3210	100	Marl - as above, <u>very</u> rare fossil fragments, calcarenite (cavings?)
3210-3240	100	Marl - very light to light grey; very soft to moderately firm

SAMPLE DESCRIPTIONS.

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
3240-3270		As above - some fine grained sand size, rounded calcareous grains (calcite?) contained within some lumps of marl. Rare fragments (elongate) of oval shaped in cross-section, light grey to grey limestone with <u>non</u> -calcareous black coat
3270-3300	100	<u>Marl</u> - very light to light grey, soft to firm. Occasional fragments of clear limestone with glauconite inclusions. Fragments black-coated limestone as ab
3300-3330	100	<u>Marl</u> - as above. Rare fragments glauconitic limestone as above. Some fossil (cephalopods). Fragments of black-coated limestone as above. Some fine grained calcareous grains in <u>some</u> marl lumps.
3330-3360	100	<u>Marl</u> - as above, some of the calcareous "grains" appear to be microfossils - white coloured marl is very soft
3360-3390	100	<u>Marl</u> as above
3390-3420	100	<u>Marl</u> - soft to firm, white to light grey, containing fine to medium sized calcareous grains. Some fragments of fossils, semi-transparent limestone, an black coated limestone.
3420-3450	100	<u>Marl</u> - light grey very soft; some micritic grey limestone and trace red limestone; fossils
3450-3480	100	<u>Marl</u> - 50% light grey - grey very soft 50% medium grey, moderately firm, silty, becoming fissile at times Trace micritic limestone, grey, very firm
3480-3510	90	<u>Marl</u> - 50% medium grained, moderately firm, very silty, becoming fissile 40% light grey to grey
	10	<u>Limestone</u> - micritic, light grey to buff, very firm
3510-3540	70	<u>Marl</u> - as above
	30	<u>Limestone</u> - as above - trace pyrite veins in limestone
3540-3570	60	<u>Marl</u> - as above
	40	<u>Limestone</u> - as above and some white and grey limestone
357 3600	80	<u>Marl</u> - 50% very light grey, soft)Some of each containing calcareous 50% light to medium grey, firm)grains
	20	<u>Limestone</u> - micritic, buff colour, subconchoidal fracture. Some fossils (coral, cephalopod). Rare fragments of black-coated white limestone
3600-3630	5	<u>Micritic limestone</u> - as above
	95	<u>Marl</u> - 50% very light grey, soft containing fossils (fine to medium sand sized) 50% light to medium grey, firm, some fissile appearance 1 large fragment of unknown mineral - crystallised, transparent, colourless, no taste, no effervescence, striations on xtal-face, poor cleavage, SG \geq 3 1 calcareous fossil (?) replaced externally by pyrite
3630-3660	60	<u>Marl</u> - light grey, very soft; - trace limonite
	40	Very silty marl - grey, moderately firm, occasionally fissile (calcareous shale)
3660-3690	70	<u>Marl</u> - as above
	30	Very silty marl - as above
3690-3720		As above
3720-3750		As above
3750-3780	80	<u>Marl</u> - as above with trace buff micritic limestone
	20	Very silty marl, grey moderately firm
3780-3810		As above - trace fossil

SAMPLE DESCRIPTIONS

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
3810-3840	60	Marl - light grey, very soft; trace buff micritic limestone; light grey calcarenite; fossils
	40	Very silty marl, medium grey, moderately firm, occasional fissile form
3840-3870	60	Marl - as above - trace laminate, fossil
	40	Very silty marl - as above
3870-3900		As above
3900-3930	30	Marl - white, very soft, occurs as lumps, containing calcareous grains (microfossils). Occasional limestone fragments
	70	Marl - light to medium grey, firm, occurs in platy ("fissile") form
3930-3960	50	Platy marl (=calcareous "shale") - light to medium grey, moderately soft to firm
	50	Soft marl - very light grey, very soft to moderately firm, with calcareous "grains"
3960-3990	30	"calcareous shale" (platy marl) as above
	30	Marl - as above
	40	Limestone - translucent, colourless to white, fossiliferous, some replacement by pyrite (appears framboidal)
3990-4020	60	Soft marl - as above)Some fossils; some limestone - colourless to whi
	40	Calcareous shale - as above)to grey, some fossiliferous, showing occasional replacement by pyrite. Rare fragments of transparent, colourless, SG \geq 3 mineral
4020-4050	60	Calcareous shale - as above
	40	Soft light grey marl - as above. Trace limestone - some fossiliferous; transparent mineral, SG \geq 3; pyrite; micritic limestone
4050-4080	70	Shale - calcareous, medium grey, moderately firm
	30	Marl - light grey, very soft; traces micritic limestone
4080-4110	60	Shale - as above - has been becoming progressively less calcareous
	40	Marl - as above - with pyrite. Some fossils and grey micrite
41 - 4140	70	Shale - as above
	30	Marl - as above. Some fossils and buff limestone
4140-4170	60	Shale - calcareous, grey, moderately firm to firm
	40	Marl - light grey, very soft; pyrite; fossils
4170-4200	80	Shale - as above
	20	Marl - light grey; abundant fossils
4200-4230	90	Shale - as above
	10	Marl - as above
4230-4260	90	Shale - as above
	10	Marl - as above; trace buff micritic limestone; abundant fossils
4260-4290	90	Shale - light grey to grey, moderately soft to moderately firm, very calcareous
	10	Marl - as above with abundant fossils
4290-4320		As above
4320-4350		As above
4350-4380	70	Shale - grey, calcareous, moderately firm
	30	Marl - light grey to grey, soft to firm ; abundant fossils

DEPTH	%	SAMPLE DESCRIPTION
4380-4410	80 20	Shale - as above Marl - as above - abundant fossils, trace pyrite intergrown with calcite
4410-4440	90 10	Shale - as above Marl - light grey to grey, mainly moderately firm, abundant fossil, cephalopods, stems. Some black, non-calcareous, moderately firm grains
4440-4470	70 30	Shale - as above Marl - as above
4470-4500		As above
4500-4530		As above - with occasional black, non-calcareous grains
4530-4560	90 10	Shale - medium grey, firm, calcareous Marl - light grey, soft, occasional fossil (stem)
		POH @ 4602' - CHANGE BIT

SAMPLE DESCRIPTIONS

DEPTH	%	SAMPLE DESCRIPTION
4560-4590	30 70	<u>Marl</u> , light grey, very soft, fossiliferous. <u>Shale</u> , Medium grey, moderately firm, very calcareous. Traces buff micritic limestone, cement cavings.
4590-4620	20 80	<u>Marl</u> , as above, pyrite overgrowing/replacing fossil. <u>Shale</u> , as above Abundant lignite, black, soft, (drilling mud?)
4620-4650	70 30	<u>Shale</u> , as above <u>Marl</u> , with calcareous grains embedded (calcsphere(?), fossils). Embedding may simply be due to softness of Marl. Trace pyrite and fossil fragments. Abundant black, brittle, non calcareous carbonaceous material(?). Trace colourless translucent to transparent mineral, with cleavage.
4650-4680	60 40	<u>Shale</u> , as above <u>Marl</u> , as above Trace fossils, colourless mineral, pyrite, limestone with black, non calcareous coating. Abundant black, lignite (?).
4680-4710		As above, abundant fossils and lignite. Fossils are sand-sized.
4710-4740		As above, abundant small fossils, trace pyrite, abundant black lignite.
4740-4770	70 30	<u>Shale</u> , light to medium grey, moderately firm, very calcareous. <u>Marl</u> , white to very light grey, small fossils and calcareous grains are embedded. Some black lignite. Abundant small calcareous grains (some are fossils). Trace pyrite, yellow limestone.
4770-4800	70 30	<u>Shale</u> , as above <u>Marl</u> , as above, some fossils, lignite, trace pyrite, colourless mineral.
4800-4830	60 40	<u>Shale</u> , as above <u>Marl</u> , abundant calcareous grains and some fossils, lignite.
4830-4860	40 60	<u>Shale</u> , as above <u>Marl</u> , as above. Abundant small calcareous grains and fossils (medium sand sized); black, brittle, lignite.
4860-4890	60 40	<u>Shale</u> , as above <u>Marl</u> , as above Trace black lignite, small fossil fragments.
4890-4920	100	<u>Marl</u> , as above grading to calcareous <u>shale</u> as above. Fossils, forams
4920-4950	100	<u>Marl</u> , as above to calcareous <u>shale</u> , as above
4950-4980	100	<u>Marl</u> , as above to calcareous <u>shale</u> , as above. Trace pyrite, trace coal (very fine cuttings)
4980-5010	100	Calcareous <u>shale</u> , as above, slightly firmer, to marl, as above
5010-5040	100	Calcareous <u>shale</u> , quite firm, as above, to marl as above
5040-5070	100	Calcareous <u>mudstone</u> , mid grey with minor fine-sand-sized shell fragments, soft to firm (70%) to marl, light grey, soft, as above (30%) fossiliferous pyritic.
5070-5100	100	Calcareous <u>shale</u> , as above, 60% to marl, as above, 40%.
5100-5130	100	Calcareous <u>shale</u> , as above, rarely carbonaceous fragments, 40%, to <u>marl</u> as above 60%. Rare glauconite, fossils, pyrite
5130-5160	100	Calcareous <u>Shale</u> , as above (50%) to marl as above (50%).
5160-5190	100	Calcareous <u>Shale</u> , (80%) to <u>Marl</u> (20%)

SAMPLE DESCRIPTIONS

SUNFISH-1

D. Maughan/M. Hordern

12.2.74

DEPTH	%	SAMPLE DESCRIPTION
5190-5220	100	Calcareous <u>Shale</u> (40%) to <u>Marl</u> (60%)
5220-5250	100	Calcareous <u>Shale</u> (50%) to <u>Marl</u> (50%) Trace limestone, micritic, buff, fine to very fine, pyritic, tight.
5250-5280	50 50	Calcareous <u>Shale</u> to <u>Marl</u> , becoming partly silty, trace limestone as above.
5280-5310	70 30	Calcareous <u>Shale</u> to <u>Marl</u> as above
5310-5340	90 10	Calcareous <u>Shale</u> to <u>Marl</u> as above, trace limestone
5340-5370	90 10	Calcareous <u>Shale</u> to <u>Marl</u> as above, trace limestone as above
5370-5400	90 10	Calcareous <u>Shale</u> to <u>Marl</u> as above, trace limestone as above.
5400-5430	100	Calcareous <u>shale</u> , trace <u>marl</u> as above Trace limestone, micritic, buff, fine, tight, glauconite, as above
5430-5460	100	Calcareous <u>Shale</u> , trace <u>marl</u> , as above
5460-5490	100	Calcareous <u>shale</u> , trace <u>marl</u> , as above
5490-5520	50 50	Calcareous <u>shale</u> , trace <u>marl</u> , as above, pyrite. <u>Limestone</u> , buff, micritic, crystalline, glauconitic, pyritic.
5520-5530	100	<u>Coal</u> , black, bright, bleeding gas, Trace very dark brown, carbonaceous <u>shale</u> , bleeding gas. C ₁ 1900, C ₂ 400, HW 65.
5530-5540	50 30 20	<u>Coal</u> , black as above Calcareous <u>shale</u> , trace <u>marl</u> , as above Sandstone, white, medium to coarse grained, subangular to subrounded, fair sorting, unconsolidated, no shows.
5540-5550	50 20 20 10	Calcareous <u>shale</u> , trace <u>marl</u> , as above Sandstone, fine to coarse, white, angular to subrounded, moderately sorted, unconsolidated, no shows. Limestone, micritic, crystalline, glauconitic, pyritic, as above. <u>Coal</u> , black, as above
5550-5560	80 10 10	Calcareous <u>shale</u> , trace <u>marl</u> , as above <u>Sandstone</u> , fine to coarse, white, as above. <u>Limestone</u> , micritic, crystalline, as above Trace <u>coal</u>
5560-5570	80 10 10	Calcareous <u>shale</u> , trace <u>marl</u> as above <u>Sandstone</u> , fine to coarse, as above <u>Limestone</u> , as above Trace <u>coal</u> , abundant pyrite.
5570-5580	80 15 5	<u>Coal</u> , black to carbonaceous <u>shale</u> , pyrite. Calcareous <u>shale</u> , as above <u>Sandstone</u> , fine to coarse, as above HW 75, C ₁ 11,000 C ₂ 1200, C ₃ 400.
5580-5590	90 10	Calcareous <u>shale</u> , as above <u>Coal</u> Trace <u>sandstone</u> , fine to coarse, as above
5590-5595	90 10	Calcareous <u>shale</u> , as above <u>Coal</u> , trace <u>sandstone</u> , fine to coarse, as above

SAMPLE DESCRIPTIONS

D. Maughan/M. Hordern
12/2/74

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
		micritic, crystalline, as above
5595-5600	90	Calcareous <u>shale</u> , as above
	10	<u>Coal</u> Trace <u>sandstone</u> , fine to medium sand sized, calcareous cement; pyrite ; glauconitic <u>limestone</u> ; fossils; minor <u>mudstone</u> - buff, moderately firm, non calcareous.
5600-5610	100	Calcareous <u>shale</u> , as above Trace <u>coal</u> ; <u>sandstone</u> , both clean white variety & buff to light brown, occasionally with carbonaceous remains, very fine to fine sand sized; and <u>mudstone</u> , non calcareous, buff, very firm, pyritic
5610-5620	80	Calcareous <u>shale</u> , as above
	20	<u>Sandstone</u> , light grey, slightly calcareous (?dolomitic) rare bright yellow fluorescence, excellent bright yellow cut. Sandstone fine, angular to subrounded, moderately sorted, hard, tight. HW 30
5620-5630	50	Calcareous <u>shale</u> as above
	30	<u>Coal</u> , black as above
	10	<u>Sandstone</u> , calcareous, fine, as above, some fluorescence
	10	<u>Siltstone</u> , very dark brown, carbonaceous, pyritic
		HW 90, C ₁ 6000, C ₂ 600.
5630-5640	70	<u>Coal</u> , black as above
	15	<u>Siltstone</u> , brown, carbonaceous, pyritic
	10	Calcareous <u>shale</u> , as above
	5	<u>Sandstone</u> , calcareous, fine, as above
5640-5650	50	<u>Coal</u> , black as above HW 135 C ₁ 8000, C ₂ 500, C ₃ 100
	25	<u>Siltstone</u> , brown, carbonaceous, pyritic,
	15	<u>Sandstone</u> , fine to very fine to <u>siltstone</u> , white, interlaminated with <u>siltstone</u> , brown carbonaceous; clayey matrix, poor porosity, no shows.
	10	Calcareous <u>shale</u> , as above
5650-5660	50	<u>Coal</u> , black as above
	25	<u>Siltstone</u> , brown, carbonaceous, as above
	15	<u>Sandstone</u> , white, fine to very fine, as above, no shows
	10	Calcareous <u>shale</u> , as above
		5665' 100% Coal, HW 70, C ₁ 1400, C ₂ 200.
5660-5670	50	Calcareous <u>shale</u> , as above.
	25	<u>Coal</u> , black as above
	15	<u>Siltstone</u> , brown, as above
	10	<u>Sandstone</u> , as above, some fine, calcareous, white (5%).
5670-5680	90	<u>Coal</u> , black to carbonaceous <u>shale</u> , as above
	5	<u>Siltstone</u> , as above
	5	<u>Sandstone</u> , as above
5680-5690	85	<u>Coal</u> , black to carbonaceous <u>shale</u> , as above
	10	<u>Siltstone</u> , as above
	5	<u>Sandstone</u> , as above
5690-5700	75	<u>Coal</u> , black to carbonaceous <u>shale</u> , as above
	20	<u>Siltstone</u> , as above, grading to buff siltstone, as above
	5	<u>Sandstone</u> , as above
5700-5710	50	<u>Siltstone</u> , light to dark brown, carbonaceous, pyritic, as above
	30	<u>Coal</u> , black to <u>shale</u> , carbonaceous black, as above
	15	Calcareous, <u>shale</u> , cavings
	5	<u>Sandstone</u> , fine to very fine, white, tight, soft, no shows

SAMPLE DESCRIPTIONS

SUNFISH-1

13.2.74

DEPTH	%	SAMPLE DESCRIPTION
5710-5720	50	<u>Siltstone</u> , brown, carbonaceous, pyritic
	40	<u>Coal</u>
	10	<u>Sandstone</u> , very fine, white, tight.
5720-5730	70	<u>Siltstone</u> , brown, carbonaceous, pyritic.
	20	<u>Coal</u>
	10	<u>Sandstone</u> , fine to very fine, white, tight, as above and coarse, angular, unconsolidated, cut.
5730-5740	60	<u>Siltstone</u> , brown, carbonaceous, pyritic.
	20	<u>Coal</u>
	20	<u>Sandstone</u> , fine to very fine, white, as above, coarse, unconsolidated as above; abundant pyrite.
5740-5750	80	<u>Coal</u>
	10	<u>Siltstone</u>
	10	<u>Sandstone</u> , fine to very fine, white, as above & coarse, unconsolidated, as above; abundant pyrite.
5750-5760	50	<u>Coal</u>
	30	<u>Siltstone</u> , brown - black, (carbonaceous to very carbonaceous)
	15	<u>Sandstone</u> , coarse, white, angular, unconsolidated, as above.
	5	<u>Sandstone</u> , fine to very fine, white, as above
5760-5770	60	<u>Coal</u>
	20	<u>Siltstone</u> , brown-black, as above
	10	<u>Sandstone</u> , coarse, white, unconsolidated as above
	10	<u>Sandstone</u> , fine to very fine, white, as above
5770-5780	40	<u>Coal</u>
	45	<u>Siltstone</u> , brown-black, with carbonaceous as above
	15	<u>Sandstone</u> , fine to very fine, frequently bright yellow fluorescence, Excellent cut, high C ₅₊ .
	5	<u>Sandstone</u> , medium to coarse, white as above
5780-5790	60	<u>Coal</u>
	25	<u>Siltstone</u> , brown-black, carbonaceous, as above
	10	<u>Sandstone</u> , fine to very fine, white, as above, rare shows, as above
	5	<u>Sandstone</u> , coarse, white, as above.
5790-5800	80	<u>Siltstone</u> , brown-black, carbonaceous, as above, bleeding gas.
	10	<u>Coal</u>
	5	<u>Sandstone</u> , fine to very fine, white, no shows.
	5	<u>Sandstone</u> , as above, coarse
		HW 220, C ₁ 24,000, C ₂ 2600, C ₃ 1200, C ₄ 100.
5800-5810	50	<u>Coal</u> , black, very pyritic.
	40	<u>Siltstone</u> , buff-brown, carbonaceous, pyritic
	10	<u>Sandstone</u> , fine to very fine, tight, white, no shows.
5810-5820	40	<u>Coal</u> , black, pyritic.
	50	<u>Siltstone</u> , buff to light grey to brown, carbonaceous
	10	<u>Sandstone</u> , white to very light buff colour, mostly tight. Rare fluorescence and cut.
		HW 150, C ₁ 17,500, C ₂ 2,200 C ₃ 1,200.
5820-5830	15	<u>Coal</u> , black, bright
	70	<u>Siltstone</u> , buff to brown, some very carbonaceous
	15	<u>Sandstone</u> , white, tight, fine grained, rare coarse grained, white sandstone fragments. Rare fluorescence and cut. Trace pyrite-some well crystallised.
5830-5840	30	<u>Coal</u> , black, bright very pyritic

SAMPLE DESCRIPTIONS

SUNFISH-1

13/2/74

DEPTH	%	SAMPLE DESCRIPTION
5830-5840	60	<u>Siltstone</u> , buff, calcareous, firm.
continued	10	<u>Sandstone</u> , pale yellow, brown, dirty, tight, to rare white <u>sandstone</u> fluorescence and cut; abundant pyrite - associated with coal and occasionally with sandstone
5840-5850	80	<u>Siltstone</u> , buff to brown to medium dark grey, very carbonaceous, brittle to very firm.
	10	<u>Sandstone</u> , very fine, white to buff, to very light grey, tight, occasionally carbonaceous, fluorescence and cut.
	10	<u>Coal</u> as above, some vuggy limonite, pyrite.
5850-5860	85	<u>Siltstone</u> , mainly grey to brown; Rest (light coloured) are probably cavings (splintery)
	10	<u>Coal</u> as above
	5	<u>Sandstone</u> , white to pale brown, fine.
5860-5870	80	<u>Siltstone</u> to shaley <u>siltstone</u> , buff to brown, carbonaceous, occasionally pyritic.
	20	<u>Coal</u> , as above
		Trace <u>sandstone</u> , buff to pale brown, tight, fine grained
		Abundant pyrite.
5870-5880	90	<u>Siltstone</u> to shaley <u>siltstone</u> , medium grey to brown, carbonaceous occasionally pyritic.
	10	<u>Coal</u> , as above
5880-5890	85	<u>Siltstone</u> to shaley, carbonaceous, pyritic, grey to brown
	10	<u>Sandstone</u> , white to pale brown, fine grained, carbonaceous, very tight, firm, poor fluorescence and cut.
	5	<u>Coal</u>
5890-5900	75	<u>Siltstone</u> , carbonaceous grey to brown, sometimes pyritic
	20	<u>Sandstone</u> , white to buff, very fine to fine grained, often carbonaceous, very poor fluorescence.
	5	<u>Coal</u> , sometimes pyritic
5900-5910	100	<u>Siltstone</u> , buff to brown, carbonaceous, grading to <u>sandstone</u> , white to pale yellow brown, carbonaceous, very fine to fine. (Actual fragments show interbedding). Trace coal; sandstone - white, medium grained; some pyrite. Trace quartz fragments - translucent, colourless.
5910-5920	95	<u>Siltstone</u> , as above grading to <u>sandstone</u> , as above
	5	<u>Coal</u> , black, bright. Some pyrite.
5920	70	<u>Siltstone</u> , light brown to pale brown
	20	<u>Sandstone</u> , buff to pale brown, often carbonaceous, good fluorescence and cut.
	10	<u>Mudstone</u> , carbonaceous, brown Trace pyrite; quartz - translucent, white.
		HW 150, C ₁ 17,500, C ₂ 2,200, C ₃ 1,200, C ₄ 300, C ₅ 400.
5930-5940	70	<u>Siltstone</u> , as above
	20	<u>Sandstone</u> , carbonaceous, white to buff, very fine to fine. Moderately good fluorescence and cut.
	5	Carbonaceous <u>Mudstone</u>
	5	<u>Coal</u> C ₁ 2,600, C ₂ 500.
5940-5950	90	<u>Siltstone</u> to shaley <u>siltstone</u> , as above
	10	<u>Sandstone</u> , as above Trace <u>coal</u>
5950-5960	90	<u>Siltstone</u> , buff to pale brown, trace carbonaceous shaley <u>mudstone</u> , brown grading to 10% <u>sandstone</u> , buff, very fine grained, carbonaceous.
	10	some pyrite often associated with <u>siltstone</u> . Trace <u>Coal</u>

SAMPLE DESCRIPTIONS

SUNFISH-1

13/2/74

DEPTH	%	SAMPLE DESCRIPTION
5960-5970 continued	10	<u>Sandstone</u> , very fine grained, light brown, some carbonaceous. No shows; Trace <u>sandstone</u> -white, fine grained.
5970-5980	70	<u>Siltstone</u> buff to pale brown & brown to black, very carbonaceous, micaceous, moderately firm.
	30	<u>Sandstone</u> , white to pale brown, carbonaceous, very fine to fine, no shows. Trace coal; quartz fragments, translucent, colourless to white; pyrite; vuggy limonite, reddish brown, pock marked where once existed pyrite and non calcareous grains
5980-5990	90	<u>Siltstone</u> , buff to pale brown, micaceous, carbonaceous, moderately firm, grading to
	10	<u>Sandstone</u> , as above. Trace <u>Coal</u> , quartz, limonite, as above Rare grains of dirty <u>sandstone</u> showed fluorescence and cut
5990-6000	60	<u>Siltstone</u> , buff to light brown, micaceous, some carbonaceous.
	10	<u>Sandstone</u> , white to buff, very fine, micaceous, carbonaceous.
	20	<u>Mudstone</u> , shaley, very carbonaceous, brown
	10	<u>Coal</u> , black, bright, hard.
6000-6010	80	<u>Siltstone</u> , white to light brown, micaceous, carbonaceous, very pyritic.
	10	<u>Coal</u> , to very carbonaceous <u>mudstone</u>
	5	<u>Sandstone</u> , very fine, white to buff, micaceous, tight
	5	<u>Sandstone</u> , coarse, angular, moderately sorted, unconsolidated
6010-6020	80	<u>Siltstone</u> , buff to brown, micaceous, carbonaceous, very pyritic
	5	<u>Sandstone</u> , fine to very fine, white to buff, micaceous, tight
	10	<u>Coal</u> , Black to very carbonaceous <u>shale</u>
	5	<u>Sandstone</u> , coarse, white, unconsolidated.
6020-6030	70	<u>Siltstone</u> , buff to brown, micaceous, carbonaceous, very pyritic
	10	<u>Coal</u> , black, bright, to <u>shale</u> , very carbonaceous
	10	<u>Sandstone</u> , fine to very fine, white to buff, tight, micaceous
	10	<u>Sandstone</u> , coarse, white, unconsolidated
6030-6040	70	<u>Siltstone</u> , buff-brown, micaceous, carbonaceous, very pyritic
	20	<u>Coal</u> , carbonaceous <u>shale</u>
	10	<u>Sandstone</u> , fine to very fine, white to buff, micaceous, tight.
6040-6050	80	<u>Siltstone</u> , buff to brown, micaceous, carbonaceous very pyritic
	10	<u>Coal</u> , carbonaceous <u>shale</u>
	10	<u>Sandstone</u> , very fine to fine, coarse, unconsolidated, as above
6050-6060	60	<u>Coal</u> , carbonaceous <u>shale</u>
	20	<u>Siltstone</u> , buff to brown, carbonaceous, micaceous, very pyritic
	10	<u>Sandstone</u> , very fine to fine
	10	<u>Sandstone</u> , coarse, unconsolidated
6060-6070	70	<u>Siltstone</u> , buff-brown, carbonaceous, micaceous, very pyritic
	10	<u>Coal</u> , to carbonaceous <u>shale</u>
	10	<u>Sandstone</u> , very fine to fine
	10	<u>Sandstone</u> , coarse, unconsolidated
6070-6080	80	<u>Siltstone</u> , as above
	10	<u>Sandstone</u> , fine to very fine, rarely dolomitic aggregates
	10	<u>Sandstone</u> , coarse, unconsolidated
6080-6090	60	<u>Siltstone</u> , as above
	20	<u>Sandstone</u> , fine to very fine, white to grey, part dolomitic, tight
	10	<u>Sandstone</u> , coarse, unconsolidated
	10	<u>Coal</u> , - <u>shale</u> carbonaceous
6090-6100	50	<u>Siltstone</u> , buff-brown, micaceous, carbonaceous, pyritic
	30	<u>Sandstone</u> , fine to very fine, white to grey, part dolomitic, tight
	10	<u>Sandstone</u> , coarse, unconsolidated
	10	<u>Coal</u> , as above

SAMPLE DESCRIPTIONS

SUNFISH-1

13.2.74

DEPTH	%	SAMPLE DESCRIPTION
6100-6110	60	Coal, as above
	30	Siltstone, buff-brown, micaceous, carbonaceous
	10	Sandstone, fine to very fine; and coarse
6110-6120	60	Siltstone, as above
	30	Sandstone, fine to very fine, white to grey, tight
	10	Coal, as above
6120-6130	40	Coal, as above
	40	Siltstone, as above
	20	Sandstone, as above
6130-6140	50	Siltstone, buff-brown, carbonaceous, grading to carbonaceous shale brown to black.
	30	Coal, black, bright. Trace pyrite.
	20	Sandstone, white to buff, very fine grained, no shows
6140-6150	50	Siltstone - buff to light brown, micaceous, slightly carbonaceous, to pale brown to brown, very carbonaceous.
	40	Coal, as above
	10	Sandstone, as above, no shows; some pyrite
6150-6160	40	Coal, as above
	30	Siltstone, buff to dark, very carbonaceous, shaley
	5	Sandstone, light brown to buff, some carbonaceous
	25	Sandstone, moderately abundant quartz grains translucent, white, medium to coarse, no fluorescence.
6160-6170	50	Sandstone, angular to subrounded, normally individual grains, translucent, white, no fluorescence.
	30	Siltstone, as above, grading to fine sandstone, buff to light brown carbonaceous.
	20	Coal, as above
6170-6180	40	Sandstone, coarse, individual grains, translucent to white to colourless subangular to subrounded, poor to moderately spherical occasionally crystalline faces, no shows.
	40	Siltstone, as above grading to buff sandstone carbonaceous, fine as above
	20	Coal as above
		HW 50, C1 2900.
6180-6190	70	Sandstone, coarse, as above, no shows.
	20	Siltstone, brown, carbonaceous, micaceous, as above.
	10	Coal, as above
6190-6200	60	Siltstone, white to light brown, slightly carbonaceous grading to mudstone shaley, brown, very carbonaceous
	20	Sandstone, coarse grained, subangular to subrounded, moderately spherical transparent to translucent, colourless to white, as above, no shows, some crystalline faces.
	20	Coal, as above
6200-6210	60	Siltstone, white to pale brown, grading to sandstone, very fine grained buff, carbonaceous and to mudstone, shaley, brown, very carbonaceous
	30	Coal, black, bright
	10	Sandstone, coarse, individual grains, as above, no shows STILL GETTING VERY ABUNDANT CALCAREOUS SHALE CAVINGS.
6210-6220	75	Shaley siltstone, as above grading to fine sandstone and shaley carbonaceous mudstone
	20	Coal, as above
	5	Sandstone, coarse transparent to translucent, white to colourless, as above no shows.

SAMPLE DESCRIPTIONS

SUNFISH-1

13/2/74

DEPTH	%	SAMPLE DESCRIPTION
6220-6230	30	<u>Sandstone</u> , very fine to fine, white to buff, carbonaceous
	40	<u>Siltstone</u> , buff to brown, to dark gray, slight to very carbonaceous
	20	<u>Coal</u> , black, bright, some pyrite
	10	<u>Sandstone</u> , coarse, transparent to translucent, as above. Trace pyrite
6230-6240	70	<u>Coal</u> , black, bright, pyrite, sub-conchoidal fracture
	25	<u>Siltstone</u> , buff, to <u>siltstone</u> , very shaley, brown, carbonaceous
	5	<u>Sandstone</u> , white very fine to fine
		Trace <u>sandstone</u> , translucent, white as above, coarse
6240-6250	40	<u>Siltstone</u> , buff, brown, carbonaceous, pyritic, micaceous
	30	<u>Sandstone</u> , fine to very fine, white to buff, tight
	20	<u>Coal</u> , carbonaceous <u>shale</u> , pyritic
	10	<u>Sandstone</u> , coarse, white, unconsolidated
6250-6260	60	<u>Coal</u> , black to carbonaceous <u>shale</u> , pyrite
	30	<u>Siltstone</u> , buff to brown, micaceous, carbonaceous, pyritic
	10	<u>Sandstone</u> , white to grey, fine to very fine, tight
6270-6280	50	<u>Siltstone</u> , buff-brown, micaceous, carbonaceous, pyrite.
	40	<u>Sandstone</u> , white to grey, fine to very fine, tight.
	10	<u>Coal</u> , carbonaceous shale
6270-6280	50	<u>Siltstone</u> , buff-brown, micaceous, carbonaceous
	25	<u>Coal</u> , carbonaceous <u>shale</u>
	25	<u>Sandstone</u> , fine to very fine, white to grey, 95% MIOCENE CAVINGS
6280-6290	50	<u>Siltstone</u> , buff to brown, micaceous, carbonaceous.
	40	<u>Coal</u> , carbonaceous <u>shale</u>
	10	<u>Sandstone</u> , fine to very fine, white to grey, no show
6290-6300	80	<u>Coal</u>
	10	<u>Siltstone</u> , buff-brown, carbonaceous micaceous
	10	<u>Sandstone</u> , fine to very fine, white to grey, no show
6300-6310	40	<u>Siltstone</u> , buff to brown
	30	<u>Sandstone</u> , fine to very fine, white to grey, no show
	30	<u>Coal</u>
		6315 HW 55, 6320 HW 125, C ₁ 12,000, C ₂ 1,000 C ₃ 200. Minor fluorescence in fine to very fine sandstone with coaly streak (rare); sandstone fine to very fine 15-20% porosity, subangular to subrounded, well sorted, soft, no fluorescence.
6310-6320	60	<u>Coal</u>
	30	<u>Sandstone</u> , fine to very fine, buff, white, rare fair porosity
	10	<u>Siltstone</u> , brown, carbonaceous
6320-6330	60	<u>Coal</u>
	30	<u>Siltstone</u> , brown, carbonaceous
	10	<u>Sandstone</u> , fine to very fine, buff-white, rare fair porosity
6330-6340	50	<u>Sandstone</u> , coarse, white, angular to subrounded, well sorted, rare fair fluorescence, good yellow cut; unconsolidated.
	20	<u>Sandstone</u> , fine grey, porosity 15-20%, common fair fluorescence excellent cut, - yellow; soft.
	30	<u>Siltstone</u> , buff to brown, HW 90, C ₁ 6000 C ₂ 1200 C ₃ 300
6340-6350	70	<u>Sandstone</u> , coarse white, subangular to subrounded, well sorted, no shows
	20	<u>Coal</u>
	10	<u>Siltstone</u> , buff to brown

SAMPLE DESCRIPTIONS

14/2/74

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
6350-6360	90	<u>Sandstone</u> , medium to coarse, white, as above, unconsolidated, faint yellow fluorescence, fair cut. HW 60, C ₁ 4000, C ₂ 700, C ₃ 200.
	10	<u>Coal</u>
6360-6370	95	<u>Sandstone</u> , medium to coarse, as above, unconsolidated, faint pinpoint fluorescence (blue).
	5	<u>Coal</u>
6270-6379	79?	<u>Sandstone</u> , medium to coarse, white as above, unconsolidated, rare pinprick fluorescence
	20	<u>Siltstone</u> , buff to brown, as above
	10	<u>Coal</u>
6379-6380	60	<u>Siltstone</u> , buff to brown, as above, grading to sandstone fine, carbonaceous
	20	<u>Sandstone</u> , medium to coarse, white, as above.
	20	<u>Coal</u>
6380-6390	70	<u>Siltstone</u> , buff-brown, as above
	20	<u>Coal</u>
	10	<u>Sandstone</u> , coarse, white, as above
6390-6400	90	<u>Siltstone</u> , buff to light brown, as above
	10	<u>Coal</u> , black, bright, firm to carbonaceous <u>shale</u> , brown to black
		Trace <u>sandstone</u> , coarse, white, as above; abundant pyrite
6400-6410	60	<u>Siltstone</u> , buff to light brown, some medium grey, carbonaceous as above.
	20	<u>Coal</u> , black, as above
	20	<u>Sandstone</u> , white to light brown, tight, very fine, often carbonaceous, no show; trace pyrite
6410-6420	70	<u>Coal</u> , as above
	15	<u>Silty Shale</u> , very carbonaceous, brown
	10	<u>Siltstone</u> , buff to brown, as above
	5	<u>Sandstone</u> , white to very pale brown, micaceous, carbonaceous, very tight, dolomitic; fine.
6420-6430	75	<u>Siltstone</u> , as above, buff, firm to brown, very carbonaceous, shaley.
	25	<u>Coal</u> , as above
6430-6440	60	<u>Siltstone</u> , as above
	20	<u>Silty shale</u> , brown, carbonaceous, bleeding gas.
	10	<u>Coal</u> , as above
	10	<u>Sandstone</u> , white to pale brown, tight, fine, subangular to subrounded, dolomitic cement.
6440-6450	50	<u>Sandstone</u> , fine to medium, white, angular to subrounded, porosity = 0-5%, tight, dolomitic cement, some brown, carbonaceous, micaceous.
	30	<u>Silty shale</u> , very carbonaceous, as above.
	20	<u>Siltstone</u> , buff - brown, as above
		Trace <u>coal</u> ; pyrite.
6450-6460	80	<u>Coal</u> , black, bright, subconchoidal fracture
	10	<u>Sandstone</u> , fine to medium, white to pale brown, tight, dolomitic, porosity = 0-10%, subangular to subrounded.
	10	<u>Siltstone</u> , buff to brown, shaley, carbonaceous
6460-6470	30	<u>Coal</u>
	40	<u>Silty shale</u> , brown, carbonaceous
	20	<u>Siltstone</u> , buff
	10	<u>Sandstone</u> , as above, porosity 0-10% , tight.
6470-6480	80	<u>Siltstone</u> (70% is buff to light brown, as above, micaceous, carbonaceous 30% brown, very carbonaceous <u>silty shale</u> , bleeding gas)
	15	<u>Coal</u> , as above
	5	<u>Sandstone</u> , as above, porosity 0-10% tight.

SAMPLE DESCRIPTIONS
SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
6480-6490		As above, <u>sandstone</u> , fine to medium, tight, porosity 0-10%, tight, subangular dolomitic.
6490-6500	30	<u>Siltstone</u> , buff to light brown, carbonaceous
	30	<u>Silty shale</u> , brown, carbonaceous, bleeding gas.
	40	<u>Coal</u> , as above, trace <u>sandstone</u> , as above, trace pyrite.
6500-6510	65	<u>Siltstone</u> , buff to brown, as above
	20	<u>Carbonaceous shale</u> to silty carbonaceous <u>shale</u> - brown, micaceous, carbonaceous
	10	<u>Coal</u>
	5	<u>Sandstone</u> , fine, white to pale brown, dolomitic, tight, porosity 0-5%.
6510-6520	60	<u>Siltstone</u> , buff to pale brown, as above
	10	<u>Shale</u> , carbonaceous, silty, brown, carbonaceous, bleeding gas
	20	<u>Coal</u> , as above
	10	<u>Sandstone</u> , white to buff, very fine to medium, no shows, tight, porosity 0-5%
6520-6530	30	<u>Siltstone</u> , as above
	30	<u>Shale</u> , carbonaceous, silty, brown, bleeding gas
	30	<u>Sandstone</u> , very fine to fine, buff to light brown, carbonaceous (interlaminated or fragments of carbonaceous remains) tight, porosity 0-5%, non calcareous cement.
	10	<u>Coal</u>
6530-6540	50	<u>Siltstone</u> , as above, buff to brown
	20	<u>Shale</u> , silty, carbonaceous, brown, as above
	20	<u>Sandstone</u> , very fine, as above
	10	<u>Coal</u>
6540-6550	50	<u>Siltstone</u> , buff to brown, carbonaceous, as above
	20	<u>Shale</u> , silty carbonaceous, brown, as above
	25	<u>Coal</u>
	5	<u>Sandstone</u> , white to buff, very fine to fine grained, tight, porosity 0-5% dolomitic; trace pyrite.
6550-6560	65	<u>Siltstone</u> , buff to brown,
	20	<u>Sandstone</u> , white to buff to pale brown, very fine to medium, carbonaceous (interlaminated or fragments) tight, dolomitic, no shows.
	5	<u>Shale</u> , carbonaceous, silty, brown
	10	<u>Coal</u> , abundant pyrite.
6560-6570	50	<u>Siltstone</u> , buff to brown, carbonaceous
	20	<u>Sandstone</u> , fine to medium, buff to pale brown, carbonaceous plus Rare <u>sandstone</u> (several grains) white, translucent, medium to coarse, one with fluorescence (yellow - moderate) and cut.
	15	<u>Shale</u> , carbonaceous, brown, silty as above, bleeding
	15	<u>Coal</u> plus pyrite
6570-6580	30	<u>Siltstone</u> , brown, as above
	25	<u>Shale</u> , carbonaceous
	25	<u>Sandstone</u> , fine to medium, white to pale brown, often pyritic, carbonaceous.
	20	<u>Coal</u>
6580-6590	75	<u>Sandstone</u> , coarse, translucent, unconsolidated, white, no show.
	5	<u>Sandstone</u> , fine to medium, white to buff.
	10	<u>Siltstone</u> , brown, as above
	10	<u>Carbonaceous shale</u> , to <u>coal</u>
6590-6600	60	<u>Sandstone</u> , fine, grey, hard, tight, no shows
	20	<u>Sandstone</u> , coarse, white, unconsolidated, porosity 25%.
	10	<u>Siltstone</u> , brown to buff, as above
	10	<u>Carbonaceous shale</u> to <u>coal</u> .
6600-6610	50	<u>Sandstone</u> , coarse, white, unconsolidated, as above porosity 25%+
	20	<u>Sandstone</u> , fine, grey, hard, tight
	10	<u>Siltstone</u> , brown to buff, as above
	10	<u>Carbonaceous shale</u> to <u>coal</u>

SAMPLE DESCRIPTIONS

SUNFISH-1

14/2/74

DEPTH	%	SAMPLE DESCRIPTION
6610-6620	95	<u>Sandstone</u> , coarse, white, unconsolidated, as above, porosity 75%, permeability excellent, no show.
	5	<u>Siltstone</u> , brown to buff, as above
6620-6630	90	<u>Sandstone</u> , coarse, white, unconsolidated, as above, porosity >25%, no show.
	10	<u>Siltstone</u> , brown to buff, as above
6630-6640	100	<u>Sandstone</u> , coarse, white, unconsolidated, as above, porosity >25%, no show. Trace pyrite (common).
6640-6650	70	<u>Sandstone</u> , coarse, white, unconsolidated as above porosity >25%, no show.
	20	<u>Sandstone</u> , fine grey, hard, tight, as above, no show
	10	<u>Siltstone</u> , brown, as above
		Trace pyrite
6650-6660	50	<u>Sandstone</u> , fine, grey, hard, carbonaceous, tight, as above, no show
	30	<u>Sandstone</u> , coarse, white, unconsolidated, as above, porosity >25%, no show.
	10	<u>Siltstone</u> , brown, as above
	10	<u>Coal</u> , carbonaceous <u>shale</u>
6660-6670	40	<u>Sandstone</u> , fine, grey, hard, carbonaceous, tight, as above, no show
	30	<u>Sandstone</u> , coarse, white, unconsolidated, as above porosity >25%, no show
	20	<u>Siltstone</u> , buff to brown, carbonaceous, as above
	10	<u>Coal</u> , carbonaceous <u>shale</u>
6670-6680	40	<u>Shale</u> , black, carbonaceous
	20	<u>Coal</u>
	30	<u>Siltstone</u> , brown to dark brown, carbonaceous, pyritic
	10	<u>Sandstone</u> , coarse, white, unconsolidated, as above porosity >25%.
6680-6690	30	<u>Sandstone</u> , coarse, white, unconsolidated, as above porosity >25%, no show
	30	<u>Sandstone</u> , fine, grey to buff, soft to firm, tight, as above
	30	<u>Siltstone</u> , buff to brown, carbonaceous, micaceous, as above
	10	Carbonaceous <u>shale</u> to <u>coal</u> .
6690-6700	40	<u>Sandstone</u> , coarse, white, unconsolidated, as above. Porosity >25%.
	20	<u>Sandstone</u> , fine, grey to buff, soft to firm, tight, no show
	20	<u>Siltstone</u> , buff - brown, carbonaceous, as above
	20	Carbonaceous <u>shale</u> to <u>coal</u> .
		6700 80% Sandstone, coarse, as above HW 65
6700-6710	40	<u>Siltstone</u> , buff-brown, carbonaceous
	30	<u>Sandstone</u> , fine, grey, tight, no show
	20	<u>Sandstone</u> , coarse, white, unconsolidated.
	10	<u>Coal</u> to carbonaceous <u>shale</u>
6710-6720	40	<u>Siltstone</u> , buff to brown, carbonaceous, as above
	40	<u>Sandstone</u> , fine, grey - brown, carbonaceous, no show, tight
	10	<u>Sandstone</u> , coarse, white, unconsolidated, as above, porosity \geq 25%
	10	<u>Coal</u> to carbonaceous <u>shale</u>
6720-6730	60	<u>Sandstone</u> , fine, grey, tight, hard, carbonaceous, no show
	30	<u>Siltstone</u> , buff to brown, carbonaceous
	10	<u>Coal</u> to carbonaceous <u>shale</u>
6730-6735	70	<u>Sandstone</u> , fine to medium grey, becoming porous (10-15-20%) downwards HW 95ma
	20	<u>Siltstone</u> , as above
	10	<u>Coal</u> to carbonaceous <u>shale</u> , as above

SAMPLE DESCRIPTIONS

SUNFISH-1

15/2/74

DEPTH	%	SAMPLE DESCRIPTION
6735-6740	80	<u>Sandstone</u> , firm to medium, grey, porous tight (15-0%) . Dull gold fluorescence good bright yellow cut in 5% of <u>sandstone</u> .
	20	<u>Siltstone</u> , as above
6740-6745 C.O.	70	<u>Sandstone</u> , fine, grey, carbonaceous, tight, hard, faint fluorescence.
	20	<u>Siltstone</u> , brown, as above.
	10	<u>Sandstone</u> , coarse, white, unconsolidated, as above
6745-6750	40	<u>Siltstone</u> , brown-buff, carbonaceous
	30	<u>Sandstone</u> , fine, grey, carbonaceous, tight, hard, no show
	30	<u>Coal</u> - carbonaceous <u>shale</u>
6750-6760	80	<u>Sandstone</u> , fine, grey, carbonaceous, soft to hard, tight to 15%, no show
	20	<u>Siltstone</u> , brown-buff, carbonaceous
6760-6770	80	<u>Sandstone</u> , coarse, white, subangular to subrounded, unconsolidated, no show, porosity >25% .
	10	<u>Sandstone</u> , fine, grey, carbonaceous, tight, no show, as above
	10	<u>Siltstone</u> , brown, carbonaceous
(70-6780	90	<u>Sandstone</u> , coarse, white, unconsolidated, as above, no show, porosity >25%
	10	<u>Coal</u>
6780-6790	40	<u>Sandstone</u> , coarse, white, unconsolidated, as above no show, porosity >25%
	20	<u>Coal</u>
	20	<u>Sandstone</u> , fine, grey, tight, no show
	20	<u>Siltstone</u> , brown, carbonaceous
6790-6800	60	<u>Coal</u> , to carbonaceous <u>shale</u>
	30	<u>Sandstone</u> , coarse, white, unconsolidated, as above, no show, porosity >25%
	10	<u>Sandstone</u> , fine, tight, grey.
6800-6810	40	<u>Coal</u>
	40	<u>Siltstone</u> , buff-brown, carbonaceous
	10	<u>Sandstone</u> , coarse, white, unconsolidated, as above, no show porosity >25%
	10	<u>Sandstone</u> , fine, tight, grey
6810-6820	40	<u>Coal</u> to silty carbonaceous <u>shale</u> , bleeding gas.
	40	<u>Siltstone</u> , buff to brown, carbonaceous, micaceous
	20	<u>Sandstone</u> , white to light brown, very fine to medium, angular to subrounded, dolomite, tight, no show.
		Trace <u>sandstone</u> , white coarse, unconsolidated, subangular to subrounded porosity >20%, trace pyrite.
6820-6830	30	<u>Sandstone</u> , light grey to brown, tight, fine grained, dolomite porosity 0 - 10%.
	20	<u>Sandstone</u> , coarse, white, unconsolidated, porosity >20%. No shows.
	20	<u>Coal</u> to carbonaceous <u>shale</u>
	30	<u>Siltstone</u> , buff to pale brown, trace pyrite
6830-6840	70	<u>Coal</u> to carbonaceous <u>shale</u> , black, bleeding gas, as above
	20	<u>Siltstone</u> , buff to light brown, as above
	10	<u>Sandstone</u> , fine to very fine, buff, tight, as above
6840-6850	50	<u>Sandstone</u> , medium to coarse, angular to subangular, white, lemon to blue fluorescence from cement - evenly distributed throughout tray in "dotted" fashion, poor cut, tight, porosity 0-5%, calcareous, dolomitic, slightly hard.
	10	<u>Sandstone</u> , very fine to fine, grey, no show
	10	<u>Coal</u> to black carbonaceous <u>shale</u>
	30	<u>Siltstone</u> , as above
		Also fluorescent calcareous fragments.
	6853	70% <u>Sandstone</u> , white to buff, consolidated and hard, dolomitic, mineral fluorescence only, poor cut, blue-white, medium grained very tight.
		10% <u>Coal</u>
		20% <u>Siltstone</u>

SAMPLE DESCRIPTIONS

SUNFISH-1

15/2/74

DEPTH	%	SAMPLE DESCRIPTION
6850-6860	80	<u>Sandstone</u> , as above, dolomitic, calcareous cement, this is causing the fluorescence, lemon to faint white-blue, moderately abundant dotted thru tray, porosity 0-5, very tight, hard, not good cut.
	15	<u>Coal</u> to carbonaceous <u>shale</u> brown to black
	5	<u>Siltstone</u> , buff to pale brown, carbonaceous
6860-6870	40	<u>Sandstone</u> , medium to coarse, white, hard and consolidated, as above. No show, calcareous, slightly dolomitic, cement, very tight.
	30	<u>Coal</u> , black to carbonaceous shale, black, as above.
	20	<u>Siltstone</u> , as above
	10	<u>Sandstone</u> , fine, grey - brown, tight.
6870-6880	60	<u>Siltstone</u> , buff to grey to brown
	20	<u>Sandstone</u> , white, consolidated, medium, very tight, porosity 0-5, dolomitic cement. No show - dolomite fluorescence only.
	10	<u>Sandstone</u> , fine, buff to brown, as above, tight.
	10	<u>Coal</u> , trace pyrite
6880-6890	50	Carbonaceous <u>shale</u> - brown to black, occasional bleeding gas
	30	<u>Sandstone</u> , medium to coarse, white, consolidated, dolomitic cement, tight, porosity 0-5, angular to subrounded.
	10	<u>Coal</u>
	10	<u>Siltstone</u> , buff to pale brown, as above
6890-6900	90	<u>Sandstone</u> , medium to coarse, white, very tight, dolomitic, as above
	10	<u>Siltstone</u> , brown to pale brown, carbonaceous. Trace pyrite
6900-6910	90	<u>Sandstone</u> , as above
	10	<u>Siltstone</u> , as above. Pyrite
6910-6920	60	<u>Sandstone</u> , fine to medium to very coarse, white, dolomitic. No shows, some pyrite.
	30	<u>Siltstone</u> , pale brown to brown, carbonaceous, as above
	10	<u>Sandstone</u> , buff, fine, carbonaceous, tight, pyrite.
6920- 6930		Very abundant cavings
	30	<u>Sandstone</u> , medium to coarse, white, porosity 0-5, tight as above
	50	<u>Siltstone</u> , brown, carbonaceous
	20	Carbonaceous <u>shale</u> , brown to black
6930-6940	80	<u>Sandstone</u> , fine to coarse, white, consolidated and tight, dolomitic cement, as above, lemon fluorescence from cement only, no cut.
	10	<u>Shale</u> , very carbonaceous, black
	5	<u>Coal</u> , black
	5	<u>Siltstone</u> , brown, as above
6940-6950	60	<u>Sandstone</u> , as above, medium to coarse, white, tight, no shows
	30	<u>Siltstone</u> , as above, buff to brown
	10	Carbonaceous - <u>shale</u> to <u>coal</u> - black
6950-6960	30	<u>Coal</u> - black
	20	<u>Shale</u> , very carbonaceous, black to brown
	30	<u>Sandstone</u> , white, medium to coarse, tight. No shows
	20	<u>Siltstone</u> , buff to brown, carbonaceous.
6960-6970		Very contaminated
6970-6980	30	<u>Siltstone</u> , black to brown, carbonaceous
	30	<u>Coal</u> , carbonaceous <u>shale</u>
	40	<u>Sandstone</u> , fine, dolomitic, white, tight, no show Very contaminated after trip.

SAMPLE DESCRIPTION

SUNFISH-1

15.2.74

DEPTH	%	SAMPLE DESCRIPTION
6980-6990	60	<u>Siltstone</u> , brown, carbonaceous, micaceous, pyritic
	20	<u>Sandstone</u> , medium to coarse, white, dolomitic, tight
	20	<u>Coal</u> - carbonaceous <u>shale</u>
6990-7000	80	<u>Siltstone</u> , brown, carbonaceous, micaceous
	10	<u>Sandstone</u> , fine to medium, white, dolomitic, tight, no show
	10	<u>Coal</u> , carbonaceous <u>shale</u>
7000-7010	90	<u>Siltstone</u> , buff to brown, carbonaceous
	10	<u>Sandstone</u> , fine to medium, white, dolomitic, tight, no show
7010-7020	80	<u>Sandstone</u> , fine to medium, white, dolomitic, porosity 0-28%, dull orange fluorescence, good bright yellow cut, 5% of sandstone, no gas kick.
	20	<u>Siltstone</u> , buff, carbonaceous, as above
7020-7030	95	<u>Sandstone</u> , fine to coarse, white, dolomitic, tight, common yellow mineral fluorescence, no cut. No show
	5	<u>Siltstone</u> , buff, carbonaceous, as above
7030-7040	90	<u>Sandstone</u> , coarse, white, unconsolidated, porosity >25%, no show.
	10	<u>Sandstone</u> , fine to medium, white, dolomitic, hard, tight, no show.
7040-7050	40	<u>Sandstone</u> , coarse, unconsolidated, porosity >25%, no show
	30	<u>Sandstone</u> , fine to medium, white, dolomitic, hard, tight, no show
	30	<u>Siltstone</u> , brown, carbonaceous
7050-7060	50	<u>Sandstone</u> , fine to medium, white, dolomitic, hard, tight, no show.
	30	<u>Siltstone</u> , brown, carbonaceous
	20	<u>Sandstone</u> , coarse, white, unconsolidated, porosity >25%, no show.
7060-7070	90	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight, fairly sorted, no show.
	10	<u>Siltstone</u> , brown, carbonaceous, very pyritic.
7070-7080	80	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight, fairly sorted, no show, dolomitic cement completely fills pore space and is approx 25% of rock.
	20	<u>Siltstone</u> , brown, carbonaceous, pyritic Abundant pyrite, often crystalline (up to 5% sample).
7080-7090	70	<u>Sandstone</u> , fine to coarse, white, dolomitic, tight, as above Very rare faint gold fluorescence, rarer bright yellow cut.
	30	<u>Siltstone</u> , brown, carbonaceous, sandy, as above Abundant pyrite.
7090-7100	100	<u>Sandstone</u> , fine to coarse, white, dolomite, hard, tight, grained, angular to subrounded, fairly sorted, cement up to 25%. Trace pyrite, trace <u>siltstone</u> , brown, carbonaceous
7100-7110	100	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight, common light yellow mineral fluorescence, no cut.
7110-7120	100	<u>Sandstone</u> , fine to coarse, white, dolomite, hard, tight, rare (1%) yellow fluorescence with good yellow cut. Trace <u>coal</u> , black, pyrite, <u>siltstone</u> .
7120-7130	100	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight
7130-7140	90	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight, no show
	10	<u>Coal</u> , black to carbonaceous <u>shale</u>
7140-7150	40	<u>Siltstone</u> , buff to brown, carbonaceous
	40	<u>Sandstone</u> , fine to coarse, white, dolomitic, hard, tight, no show.
	20	<u>Coal</u> , black to carbonaceous <u>shale</u> + trace pyrite

SAMPLE DESCRIPTION

SUNFISH-1

16/2/74

DEPTH	%	SAMPLE DESCRIPTION
7150-7160	70 30	<u>Sandstone</u> , fine to coarse, white, dolomitic, tight, no show, as above <u>Siltstone</u> , brown, carbonaceous Trace carbonaceous <u>shale</u> , black, trace <u>sandstone</u> , fine, brown to pale brown, no shows.
7160-7170		Poor sample, almost all cavings, cannot interpret, lithologies present are <u>sandstone</u> , white, fine to coarse,, dolomitic as above. <u>Siltstone</u> brown, carbonaceous to buff, carbonaceous <u>shale</u> and <u>coal</u> , trace.
7170-7180	80 10 10	<u>Sandstone</u> , white, fine to medium, dolomitic, tight, no shows <u>Siltstone</u> , buff to brown, carbonaceous <u>Coal</u> , black, bright, hard to carbonaceous <u>shale</u> , brown, pyritic
7180-7190	90 10	<u>Sandstone</u> , white, medium to very coarse, dolomitic, porosity 0-max15% (cs.grains), no show. <u>Coal</u> , black, bright, bleeding gas to carbonaceous <u>shale</u> , black to brown. Trace pyrite. <u>Sandstone</u> has increased % of very coarse to coarse grains which often occur individually (i.e. with little or no cement and other grains adhering).
7190-7200	90 10	<u>Sandstone</u> , white, fine to coarse, dolomitic, tight, No show, (1 grain mineral fluorescence, no cut). <u>Siltstone</u> , buff-brown, carbonaceous plus pyrite.
		7205 90% carbonaceous <u>shale</u> to carbonaceous <u>siltstone</u> , brown to black bleeding gas. 10% <u>Sandstone</u> , white, fine to coarse, dolomitic, as above Trace <u>coal</u> , pyrite
7205-7210	30 70	<u>Siltstone</u> , brown, carbonaceous, some bleeding gas <u>Sandstone</u> , fine to medium, white, dolomitic, no shows. Trace carbonaceous <u>shale</u>
7210-7220	10 20 60 10	<u>Sandstone</u> , fine to medium, white, dolomitic, very tight Volcanic(?) altered to white <u>claystone</u> , "fibrous" appearance, sometimes fissile, non calcareous, soft to hard, green, grey, when fresh, i.e. basic volcanic. <u>Siltstone</u> , brown to black, to carbonaceous <u>shale</u> Very fine conglomerate with silty matrix, brown, (i.e. <u>siltstone</u> , as above with larger siliceous fragments of volcanic(?)).
7220-7225	100	Altered volcanic, acicular crystals (plagioclase?) now chloritic, in altered cryptocrystalline to glassy groundmass, now clay, rock buff - greenish grey occasionally bright green, some flow structure, rarely vuggy (vesicles filled with siliceous material). honey brown, subrounded to rounded grains. Vesicular to Auger material. Pyrite, some coarse, well crystallised.
7225-7230	50 40 10	Altered volcanics, buff to green, aphanitic, with flow structure, pyrite as above. <u>Clay</u> - very altered volcanics, very soft white, containing volcanics, pyritic, dolomitic, as above. <u>Siltstone</u> , medium grey, brown, carbonaceous.
7230-7240	100	Volcanics, as discreet moderately firm fragments to very soft clay alteration product as above, white.
7240-7250	30 50 20	Ferruginous volcanics, red, acicular crystals (Plagioclase) in clayey white ground mass. Volcanic fragments to clayey mass of volcanic and vesicular material as above. <u>Siltstone</u> and carbonaceous <u>shale</u>
7250-7260	75 25	Volcanics, white to green, acicular crystals in white ground mass as above with cavity fillings - siliceous white green (chloritic) and honey brown some banded agate-like concentric arrangement. Acicular crystals mainly altered to chlorite green. Ferruginous volcanics as above

SAMPLE DESCRIPTIONS

SUNFISH-1

16/2/74

DEPTH	%	SAMPLE DESCRIPTION
7260-7270		As above, but with increased amount of cavity filling material-honey brown, white, siliceous, often banded and agate-ring-like, also green plus honey brown, banded cavity fill - silica.
7270-7280	50	Volcanic, buff to green, aphanitic chrystalline as above
	40	Ferruginous volcanic, red to rust brown, with green (chloritic?) cavity fill
	10	Siltstone, brown, slightly carbonaceous.
7280-7290	100	Altered volcanic, variable, buff to green to red to brown, microcrystalline to finely granular, cavity fillings.
7290-7300	100	Altered volcanics, as above
7300-7310	100	As above
7310-7320	100	Volcanics as above, trace dolomitic sandstone
7320-7330	100	Volcanics, as above, mainly buff, often quite pyritic.
7330-7340	100	Volcanics as above, buff, quite pyritic.
(7340-7347)	40	Volcanics, as above, pyritic.
	40	Sandstone, coarse, probably part of fine to medium sandstone, dolomitic grain angular, porosity >25%.
	20	Sandstone, fine to medium, dolomitic, hard, tight, spotty (50%) yellow fluorescence, fair yellow cut (25%). quartz very coarse to angular, may be quite possibly associated with base of volcanic).
7340-7350	60	Sandstone, coarse to very coarse, angular as above porosity >25%
	20	Sandstone, fine to medium, dolomitic, 50% spotty fluorescence, 25% fair cut.
	20	Volcanic, as above
(7350-7355)	100	Sandstone, coarse to very coarse, angular to subrounded, well sorted, porosity >25%, HW 40, 75% spotty fluorescence, 10% fair cut. Trace volcanics, trace dolomitic sandstone.
7350-7360	90	Sandstone, coarse to very coarse, as above porosity >25%, 80% fluorescence, 20% fair cut.
	5	Sandstone, fine to medium, dolomitic, as above
	5	Volcanic, as above
		Trace coal, (bleeding gas). P.O.H. for Core #1.
7360-7386	75	Sandstone, light grey, fine to medium to very coarse, quartzose, clayey, slightly dolomitic, angular to subrounded, moderately sorted, hard, tight, porosity 15-20%, excellent yellow fluorescence and bluish yellow cut.
CORE # 1	20	Shale, dark grey, silty, carbonaceous
	5	Sandstone, fine to medium grained, clayey porosity low.
7386-7416	70	Shale, grey to dark grey, silty, very hard, carbonaceous to coally
		Trace pyrite.
CORE # 2	20	Sandstone, white to light grey, very fine to very coarse, subangular to subrounded, moderately well sorted, carbonaceous, micaceous, quartzose, slightly dolomitic, porosity 13-16% permeability 0.1 - 128. bluish white fluorescence, milky blue cut.
	10	Shale, white to light grey, finely interlaminated with shale, black, micaceous carbonaceous.
7416-7420	70	Siltstone, brown, carbonaceous to carbonaceous shale
	30	Sandstone, fine to coarse, white to buff, subangular to subrounded, dolomitic, some pyrite. Abundant pyrite.
7420-7430	90	Siltstone, as above
	10	Sandstone, as above
		Abundant pyrite

)
) Poor
) samples
) very
) abundant
) cavings
) volcanic
) & marls.

SAMPLE DESCRIPTION

SUNFISH-1

17/2/74

DEPTH	%	SAMPLE DESCRIPTION
7430-7440	50	<u>Siltstone</u> , dark brown, carbonaceous, quartzose,
	30	<u>Sandstone</u> , coarse, quartzose, white, unconsolidated, porosity >25%, subangular to subrounded, moderately sorted, no show.
	20	<u>Sandstone</u> , fine to coarse, quartzose, white, dolomitic, hard, tight, no show
7440-7450	60	<u>Sandstone</u> , coarse to very coarse, quartzose, white, unconsolidated porosity >25%, no show.
	20	<u>Sandstone</u> , fine to medium, quartzose, dolomitic, firm to hard, tight to 10%, no show.
	20	<u>Siltstone</u> , dark brown, carbonaceous, as above
7450-7460	60	<u>Sandstone</u> , coarse, quartzose, white, unconsolidated, porosity >25%, rare mineral fluorescence, no show.
	30	<u>Sandstone</u> , fine to medium, quartzose, dolomitic, hard, tight, no show
	10	<u>Coal to carbonaceous shale</u> , bleeding gas
		Trace <u>siltstone</u> , brown, carbonaceous
7460-7470	80	<u>Sandstone</u> , coarse, quartzose, white, unconsolidated, porosity >25%, no show.
	10	<u>Sandstone</u> , fine to medium, quartzose, dolomitic, hard, tight, no show.
	10	<u>Coal to carbonaceous shale</u> , bleeding gas
7470-7480	90	<u>Sandstone</u> , coarse, quartzose, white, unconsolidated, porosity >25%, no show
	10	<u>Sandstone</u> , fine to medium, quartzose, dolomitic, hard, tight, no show
7480-7490	50	<u>Sandstone</u> , coarse, quartzose, white, unconsolidated, porosity >25%, no show.
	20	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show
	30	<u>Siltstone</u> , dark brown, micaceous, carbonaceous
7490-7500	70	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show.
	20	<u>Sandstone</u> , coarse, unconsolidated, porosity >25%, no show
	10	<u>Siltstone</u> , dark brown, micaceous, carbonaceous
7500-7510	30	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show.
	30	<u>Sandstone</u> , coarse, unconsolidated, porosity >25%, no show.
	40	<u>Siltstone</u> , dark brown, micaceous, carbonaceous.
7510-7520	40	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show
	40	<u>Sandstone</u> , coarse, unconsolidated, porosity >25%, no show
	20	<u>Coal to carbonaceous shale</u> . Trace <u>siltstone</u>
7520-7530	70	<u>Sandstone</u> , coarse, unconsolidated porosity >25%, no show
	10	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show
	15	<u>Coal to carbonaceous shale</u>
	5	<u>Siltstone</u> , dark brown, carbonaceous micaceous
7530-7540	80	<u>Sandstone</u> , coarse to very coarse, unconsolidated, white, porosity >25%, no show
	10	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight, no show
	10	<u>Coal to carbonaceous shale</u>
7540-7550	70	<u>Sandstone</u> , coarse to very coarse, unconsolidated, white, porosity >25%
	20	<u>Sandstone</u> , fine to medium, dolomitic, hard, tight
	10	<u>Siltstone</u> , dark brown, carbonaceous
7550-7560	80	<u>Sandstone</u> , coarse to very coarse, unconsolidated porosity >25%, as above no show
	10	<u>Sandstone</u> , medium, white, slightly dolomitic, tight, no show
	10	<u>Coal and carbonaceous shale</u> , black to dark brown, plus pyrite
7560-7565	90	<u>Sandstone</u> , coarse to very coarse, white, unconsolidated, porosity >25%. as above
	10	<u>Siltstone</u> , brown, carbonaceous, plus pyrite.

POH @ 7565' for intermediate logging.

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
7590-7600	70	<u>Sandstone</u> - clear to white, medium to coarse grained, subrounded, well sorted, loose, no show
	30	Cavings
7600-7610	40	<u>Sandstone</u> - as above - no show
	20	<u>Shale</u> - medium grey, slightly silty, subfissile
	40	Cavings
7610-7620	50	<u>Sandstone</u> - as above no show
	25	<u>Shale</u> - as above
	25	Cavings
7620-7630	25	<u>Sandstone</u> - as above no show
	30	<u>Shale</u> - fine grained, silty, subfissile
	45	Cavings.
7630-7640	5	<u>Sandstone</u> - as above, no show
	30	<u>Shale</u> , medium grey, silty, subfissile
	15	<u>Siltstone</u> - brown grey, medium grained, subrounded, fairly sorted, loose
	Trace	<u>Coal</u> , carbonaceous shale
	50	Cavings
7640-7650	70	<u>Sandstone</u> - clear to white, medium grained, subrounded, well sorted loose, no show
	10	<u>Shale</u> , medium grey, slightly silty, subfissile
	20	Cavings, trace coal
7650-60	70	<u>Sandstone</u> - clear to white, coarse grained, subrounded, fair sorted, aggregates, no show
	20	<u>Shale</u> - as above
	10	Cavings, trace coal
7660-7670	5	<u>Sandstone</u> - clear to white, medium grained, subrounded, fairly sorted, loose, and aggregates, no show
	10	<u>Shale</u> , medium grey, slightly silty, sub-fissile
	75	<u>Siltstone</u> - brown, medium grained, subrounded, loose
	5	<u>Coal</u> and carbonaceous shale
	5	Rock fragments
7670-7680	2	<u>Sandstone</u> - clear to white, medium grained, subrounded, well sorted, loose
	5	<u>Shale</u> , medium grey, slightly silty, subfissile
	5	<u>Coal</u> , carbonaceous shale
	88	<u>Siltstone</u> , brown, medium to coarse grained, subrounded, poorly sorted, loose
		Trace pyrite
7680-7690	2	<u>Shale</u> , medium grey, slightly silty, subfissile
	98	<u>Siltstone</u> , brown, subangular to subrounded, fairly sorted, loose
		Trace coal, trace pyrite, trace sandstone, clear to white, medium grained rounded loose
7690-7700	15	<u>Shale</u> , medium grey, slightly silty, subfissile
	85	<u>Siltstone</u> , brown, firm, sandy
		Trace coal, trace sandstone, as above
7700-7710	30	<u>Shale</u> , medium grey, slightly silty, subfissile
	65	<u>Siltstone</u> , brown, firm sandy
	5	<u>Coal</u> , carbonaceous shale
7710-7720	20	<u>Shale</u> , as above
	75	<u>Siltstone</u> , brown, firm, sandy/carbonaceous
	3	<u>Coal</u>
	2	<u>Pyrite</u>
		Trace sandstone, as above

SUNFISH-1

DEPTH	%	SAMPLE DESCRIPTION
7720-7730	30	<u>Shale</u> , as above
	20	<u>Siltstone</u> , as above
	50	<u>Dolomite</u> , white to grey, hard Trace coal
7730-7740	15	<u>Shale</u> , as above
	60	<u>Dolomite</u> , as above
	25	<u>Volcanic</u> , angular, dark grey, green and red alterations Trace coal
7740-7750	60	<u>Volcanics</u> , as above
	30	<u>Shale</u> , as above
	10	<u>Sandstone</u> , white, subangular, medium to coarse grained, poorly sorted, loose
7750-7760	100	<u>Volcanics</u> , dark grey, angular, quartz, green to red alterations Trace dolomite, hard, white Trace shale, medium grey, subfissile, slightly silty
7760-7770	90	<u>Volcanics</u> , dark grey to green and white with acicular dark xtals alterations green and red
	5	<u>Dolomite</u> , hard, white
	5	<u>Shale</u> , medium grey, silty, subfissile Trace siltstone, light grey and brown, submassive Trace pyrite
7770-7774 (GAS)	60	<u>Volcanics</u> , as above
	10	<u>Dolomite</u> , as above
	20	Trace medium to light grey, subfissile shale
	10	<u>Marl</u> , grey to brown, slightly sandy Trace Coal Trace pyrite
7774-7775 (GAS)	25	<u>Volcanics</u> , as above including few vuggy grains
	60	<u>Dolomite</u> , white, hard
	10	<u>Marl</u> , light grey, slightly sandy
	5	<u>Shale</u> , medium grey, subfissile Trace Coal, trace quartz - reworked
7775-7780	60	<u>Dolomite</u> , white, hard, some translucent
	25	<u>Marl</u> , light grey, slightly sandy
	10	<u>Volcanics</u> , as above, alteration green to red
	3	<u>Quartz</u> - reworked red to white grains
	2	<u>Shale</u> - grey to brown subfissile Trace coal
7780-7790	50	<u>Dolomite</u> , as above
	15	<u>Volcanics</u> as above
	20	<u>Marl</u> , light grey to medium grey, slightly sandy
	10	<u>Quartz</u> , opalline material (fluorescence) and trace of reworked quartz as above
	5	<u>Siltstone</u> , medium brown, submassive, slightly sandy Trace coal, trace pyrite
7790-7800	30	<u>Siltstone</u> , medium to dark brown submassive
	15	<u>Shale</u> - grey to brown fissile
	20	<u>Limestone</u> which micritic, fossiliferous
	15	<u>Marl</u> , as above
	10	<u>Dolomite</u> , hard, white
	8	<u>Volcanics</u> as above
	2	<u>Quartz</u> , opalline and reworked, as above Trace Coal, trace pyrite
7800-7802	35	<u>Marl</u> , as above
	30	<u>Siltstone</u> , light brown, massive
	20	<u>Dolomite</u> , as above
	10	<u>Quartz</u> , opalline and reworked and coarse grained rounded sand
	5	<u>Shale</u> , medium grey to brown subfissile

DEPTH	%	SAMPLE DESCRIPTION
7802-7805 (GAS)	30	<u>Marl</u> , as above
	30	<u>Siltstone</u> , medium brown and white, massive
	30	<u>Dolomite</u> , hard, white chips
	10	<u>Sandstone</u> , white, silty and loose grains Trace coal, trace pyrite, trace volcanics
7805-7810 (GAS)	50	<u>Sandstone</u> and loose quartose grains
	30	<u>Siltstone</u> white and light brown, as above
	20	<u>Marl</u> , as above Trace volcanics, trace coal
7810-7820	50	<u>Sandstone</u> , clear loose quartz grains
	10	<u>Sandstone</u> , medium grained- silty
	10	<u>Siltstone</u> , light grey massive
	20	<u>Dolomite</u> , white hard
	10	<u>Marl</u> , as above Trace coal, volcanics, pyrite
7820-7830	30	<u>Sandstone</u> , white to light brown, fine grained, silty
	20	<u>Sandstone</u> , sub-angular to sub-rounded, loose grains
	30	<u>Siltstone</u> , white to light brown, slightly sandy massive
	15	<u>Dolomite</u> , white, hard
	5	<u>Shale</u> , dark brown, subfissile Trace coal, trace volcanics, trace opalline quartz
7830-7840	45	<u>Sandstone</u> , which, medium to coarse grained, subrounded, well sorted, loose
	10	<u>Dolomite</u> , white, hard, aslitic
	15	<u>Shale</u> , medium grey, fissile
	5	<u>Volcanics</u>
	25	<u>Siltstone</u> , brown, firm, slightly sandy
7840-7850	15	<u>Sandstone</u> , as above
	25	<u>Shale</u> , as above
	5	<u>Coal</u> , carbonaceous shale
	55	<u>Siltstone</u> , as above
7850-7860	85	<u>Sandstone</u> , clear to white, medium to coarse grained, subangular to subrounded well sorted, loose
	10	<u>Shale</u> , as above
	5	<u>Volcanics</u> Trace coal, trace dolomite
7860-7865 (GAS)	35	<u>Sandstone</u> , as above
	10	<u>Shale</u> , as above
	25	<u>Siltstone</u> , as above
	30	<u>Volcanics</u> , dark grey, angular, red and green alterations Trace coal
7865-7870	25	<u>Sandstone</u> , white, coarse grained, sub-angular, fairly sorted, loose
	25	<u>Shale</u> , as above
	45	<u>Siltstone</u> , as above
	5	<u>Volcanics</u>
7870-7880	50	<u>Sandstone</u> , white, very coarse to gritty, subangular to angular, fairly sorted as above, no show
	25	<u>Siltstone</u> , as above, carbonaceous
	25	<u>Shale</u> , as above
7880-7890	35	<u>Sandstone</u> , white, very coarse, angular, fairly sorted, loose, no show
	30	<u>Shale</u> , medium grey, fissile
	35	<u>Siltstone</u> , brown, gritty, firm
		Trace dolomite, trace volcanics
7890-7900	5	<u>Sandstone</u> , as above
	30	<u>Shale</u> , medium grey, slightly silty, sub-fissile
	65	<u>Siltstone</u> , as above

DEPTH	%	SAMPLE DESCRIPTION
7900-7905	90	<u>Shale</u> , carbonaceous, dark grey, subfissile
	10	<u>Siltstone</u> , light grey, massive, slightly sandy
		Trace dolomite, trace volcanics, trace sand grains and quartz granules
7905-7910	50	<u>Shale</u> , carbonaceous, as above
	40	<u>Siltstone</u> , white, light grey, and medium brown, massive, slightly sandy
	5	<u>Dolomite</u> , white and hard
	5	<u>Sand</u> , coarse grained sandstone and loose grains
		Trace volcanics, as above, trace coal, trace marl
7910-7920	50	<u>Shale</u> , medium to dark grey, fissile, hard
	20	<u>Marl</u> , soft, fissile, light to medium grey
	25	<u>Siltstone</u> , white, light grey and brown, massive, slightly sandy, hard
	5	<u>Sandstone</u> , medium to coarse grained, fairly sorted, good rounding, slightly silty, loose grains
		Trace volcanics, trace coal, trace dolomite
7920-7930	80	<u>Marl</u> , medium grained, carbonaceous, subfissile, strongly calcareous, soft
	20	<u>Siltstone</u> , light grey and light brown, massive, as above
		Trace dolomite, trace quartz, loose grains, trace coal
7930-7940	50	<u>Marl</u> , medium grey, as above, subfissile
	40	<u>Shale</u> , medium to dark grey, carbonaceous, fissile
	10	<u>Siltstone</u> , white, light brown, massive, hard
		Trace volcanics, as above, oolitic limestone (fluorescent), trace sandstone-few loose quartz grains, trace coal
7940-7950	60	<u>Marl</u> , as above
	20	<u>Shale</u> , as above, subfissile
	20	<u>Siltstone</u> , as above
		Trace volcanics, trace sandstone-few loose quartz grains, trace coal, trace pyrite
7950-7960	50	<u>Marl</u> , as above
	20	<u>Shale</u> , as above
	25	<u>Siltstone</u> , white to light brown, and light grey, massive, slightly sandy
	5	<u>Sandstone</u> , rounded, loose quartz grains
		Trace volcanics, as above, trace dolomite
7960-7970	40	<u>Marl</u> , as above
	40	<u>Shale</u> , dark to medium grained fissile, carbonaceous
	15	<u>Siltstone</u> , as above
	5	<u>Sandstone</u> , white, coarse grain, indurated, well sorted, well rounded, and loose grains of quartz
		Trace coal, volcanics, pyrite, dolomite
7970-7980	50	<u>Shale</u> , as above, slightly silty
	40	<u>Marl</u> , as above
	10	<u>Siltstone</u> , as above
		Trace sandstone, loose grains of quartz, trace volcanics, as above, trace dolomite
7980-7990	60	<u>Shale</u> , dark grey, carbonaceous fissile, non-silty
	20	<u>Marl</u> - as above
	20	<u>Siltstone</u> , as above
		Trace sandstone and few loose grains, trace coal, dolomite, volcanics
7990-8000	30	<u>Shale</u> , medium to dark grey, subfissile, slightly silty
	70	<u>Siltstone</u> , brown to grey, soft, gritty
		Trace sandstone, coal

DEPTH	%	SAMPLE DESCRIPTION
8000-8010	30	<u>Shale</u> , as above
	70	<u>Siltstone</u> , as above Trace coal
8010-8020	25	<u>Shale</u> , as above
	75	<u>Siltstone</u> , as above Trace coal, dolomite
8020-8030	60	<u>Siltstone</u> , (marl), calcareous, soft, fossiliferous (forams), medium to light grey
	10	<u>Siltstone</u> , non-calcareous, white to light brown, massive, slightly sandy
	20	<u>Shale</u> - carbonaceous, dark grey fissile, slightly silty
	10	Cavings Trace sandstone, volcanics, coal
8030-8040	40	<u>Shale</u> , dark grey, carbonaceous as above
	50	<u>Siltstone</u> , white to medium grey, slightly calcareous, slightly sandy, massive soft to firm
	10	Cavings Trace sandstone - medium loose grains and granules, trace dolomite, coal, volcanics
8040-8050	30	<u>Shale</u> , as above
	40	<u>Siltstone</u> - calcareous, soft, medium grey
	30	<u>Siltstone</u> - non-calcareous, slightly sandy, massive, light brown Trace sandstone, coarse grained, white, poor sorting and rounding, trace coal trace volcanics
8050-8060	30	<u>Shale</u> , carbonaceous, dark grey, subfissile
	20	<u>Calcareous Siltstone</u> (Marl), as above
	50	<u>Siltstone</u> , as above Trace coal, sandstone, volcanics
8060-8070	60	<u>Siltstone</u> , non-calcareous massive firm, light brown to grey, slightly sandy
	20	<u>Siltstone</u> - calcareous (marl), soft, massive, light grey
	20	<u>Shale</u> - dark grey carbonaceous fissile to subfissile, hard
		Trace sandstone - coarse grained, white, fair sorting and rounding, Trace volcanics, coal
8070-8080	70	<u>Siltstone</u> , brown to grey, carbonaceous, firm, massive
	20	<u>Shale</u> , as above
	10	<u>Marl</u> , light grey, probably caved
8080-8090	80	<u>Siltstone</u> , as above
	15	<u>Shale</u> , as above
	5	<u>Marl</u> , as above
8090-8100	15	<u>Shale</u> , as above
	15	<u>Marl</u> , as above
	70	<u>Siltstone</u> , as above
8105-8110 (GAS)	20	<u>Shale</u> , as above
	20	<u>Marl</u> , as above
	60	<u>Siltstone</u> , as above Trace sandstone, clear to white, fine grained, fairly sorted, cemented, no show mineral fluorescence
8110-8120 (GAS)	80	<u>Sandstone</u> , as above
	15	<u>Shale</u> , as above
	5	<u>Marl</u> , light grey, probably caved

DEPTH	%	SAMPLE DESCRIPTION
8120-8130	80 15 5	<p><u>Sandstone</u>, dirty grey, very fine to fine grained, variable (generally poor) sorting, subangular to rounded, quartose but includes rock fragments? feldspar carbonaceous clasts, reworked glauconite or chamosite and fossils (forams,? spines). Grain size ~0.05 - 3 mm (quartz). Floury (?clayey), cement. Strong blue-ink fluorescence, slow cut.</p> <p><u>Shale</u>, as above</p> <p><u>Silty Marl</u>, as above</p>
8128-8158 CORE 3	80 20 50 50	<p><u>Sandstone</u>, very fine to fine grained, poorly sorted, grey sandstone, with clay matrix, composed of quartz, feldspar, rock fragments, micas, carbonaceous chips</p> <p><u>Shale</u>, carbonaceous, finely laminated on massive units up to 3" thick with few stringers of fine sand.</p> <p><u>Shale</u>, carbonaceous, as above</p> <p><u>Sandstone</u>, as above</p>
8158-8160	40 40 20	<p><u>Shale</u>, grey, firm, subfissile, slightly carbonaceous</p> <p><u>Siltstone</u>, grey brown, firm, no porosity</p> <p><u>Sandstone</u>, grey brown, fine grained, poorly sorted, angular, extremely immature, quartzose, feldspar, lithic, clay choked, glauconite, pyrite, slightly dolomitic in parts with a trace of mineral fluorescence</p>
8160-8170	30 10 50 10	<p><u>Shale</u>, as above</p> <p><u>Siltstone</u>, as above</p> <p><u>Sandstone</u>, as above</p> <p><u>Volcanics</u>, basic light grey green, highly chloritic, abundant fine feldspar laths, probably from above (cavings)</p>
8170-8175	20 20 40 20	<p><u>Shale</u></p> <p><u>Siltstone</u></p> <p><u>Sandstone</u></p> <p><u>Volcanic</u></p>

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX 2

SIDEWALL CORE DESCRIPTIONS

NO.	DEPTH	REC	ROCK TYPE	MODIFIERS		CAL	COLOR	INDUR DEG	GRAIN SIZE	SRGTG	RND	DISS	STAIN	FLOURESCENCE			CUT FLUOR.			CUT RESIDUE		SHOW	PROD	REMARKS - GAS	
				4	5									14	15	16	17	18	19	20	21				22
1	8114	1	Sst.	Lithic.Feld.	V	wh.	friab.	f-m	P	sa	15	-	90	Even dull	bl-wh	Bright	bl-wh	-	-	0	O11	C1 500, C2 300, C3 1100, C4 120 C5 600 Fissile; marly, C1 1100, C2 400			
2	8000	1	Sh.	Silty	V	gry.	s-f																		
3	7895	3/4	Sh		Mod	gry	hard																		
4	7870	1/2	Sst.	Carb.qtz.rk	-	gry	v.frb	cs-f	P	sa	25	-													
5	7857	3/4	Sst.	qtzs,rare rk		wh-buff	friab	f-m	Mod.	sa	25	-													
6	7850	1-1/8	Sst.	qtz.rare grn	non	Wh.	friab	m-cs	Mod well	sa	15	-													
7	7795	3/4	Sst.	Shaley Carb.sdy.	non	Brn.	friab.		Poor		25+														
8	7430	1	Sh.	Sl. mica	non	v.lt. gy	firm																		
9	7330	1-1/8	Volcs.	Acicular feld	V	wh-pale green.	Hard							20% Spotty dull	gold	no									
10	7150	7/8	Slst.	Mica smtl dk rk.frgs.	Sl.	Lt.brn	Firm																		
11	6900	NO	RECOVERY																						
12	6880	1-1/8	Silty shale	Silty,mica	Mod	Lt.gry	Soft-Firm																		
13	6720	1 1/2	Siltst	Silty,mica	Sl.	Lt.gry	Soft-Firm																		
14	6510	1 1/2	Siltst	Sl. micac.	V	gry-v Lt.gry	Firm																		
15	6320	1 1/2	Sst.	Quartzose	non	Wh.	Friable	f-m	Mod	sa	25	-	80	Even dull	bl.wh	dull	bl.wh	light	clear	GC	cond				
16	6140	2	Slst	Quartzose	Mod	wh.	Firm																		
17	5940	1-3/8	Sst.	Quartzose	non	Wh Lt.gry	Friab.	f	Mod.	sa	15	-													
18	5790	1 1/2	Sh.	Silty,mica.	V	Lt.gry	Firm																		

FORM R 287 3/72

CORE DESCRIPTION SUNFISH-1

CORE NO.	DEPTH	RECOVERY	DESCRIPTION
1	8114	1" (50%)	<u>SANDSTONE</u> - quartz, feldspar, rock frag. bearing, dark brown rock frags., clay matrix 25%; buff, very fine to coarse grained, angular to subrounded, very poorly sorted friable when wet, firm to hard when dry; dolomitic cement. Rare very fine ferruginous (?) red frags. Grain of bright green mineral (glauconite?). — dull blue to white fluorescence, evenly distributed over 90% of rock. Bright blue to white cut. No residue — Chromatog: C ₁ 500 C ₂ 300, C ₃ 1100 C ₄ 1200, C ₅₊ 600.
2	8000	1" (50%)	<u>SHALE</u> - silty; med. grey, dolomitic; hard when dry. Soft-firm when wet; subfissile - breaks into chips; tiny carbonaceous frags. Chromatog: C ₁ 1100, C ₂ 400
3	7895	3/4" (37%)	<u>INDURATED SHALE</u> - medium dark grey; non-fissile, sub-conch. fracture; non-calcareous; hard. — No gas
4	7870	1/2" (25%)	<u>SANDSTONE</u> - quartzose, carbonaceous frags; carb. shale laminae; fine-rare granules; very poorly sorted; non-calcareous; angular to subrounded; 25% clay matrix; light grey; friable; no shows — Chromatog: C ₁ 500 C ₂ 100.
5	7857	3/4" (37%)	<u>SANDSTONE</u> - quartzose, black sh. or carb. frags; white to light grey; fine to medium grained mainly (very rare granules); moderately sorted; friable; sub-angular to sub-rounded, non-calcareous; 25% clay; no shows — Chromatog: No gas
6	7850	1-1/8" (56%)	<u>SANDSTONE</u> - quartzose; minor black rock frags; rare green mineral; buff; medium to coarse grained; well sorted; sub-angular to sub-rounded; slightly calcareous; 15% clay matrix; no shows. Friable Chromatog. C ₁ 500 C ₂ 200
7	7795	3/4" (37%)	<u>SILTY SHALE</u> - dark brown; pyrite bands and occasional white non-calcareous bands ("sugary" silt-sized grains) cavity filling (?); soft; carbonaceous; — Chromatog: C ₁ 1800, C ₂ 700, C ₃ 200
8	7430	1" (50%)	<u>SHALE</u> - light olive grey; silty; mica; carbonaceous plant remains; non-calcareous; firm. — Chromatog: C ₁ 500, C ₂ 300
9	7330	1-1/8" (56%)	<u>WEATHERED VOLCANICS</u> - Acicular feldspars in ground-mass white to pale green; silica-filled cavities; some pyrite; Very calcareous covering "paste" that hides igneous texture - removed by acid. Rock highly fractured but individual frags. hard. Spotty dull to bright yellow mineral fluorescence over 20% of rock. No cut. Strong gas odour. C ₁ 300, C ₂ 100.
10	7150	7/8" (44%)	<u>SILTSTONE</u> - quartz, mica, carb. rock frags; medium to light grey; slightly calcareous; gas odour. C ₁ 1000, C ₂ 400, C ₃ 100

CORE DESCRIPTION SUNFISH-1

CORE NO.	DEPTH	RECOVERY	DESCRIPTION
11	6900	NO RECOVERY	
12	6880	1-1/8" (56%)	<u>SHALE</u> - silty; medium grey; micaceous; slightly calcareous, subfissile; soft — C ₁ 400, C ₂ 200
13	6720	1 1/4" (62%)	<u>SILTSTONE</u> - laminae of light grey siltstone, smaller on of medium dark grey siltstone; minor carbonaceous frags micaceous; subfissile; quartz silt; breaks up easily; slightly calcareous. — C ₁ 400, C ₂ 100
14	6510	1 1/4" (62%)	<u>SILTSTONE</u> - medium grey; slightly micaceous; firm; bedded shows 1mm. thick laminae of sst-v.f., white. No shows — C ₁ 5900, C ₂ 2600, C ₃ 800.
15	6320	1 1/2" (75%)	<u>SANDSTONE</u> - quartzose, minor black rock frags; white; fine to medium grained; moderately sorted; subangular, non-calcareous; 5-10% clay; friable; dull blue white fluorescence, evenly distributed over 80% rock; dull blue white cut with light quantity of clear residue; massive sst. — very strong gas odour — C ₁ 400, C ₂ 200, C ₃ 1900, C ₄ 4400, C ₅₊ 2400
16	6140	2" (100%)	<u>CLAYSTONE</u> - white, slightly to non-calcareous, containing large frags. of <u>siltstone</u> - medium dark grey, very calcareous, mica, and some carb. plant remains. Firm — C ₁ 1100, C ₂ 400, C ₃ 200
17	5940	1-3/8" (69%)	<u>SANDSTONE</u> - fine to medium grained, light grey; 60% quartz, 40% dark rock frag. grains; fine grained pyrite disseminated throughout; angular to subangular; 15% clay; friable; moderately sorted; slightly calcareous, breaks up in acid. Carb. stringer being replaced by pyrite cuts across core — C ₁ 100. No shows
18	5790	1 1/2" (75%)	<u>SILTY SHALE</u> - light grey to brown; slightly micaceous very fine stringers of white silty shale indicate bedding is laminated; very calcareous — C ₁ 900, C ₂ 600, C ₃ 600
19	5580	1 1/2" (75%)	<u>SILTSTONE</u> - medium to light grey, interlaminated with very light grey layers; firm; non-calcareous — No gas
20	5517	1 1/2" (75%)	<u>MUDSTONE</u> - medium light grey, hard, extremely calcareous silty and <u>SANDSTONE</u> - white, very fine to fine, quartz and rock frags., moderately sorted, subangular-subrounded, dolomitic, very tight and probably clay choked, No shows — C ₁ 300, C ₂ 100
21	5510 (1678m)	1" (50%)	<u>MARL</u> - medium grey, very calcareous, soft — C ₁ 200.
22	5500	1" (50%)	<u>CALCARENITE</u> - white, fine to coarse grained, very calcareous, subangular-subrounded, poorly sorted, moderate abundant green glauconite present (elongate grains); highly fractured rock - breaks into pieces, dissolves in acid into grains; trace pyrite. - dull yellow fluor (mineral fluor.) over 60% of rock evenly. No cut-No gas

CORE DESCRIPTION SUNFISH -1

CORE NO.	DEPTH	RECOVERY	DESCRIPTION
23	5400	2" (100%)	<u>MARL</u> - medium grey, very calcareous, subfissile, firm to hard. — C ₁ 1700, C ₂ 400.
24	5200	1½" (75%)	<u>MARL</u> - medium grey, very calcareous rarely micaceous, soft. — C ₁ 100.
25	4900	1" (50%)	<u>SHALE</u> - dark grey, moderately calcareous, subfissile, firm. — C ₁ 100
26	4500	1-1/8" (56%)	<u>SHALE</u> - silty, micaceous, dark grey; moderately calcareous, subfissile, firm. No gas
27	4100	3/4" (37%)	<u>SILICEOUS BANDS</u> - highly fractured quartz vein (?) layer central to core - white, no grains - adjacent dark grey silicified shale, highly fractured, plus opposing band of calcarenite - calcareous, with blue green grains (altered glauconite?) — No gas.
28	3700	1" (50%)	<u>ASSORTMENT OF</u> : (no cylindrical core shape remains) - massive, highly fractured, white quartz - indurated shale frags. - black - fine very coarse sand grains, slightly calcareous - extremely weak and friable mixture — C ₁ 100
29	3270	½" (25%)	<u>SANDSTONE</u> - quartzose, minor black rock frags; fine to medium grained, moderately sorted, subangular-subrounded 15% clay, white to buff, non-calcareous, friable, No shows, No gas.
30	2900	3/4" (37%)	<u>SANDSTONE</u> - very light grey to buff, very fine to fine grained, subangular, moderately sorted, minor carb. frags, clay 25%, very tight, non-calcareous, No shows, No gas

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX 3

PALAEONTOLOGICAL DATA SUMMARY

FORAMINIFERAL BIOSTRATIGRAPHY AND ENVIRONMENTAL ANALYSIS IN SUNFISH-1

by David Taylor

24-7-74.

MID MIOCENE PROXIMAL CANYON FACIES - 4900' - 2900'.

Of the eleven side wall cores examined only four contained biostratigraphically diagnostic fauna and even these were heavily affected by diagenesis making specific designation difficult. No foraminifera were found in side wall cores at 2900', 3270', 4100' and 4500'. Residues of side wall cores at and above 4900' were composed dominantly of angular fine to coarse quartz of obviously terrestrial origin, especially as coal fragments were present at 3700' and black slate fragments (?Lower Palaeozoic) at 4100'. No biostratigraphic or environmental comment can be made for this arenaceous interval from 4900' upwards, save that it may have been the proximal end of a mid Miocene submarine canyon which are distally calcareous in Gippsland. Barracoota-1 contains terrestrial detritus in the mid Miocene which is believed to represent a proximal canyon facies. Samples below 4900' (e.g. 5200') are definitely early Miocene.

OLIGOCENE TO EARLY MIOCENE - 5517' - 5200'

The side wall core at 5517' possibly contains an early Oligocene Zone J fauna but the diagenetic obliteration of surface texture make the recognition of *Globigerina angiporoides* tenuous. There is a distinctive late Oligocene Zone I-1 fauna at 5510' but identification relies on shape as surface texture is either obliterated or encrusted. Only a thick walled, sparsely perforate benthonic fauna was recovered in the heavily recrystallized micrite at 5500', which may imply that the more delicate planktonic foraminifera were removed during diagenesis. Side wall cores at both 5400' and 5200' contained early Miocene Zone H-1 faunas.

It is difficult to appraise environmentally the Oligocene-early Miocene interval as certain species may have been destroyed. The dominance of planktonics and the benthonic fauna at 5500' could indicate a position on a continental slope anywhere from the shelf/slope break to the base of the slope. Size and shape sorting at the early Miocene indicates high energy shelf edge or down slope currents which are less evident in the Oligocene.

One must emphasise the confusion caused by diagenesis in the Sunfish-1 section and the need for detailed study, especially in the light of its effects on sonic velocity as has been recently demonstrated by Packham & Lingen (1973, Initial Rep. Deep Sea Drilling Project, Vol. XXI, 495-521) from S.E.H. studies of deep sea core.

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A	Alternate					
	B	Alternate					
	C	Alternate					
	D ₁	Alternate					
	D ₂	Alternate					
	E	Alternate					
	F	Alternate					
	G	Alternate					
	H ₁	5200	1		5400	0	
	H ₂	Alternate					
OLIGOCENE	I ₁	5510	0		5510	0	
	I ₂	Alternate					
	J ₁	5517*	2		5517*	2	
	J ₂	Alternate					
EOC.	K	Alternate					
	Pre K						

No Fauna found in S.W.C.s 2900, 3270, 4100 & 4500.

Non diagnostic faunas present in S.W.C.s at 3700, 4900 & 5500.

*All specimens show signs of diagenesis which is extreme at 5517 making zonal designation difficult.

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).

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX 4

PALYNOLOGICAL REPORT

Now received and inserted
after this page.

The report which has not yet been completed, will be forwarded as soon as possible.

Cables have been enclosed.

"Palynological results for Sunfish-1 are as follows: SWC at 5517' contains marine post Latrobe assemblage. SWC at 5580' from lower M. diversus zone with common dinoflagellates. SWC 18 at 5790', SWC 17 at 5940' and SWC 16 at 6140' assigned to L. balmei zone. SWC 15 at 6320' indeterminate, practically barren; SWC 14 at 6510', SWC 13 at 6720', SWC 12 at 6880' and SWC 10 at 7150' are interpreted as T. longus zone. Cores 1 and 2 plus SWC 8 at 7430' from T. lilliei zone. SWC 7 at 7795', SWC 5 at 7857' and SWC 3 at 7995' late Cretaceous pre-T. lilliei, probably N. senectus at 7795' and 7857' with no zone assignment for sample at 7995'. SWC 2 at 8000', SWC 1 at 8114' and Core 3 are early Cretaceous. Confidence ratings high for samples down to 7410' and from 8000' to 8152' and low in intervening sample. Dinoflagellates present in samples down to 6510'. No dinoflagellates in Sunfish cores"

PALYNOLOGICAL INTERPRETATIONS FOR
SUNFISH-1, GIPPSLAND BASIN, AUSTRALIA

Lewis E. Stover

SUMMARY

5517 feet	Post-Latrobe	Probably Oligocene
5580 feet	Lower <i>M. diversus</i>	Early Eocene
5790 - 6140 feet	<i>L. balmei</i>	Paleocene
6510 - 7150 feet	<i>T. longus</i>	Paleocene
7371 - 7430 feet	<i>T. lilliei</i>	Late Cretaceous
7795 - 7895 feet	Indeterminate	Cretaceous
8000 - 8152 feet	<i>C. paradoxa?</i>	Early Cretaceous

8000

DISCUSSION

1. The highest sample from Sunfish-1 at 5517 feet is post-Latrobe, probably Oligocene; but the lack of diagnostic spore-pollen preclude a definitive zone assignment. Sample contains mainly a marine assemblage dominated by dinoflagellates.
2. A Lower *Malvacipollis diversus* assemblage with spore-pollen and dinoflagellates was recovered from 5580 feet; assignment to the *M. diversus* zone is made with very high confidence.
3. Zone diagnostic spore-pollen were identified in assemblages from the *Lygistepollenites balmei*, *Tricolpites longus* and *Tricolpites lilliei* zones, consequently, high confidence ratings are given to these zone assignments (5790 to 7430 feet).
4. Samples from 7795 to 7895 feet yielded inconclusive palynological data; the assemblages are placed provisionally and with low confidence into the *Nothofagidites senectus* zone. The interval, however, could be older.
5. Early Cretaceous palynomorphs occur from 8000 to 8152 feet, and the epoch-level determination can be accepted with confidence. The *Coptospora paradoxa* zone assignment, however, is much less certain and should be regarded as tenuous. Of possible significance is the presence of rare acritarchs in the Early Cretaceous section. The occurrence of these palynomorphs suggests marginal marine deposition.
6. Recycled Early Cretaceous forms are present in the *L. balmei* and *T. longus* zones and also in the interval between the *T. lilliei* zone and the Early Cretaceous. This latter interval also has rare Permian pollen.
7. Dinoflagellates are common in the post Latrobe and Lower *M. diversus* samples and rare in some *L. balmei* and the highest *T. longus* sample.

PALYNOLOGICAL INTERPRETATIONS FOR
SUNFISH-1, GIPPSLAND BASIN, AUSTRALIA

Lewis E. Stover

SUMMARY

5517 feet	Post-Latrobe	Probably Oligocene
5580 feet	Lower <i>M. diversus</i>	Early Eocene
5790 - 6140 feet	<i>L. balmei</i>	Paleocene
6510 - 7150 feet	<i>T. longus</i>	Paleocene
7371 - 7430 feet	<i>T. lilliei</i>	Late Cretaceous
7795 - 7895 feet	Indeterminate	Cretaceous
8000 - 8152 feet	<i>C. paradoxa?</i>	Early Cretaceous

DISCUSSION

Post-Latrobe - The palynomorph assemblage from SWC 20 at 5517 feet consists mostly of dinoflagellates with *Spiniferites ramosus* and *Operculodinium centrocarpum* being the commonly occurring species. Other dinoflagellates include *Lingulodinium machaerophorum*, *Leptodinium* sp., *Nematosphaeropsis* sp. and numerous "dinospheres." Spore-pollen are rare and no species indicative of post-Latrobe spore-pollen zones was found.

Lower *Malacipollis diversus* Zone -

The assemblage from SWC 19 at 5580 feet contains a sparse spore-pollen assemblage in which specimens of *M. diversus* are common and those of *Spinizonocolpites prominatus* are frequent. In comparison, the species listed below are rare:

Banksieaeidites arcuatus
Cupanioidites orthoteichus
Cyathidites gigantis
C. spendens
Ephedripites notensis

Haloragacidites harrisii
Lygistepollenites florinii
Polypodiaceoisporites varus
Proteacidites parvus
Tricolpites gillii

Dinoflagellates are common at 5580 feet and although their preservation is poor, it is possible to identify most specimens to the generic level and occasional specimens to the species level. Collectively, the dinoflagellates represent a typical association of Early Eocene forms including *Wetzeliella homomorpha*, *Adnatosphaeridium* sp., *Cordosphaeridium* sp., *Diphyes colligerum*, *Fibracysta bipolare*, *Muratodinium fimbriatum* and *Trichodinium* sp.

Lygistepollenites balmei Zone - Species indicative of this zone were obtained from SWC 18 at 5790 feet, SWC 17 at 5940 feet and SWC 16 at 6140 feet, and include:

Australopollis obscurus
Gambierina edwardsii
Gambierina rudata
Lygistepollenites balmei
Peromonolites densus
Polycolpites langstoni (5790 and 5940 feet)
Proteacidites angulatus (6140 feet only)

Rare dinoflagellates are present at 5790 feet (*Spiniferites* spp.); a single specimen of *Gingiodinium* sp. was found at 5940 feet and microplankton were not identified at 6140 feet. Recycled Early Cretaceous spores occur at 5790 feet. In addition to the zone diagnostic species the following spore-pollen are present in the *L. balmei* zone in Sunfish-1.

<i>Cyathidites splendens</i>	
<i>Haloragacidites harrisii</i>	5790 feet only
<i>Ceratospirites equalis</i>	
<i>Latrobosporites ohioensis</i>	
<i>Lygistepollenites florinii</i>	5790 feet only
<i>Nothofagidites brachyspinulosus</i>	
<i>N. emarcidus</i>	
<i>N. endurus</i>	5940 feet only
<i>N. flemingii</i>	5790 and 5940 feet
<i>Periporopollenites polyoratus</i>	
<i>Phyllocladidites mawsonii</i>	
<i>P. reticulosaccatus</i>	
<i>Proteacidites parvus</i>	
<i>Stereisporites punctatus</i>	
<i>Tricolpites phillipsii</i>	5790 feet only

Tricolpites longus Zone - The highest sample with species diagnostic of this zone is SWC 14 at 6510 feet from which specimens of *Proteacidites cleinei*, *Tricolpites confessus* and *T. waiparaensis* were recovered. *Tricolpites longus*, *Tripoporopollenites sectilis* and *Proteacidites amoloserinus* appear in SWC 13 at 6720 feet. *Tricolporites lilliei* and *Tetradopollis securus* are present in the lowest sample from the *T. longus* zone (SWC 10 at 7150 feet).

Specimens of *Nothofagidites* spp. are very rare between 6510 and 6880 feet and rare at 7150 feet; on the other hand, specimens of *Gambierina* spp. are common between 6720 and 7150 feet. Very poorly preserved dinoflagellates are associated with the well preserved spore-pollen at 6510 feet. Although specific identifications were not possible, the following dinoflagellate genera were recognized with reasonable certainty: *Aehomosphaera*, *Adnatosphaeridium*, *Areoligera*, *Fibracysta* and *Kenleyia*. Listed below are the spore-pollen species recovered from the *T. longus* zone in Sunfish-1.

<i>Cyathidites splendens</i>	6720 feet only
<i>Gambierina edwardsii</i>	7150 feet only
<i>G. rudata</i>	all samples
<i>Ceratospirites equalis</i>	6880 and 7150 feet
<i>Latrobosporites amplus</i>	6720 to 7150 feet
<i>L. ohaiensis</i>	6880 feet only
<i>Lygistepollenites balmei</i>	6510, 6720, 7150 feet
<i>Nothofagidites emarcidus</i>	6510 and 7150 feet
<i>N. senectus</i>	7150 feet only
<i>Periporopollenites polyoratus</i>	6510 and 6720 feet
<i>Phyllocladidites mawsonii</i>	all samples
<i>Proteacidites amoloserinus</i>	6720 feet only
<i>P. angulatus</i>	6510 feet only
<i>P. cleinei</i>	6510 feet only
<i>P. palisadus</i>	6720 feet only
<i>P. parvus</i>	6510 and 6720 feet
<i>P. pseudomoides</i>	6510 feet only
<i>P. reticuloconcavus</i>	6880 and 7150 feet
<i>Simplicepollis meridianus</i>	6510 and 6880 feet
<i>Stereisporites punctatus</i>	6720 and 6880 feet
<i>Tetradopollis securus</i>	7150 feet only
<i>Tricolpites confessus</i>	all samples
<i>T. gillii</i>	all samples
<i>T. longus</i>	6720 and 7150 feet
<i>T. waiparaensis</i>	6510 and 7150 feet
<i>Tricolporites lilliei</i>	7150 feet only
<i>Triporopollenites sectilis</i>	6720 to 7150 feet

Tricolporites lilliei Zone - Samples from conventional cores 1 and 2 (7371.7-7385.5 feet and 7386.0-7410.5 feet, respectively) and SWC 8 at 7430 feet are assigned to the *T. lilliei* zone. Placement of these samples in the *T. lilliei* zone is based on the increased abundance of *Nothofagidites* spp. coupled with the occurrence of *Cicatricosisporites australiensis*, *Densoisporites velatus*, *Gephyrapollenites wahooensis*, *Ornamentifera sentosa*, *Phyllocladidites verrucosus*, *Stereisporites regium*, *Tricolpites pachyexinus*, and *T. renmarkensis*. None of these forms was found in the overlying *T. longus* zone in Sunfish-1. Specimens of *D. velatus* are frequent in some preparations from cores 1 and 2 where it is commonly associated with well preserved spores of the *Camerozonosporites/Latrobosporites* complex. A very sparse spore-pollen assemblage was recovered from SWC 8 at 7430 feet which is placed in the *T. lilliei* zone because of the occurrence of *Tricolpites confessus* and *Tetradopollis securus*. No microplankton present in samples from the *T. lilliei* zone. Spore-pollen from the zone in Sunfish-1 include:

Camerozonosporites/Latrobosporites amplus
C./H. ohaiensis
Ceratospirites equalis
Cicatricosisporites australiensis
Densoisporites velatus
Gambierina rudata

Gephyrapollenites wahooensis
Nothofagidites emarcidus
N. senectus
Ornamentifera sentosa
Phyllocladidites mawsoni
P. verrucosus
Proteacidites cleinei
P. palisadus
P. parvus
Stereisporites regium
Tetradopollis securus
Tricolpites confessus
T. gillii
T. longus
T. pachyexinus
T. renmarkensis
T. waiparaensis
Tricolporites lilliei
Triporopollenites sectilis

Samples from 7795 to 7895 feet - Palynomorph assemblages from SWC 7 at 7795 feet, SWC 5 at 7857 feet and SWC 3 at 7895 feet provide inconclusive determinations. SWC 7 was poorly fossiliferous with mainly broken specimens. The presence to small proteaceous pollen suggests the sample is probably from the *N. senectus* zone, but confirming evidence is lacking.

SWC 5 contains a mixture of contaminants, recycled Early Cretaceous spores, and a rather limited indigenous assemblage. At least some of the proteaceous pollen and specimens of *Nothofagidites* appear to be in place, and if this is true, then the sample is from the *N. senectus* zone. Obvious recycled Early Cretaceous forms are *Contignisporites* sp., and *Rouseisporites reticulatus*; a specimen provisionally identified as *Krauselisporites* sp. may represent Permian reworking.

SWC 3 has common, poorly preserved gymnosperm pollen, abundant inaperturate grains (of which some might be marine cysts). It also has some well preserved Early Cretaceous spore-pollen, such as *Rouseisporites radiatus*, and *Classopollis* sp. as well as Permian bisaccate pollen (*Striatites* sp.), and Tertiary dinoflagellates (contaminants). Zone diagnostic species are lacking, therefore no reliable age interpretation is possible.

Early - Cretaceous - SWC 2 at 8000 feet, SWC 1 at 8114 feet and conventional core 3 at 8138 - 8152 feet contain common and reasonably well preserved Early Cretaceous spore-pollen. Also present are very rare acritarchs (core 3 and SWC 2) whose presence suggests marginal marine depositional conditions. Based on the presence of *Dictyosporites speciosus* and *Trilobosporites trioreticulosus*, the assemblages are assigned with low confidence to the *Coptospora paradoxa* zone; the nominate species was not identified. Spore-pollen from the Early Cretaceous interval in Sunfish-1 are:

Alisporites grandis
Araucariacites australis
Baculatisporites comaumensis
Cicatricosisporites australiensis
C. hughesii
Cingulitriletes clavus
Ceratospirites equalis
Classopollis sp.
Cycadopites sp.
Cyathidites australis
C. minor
Dietyotosporites speciosus
Foraminisporis asymmetricus
F. dailyi
Gleicheniidites sp.
Klukisporites scaberis
Krauselisporites sp.
Laevigatosporites sp.
Leptolepidites major
L. verrucatus
Lycopodiacidites asperatus
Lycopodiumsporites austraclavatidites
L. eminulus
L. nodosus
Microcachryidites antarcticus
Neoraistriackia truncata
Osmundacidites wellmani
Podosporites microsaccatus
Rouseisporites radiatus
Sterisporites antiquasporites
Trilobosporites trioreticulosus
Triporites sp. (very small, single specimen)
Tsugaepollenites segmentatus

CONCLUSIONS

1. The highest sample from Sunfish-1 at 5517 feet is post-Latrobe, probably Oligocene, but the lack of diagnostic spore-pollen preclude a definitive zone assignment. Sample contains mainly a marine assemblage dominated by dinoflagellates.
2. A Lower *Malvacipollis diversus* assemblage with spore-pollen and dinoflagellates was recovered from 5580 feet; assignment to the *M. diversus* zone is made with very high confidence.
3. Zone diagnostic spore-pollen were identified in assemblages from the *Iygistepollenites balmei*, *Tricolpites longus* and *Tricolpites lilliei* zones, consequently, high confidence ratings are given to these zone assignments (5790 to 7430 feet).

4. Samples from 7795 to 7895 feet yielded inconclusive palynological data; the assemblages are placed provisionally and with low confidence into the *Nothofagidites senectus* zone. The interval, however, could be older.
5. Early Cretaceous palynomorphs occur from 8000 to 8152 feet, and the epoch-level determination can be accepted with confidence. The *Coptospora paradoxa* zone assignment, however, is much less certain and should be regarded as tenuous. Of possible significance is the presence of rare acritarchs in the Early Cretaceous section. The occurrence of these palynomorphs suggests marginal marine deposition.
6. Recycled Early Cretaceous forms are present in the *L. balmei* and *T. longus* zones and also in the interval between the *T. lilliei* zone and the Early Cretaceous. This latter interval also has rare Permian pollen.
7. Dinoflagellates are common in the post Latrobe and Lower *M. diversus* samples and rare in some *L. balmei* and the highest *T. longus* sample.

LIST OF SAMPLES

SWC	20	5515'	post-Latrobe	probably Oligocene	D
SWC	19	5580'	Lower <i>M. diversus</i>	Early Eocene	D
SWC	18	5790'	<i>L. balmei</i>	Paleocene	D
SWC	17	5940'	" "	"	D
SWC	16	6140'	" "	"	
SWC	15	6320'	indeterminate		
SWC	14	6510'	<i>T. longus</i>	Paleocene	D
SWC	13	6720'	" "	"	
SWC	12	6880'	" "	"	
SWC	10	7150'	" "	"	
CORE	1	7371.7'	<i>T. lilliei</i>	Late Cretaceous	
		7383'	" "	" "	
		7385.5	" "	" "	
CORE	2	7395'	" "	" "	
		7398'	" "	" "	
		7407'	" "	" "	
		7410.5'	" "	" "	
SWC	8	7430'	" "	" "	
SWC	7	7795'	<i>N. senectus?</i>	Late Cretaceous	
SWC	5	7857'	" " ?	" "	
SWC	3	7895'	indeterminate	Late Cretaceous?	
SWC	2	8000'	<i>C. paradoxa?</i>	Early Cretaceous	A
SWC	1	8114'	" " "	" "	
CORE	3	8138'	" " "	" "	A
		8147'	" " "	" "	
		8152'	" " "	" "	A

D = dinoflagellates
A = acritarchs

BASIN GIPPSLAND DATE APRIL 1974

WELL NAME SUNFISH-1 ELEVATION _____

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
OLIGO-MIOC.	<u>T. bellus</u>										
	<u>P. tuberculatus</u>										
EOCENE	<u>U. N. asperus</u>										
	<u>L. N. asperus</u>										
	<u>P. asperopolus</u>										
	<u>U. M. diversus</u>										
	<u>L. M. diversus</u>	5580	0				5580	0			
	<u>L. balmei</u>	5790	1				6140	1			
LATE CRETACEOUS	<u>T. longus</u>	6510	1				7150	1			
	<u>T. lilliei</u>	7371	1				7430	1			
	<u>N. senectus</u>	7795	2				7895	2			
	<u>C. trip./T.pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS	<u>C. paradoxa</u>	8000	2				8152	2			
	<u>C. striatus</u>										
	<u>U. C. hughesii</u>										
	<u>L. C. hughesii</u>										
	<u>C. stylosus</u>										
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 DATE APRIL 1974

DATA REVISED BY: _____ DATE _____

BASIN GIPPSLAND

DATE _____

WELL NAME SUNFISH-1

ELEVATION K.B. +32 FEET

AGE	PALYNOLOGIC ZONES	HIGHEST DATA				LOWEST DATA					
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
Eocene	<u>P. tuberculatus</u>	5517	1				5517	1			
	<u>U. N. asperus</u>										
	<u>M. N. asperus</u>										
	<u>L. N. asperus</u>										
	<u>P. asperopolus</u>										
	<u>U. M. diversus</u>										
	<u>M. M. diversus</u>										
	<u>L. M. diversus</u>	5580	1				5580	1			
PALEOCENE	<u>U. L. balmei</u>	5790	1				5790	1			
	<u>L. L. balmei</u>	5940	2				6140	1			
	<u>T. longus</u>	6510	1				7150	1			
EARLY CRETACEOUS	<u>T. lilliei</u>	7371	1				7430	1			
	<u>N. senectus</u>	7795	2				7895	2			
	<u>C. trip./T.pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS	<u>C. paradoxa</u>	8000	2				8152	2			
EARLY CRETACEOUS											

DINOFLAGELLATE ZONES:

COMMENTS:

Wetzeliella hypercantha 5580(1)

Wetzeliella homomorpha 5790(1)

Deflandrea druggii 6510(2)

Acritarchs are also present in the C. paradox Zone interval.

suggesting a marginal marine influence.

- 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. DATE April. 1974

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

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX 5

WELL LOG ANALYSIS

TO WELL FILE
cc. W.W. FRASER (2), C.N. CURNOW, P.C. HALL

OPERATOR ESSO AUSTRALIA

WELL SUNFISH-1

DATE 20th February, 1971

STATE VICTORIA

ELEV. 32'KB

DEPTH INTERVAL	POROSITY ESTIMATE	WATER SAT. ESTIMATE	REMARKS
5520-27 (7)	25.5-26.7	100	Formation water productive
5527-34 (7)	27.3-29.7	100	Formation water productive
5541-45 (4)	20.6-21.8	100	Formation water productive
5549-56 (7)	24.3-25.5	100	Formation water productive
5616-20 (4)	28.5-30.3	29-31	Oil productive
5625-30 (5)	28.0-29.7	100	Formation water productive
5722-28 (6)	20.0-21.2	100	Formation water productive
5728-33 (5)	23.7-25.0	100	Formation water productive
5740-48 (8)	24.3-25.5	100	Formation water productive
5815-20 (5)	20.6-21.8	34-37	Shaley, oil productive
5832-37 (5)	18.2-19.5	40-44	Shaley, oil productive
5887-89 (2)	23.0-24.3	28-30	Gas productive
589-22 (3)	20.6-21.8	35-38	Shaley, gas productive
5972-77 (5)	22.0-24.0	16-18	Gas productive
5998-6002 (4)	17.6-18.9	39-42	Shaley, gas productive
6034-39 (5)	22.5-24.5	21-23	Gas productive
6060-62 (2)	20.0-21.2	33-36	Gas productive
6096-99 (3)	21.8-23.0	32-34	Gas productive
6123-26 (3)	13.2-19.5	35-38	Shaley, gas productive
6148-56 (8)	21.2-22.5	19-21	Gas productive
6156-61 (5)	24.0-26.0	11	Gas productive
6161-68 (7)	24.0-26.0	4	Gas productive
6168-73 (5)	22.5-24.5	11-13	Gas productive
6175-86 (11)	24.0-26.0	10-11	Gas productive
6186-95 (9)	24.0-26.0	8	Gas productive
6313-16 (3)	20.0-21.2	27-29	Gas productive
6316-22 (6)	24.0-26.0	17-18	Gas productive
6342-46 (4)	27.3-29.7	14-15	Gas productive
6346-52 (6)	23.0-24.3	26-28	Shaley, gas productive
6360-63 (3)	26.2-28.0	26-28	Oil productive
6363-67 (4)	20.0-21.8	43-47	Shaley, oil productive
6367-71 (4)	25.5-26.7	82-87	Formation water productive
6435-41 (6)	21.2-23.0	18-20	Gas productive
6510-16 (6)	23.0-24.3	19-20	Gas productive
6548-50 (2)	17.6-19.5	33-37	Gas productive
6566-70 (4)	16.5-18.2	29-33	Gas productive

TESTS:

F.I.T. program in progress

FORMATION:

Latrobe

LOGS:

ISF, FDC-CNL-GR

COMMENTS:

The sands listed in the interval 6800' to 7340' are those with low to nil dolomite content
All sands in this interval appear to be water bearing.

R B King

DEPTH INTERVAL	POROSITY ESTIMATE	WATER SAT. ESTIMATE	REMARKS
6570-73 (3)	21.2-22.5	20-21	Gas productive
6573-78 (5)	16.5-18.2	30-33	Gas productive
6580-83 (3)	17.6-18.9	25-27	Gas productive
6583-90 (7)	18.0-20.0	11-12	Gas productive
6603-06 (3)	20.0-21.8	23-26	Gas productive
6606-11 (5)	17.0-18.2	31-34	Gas productive
6611-19 (8)	13.0-15.0	22-26	Gas productive
6619-28 (9)	20.0-22.0	10-11	Gas productive
6634-37 (3)	20.0-21.2	23-24	Gas productive
6637-45 (8)	21.0-23.0	17-19	Gas productive
6645-48 (3)	17.6-18.9	28-30	Gas productive
6658-60 (2)	17.0-18.2	36-39	Gas productive
6668-70 (2)	24.3-25.5	23-24	Gas productive
6690-92 (2)	18.9-20.6	31-34	Gas productive
6694-97 (3)	23.7-25.0	24-26	Gas productive
6730-34 (4)	18.8-20.6	27-30	Gas productive
6734-39 (5)	21.5-23.5	17-19	Gas productive
6739-45 (6)	21.2-22.5	27-29	Gas productive
6768-82 (14)	21.5-23.5	16-18	Gas productive
6772-93 (4)	17.6-18.8	39-42	Shaley, gas productive
6780-64 (4)	13.4-15.3	100	Formation water productive
7002-08 (6)	13.4-15.3	100	Formation water productive
7016-26 (10)	17.6-18.8	100	Formation water productive
7136-41 (5)	17.0-18.2	100	Formation water productive
7170-75 (5)	15.8-17.0	100	Formation water productive
7175-82 (7)	17.6-18.8	100	Formation water productive
7345-52 (7)	Dolomitic	-	Possibly oil productive
7352-56 (4)	14.5-15.8	33-37	Oil productive
7356-64 (8)	18.2-20.0	25-28	Oil productive
7364-74 (10)	14.5-16.4	26-31	Oil productive
7374-82 (8)	16.4-17.6	28-30	Oil productive
7407-11 (4)	15.8-17.0	36-40	Oil productive
7421-23 (2)	Dolomitic	-	No show in core
7435-44 (9)	17.0-18.8	77-88	Formation water productive
7444-56 (12)	15.0-17.0	100	Formation water productive
7456-71 (15)	17.0-18.8	100	Formation water productive

ALL INFORMATION CONTAINED
 HEREIN IS UNCLASSIFIED
 DATE 08-12-2011 BY 60322
 UCBAW/SJS

TSF. depth

? marked

resistivity change
 in oil section
 20 to 10~

TO WELL FILE (cc. W.W. FRASER (2), C.N. CURNOW, P.C. HALL)

OPERATOR ESSO AUSTRALIA WELL SUNFISH-1 DATE 19th March, 1974.

STATE VICTORIA ELEV. 32' KB

DEPTH INTERVAL	POROSITY ESTIMATE	WATER SAT. ESTIMATE	REMARKS
7503-18 (15	16.5 - 17.6	100	Shaley
7518-24 (6	18.8 - 20	100	
7524-29 (5	15.3 - 16.5	100	Shaley
7529-35 (6	22.5 - 23.7	100	
7535-40 (5	13.4 - 14.6	100	
7540-48 (8	22.5 - 23.7	100	
7559-62 (3	18.3 - 19.5	100	
7585-89 (4	15.8 - 17	82-100	
7592-7604 (12	14.6 - 15.8	100	
7613-18 (5	18.3 - 19.5	100	
7613-23 (5	14 - 15.2	100	
7613-55 (6	13.4 - 14.6	100	
7809-13 (4	16.5 - 17.6	41-45	Shaley, gas productive
7819-22 (3	18.5 - 19.5	25-27	Gas productive
7837-40 (3	15 - 16	39-45	Gas productive
7850-52 (2	18.5 - 19.5	28-29	Gas productive
7856-60 (4	19 - 21	15-16	Gas productive
7860-65 (5	11.5 - 12.7	33-37	Gas productive
7878-90 (12	11 - 12.2	53-57	Shaley, possibly gas productive
8109-32	Indeterminate	-	Rugose hole prevents contact

ISF depths

INDETERMINATE

TESTS:

FORMATION:

LATROBE - STRZELCKI

LOGS:

ISF, BHC, FDC-CNL-GR

COMMENTS:

BY R B T King

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX VI

CORE DESCRIPTIONS

CORE DESCRIPTION

Core No. 1 (ONE)

WELL: SUNFISH -1

Interval Cored 7360-7386 ft., Cut 26 ft., Recovered 26 ft., (100%) Fr. LATROBE

Bit Type C-20, Bit Size 8 15/32 in., Desc. by S. D. GILES Date 18-2-1974

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 7360'0"			7360'0" - 7364'10"	SANDSTONE l. gy., cs to v. cs. to granule, qzose with minor lithics, clayey matr, sl. dol. Grains ang. to s-rd, med srd. Beds differentiated into cl, w. srd, cs. sst, and cs, med srd sl. clayey sst. Crossbedding 5°-25°, rare ang. sh. cherts to 2". Por. 15-20%. Ex. even l. ylw. fluor, ex. bluish-ylw cut, which disappears rapidly after evap'n of solvent.
5 6.5			7364'10" - 7365'0"	SANDSTONE, l. gy., f-m, hd, tt, grad. contact to adj. beds. Bed angle 30°
5			7365'0" - 7367'4"	SANDSTONE, l. gy., m-cs, qzose, hd., low porosity. Crossbeds to 20°
5			7367'4" - 7370'4"	SANDSTONE, l. gy. m-cs, qzose, hd., tt. Crossbeds 10-15°. Porosity moderate. Coaly.
20			7370'4" - 7371'8"	SANDSTONE, l. gy., cs, as above, crossbeds 15°. Porosity moderate to good. Fluor. as above.
5			7371'8" - 7371'10"	SHALE dark gy, silty, cross' on u. + lwr contacts
5			7371'10" - 7373'0"	SANDSTONE m-cs, with 1" of elongate sh. breccia at base - "basal cgl"
5			7373'0" - 7373'4"	SANDSTONE v. cs to granule, moderate porosity, v. gd. spotty fluor, v. gd. cut, as above
			7373'4" - 7377'10"	SANDSTONE f-m, many thin wavy carb. beds. Became sst, m. below 7376'0" Porosity low to med (below 7376'). Fluor + cut as above, sl. wtr cut. Dol, crossbeds to 25°
			7377'10" - 7378'0"	SANDSTONE f-m, gn, clayey Porosity v. low
			7378'0" - 7382'0"	SHALE dk. gy, silty.
			7382'0" - 7384'6"	SHALE, v. dk. gy, carb, silty. Freq. thin caly stringers of coalified plant remains. to 0.5m
			7384'6" - 7385'8"	SHALE dk. gy, silty.

Good to excellent bright yellow fluorescence - weak to excellent bluish-white cut.

REMARKS: Core analysed by Baroid

Depth	Porosity	Water Sat ²	Resid. hydrocarb.	Perm.	
7361'	19.45%	38.86%	8.63%	91.44 md.	PALYNOLOGY SAMPLES →
7363'	19.32%	37.84%	8.02%	82.21 md.	EPRCo CORE " →
7370'	23.02%	30.74%	7.68%	1364.66 md.	
7372'	19.21%	43.92%	6.35%	FRAGILE CORE	
7375'	19.39%	43.51%	6.29%	1.36 md.	
7379'	21.33%	40.57%	7.47%	73.68 md.	

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 2

WELL: SUNFISH - 1

Interval Cored 7386-7416 ft., Cut 30 ft., Recovered 30 ft., (100%) From LATROBE GP.

Bit Type C20, Bit Size 8 15/32 in., Desc. by M. HORDERN Date 18/2/1974

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
38.8			7386'-7401'	SHALE - dk. gry, silty, massive & v. hard, mica, carb. - thin coal stringers (relic rootlets, plant remains), bands & ovoid to irreg. blebs of finely crystalline (acicular x'tals) pyrite (1/2"-2" thick regions). Pyrite impregnated through 7400'-7401' sectn. Occas. disrupted bedding - prob. due to organic burrowing. Coaly filaments prominent at shale base (1/2" thick band).
90			7401'-7405'	SANDSTONE - cs. to granule at top, mainly med.-v. cs, wh.-lt. gry, sa-sr, mod. well s'rd, quartzose, minor lithics, consolidated with mod. dolom. cement, ϕ 13-16% k < 0.1-128; Some shale & coal laminations & rootlets; inclined (20°) parallel lamina's @ 7404'; microfault @ 7403'. Strong bluish wh. fluorescence overall; exc. milky blue cut.
95			7405'-7405'6"	SANDSTONE - lt. gry, f, sa-sr, v. slightly dolom, interlaminated with shale filaments. Poor bluish wh. fluorescence at top only of unit - no cut. Remainder has no fluor.
105			7405'6"-7412'	SHALE - gry, silty, some carb. & coal (leaf & stem remains, rootlets) more carbonaceous towards base (7411-7412). Very cs. sand grains scattered along minor scour & fill structure @ 7407'.
110			7412'-7414'	SILTSTONE - wh.-lt. gry, finely interlaminated with SHALE - blk, micac, carb; Microxbeds (20°) @ 7413'. Shale laminae decrease in frequency & silt increases to sand, down section towards: -
116			7414'-7416'7"	SANDSTONE - v.f-f, lt. gry, well s'rd, sa-sr, sl. dolom; decreasingly interlaminated downwards with shale - blk, v. carb, micac. No fluor. or cut.

REMARKS:

PALYNOLOGY SAMPLES →

ERCO CORE " →

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. 3

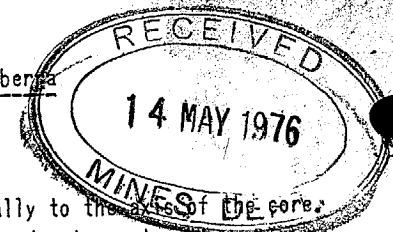
WELL: SUNFISH-7

Interval Cored 8128 - 8158 ft., Cut 30 ft., Recovered 30 ft., (100% Fm.)

Bit Type C-20, Bit Size 8 5/32 x 4 in., Desc. by Foe D, Date 27.2.74

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
			3128	
		trace spotty sh.		Sand (80%) v.f. - f. gr, poorly sorted, gray sandst, with clayey matrix. Composed of qtz, feld, rock frags, micae, carbonaceous chips; max gr. size 1.5mm. low porosity. Massive beds to 10" thick, rarely show grading but generally homogeneous. Deposited erosively on shales "Pseudo-nodules" of sand bounded into clay. Sand may disrupt shale layers, & basal sand often contains rip up clasts of carb. material.
		trace white cut.	3135-5	Shale (20%) as carbonaceous, finely laminated or massive with up to 3" thick, with few stringers of fine sand 1-2 mm thick.
		neglig sh.		Shale (50%) carbonaceous a.a.; units up to 8" thick with stringers & interstratification of sand. Shale fairly silty in part & may grade into sand. Coal cleats common. Some small lenses of brown sandstone at 8145'
				Sand (50%) a.a. possibly even less porous; more intimately associated with shales. Sharp & erosive contacts still observed, but gradational contacts common. Clasts & flakes of carb. matter common, particularly as intraformational conglomerates at the base of sand beds.
			3158	
				4" exposures for EPRC at 8129, 30, 32, 33, 34, 35 ft. Petrology samples 8129, 33, 38, 41, 44, 47. ft. Core lab specimens 8132, 8157 Porosity samples 8129, 32, 35, 55.

REMARKS:



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. (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.

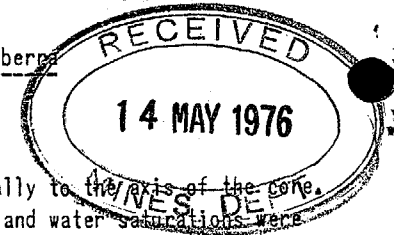
WELL NAME AND NO. Sunfish No. 1

DATE ANALYSIS COMPLETED 28/4/76

Core No.	Sample Depth feet		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 tetrachlorethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	7361'2"	7361'11"	Sst; m.gr. to v.c. gr.	14.2	122	579	2.27	2.65	14	5.9	N.D.	Good	Dull yellow spotted	Trace
1	7364'6"	7365'3"	As above	15.4	105	468	2.24	2.64	5	9.4	N.D.	Good	Bright yellow spotted	Fair
1	7369'5"	7369'11"	Sst; f.gr. to m.gr.	19.2	9.7	180	2.16	2.64	6	3.6	N.D.	Good	Fair spotted yellow	Fair
1	7371'11"	7372'9"	Sst; v.f.gr. to f.gr. carb	15.2	1.3	3.2	2.24	2.64	5	3.2	N.D.	Good	As above	Fair
1	7375'3"	7376'3"	As above	16.7	20	2.5	2.21	2.65	6	6.8	N.D.	Good	Trace spotted yellow	Trace
2	7392'0"	7392'10"	Shale dk grey	5.6	<0.1	<0.1	2.48	2.64	53	7.4	N.D.	Nil	Nil	Nil
2	7402'6"	7403'5"	Sst; m.gr. sl. carb	14.4	7.1	136	2.25	2.63	9	4.4	N.D.	Fair	Bright yellow	Fair
3	8134'3"	8135'4"	Sst; f.gr. slty sl. carb	11.0	<0.1	0.16	2.42	2.72	6	6.4	N.D.	Fair	Poor yellow-orange	Nil

General File No. 74/1076
Well File No. _____

Remarks: -



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. Sunfish No. 1

DATE ANALYSIS COMPLETED 28/3/76

Core No.	Sample Depth feet		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 tetrachlorethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
3	8141'0"	8142'1"	Stst; aren calc.	9.1	<0.1	<0.1	2.64	2.90	18	2.6	N.D.	Trace	Nil	Nil
3	8155'4"	8156'4"	Stst; aren.	11.0	<0.1	<0.1	2.48	2.77	24	1.9	N.D.	Trace	Nil	Nil

Remarks: -

General File No. 74/1076
Well File No. _____



CORE ANALYSIS REPORT

Page 1 of 1
BASIC

COMPANY: ESSO (AUST.) LTD.

COUNTY: OFFSHORE

WELL : SUNFISH NO.1

STATE : VICTORIA

FIELD : GIPPSLAND BASIN TYPE OF CORE: CHRIS, C-20 DIAMETER 8.468"

DEPTH	LITHOLOGY	PERM. md.	POROS- ITY %	SATURATIONS		% GAS BULK VOL.	REMARKS
				%PORE SPACE	OIL WATER		
7361'	SAND	91	19	8.6	39	10	
7363'	"	82	19	8.0	38	10	
7370'	"	1364	23	7.7	31	14	
7372'	"	-	19	6.3	44	10	TOO FRIABLE FOR PERM.
7375'	"	1.3	20	6.3	43	10	
7378'	"	73	21	7.5	40	11	
7402'	"	50	14	5.0	46	7	
7405'	"	128	16	7.9	55	6	
7415'	"	<1	13	7.1	56	5	
8129'	"	<1	11	0	56	5	
8132'	"	<1	14	0	43	8	
8135'	"	<1	11	8	43	5	
8155'	"	<1	5	0	-	-	

SUNFISH-1

WELL COMPLETION REPORT

APPENDIX 7

FORMATION TEST RESULTS

SUNFISH-1 (F. I. Tests)

F.I.T. 1 7361'

Recovered	14250	cc. oil, 42° API			
	60.4	cf. gas			
Pressure	3234	psi			
Gas Properties (ppm)	C ₁	C ₂	C ₃	C ₄	C ₅
	180,000	130,000	11,000	4,500	600

F.I.T. 2 6773'

Recovered	127.6	cf. gas, 200 cc. mud			
	230	cc. condensate, 52° API			
Pressure	3000	psi			
Gas Properties (ppm)	C ₁	C ₂	C ₃	C ₄	C ₅
	172,000	130,000	14,200	6,600	1000

F.I.T. 3 6738'

Recovered	108	cf. gas			
	2500	cc. condensate			
		Trace water and mud			
Pressure	2895	psi			
Gas Properties (ppm)	C ₁	C ₂	C ₃	C ₄	C ₅
	142,000	129,000	15,300	7,600	1,300

F.I.T. 4 6643'

Recovered	124.1	c.ft., gas
	2300	cc. condensate
		Trace mud and water
Pressure	2955	psi

F.I.T. 5 7450'

Recovered	2.5	c.ft., gas
	2100	cc. water
	8900	ppm Cl ⁻
	50	ppm NO ₃ ⁻
Pressure	3317	psi

F.I.T. 6 7350'

TEST TOOL FAILED TO SEAL

F.I.T. 7 7020'

Recovered	21000	Trace gas
	5700	cc. water
	62.5	ppm Cl ⁻
		ppm NO ₃ ⁻
Pressure	3084.5	psi

F.I.T. 8 6363'

Recovered	62.6	c.ft., gas
	17000	cc. oil
Pressure	2778.5	psi

-2-

F.I.T. 9 6320'

Recovered	122.5	c.ft., gas
	1000	cc. condensate, trace water
Pressure	2766.3	psi

F.I.T. 10 6191'

Recovered	127.6	c.ft., gas
	200	cc. condensate
Pressure	2747.9	psi

Condensates are light brown, translucent, with 48-52.5° API gravity measured by hydrometer and confirmed by refractometer.

F.I.T. 11 7349'

Tight Test	4750	cc gas cut muddy water
	5500	ppm Cl ⁻
	56.2	ppm NO ₃

F.I.T. 12 5817'

Tight Test	3250	cc muddy water
	5750	ppm Cl ⁻
	68.75	ppm NO ₃

F.I.T. 13 5618'

Recovered	66.9	c.ft., gas
	14500	cc. oil, 46° API
Pressure	2460.3	psi

F.I.T. 14 6572'

Recovered	55.8	c.ft., gas
	1000	cc. gas cut muddy water
Pressure	2930	psi

F.I.T. 15 6514'

Recovered	58.8	c.ft., gas
	2000	cc. gas cut muddy water
Pressure	2950	psi

F.I.T. 16 6439'

Recovered	41.8	c.ft., gas
	550	cc. water at
Pressures	2944	psi

F.I.T. 17 6036'

Recovered	58.5	c.ft., gas
	55	cc. condensate
	100	cc. mud at
Pressure	2682	psi

F.I.T. 18 6098'

Recovered	38.8	c.ft., gas
	3000	cc. water at
Pressure	2693	psi

F.I.T. 19 5975'

Recovered	57.5	c.ft., gas
	74	cc condensate
	100	cc. mud at
Pressure	2663	psi

F.I.T. 20 8113'

FAILED TO SEAL

F.I.T. 21 8117'

NO PRESSURE BUILD-UP - TIGHT FORMATION.

SAMPLING TIME - 55 MINUTES.

SUNFISH-1

WASCO

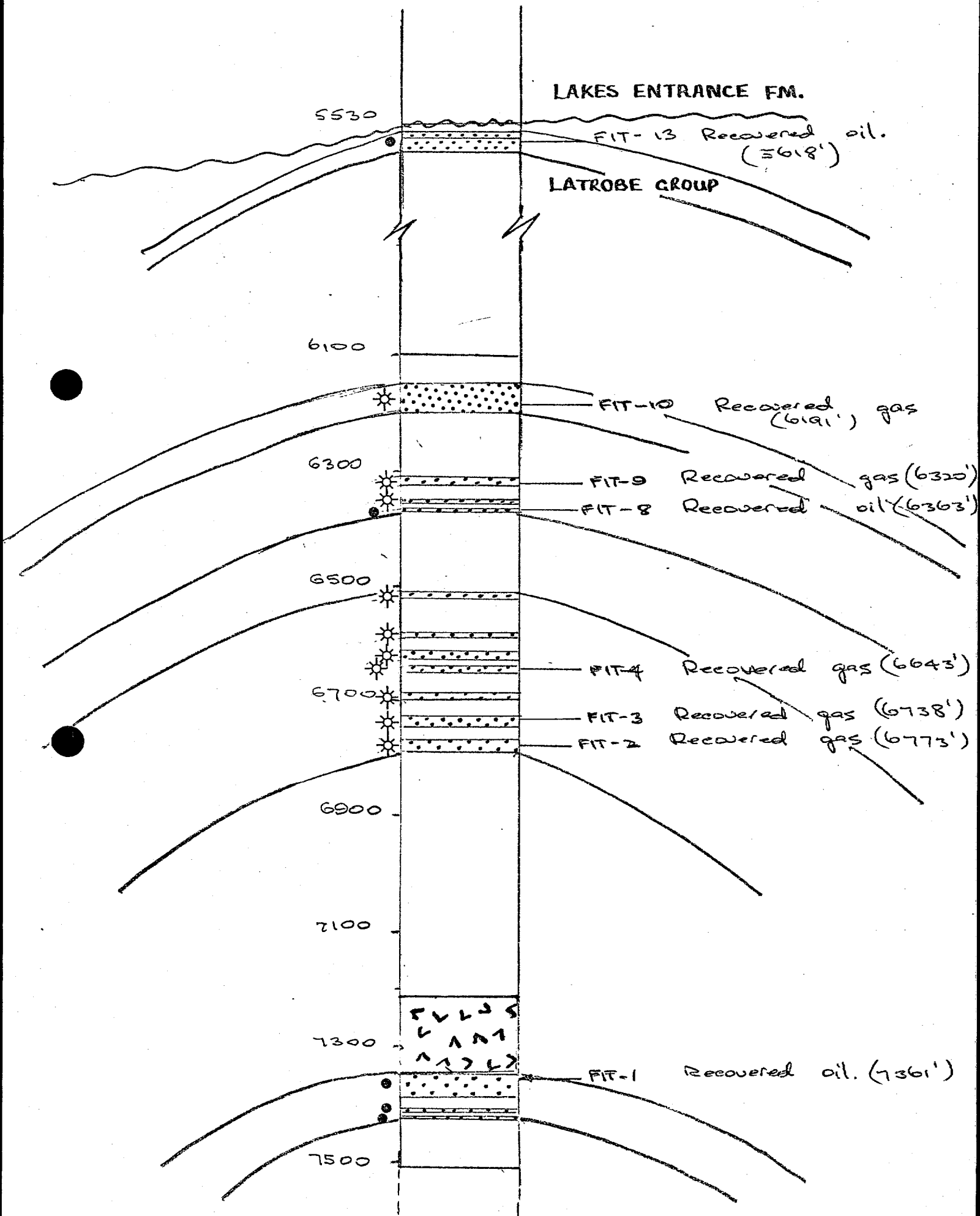
2nd Copy 10/1FORMATION INTERVAL TESTS

SUMMARY

<u>FIT Number</u>	<u>Depth (K.B.)</u>	<u>Recovery</u>
1	7361'	14,250 c.c. oil. 60.4 cu. ft. gas
2	6773'	127.6 cu. ft. gas 230 c.c. condensate 200 c.c. mud
3	6738'	108 cu. ft. gas 2500 c.c. condensate
4	6643'	124.1 cu. ft. gas 2300 c.c. condensate trace mud and water
5	7450'	2.5 cu. ft. gas 21,000 c.c. water
6	7350'	no recovery.
7	7020'	trace gas. 21,000 c.c. water
8	6363'	62.6 cu. ft. gas 17,000 c.c. oil
9	6320'	122.5 cu. ft. gas 1000 c.c. condensate trace water.
10	6191'	127.6 cu. ft. gas 200 c.c. condensate
11	7349'	4750 c.c. gas cut muddy water
12	5817'	3250 c.c. muddy water.
13	5618'	66.9 cu. ft. gas 14,500 c.c. oil
14	6572'	55.3 cu. ft. GAS 1000 cc MUDDY WATER
15	6514'	58.8 cu. ft. GAS 2000 cc WATER
16	6439'	41.8 cu. ft. GAS 2750 cc WATER
17	6036'	58.5 cu. ft. GAS 150 cc (APPROX) CONDENSATE

SUNFISH-1

INTERPRETATIVE



AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 19, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURES WITH AMERADA GAUGES RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 3282 12 HOUR CLO
 1 AMERADA 8,900 PSI ELEMENT SERIAL No. 9390 12 HOUR CLO

F.I.T. TEST No. 1 @ 7361' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
2059			RUN IN HOLE
2154			SET PACKER - INITIAL HYDROSTATIC
2155	3911	3931.8	
2156			OPEN TOOL AND SAMPLE
2157	3133.4	3130.7	
2206	3133.4	3130.7	
2207	3170.1	3209.5	
2208	3225.2	3241.9	
2209	3231.3	3237.3	
2212	3231.3	3237.3	SEAL MAIN SAMPLER - OPEN SEGREGATOR
2213	3237.5	3241.9	
2217	3237.5	3241.9	SEAL SEGREGATOR
2218			RELEASE TOOL
2219	3886.5	3885.6	FINAL HYDROSTATIC

NOTE: MAXIMUM TEMPERATURE
 200°F @ 7361'

F.I.T. TEST No. 2 @ 6773' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
2324			RUN IN HOLE
0017			SET PACKER - INITIAL HYDROSTATIC
0018	3629.3	3626.3	
0019			OPEN TOOL AND SAMPLE
0020	2998.8	3001.1	
0035	2998.8	3001.1	SEAL MAIN SAMPLER - OPEN SEGREGATOR
0036	2998.8	2991.8	
0037	2998.8	2996.5	
0038	2998.8	3001.1	
0041	2998.8	3001.1	SEAL SEGREGATOR
0042			RELEASE TOOL
0043	3623.6	3617.1	FINAL HYDROSTATIC

AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCA)
 FEBRUARY 20, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURES WITH AMERADA GAUGES RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 8,900 PSI ELEMENT SERIAL No. 9390 12 HOUR CLOCK

F.I.T. TEST No. 3 @ 6738' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
0201			RUN IN HOLE
0304			SET PACKER - INITIAL HYDROSTATIC
0305	3610.9	3593.9	
0307			OPEN TOOL AND SAMPLE
0314			F.I.T. TOOL PLUGGED
0315	2882.5	2894.7	FIRE SHAPED CHARGE
0316	2894.8	2894.7	
0325	2894.8	2894.7	
0326	2974.3	2982.6	SEAL MAIN CHAMBER - OPEN SEGREGATOR
0328	2974.3	2982.6	
0330			SEAL SEGREGATOR
0331	3604.8	3598.5	RELEASE TOOL
			FINAL HYDROSTATIC

F.I.T. TEST No. 4 @ 6643' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>		<u>REMARKS</u>
1501			RUN IN HOLE
1553			SET PACKER - INITIAL HYDROSTATIC
1554	3555.8		
1555			OPEN TOOL AND SAMPLE
1556	2919.2		
1606	2919.2		
1607	2955.4		
1608	2955.4		SEAL MAIN CHAMBER - OPEN SEGREGATOR
1609	2925.4		
1610	2937.6		
1612	2937.6		SEAL SEGREGATOR
1613			RELEASE TOOL
1614	3531.3		FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900 PSI)
 WAS RUN IN TANDEM WITH THIS
 GAUGE
 STYLUS WAS BROKEN (No. 1)
 RESULTS UNABLE TO BE READ.

AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 20, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURES WITH AMERADA GAUGES RUN IN
 TANDEN WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 8,900 PSI ELEMENT SERIAL No. 9390 12 HOUR CLOCK

F.I.T. TEST No. 5 @ 7450' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
1745			RUN IN HOLE
1822			SET PACKER - INITIAL HYDROSTATIC
1832	3978.4		
1825			OPEN TOOL AND SAMPLE
			F.I.T. TOOL PLUGGED
1842			FIRE SHAPED CHARGE
1843	3286.4		
1846	3286.4		
1847	3317		
1848	3317		SEAL MAIN CHAMBER
1850			RELEASE TOOL
1851	3947.8		FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900)
 WAS RUN IN TANDEN WITH THIS GAUGE
 STYLUS WAS BROKEN AGAIN (No. 2)
 RESULTS UNREADABLE.

F.I.T. TEST No. 6 @ 7350' M.D. - MUD RUN

INITIAL HYDROSTATIC: 3924 PSIG
 FINAL HYDROSTATIC: 3911 PSIG

AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 21, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURES WITH AMERADA GAUGES RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 8,900 PSI ELEMENT SERIAL No. 9390 12 HOUR CLOCK

F.I.T. TEST No. 7 @ 7020' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
0024			
0057			RUN IN HOLE
0058	3757.9		SET PACKER - INITIAL HYDROSTATIC
0059			
0100	2087.1		OPEN TOOL AND SAMPLE
0101	2093.2		
0104	2093.2		
0105	2087.1		
0106	2087.1		
0107	2080.9		
0113	2080.9		
0114	2521.5		
0115	2527.6		
0116	3084.5		
0120	3084.5		
0121			SEAL MAIN CHAMBER
0122	3727.3		RELEASE TOOL FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900 PSI)
 WAS RUN IN TANDEM WITH No. 8282
 (0-11,800 PSI)
 ELEMENT No. 9390 DAMAGED.

F.I.T. TEST No. 8 @ 6363' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>8,900</u>	<u>REMARKS</u>
0235			
0305			RUN IN HOLE
0306	3408.7		SET PACKER - INITIAL HYDROSTATIC
0307			
0308	2760.1		OPEN TOOL AND SAMPLE
0309	2766.3		
0318	2766.3		
0319	2778.5		
0325	2778.5		
0326			SEAL MAIN CHAMBER
0327	3339.9		RELEASE TOOL FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900 PSI)
 RUN IN TANDEM WITH THE ABOVE ELEMENT
 DAMAGED

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
FEBRUARY 21, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURE WITH AMERADA GAUGE RUN IN
TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
1 AMERADA 8,900 PSI ELEMENT SERIAL No. 9390 12 HOUR CLOCK

F.I.T. TEST No. 9 @ 6320' M.D.

<u>HOURS</u>	<u>PSIG</u> 11,800	<u>PSIG</u> 8,900	<u>REMARKS</u>
0443			RUN IN HOLE
0514			SET PACKER - INITIAL HYDROSTATIC
0515	3396.6		
0516			OPEN TOOL AND SAMPLE
0517	2705.1		
0526	2705.1		
0527	2766.3		
0533	2766.3		SEAL MAIN CHAMBER
0534			RELEASE TOOL
0535	3359.9		FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900 PSI)
RUN IN TANDEM WITH THE ABOVE -
DAMAGED.

F.I.T. TEST No. 10 @ 6191' M.D.

<u>HOURS</u>	<u>PSIG</u> 11,800	<u>PSIG</u> 8,900	<u>REMARKS</u>
0642			RUN IN HOLE
0710			SET PACKER - INITIAL HYDROSTATIC
0711	3347.6		
0712			OPEN TOOL AND SAMPLE
0715	2754		
0726	2754		SEAL MAIN CHAMBER - OPEN SEGREGATOR
0727	2741.8		
0728	2747.9		
0732	2747.9		SEAL SEGREGATOR
0734			RELEASE TOOL
0735	3329.3		FINAL HYDROSTATIC

NOTE: ELEMENT No. 9390 (0-8,900 PSI)
RUN IN TANDEM WITH THIS ELEMENT BUT
HAD BEEN DAMAGED IN A PREVIOUS TEST
AND RESULTS WERE INCORRECT.

F.I.T. TEST No. 11 @ 7349 M.D.

INITIAL HYDROSTATIC: 3911.0 PSIG
FINAL HYDROSTATIC: 3355.9 PSIG

F.I.T. TEST No. 12 @ 5817' M.D.

INITIAL HYDROSTATIC: 3164 PSIG
FINAL HYDROSTATIC: 3145 PSIG

AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 21, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURE WITH AMERADA GAUGES RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 10,300 PSI ELEMENT SERIAL No. 9403 12 HOUR CLOCK

F.I.T. TEST No. 13 @ 5618' M.D.

HOURS	PSIG 11,800	REMARKS
1403		
1435		RUN IN HOLE
1436		SET PACKER - INITIAL HYDROSTATIC
1437	3011	
1438		OPEN TOOL AND SAMPLE
1446	2454.2	
1447	2454.2	
1455	2460.3	
1457	2460.3	SEAL CHAMBER
1458	2968.2	RELEASE TOOL FINAL HYDROSTATIC

NOTE: TEST NOT RUN IN TANDEM.

F.I.T. TEST No. 14 @ 6572' M.D.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 10,300 PSI ELEMENT SERIAL No. 9403 12 HOUR CLOCK

HOURS	PSIG 11,800	PSIG 10,300	REMARKS
0852			
0922			RUN IN HOLE
0923			SET PACKER - INITIAL HYDROSTATIC
0924	3574.2	3552.6	
0925	3574.2	3552.6	
0926	2301.2	3552.6	OPEN TOOL AND SAMPLE
0927	2301.2	1427.2	
0928	2301.2	1427.2	
0929	2301.2	1670.9	
0930	2301.2	2154.5	
0931	2301.2	2580.3	
0932	2864.2	2663.4	
0933	2864.2	2855.6	
0934	2864.2	2881.6	
0935	2925.4	2897.2	
0936	2925.4	2918	
0937	2925.4	2923.2	
0938	2931.5	2928.4	SEAL CHAMBER
0939			RELEASE TOOL
0940	3549.7	3536.9	FINAL HYDROSTATIC

AGNEW-GO-WESTERN PTY. LTD.
 582 ST. KILDA ROAD
 MELBOURNE, VICTORIA 3004

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 23, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURE WITH AMERADA GAUGES RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 10,300 PSI ELEMENT SERIAL No. 9403 12 HOUR CLOCK

F.I.T. TEST No. 15 @ 6515' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>10,300</u>	<u>REMARKS</u>
1027			RUN IN HOLE
1055			SET PACKER - INITIAL HYDROSTATIC
1056	3519.1		
1057			OPEN TOOL AND SAMPLE
1059	2919.2		
1100	2925.4		
1101	2925.4		
1102	2925.4		
1103	2925.4		
1104	2949.8		
1105	2949.8		
1106	2949.8		
1107	2949.8		SEAL CHAMBER
1108			RELEASE TOOL
1109	3512.9		FINAL HYDROSTATIC

NOTE: STYLUS BROKEN IN ELEMENT
 No. 9403 - CHART NOT READABLE.

F.I.T. TEST No. 16 @ 6439' M.D.

<u>HOURS</u>	<u>PSIG</u> <u>11,800</u>	<u>PSIG</u> <u>10,300</u>	<u>REMARKS</u>
1200			RUN IN HOLE
1246			SET PACKER - INITIAL HYDROSTATIC
1247	3488.4		
1248			OPEN TOOL AND SAMPLE
1250	2925.4		
1251	2925.4		
1252	2925.4		
1253	2925.4		
1254	2925.4		
1255	2943.7		
1256	2943.7		
1257	2943.7		
1258	2943.7		SEAL CHAMBER
1301			RELEASE TOOL
1302	3470.1		FINAL HYDROSTATIC

NOTE: ELEMENT No. 9403 (0-10,300 PSI)
 RUN IN TANDEM - NO RESULTS AS
 STYLUS BROKEN.

ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCA)
 FEBRUARY 23, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURE WITH AMERADA GAUGE RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 3282 12 HOUR CLOCK
 1 AMERADA 10,300 PSI ELEMENT SERIAL No. 9403 12 HOUR CLOCK

F.I.T. TEST No. 17 @ 6036' M.D.

<u>HOURS</u>	<u>PSIG</u> 11,800	<u>PSIG</u> 10,300	<u>REMARKS</u>
1350			RUN IN HOLE
1421			SET PACKER - INITIAL HYDROSTATIC
1422	3274.2	3255.9	
1432			OPEN TOOL AND SAMPLE
1424	3274.2	3255.9	F.I.T. TOOL PLUGGED
1425	3274.2	3255.9	
1426	3274.2	3255.9	
1427			FIRE SHAPED CHARGE
1428	2650	2647.8	
1429	2680.6	2684.2	
1434	2680.6	2684.2	SEAL CHAMBER
1436			RELEASE TOOL
1437	3219.1	3224.7	FINAL HYDROSTATIC

F.I.T. TEST No. 18 @ 6098' M.D.

<u>HOURS</u>	<u>PSIG</u> 11,800	<u>PSIG</u> 10,300	<u>REMARKS</u>
1530			RUN IN HOLE
1553			SET PACKER - INITIAL HYDROSTATIC
1554	3298.7		
1555			OPEN TOOL AND SAMPLE
1556			F.I.T. TOOL PLUGGED
1557			FIRE SHAPED CHARGE
1558	2692.8		
1559	2692.8		
1604	2692.3		SEAL CHAMBER
1606			RELEASE TOOL
1607	3286.4		FINAL HYDROSTATIC

NOTE: STYLUS BROKEN - CHART
 UNREADABLE

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ESSO AUSTRALIA LIMITED

SUNFISH

SUNFISH No. 1 (WILDCAT)
 FEBRUARY 23, 1974

PURPOSE: OBTAIN SUBSURFACE PRESSURES WITH AMERADA GAUGE RUN IN
 TANDEM WITH SCHLUMBERGER FORMATION INTERVAL TESTER.

TOOLS USED: 1 AMERADA 11,800 PSI ELEMENT SERIAL No. 8282 12 HOUR CLOCK
 1 AMERADA 10,300 PSI ELEMENT SERIAL No. 9403 12 HOUR CLOCK

F.I.T. TEST No. 19 @ 5975' M.D.

HOURS	PSIG	PSIG	REMARKS
	11,800	10,300	
1705			RUN IN HOLE SET PACKER - INITIAL HYDROSTATIC OPEN TOOL AND SAMPLE
1734			
1735	3249.7	3229.9	
1736	2656.1	2653	
1737	2662.2	2663.4	
1738	2662.2	2663.4	
1739	2662.2	2663.4	
1740	2662.2	2663.4	
1741	2662.2	2663.4	
1742	2662.2	2663.4	
1743	2662.2	2663.4	
1744	2662.2	2663.4	
1746			
1747	3231.3	3219.5	

PE902307

This is an enclosure indicator page.
The enclosure PE902307 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE902307 has the following characteristics:

ITEM_BARCODE = PE902307
CONTAINER_BARCODE = PE905173
NAME = Structure Map Upper Paleocene
Unconformity Post Drilling
BASIN = GIPPSLAND
PERMIT =
TYPE = SEISMIC
SUBTYPE = HRZN_CONTR_MAP
DESCRIPTION = Structure Map Upper Paleocene
Unconformity Post Drilling
REMARKS =
DATE_CREATED = 1/04/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = Sunfish-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902308

This is an enclosure indicator page.
The enclosure PE902308 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE902308 has the following characteristics:

- ITEM_BARCODE = PE902308
- CONTAINER_BARCODE = PE905173
- NAME = Structure Map Top Latrobe Post Drilling
Sunfish Prospect
- BASIN = GIPPSLAND
- PERMIT =
- TYPE = SEISMIC
- SUBTYPE = HRZN_CONTR_MAP
- DESCRIPTION = Structure Map Top Latrobe Post Drilling
Sunfish Prospect
- REMARKS =
- DATE_CREATED = 1/04/74
- DATE_RECEIVED =
- W_NO = W679
- WELL_NAME = Sunfish-1
- CONTRACTOR = ESSO
- CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902309

This is an enclosure indicator page.
The enclosure PE902309 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE902309 has the following characteristics:

ITEM_BARCODE = PE902309
CONTAINER_BARCODE = PE905173
NAME = Sunfish Prospect Structure Map Top
Upper Cretaceous
BASIN = GIBBSLAND
PERMIT =
TYPE = SEISMIC
SUBTYPE = HRZN_CONTR_MAP
DESCRIPTION = Sunfish Prospect Structure Map Top
Upper Cretaceous
REMARKS =
DATE_CREATED = 1/04/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = Sunfish-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE601434

This is an enclosure indicator page.
The enclosure PE601434 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE601434 has the following characteristics:

- ITEM_BARCODE = PE601434
- CONTAINER_BARCODE = PE905173
- NAME = Well Completion Log
- BASIN = GIPPSLAND
- PERMIT =
- TYPE = WELL
- SUBTYPE = COMPLETION_LOG
- DESCRIPTION = Well Completion Log
- REMARKS =
- DATE_CREATED = 3/03/74
- DATE_RECEIVED =
- W_NO = W679
- WELL_NAME = Sunfish-1
- CONTRACTOR = ESSO
- CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902310

This is an enclosure indicator page.
The enclosure PE902310 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE902310 has the following characteristics:

ITEM_BARCODE = PE902310
CONTAINER_BARCODE = PE905173
NAME = Geological Cross Section A-A'
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = CROSS_SECTION
DESCRIPTION = Geological Cross Section A-A'
REMARKS =
DATE_CREATED = 1/04/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = Sunfish-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902311

This is an enclosure indicator page.
The enclosure PE902311 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE902311 has the following characteristics:

ITEM_BARCODE = PE902311
CONTAINER_BARCODE = PE905173
NAME = Time Depth Curve
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Time Depth Curve
REMARKS =
DATE_CREATED = 22-23/3/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = Sunfish-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE604651

This is an enclosure indicator page.
The enclosure PE604651 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE604651 has the following characteristics:

ITEM_BARCODE = PE604651
CONTAINER_BARCODE = PE905173
NAME = Mud Log
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = MUD_LOG
DESCRIPTION = Mud Log for Sunfish-1
REMARKS =
DATE_CREATED = 1/03/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = SUNFISH-1
CONTRACTOR = BAROID WELL LOGGING SERVICE
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE904243

This is an enclosure indicator page.
The enclosure PE904243 is enclosed within the
container PE905173 at this location in this
document.

The enclosure PE904243 has the following characteristics:

ITEM_BARCODE = PE904243
CONTAINER_BARCODE = PE905173
NAME = Formation Tester Data
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = FIT
DESCRIPTION = Formation Tester Data for Sunfish-1
REMARKS =
DATE_CREATED = 19/02/74
DATE_RECEIVED =
W_NO = W679
WELL_NAME = SUNFISH-1
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)