ESSO

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WCR FORTESCUE-1

(W709)

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION REPORT

FORTESCUE-2

GIPPSLAND BASIN, VICTORIA

R.C.N. THORNTON,
J.D. ALDER

MARCH, 1979

CONTENTS

ESSO AUSTRALIA LTD.

COMPLETION REPORT

1. WELL DATA RECORD

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
FORTESCUE-2	VIC/ OFFSHORE	VIC/L5	GIPPSLAND	FORTESCUE

CO-ORDINATES	MAP PROJECTION	GEOGRAPHICAL LOCATION
LATITUDE 38° 25' 56.96"S LONGITUDE 148° 15' 59.13"E X 610,534mE Y 5,745,423.42mN	AMG Zone 55	2.8 kms to NNW of Cobia-1, 3.8 kms to SSW of West Halibut-1.

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH 2652 Average Angle Vertical
KB 31 RT	68.7m	~~MEASURED DEPTH~~
	PLUG BACK DEPTH 115m	REASONS FOR PLUGGING BACK ABANDONMENT

DATES

MOVE IN	RIG UP	SPUDDED
29th October, 1978	29th October, 1978	30th October, 1978
RIG DOWN COMPLETE	**RIG RELEASED**	**PRODUCTION UNIT - RIG UP**
25th November, 1978	25th November, 1978	N/A

PRODUCTION UNIT - RIG DOWN	INITIAL PRODUCTION ESTABLISHED
N/A	N/A

MISCELLANEOUS

OPERATOR	~~PERMITTEE~~ LICENCEE	ESSO INTEREST 50%
ESSO AUSTRALIA LTD	Esso Exploration and Production Australia Hematite Petroleum Pty. Ltd	OTHER INTEREST Hematite Petroleum Pty. Ltd - 50%

CONTRACTOR Australian	RIG NAME	EQUIPMENT TYPE
ODECO Pty. Ltd, 3rd Floor, Park Towers, 317 Hay Street, PERTH, W.A.	"OCEAN DIGGER"	Semi-Submersible Rig.

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
28	5-238-009	N/A	N/A

LAHEE WELL CLASSIFICATION		
	Before Drilling	Field Outpost
	After Drilling	Successful Outpost

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2. CASING - LINER - TUBING RECORD

Type	Size	Weight	Grade	Thread	No. Joints	Depth
PILE JOINT	24"	670	X-52	CC	1	100.7m
CROSSOVER JOINT	20"	129	X-52	JV-CC	1	116.2m
CONDUCTOR CASING	20"	94	X-52	JV	9	236m
SURFACE CASING	$13^3/8$"	54.5	K-55	BUTT	59	861m

3. CEMENT RECORD

String	20" CONDUCTOR PIPE		$13^3/8$" CASING		
Type of Cement	AUST 'N' + 12% GEL	AUST 'N' NEAT	CLASS G NEAT	AUST 'N' NEAT	
Slurry Volume (M^3)	42.25	11.55	18.92	6.60	
Slurry Density (S.G.)	1.45	1.87	1.89	1.87	
Cement Top	SEAFLOOR		568m		
Casing Tested KPa	3450		10,340		
Number of Centralizers	6		8		
Number of Scratchers					
Stage Collar					
Remarks	20" CONDUCTOR TESTED TO 500 PSI (3.45MPa)		TESTED TO 200/1500 PSI (1.4/8.3MPa)		

4. CEMENT PLUGS

Plug	1	2	3	4
Cement Type	CLASS 'N' PLUS 0.3% HR-4	CLASS 'N' PLUS 0.3% HR-4	CLASS 'N' + 0.3% HR-4	CLASS 'N' NEAT
Slurry Volume (M^3)	8.25	11.2	11.2	13.63
Slurry Density(SG)	1.87	1.87	1.87	1.87
Cement Base	2650m	2500m	891m	231m
Cement Top	2550m	2380m	770m	115m
Remarks		TAGGED PLUG AT 2380M WITH 15 KIPS.	PRESSURE TESTED PLUG TO 1000PSI (6.9 MPa)	PERFORATED AT 231M AND 175M. CIRCULATED 172 SX INTO $13^3/8$"-20" ANNULUS.

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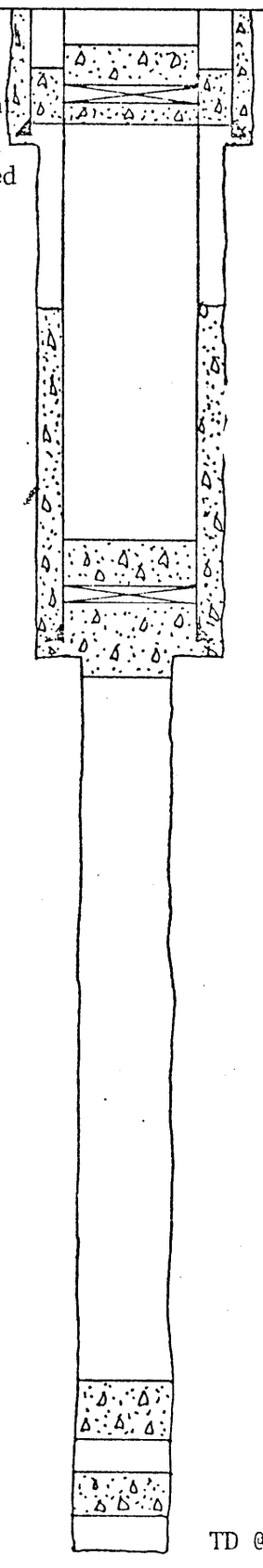
ABANDONMENT SCHEMATIC

FORTESCUE-2

ML 101m RKB



No. 4 Cement Plug
231 - 115m
413 sx Aust 'N' cement

Note: Perforated at 231m and 175m. Circulated 172 sx Class 'N' into 13-3/8" x 20" annulus and dumped 231 sx Class 'N' on top of retainer

EZ SV Retainer at 215m
20" casing @ 236m

Top of cement @ 568m

No. 3 cement plug
891 - 770m
340 sx Aust 'N' cement

EZ SV Retainer at 831m
13-3/8" casing @ 861m

No. 2 cement plug
2500 - 2380m
340 sx Aust 'N' cement

No. 1 cement plug
2650 - 2550m
250 sx Aust 'N' cement

TD @ 2653m

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5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES.

INTERVAL	TYPE	INTERVAL	TYPE
			COVENTIONAL CORES #1-4
280-290m	10m intervals-5 sets		
290-300m	5m " washed and		
300-880m	10m " dried	2420-2436m	Cut 16m, recovered 15.5m
880-2420m	5m " -Samples and	2436-2450.5m	Cut 14.5m, recovered 11.5m
2480-2640m	5m " one unwashed	2450.5-2464m	Cut 13.5m, recovered 11.0m
	sack.	2464-2480m	Cut 16m, recovered 14m.
490-2420m	One composite canned cuttings sample. Every 30 metres.		
2636.5-2296.5	30 S.W.C.'s 30 rec.		
2266-885m	30 S.W.C.'s 30 rec.		

6. WIRELINE LOGS AND SURVEYS

Type & Scale	From	To	Type & Scale	From	To
ISF-Sonic 1:200 Run 1, 1:500	237.0	877.0m	Velocity Survey		
ISF-Sonic-MSFL 1:200 Run 2, 1:500	861.0	2651m	16 levels	885m-2652m	
FDC 1:200 Run 1, 1:500	100.0	878.0m			
FDC-CNL 1:200 Run 2, 1:500	860	2651m			
HDT-Dipmeter 1:200 and computed results	861	2651m			

RFT pressure results

SUMMARY OF FORMATION TEST PROGRAMME

FORTESCUE-2

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES) OIL	COND.	GAS	FORMATION WATER	FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE MPag	Psig	HEWLETT-PACKARD HYDROSTATIC PRESSURE MPag	Psig	HORIZONTAL PERMEABILITY millidarcys	REMARKS
1	1	2446.5	1	17.55		301.0		1.70	23.104	3351	26.813	3888.9	947	Horner Pressure 23.486 MPa, (3406.4 psi)
	2	2632							25.233	3659.7	28.807	4178.1		Pretest only
	3	2623							25.146	3647.1	28.711	4164.2		" "
	4	2613							25.049	3633.0	28.605	4148.8		" "
	5	2563							24.479	3550.4	28.067	4070.8		" "
	6	2551							24.389	3537.3	27.936	4051.8		" "
	7	2542							24.303	3524.8	27.841	4037.9		" "
	8	2535							24.230	3514.2	27.761	4026.4		" "
	9	2511							TIGHT		27.506	3989.4		" "
	10	2497							23.977	3477.6	27.372	3970.0		" "
	11	2488							23.900	3466.4	27.268	3954.8		" "
	12	2481							23.822	3455.1	27.181	3942.3		" "
	13	2462							23.644	3429.2	26.979	3912.9		" "
	14	2446.5							23.504	3409.0	26.752	3880.0		" "
2	15	2452							-	-	26.872	3897.5		Seats 15, 16, 17: Tight formation test may be caused by presence of very thick mudcake.
	16	2452							-	-	26.872	3897.5		
	17	2451.5							-	-	26.859	3895.5		
	18	2451	1	-	-	19.8	-	19.5	23.545	3414.9	26.839	3892.7	N.A.	Horner Pressure 23.486 MPa, (3406.4 psi)
	19	2481.5							24.703	3582.9	28.198	4089.7		Pretest only

SUMMARY OF FORMATION TEST PROGRAMME

FORTESCUE-2

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		HORIZONTAL PERMEABILITY	REMARKS
				OIL	COND.	GAS	FORMATION WATER	FILTRATE	MPag	Psig	MPag	Psig	millidarcys	
2	20	2510.5							-	-	27.469	3984.0		Seats 20, 21 and 22: Lost seal due to packer becoming dislodged.
	21	2510.5							-	-	-	-		
	22	2510.5							-	-	27.465	3983.5		
3	23	2450.5							VERY	TIGHT	26.838	3892.5		Pretest only
	24	2453							VERY	TIGHT	26.860	3895.7		" "
	25	2453							VERY	TIGHT	26.858	3895.4		" "
	26	2455.5							VERY	TIGHT	26.884	3899.1		" "
	27	2455							VERY	TIGHT	26.892	3900.4		" "
	28	2450		0.25	-	2.8	-	13.5	23.531	3412.8	26.814	3889.0		Seat 28: During build-up period, pressure oscillates on both HP and Schlumberger gauges. Horner Pressure 23.560 MPa, (3417 psi)
	29	2570							24.573	3564.0	24.187	3508.0		Pretest only
	30	2526							24.124	3498.8	27.599	4002.8		" "
	31	2510.5							24.059	3489.5	27.430	3978.3		" "

FORTESCUE - 2

STRATIGRAPHIC TABLE

MM YEARS	EPOCH	SERIES	FORMATION HORIZON	PALYNOLOGICAL ZONATION SPORE - POLLEN ASSEMBLAGE ZONES A.D. PARTRIDGE H.E. STACY	PLANKTONIC FORAMINIFERAL ZONATIONS	DRILL DEPTH (METRES)	SUBSEA DEPTH (METRES)	THICKNESS (METRES)
			SEAFLOOR			100	-69	
0	PLEIST	E L	GIPPSLAND LIMESTONE		A 1			
	PLIO	L			A 2			
		M			A 3			
5		E			A 4			
	MIOCENE	LATE			B 1			
					B 2			2030
10		MIDDLE			C			
					D 1			
					D 2			
15					E 1			
			2130		E 2	2130	-2099	
		EARLY	LAKES ENTRANCE FORMATION	P. tuberculatus	F			
20					G			
					H 1			
25					H 2			311
	OLIGOCENE	LATE			I 1			
					I 2			
30					J 1			
		EARLY	2440			2440	-2409	
35				Upper N. asperus	J 2			
					K			
	EOCENE	LATE		Middle N. asperus				
40			2440			2440	-2409	
		MIDDLE	GURNARD FORM. 2444	Lower N. asperus		2444	-2413	4
45			LATROBE GROUP					
				P. asperopolus				
50		EARLY		Upper M. diversus				
				Middle M. diversus				
			2444 NEARSHORE MARINE COARSE CLASTICS	Lower M. diversus		2444	-2413	100
						2544	-2513	>108
55	PALEOCENE	LATE	2652 T.D.	Upper L. balmei		2652 T.D.	(-2621) T.D.	
60		EARLY		Lower L. balmei				
65	UPPER CRETACEOUS	LATE		T. longus				
				T. lilliei				

DWG. 1904/OP/14

DESCRIPTION OF STRATIGRAPHIC UNITS

FORTESCUE-2

DEPTH	DESCRIPTION
	GIPPSLAND LIMESTONE (100m-2130m K.B.)
280m-450m	CALCARENITE, SKELETAL: white, unconsolidated or poorly cemented, fine to granule size fossil debris, forams, bryzoa, coral, bivalve fragments and echinoid spines. Trace of very fine to granule, rounded quartz grains. Minor calcite recrystallisation and traces of glauconite. Trace of calcareous siltstone, grey, firm, massive, grades from clay to very fine sand, slightly calcareous, carbonaceous flecks.
450m-570m	CALCISILTITE, SKELETAL, GRADING TO CALCILUTITE: CALCISILTITE, SKELETAL: white to very light grey, firm to soft, fossil fragments include forams, bivalve debris, coral, bryozoa and echinoid spines. Trace pyrite, trace subrounded to rounded, clear, very coarse quartz grains. CALCILUTITE - light grey, very soft, silty, very fossiliferous with foram and bivalve debris.
570m-1690m	CALCISILTITE, SKELETAL: white to medium light grey, soft to firm, grades to calcilutite, massive, silt sized forams, bryozoa, bivalve fragments, corals and echinoid spines. Pyrite common as framboidal clusters, coating fossils or as fine disseminations. Trace glauconite and carbonaceous material. Trace marl, medium light to medium grey, very soft to soft, silty, trace of carbonaceous material.
1690m-1850m	SKELETAL CALCISILTITE GRADING TO CALCAREOUS SILTSTONE: CALCISILTITE, SKELETAL: as per previous interval. SILTSTONE, CALCAREOUS: medium grey, firm, massive, increasing in clay towards base, trace pyrite and carbonaceous material.
1850m-2130m	MUDSTONE, CALCAREOUS: medium to light grey, firm, silty, rare forams and coral. Trace pyrite, glauconite and carbonaceous material. Trace of quartz.
	LAKES ENTRANCE FORMATION
2130m-2427m	CALCAREOUS MUDSTONE & MINOR MARL: CALCAREOUS MUDSTONE: light grey to brown, firm, massive to subfissile, silty. Fossils common, predominantly forams. Trace of iron stained granular, angular quartz grains. Pyrite commonly coats fossils, glauconite and mica becoming abundant, trace carbonaceous material. MARL: white to very light grey, soft, isolated forams, trace pyrite.
2427m-2440m	CALCAREOUS MUDSTONE GRADING TO CALCAREOUS SILTSTONE: CALCAREOUS MUDSTONE: dark grey to brown, hard, semi-fissile, minor forams minor pyrite, mica flakes and carbonaceous material. Downward increase in glauconite. CALCAREOUS SILTSTONE: light to dark grey, hard, massive, forams, clay rich, minor pyrite, mica and carbonaceous material with downward increase in glauconite.
	LATROBE GROUP
2440m-2444m	GURNARD FORMATION: GREENSAND: grey to dark brown, moderately hard to hard, clay to coarse

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DESCRIPTION OF STRATIGRAPHIC UNITS

FORTESCUE-2

DEPTH	DESCRIPTION
	sand sized, massive, predominantly glauconite pellets (30-60%), often oxidised, very calcareous. Minor amounts of well rounded to subangular, coarse to granular quartz grains.
2444m-2480m	FINE SANDSTONE & MINOR INTERBEDDED VERY FINE SANDSTONE/SILTSTONE/MUDSTONE SANDSTONE: light grey to brown, friable to indurated, very fine to fine grained, generally well sorted, massive to flat bedded, angular to sub-rounded, trace mica and glauconite, abundant pyrite. Occasional silty carbonaceous layers. Porosity from very good to tight. VERY FINE GRAINED SANDSTONE/SILTSTONE: dark brown, hard, clay rich. Trace of pyrite and mica. Glauconite common. Extensively bioturbated. MUDSTONE: dark brown, very carbonaceous, pyrite and mica common.
2480m-2652m	COARSE SANDSTONE INTERBEDDED WITH VERY FINE SANDSTONE/SILTSTONE/SHALE/COAL: COARSE SANDSTONE: light grey to brown, unconsolidated, well sorted, coarse to granule, subrounded to rounded, polished quartz grains, minor pyrite coating. VERY FINE SANDSTONE: light grey to brown, friable to semifriable, fine to very fine grained, grading to silt, massive or laminae defined by carbonaceous material, clear quartz grains and minor mica, pyrite common, abundant clay, tight. SILTSTONE: light brown to dark brown, firm to hard, abundant pyrite, carbonaceous matter define laminae. SHALE: very dark grey to brown, soft to firm, occasionally containing silty lenses, carbonaceous. COAL: black, hard, pyritic.

FORTESCUE-2

GEOLOGICAL AND GEOPHYSICAL ANALYSIS

STRATIGRAPHY

AGE	UNIT/ HORIZON	DEPTH (m) PREDICTED KB	DEPTH (m) ACTUAL KB	DEPTH (m) ACTUAL SUBSEA	THICKNESS (m)
Pliocene/ Miocene	Gippsland Limestone	101	99.5	-68.5	2030.5
Miocene	Base of High Velocity Channel	1576	1681	-1650	
	Mid Miocene Marker	2216	2218	-2187	
Miocene/ Oligocene	Lakes Entrance Formation	-	2130	-2099	314
	"Oligocene Wedge"	-	2422	-2391	22
Eocene/ Paleocene	Latrobe Group	2421	2440	-2409	211+
	Gurnard Formation	-	2440	-2409	4
	Fine Grained Marine Unit	2421	2444	-2413	36
	Coarse Clastics		2480	-2449	171+
	M-1.3.1	2546	2548	-2517	
	T.D.		2651	-2620	

GEOLOGICAL ANALYSIS

Fortescue-2 was drilled to test the southern extent of the Fortescue Field, which had been discovered with the drilling of West Halibut-1 in a separate fault block, 3.8 km to the north-north east. In particular, the well was designed to evaluate the base seal to the field in the southern fault block and to determine the depth of the oil/water contact.

The Latrobe Group section encountered in Fortescue-2 comprises marine to nearshore marine and alluvial plain sediments. These can be correlated with West Halibut-1, as well as Cobia-1 and -2 to the southeast (see geological crosssection B-B).

The base of the Lakes Entrance Formation, as well as the Gurnard Formation and fine grained marine unit of the Latrobe Group were fully cored. The basal Lakes Entrance Formation comprises hard glauconitic, foraminiferal mudstone and siltstone of Oligocene age and wedges out up dip from Fortescue-2. It has not been recognised in Cobia-1 and -2. The Gurnard Formation of Lower N. asperus age consists of up to 60% glauconite pellets, with 5-10% quartz granules. It too thins towards Cobia-1 and is absent from Cobia-2.

The fine grained marine unit at Fortescue-2 (M-1.0.0) is of nearshore marine origin and is time equivalent with coarse sands of fluvial to marine bar environment (M-1.0.0) overlying floodplain deposits (M-1.0.0 seal) at West Halibut. Consequently, the rock unit which provides base seal to the Fortescue Field in the northern block does not occur in the southern block. The youngest units at West Halibut-1, F2 and F3 pinch out southwards as a result of non-deposition, before reaching Fortescue-2. With depth, the facies at Fortescue-2 progressively change from marginal marine through beach sands to alluvial plain sandstones, shales and coals.

An 8m gross oil column was encountered at Fortescue-2 in the fine grained marine unit. Only one 3m sand is net pay, however. The oil/water contact was identified from the cores and logs at -2421m.

Formation pressure data indicate that the base seal to the Fortescue Field in the southern block is different from that in the northern block. Whereas in the northern block the M-1.0.0 base seal is the hydraulic barrier, at Fortescue-2 the pressure drop occurs across the M-1.0.2 interbedded shale and coal unit. Formation pressures in the upper sands fall on the same trend as those above the M-1.0.0 seal at West Halibut-1 whereas those from the lower sands equate with Halibut field pressures.

The reservoir sandstones above the M-1.0.2 base seal pinch out up dip from Fortescue-2. Consequently, they were not penetrated by either of the Cobia wells.

GEOPHYSICAL ANALYSIS

Although the top of the Latrobe Group was encountered 19m deeper than anticipated, an additional unit of Oligocene age was found to directly overlie the Latrobe Group. It is the top of this unit, here 22m in thickness, that gives rise to the strong seismic reflection which had been identified as the Top of Latrobe Group. The presence of this wedge is localized and has been found only here and subsequently in the Rockling-1 well.

A revised Top of Latrobe Seismic Marker (i.e. on top of the Oligocene wedge, where present) map is enclosed. This map incorporates the results of Fortescue-3 drilling.

APPENDIX 1

APPENDIX 1

CUTTINGS SAMPLE DESCRIPTIONS

LITHOLOGICAL DESCRIPTIONS — J.D. ALDER

FORTESCUE-2 — 1/11/78

DEPTH	%	DESCRIPTION
280m-290m	85%	Calcarenite - white, unconsolidated, fine to granular. Loose fossil fragments, forams, shell debris, bryozoa, coral debris. Trace of quartz, clear, subrounded, coarse grained. Trace glauconite.
	15%	Calcareous Siltstone - grey, firm, clay to very fine sand grains, trace carbonaceous, slightly calcareous.
290m-295m	85%	Calcarenite - As above. Very fine to medium grained.
	15%	Calcareous Siltstone - As above.
295m-300m	85%	Calcarenite - fine to granular, as above.
	15%	Calcareous Siltstone - As above.
300m-310m	85%	Calcarenite - As above.
	15%	Calcareous Siltstone - As above.
		Trace non-calcareous, chocolate.
		Mudstone - firm.
310m-320m	60%	Calcarenite - white, friable, partially cemented with calcareous cement, predominantly loose shell fragments, bryozoa, coral debris, forams, echinoid spines. Trace quartz, very fine to granular.
	40%	Calcareous Siltstone - grey, firm, clay to very fine sand grains, slightly calcareous, carbonaceous flecks, some fragments completely coated in thin calcite.
320m-330m	60%	Calcarenite - As above.
	40%	Calcareous Siltstone - As above.
330m-340m	70%	Calcarenite - As above.
	30%	Calcareous Siltstone - As above.
340m-350m	80%	Calcarenite - white,friable, partial calcareous cement, very fine to medium grained. 20% coarse to granular. Mainly shell debris, coral fragments forams, echinoid spines, rare calcite crystals.
	20%	Calcareous Siltstone - grey, firm, clay to very fine grained, slightly calcareous, often with calcareous coating.
350m-360m	85%	Calcarenite - As above.
	15%	Calcareous Siltstone - As above.
360m-370m	85%	Calcarenite - As above.
	15%	Calcareous Siltstone - As above.
370m-380m	85%	Calcarenite - As above.
	15%	Calcareous Siltstone - As above.

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DEPTH	%	DESCRIPTION
380m-390m	90%	Calcarenite - As above.
	10%	Calcareous Siltstone - As above.
390m-400m	90%	Calcarenite - white, friable, partial calcareous cement, very fine to medium grained. 20% coarse to granular. Mainly shell debris, coral fragments, forams, echinoid spines, trace quartz, clear, rounded, very coarse grained.
	10%	Calcareous Siltstone - grey, firm, clay to very fine grained, slightly calcareous, trace Mudstone, non-calcareous.
400m-410m	90%	Calcarenite - As above.
	10%	Calcareous Siltstone - As above.
410m-420m	95%	Calcarenite - white, very friable, partial calcareous cement, very fine to medium grained. 5% coarse to granula predominantly indeterminate fossil debris, some shell and coral fragments.
	5%	Calcareous Siltstone - grey, firm, clay to very fine grained, slightly calcareous, often with calcareous coating.
420m-430m	100%	Calcarenite - As above. Very fine to medium grained. 20% coarse to granular. Trace Siltstone and chocolate Mudstone.
430m-440m	100%	Calcarenite - very fine to medium grained. 3% coarse to granular, as above.
440m-450m	100%	Calcarenite - white, firm, calcareous cement, very fine to medium grained. 5% coarse to granular. Trace Siltston Trace quartz, occasional loose shell debris and forams.
450m-460m		Poor sample mostly clay. Large amount lost in washing.
	100%	Calcisiltite - white to very light grey, clay to silt grains, soft. Trace carbonaceous flecks. Trace quartzite fragments - granular, hard, yellow to red brown. Loose shell and coral debris.
460m-470m	60%	Calcisiltite - As above.
	5%	Granular clear Quartz - rounded.
	5%	Siltstone - grey, firm, slightly calcareous.
	30%	Loose fossil fragments, shell debris, forams, corals, bryozoa, echinoid spines.
470m-480m	70%	Calcisiltite - As above.
	5%	Granular clear rounded Quartz.
	5%	Siltstone - grey, firm, slightly calcareous.
	20%	Coarse fossil fragments, as above.

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LITHOLOGICAL DESCRIPTIONS

J.D. ALDER

1/11/78

FORTESCUE-2

DEPTH	%	DESCRIPTION
480m-490m	100%	Calcisiltite - As above. Trace Quartzite. Trace loose shell debris and forams.
START CAN SAMPLES		
490m-500m		Very poor sample mostly a very sticky clay, calcareous,lig grey.
	100%	Calcilutite - light grey, very silty clay, soft. Loose fossil fragments - forams, shell debris.
500m-510m	100%	Calcilutite - As above.
510m-520m	100%	Calcilutite - As above.
520m-530m	100%	Calcilutite - light grey, very soft, 100% clay. 90% soluble in HCL. Loose fossils - forams and shell debris.
530m-540m	50%	Forams.
	50%	Calcilutite - As above.
540m-550m	100%	Calcilutite - As above. Loose fossil forams common.
550m-560m	100%	Calcilutite - As above.
560m-570m	100%	Calcilutite - As above.
570m-580m	10%	Loose fossil forams.
	90%	Calcisiltite - white to light grey, clay to silt grains, dominantly silt, firm to soft, loose shell debris, corals and bryozoa, trace pyrite.
		Trace Quartz, clear, very coarse, subrounded to rounded. Sample quality much better, much more cement, not as much loose clay.
580m-590m	20%	Loose fossil fragments. Shell debris, forams, echinoid spines, coral debris.
	80%	Calcisiltite - As above.
590m-600m	100%	Calcisiltite - As above. Loose fossil fragments common.
600m-610m	100%	Calcisiltite - As above, very clay, possible grading to a calcilutite.
610m-620m	100%	Calcisiltite - white to light grey, clay to silt grains, dominantly silty, firm, loose forams, shell, coral debris. Trace quartz, trace chocolate Mudstone, non-calcareous.
620m-630m	100%	Calcisiltite - As above.
630m-640m	100%	Calcisiltite - As above.
640m-650m	100%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
650m-660m	100%	Calcisiltite - As above. Trace carbonaceous flecks, very rare grains of Pyrite.
660m-670m	100%	Calcisiltite - white to light grey, clay to silt, domina ly silt, firm to hard, rare trace quartz, trace carbaceous flecks and glauconite. Loose fossil fragments, shell debr coral stems, forams and echinoid spines.
670m-680m	100%	Calcisiltite - white to light grey, firm to hard, trace carbonaceous flecks, 1% glauconite. Loose fossil fragments, shell debris, coral stems.
680m-690m	100%	Calcisiltite - As above.
690m-700m	100%	Calcisiltite - As above. Glauconite not as common.
700m-710m	100%	Calcisiltite - As above.
710m-720m	100%	Calcisiltite - white to light grey, firm to hard, trace carbonaceous flecks, loose fossil fragments, forams, coral stems, shell fragments.
720m-730m	100%	Calcisiltite - As above.
730m-740m	100%	Calcisiltite - As above.
740m-750m	100%	Calcisiltite - As above.
750m-760m	100%	Calcisiltite - white to light grey, firm to hard, calcit cement, trace carbonaceous flecks, fossil fragments. Loose and cemented into rock material, forams, coral and shell debris. Occasional echinoid spines.
760m-770m	100%	Calcisiltite - As above.
770m-780m	100%	Calcisiltite - As above.
780m-790m	100%	Calcisiltite - As above.
790m-800m	100%	Calcisiltite - As above.
780m-810m	100%	Calcisiltite - As above.
810m-820m	100%	Calcisiltite - white to light grey, firm to hard calcite cement. Trace carbonaceous flecks, trace glauconi fossil fragments, loose and cemented, forams, coral and shell debris.
820m-830m	100%	Calcisiltite - As above.
830m-840m	95%	Calcisiltite - As above.
	5%	Micrite - pale brown, massive, very hard, sparry in part.
840m-850m	50%	Calcisiltite - As above.
	50%	Micrite - As above.
850m-860m	85%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
850m-860m		Continued/....
	15%	Micrite - As above.
860m-870m	100%	Calcisiltite - white to light grey, firm to hard calcite cement. Trace carbonaceous flecks, trace glauconi fossil fragments, loose and cemented forams, coral and shell debris.
870m-880m	95%	Calcisiltite - As above.
	5%	Micrite - As above.
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880m-885m	100%	Calcisiltite - light grey, soft to firm, contains about 5% disseminated dark material giving pepper and salt appearance. (Carbonaceous?).
885m-890m	100%	Calcisiltite - light grey, soft to firm, "pepper and salt appearance as above. Some pyrite nodules up to granule size. Trace quartz, trace forams and coral stems.
890m-895m		Very poor sample, mostly clay.
	100%	Calcisiltite - light grey, soft, forams common. Trace carbonaceous flecks, very silty. Trace quartz.
895m-900m		Very poor sample.
	100%	Calcisiltite - As above.
900m-905m	100%	Calcisiltite - As above.
905m-910m	100%	Calcisiltite - As above.
910m-915m	100%	Calcisiltite - light grey, firm, lost most of the soft clay. Trace carbonaceous flecks. Trace quartz, forams common.
915m-920m	100%	Calcisiltite - As above. Trace pyrite, trace shell debr
920m-925m	100%	Calcisiltite - light grey, firm. Trace carbonaceous flecks. Trace quartz, clear rounded, loose forams and coral stems.
925m-930m	100%	Calcisiltite - As above.
930m-935m	100%	Calcisiltite - As above.
935m-940m	100%	Calcisiltite - light to medium light grey, firm, becomin finer grained, predominantly fine to medium, silty, clayey in part, trace carbonaceous flecks, loose forams and coral stems, fossils partly replaced by pyrite.
940m-945m	80%	Calcisiltite - As above.
	20%	Micrite - medium light grey to yellow brown, very hard, massive. Trace carbonaceous flecks. Loose fossil fragmen forams, and coral stems, some rugose coral.

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DEPTH	%	DESCRIPTION
945m-950m	80%	Calcisiltite - As above.
	20%	Micrite - As above.
950m-955m	90%	Calcisiltite - As above.
	10%	Micrite - As above.
955m-960m	80%	Calcisiltite - As above.
	20%	Micrite - As above, sparry in part, rare clear calcite crystals.
960m-965m	100%	Calcisiltite - light to medium light grey, firm. Trace carbonaceous flecks, trace quartz granules, clear rounded. Loose forams and coral debris.
965m-970m	100%	Calcisiltite - As above.
970m-975m	100%	Calcisiltite - As above.
975m-980m	100%	Calcisiltite - As above.
980m-985m	100%	Calcisiltite - As above.
		Trace sparry Limestone.
985m-990m	100%	Calcisiltite - light to medium light grey, firm, trace carbonaceous flecks, trace quartz granules, clear rounded Loose forams and coral stems, some forams replaced by pyrite.
990m-995m	100%	Calcisiltite - As above.
995m-1000m	100%	Calcisiltite - As above.
1000m-1005m	100%	Calcisiltite - As above. Trace Marl - light grey, soft.
1005m-1010m		Samples becoming very clayey.
	10%	Calcisiltite - As above.
	40%	Marl - light grey, soft, very silty. Trace carbonaceous flecks.
1010m-1015m	50%	Calcisiltite - As above.
	50%	Marl - As above.
1015m-1020m	50%	Calcisiltite - As above.
	50%	Marl - As above.
1020m-1025m	20%	Marl - As above.
	80%	Calcisiltite - As above.
1025m-1030m	10%	Marl - As above.
	90%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
1030m-1035m	100%	Calcisiltite - light grey to yellow grey, soft to firm, very clayey, silt. Trace quartz, clear rounded. Loose forams, and coral stems.
1035m-1040m	100%	Calcisiltite - As above.
1040m-1045m	70%	Calcisiltite - As above.
	30%	Marl - medium light to medium grey, soft, very slightly silty to silty.
1045m-1050m	85%	Calcisiltite - As above. Trace micrite and sparry Limestone.
	15%	Marl - As above.
		Forams common, some show pyrite replacement.
1050m-1055m	70%	Calcisiltite - As above.
	30%	Marl - As above.
1055m-1060m	60%	Calcisiltite - As above.
	40%	Marl - As above.
1060m-1065m	50%	Calcisiltite - As above.
	50%	Marl - As above.
		4/11/78
1065m-1070m	80%	Calcisiltite - light to medium light grey, soft to firm, very clayey, silt. Trace quartz, loose forams and coral stems.
	20%	Marl - medium light to medium grey, very soft to soft, very slightly silty to silty.
1070m-1075m	60%	Calcisiltite - As above.
	40%	Marl - As above.
1075m-1080m	20%	Marl - As above.
	80%	Calcisiltite - As above.
1080m-1085m	90%	Calcisiltite - light to medium light grey, soft to firm, very clayey fine silt. Trace quartz, loose forams and coral stems some replaced by Pyrite.
	10%	Marl - As above.
1085m-1090m	100%	Calcisiltite - As above.
1090m-1095m	100%	Calcisiltite - As above.
1095m-1100m	100%	Calcisiltite - As above.
1100m-1105m	100%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
1105m-1110m	100%	Calcisiltite - light to medium light grey, firm, very clayey, silt. Trace carbonaceous flecks, trace quartz, loose forams and coral stems some replaced with pyrite.
1110m-1115m	100%	Calcisiltite - As above.
1115m-1120m	100%	Calcisiltite - As above. Trace Micrite, very hard, massive, sparry in part. Trace Marl - As above.
1120m-1125m	100%	Calcisiltite - As above.
1125m-1130m	100%	Calcisiltite - light to medium light grey, firm, grading to micritic in part. Massive,hard,sparry in part. Trace Pyrite. Trace Quartz.
1130m-1135m	100%	Calcisiltite - As above.
1135m-1140m	100%	Calcisiltite - As above.
1140m-1145m	100%	Calcisiltite - As above.
1145m-1150m	100%	Calcisiltite - light to medium light grey, firm, grading to micritic in part, massive, hard, sparry in part. Trace Pyrite. Trace loose forams.
1150m-1155m	100%	Calcisiltite - As above.
1155m-1160m	100%	Calcisiltite - As above.
1160m-1165m	100%	Calcisiltite - medium light grey, firm, very silty, trace carbonaceous flecks. Trace Pyrite. Trace loose fossil forams, partly replaced by pyrite.
1165m-1170m	100%	Calcisiltite - As above.
1170m-1175m	100%	Calcisiltite - As above.
1175m-1180m	100%	Calcisiltite - medium light grey, soft to firm, clayey silt, grading to trace of Marl. Trace of loose fossil forams.
1180m-1185m	100%	Calcisiltite - medium light grey, soft to firm, very clayey, silt. Trace carbonaceous flecks. Occasional loose forams.
1185m-1190m	100%	Calcisiltite - As above.
1190m-1195m	100%	Calcisiltite - As above.
1195m-1200m	100%	Calcisiltite - As above.
1200m-1205m	100%	Calcisiltite - medium light grey, firm, very silty, trace carbonaceous flecks. Trace Pyrite. Trace Micrite, hard, massive, yellow brown.
1205m-1210m	100%	Calcisiltite - medium light grey, firm. Trace carbonaceous flecks, trace pyrite, occasional loose fossil fragments, forams, coral stems and indeterminate debris.
1210m-1215m	100%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
1215m-1220m	100%	Calcisiltite - medium light grey, firm. Trace carbonaceous flecks. Trace Pyrite. Loose fossil fragments, fora and coral debris.
1220m-1225m	100%	Calcisiltite - As above.
1235m-1230m	100%	Calcisiltite - As above.
1230m-1235m	100%	Calcisiltite - light medium grey, firm, occasionally becoming micritic and hard. Trace carbonaceous flecks, trace pyrite. Loose fossil fragments predominantly forams and coral debris.
		TRIPPED FOR NEW BIT. X3A.
1235m-1240m	100%	Calcisiltite - medium light grey, firm, occasionally becoming micritic, massive, hard, partly sparry. Trace carbonaceous flecks, very fine disseminated pyrite. Loose fossil fragments, predominantly forams, echinoid spines, coral debris.
1240m-1245m	100%	Calcisiltite - As above.
1245m-1250m	100%	Calcisiltite - As above.
1250m-1255m	100%	Calcisiltite - As above.
1255m-1260m	100%	Calcisiltite - As above.
1260m-1265m	100%	Calcisiltite - As above.
1265m-1270m	95%	Calcisiltite - As above.
	5%	Micrite - yellow brown, hard, massive, partly sparry.
1270m-1275m	100%	Calcisiltite - medium light grey, firm, occasionally becoming micritic, yellow to brown, massive, hard, partly sparry. Trace carbonaceous flecks, very fine disseminated pyrite, occasional forams.
1275m-1280m	100%	Calcisiltite - As above.
1280m-1285m	100%	Calcisiltite - As above.
1285m-1290m	100%	Calcisiltite - As above.
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1290m-1295m	100%	Calcisiltite - As above.
1295m-1300m	100%	Calcisiltite - As above.
1300m-1305m	100%	Calcisiltite - medium light grey, firm, trace carbonaceo flecks, trace pyrite, trace glauconite, trace micrite, yellow brown, massive, hard, occasional forams.
1305m-1310m	100%	Calcisiltite - As above.
1310m-1315m	95%	Calcisiltite - As above.
	5%	Micrite - yellow brown, massive, hard, partly sparry.

DEPTH	%	DESCRIPTION
1315m-1320m	95%	Calcisiltite - As above.
	5%	Micrite - As above.
1320m-1325m		Calcisiltite - As above.
1325m-1330m	100%	Calcisiltite - medium light grey, firm, grading to micritic, hard, massive, yellow brown, occasionally sparry. Trace carbonaceous flecks, trace pyrite, glauconit rare forams.
1330m-1335m	100%	Calcisiltite - As above.
1335m-1340m	100%	Calcisiltite - As above.
1340m-1345m	100%	Calcisiltite - As above.
1345m-1350m	100%	Calcisiltite - As above.
1350m-1355m	100%	Calcisiltite - medium light grey, firm, grading to micritic, hard, massive, yellow brown, occasionally sparry. Trace carbonaceous flecks, trace pyrite and glauconite. Rare forams and coral stems.
1355m-1360m	100%	Calcisiltite - As above.
1360m-1365m	100%	Calcisiltite - As above.
1365m-1370m	100%	Calcisiltite - As above.
1370m-1375m	100%	Calcisiltite - As above.
1375m-1380m	100%	Calcisiltite - medium light grey, soft to firm, trace carbonaceous flecks, trace pyrite and glauconite, rare forams.
1380m-1385m	100%	Calcisiltite - As above.
1385m-1390m	100%	Calcisiltite - As above.
1390m-1395m	100%	Calcisiltite - medium light grey, firm, grading to micrite, yellow brown, massive, hard, trace carbonaceous flecks, trace pyrite, rare forams.
1395m-1400m	100%	Calcisiltite - As above.
1400m-1405m	100%	Calcisiltite - As above.
1405m-1410m	100%	Calcisiltite - As above.
1410m-1415m	90%	Calcisiltite - medium light grey, firm, trace carbonace flecks, disseminated pyrite, trace quartz, clear, rounded fine to granular, rare indeterminate fossil fragments and forams.
	10%	Micrite - yellow brown, hard, massive, sparry in part.
1415m-1420m	100%	Calcisiltite - medium light grey, firm, grading into micrite, yellow to brown, hard. Trace carbonaceous fleck trace quartz, finely disseminated pyrite.

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DEPTH	%	DESCRIPTION
1420m-1425m	50%	Calcisiltite - As above.
	50%	Micrite - yellow, brown, hard, massive, trace pyrite, sparry in part.
1425m-1430m	100%	Calcisiltite - As above.
1430m-1435m	100%	Calcisiltite - medium light grey, firm, grading into micrite, yellow, brown,hard. Trace carbonaceous flecks, finely disseminated Pyrite. Rare indeterminate fossil fragments.
1435m-1440m	100%	Calcisiltite - As above.
1440m-1445m	100%	Calcisiltite - As above.
1445m-1450m	100%	Calcisiltite - As above.
1450m-1455m	100%	Calcisiltite - medium light grey, firm, very silty, minor clay, trace carbonaceous flecks, finely disseminated pyrite, rare forams and coral stems.
1455m-1460m	100%	Calcisiltite - As above.
1460m-1465m	100%	Calcisiltite - As above.
1465m-1470m	100%	Calcisiltite - As above.
1470m-1475m	100%	Calcisiltite - As above.
1475m-1480m	100%	Calcisiltite - As above.
1480m-1485m	100%	Calcisiltite - medium light grey, firm, very silty, minor clay. Trace carbonaceous flecks, finely disseminate pyrite, rare forams and coral stems.
1485m-1490m	100%	Calcisiltite - As above.
1490m-1495m	100%	Calcisiltite - As above.
1495m-1500m	100%	Calcisiltite - medium light grey, firm, very silty, minor clay. Trace carbonaceous flecks, finely disseminate pyrite, rare forams and coral stems.
1500m-1505m	100%	Calcisiltite - As above.
1505m-1510m	100%	Calcisiltite - As above.
1510m-1515m	100%	Calcisiltite - As above.
1515m-1520m	100%	Calcisiltite - As above.
1520m-1525m	100%	Calcisiltite - medium light grey, firm. Trace carbonaceous flecks, finely disseminated pyrite, rare forams, very silty with minor clay.
1525m-1530m	100%	Calcisiltite - As above.
1530m-1535m	100%	Calcisiltite - As above.
1535m-1540m	100%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
1535m-1540m	100%	Calcisiltite - medium light grey to yellow brown, firm to hard. Trace carbonaceous flecks, finely disseminated pyrite, grades into micrite. Rare forams, and coral stems
1540m-1615m	100%	Calcisiltite - As above.
		6/11/78
1615m-1620m	95%	Calcisiltite - medium light grey, firm, trace carbonaceous flecks, trace pyrite, very silty with minor clay.
	5%	Calcarenite - medium light grey, firm to hard, glauconitic, very fine to fine, angular grained, calcareou and Marl grains.
1620m-1625m	100%	Calcisiltite - As above. Trace Calcarenite - as above.
1625m-1630m	100%	Calcisiltite - As above.
1630m-1635m	100%	Calcisiltite - As above.
1635m-1640m	100%	Calcisiltite - medium light grey, firm, very silty with very minor clay. Trace carbonaceous flecks, trace glauconite, trace pyrite.
1640m-1645m	100%	Calcisiltite - As above.
1645m-1650m	100%	Calcisiltite - As above.
1650m-1655m	100%	Calcisiltite - As above.
1655m-1660m	100%	Calcisiltite - medium light grey, firm. Trace carbonaceous flecks, trace glauconite, trace pyrite, granular Limestone with calcareous cement.
1660m-1665m	100%	Calcisiltite - As above.
1665m-1670m	100%	Calcisiltite - As above.
1670m-1675m	100%	Calcisiltite - medium light grey, firm, trace glauconite pyrite and carbonaceous flecks, very rare forams.
1675m-1680m	100%	Calcisiltite - As above.
1680m-1685m	100%	Calcisiltite - As above. Forams becoming more common.
1685m-1690m	100%	Calcisiltite - As above.
1690m-1695m	70%	Calcisiltite - medium light grey, firm, trace glauconite pyrite and carbonaceous flecks.
	30%	Calcareous Siltstone - very calcareous, medium grey, firm, trace pyrite, trace carbonaceous flecks, forams and coral debris common.
1695m-1700m	50%	Calcisiltite - As above.
	50%	Calcareous Siltstone
1700m-1705m	30%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
1700m-1705m		Continued/....
	30%	Calcareous Siltstone - As above.
	40%	Marl (?) white to light grey, very soft, trace pyrite, trace carbonaceous flecks.
1705m-1710m	90%	Calcareous Siltstone - As above.
	10%	Calcisiltite - As above.
1710m-1715m	95%	CalcareousSiltstone - As above.
	5%	Calcisiltite - As above.
1715m-1720m	85%	Calcareous Siltstone - very calcareous, medium grey, firm trace pyrite and carbonaceous flecks. Occasional forams.
	15%	Micrite - yellow brown, hard, massive. Trace Pyrite.
1720m01725m	85%	Calcareous Siltstone - As above.
	15%	Micrite - As above.
1725m-1730m	80%	Calcareous Siltstone - As above.
	20%	Micrite - As above.
1730m-1735m	85%	Calcareous Siltstone - As above.
	10%	Calcisiltite - As above.
	5%	Micrite - As above.
1735m-1740m	95%	Calcareous Siltstone - very calcareous, medium grey, firm trace pyrite, trace carbonaceous flecks, rare forams.
	5%	Micrite - yellow brown, hard, massive. Trace Pyrite.
1740m-1745m	100%	Calcareous Siltstone - As above. Trace Micrite, trace Calcisiltite.
1745m-1750m	100%	Calcareous Siltstone - As above.
1750m-1755m	90%	Calcareous Siltstone - As above.
	10%	Calcisiltite and Micrite - As above.
1755m-1760m	95%	Calcareous Siltstone - As above.
	5%	Calcisiltite and Micrite - As above. Trace Gypsum?
1760m-1765m	100%	Calcareous Siltstone - firm, very calcareous, medium gre trace pyrite, trace carbonaceous flecks, rare forams. Trace Gypsum?
1765m-1770m	100%	Calcareous Siltstone - firm, very calcareous, medium gre trace pyrite, trace carbonaceous flecks, rare forams.
1770m-1775m	100%	Calcareous Siltstone - As above.

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DEPTH	%	DESCRIPTION
1775m-1780m	100%	Calcareous Siltstone - As above.
1780m-1785m	100%	Calcareous Siltstone - As above.
1785m-1790m	100%	Calcareous Siltstone - As above.
1790m-1795m	100%	Calcareous Siltstone - As above. Loose forams common.
1795m-1800m	100%	Calcareous Siltstone - medium grey, firm, very clayey, silt, very calcareous. Trace Pyrite, trace carbonaceous flecks. Loose forams common.
1800m-1805m	100%	Calcareous Siltstone - As above.
1805m-1810m	100%	Calcareous Siltstone - As above.
1810m-1815m	100%	Calcareous Siltstone - As above.
1815m-1820m	100%	Calcareous Siltstone - As above.
1820m-1825m	100%	Calcareous Siltstone - As above.
1825m-1830m	100%	Calcareous Siltstone - medium grey, firm, very clayey, silty very calcareous, trace pyrete, both fine grained nodules and disseminated. Trace carbonaceous flecks. Loose forams common.
1830m-1835m	100%	Calcareous Siltstone - As above.
1835m-1840m	100%	Calcareous Siltstone - As above.
1840m-1845m	100%	Calcareous Siltstone - As above.
1845m-1850m	100%	Calcareous Mudstone - medium grey, firm, very silty, clay, very calcareous. Trace Pyrite, in fine grained nodules and veins, trace carbonaceous flecks. Loose forams common.
1850m-1855m	100%	Calcareous Mudstone - As above.
1855m-1860m	100%	Calcareous Mudstone - As above.
1860m-1865m	100%	Calcareous Mudstone - As above.
1865m-1870m	100%	Calcareous Mudstone - As above.
1870m-1875m	100%	Calcareous Mudstone - medium grey, firm, very silty clay, very calcareous. Trace Pyrite, trace carbonaceous flecks. Loose forams common.
1875m-1880m	100%	Calcareous Mudstone - As above.
1880m-1885m	100%	Calcareous Mudstone - medium grey, firm, very silty clay, very calcareous. Trace Pyrite, trace carbonaceous flecks. Loose forams common.
1885m-1890m	100%	Calcareous Mudstone - As above.
1890m-1895m	100%	Calcareous Mudstone - As above.
1895m-1900m	100%	Calcareous Mudstone - As above.

DEPTH	%	DESCRIPTION
1900m-1905m	100%	Calcareous Mudstone - medium grey, firm, very silty, clay, very calcareous. Trace Pyrite. Loose fossil fragments, forams and coral stems.
1905m-1910m	100%	Calcareous Mudstone - As above.
1910m-1915m	100%	Calcareous Mudstone - As above.
1915m-1920m	100%	Calcareous Mudstone - As above.
1920m-1925m	100%	Calcareous Mudstone - As above.
1925m-1930m	100%	Calcareous Mudstone - medium grey, firm, very silty clay very calcareous. Trace Pyrite, loose fossil fragments, forams and coral stems.
1930m-1935m	100%	Calcareous Mudstone - As above. Trace Gypsum (?).
1935m-1940m	95%	Calcareous Mudstone - As above.
	5%	Micrite - yellow brown, hard, massive. Trace Pyrite.
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1940m-1950m	100%	Calcareous Mudstone - medium grey, firm, very silty, clay, very calcareous. Trace Pyrite, trace Gypsum (?) loose forams and indeterminate fossil fragments.
1950m-1955m	100%	Calcareous Mudstone - As above.
1955m-1960m	100%	Calcareous Mudstone - As above.
1960m-1965m	100%	Calcareous Mudstone - As above.
1965m-1970m	100%	Calcareous Mudstone - As above.
1970m-1975m	100%	Calcareous Mudstone - As above.
1975m-1980m	100%	Calcareous Mudstone - medium grey, firm, very silty clay very calcareous. Trace Pyrite. Loose fossil forams and indeterminate fossil fragments.
1980m-1985m	100%	Calcareous Mudstone - As above.
1985m-1990m	100%	Calcareous Mudstone - As above.
1990m-1995m	100%	Calcareous Mudstone - As above.
1995m-2000m	100%	Calcareous Mudstone - As above.
2000m-2005m	100%	Calcareous Mudstone - medium to light grey, firm, very silty, very calcareous. Trace Pyrite. Loose forams.
2005m-2010m	100%	Calcareous Mudstone - As above.
2010m-2015m	100%	Calcareous Mudstone - As above.
2015m-2020m	100%	Calcareous Mudstone - medium light grey, firm, very silty, very calcareous. Trace Quartz. Trace pyrite. Loose forams.

16/.....

DEPTH	%	DESCRIPTION
2020m-2025m	100%	Calcareous Mudstone - As above.
2025m-2030m	100%	Calcareous Mudstone - As above.
2030m-2035m	100%	Calcareous Mudstone - As above.
2035m-2040m	100%	Calcareous Mudstone - As above.
2040m-2045m	100%	Calcareous Mudstone - medium light grey, firm, very silty, very calcareous. Trace Pyrite.
2045m-2050m	100%	Calcareous Mudstone - As above.
2050m-2055m	100%	Calcareous Mudstone - As above. Trace Glauconite.
2055m-2060m	100%	Calcareous Mudstone - medium light grey, firm, very silty calcareous. Trace pyrite, trace glauconite, loose forams.
2060m-2065m	100%	Calcareous Mudstone - As above.
2065m-2070m	100%	Calcareous Mudstone - medium light grey, firm, very silty pyritic, trace glauconite. Loose fossil fragments, forams and indeterminate debris.
2070m-2075m	100%	Calcareous Mudstone - As above.
2075m-2080m	100%	Calcareous Mudstone - As above. Trace Gypsum (?).
2080m-2085m	100%	Calcareous Mudstone - As above.
2085m-2090m	100%	Calcareous Mudstone - medium light grey, soft to firm, silty clay, very calcareous, pyrite, loose fossil fragments mainly forams.
2090m-2095m	100%	Calcareous Mudstone - As above.
2095m-2100m	100%	Calcareous Mudstone - As above.
2100m-2105m	100%	Calcareous Mudstone - As above.
2105m-2110m	100%	Calcareous Mudstone - As above.
2110m-2115m	100%	Calcareous Mudstone - medium light grey, firm, silty clay, very calcareous, pyritic. Loose fossil fragments, mainly forams.
2115m-2120m	100%	Calcareous Mudstone - medium light grey, firm, silty, clay, very calcareous, trace pyrite, trace glauconite, rare forams.
2120m-2125m	100%	Calcareous Mudstone - As above.
2125m-2130m	100%	Calcareous Mudstone - As above.
2130m-2135m	100%	Calcareous Mudstone - As above.
2135m-2140m	100%	Calcareous Mudstone - As above.
		TRIP FOR NEW BIT.

17/....

DEPTH	%	DESCRIPTION
2140m-2145m	100%	Calcareous Mudstone - medium light grey, firm, very silty, very calcareous, trace carbonaceous flecks, trace pyrite, loose forams.
2145m-2150m	100%	Calcareous Mudstone - As above.
2150m-2155m	100%	Calcareous Mudstone - medium light grey, firm, very silty clay, very calcareous, pyrite, trace glauconite, loose forams.
2155m-2160m	100%	Calcareous Mudstone - medium light grey, firm, very silty clay, very calcareous, pyritic, glauconitic in part, trace carbonaceous flecks, loose forams.
2160m-2165m	100%	Calcareous Mudstone - medium light grey, firm, very silty clay, very calcareous, pyritic, forams common.
2165m-2170m	100%	Calcareous Mudstone - As above.
2170m-2175m	100%	Calcareous Mudstone - medium light grey, very silty clay, very calcareous, pyritic, trace glauconite forams common.
2175m-2180m	100%	Calcareous Mudstone - As above.
2180m-2185m	100%	Calcareous Mudstone - As above.
2185m-2190m	100%	Calcareous Mudstone - medium light grey, firm, very silty, very calcareous, pyritic, loose forams.
2190m-2200m	100%	Calcareous Mudstone - As above.
2200m-2205m	100%	Calcareous Mudstone - As above.
2205m-2210m	100%	Calcareous Mudstone - medium light grey, firm, very silt clay, very calcareous,pyritic. Trace glauconite, forams common.
2210m-2215m	100%	Calcareous Mudstone - As above.
2215m-2220m	100%	Calcareous Mudstone - As above.
2220m-2225m	100%	Calcareous Mudstone - medium light grey, firm, very silty clay, very calcareous, pyritic. Trace glauconite trace white sparry calcite, forams common.
2225m-2230m	100%	Calcareous Mudstone - As above.
2230m-2235m	100%	Calcareous Mudstone - medium light grey, firm, very silty clay, very calcareous. Trace Pyrite, trace Glauconi forams.
2235m-2240m	100%	Calcareous Mudstone - As above.
2240m-2245m	100%	Calcareous Mudstone - medium light grey, firm, very silty. Trace pyrite, trace Glauconite, forams.
2245m-2250m	100%	Calcareous Mudstone - As above.
2250m-2255m	100%	Calcareous Mudstone - As above.

18/.....

LITHOLOGICAL DESCRIPTIONS

J.D. ALDER

FORTESCUE-2

8/11/78

DEPTH	%	DESCRIPTION
2255m-2260m	100%	Calcareous Mudstone - medium to light grey, firm, very silty, trace pyrite, trace glauconite, impregnated forams.
		Trace Siltstone - white, firm, calcareous.
2260m-2265m	100%	Calcareous Mudstone - As above, trace carbonaceous flecks
		Trace Siltstone - As above.
2265m-2270m	95%	Calcareous Mudstone - As above.
	5%	Siltstone - white to light grey, as above, calcareous, firm, forams.
2270m-2275m	100%	Calcareous Mudstone - As above.
2275m-2280m	100%	Calcareous Mudstone - As above.
2280m-2285m	100%	Calcareous Mudstone - As above.
2285m-2290m	100%	Calcareous Mudstone - As above.
		Trace large globular forams, quartz grain, granule size, fractured, angular coated with red, ferruginate, clay.
2290m-2295m	100%	Calcareous Mudstone - As above.
2295m-2300m	70%	Calcareous Mudstone - light to medium grey, firm, very silty, trace pyrite, trace forams, trace carbonaceous fleck
	25%	Marl - white to very light grey, soft, silty, trace foram
		Trace globular forams, 1mm diameter.
2300m-2305m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
2305m-2310m	70%	Calcareous Mudstone - As above.
	30%	Marl - As above.
2310m-2315m	100%	Calcareous Mudstone - light medium grey, firm, very silty trace pyrite, trace forams.
2315m-2320m	100%	Calcareous Mudstone - As above, trace glauconite.
2320m-2325m	100%	Calcareous Mudstone - medium light grey, firm, very silty trace pyrite, trace forams.
2325m-2330m	80%	Calcareous Mudstone - As above.
	20%	Marl - white to very light grey, soft, silty, trace foram
2330m-2335m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
		R.C.N. THORNTON
2335m-2340m	90%	Calcareous Mudstone - As above.

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DEPTH	%	DESCRIPTION
2335m-2340m		Continued/.....
	10%	Marl - As above.
2340m-2345m	70%	Calcareous Mudstone - As above.
	30%	Marl - As above.
2345m-2350m	70%	Calcareous Mudstone - As above, except firm to moderately hard.
	30%	Marl - As above.
2350m-2355m	70%	Calcareous Mudstone - medium to light grey, firm to moderately hard, silty, trace forams, trace pyrite, trace carbonaceous flecks.
	30%	Marl - white to very light grey, very soft, very calcareous,, forams common.
2355m-2360m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
		Trace globular forams, .5-1mm diameter, pyrite infilled(?) burrow fragment.
2360m-2365m	60%	Calcareous Mudstone - As above, trace glauconite impregnated forams.
	40%	Marl - As above.
2365m-2370m	60%	Calcareous Mudstone - As above.
	40%	Marl - As above.
		Trace loose forams, mostly .5mm diameter, some 2mm diameter
2370m-2375m	70%	Calcareous Mudstone - As above.
	30%	Marl - As above.
		Trace loose forams, pyrite impregnated gastropod.
2375m-2380m	60%	Calcareous Mudstone - light to medium grey to brown, firm to moderately hard, silty, pyrite rare - common, trace carbonaceous flecks, trace forams.
	40%	Marl - white to very light grey, very soft, very calcareous, forams, silty, trace pyrite.
		Trace loose forams, .5mm diameter.
2380m-2385m	70%	Calcareous Mudstone - As above.
	30%	Marl - As above.
2385m-2390m	90%	Calcareous Mudstone - As above.
	10%	Marl - As above.

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DEPTH	%	DESCRIPTION
2390m-2395m	90%	Calcareous Mudstone
	10%	Marl - As above.
		Trace echinoid spine fragments, large loose forams.
2395m-2400m	100%	Calcareous Mudstone - As above, trace glauconite, impregnated forams.
		Trace Calcareous Siltstone - white to very light grey, moderately hard, forams, globular forams.
2400m-2403m	90%	Calcareous Mudstone - As above.
	10%	Marl - As above.
		Trace Calcareous Siltstone - As above.
		1610 hours 8/11/78: Depth: 2403m, circulate bottoms up. No increase in gas reading.
		1715 hours return to drilling.
2403m-2405m	95%	Calcareous Mudstone - As above.
	5%	Marl - As above.
2405m-2410m	95%	Calcareous Mudstone - As above, trace glauconite, impregnated forams.
	5%	Marl - As above, trace glauconite and pyrite impregnated forams.
		Trace loose forams, glauconite.
2410m-2415m	100%	Calcareous Mudstone - light to medium grey to brown, firm to moderately hard, silty (some white and very silty) forams, trace pyrite, trace glauconite impregnated forams and glauconite grains (slight increase from above).
2415m-2420m	100%	Calcareous Mudstone - As above.
		2000 hours 8/11/78: Pulled out to cut Core No. 1.
		13/11/78
2480m-2485m	95%	Sand - loose, quartz grains, mainly clear, minor light grey, trace orange, polished, well sorted, very coarse grained to granule, subrounded to rounded, minor slight pyrite encrusted, no fluorescence.
	5%	Siltstone - grey to brown, hard, carbonaceous, pyritic.
2485m-2490m	85%	Sand - loose quartz grains, mainly clear, minor milky, light grey, trace orange, mainly polished, poorly sorted, coarse grained to granule, subrounded to rounded, minor slight pyrite encrusted, no fluorescence.
	10%	Siltstone - grey to brown, hard, quartz, carbonaceous, pyritic.

21/.....

DEPTH	%	DESCRIPTION
2485m-2490m		Continued/....
	3%	Siltstone - light grey to light brown, firm, quartz, clean.
	2%	Shale - very dark grey, hard, pyritic, very carbonaceous.
2490m-2495m	60%	Sand - As above.
	20%	Siltstone - grey to brown, as above, except highly pyriti
	15%	Shale - very dark grey, as above, highly pyritic.
	5%	Siltstone - light grey to light brown, as above.
2495m-2500m	50%	Sand - As above.
	45%	Coal - black, pyritic.
	5%	Siltstone and Shale.
2500m-2505m	60%	Sand - As above.
	35%	Coal - As above.
	5%	Siltstone and Shale.
2505m-2510m	30%	Sand - As above.
	30%	Siltstone - light grey to light brown, firm, quartz, clean, minor inclusions of fine grained quartz.
	20%	Siltstone - dark grey to brown, hard, quartz, abundant pyrite, carbonaceous matter.
	10%	Shale - very dark grey, pyritic, carbonaceous.
	5%	Sandstone - light grey to brown, soft, quartz, fine grained, subangular to rounded, pyrite, trace carbonaceous flecks.
	5%	Calcareous Claystone - light grey, firm, trace carbonaceous matter - cavings. Trace coal, black pyritic.
2510m-2515m	20%	Sand - As above.
	30%	Siltstone - dark grey to brown, as above.
	30%	Shale - very dark grey, as above.
	10%	Calcareous Claystone - light grey, as above - cavings.
	10%	Siltstone - light grey to brown, as above.
2515m-2520m	70%	Shale - black, carbonaceous, pyritic.
	10%	Coal - black.
	20%	Siltstone, Sandstone - As above.
2520m-2525m	70%	Siltstone - light brown quartz, very pyritic, carbonaceou

22/.....

DEPTH	%	DESCRIPTION
2520m-2525m		Continued/.....
	10%	Siltstone - light grey, quartz, clean.
	10%	Calcareous Claystone - light grey - cavings.
	10%	Sand - As above.
2525m-2530m	50%	Sand - As above.
	50%	Siltstone - light brown and light grey, as above.
2530m-2535m	70%	Sand - As above.
	20%	Siltstone - light brown, as above.
	10%	Shale - black, as above.
2535m-2540m	95%	Sand - loose, quartz grains, predominantly clear, minor milky, polished, moderately sorted, very coarse grained to granule, subrounded to rounded, trace pyrite encrusted.
	5%	Siltstone - As above, Shale - As above.
2540m-2545m	95%	Sand - As above.
	5%	Siltstone - As above, Shale - As above.
2545m-2550m	85%	Sand - As above.
	10%	Sandstone - light grey, soft quartz, clear, subrounded to rounded, fine grained or very fine grained, well sorted, clay matrix, trace carbonaceous flecks, trace pyrite.
	5%	Siltstone - light brown, firm, abundant pyrite, trace carbonaceous material.
2550m-2555m	90%	Sand - As above.
	5%	Sandstone - As above.
	5%	Siltstone - As above.
2555m-2560m	90%	Sand - As above.
	5%	Sandstone - As above.
	5%	Siltstone - As above.
2560m-2565m	90%	Sand - As above.
	5%	Sandstone - As above.
	5%	Siltstone - As above.
2565m-2570m	90%	Sand - loose, quartz, predominantly clear, minor milky and light grey, mainly polished, poorly sorted, coarse grained to granule, subrounded to rounded, trace pyrite encrusted.
	5%	Siltstone - light brown, firm, quartz, pyrite, carbona-

23/.....

DEPTH	%	DESCRIPTION
2565m-2570m	5%	Continued/....
		ceous material.
	5%	Sandstone - light grey, firm, quartz, clear, fine grained subrounded to rounded, well sorted, clay choked, pyrite, carbonaceous material.
2570m-2575m	75%	Sand - As above.
	10%	Siltstone - As above.
	10%	Sandstone - As above.
		Trace Coal; Shale.
2575m-2580m	70%	Sand - As above.
	20%	Siltstone - As above.
	10%	Sandstone - As above.
2580m-2585m	50%	Sand - As above.
	30%	Siltstone - light grey, light brown to dark brown, firm to hard, quartz, ranging from clean to very carbonaceous and pyritic, trace mica.
	10%	Shale - very dark grey, carbonaceous, pyritic.
	10%	Sandstone - light grey, firm, quartz well sorted, very fine grained, white clay matrix.
2585m-2590m	20%	Sand - As above.
	40%	Siltstone; minor Sandstone; minor Shale - As above.
	40%	Coal - black, hard, pyritic.
		0045 hours, 14/11/78 pulled out of hole to change bit.
		14/11/78
2590m-2595m		NO SAMPLE.
2595m-2600m		NO SAMPLE.
2600m-2605m		Unrepresentative: predominantly cavings.
2605m-2610m	60%	Sand - loose, quartz, clear, milky, mostly polished, poorly sorted, coarse grained to granule, subrounded to rounded trace pyrite encrusted.
	40%	Siltstone - brown to grey, firm, quartz, abundant pyrite, abundant carbonaceous matter.
		Trace Sandstone - light grey to light brown, firm, quartz fine grained, clay choked, pyritic, carbonaceous. Shale - black, hard, pyritic.
2610m-2615m	80%	Sand - As above.

24/.....

DEPTH	%	DESCRIPTION
2610m-2615m		Continued/.....
	20%	Siltstone - As above.
		Trace Sandstone - As above; Shale - As above.
2615m-2620m	70%	Sand - As above.
	30%	Siltstone - As above.
		Trace Sandstone - As above; Shale - As above.
2620m-2625m	80%	Sand - As above.
	20%	Siltstone - As above; Sandstone - As above; Shale - As above.
2625m-2630m	90%	Sand - As above.
	10%	Siltstone - As above; Sandstone - As above; Shale - As above.
2630m-2635m	80%	Sand - As above.
	20%	Siltstone - As above; Sandstone - As above; Shale - As above.
2635m-2640m	80%	Sand - As above.
	20%	Siltstone - As above; Sandstone - As above; Shale - As above.

APPENDIX 2

APPENDIX 2

SIDEWALL CORE DESCRIPTIONS

SIDEWALL CORE DESCRIPTIONS — R.C.N. THORNTON

FORTESCUE-2 — 21/11/78

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
1	2636.5m	20mm	Sandstone - grey, semifriable, quartz clear, polished, predominantly well sorted, very fine grained, trace fine grained, angular to subangular, clay matrix, tight. Trace mica.
2	2627m	20mm	Siltstone - grey, semifriable, quartz clear, angular, clay matrix, micaceous.
3	2608.5m	20mm	Sandstone - grey to dark grey, semifriable, quartz clear, polished, poorly sorted, silt to medium grained, mainly fine grained, angular to subrounded, carbonaceous, clay matrix, dark grey, carbonaceous bands common, trace pyrite.
4	2603.5m	15mm	Very finely Interlaminated Siltstone and Shale. Siltstone - light grey, quartz, clear, clay rich; Shale - dark brown, carbonaceous, silty.
5	2599.5m	25mm	Siltstone - grey, semifriable, quartz, carbonaceou streaks and very fine laminae.
6	2596m	25mm	Very finely Interlaminated Siltstone and Shale. Siltstone - grey, semifriable, quartz, dirty; Shale - dark brown, carbonaceous.
7	2592.5m	20mm	Shale - very dark grey, carbonaceous, silty, micaceous, firm.
8	2590m	20mm	Finely Interlaminated Siltstone and Shale. Siltstone - light grey, firm; Shale - dark brown, carbonaceous.
9	2585.5m	20mm	Siltstone - light grey, semifriable, quartz, clear, clay rich, minor dark brown,carbonaceous streaks and very fine laminae.
10	2579.5m	25mm	Shale - very dark grey to brown, firm, carbonaceou
11	2575.5m	25mm	Shale - very dark grey to brown, firm, carbonaceou silty, trace pyrite, trace mica.
12	2571.5m	20mm	Interbedded Shale and Sandstone. Shale - very dark grey to brown, soft; Sandstone - very dark grey to brown, quartz, clear coarse grained, well sorted, well rounded, embedded in very dark grey to brown clay matrix.
13	2566.5m	20mm	Finely Laminated Shale and Siltstone. Shale - dark grey to brown, firm, carbonaceous; Siltstone - light grey, quartz, carbonaceous, pyritic, clay rich.
14	2556.5m	15mm	Siltstone - grey, soft, quartz, very fine, clay rich, trace mica.
15	2553.5m	20mm	Shale - very dark grey to brown, soft, carbonaceou enclosing lenses of Siltstone - light grey, quartz, and coarse grained, well rounded, quartz grains.

2/.....

SIDEWALL CORE DESCRIPTIONS — R.C.N. THORNTON

FORTESCUE-2 — 21/11/78

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
16	2546m	15mm	Sandstone - grey, friable, quartz, clear, well sorted, very fine grained, subangular to subrounded, trace mica, clay matrix, tight.
17	2520.5m	20mm	Shale - very dark grey to brown, firm, carbonaceous silty, micaceous, pyritic.
18	2516.5m	20mm	Shale - very dark grey to brown, firm, carbonaceous silty, micaceous, pyritic, minor very fine laminae of Siltstone -light grey.
19	2513.5m	20mm	Sandstone - light grey, friable, quartz, clear, well sorted, very fine grained, subangular to rounded pyrite common, carbonaceous streaks and laminae common, clay matrix, tight.
20	2508.5m	30mm	Coal - black, shiny.
21	2504m	25mm	Siltstone - grey to brown, soft, quartz, very clay rich.
22	2500m	15mm	Sandstone - light grey, friable, quartz,clear, very fine grained, well sorted, subangular to rounded abundant clay, carbonaceous laminae.
23	2492.5m	15mm	Shale - very dark grey to brown, firm, carbonaceous, silty, pyritic.
24	2419m	20mm	Calcareous Mudstone - grey to green, firm, silty, trace glauconite, trace mica.
25	2416.5m	40mm	Calcareous Mudstone - grey,firm, trace mica, trace pyrite, silty in part.
26	2414m	30mm	Calcareous Mudstone - grey, soft, forams.
27	2387m	35mm	Calcareous Mudstone - grey, firm, pyritic, slightly silty.
28	2356m	35mm	Calcareous Mudstone - grey, firm, trace pyrite.
29	2327m	35mm	Calcareous Mudstone - grey, soft.
30	2296.5m	35mm	Calcareous Mudstone - grey, firm, slightly silty, trace mica.
31	2266m	50mm	Calcareous Mudstone - grey, firm, slightly silty.
32	2236m	40mm	Calcareous Mudstone - grey, firm, planktonic forams, very slightly silty.
33	2205m	50mm	Calcareous Mudstone - grey, firm, planktonic forams, slightly silty.
34	2176.5m	50mm	Calcareous Mudstone - grey, firm planktonic forams, trace pyrite.
35	2150m	60mm	Calcareous Mudstone - grey, firm, trace pyrite.
36	2120m	30mm	Calcareous Mudstone - grey, firm.
37	2095m	20mm	Calcareous Mudstone - grey, firm.

3/.....

SIDEWALL CORE DESCRIPTIONS

R.C.N. THORNTON

FORTESCUE-2

21/11/78

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
38	2065m	20mm	Calcareous Mudstone - grey, firm, planktonic forams, trace pyrite.
39	2035m	30mm	Calcareous Mudstone - grey, firm, trace pyrite.
40	2000m	15mm	Calcareous Mudstone - grey, firm, pyrite impregnated, planktonic forams.
41	1970.5m	30mm	Calcareous Mudstone - grey, firm, planktonic forams, trace pyrite.
42	1941m	30mm	Calcareous Mudstone - grey, firm.
43	1910m	30mm	Calcareous Mudstone - grey, firm, planktonic forams.
44	1880m	10mm	Calcareous Mudstone - grey, firm.
45	1850m	40mm	Calcareous Mudstone - grey, soft, planktonic forams, trace pyrite.
46	1820m	30mm	Calcareous Mudstone - grey, firm, forams.
47	1790m	20mm	Calcareous Mudstone - grey, firm, forams.
48	1765m	40mm	Calcareous Mudstone - grey, firm, forams.
49	1735m	30mm	Calcareous Mudstone - grey, firm, forams, shell fragments.
50	1695m	40mm	Calcareous Mudstone - grey, firm,pyrite common.
51	1655m	15mm	Calcareous Mudstone - grey, firm, forams.
52	1575m	20mm	Calcareous Mudstone - grey, firm, forams silty.
53	1495m	20mm	Calcareous Mudstone - grey to light grey, very finely laminated, firm.
54	1415m	15mm	Calcareous Mudstone - grey, firm, forams.
55	1310m	20mm	Calcareous Mudstone - grey, firm, enclosing quartz grains, clear, polished, poorly sorted, coarse to very coarse grained, angular to subrounded.
56	1230m	15mm	Calcareous Mudstone - grey, firm.
57	1150m	20mm	Calcareous Mudstone - grey, firm, forams, sponge spicules.
58	1070m	20mm	Calcareous Mudstone - grey, firm, silty.
59	990m	30mm	Calcareous Mudstone - grey, firm, silty.
60	885m	45mm	Calcareous Mudstone - grey, firm, abundant sponge spicules.

PAGE 1 OF 4

ATT 60 REC 60

DATE 21st November, 1972

IES RUN NO 1 & 2 SWC RUN NO 1

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

WELL FORTESCUE-2

GEOLOGIST R.C.N. THORNTON

SERVICE CO SCHLUMBERGER

NO. 1a	DEPTH M 1	REC mm 2	ROCK TYPE 3	MODIFIERS 4	CAL 5	COLOR 6	INDUR DEG 7	GRAIN SIZE 8	SRTG 9	RND 10	DISS CLAY 11	STAIN 12	FLOURESCENCE % RK	FLOURESCENCE DISTR 14	FLOURESCENCE INTEN 15	FLOURESCENCE COLOR 16	CUT FLUOR. INTEN 17	CUT FLUOR. COLOR 18	CUT RESIDUE QUAN 19	CUT RESIDUE COLOR 20	SHOW 21	PROB PROD 22	REMARKS - GAS 23
1	2636.5	20	SAND-STONE	trace mica	-	grey	semi-friable	very fine	well	a-sa	20%												
2	2627	20	SILT-STONE	mica	-	grey	semi-friable																
3	2608.5	20	SAND-STONE	carbonaceous	-	grey to dark grey	semi-friable	silt to medium	poor	a-sr	30%												
4	2603.5	15	SILT-STONE		-	light grey	semi-friable																
			SHALE	carbonaceous	-	dark brown																	
5	2599.5	25	SILT-STONE	carbonaceous	-	grey	semi-friable																
6	2596	25	SILT-STONE		-	grey	semi-friable																
			SHALE	carbonaceous	-	dark brown																	
7	2592.5	20	SHALE	carbonaceous silty, micaceous	-	dark grey	firm																
8	2590	20	SILT-STONE		-	light grey	firm																
			SHALE	carbonaceous	-	dark brown																	
9	2585.5	20	SILT-STONE	carbonaceous streaks	-	light grey	semi-friable																
10	2579.5	25	SHALE	carbonaceous	-	dark grey to brown	firm																
11	2575.5	25	SHALE	carbonaceous silty.	-	dark grey to brown	firm																
12	2571.5	20	SHALE	carbonaceous	-	dark grey to brown	soft																
			SAND-STONE	clay rich	-	dark grey to brown	soft	coarse	well	r	40%												
13	2566.5	20	SHALE	carbonaceous	-	dark grey to brown	firm																
			SILT-STONE	carbonaceous pyritic.	-	light grey	firm																

FORM R 257 3 72

2/.....

PAGE 2 OF 4

ATT 60 REC 60

DATE 21st November 1978

SWC RUN NO 1 & 2

IES RUN NO 2

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

WELL FORTESCUE-2

GEOLOGIST R.C.N. THORNTON

SERVICE CO SCHLUMBERGER

NO.	DEPTH M	REC mm	ROCK TYPE	MODIFIERS	CAL	COLOR	INDUR DEG	GRAIN SIZE	SRTG	RND	DISS CLAY	STAIN	FLOURESCENCE %	FLOURESCENCE DISTR	FLOURESCENCE INTEN	FLOURESCENCE COLOR	CUT FLUOR. INTEN	CUT FLUOR. COLOR	CUT RESIDUE QUAN	CUT RESIDUE COLOR	SHOW	PROB PROD	REMARKS - GAS
1a	1	2	3	4	5	6	7	8	9	10	11	12	RK	14	15	16	17	18	19	20	21	22	23
14	2556.5	15	SILT-STONE	clay rich	-	grey	soft																
15	2553.5	20	SHALE	quartz grains	-	dark grey to brown	soft																
			SILT-STONE		-	light grey																	
16	2546	15	SAND-STONE	mica	-	grey	fri-able	very fine	well	sa-sr	20%												
17	2520.5	20	SHALE	carbonaceous silty	-	very dark grey to brown	firm																
18	2516.5	20	SHALE	carbonaceous silty		very dark grey to brown	firm																
19	2513.5	20	SAND-STONE	pyritic, carbonaceous	-	light grey	fri-able	very fine	well	sa-r	20%												
20	2508.5	30	COAL		-	black																	
21	2504	25	SILT-STONE	very clay rich	-	grey to brown	soft																
22	2500	15	SAND-STONE	very clay rich	-	light grey	fri-able	very fine	well	sa-r	30%												
23	2492.5	15	SHALE	carbonaceous	-	very dark grey to brown	firm																
24	2419	20	MUD-STONE	calcareous	V	grey to green	firm																
25	2416.5	40	MUD-STONE	calcareous	V	grey	firm																
26	2414	30	MUD-STONE	calcareous, forams	V	grey	soft																
27	2387	35	MUD-STONE	calcareous	V	grey	firm																
28	2356	35	MUD-STONE	calcareous, trace pyrite	V	grey	firm																
29	2327	35	MUD-STONE	calcareous	V	grey	soft																
30	2296.5	35	MUD-STONE	calcareous, silty	V	grey	firm																

FORM A 251 3 72

3/.....

PAGE 3 OF 4

ATT 60 REC 60

DATE 21st November '78

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

SWC RUN NO 1 & 2

IES RUN NO 2

WELL FORTESCUE-2

GEOLOGIST R.C.N. THORNTON

SERVICE CO SCHLUMBERGER

NO. 1a	DEPTH M 1	REC mm 2	ROCK TYPE 3	MODIFIERS 4	CAL 5	COLOR 6	INDUR DEG 7	GRAIN SIZE 8	SRTG 9	RND 10	DISS CLAY 11	STAIN 12	FLOURESCENCE % RK 13	DISTR 14	INTEN 15	COLOR 16	CUT FLUOR. INTEN 17	COLOR 18	CUT RESIDUE QUAN 19	COLOR 20	SHOW 21	PROB PROD 22	REMARKS - GAS 23
31	2266	50	MUD-STONE	calcareous, slightly silty	V	grey	firm																
32	2236	40	MUD-STONE	calcareous	V	grey	firm																
33	2205	50	MUD-STONE	calcareous	V	grey	firm																
34	2176.5	50	MUD-STONE	calcareous	V	grey	firm																
35	2150	60	MUD-STONE	calcareous	V	grey	firm																
36	2120	30	MUD-STONE	calcareous	V	grey	firm																
37	2095	20	MUD-STONE	calcareous	V	grey	firm																
38	2065	20	MUD-STONE	calcareous, forams	V	grey	firm																
39	2035	30	MUD-STONE	calcareous	V	grey	firm																
40	2000	15	MUD-STONE	calcareous	V	grey	firm																
41	1970.5	30	MUD-STONE	calcareous, forams	V	grey	firm																
42	1941	30	MUD-STONE	calcareous	V	grey	firm																
43	1910	30	MUD-STONE	calcareous	V	grey	firm																
44	1880	10	MUD-STONE	calcareous	V	grey	firm																
45	1850	40	MUD-STONE	calcareous	V	grey	soft																
46	1820	30	MUD-STONE	calcareous	V	grey	firm																
47	1790	20	MUD-STONE	calcareous	V	grey	firm																
48	1765	40	MUD-STONE	calcareous	V	grey	firm																
49	1735	30	MUD-STONE	calcareous	V	grey	firm																
50	1695	40	MUD-STONE	calcareous, pyritic.	V	grey	firm																
51	1655	15	MUD-STONE	calcareous, forams	V	grey	firm																
52	1575	20	MUD-STONE	calcareous, silty, forams.	V	grey	firm																
53	1495	20	MUD-STONE	calcareous, finely lamin-ated	V	grey to light grey	firm																
54	1415	15	MUD-STONE	calcareous, forams	V	grey	firm																
55	1310	20	MUD-STONE	calcareous	V	grey	firm																

FORM P 217 3 72

4/.....

WELL FORTESCUE-2

GEOLOGIST R.C.N. THORNTON

SERVICE CO SCHLUMBERGER

IES RUN NO 2 SWC RUN NO 1 & 2 DATE 21st November '78

ATT ' 60 REC 60

PAGE 4 OF 4

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

NO.	DEPTH M	REC mm	ROCK TYPE	MODIFIERS	CAL	COLOR	INDUR DEG	GRAIN SIZE	SRTG	RND	DISS CLAY	STAIN	FLOURESCENCE % RK	DISTR	INTEN	COLOR	CUT FLUOR. INTEN	COLOR	CUT RESIDUE QUAN	COLOR	SHOW	PROB PROD	REMARKS - GAS
1 a	1	2	3	4	5	6	7	8	9	10	11	12		14	15	16	17	18	19	20	21	22	23
				Quartz	-	clear	-	coarse to very coarse	poor	a-sr													
56	1230	20	MUD-STONE	calcareous	V	grey	firm																
57	1150	20	MUD-STONE	calcareous, foramS, sponge spicules	V	grey	firm																
58	1070	20	MUD-STONE	calcareous, silty,	V	grey	firm																
59	990	30	MUD-STONE	calcareous, silty	V	grey	firm																
60	885	45	MUD-STONE	calcareous, abundant sponge spicules	V	grey	firm																

FORM B 211 3 74

APPENDIX 3

APPENDIX 3

CONVENTIONAL CORE DESCRIPTIONS AND ANALYSIS

CL-511-1

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No.

CORE ANALYSIS RESULTS

Company ESSO AUSTRALIA Formation File WA-CA-32
Well FORTESQUE # 2 Core Type CONVENTIONAL DIAMOND Date Report DS
Field FORTESQUE Drilling Fluid Analysts
County AUSTRALIA State VIC Elev. Location BASS STRAIT

Lithological Abbreviations

SAND-SD, SHALE-SH, LIME-LM, DOLOMITE-DOL, CHERT-CH, GYPSUM-GYP, ANHYDRITE-ANHY, CONGLOMERATE-CONG, FOSSILIFEROUS-FOSS, SANDY-SDY, SHALY-SHY, LIMY-LMY, FINE-FN, MEDIUM-MED, COARSE-CSE, CRYSTALLINE-XLN, GRAIN-GRN, GRANULAR-GRNL, BROWN-BRN, GRAY-GY, VUGGY-VGY, FRACTURED-FRAC, LAMINATION-LAM, STYLOLITIC-STY, SLIGHTLY-SL/, VERY-V/, WITH-W/

SAMPLE NUMBER	DEPTH ~~FEET~~ M.	PERMEABILITY MILLIDARCYS Kl	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	calc grain density	SAMPLE DESCRIPTION AND REMARKS
1.	2443.1	<0.1	9.1	0.0	97.8	2.99	SST:volcanic, dk gry, f - crse, v/hd, v poor sort, n flu or cut.
2.	2443.9	0.1	13.6	0.0	98.4	2.68	SST: lt gy, fine, hd, well sort, sl sil smt, sub roun pyrite carbonaceous sl cal
3.	2444.9	<0.1	9.0	0.0	79.9	2.71	SST: med gy, fine - med, l poor sort, cly mtx, sl sil cmt, subang, pyrite , carbonaceous mica.
4.	2445.4	131	21.0	15.7	73.7	2.64	SST: med gy, fine med, hd, well sort, calc cmt, sub round, pyrite carbonaceous mod yel/wt flu, immed blu/ wt cut.
5.	2445.7	147	23.2	15.6	56.7	2.63	SST: med gy, med, hd, well sort, sl cly,calc cmt, sub ang, pyrite carbonaceous mica sl calc, mod yel/wtfl immed bl/wt cut.
6.	2447.0	5.1	16.0	0.3	85.0	2.66	SST: med gy, fine-med, hd, well sort, calc cmt, suban mica sl carbon, patchy yel flu, slow yel/wt cut.
7.	2450.6	103	22.5	19.1	50.4	2.64	SST: med gy, fine-med, hd, mod sort, sil cmt, subang, mica carbonaceous, mod yel wt flu, immed wy cut.
9.	2451.0	107	20.1	16.9	59.0	2.61	SST: med gy, fine, hd, mod sort, calc cmt, subround, mica clauc, mod yel flu, immed wt cut.
10.	2451.3	42	18.7	10.3	60.4	2.65	SST: med gy, fine-med, hd, mod sort, sil cmt, subang, worm burrow, clauc mica, patchy yel flu, immed yel/ wt cut.

CL-511-1

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No.

CORE ANALYSIS RESULTS

Company ESSO AUSTRALIA Formation File WA-CA-32
Well FORTESQUE # 2 Core Type CONVENTIONAL DIAMOND Date Report
Field FORTESQUE Drilling Fluid Analysts DS
County AUSTRALIA State VIC Elev. Location BASS STRAIT

Lithological Abbreviations

SAND-SD, SHALE-SH, LIME-LM
DOLOMITE-DOL, CHERT-CH, GYPSUM-GYP
ANHYDRITE-ANHY, CONGLOMERATE-CONG, FOSSILIFEROUS-FOSS
SANDY-SDY, SHALY-SHY, LIMY-LMY
FINE-FN, MEDIUM-MED, COARSE-CSE
CRYSTALLINE-XLN, GRAIN-GRN, GRANULAR-GRNL
BROWN-BRN, GRAY-GY, VUGGY-VGY
FRACTURED-FRAC, LAMINATION-LAM, STYLOLITIC-STY
SLIGHTLY-SL/, VERY-V/, WITH-W/

SAMPLE NUMBER	DEPTH FEET XXX M.	PERMEABILITY MILLIDARCYS KL	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	calc grain density	SAMPLE DESCRIPTION AND REMARKS
12.	2452.0	43	18.0	10.5	59.4	2.66	SST: med gy, fine, hd, mod sort, sil cmt, subang, clauc, mica slifects, poor yelflu, immed yel/wt cut.
13.	2452.6	85	18.8	17.5	63.0	2.58	SST: med gy, fine-med, hd, mod sort, sil cmt, subang, mica carbonaceous, sl calc mod yel flu, immed wy cut.
14.	2453.2	59	18.9	14.9	59.7	2.64	SST: med cy, fine-med, hd, well sort, sl cly, sil cmt sub round, mica, carbonac-eous, sl calc, mod yel flu immed wt/yel cut.
15	2454.0	2.1	13.9	0.0	85.0	2.68	SST: med gy, fine, hd, wel sort, cly mtx, sil cmt, subang, mica sl calc, v p yel flu, no cut.
17.	2456.1	1.0	13.5	0.0	93.8	2.66	SST: med gy, fine, hd, mod sort, cly mtx, sil cmt, subang, mica calc, no flu, no cut.
18.	2459.0	9.1	16.9	0.0	98.2	2.65	SST: med gy, fine, hd, mod sort, cly mtx, sil cmt, sub round, mica carbonaceo no flu or cut.
19.	2461.3	<0.1	11.1	0.4	97.1	2.67	SST: med gy, fine, hd, mod sort, cly mtx, sil cmt, subang, mica carbonaceous, no flu or cut.

FORM F-3 COREGRAPH HEADS—TOTAL WATER

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY	ESSO AUSTRALIA LTD	DATE ON	FILE NO. WA-CA-32
WELL	FORTESQUE NO 2	DATE OFF	ENGRS. DS
FIELD	FORTESQUE	FORMATION	ELEV.
COUNTY	AUSTRALIA STATE VIC	DRLG. FLD.	CORES
LOCATION	BASS STRAIT	REMARKS	

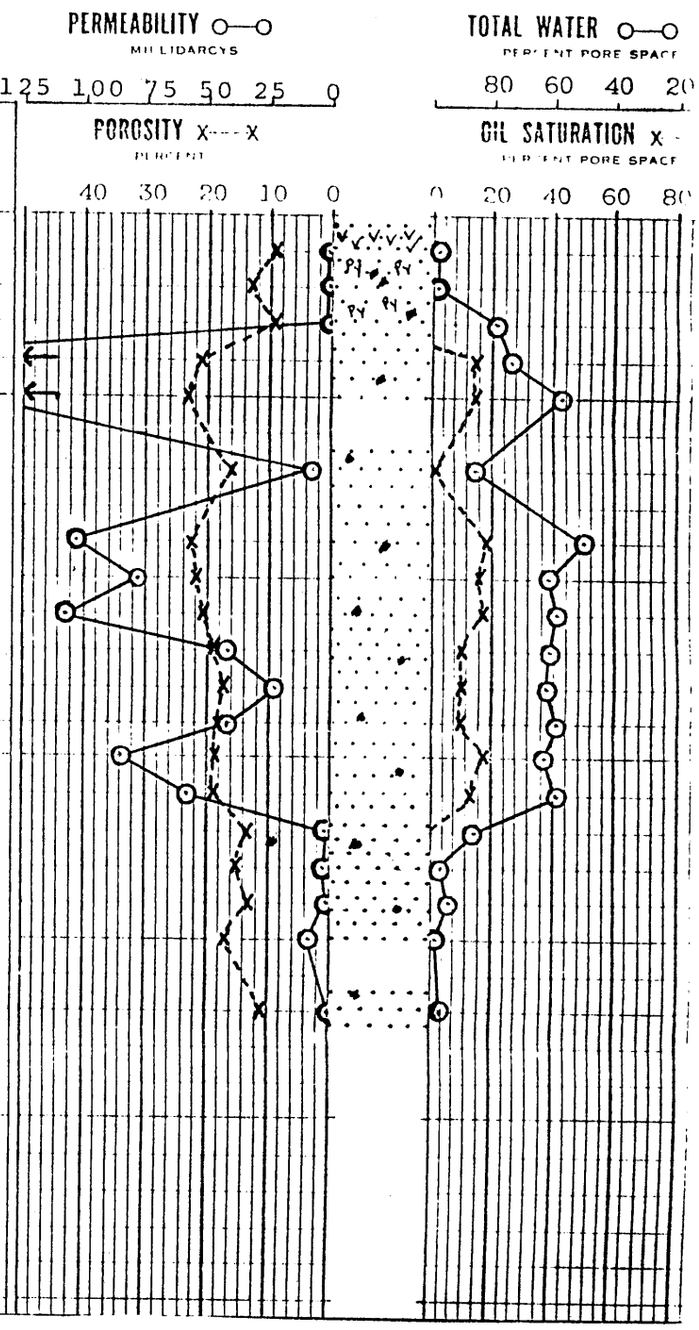
SAND LIMESTONE CONGLOMERATE CHERT

SHALE DOLOMITE

TABULAR DATA and INTERPRETATION

SAMPLE NUMBER	DEPTH meter	PERM. MD. Kl	POROSITY %	RESIDUAL SATURATION % PORE SPACE OIL	RESIDUAL SATURATION % PORE SPACE TOTAL WATER	calc grain density	REMARKS
1	2443.1	<0.1	9.1	0.0	97.8	2.99	
2	2443.9	0.1	13.6	0.0	98.4	2.68	
3	2444.9	<0.1	9.0	0.0	79.9	2.71	
4	2445.3	131	21.0	15.7	73.7	2.64	
5	2445.7	147	23.2	15.6	56.7	2.63	
6	2447.0	5.1	16.0	0.3	85.0	2.66	
7	2450.6	103	22.5	18.1	50.4	2.64	
8	2450.9	78	22.0	16.0	61.0	2.66	
9	2451.0	107	20.1	16.9	59.0	2.61	
10	2451.3	42	18.7	10.3	60.4	2.65	
11	2451.7	23	17.4	11.1	62.6	2.66	
12	2452.0	43	18.0	10.5	59.4	2.66	
13	2452.6	85	18.8	17.5	63.0	2.58	
14	2453.3	59	18.9	14.9	59.7	2.64	
15	2454.0	2.1	13.9	0.0	85.0	2.68	
16	2454.5	2.5	14.7	0.0	97.4	2.67	
17	2456.1	1.0	13.5	0.0	93.8	2.66	
18	2459.0	9.1	16.9	0.0	98.2	2.65	
19	2461.3	<0.1	11.1	0.4	97.1	2.67	

COMPLETION COREGRAPH



ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
2420·0 (0 1 2)												
·2												
·4												
·6												Calcareous Mudstone - dark grey to brown, hard, semi-fissile, silty, micaceous, trace pyrite, trace glauconite forams, trace carbonaceous flecks.
·8										dk gy		
2421·0			MARINE									
·2												
·4										lt gy		Calcareous Siltstone - light grey to brown, hard, pyritic, trace glauconite, trace carbonaceous flecks.
·6												
·8												
2422·0												

SAMPLES COLLECTED FOR PALYNOLOGIC ANALYSIS:

2420.2m; 2420.9m; 2422.0m; 2422.8m; 2423.8m; 2424.5m; 2425.5m; 2426.4m; 2427.3m; 2428.3m; 2428.7m; 2429.3m; 2430.0m; 2431.8m; 2432.8m; 2434.0m; 2434.4m; 2434.8m; 2435.5m.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
0 1 2												
2422·0												
·2												
·4												
·6												
→·8												Calcareous Mudstone - dark grey to brown, hard, semi-fissile, forams, slightly more glauconite and pyrite than above, and less mica. Minor interbeds of Calcareous Siltstone- light brown to grey, glauconite, pyrite.
2423·0			MARINE									
·2												
·4												
·6												
→·8												
2424·0												

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97%) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
2424·0 (0 1 2)												
·2												
·4												
·6												
·8								dk gy				Finely interlaminated Mudstone/Siltstone.
2425·0			MARINE									
·2												
·4												Calcareous Mudstone - dark grey to brown, hard, fissile, silty, trace pyrite, trace glauconite, trace mica, forams, trace carbonaceous flecks.
·6												
·8												
2426·0												

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

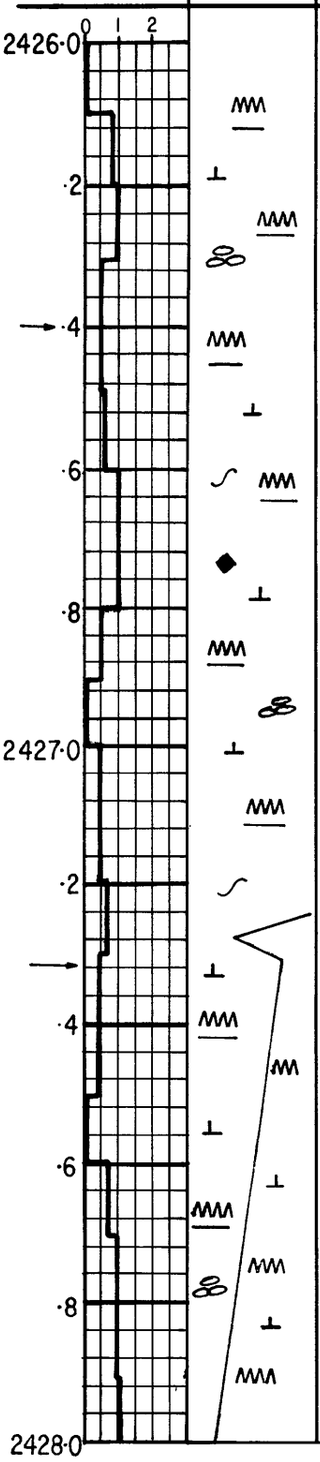
WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97%) Fm

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78



COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
	TRACE OF BURROWS	MARINE					dkgy				Calcareous Mudstone - dark grey to brown, hard, semi-fissile, minor pyrite, glauconite (some impregnated forams) and mica. Indistinct small scale sedimentary structures. Finely interbedded Siltstone and Mudstone. Siltstone - calcareous, light grey to brown, forams, glauconite (some impregnated forams), pyrite, carbonaceous flecks, clay rich.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

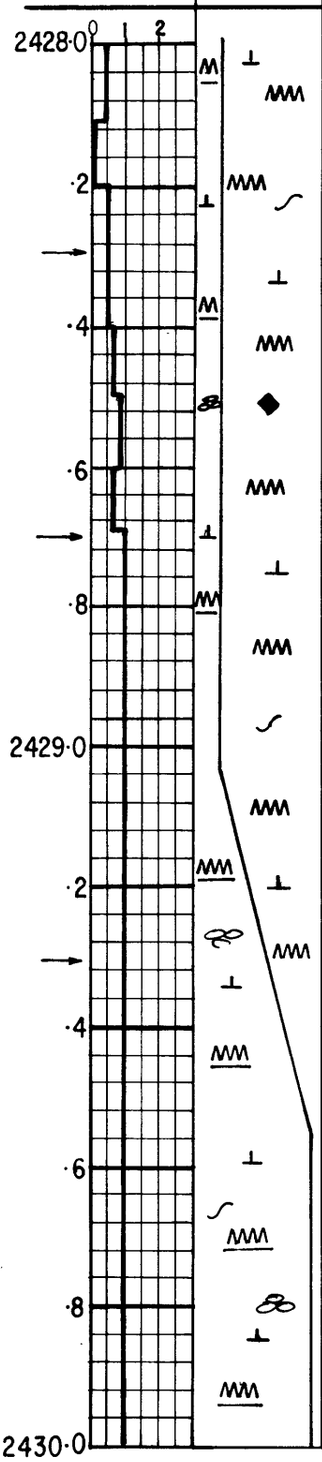
WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78



ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97%) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2430·0 (0 1 2)			MARINE					dkgy				Finely interlaminated (1-3mm) Calcareous Mudstone and Calcareous Siltstone. Mudstone - dark grey to brown, hard, semi-fissil silty, pyrite, glauconit mica, forams, carbona-ceous flecks. Siltstone - light grey to brown, glauconitic, forams (some glauconite impregnated), pyrite, carbonaceous flecks, clay rich.
·2												
·4												
·6												
·8												
2431·0												
·2												
·4												
·6												
·8												
2432·0												

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 7 of 8

WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2432·0			MARINE					dkgy				Finely interlaminated Calcareous Mudstone/ Calcareous Siltstone - As above.
2433·0												
2434·0												

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 8 of 8

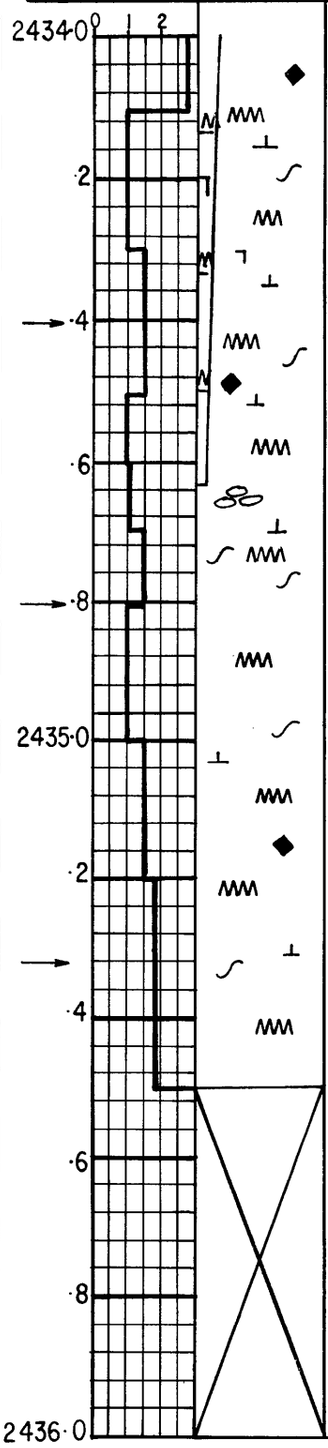
WELL FORTESCUE-2

SCALE 1:100

CORE No. 1

Interval Cored 2420-2436m Cut 16m Recovered 15.5m (97%) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 10.11.78



DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
		CHURNED BEDDING	MARINE				g	dk gy / lt gy				Interlaminated Siltstone Mudstone - As above, except slight increase in glauconite, pyrite, mica, carbonaceous flecks.
												Siltstone - As above, 5% glauconite.
												CORE LOST: 2435.5m-2436.0m.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

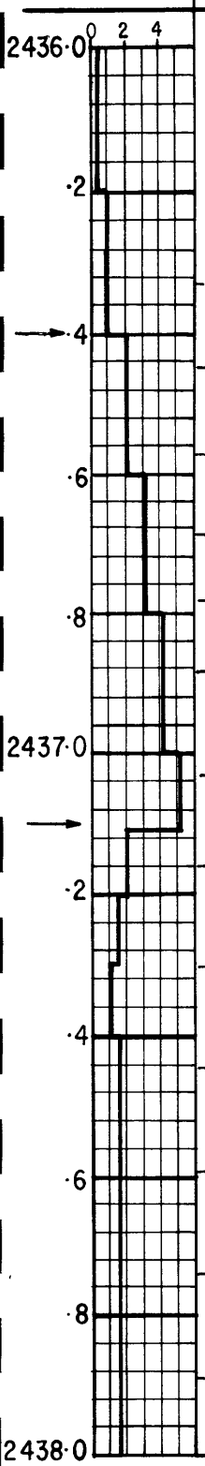
WELL FORTESCUE-2

SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78



COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
											SILTSTONE with very fine clay streaks etching out wavy bedding.
		MARINE					dk gy-brn				CALCAREOUS SILTSTONE: dark grey to brown, hard, massive, clay rich, glauconite common, mica, forams, trace pyrite, trace carbonaceous flecks.

: SAMPLES COLLECTED FOR PALYNOLOGIC ANALYSIS:

2436.4; 2437.1; 2438.1; 2439.0; 2439.9; 2441.0; 2442.0; 2442.8; 2443.5; 2443.8; 2444.9; 2446.0 2446.9; 2447.5.

SP : SAMPLES SEAL PEELED

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 2

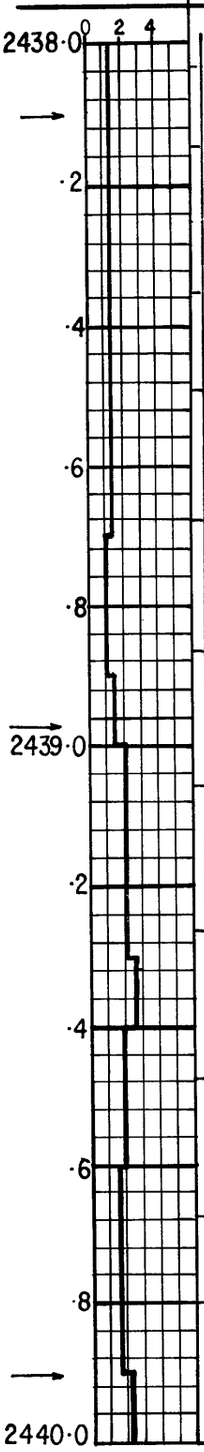
SHEET 2 of 8

SCALE ...1:100.....

CORE No. .....2.....

Interval Cored 2436.0-2450.5m **Cut** ...14.5m.. **Recovered** ..11.5m..... (.79...%) **Fm**.....

Bit Type.....C22.....**Bit Size**.....8½"..... **in., Desc by** RCN Thornton JD Alder **Date** ..11/11/78.....



DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
												SILTSTONE with very fine clay streaks etching out wavy bedding.
								dkgy brn				CALCAREOUS SILTSTONE: dark grey to brown, hard, massive, clay rich abundant glauconite (30%), mica common, trace pyrite, trace carbonaceous flecks.
							G	dk gy brn				GLAUCONITE RICH SILTSTONE, bedding etched out by clay laminae.

CALCAREOUS SILTSTONE: as above, except a few clay pebbles (2mm diameter), round, ferruginous, yellow, trace quartz grains, clear, coarse grained, subangular.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

SHEET 3 of 8

SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
2440·0 (0 2 4) ·2 ·4 ·6 ·8 2441·0 ·2 ·4 ·6 ·8 2442·0		MASSIVE	MARINE			INCREASE IN AMOUNT OF GLAUCONITE		dk brn. gy				GREENSAND: dark brown to grey, hard, massive, silty clay matrix containing up to 60% glauconite pellets (mostly ½-1 mm diameter; many ovoid), many altered to yellow to brown (?) goethite.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 4 of 8

WELL FORTESCUE-2

SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2442·0 (0 2 4)												
·2												
·4												GREENSAND, dark brown, moderately hard, abundant glauconite pellets (30-50%, ¼mm diameter), & quartz granules (5-10%), orange stained, well rounded, frosted, set in clay matrix.
·6							S	dk brn				
·8							S	dk brn				
2443·0		MASSIVE	MARINE									CLAY: dark brown, soft, altered glauconite pellets, highly calcareous, ferruginous.
SP ·2								dk brn				
·4												
·6							S	dk brn				
·8					f.gr			lt brn				CLAY: as above.
SP 2444·0												SANDSTONE: light brown, hard, quartz, clear, fine grained, well sorted, angular to subrounded, clean, tight, trace mica, trace carbonaceous flecks.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

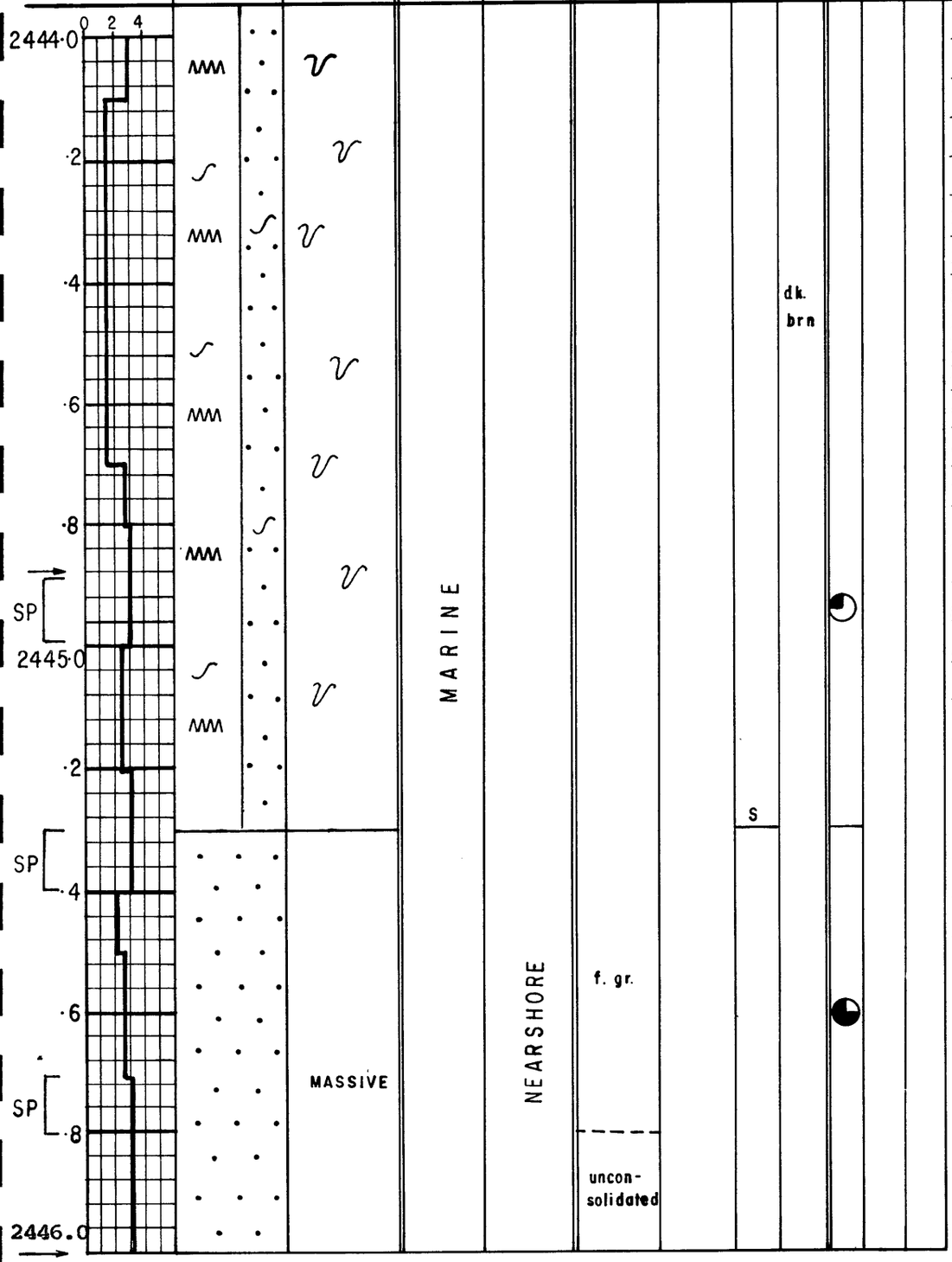
SHEET 5 of 8

SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78



REMARKS

INTERBEDDED SILTSTONE AND VERY FINE GRAINED SANDSTONE - EXTENSIVELY BIOTURBATED: dark brown, hard, clay rich, glauconite common, trace coarse grained quartz, trace mica, pyrite.

Spotty yellow fluorescence.

Sandstone - light grey to stained brown, friable, quartz, clear, fine grained, well sorted, sub angular to subrounded, trace mica, good porosity. Strong petroliferous odour, massive yellow fluorescence, immediate dense white cut.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

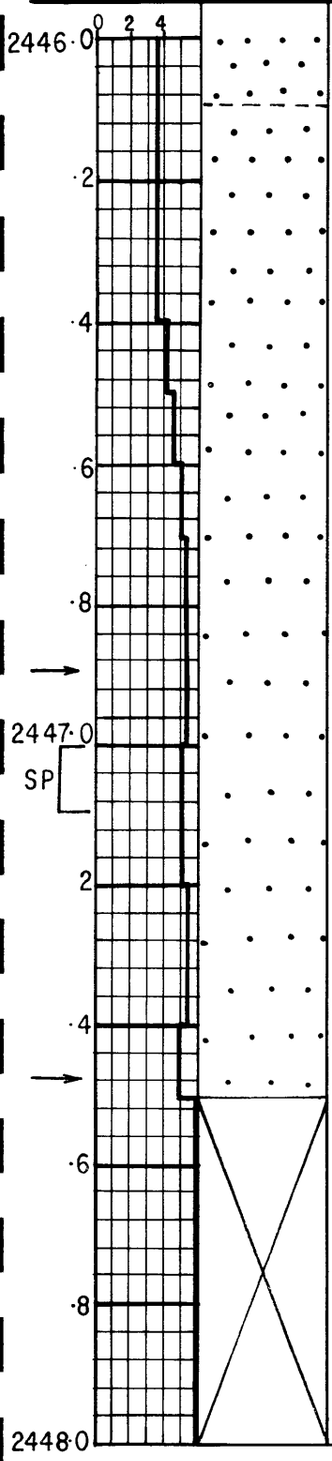
WELL FORTESCUE - 2

SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79 %) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 11.11.78



COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
				unconsol.		G		◔			
	MASSIVE	MARINE	NEARSHORE	v.f. gr hard tight			brn gry				Sandstone - brown to grey, hard, quartz, very fine grained, abundant pyrite, trace mica, trace carbonaceous flecks, tight, carbonaceous siltstone laminae, no fluorescence.
						G					Sandstone - brown to grey, hard, quartz, fine grained, well sorted, subangular to subrounded, trace mica, porosity fair to tight. Yellow oil bleeding and massive yellow fluorescence from porous streaks slow milky white cut.
				unconsol.			brn gy	◔			
											NO RECOVERY: 2447.5m-2450.5m.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 7 of 8

WELL FORTESCUE - 2

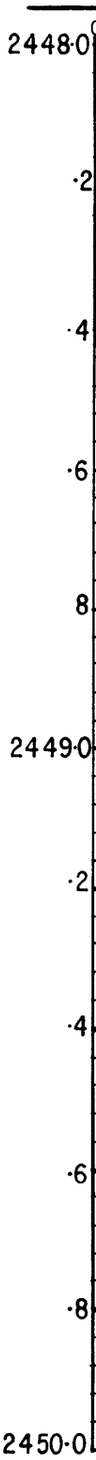
SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79%) Fm.

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 11.11.78

DEPTH & CORING RATE m./hr.	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS



Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 8 of 8

WELL FORTESCUE-2

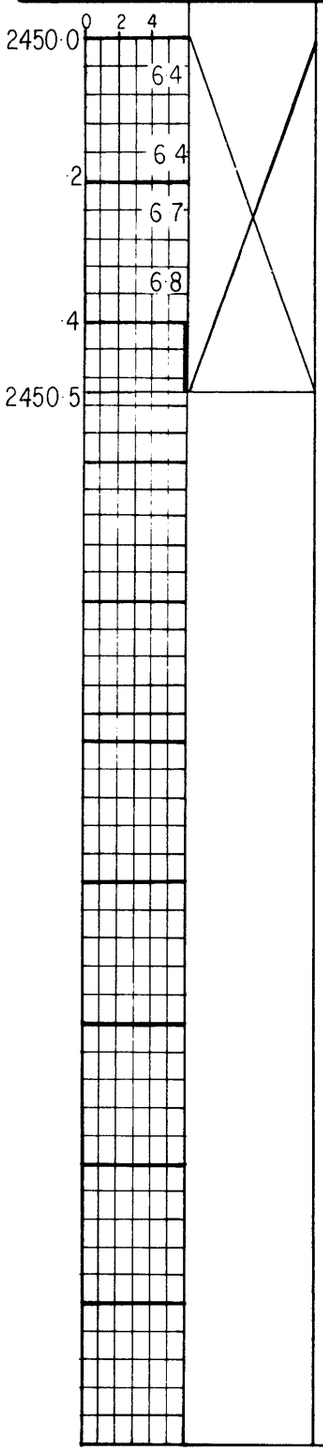
SCALE 1:100

CORE No. 2

Interval Cored 2436.0-2450.5m Cut 14.5m Recovered 11.5m (79) Fm

Bit Type C22 Bit Size 8½" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 11.11.78

DEPTH & CORING RATE m./hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS



Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 1 of 7

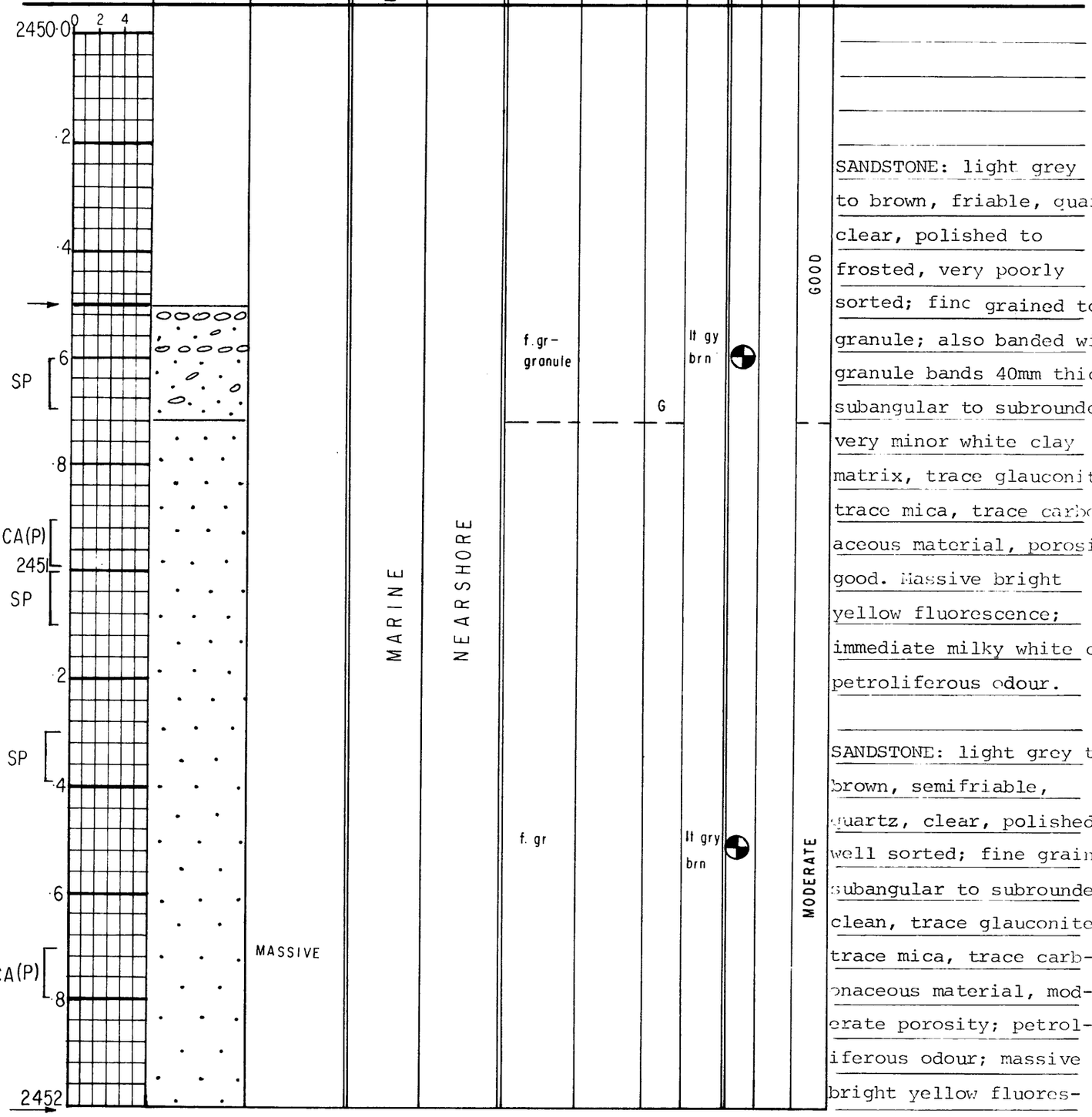
WELL FORTESCUE - 2

SCALE 1:100

CORE No. 3

Interval Cored 2450.5-2464m Cut 13.5m Recovered 11.0m (81 %) Fm. Latrobe

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78



SANDSTONE: light grey to brown, friable, quart clear, polished to frosted, very poorly sorted; finc grained to granule; also banded wit granule bands 40mm thick subangular to subrounded very minor white clay matrix, trace glauconit trace mica, trace carbo aceous material, porosit good. Massive bright yellow fluorescence; immediate milky white cu petroliferous odour.

SANDSTONE: light grey to brown, semifriable, quartz, clear, polished, well sorted; fine grainec subangular to subrounded clean, trace glauconite, trace mica, trace carb- onaceous material, mod- erate porosity; petrol- iferous odour; massive bright yellow fluores- cence, immediate milky white cut.

SP : SEAL PEELED SAMPLES

CA(P): SAMPLES SENT TO PERTH FOR CORE ANALYSIS

: SAMPLE COLLECTED FOR PALYNOLOGIC ANALYSIS:-

2450.5; 2452.0; 2452.8; 2453.8; 2454.5; 2455.0; 2456.0; 2457.0; 2458.1; 2459.4; 2460.3; 2461.0; 2461.5.

Dwg 1107/CP/67

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

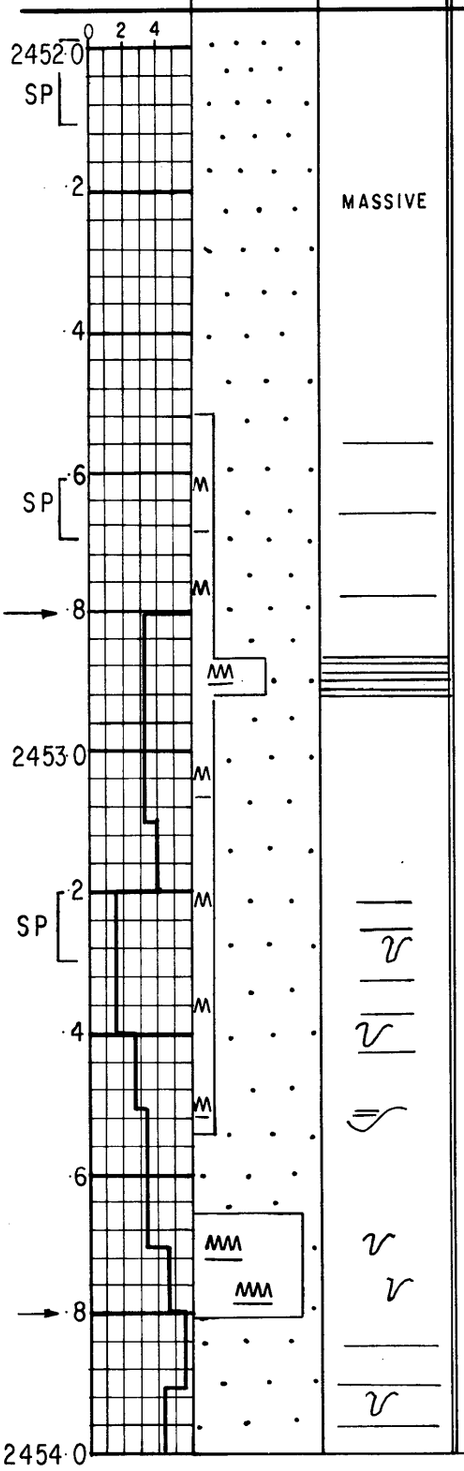
SHEET 2 of 7

SCALE 1:100

CORE No. 3

Interval Cored 2450.5-2464m **Cut** 13.5m **Recovered** 11.0m (81 %) **Fm.** Latrobe

Bit Type C22 **Bit Size** 8½" **in., Desc by** RCN Thornton JD Alder **Date** 11/11/78



REMARKS

SANDSTONE: light grey to brown, semifriable, as above except slightly less porous, carbonaceous streaks. Patchy bright yellow fluorescence concentrated in areas of best porosity, including burrows.

MUDSTONE/SILTSTONE: large horizontal burrows (20mm diameter).

SANDSTONE: as above, except carbonaceous material is common, and there are streaks of soft brown clay. Slight petroliferous odour; very slight yellow fluorescence.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

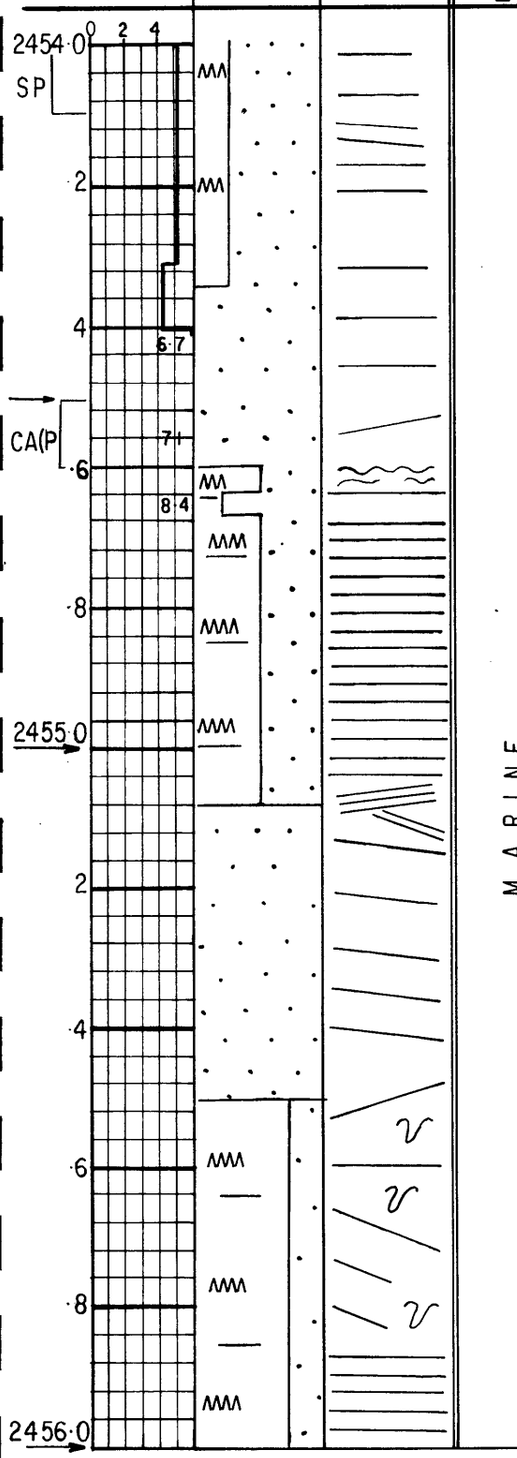
SHEET 3 of 7

WELL FORTESCUE-2 **SCALE** 1:100

CORE No. 3

Interval Cored 2450.5-2464m **Cut** 13.5m **Recovered** 11.0m (81 %) **Fm.** Latrobe

Bit Type C22 **Bit Size** 8½" **in., Desc by** RCN Thornton / JD Alder **Date** 11/11/78



COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
				vf·f gr			lt gy brn			TIGHT	SANDSTONE: finely laminated; light grey to brown hard, quartz, clear, moderately sorted, very fine to fine grained, subangular to subrounded, polished, clay matrix, tight, carbonaceous material common, trace glauconite, trace mica, rare patchy dull gold fluorescence.
							lt gy / dk brn.			TIGHT	INTERLAMINATED, FLAT, SANDSTONE/MUDSTONE: Sandstone laminae 1-3mm thick; mudstone 0.5-2mm. SANDSTONE: light grey, quartz, very fine grained, trace glauconite, carbonaceous flecks. MUDSTONE: dark brown, very carbonaceous, pyrite mica.
		MARINE	NEARSHORE	vf. f. gr		S				POOR	SANDSTONE: light grey to brown, slightly laminated
						S	lt gy / dk gy-brn			TIGHT	Interlaminated very fine grained SANDSTONE/ MUDSTONE.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

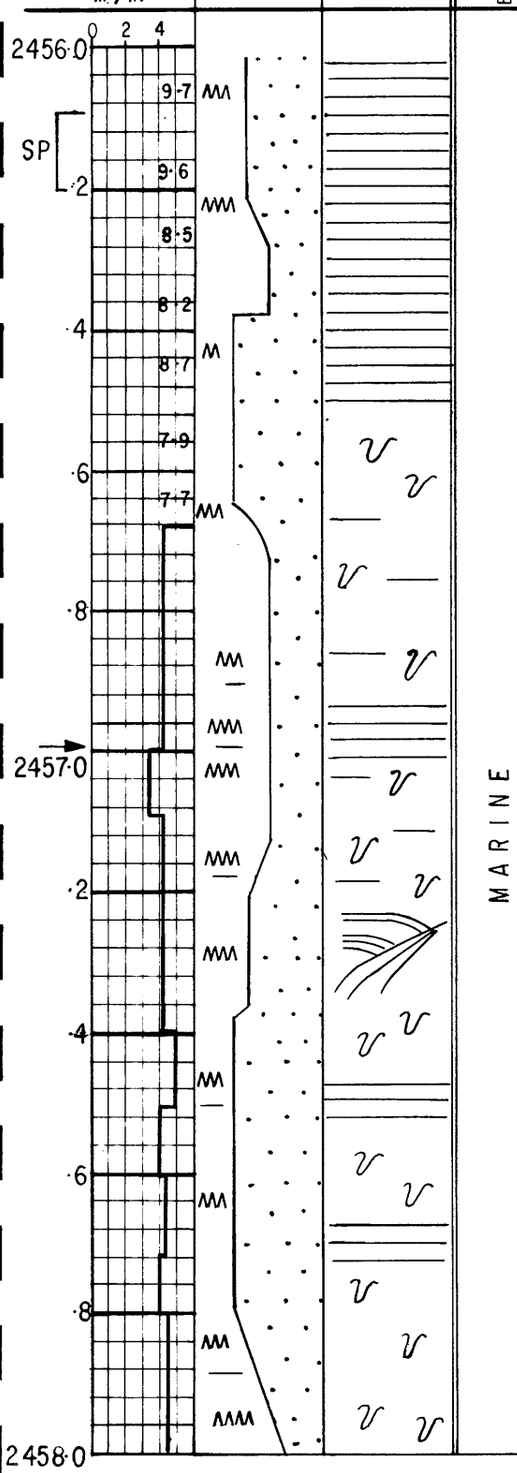
SHEET 4 Of 7

SCALE 1:100

CORE No. 3

Interval Cored 2450.5-2464m Cut 13.5m Recovered 11.0m (81 %) Fm Latrobe

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78



REMARKS

FINELY INTERLAMINATED SANDSTONE/SILTSTONE

Bedding horizontal, but churned.

FINELY FLAT LAMINATED SANDSTONE, light grey, quartz, clear, very fine grained to silt, carbonaceous flecks, mica, tight; laminae 1-2mm thick; very fine laminae (less than 1mm) of dark brown, micaceous, carbonaceous clay.

Alternately finely laminated and bioturbated

Dwg 1107/CP/87

ESSO AUSTRALIA LTD.

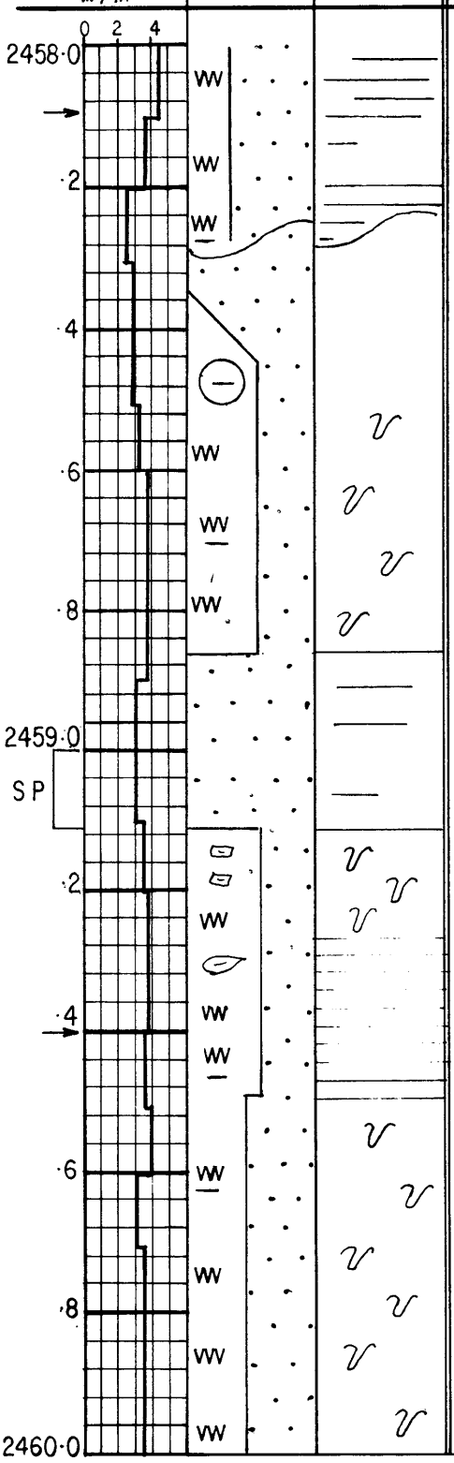
CORE DESCRIPTION

WELL FORTESCUE - 2 **SCALE** 1:100

CORE No. 3

Interval Cored 2450.5-2464m **Cut** 13.5 **Recovered** 11.0m (81 %) **Fm.** Latrobe

Bit Type C22 **Bit Size** 8½" **in., Desc by** RCN Thornton JD Alder **Date** 11/11/78



SANDSTONE: light grey to brown, quartz, clear, very fine grained, carbonaceous flecks, trace mica, tight.

SHALE pebble, brown, round, slightly flattened, 50mm diameter

Large (15mm diameter) burrows.

SANDSTONE: fine grained, very faintly horizontally laminated.

SHALE clasts, light brown, flattened, contorted, 5-50mm across.

Churned bedding.

Large (10mm diameter) horizontal burrows.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

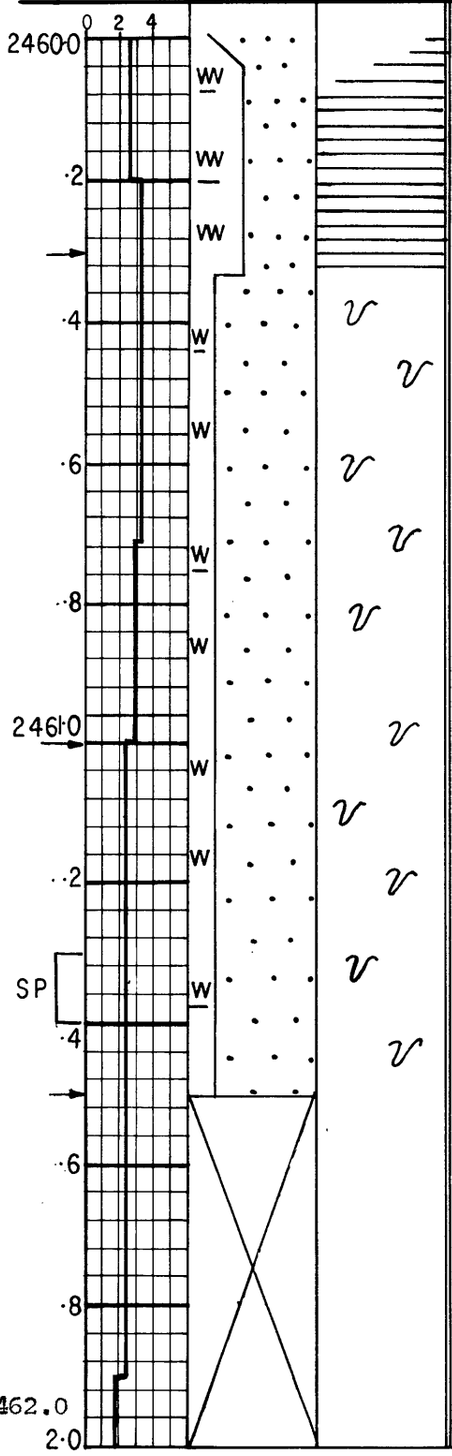
WELL FORTESCUE-2

SCALE 1:100

CORE No. 3

Interval Cored 2450.5-2464m Cut 13.5m Recovered 11.0m (81 %) Fm. Latrobe

Bit Type C22 Bit Size 8½" in., Desc by RCN Thornton JD Alder Date 11/11/78



REMARKS

VERY FINELY FLAT LAMINATED SANDSTONE/SILTSTONE

SANDSTONE: light grey to brown, hard to semi-friable, quartz, clear, fine grained, well sorted, subangular to subrounded, clay matrix, trace mica, trace glauconite pellets, trace carbonaceous flecks; clay streaks and very fine laminae.

SANDSTONE is extensively bioturbated.

NO RECOVERY:
2461.5 to 2464.0m

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD

CORE DESCRIPTION

WELL FORTESCUE-2

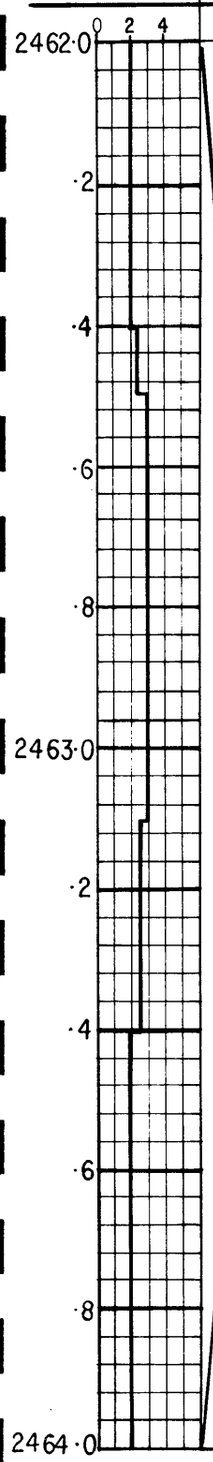
SCALE 1:100

CORE No. 3

Interval Cored 2450.5-2464m **Cut** 13.5m **Recovered** 11.0m (81) **Fm** Latrobe

Bit Type C22 **Bit Size** 8½" **in., Desc by** RCN Thornton JD Alder **Date** 11/11/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	[illegible]	[illegible]	[illegible]	[illegible]	REMARKS



Dwg 1107/CP/87

ESSO AUSTRALIA LTD.

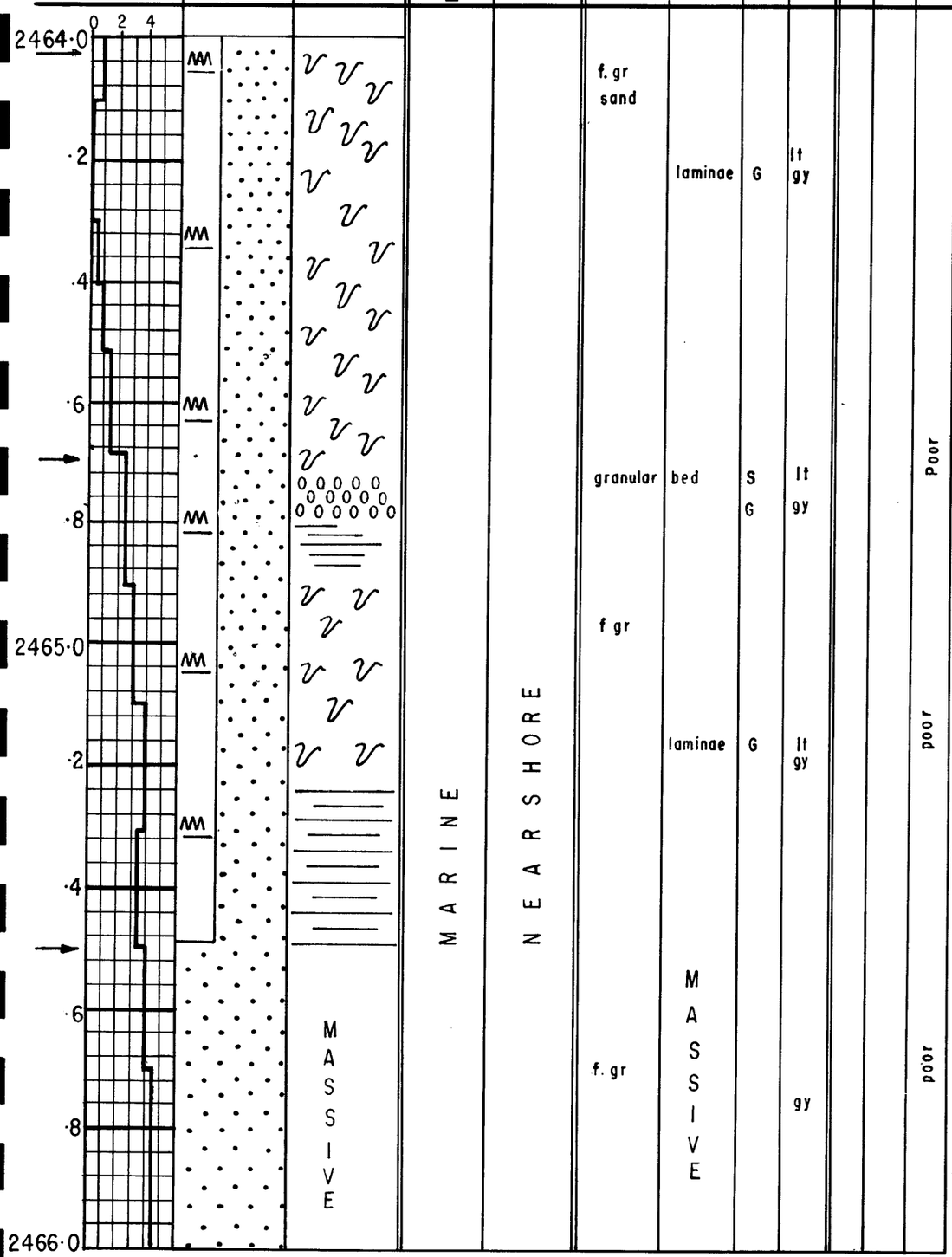
CORE DESCRIPTION

WELL FORTESCUE-2 · SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 %) Fm. Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JDAlder RCNThornton Date 13/11/78



REMARKS

Finely interlaminated SANDSTONE & CLAYSTONE. Sandstone laminae continuous 2-3mm thick. Claystone discontinuous up to 1mm thick. Sandstone: light grey, hard, quartz clear fine grained, well sorted, Subangular to subrounded, clay rich tight, trace glauconite, trace mica, trace carbonaceous material. Claystone: dark brown, micaceous, carbonaceous.

Sandstone: light grey, friable, quartz, fine to granule, well sorted, subangular to subrounded clay rich, trace mica.

SANDSTONE: grey, semi-friable, quartz, clear, fine grained, well sorted, angular to subrounded, clay rich, carbonaceous streaks, common distributed along bedding; pyrite common often associated with carbonaceous material, trace mica, no fluorescence.

SAMPLES COLLECTED FOR PALYNOLOGIC ANALYSIS:

2464.05; 2464.7; 2465.5; 2466.5; 2467.4; 2468.2; 2469.1; 2469.9; 2470.4; 2471.5; 2472.3; 2473.0; 2474.0; 2475.5; 2476.4; 2478.0.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 %) Fm. Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JDAlder RCNThornton Date 13/11/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
0 2 4												
2466·0					f gr	MASSIVE		gy			poor	SANDSTONE: grey, semi-friable quartz, clear, fine grained, well sorted, angular to sub-rounded, clay rich, poor porosity, carbonaceous streaks common, trace mica. No fluorescence.
·2		MASSIVE										
·4												
→												
·6					f gr			gy			poor	
·8												
2467·0												
·2			MARINE	NEARSHORE								
→·4					f gr			gy			poor	
·6												
·8							G					
2468·0	WW				f gr	laminae		gy				

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

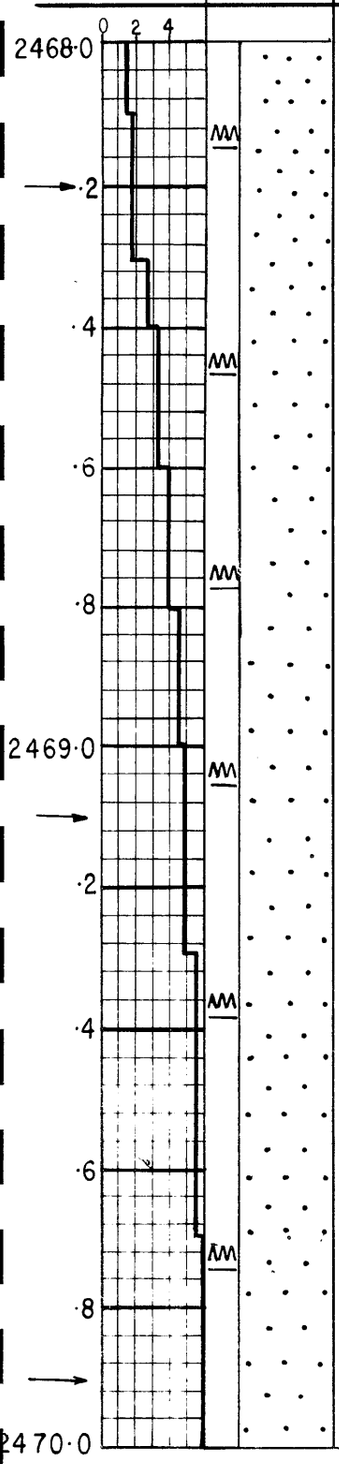
WELL FORTESCUE-2

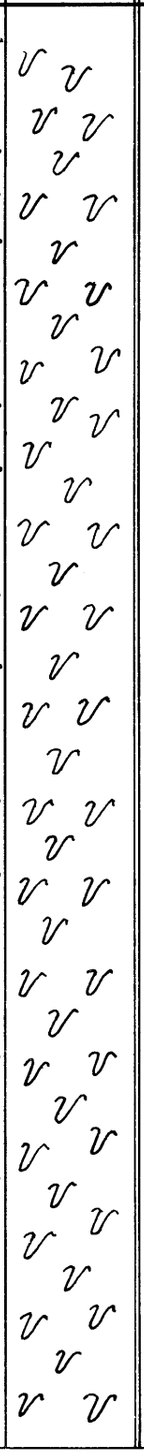
SCALE 1:100

CORE No 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 Fm Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JDAlder RCNThornton Date 13/11/78





ENVIRONMENT: MARINE

FACIES: NEAR SHORE

TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY
f gr sand	laminae	G	gy			poor
f gr sand	laminae	G	gy			poor
f gr sand	laminae	G	gy			poor

REMARKS

SANDSTONE: grey, semi-friable, quartz, clear, fine grained, well sorted, subangular to rounded, clay rich, poor porosity, carbonaceous flecks and streaks, trace pyrite, trace mica, no fluorescence.

Dwg 1107/CP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2

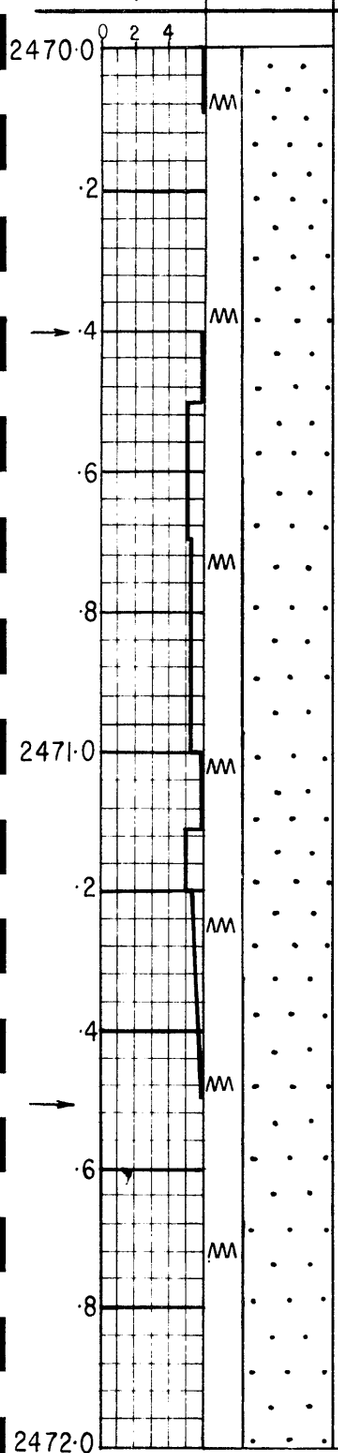
SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 Fm Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JD Alder
RCN Thornton

Date 13/11/78



COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
		MARINE	NEARSHORE	f gr	laminae	G	gy				SANDSTONE: grey, semifriable, quartz, clear, predominantly fine grained, well sorted, but minor medium grained along bedding planes, sub-angular to rounded,
				f gr	laminae	G	gy				clayey in part, slightl better porosity than above, clearer than above, less accessory minerals, trace carb-onaceous flecks, trace pyrite, trace mica,
				f gr							rare trace pale green mineral (? glauconite).
				f gr	laminae	G	gy				
				f gr	laminae	G	gy				

Dwg. 1107/CP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

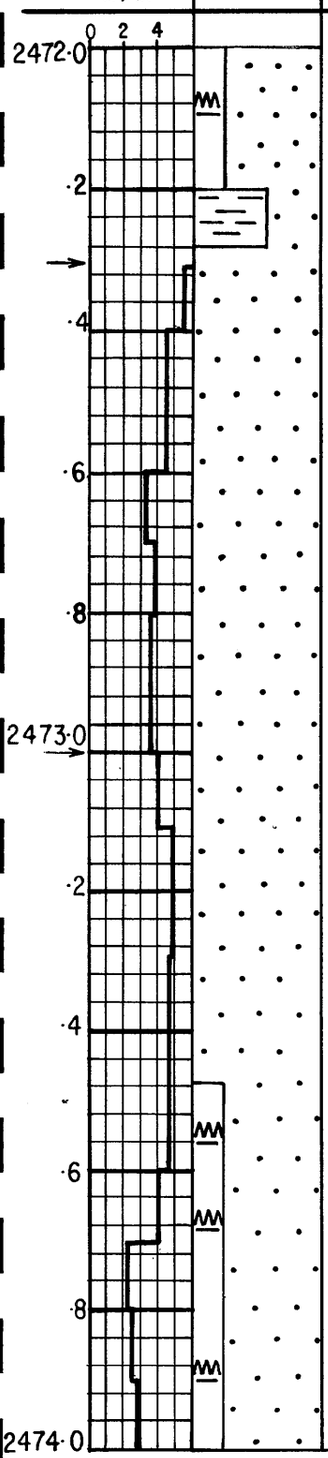
WELL FORTESCUE- 2

SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 %) Fm. Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JA Alder RCN Thornton Date 13/11/78



DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
					f gr	laminae	G	gy				SHALE: dark grey, firm, semifissile; carbonaceous, micaceous; pyrite commonly enclosing quartz grains, fine to medium grained; shale bands 1-10mm thick, continuous interbedded with discontinuous bands of siltstone and sandstone. Light grey quartz, clear, fine grained, white clay choked.
					shale	bed	S	dk gy				
							G					
					f med gy	MASSIVE		gy			mod	
			MARINE	NEARSHORE								
						laminae	G	gy			mod	SANDSTONE: grey, semi-friable, quartz, clear, predominantly well sorted, fine grained, but trace medium to granular, subangular to subrounded, minor clay matrix, moderate porosity, fairly clean minor carbonaceous material, trace mica, trace pyrite.
					f-med gr							
						laminae	G	gy				

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 2

SCALE 1:100

CORE No. 4

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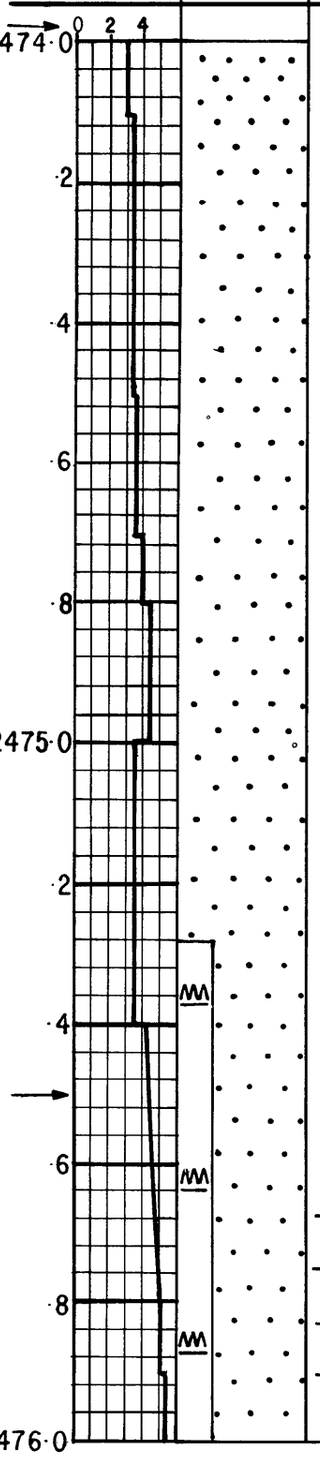
Bit Type C20 Bit Size 8½" in., Desc by JD Alder RCN Thornton Date 13/11/78



DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
2474·0			MARINE	NEARSHORE	f-m gr	MASSIVE		gy			mod	SANDSTONE: grey, semi-friable, quartz, clear, moderately sorted, fine to medium grained, sub-angular to rounded, minor clay matrix, moderate porosity, fairly clean minor carbonaceous material, trace mica, trace pyrite.
2475·0					f-m gr			gy			mod	SANDSTONE: grey, semi-friable, quartz, clear, well sorted, subangular to rounded, minor clay matrix, moderate porosity, fairly clean, carbonaceous material and pyrite, trace mica, rare trace pale green grains ?glauconite.
					f gr	laminae	G	gy			mod	
						laminae	G	gy			mod	

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-2 SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 %) Fm. Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JD Alder RCN Thornton Date 13/11/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
0 2 4												
2476·0												SANDSTONE: grey, semi-friable, quartz, clear, fine grained, well sorted, subangular to rounded, minor clay matrix, moderate porosity, fairly clean, trace mica, rare trace pale green grains (?glauconite).
·2		MASSIVE	MARINE	NEARSHORE	f gr	MASSIVE		gy			mod.	
→·4												
·6												
·8												
2477·0												
·2					v fgr			gy			poor	SANDSTONE: grey, quartz, clear, very fine grained, well sorted, subangular to subrounded clay matrix, poor porosity, abundant carbonaceous streaks.
·4												
·6												
·8												
2478·0												

Dwg. 1107/OP/87

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CORE DESCRIPTION

SHEET 8 of 8

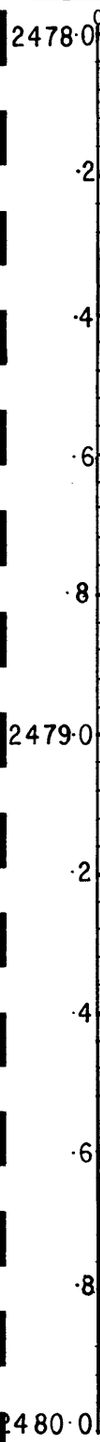
WELL FORTESCUE-2

SCALE 1:100

CORE No. 4

Interval Cored 2464-2480m Cut 16m Recovered 14m (88 %) Fm. Latrobe

Bit Type C20 Bit Size 8½" in., Desc by JD Alder / RCN Thornton Date 13/11/78



DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
												NO RECOVERY: 2478-2480m.

Dwg. 1107/OP/87

APPENDIX 4

APPENDIX 4

PALYNOLOGICAL REPORT

A PALYNOLOGICAL ANALYSIS OF

FORTESCUE-2, GIPPSLAND BASIN

by

H. E. STACY

Esso Australia Ltd.
Palaeontology Report 1979/4

March 5, 1979

INTRODUCTION

Twenty-one side wall cores and twelve core samples were processed and examined for palynology. Yield ranged from good to very poor, but only one sample was so poor as to be completely indeterminate.

Zones and lithological/facies subdivisions of the basal Lakes Entrance Formation and Latrobe Group is summarized below. All samples examined are summarized in Table-1 and individual species occurrence is noted on the accompanying distribution sheets.

SUMMARY

UNIT/FACIES	ZONE	DEPTH (in metres)
LAKES ENTRANCE FORMATION Marl	P. tuberculatus	2421m-2441m
	UNCONFORMITY	
GURNARD FORMATION Glauconite Sandstone	Lower N. asperus	2442.8m
	UNCONFORMITY	
LATROBE GROUP Coarse Clastics	Lower M. diversus	2444.9m-2520.5m
	Upper L. balmei	2553.5m-2636m
		2652m T.D.

GEOLOGICAL COMMENTS

1. A thin layer of Gurnard greensand of less than 4 meters thick is present between the Oligocene Lakes Entrance Formation and the Early Eocene Latrobe coarse clastics. This is demonstrated both by the greensand lithology with glauconite pellets and the presence of Areosphaeridium dictyoplokus, a Middle Eocene (Lower N. asperus) dinoflagellate marker in the palynology residue.

..../2

2. Based on the occurrence of Deflandrea dartmooria at the top of Latrobe coarse clastics in this well, it is believed that only Lower M. diversus and Upper L. balmei Zones are represented below the Gurnard Formation and that the Upper and/or Middle M. diversus beds noted in Fortescue-1, West Halibut-1 and other wells in the area are missing.

3. Both Fortescue-1 and West Halibut-1 contain approximately 100 metres (96 and 99.5 respectively) of Lower M. diversus sediments before the overlying Middle M. diversus beds are encountered. In Fortescue-2 approximately 70 metres of Lower M. diversus section is present, the top of which is cut by an unconformity, and no Middle or Upper M. diversus sediments are present.

4. The sidewall core from 2546m sampled a massive sandstone that was almost barren of palynomorphs. Recovery of microfossils was so poor that it is not possible to assign this sample to either the Lower M. diversus or Upper L. balmei Zones. From electric log correlation with other wells in the area, it appears that this massive sand is the basal unit of the Lower M. diversus Zone.

5. The Wetzeliella hyperacantha Zone once again is found to include the lowermost part of the Lower M. diversus and uppermost Upper L. balmei Zones and extends from 2520.5m to 2566.5m.

DISCUSSION OF ZONES

Upper Lygistepollenites balmei Zone: 2553.5m to 2636m (T.D.)
The occurrence of Lygistepollenites balmei, Australopollis obscurus, Gamberina rudata and G. edwardsii all demonstrate that the enclosing sediments are stratigraphically lower than the Malvacipollis diversus Zone. The scattered occurrence of Cyathidites gigantis, Wetzeliella homomorpha and Proteacidites incurvatus in the section from 2553.5m to 2603.5m establish that these sediments are no older than the Upper L. balmei Zone. The bottom two samples, 2608.5m and 2636m, do not contain any Upper L. balmei Zone markers, but because of the small size of the flora, this lack very well may be due to sample recovery, rather than stratigraphic position.

..../3

As noted in the Geological Comments, the sample from 2546 metres was barren of zone specific fossils, and thus it is not possible to assign a zone age to this point in the well.

Lower Malvacipollis diversus Zone: 2444.9m to 2520.5m.

Lower M. diversus assignment is made to the samples from 2444.9m to 2520.5m, in part, on the basis of negative evidence. That is the lack of any representatives of L. balmei, the marker for the underlying zone and the lack of specimens of Proteacidites tuberculiformis, P. plemmelus, P. xestoformis or Diporites delicatus, any of which are indicative of Middle M. diversus sediments. In addition to this negative evidence, the occurrence of Deflandrea dartmooria, scattered throughout this section, is suggestive that these beds are no younger than Lower M. diversus.

Lower Nothofagidites asperus Zone: 2442.8 metres.

This single sample of Gurnard greensand was almost barren of palynomorphs but did contain several specimens of Areosphaeridium dictyoplokus, which is the dinoflagellate marker for the Lower N. asperus zone.

Proteacidites tuberculatus Zone: 2421m to 2441m.

Good P. tuberculatus flora, including both Cyatheacidites annulatus and Dinospherea simplex was found in this section of the well.

REFERENCES

Stacy, H.E. and Partridge, A.D., 1978, Paleontological Analysis of Fortescue-1, Gippsland Basin, ESOA Paleo. Rept. 1978/19.

Stacy, H.E. and Partridge, A.D., 1979, Paleontological Analysis of West Halibut-1, Gippsland Basin, ESOA Paleo. Rept. 1979/3.

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: +30m GL: -70m

WELL NAME: FORTESCUE-2 TOTAL DEPTH: 2652m

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
PALEOGENE	*P. tuberculatus*	2421	0				2441	1			
	Upper *N. asperus*										
	Mid *N. asperus*										
	Lower *N. asperus*	2442.8	1				2442.8	1			
	P. asperopolus										
	Upper *M. diversus*										
	Mid *M. diversus*										
	Lower *M. diversus*	2444.9	1				2520.5	1			
	Upper *L. balmei*	2553.5	0				2636	2	2603.5	1	
	Lower *L. balmei*										
LATE CRETACEOUS	*T. longus*										
	T. lilliei										
	N. senectus										
	U. *T. pachyexinus*										
	L. *T. pachyexinus*										
	C. triplex										
	A. distocarinatus										
EARLY CRET.	*C. paradoxus*										
	C. striatus										
	F. asymmetricus										
	F. wonthaggiensis										
	C. australiensis										
PRE-CRETACEOUS											

COMMENTS: Wetzeliella hyperacantha Zone: 2520.5m to 2566m.
All depths in metres.

CONFIDENCE RATING:
- 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 an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone, then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

DATA RECORDED BY: H.E.Stacy DATE: March 5, 1979

DATA REVISED BY: _____ DATE: _____

TABLE - 1

SUMMARY OF PALEONOLOGICAL ANALYSES, FORTESCUE-2, GIPPSLAND

SAMPLE	DEPTH(m)	DEPTH(ft)	ZONE	AGE	CONFIDENCE RATING	YIELD	DIVERSITY	COMMENTS
CORE 1	2421	7943	*P. tuberculatus*	Oligocene	0	Good	High	Both marine and non-marine, *C.annulatus*
CORE 1	2423.8	7952	*P. tuberculatus*	Oligocene	1	Poor	Low	Both marine and non-marine, *C.annulatus*
CORE 1	2428.7	7968	*P. tuberculatus*	Oligocene	1	Poor	Low	Both marine and non-marine, *C.annulatus*
CORE 1	2434	7986	*P. tuberculatus*	Oligocene	1	Poor	Low	Both marine and non-marine, *C.annulatus*
CORE 2	2441	8009	*P. tuberculatus*	Oligocene	1	Fair	Moderate	Both marine and non-marine, *C.annulatus*
CORE 2	2442.8	8014	Lower *N. asperus*	Middle Eocene	1	Very poor	Very low	*Areosphaeridium dictyoplokus* present
CORE 2	2444.9	8021	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	*Deflandrea dartmooria* present
CORE 3	2455	8054	Lower *M. diversus*	Early Eocene	2	Poor	Low	
CORE 3	2459.4	8069	Lower *M. diversus*	Early Eocene	1	Good	High	
CORE 3	2460.3	8072	Lower *M. diversus*	Early Eocene	1	Good	High	
CORE 4	2470	8104	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	
CORE 4	2472.3	8111	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	
SWC 23	2492.5	8177	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	
SWC 22	2500	8202	Lower *M. diversus*	Early Eocene	2	Poor	Low	
SWC 21	2504	8215	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	
SWC 19	2513.5	8246	Lower *M. diversus*	Early Eocene	1	Poor	Low	
SWC 18	2516.5	8256	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	
SWC 17	2520.5	8269	Lower *M. diversus*	Early Eocene	1	Fair	Moderate	*W. hyperacantha* present
SWC 16	2546	8353	Indeterminate		1	Very poor	Very low	Dinoflagellate fragments, *W. hyperacantha*
SWC 15	2553.5	8378	Upper *L. balmei*	Paleocene	0	Fair	Moderate	Both marine and non-marine
SWC 14	2556.5	8387	Upper *L. balmei*	Paleocene	2	Fair	Very low	
SWC 13	2566.5	8420	Upper *L. balmei*	Paleocene	1	Fair	Moderate	*W. hyperacantha* present
SWC 12	2571	8435	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 11	2575.5	8450	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 10	2579.5	8463	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 9	2585.5	8483	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 8	2590	8497	Upper *L. balmei*	Paleocene	1	Good	High	
SWC 7	2592.5	8506	Upper *L. balmei*	Paleocene	1	Good	High	
SWC 6	2596	8517	Upper *L. balmei*	Paleocene	1	Good	High	
SWC 5	2599.5	8529	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 4	2603.5	8542	Upper *L. balmei*	Paleocene	1	Fair	Moderate	
SWC 3	2608.5	8558	Upper *L. balmei*	Paleocene	2	Poor	Low	
SWC 1	2636	8648	Upper *L. balmei*	Paleocene	2	Poor	Low	

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 1 of 8

SAMPLE TYPE *	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2421	2423.8	2428.7	2434	2441	2442.8	2444.9	2455	2459.4	2460.3	2470	2472.3	2492.5	2500	2504	2513.5	2516.5	2520.5	2546	2553.5	2556.5	2566.5	2571	2575.5	2579.5	2585.5	2590	2592.5
A. qualumis																												
A. acutullus																												
A. luteoides																												
A. oculatus																												
A. sectus																												
A. triplaxis																												
A. obscurus																											/	/
B. disconformis										/							/											
B. arcuatus																												
B. elongatus																						/	/	/				
B. mutabilis																												
B. otwayensis																												
B. elegansiformis																												
B. trigonalis																												
B. verrucosus																												
B. bombaxoides																												
B. emaciatus							/																					
C. builatus																												
C. heskermensis																												
C. horrendus																												
C. meleosus																												
C. apiculatus																												
C. leptos																												
C. striatus																												
C. vanraadshoovenii																												
C. orthoteichus/major												/				/												
C. annulatus	/		/	/	/																							
C. gigantis										cf.		/									/	/	/				/	/
C. splendens							/	/	/	/		/					/				/		/	/		/	/	
D. australiensis							/			/																		
D. granulatus							/	/	/	/	/							/						/		/		/
D. tuberculatus												/												/				
D. delicatus																												
D. semilunatus																												
E. notensis																												
E. crassiexinus																												
F. balteus																												
F. crater																												
F. lucunosus																												
F. palaequetrus																												
G. edwardsii																					/						/	
G. rudata																					/						/	
G. divaricatus																												
G. gestus																												
G. catathus																												
G. cranwellae																												
G. wahooensis																												
G. bassensis																												
G. nebulosus																												
H. harrisii					/		/	/	/	/	/	/	/	/	/	/	/	/		/	/		/		/			/
H. astrus																												
H. elliottii					/																							
I. anguloclavatus																												
I. antipodus																												
I. notabilis							/					/																
I. gremius																												
I. irregularis																												
J. peiratus																												
K. waterbolkii																												
L. amplus																												
L. crassus																												
L. ohaiensis																												
L. bainii																												
L. lanceolatus																												
L. balmei																				/		/	/	/	/	/	/	/
L. florinii							/	/	/	/	/		/	/	/						/	/	/	/		/		
M. diversus								/		/	/	/	/	/	/							/		/				
M. duratus																												
M. grandis																												
M. perimagnus																												

*C = core; S = sidewall core; T = cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 2 of 8

SAMPLE TYPE *	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2596	2599.5	2603.5	2608.5	2636
A. qualumis					
A. acutullus					
A. luteoides					
A. oculatus					
A. sectus					
A. triplaxis					
A. obscurus	/	/	/		/
B. disconformis					
B. arcuatus					
B. elongatus				/	
B. mutabilis					
B. otwayensis					
B. elegansiformis					
B. trigonalis					
B. verrucosus					
B. bombaxoides					
B. emaciatus					
C. bullatus					
C. heskermensis					
C. horrendus					
C. meleosus					
C. apiculatus					
C. leptos					
C. striatus					
C. vanraadshoovenii					
C. orthoteichus/major					
C. annulatus					
C. gigantis		/			
C. splendens	/	/			
D. australiensis					
D. granulatus					
D. tuberculatus					
D. delicatus					
D. semilunatus					
E. notensis				/	
E. crassiexinus					
F. balteus					
F. crater					
F. lucunosus					
F. palaequetrus					
G. edwardsii	/		/	/	
G. rudata	/	/	/	/	/
G. divaricatus					
G. gestus					
G. catathus					
G. cranwellae	/				
G. wahooensis					
G. bassensis					
G. nebulosus					
H. harrisii	/		/		/
H. astrus					
H. elliottii					
I. anguloclavatus					
I. antipodus					
I. notabilis					
I. gremius					
I. irregularis					
J. peiratus					
K. waterbolkii					
L. amplus					
L. crassus					
L. ohaiensis					
L. bainii					
L. lanceolatus					
L. balmei	/	/	/	/	/
L. florinii					
M. diversus					
M. duratus					
M. grandis					
M. perimagnus					

*C= core; S= sidewall core; T= cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 3 of 8

SAMPLE TYPE *	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2421	2423.8	2428.7	2434	2441	2442.8	2444.9	2455	2459.4	2460.3	2470	2472.3	2492.5	2500	2504	2513.5	2516.5	2520.5	2546	2553.5	2556.5	2566.5	2571	2575.5	2579.5	2585.5	2590	2592.5
M. subtilis							/					/			/		/			/	/		/		/			/
M. ornamentalis																												
M. hypolaenoides																												
M. homeopunctatus																												
M. parvus/mesonesus												/						/										
M. tenuis																												
M. verrucosus																												
M. australis																		/										
N. asperus																												
N. asperoides																												
N. brachyspinulosus											/													/			/	/
N. deminutus																												
N. emarcidus/heterus	/				/																							
N. endurus																												
N. falcatus				/																								
N. flemingii							/		/	/	/							/			/		/			/		/
N. goniatus																												
N. senectus																												
N. vansteenisii																												
O. sentosa																												
P. ochesis																												
P. catastus																												
P. demarcatus																												/
P. magnus																												
P. polyoratus															/						/			/	/		/	
P. vesicus																												
P. densus																				/								
P. velosus																												
P. morganii/jubatus																												
P. mawsonii					/				/	/		/		/						/				/			/	/
P. reticulosaccatus																												
P. verrucosus																												
P. crescentis																												
P. esobalteus																												
P. langstonii																				/					/			/
P. reticulatus																												
P. simplex																												
P. varus																												
P. adenanthoides (Prot.)									/	/	/	/	/		/	/		/			/				/		/	/
P. alveolatus																												
P. amolosexinus																											/	/
P. angulatus																												
P. annularis								/		/	/	/			/	/	/	/					/				/	
P. asperopolus																												
P. biornatus										/			/		/													
P. clarus																												
P. cleinei																												
P. confragosus																												
P. crassis																												
P. delicatus																												
P. formosus																					?							
P. grandis							/	/	/	/	/	/	A	/	/	/	/	/										
P. grevillaensis																												
P. incurvatus												/	/		/	/	/						/		/		?
P. intricatus																												
P. kopiensis																												
P. lapis																	/											
P. latrobensis																												
P. leightonii																												
P. obesolabrus																	/											
P. obscurus																cf									/		/	
P. ornatus																	/											
P. otwayensis																												
P. pachypolus																												
P. palisadus																												
P. parvus																												
P. plemmelus																												
P. prodigus																					?			/				?
P. pseudomoides									/				/		/			/										
P. recavus																												

*C= core; S= sidewall core; T = cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 4 of 8

SAMPLE TYPE *	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2596	2599.5	2603.5	2608.5	2636
M. subtilis					
M. ornamentalis					
M. hypolaenoides					
M. homeopunctatus					
M. parvus/mesonesus					
M. tenuis					
M. verrucosus					
M. australis					
N. asperus					
N. asperoides					
N. brachyspinulosus					/
N. deminutus					
N. emarcidus/heterus					/
N. endurus					
N. falcatus					
N. flemingii	/	/			
N. goniatus				/	
N. senectus					
N. vansteenisii					
O. sentosa					
P. ochesis					
P. catastus					
P. demarcatus					
P. magnus					
P. polyoratus	/				
P. vesicus					
P. densus					
P. velosus					
P. morganii/jubatus					
P. mawsonii				/	
P. reticulosaccatus					
P. verrucosus					
P. crescentis					
P. esobalteus					
P. langstonii	/			/	
P. reticulatus		?			
P. simplex					
P. varus					
P. adenanthoides (Prot.)	/		/		
P. alveolatus					
P. amolosexinus					
P. angulatus					
P. annularis					
P. asperopolus					
P. biornatus					
P. clarus					
P. cleinei					
P. confragosus					
P. crassis					
P. delicatus					
P. formosus					
P. grandis					
P. grevillaensis					
P. incurvatus					
P. intricatus					
P. kopiensis					
P. lapis					
P. latrobensis					
P. leightonii					
P. obesolabrus					
P. obscurus					
P. ornatus					
P. otwayensis					
P. pachypolus					
P. palisadus					
P. parvus					
P. plemmelus					
P. prodigus	/				
P. pseudomoides					
P. recavus					

*C=core; S=sidewall core; T=cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 5 of 8

SAMPLE TYPE *	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2421	2423.8	2428.7	2434	2441	2442.8	2444.9	2455	2459.4	2460.3	2470	2472.3	2492.5	2500	2504	2513.5	2516.5	2520.5	2546	2553.5	2556.5	2566.5	2571	2575.5	2579.5	2585.5	2590	2592.5
P. rectomarginis																												
P. reflexus																												
P. reticulatus																												
P. reticuloconcavus																												
P. reticuloscabratus																												
P. rugulatus																												
P. scitus																												
P. stipplatus																												
P. tenuiexinus										/			/	/									/		/		/	
P. truncatus																												
P. tuberculatus																												
P. tuberculiformis																												
P. tuberculotumulatus																												
P. xestoformis (Prot.)																												
Q. brossus																												
R. boxatus																												
R. stellatus																												
R. mallatus							/													/	/							/
R. trophus																												
S. cainozoicus																												
S. rotundus																												
S. digitatoides																												
S. marlinensis																												
S. rarus																												
S. meridianus							/			/	/												/	/			/	/
S. prominatus																												
S. uvatus																												
S. punctatus									/																			
S. regium																												
T. multistrixus (CP4)																				/			/					/
T. textus																											cf	
T. verrucosus																												
T. securus																												
T. confessus (C3)																												
T. gillii																												
T. incisus																												
T. longus																												
T. phillipsii													/	/				/							/		/	
T. renmarkensis																												
T. sabulosus																												
T. simatus																												
T. thomasii																												
T. waiparaensis																												
T. adelaidensis (CP3)																												
T. angurium															/													
T. delicatus																												
T. geraniodes																												
T. leuros																												
T. lilliei																												
T. marginatus																												
T. moultonii										/																		
T. paenestriatus												/																
T. retequetrus																												
T. scabratus																												
T. sphaerica																												
T. magnificus (P3)																												
T. spinosus																												
T. ambiguus																												
T. chnosus																												
T. helosus																												
T. scabratus																												
T. sectilis																												
V. attinatus																												
V. cristatus																												
V. kopukuensis		/		/	/		/													/	/							

*C= core; S= sidewall core; T= cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 6 of 8

SAMPLE TYPE *	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2596	2599.5	2603.5	2608.5	2636
P. rectomarginis					
P. reflexus					
P. reticulatus					
P. reticuloconcavus	/				
P. reticuloscabratus					
P. rugulatus					
P. scitus					
P. stipplatus					
P. tenuiexinus		/	/		
P. truncatus					
P. tuberculatus					
P. tuberculiformis					
P. tuberculotumulatus					
P. xestoformis (Prot.)					
Q. brossus					
R. boxatus					
R. stellatus					
R. mallatus					
R. trophus					
S. cainozoicus					
S. rotundus					
S. digitatoides					
S. marlinensis					
S. rarus					
S. meridianus			/	/	
S. prominatus	/				
S. uvatus					
S. punctatus					
S. regium					
T. multistrixus (CP4)			/		
T. textus					
T. verrucosus					
T. securus					
T. confessus (C3)					
T. gillii	/				
T. incisus					
T. longus					
T. phillipsii					
T. renmarkensis					
T. sabulosus					
T. simatus					
T. thomasii					
T. waiparaensis					
T. adelaidensis (CP3)					
T. angurium					
T. delicatus					
T. geraniodes					
T. leuros					
T. lilliei					
T. marginatus					
T. moultonii					
T. paenestriatus					
T. retequetrus					
T. scabratus					
T. sphaerica					
T. magnificus (P3)					
T. spinosus					
T. ambiguus					
T. chnosus					
T. helosus					
T. scabratus					
T. sectilis					
V. attinatus					
V. cristatus					
V. kopukuensis					

*C= core; S= sidewall core; T= cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 7 of 8

SAMPLE TYPE *	C	C	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2421	2423.8	2428.7	2434	2441	2442.8	2444.9	2455	2459.4	2460.3	2470	2472.3	2492.5	2500	2504	2513.5	2516.5	2520.5	2546	2553.5	2556.5	2566.5	2571	2575.5	2579.5	2585.5	2590	2592.5
Cyclonephelium sp.	/				/																							
Dinosphaere pritue		/																										
D. scabroellipticus	/																											
D. simplex					/															/								
D. simplex A	/																											
Emslandia australiensis			/																									
H'kolpoma cf. rigaudae	/	/																										
L. machaerophorum	/				/																							
Leptod. leos type	/																											
Nematosphaerpsis sp.			/																									
O. centrocarpum	/				/				/	/																		
O. solarium	/																											
Polysph. varispinosum	/																											
Pentad. laticitum	/																											
Tectatod. pelliferum					/																							
Tectatodinium sp.	/																											
Weltz homomorpha										/	/	/						/	/	/		/		/	/	/	/	/
Delf. dartmoria							/			/	/				/					/					/			
Cordo. inodes							/																					
Spinidium sp.							/			/	/										/				/		/	
Dyphes colligerum							/	/	/	/	/	/																
Spiniferites ramosa								/	/	/	/	/																
Adnat. retiintextum (s.l.)												/								/								
Thallasiphora pelagica										/		/																
Kenleyia spp.																				/								
Wetziella hypercantha																		/	/			/						
Deflandria sp.										/												/						
Para. indentata									/	/	/																	
Adanat. cf. morayensis										/																		
Tubosph. filosa										/																		
System. placantha										/																		
Achom. ramulifera											/																	
Areosph. dictyoplokus						/																						
Hystr. capricornum						/																						

*C = core; S = sidewall core; T = cuttings.

Well Name FORTESCUE-2 Basin GIPPSLAND Sheet No. 8 of 8

SAMPLE TYPE *	S	S	S	S	S
DEPTHS / PALYNOMORPHS	2596	2599.5	2603.5	2608.5	2636
Dilwyn. granilosa	/				
Wetziella sp.			/		
W. homomorpha			/		

*C = core; S = sidewall core; T = cuttings.

APPENDIX 5

APPENDIX 5

LOG ANALYSIS

WELL LOG ANALYSIS REPORT

TO WELL FILE

cc: D.J. Battersby, C.N. Curnow, A.J. Rigg

OPERATOR Esso Australia Ltd. WELL Fortescue #2 DATE 30th November 1978

STATE Victoria ELEV. 31.0m

DEPTH INTERVAL (m) ISF Depths	POROSITY ESTIMATE %	WATER SAT. ESTIMATE %	REMARKS
2444.0 - 45.5 (1.5)	13 - 15	46 - 52	V. Shaley, non net.
2445.5 - 46.0 (0.5)	14 - 17	34 - 42	Shaley, oil productive
2446.0 - 47.5 (1.5)	21 - 24	28 - 32	Oil productive
2447.5 - 48.5 (1.0)	23 - 25	31 - 35	Shaley, oil productive
2448.5 - 50.0 (1.5)	19 - 21	39 - 43	V. Shaley, non net.
2450.0 - 50.5 (0.5)	22 - 23	40	ditto
2450.5 - 52.0 (1.5)	21 - 23	40 - 49	Shaley, probably oil productive
2452.0 - 53.5 (1.5)	14 - 16	53 - 54	Shaley, residual oil zone, water productive.
2453.5 - 54.0 (0.5)	10 - 13	Indeterminate	
2458.0 - 59.5 (1.5)	15 - 17	42 - 50	V. Shaley, water sat. underestimated water productive.
2459.5 - 61.0 (1.5)	21 - 22	40 - 49	ditto
2461.0 - 61.5 (0.5)	16 - 18	53 - 63	Shaley, water productive
2461.5 - 62.0 (0.5)	13 - 15	70 - 73	ditto
2462.0 - 65.0 (3.0)	18 - 20	73 - 79	ditto
2465.0 - 65.5 (0.5)	17 - 19	73 - 77	ditto
2465.5 - 66.0 (0.5)	19 - 21	71	Water productive
2466.0 - 66.5 (0.5)	11 - 15	Indeterminate	
2467.5 - 69.0 (1.5)	18 - 20	57 - 59	Shaley, water productive
2469.0 - 69.5 (0.5)	15 - 16	56	V. Shaley, water productive
2472.0 - 74.0 (2.0)	23 - 25	52 - 60	Shaley, water productive
2474.0 - 75.0 (1.0)	19 - 22	55 - 57	Shaley, water productive
2475.0 - 75.5 (0.5)	18 - 20	60 - 65	ditto
2475.5 - 77.0 (2.5)	23 - 26	67 - 70	ditto
2477.0 - 79.5 (2.5)	19 - 21	64 - 70	ditto
2479.5 - 83.0 (3.5)	23 - 26	67 - 94	Water productive
2483.0 - 85.0 (2.0)	20 - 22	87 - 94	ditto
2485.0 - 85.5 (0.5)	21 - 23	85 - 88	ditto
2485.5 - 90.5 (5.0)	25 - 28	74 - 81	ditto
2490.5 - 91.5 (1.0)	20 - 22	71 - 81	Shaley, water productive
2491.5 - 92.0 (0.5)	17 - 18	Indeterminate	
2492.0 - 94.0 (2.0)	19 - 21	23 - 25 *	V. Shaley
2494.0 - 98.0 (4.0)	24 - 29	33 - 69 *	
2498.0 - 2500.0 (2.0)	19 - 22	56 - 67	Water productive
2500.0 - 01.0 (1.0)	17 - 19	50 - 58	Shaley, water productive
2502.5 - 03.0 (0.5)	13 - 15	31 - 33 *	V. Shaley

TESTS:

Latrobe formation was extensively cored, FIT and RFT tested.

FORMATION:

Latrobe formation

LOGS:

ISF-SONIC-MSFL-GR
FDC-CNL-GR

COMMENTS:

Base of the mobile oil or the producing oil/water contact is picked up at 2452m. The density-neutron cross plot and gamma ray curve were used to calculate the percentage clay over the entire interpreted interval. The density and neutron logs were used to calculate porosity, except in the interval 2446.0 - 48.0m where the sonic was used. The density is mud affected and is unreliable over this 2m interval. The value for Rw used in the interpretation is 0.063 @ 200°F which is equivalent to 40,000 ppm Nacl.

BY S. Patnivat

WELL

DEPTH INTERVAL (m) ISF Depths	POROSITY ESTIMATE %	WATER SAT. ESTIMATE %	REMARKS
2503.0 - 03.5 (0.5)	18 - 23	25 - 31 *	V. Shaley
2504.5 - 06.0 (1.5)	11 - 16	43 - 47 *	ditto
2508.0 - 08.5 (0.5)	15 - 17	Indeterminate	
2509.5 - 10.0 (0.5)	20 - 26	Indeterminate	
2510.0 - 10.5 (0.5)	15 - 18	60 - 65	Water productive
2510.5 - 11.5 (1.0)	21 - 22	70 - 71	ditto
2511.5 - 12.0 (0.5)	19 - 20	64 - 66	ditto
2512.0 - 12.5 (0.5)	13 - 14	62	ditto
2515.5 - 16.5 (1.0)	14 - 15	Indeterminate	ditto
2518.0 - 19.0 (1.0)	13 - 14	Indeterminate	V. Shaley
2523.5 - 24.0 (0.5)	17 - 20	69 - 74	Water productive
2524.0 - 25.5 (1.5)	22 - 24	74 -100	ditto
2525.5 - 28.0 (2.5)	23 - 25	100	ditto
2528.0 - 32.0 (4.0)	25 - 27	100	ditto
2532.0 - 40.0 (8.0)	24 - 26	100	ditto
2540.0 - 43.5 (3.5)	22 - 24	100	ditto
2543.5 - 44.0 (0.5)	19 - 22	100	ditto

* Water saturation anomalously low; range of shale content 40-50%.

APPENDIX 6

APPENDIX 6

VELOCITY SURVEY

VELOCITY SURVEY

Well ..FORTESCUE-2.....

Basin ..GIPPSLAND.....

INTRODUCTION

Esso personnel ..K. WOOD.....

Contractor ..VELOCITY DATA PTY. LTD.....

Supplied (1) Instruments

(2) Personnel

Seismic Observer ..B. POTTER.....

Marine Shooter ..R. BURNS.....

Dynamite .....

(3) Seismic Souce

Gas Gun

Gas Pressures .....

Oxygen ..90 PSI.....

Propane ..50 PSI.....

(3) Licenced Shooting Boat

name .....

date loaded .....

date released .....

Agent .....

.....

amount of powder ..... lbs

size of cans ..... lbs

number of cans .....

number of caps .....

number of boosters .....

Personnel and Instruments

assembled at ..SALE..... date ..11/11/1978.....

boarded (rig)..OCEAN DIGGER..... date..12/11/1978.....

date of survey..15/11/1978.....

casing depth..20" @ 236m & $13^3/8$" @ 861m.

T.D. when shot..2652 m..... FTD ..2652 m.....

water depth..70 m.....

K.B. : 31 m

SURVEY PROCEDURE

Weather: sea ..1-2 m.....

rig movement ..SLIGHT.....

rig noise ..MODERATE.....

Hydrophones: number ..THREE.....

depth below sea level ..12.2..... metres

position ..2-1 m above bottom of gas gun

..1 - in moon pool.....

Shot Positioning and Charges:

marker buoys (number .....

(distance .....

(direction .....

charge depth ..... metres

number of shots ..... charge size..... lbs.

number of shots .....charge size ..... lbs.

number of misfires .....

Gas gun amount of powder used .....lbs

amount of powder dumped .....lbs.

Well-phone positioning :

T-bar .....

number of depths .....16.....

Time: first shot .....1045.....

last shot .....1445.....

rig time .....6 hours.....

No. of pops per level : 2 to 3 pops

RESULTS

Quality of records (good .....19.....
(fair .....14.....
(poor .....6.....
(not used .....

Comparison of Interval Times
with sonic log
/Δ/average .....microsec/metre
/Δmax/ .....microsec/metre

CONCLUSION

Reliability of T-D curve .....

COMMENTS:

First shoot fired at 1045.
On second level at 1115 time break phones were not working.
Had to pull the gun to the surface and found that the geophone cable was cut. Repaired and continued shooting at 1145.
Had a lot of trouble holding the tool on the correct level due to the arm not being able to hold in the mud walls. Only allowed 0.5 - 1 m of slack in the cable instead of the usual 3 m. With this limited amount of slack the records were still fair to good.
Finished shooting at 1445 m.
Two time break phones were independant of each other. ie. different amplifier for each phone.

VELOCITY SURVEY ERROR CHECK

[redacted]epth Rel. S.L.	Av. Vertical Travel Time (check shots)	Ti Check Shots (sec.)	Ti Sonic Log (sec.)	Δ (Millisecs.) Ti Sonic — Ti Check	Depth Interval (m)	Error (Microsec. per m)
[redacted]854	.361	.025	.023	-2	67	29.9
921	.386					
[redacted]921	.386	.051	.0505	-½	158	3.2
1097	.437					
1097	.437	.047	.046	-1	152	6.6
[redacted]1231	.484					
1231	.484	.042	.040	-2	138	14.5
[redacted]1369	.526					
1369	.526	.035	.037	+2	138	14.5
1507	.561					
1507	.561	.041	.039	-2	141	14.2
[redacted]1648	.602					
1648	.602	.040	.0395	-½	121	4.1
[redacted]1769	.642					
1769	.642	.052	.049	-3	150	20.0
1919	.694					
1919	.694	.050	.048	-2	150	13.3
[redacted]2069	.744					
2069	.744	.049	.050	1	150	6.7
[redacted]2219	.793					
2219	.793	.056	.054	-2	165	12.1
2384	.849					
2384	.849	.009	.0075	-1½	26	57.1
[redacted]2410	.858					
2410	.858	.005	.0035	-1½	13	115.4
[redacted]2423	.863					
2423	.863	.018	.0195	1½	70	21.4
2493	.881					
[redacted]2493	.881	.036	.034	-2	125	16.0
[redacted]2618	.971					

Shothole information:- Elevation, Distance & Direction from Well

Company: ESSO EXPLORATION AUSTRALIA INC.

Well: FORTESCUE-2

Elevation (Derrick Floor): 31 m

Total Depth: 2652

LOCATION

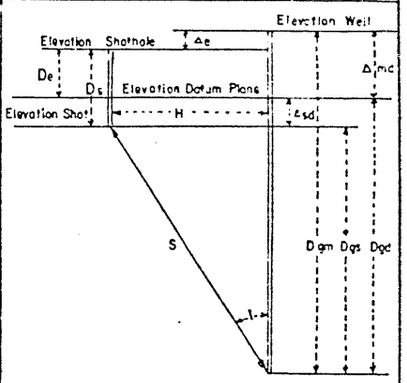
Coordinates: Lat: 38°25'56.640" Long: 148°15'59.364" DATUM : MEAN SEA LEVEL

Section, Township, Range:

County:

Area or Field: GIPPSLAND BASIN

Record Number	Shothole Number	Time of Shot	Dgm	Ds	tus	tr	T Reading	T	T Grade	Dgs	H	TAN i	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	ΔDgd	ΔTgd	Vi Interval Velocity	Va Average Velocity
2			885	12.2	.008	.025	354	353	G	841.8	38	.0451	.9990	.353	12.2	.008	362	.361	854				2368
1			885				352		G								360			67	.025	2677	
39			952				378		G								386						
38			952				377	378	G	908.8	38	.0418	.9991	.378	12.2	.008	385	.386	921				2388
37			952				378		VG								386			158	.051	3095	
36			1110				430	429	VG								438						
35			1110				429		G	1066.8	38	.0356	.9994	.429	12.2	.008	437	.437	1079				2471
34			1262				477	476	VG								485						
33			1262				476		F-G	1218.8	38	.0312	.9995	.476	12.2	.008	484	.484	1231	152	.047	3231	2545
4			1400				518	518	F								526						
3			1400				519		G	1356.8	38	.0280	.9996	.518	12.2	.008	527	.526	1369	138	.042	3284	2604
32			1538				554		F								562						
31			1538				553	553	G	1494.8	38	.0254	.9997	.553	12.2	.008	561	.561	1507	138	.035	3940	2687
30			1697				594		G								602						
29			1697				594	594	G	1635.8	38	.0232	.9997	.594	12.2	.008	602	.602	1648	141	.041	3437	2738
28			1697				594		P-F								602						
27			1800				633		P-F								641			121	.040	3024	
26			1800				635	634	P-F	1756.8	38	.0216	.9998	.634	12.2	.008	643	.642	1769				2756
25			1800				634		P-F								642						
24			1950				686	686	F								694			150	.052	2884	
23			1950				686		G	1906.8	38	.0199	.9998	.686	12.2	.008	694	.694	1919				2766
6			2100				735	736	F								743						
5			2100				737		F	2056.8	38	.0185	.9998	.736	12.2	.008	745	.744	2069	150	.050	2999	2781
22			2250				785	785	F-G								793						
21			2250				786		F	2206.8	38	.0172	.9999	.785	12.2	.008	794	.793	2219	150	.049	3061	2799
20			2415				841		G								849						
19			2415				841	841	G	2371.8	38	.0160	.9999	.841	12.2	.008	849	.849	2384	165	.056	2946	2808
18			2415				842		F-G								850						
17			2441				850		G								858			26	.009	2889	2809
16			2441				850	850	G	2397.8	38	.0158	.9999	.850	12.2	.008	858	.858	2410				
15			2441				850		F-G								858						
14			2454				855		G								863			13	.005	2600	2808
13			2454				854	854	F-G	2410.8	38	.0158	.9999	.855	12.2	.008	862	.863	2423				
12			2454				855		F-G								863						
11			2524				873	873	G								881			70	.018	3888	
10			2524				873		F-G	2480.8	38	.0153	.9999	.873	12.2	.008	881	.881	2493				2830



Dgm = Geophone depth measured from well elevation

Dgs = " " " " shot. "

Dgd = " " " " datum "

Ds = Depth of shot

De = Shothole elevation to datum plane

H = Horizontal distance from well to shotpoint

S = Straight line travel path from shot to well geophone

tus = Uphole time at shotpoint

T = Observed time from shotpoint to well geophone.

tr = " " to reference geophone.

Δe = Difference in elevation between well & shotpoint.

Δsd = " " " " shot & datum plane

Δsd = Ds - De

Dgs = Dgm - Ds ± Δe ; $\tan i = \frac{H}{Dgs}$

Tgs = cos i Tv = Vert. travel time from shot elev to geophone

Tgd = $Tgs \pm \frac{\Delta sd}{V}$ = " " " datum plane. "

Dgd = Dgm - Δmd

Vi = Interval velocity = $\frac{\Delta Dgd}{\Delta Tgd}$

Va = Average = $\frac{Dgs}{Tgs}$

Surveyed by: K.Wood

Date: 15/11/1978

Weathering Data:

Casing Record 20"@236m & 13 3/8"@861m.

DWG 1107/OP/3

Shothole information:- Elevation, Distance & Direction from Well

Company: ESSO EXPLORATION AUSTRALIA INC.

Well: FORTESCUE-2

Elevation (Derrick Floor): 31 m

Total Depth: 2652m

LOCATION

Coordinates: Lat : 38° 25' 56.640" Long: 148° 15' 59.364" Datum: MEAN SEA LEVEL

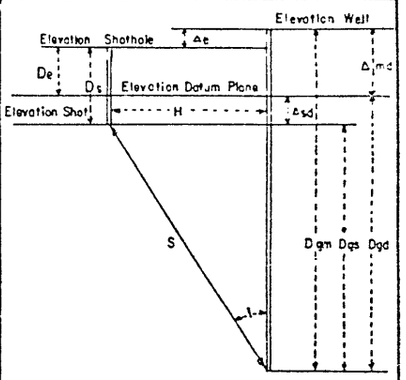
Section, Township, Range:

County: GIPPSLAND

Area or Field: BASIN

Record Number	Shothole Number	Time of Shot	Dgm	Ds	tus	tr	T Reading	t.	Grade	Dgs	H	TAN i	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	ΔDgd	ΔTgd	Vi Interval Velocity	Va Average Velocity
9			2649				910		F								918						
8			2649				909	.909	P	2605.8	38	.0146	.9999	.909	12.2	.008	917	.917	2618	125	.036	3472	2855
7			2649				909		P								917						

LEVEL 245-4 OMITTED ON INTERVAL VELOCITY Vs DEPTH CURVE



Dgm = Geophone depth measured from well elevation

Dgs = " " " " shot "

Dgd = " " " " datum "

Ds = Depth of shot

De = Shothole elevation to datum plane

H = Horizontal distance from well to shotpoint

S = Straight line travel path from shot to well geophone

tus = Uphole time at shotpoint

T = Observed time from shotpoint to well geophone.

tr = " " to reference geophone.

Δe = Difference in elevation between well & shotpoint.

Δsd = " " " " shot & datum plane

Δsd = Ds - De

Dgs = Dgm - Ds ± Δe ; $\tan i = \frac{H}{Dgs}$

Tgs = cos i T = Vert. travel time from shot elev. to geophone

Tgd = $Tgs \pm \frac{\Delta sd}{V}$ = " " " " datum plane " "

Dgd = Dgm - Δmd

Vi = Interval velocity = $\frac{\Delta Dgd}{\Delta Tgd}$

Va = Average = $\frac{D\,gd}{T\,gd}$

Surveyed by: K. Wood

Date: 15/11/1978

Weathering Data:

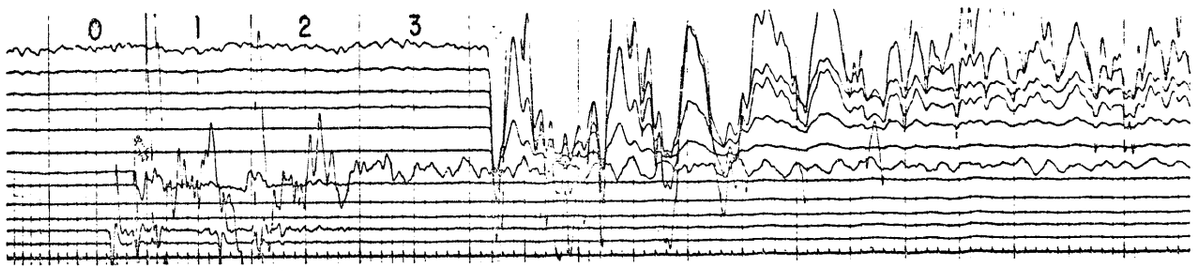
Casing Record 20"@236m & $13\frac{3}{8}$"@ 861 m.

DWG. 1107/OP/3

FORTESCUE-2

WELL VELOCITY RECORD 15-11-1978

Rec. No. 1
885 m K.B.



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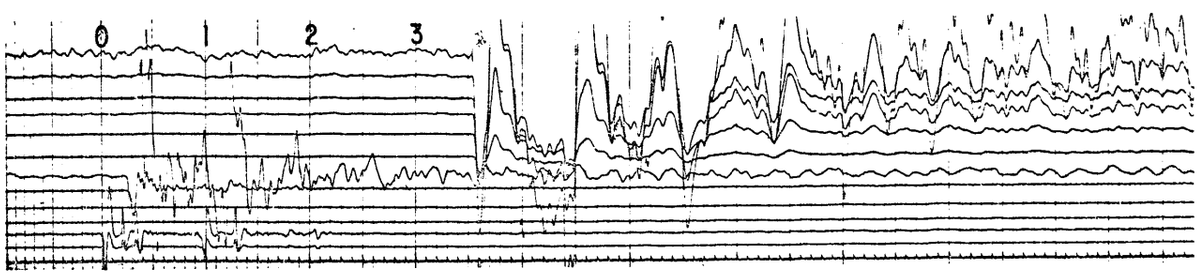
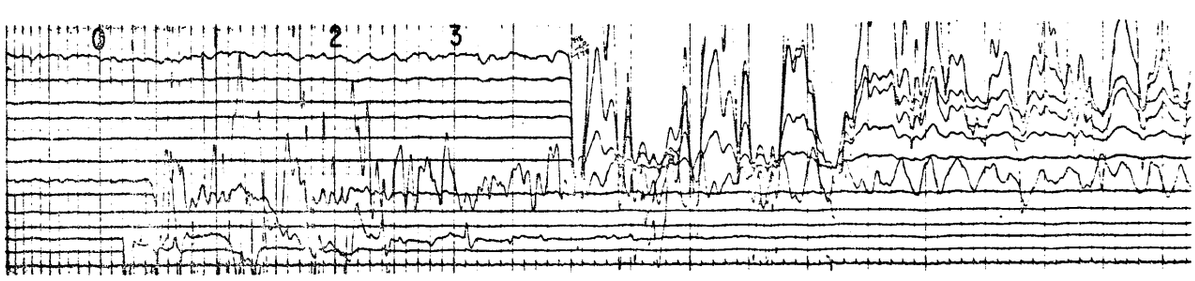
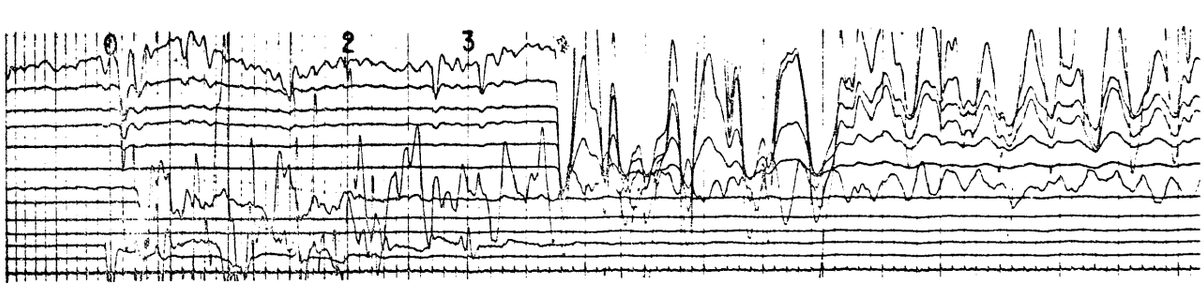
885 m K.B.



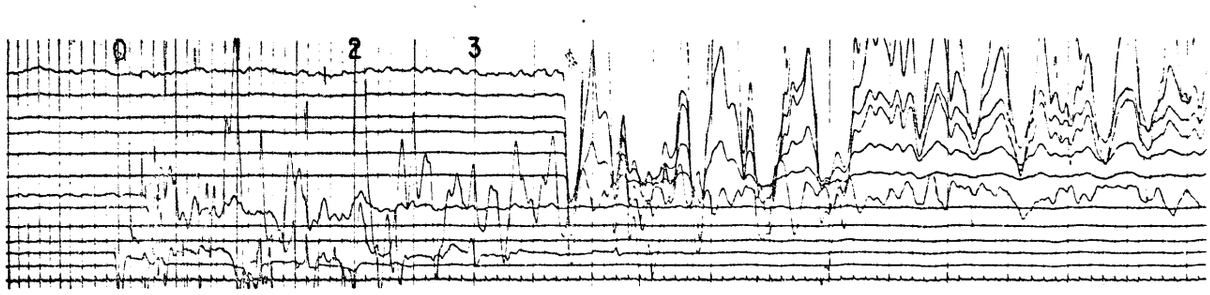
Rec. No. 37
952 m K.B.



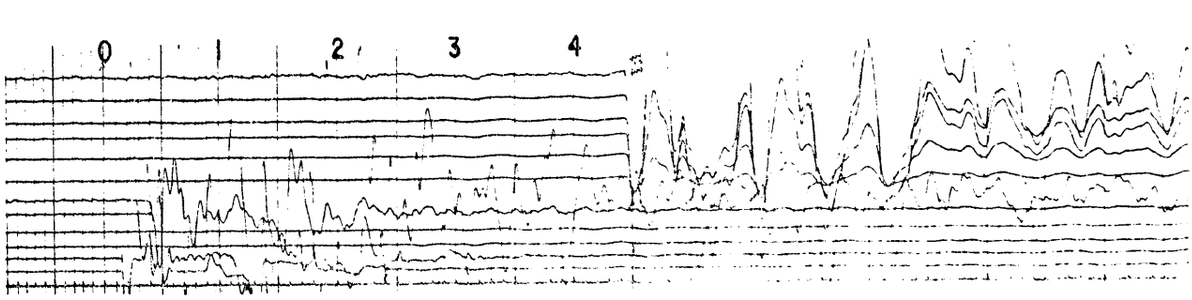
Rec. No. 38
952 m K.B.



Rec. No. 39
952 m K.B.



Rec. No. 35
1110 m K.B.

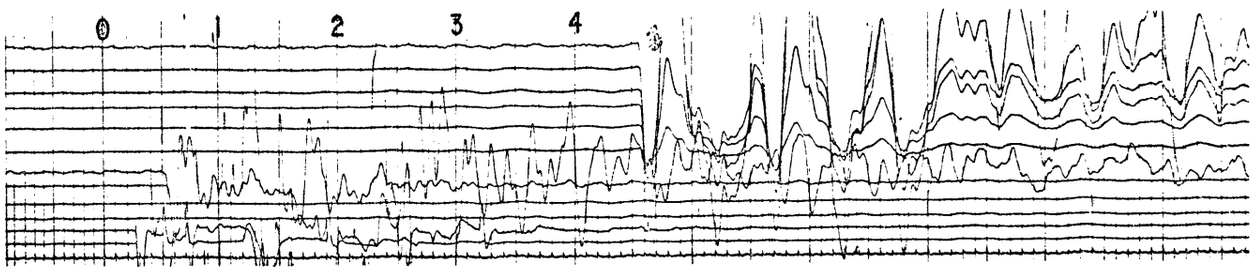


FORTESCUE-2

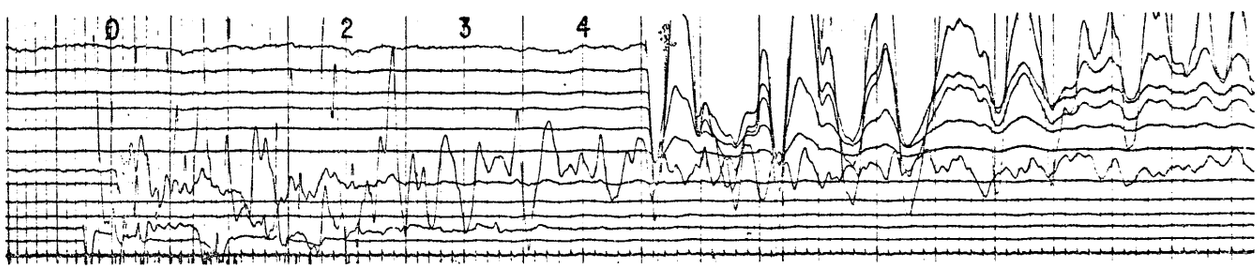
WELL VELOCITY RECORD

15-11-1978

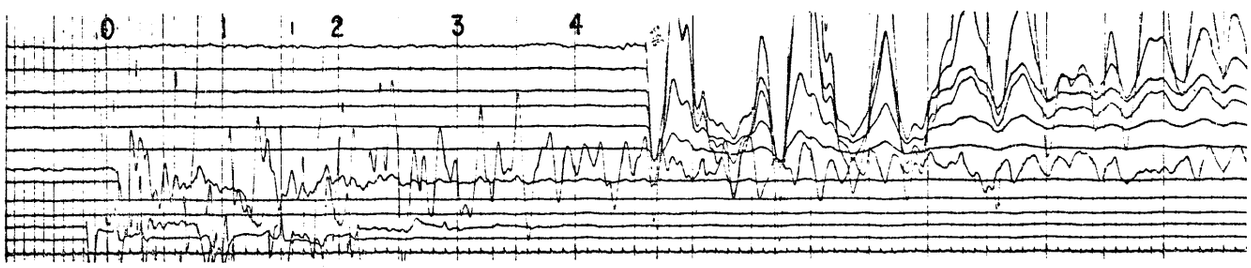
Rec. No. 36
1110 m K.B.



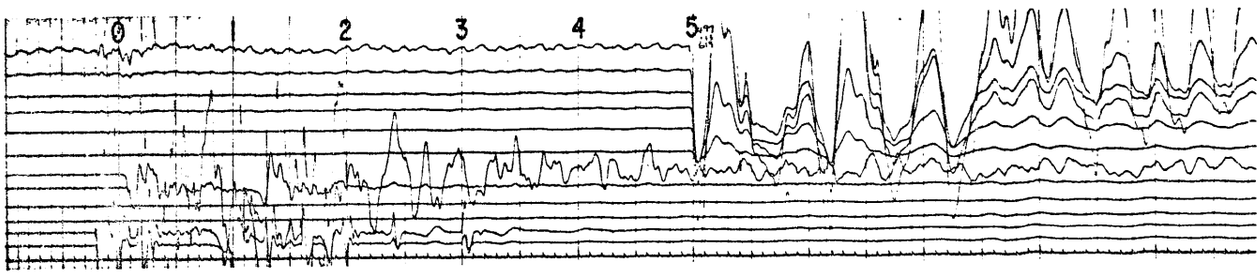
Rec. No. 33
1262 m K.B.



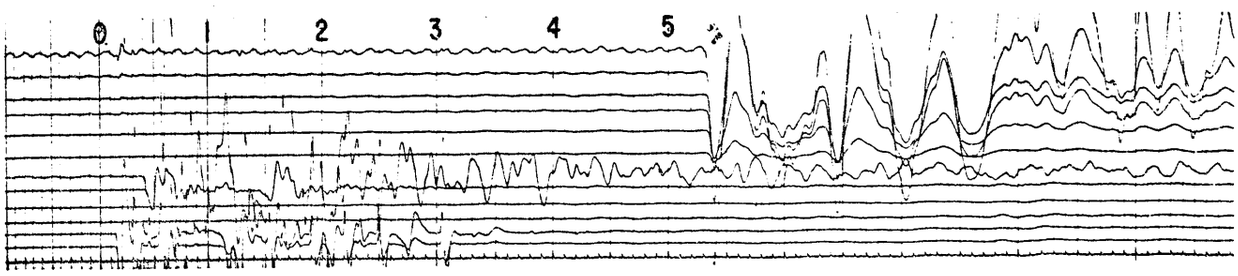
Rec. No. 34
1262 m K.B.



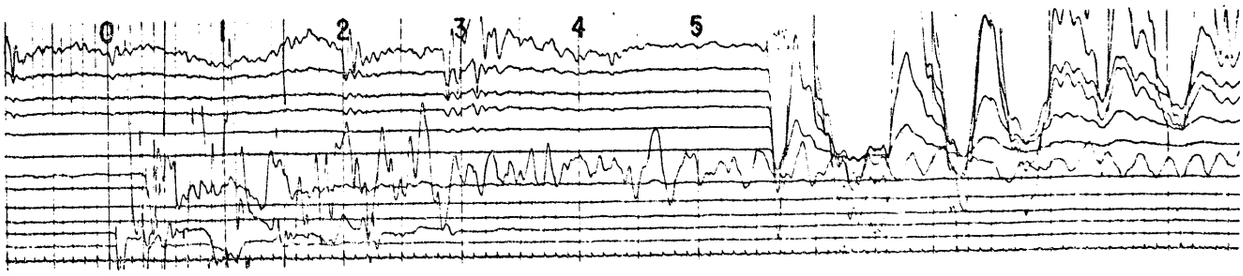
Rec. No. 3
1400 m K.B.



Rec. No. 4
1400 m K.B



Rec. No. 31
1538 m K.B.

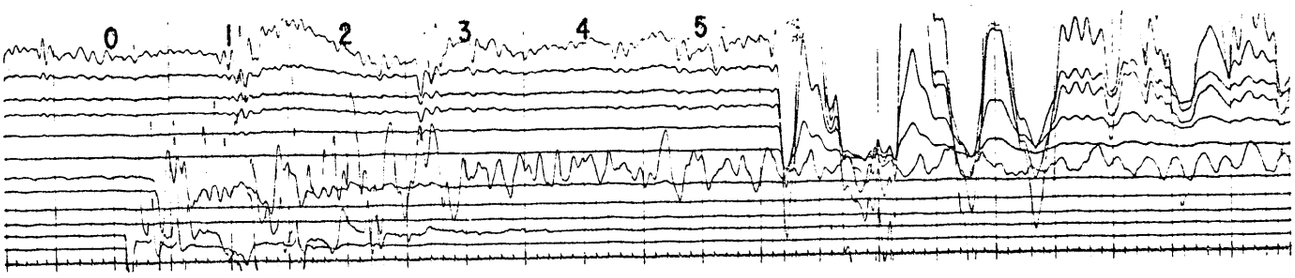


FORTESCUE-2

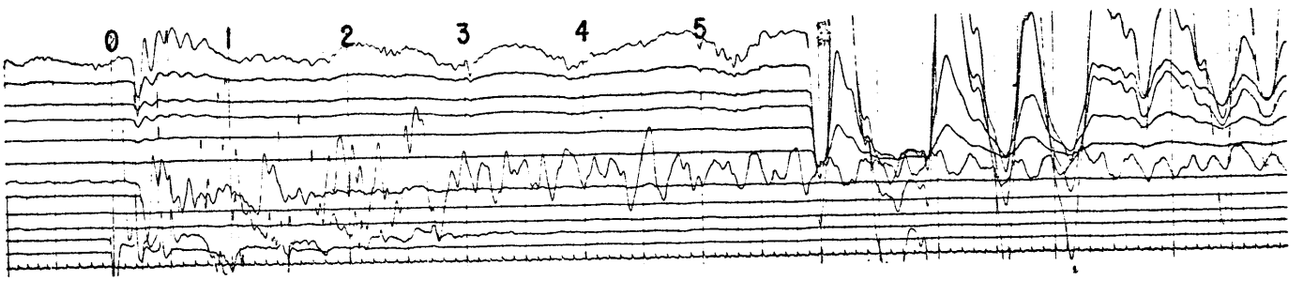
WELL VELOCITY RECORD

15-11-1978

Rec. No. 32
1538 m K.B.



Rec. No. 28
1679 m K.B.



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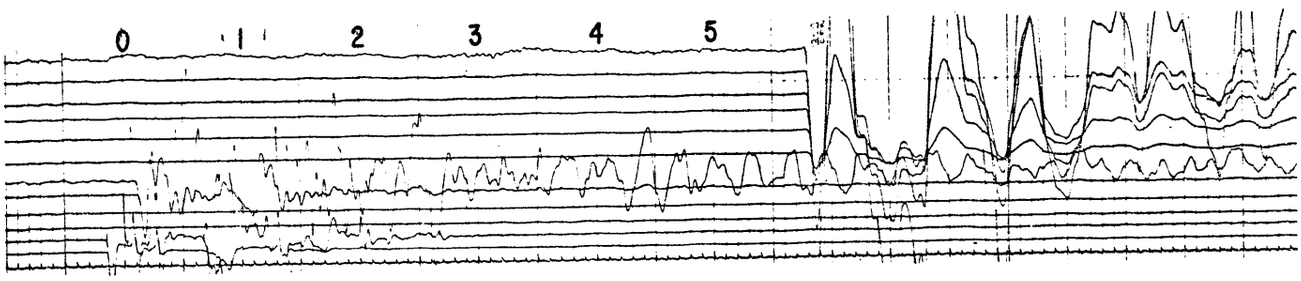
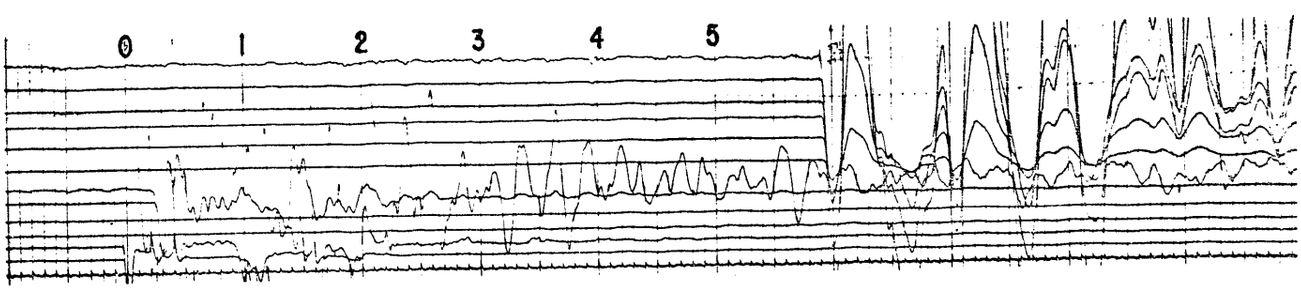
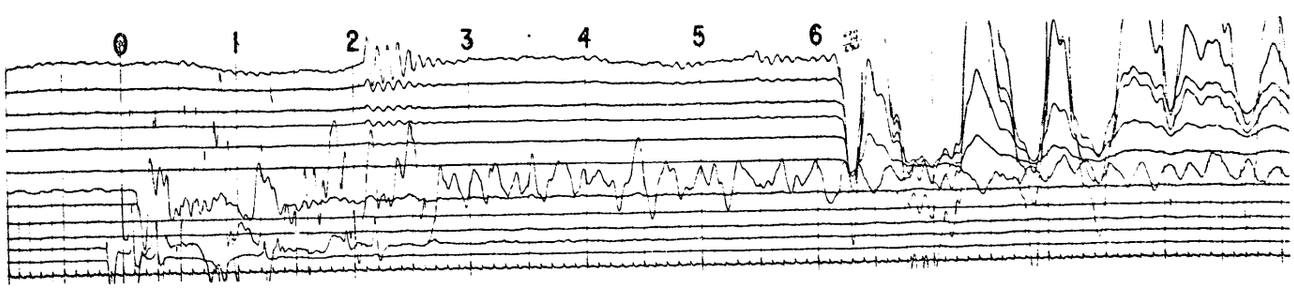
1679 m K.B.



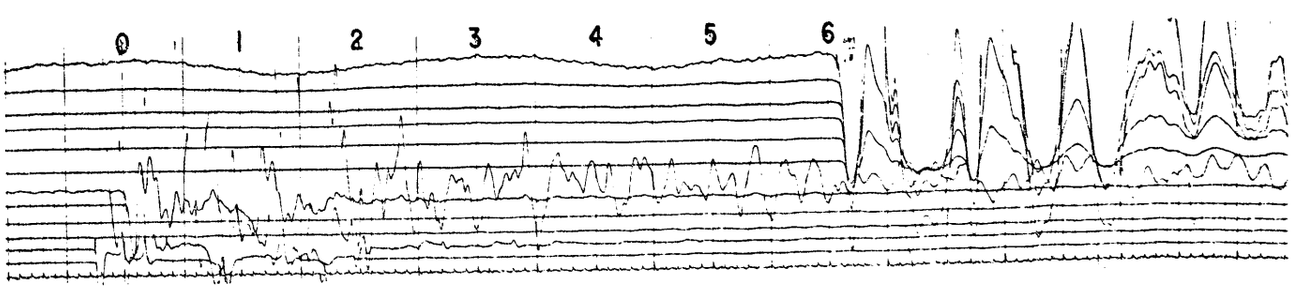
Rec. No. 30
1679 m K.B.



Rec. No. 25
1800 m K.B.



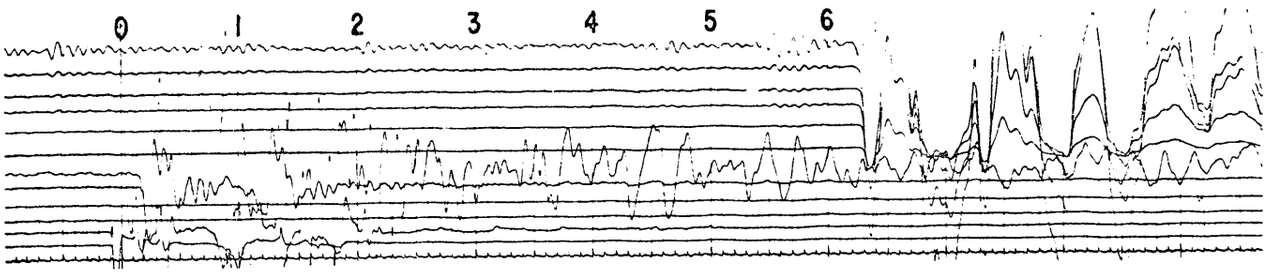
Rec. No. 26
1800m K.B.



FORTESCUE-2

WELL VELOCITY RECORD

15 - 11 - 1978



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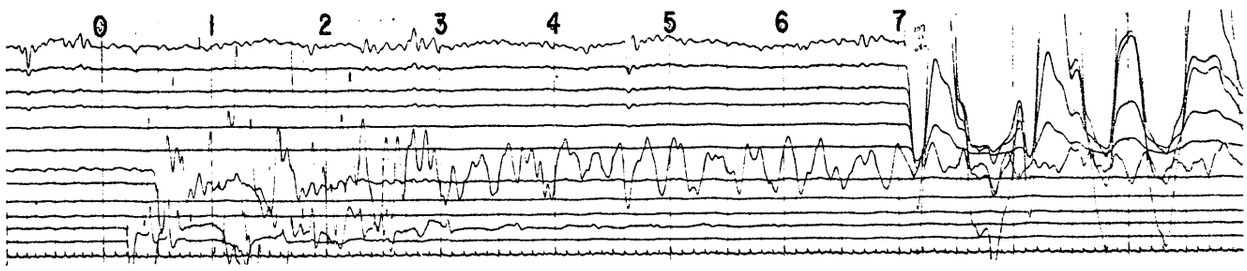
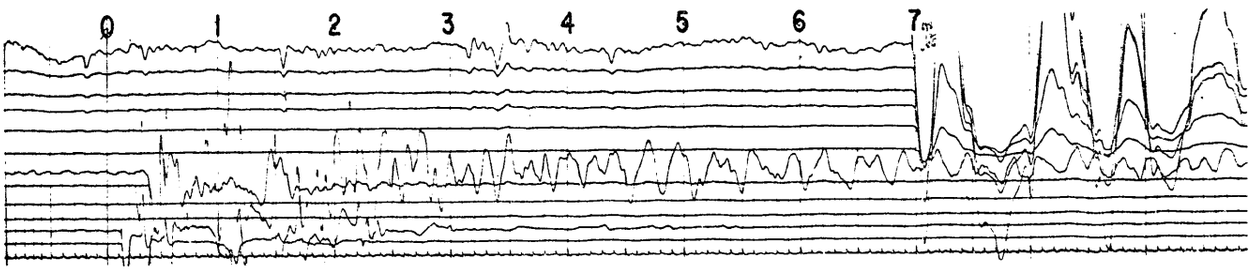
1800 m K.B.



Rec. No. 23
1950 m K.B.



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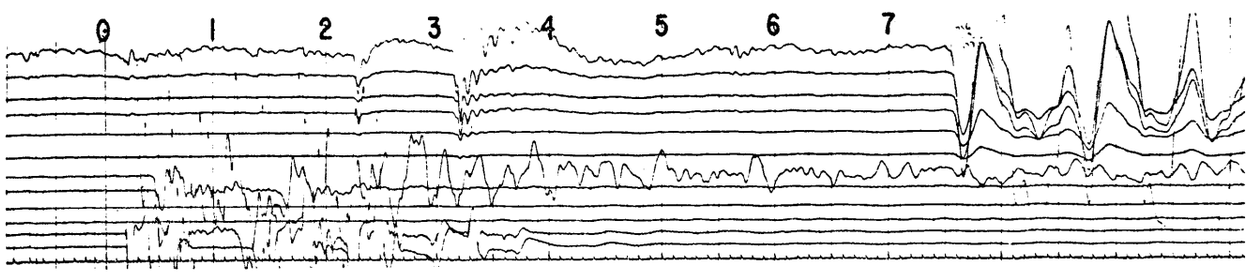
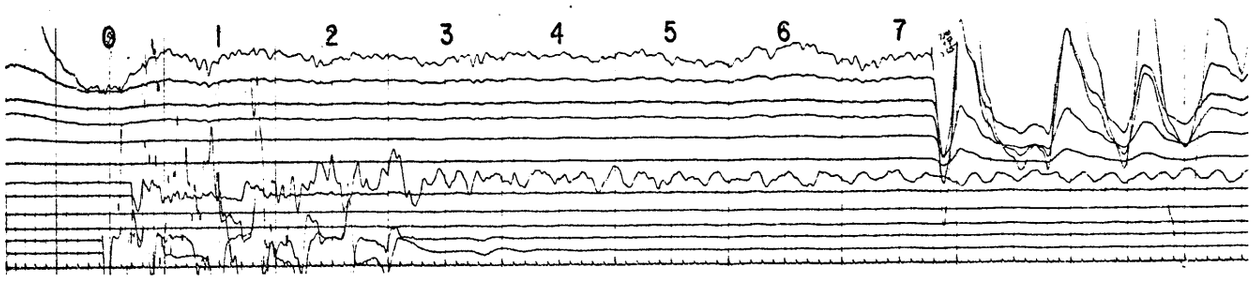
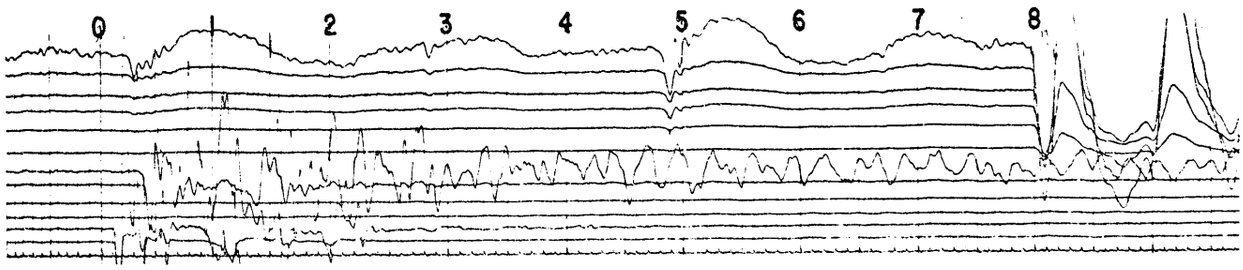
1950 m K.B.



Rec. No. 5
2100 m K.B.



Rec. No. 6
2100 m K.B.



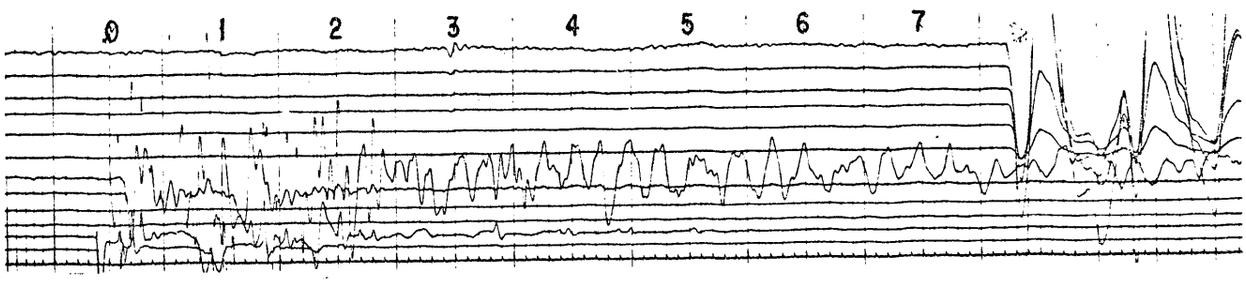
Rec. No. 21
2250 m K.B.

FORTESCUE-2

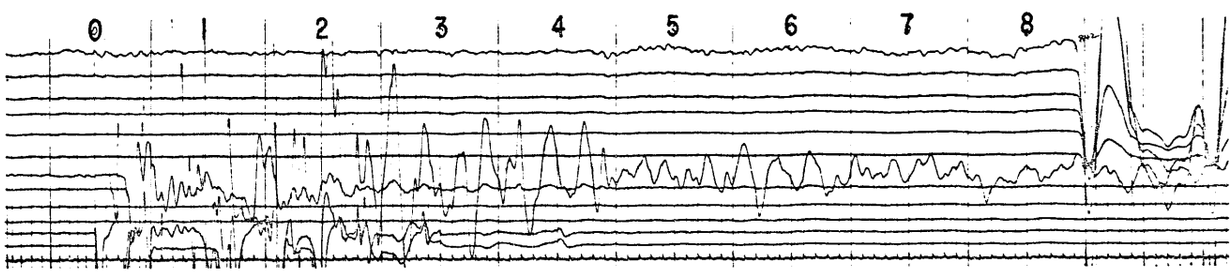
WELL VELOCITY RECORD

15 - 11 - 1978

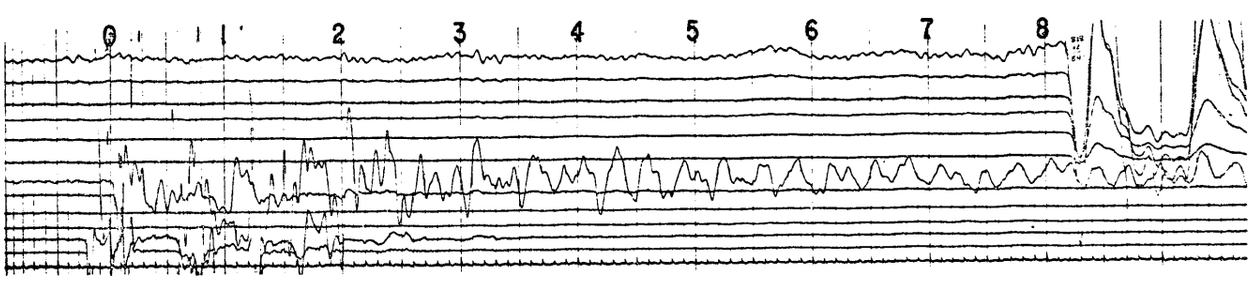
Rec. No. 22
2250 m K.B.



Rec. No. 18
2415 m K.B.



Rec. No. 19
2415 m K.B.



Rec. No. 20
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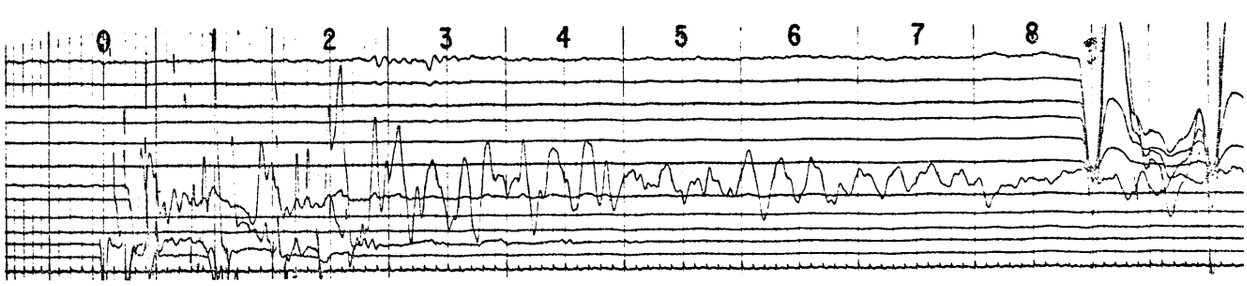
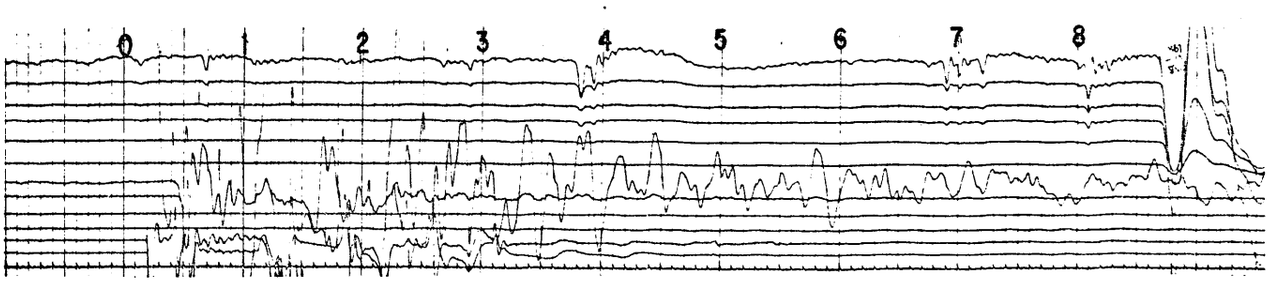


Rec.No. 15
2441 m K.B.



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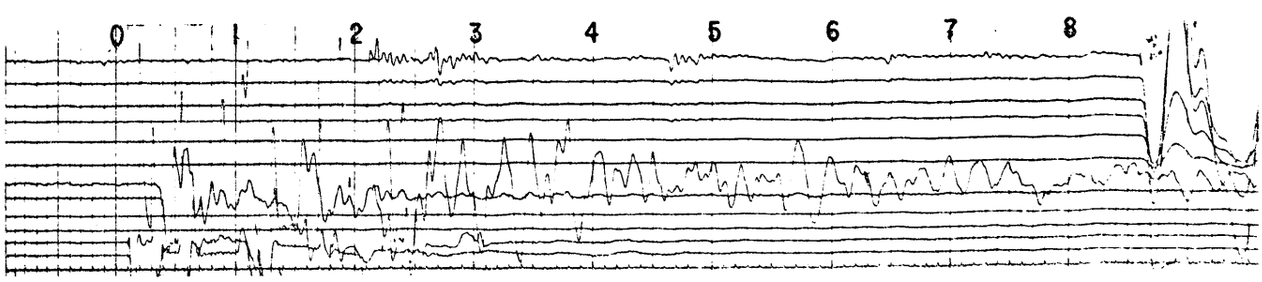
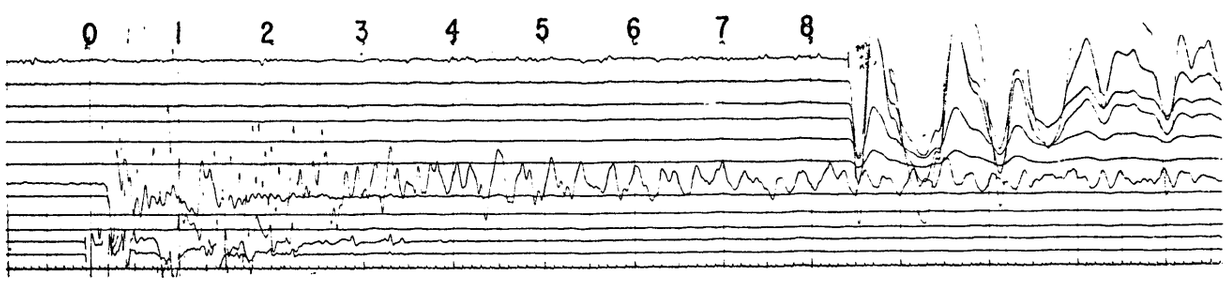


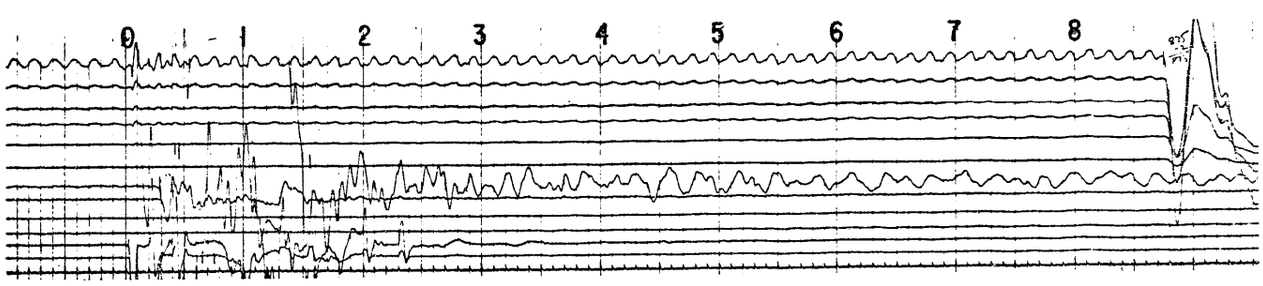
FORTESCUE-2

WELL VELOCITY RECORD 15-11-1978

Rec. No. 17
2441 m K.B.



Rec. No. 10
2454 m K.B.



Rec. No. 11
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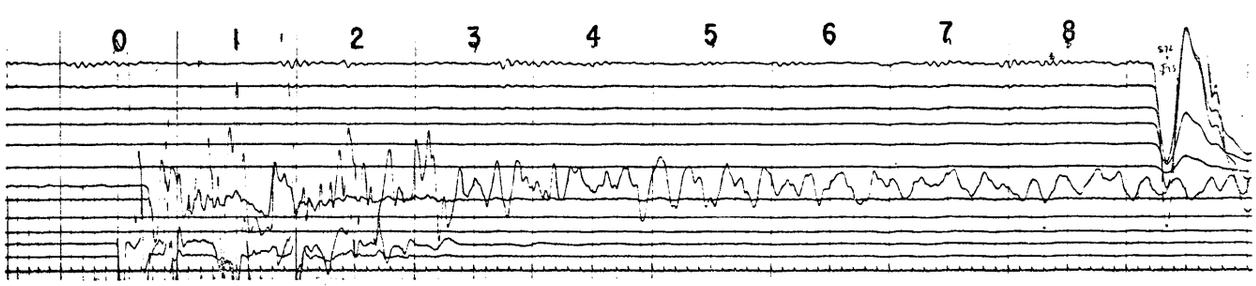

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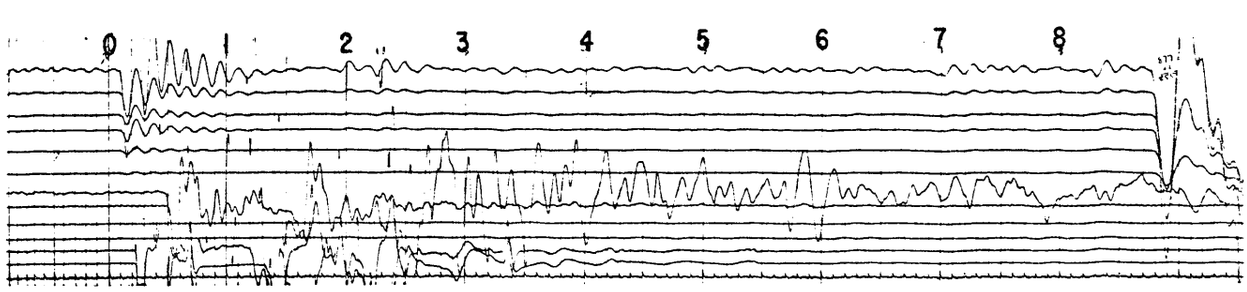

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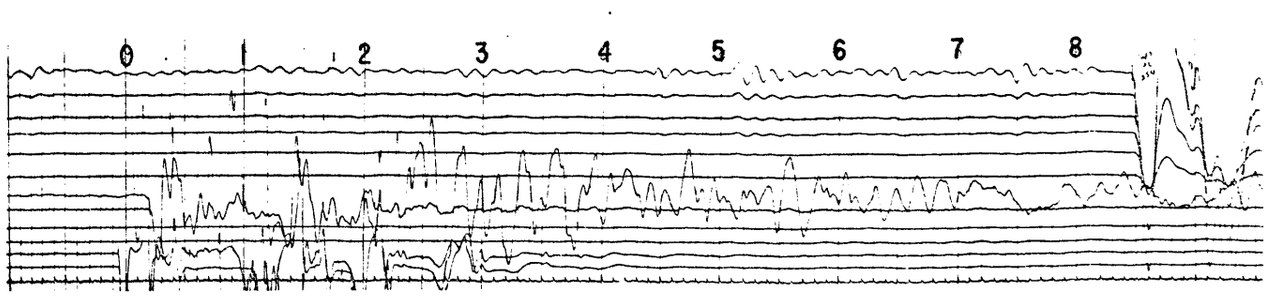

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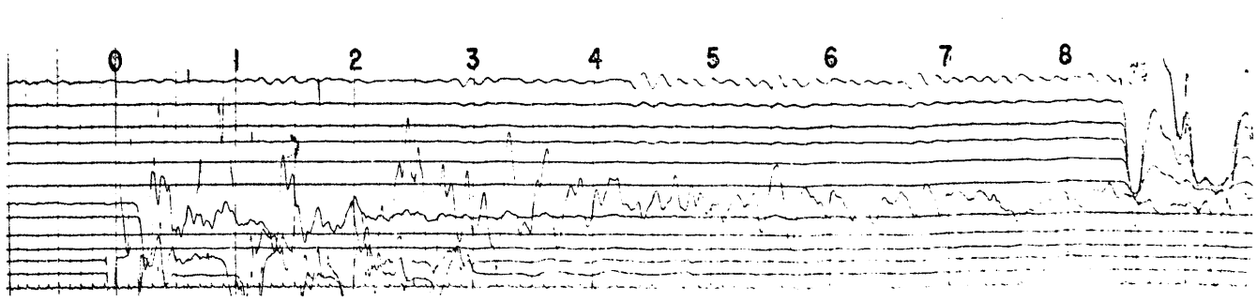
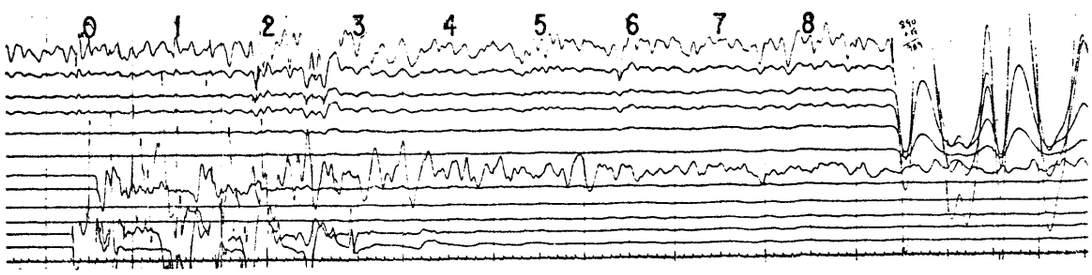


FORTESCUE-2

WELL VELOCITY RECORD

15-11-1978

Rec. No. 7
2649 m K.B.



Rec. No. 8
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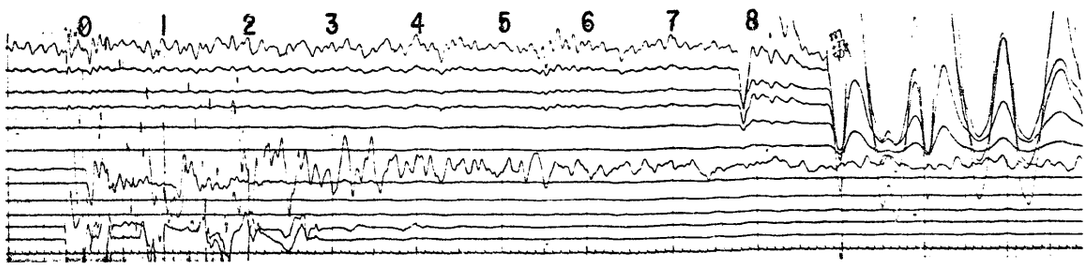

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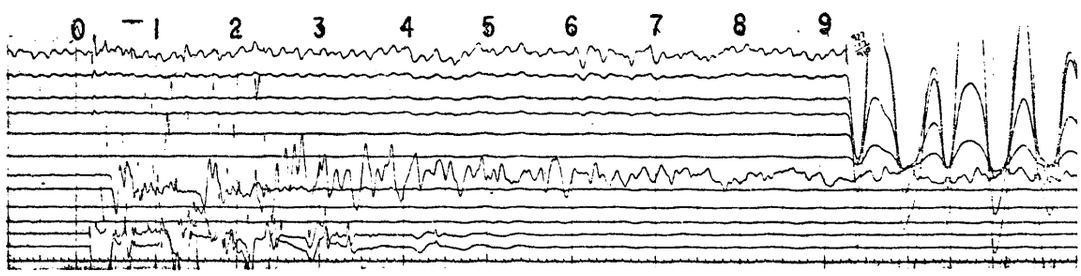

APPENDIX 7

APPENDIX 7

APPENDIX 7

REPEAT FORMATION TEST REPORT AND ANALYSIS

FORTESCUE-2

PRESSURE BUILD-UP ANALYSIS

WELL	RUN NO.	SEAT NO.	DEPTH (Metres) MDkb	DEPTH (Metres) SUBSEA	PERMEABILITY* (md)	HORNER EXTRAPOLATED PRESSURE (psig)
Fortescue-2	1	1	2446.5	2415.5	947	3406.4
	2	18	2451	2420	?	3416.1
	3	28	2450	2419	35	3417.0

* Assumed h = 0.5 ft.

REPEAT FORMATION TESTER RECORD PART 1

WELL: FORTESCUE-2

RUN #: 1 GEOLOGIST/S: R.C.N. THORNTON DATE: 18/11/78-17/11/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	1	2446.5 m	3351 psig/23.104 MPag	permeability: 947 mds
SEAT #:	2	2632 m	3659.7 " /25.233 MPag	Pretest only
SEAT #:	3	2623 m	3647.1 " /25.146 MPag	" "
SEAT #:	4	2613 m	3633.0 " /25.049 MPag	" "
SEAT #:	5	2563 m	3550.4 " /25.479 MPag	" "
SEAT #:	6	2551 m	3537.3 " /24.389 MPag	" "
SEAT #:	7	2542 m	3524.8 " /24.303 MPag	" "
SEAT #:	8	2535 m	3514.2 " /24.230 MPag	" "
SEAT #:	9	2511 m	MPag	" " TIGHT
SEAT #:	10	2497 m	3477.6 " /23.977 MPag	" "

SAMPLES

	CHAMBER 1 (22.000 l.)	CHAMBER 2 (l.)
	SEAT #: 1 DEPTH: 2446.5m	SEAT #: DEPTH: m
Hydrostatic Initial	3890.7 psig/26.826 MPag	MPag
Pretest	3352.9 " /23.118 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	170.8-1823.7 psig/ 1.178-12.574 MPag	MPag
Final Shut-in	3351 psig/23.104 MPag	MPag
Hydrostatic Final	3889.9 psig/26.813 MPag	MPag
Formation Press. (Horner)	3406.4 psig/23.486 MPag	MPag

TEMPERATURE

Maximum Recorded: 85 °C Time Since Circulation: 9½ Hrs

Depth Tool Reached: 2535 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3500 psig/ 23.132 MPag Calibration Temperature: 71.6 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.3 ppg/1.12 S.G. Calculated Hydrostatic: 3881 psig/26.76 MPag

RFT Choke Size:

REPEAT FORMATION TESTER RECORD PART 1

WELL: FORTESCUE-2

RUN #: 1 Cont/... GEOLOGIST/S: R.C.N. THORNTON DATE: 18/11/78-17/11/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	11	2488 m	3466.4 psig/ 23.9 MPag	Pretest only
SEAT #:	12	2481 m	3455.1 psig/ 23.822 MPag	" "
SEAT #:	13	2462 m	3429.2 psig/ 23.644 MPag	" "
SEAT #:	14	2446.5 m	3409.0 psig/ 23.504 MPag	" "
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (1.)	CHAMBER 2 (1.)
	SEAT #: DEPTH: m	SEAT #: DEPTH: m
Hydrostatic Initial	MPag	MPag
Pretest	MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	MPag	MPag
Final Shut-in	MPag	MPag
Hydrostatic Final	MPag	MPag
Formation Press. (Horner)	MPag	MPag

TEMPERATURE

Maximum Recorded: °C Time Since Circulation: Hrs

Depth Tool Reached: m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: MPag Calibration Temperature: °C

Hewlett-Packard Gauge #:

Mud Weight: S.G. Calculated Hydrostatic: MPag

RFT Choke Size:

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (1.)
	SEAT #: 1 DEPTH: 2446.5 m	SEAT #: DEPTH: m
Tool Set:	00:46:37	
Pretest Open:	00:46:44	
Time Open:	00:03:16	
Chamber Open:	00:50:30	
Chamber Full:	01:02:23	
Fill Time:	00:11:53	
Start Build-up:	01:02:23	
Finish Build-up:	01:26:31	
Build-up Time:	00:24:08	
Seal Chamber:	01:26:31	
Tool Retract:	01:26:58	
Total Time:	00:40:21	

RECOVERY

Surface Pressure:	850 psig 5.861 MPag	MPag
Gas:	301.0 psig 1.	1.
Oil:	17.55 1.	1.
Water:	1.	1.
Others:	Filtrate: 1.70 1.	1.

PROPERTIES

	TOP	MIDDLE	BOTTOM	
Gas Composition				
C_1 (ppm)	93264	607020	703500	
C_2	20496	122000	121695	
C_3	44096	162240	134680	
iC_4/nC_4	6222/ 3066	148800/ 8760	41632/ 3066	
C_5	2400	2086	1251	
C_6+				
CO_2/H_2S				
Oil Properties	45 °API @ 15.5 °C		°API @ °C	
Colour:	Red brown			
Fluorescence:	Pale yellow			
G.O.R.:	97			
Water Properties				
Resistivity:	Ω @ °C		Ω @ °C	
NaCl Equivalent:	ppm		ppm	
Cl^- Titrated:	5400 ppm		ppm	
NO_3^-:	Too opaque to test ppm		ppm	
Est. Water Type:	Filtrate			

REMARKS

Mud Properties: Resistivity: 0.751 Ω @ 19 °C

NaCl Equiv.: ppm Cl^- Titrated: 4000 ppm NO_3^-: 120 ppm

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-2

RUN #: 2 GEOLOGIST/S: R.C.N. THORNTON DATE: 17/11/78-18/11/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	15	2452 m	- MPag	Seats 15,16,17: Tight
SEAT #:	16	2452 m	- MPag	Formation test. May be
SEAT #:	17	2451.5 m	- MPag	be caused by presence
SEAT #:	18	2451 m	3414.9 psig/ 23.545 MPag	of thick mudcake.
SEAT #:	19	2481.5 m	3582.9 psig/ 24.703 MPag	Pretest only
SEAT #:	20	2510.5 m	- MPag	Seats 20,21,22: Lost
SEAT #:	21	2510.5 m	- MPag	Seal-packer dislodged.
SEAT #:	22	2510.5 m	- MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (20.000 1.)	CHAMBER 2 (1.)
	SEAT #: 18 DEPTH: 2451.0 m	SEAT #: DEPTH: m
Hydrostatic Initial	3892.7 psig/26.840 MPag	MPag
Pretest	3359.8 psig/23.165 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	192.0-910.4 psig/ 1.323-6.277 MPag	MPag
Final Shut-in	3357.6 psig/23.15 MPag	MPag
Hydrostatic Final	3391.1 psig/26.828 MPag	MPag
Formation Press. (Horner)	3406.4 psig/23.486 MPag	MPag

TEMPERATURE

Maximum Recorded: 194 °F 93 °C Time Since Circulation: 20 Hrs

Depth Tool Reached: 2581.5 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3360 psig/ 23.167 MPag Calibration Temperature: 84.5 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.3 ppg/1.116 S.G. Calculated Hydrostatic: 3889 psig/26.814 MPag

RFT Choke Size:

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (20.000 1.)	CHAMBER 2 (1.)
	SEAT #: 18 DEPTH: 2451.0 m	SEAT #: ____ DEPTH: ____ m
Tool Set:	01:41:05	
Pretest Open:	01:41:11	
Time Open:	05:37	
Chamber Open:	01:46:48	
Chamber Full:	02:05:02	
Fill Time:	18:14	
Start Build-up:	02:05:02	
Finish Build-up:	02:42:46	
Build-up Time:	37:44	
Seal Chamber:	02:42:46	
Tool Retract:	02:46:34	
Total Time:	01:05:29	

RECOVERY

Surface Pressure:	850 psig/5.861	MPag		MPag
Gas:	19.8	l.		l.
Oil:		l.		l.
Water:		l.		l.
Others:	Filtrate: 19.5	l.		l.

PROPERTIES

Gas Composition		
C_1 (ppm)	136,680	
C_2	34,160	
C_3	61,360	
iC_4/nC_4	i 23,180/n 16,000	
C_5	7,152	
C_6+		
~~XXXXXX~~ He	380	
Oil Properties	____ °API @ ____ °C	____ °API @ ____ °C
Colour:		
Fluorescence:		
G.O.R.:		
Water Properties		
Resistivity:	.46 Ω @ 22 °C	____ Ω @ ____ °C
NaCl Equivalent:	14,000 ppm	____ ppm
Cl^- Titrated:	6,200 ppm	____ ppm
NO_3^-:	0 ppm	____ ppm
Est. Water Type:		

REMARKS

Mud Properties: Resistivity: .741 Ω @ 19 °C

NaCl Equiv.: ____ ppm Cl^- Titrated: 4000 ppm NO_3^-: 120 ppm

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-2

RUN #: 3 GEOLOGIST/S: R.C.N. THORNTON DATE: 18/11/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	23	2450.5 m	Very tight MPag	Pretest only
SEAT #:	24	2453 m	" " MPag	" "
SEAT #:	25	2453 m	" " MPag	" "
SEAT #:	26	2455.5 m	" " MPag	" "
SEAT #:	27	2455 m	" " MPag	" "
SEAT #:	28	2450 m	3412.8 psig/ 23.531 MPag	During build-up period, pressure oscillated on both HP and Schlumberger gauges.
SEAT #:	29	2570 m	3564 psig/ 24.573 MPag	Pretest only
SEAT #:	30	2526 m	3498.8 psig/ 24.124 MPag	" "
SEAT #:	31	2510 m	3489.5 psig/ 24.059 MPag	" "
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (20.000 l.)	CHAMBER 2 (l.)
	SEAT #: 28 DEPTH: 2450 m	SEAT #: DEPTH: m
Hydrostatic Initial	3889 psig/26.814 MPag	MPag
Pretest	3357.8 psig/23.151 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	195.7-649.5 psig/ 1.349-4.479 MPag	MPag
Final Shut-in	3356.4 psig/23.142 MPag	MPag
Hydrostatic Final	MPag	MPag
Formation Press. (Horner)	3887.7 psig/26.805 MPag	MPag

TEMPERATURE

Maximum Recorded: 205°F 96°C Time Since Circulation: 28½ Hrs

Depth Tool Reached: 2526 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3360 psig/ 23.167 MPag Calibration Temperature: 87 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.3 ppg/1.116 S.G. Calculated Hydrostatic: 3887 psig/26.8 MPag

RFT Choke Size:

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (20.000 1.)	CHAMBER 2 (1.)
	SEAT #: 28 DEPTH: 2450 m	SEAT #: ____ DEPTH: ____ m
Tool Set:	01:16:23	
Pretest Open:	01:16:34	
Time Open:	02:49	
Chamber Open:	01:19:23	
Chamber Full:	01:33:31	
Fill Time:	14:08	
Start Build-up:	01:33:31	
Finish Build-up:	02:01:22	
Build-up Time:	27:51	
Seal Chamber:	02:01:22	
Tool Retract:	02:01:38	
Total Time:	00:45:15	

RECOVERY

Surface Pressure:	400 psig/2.758 MPag	MPag
Gas:	2.8 l.	l.
Oil:	0.25 l.	l.
Water:	l.	l.
Others:	13.5 l.	l.

PROPERTIES

Gas Composition		
C_1 (ppm)	40,200	
C_2	10,004	
C_3	19,552	
iC_4/nC_4	i 7152/n 6556	
C_5		
C_{6+}		
CO_2/H_2S		
Oil Properties	°API @ °C	°API @ °C
Colour:	Dark brown	
Fluorescence:	Bright yellow	
G.O.R.:		
Water Properties		
Resistivity:	.80 Ω @ 21.1 °C	Ω @ °C
NaCl Equivalent:	7500 ppm	ppm
Cl^- Titrated:	3200 ppm	ppm
NO_3^-:	Too opaque to test ppm	ppm
Est. Water Type:		

REMARKS

Mud Properties: Resistivity: 0.741 Ω @ 19 °C

NaCl Equiv.: _____ ppm Cl^- Titrated: 4,000 ppm NO_3^-: 120 ppm

ENCLOSURES

PE902736

This is an enclosure indicator page.
The enclosure PE902736 is enclosed within the container PE902735 at this location in this document.

The enclosure PE902736 has the following characteristics:

ITEM_BARCODE	= PE902736
CONTAINER_BARCODE	= PE902735
NAME	= Structure Map Top of Latrobe Group Seismic Marker
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Structure Map Top of Latrobe Group Seismic Marker. Plate 2 of WCR.
REMARKS	=
DATE_CREATED	= 28/02/1979
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= Fortescue-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902737

This is an enclosure indicator page.
The enclosure PE902737 is enclosed within the container PE902735 at this location in this document.

The enclosure PE902737 has the following characteristics:

ITEM_BARCODE	= PE902737
CONTAINER_BARCODE	= PE902735
NAME	= Time Structure Map Top of Latrobe Group Seismic Marker
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CONTR_MAP
DESCRIPTION	= Time Structure Map Top of Latrobe Group Seismic Marker. Plate 1 of WCR.
REMARKS	=
DATE_CREATED	= 28/02/1979
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= Fortescue-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902738

This is an enclosure indicator page.
The enclosure PE902738 is enclosed within the container PE902735 at this location in this document.

The enclosure PE902738 has the following characteristics:

ITEM_BARCODE	= PE902738
CONTAINER_BARCODE	= PE902735
NAME	= Geological Cross Section B-B Fortescue 2 Cobia 1 Cobia 2
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Geological Cross Section B-B Fortescue-2 Cobia-1 Cobia-2. Plate 3 of WCR.
REMARKS	=
DATE_CREATED	= 28/02/1979
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= Fortescue-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902739

This is an enclosure indicator page.
The enclosure PE902739 is enclosed within the container PE902735 at this location in this document.

The enclosure PE902739 has the following characteristics:

ITEM_BARCODE	= PE902739
CONTAINER_BARCODE	= PE902735
NAME	= Sonic Calibration Curve
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Sonic Calibration Curve. Enclosure 5 of WCR.
REMARKS	=
DATE_CREATED	= 30/11/1978
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= Fortescue-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE906132

This is an enclosure indicator page.
The enclosure PE906132 is enclosed within the container PE902735 at this location in this document.

The enclosure PE906132 has the following characteristics:

ITEM_BARCODE	= PE906132
CONTAINER_BARCODE	= PE902735
NAME	= Time-Depth Curve
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Time-Depth curve (basic data) for Fortescue-2
REMARKS	=
DATE_CREATED	= 01/12/1978
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= FORTESCUE-2
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE601415

This is an enclosure indicator page.
The enclosure PE601415 is enclosed within the container PE902735 at this location in this document.

The enclosure PE601415 has the following characteristics:

ITEM_BARCODE	= PE601415
CONTAINER_BARCODE	= PE902735
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Well Completion Log
REMARKS	=
DATE_CREATED	= 15/11/1978
DATE_RECEIVED	= 26/04/1979
W_NO	= W709
WELL_NAME	= Fortescue-2
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)