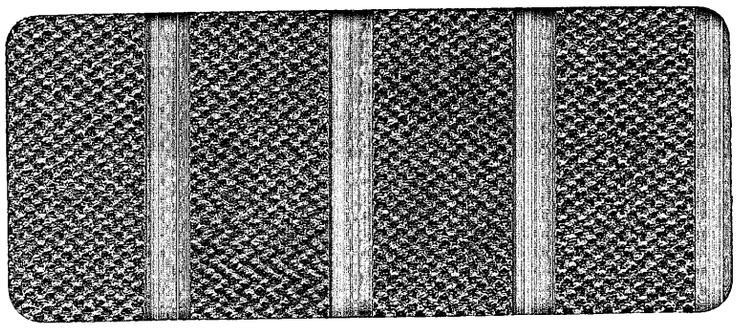

WCR OF FORTESCUE-3

W712

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION REPORT

FORTESCUE-3

Rec'd 5-6-79

GIPPSLAND BASIN

ESSO AUSTRALIA LTD.

FEBRUARY, 1979

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ESSO AUSTRALIA LTD.

COMPLETION REPORT

1. WELL DATA RECORD

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
FORTESCUE-3	VICTORIA	VIC/L5	GIPPSLAND	FORTESCUE

CO-ORDINATES	MAP PROJECTION	GEOGRAPHICAL LOCATION
LATITUDE 38° 23' 23.11"S LONGITUDE 148° 16' 02.30"E X 610 677.10mE Y 5 750 164.73mN	AMG ZONE 55	3 Kms SE FORTESCUE-1 2 Kms NW WEST HALIBUT-1

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Average Angle
KB 31m RT	69m	2625m MDKB 2607. TVD	3°
	PLUG BACK DEPTH: 125m	REASONS FOR PLUGGING BACK: ABANDONMENT	

DATES

MOVE IN	RIG UP	SPUDDED
25/11/78	26/11/78	26/11/78
RIG DOWN COMPLETE	**RIG RELEASED**	**PRODUCTION UNIT - RIG UP**
25/12/78	25/12/78	N/A

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

MISCELLANEOUS

OPERATOR	~~PERMITTEE~~ LICENCEE	ESSO INTEREST 50%
ESSO AUSTRALIA LTD	HEMATITE PETROLEUM PTY.LTD ESSO EXPL. & PROD. AUST INC.	OTHER INTEREST 50%

CONTRACTOR	RIG NAME	EQUIPMENT TYPE
AUSTRALIAN ODECO	"OCEAN DIGGER"	SEMI-SUBMERSIBLE RIG

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
30.50	5-238-011	N/A	N/A

LAHEE WELL CLASSIFICATION	Before Drilling	STEPOUT WELL
	After Drilling	SUCCESSFUL OUTPOST

WELL FORTESCUE-3

2. CASING - LINER - TUBING RECORD

Type	Size	Weight	Grade	Thread	No. Joints	Depth (m)	Depth (ft.)
PILE JOINT	24"	670	-	CC	1	103m	337.9ft.
CROSS OVER	20"	129	X-52	CC-JV	1	115m	377.3ft.
CONDUCTOR CASING	20"	94	X-52	JV	8	213m	698.8ft.
FLOAT JOINT	20"	94	X-52	JV	1	225m	738.2ft.
HANGER & PUP JOINT	$13^3/8$"	-	-	-	1	105m	344.4ft.
SURFACE CASING	$13^3/8$"	54.5	K-55	BUTT	63	855.1m	2805.4ft.
FLOAT JOINT	$13^3/8$"	54.5	K-55	BUTT	1	867m	2844.4ft.

3. CEMENT RECORD

String	20"		$13^3/8$"		
Type of Cement	CLASS 'N'		CLASS 'N'		
	+ 12% gel	2% $CaCl_2$	Neat	+ 1% $CaCl_2$	
Slurry Volume (M^3)	42.25	11.55	25.74	6.60	
Slurry Density S.G. (PPG)	1.45 (12.1)	1.87 (15.6)	1.87 (15.6)	1.87 (15.6)	
Cement Top	Seafloor		444m (1456ft.)		
Casing Tested Kpa	3450 (500 psi)		10,340 (1500 psi)		
Number of Centralizers	6		8		
Number of Scratchers					
Stage Collar					
Remarks					

4. CEMENT PLUGS

Plug	1	2	3	4	5
Cement Type	CLASS 'N' + 0.8% HR-12	CLASS 'N' + 0.3% HR-4	CLASS 'N' 'Neat'	CLASS 'N' 0.3% HR-4	CLASS 'N' 'Neat'
Slurry Volume M^3	8.25	10.23	9.90	11.22	4.22
Slurry Density SG (PPG)	1.87 (15.6)	1.87 (15.6)	1.87 (15.6)	1.87 (15.6)	1.87 (15.6)
Cement Base m (ft.)	2622 (8602)	2500 (8202)	1575 (5167)	913 (2995)	180 (590)
Cement Top m (ft.)	2522 (8274)	2393 (7851)	1475 (4839)	772 (2533)	125 (410)
Remarks					

WELL FORTESCUE-3

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES.

INTERVAL	TYPE
	CUTTINGS SAMPLES
225m-880m	5 sets of 10 metre washed and dried and one set unwashed.
880m-2625m	5 sets of 5 metre washed and dried and one set unwashed.
225m-2625m	30 metre intervals of unwashed canned samples.

INTERVAL	TYPE
	CONVENTIONAL CORES
1536m-1548.6m	1. 100%, 12.6m recovered
2409.5m-2410.5m	2. 40%, 0.4m "
2410.5m-2416m	3. 27%, 1.5m "
2416m	4.No coring,pump press.failed
2416m-2417m	5. 10%, 0.1m recovered
2440m-2456m	6. 71%, 11.4m "
2456m-2470m	7. 64%, 9m "
2470m-2480m	8. 0%, 0m "
	NOTE: Cores 2 & 5, core barrel jammed. Core 3, pulled because of severe winds affecting rig location.
	SIDEWALL CORES
2615m-1524.5m	RUN 1, 51 shot, recovered 47.

6. WIRELINE LOGS AND SURVEYS

Type & Scale	From To
FDC-Gr RUN 1 1:200, 1:500	875.0m-100.0m
FDC-CNL-Gr RUN 2 1:200, 1:500	2620.5m-868.0m
ISF-Sonic RUN 1 1:200, 1:500	875.4m-225.0m
ISF-Sonic-MSFL RUN 2 1:200, 1:500	868.0m-2618.5m
HDT RUN 1 1:100	868.0m-2620.0m
SIDEWALL CORES RUN 1	2615m-1525m
RUN 2	2450m- 880m

Type & Scale	From To
VELOCITY SURVEY	13 levels
	880m-2618m
RFT TEST RESULTS ARE SUMMARISED IN ITEM 7.	

SUMMARY OF FORMATION TEST PROGRAMME

FORTESCUE-3

TEST	SEAT	ISF-SONIC 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
RFT1	1	2440.5	PRETEST						-	-	-	-		No test)
	2	"	"						-	-	-	-		" ") Port Clogged?
	3	2440.0	SAMPLE	16.10	-	206.7	-	1.00	23.43	3398.47	27.73	4022.00	2925	(1.75 l oil/filtrate (emulsion. Segregator
	4	2594.5	PRETEST						24.62	3570.84	29.42	4267.23		(#3001 not opened.
	5	2591.5	"						24.59	3567.04	29.36	4259.09		(Horner Press. 24.43
	6	2583.0	"						24.52	3556.08	29.26	4243.61		MPag/3398.8 Psig).
	7	2578.5	"						24.46	3548.13	29.19	4233.56		
	8	2563.0	"						24.34	3529.66	29.008	4207.27		
	9	2554.0	"						24.20	3510.31	28.92	4193.85		
	10	2547.0	"						24.13	3499.57	28.83	4181.00		
	11	2539.0	"						-	-	-	-		No seal.
	12	"	"						24.07	3490.58	28.74	4168.00		
	13	2525.0	"						24.09	3494.09	28.57	4143.06		
	14	2505.0	"						-	-	-	-		No seal.
	15	"	"						23.90	3466.89	28.34	4110.17		
	16	2485.0	"						23.71	3439.03	28.11	4076.79		
	17	2470.0	"						23.56	3417.44	27.92	4050.15		
	18	2438.0	"						-	-	-	-		No seal.
	19	"							23.43	3397.85	27.54	3994.32		
	20	"	"						-	-	-	-		No seal.
	21	"	"						-	-	-	-		No seal.

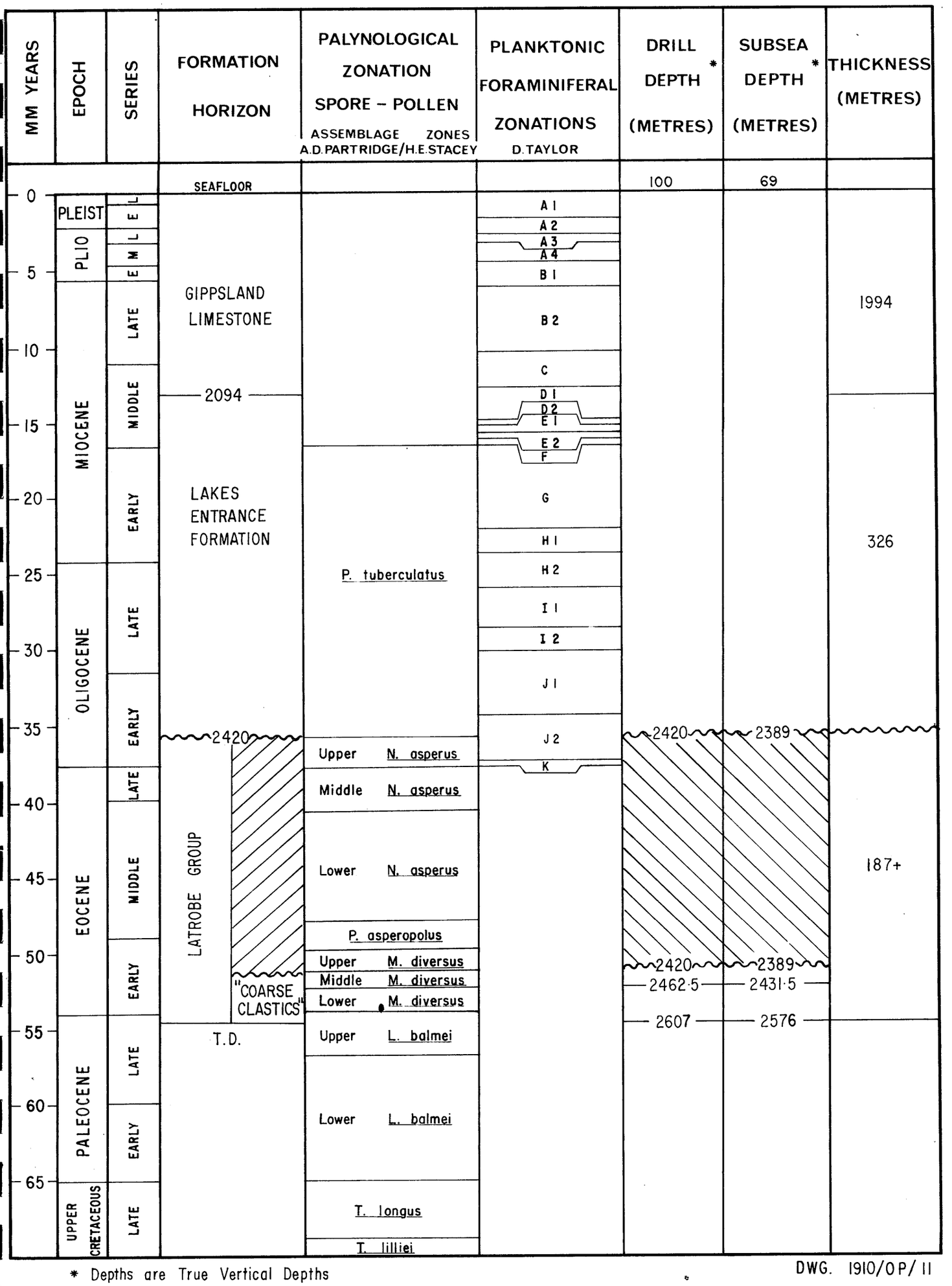
SUMMARY OF FORMATION TEST PROGRAMME

FORTESCUE-3

TEST	SEAT	ISF-SONIC 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
RFT2	22	1524.9	PRETEST						-	-	-	-		No seal.
	23	2448.5	SAMPLE	0.5	-	8.5	-	19.9	23.49	3408.86	27.52	3991.20	596	(Segregator #3005 not opened.
	24	2438.0	PRETEST						23.42	3397.30	27.31	3961.23		(Horner Press. 23.49 MPag/3406.4 Psig).
RFT3	25	2462.0	SAMPLE	slight scum	-	-	19	-	23.44	3400.64	27.72	4020.86	569	(Segregator #3007 not opened. Horner Press. 23.47 MPag/3403.6 Psig
RFT4	26	2457.5	"	brown scum	-	56.64		19 oily smell	23.43	3398.08	27.68	4015.08	191	(Segregator #3003 un-opened.
	27	2454.0	PRETEST						23.42	3397.31	27.62	4006.03		(Horner Press. 23.45 MPag/3401.0 Psig).
	28	2443.0	"						-	-	-	-		No seal.
	29	"	"						23.66	3432.24	27.49	3986.69		
	30	2442.0	"						-	-	-	-		No seal.
	31	"	"						23.47	3404.18	27.45	3981.50		
	32	2435.5	"						23.46	3402.99	27.35	3967.17		
	33	2465.0	"						23.52	3410.81	27.62	4006.03		
RFT5	34	2454.5	SAMPLE	3	-	11.3	-	17	23.42	3397.44	27.64	4009.57	very low	(Segregator #3008 un-opened. (Horner Press. 23.42 MPag/ 3398.00 Psig).

FORTESCUE – 3

STRATIGRAPHIC TABLE



* Depths are True Vertical Depths

DWG. 1910/0P/11

DESCRIPTION OF LITHOLOGICAL UNITS

FORTESCUE-3

DEPTH	DESCRIPTION
	GIPPSLAND LIMESTONE: (100m-2094mTVD)
240m-570m	SKELETAL CALCARENITE & MINOR MARL: CALCARENITE - very light to light grey, very fine to medium grained, minor very coarse, fossil debris, firmly to loosely cemented, dominantly fossil fragments of bivalves, bryozoa, foraminifera and gastropods. Traces of very fine grained glauconite. MARL - very light grey, very soft.
570m-1045m	CALCISILTITE GRADING TO MARL IN PART: CALCISILTITE - very light grey to buff, soft to firm, occasionally hard and brittle, minor loose fossil fragments dominantly forams, bryozoans, coral and sponge spicules. Glauconite common as nodules, and traces of black carbonaceous? flecks. MARL - very light grey, very soft, minor dark glauconite grains and fossil debris.
1045m-2094m	MARL GRADING TO CALCAREOUS MUDSTONE AND MINOR CALCISILTITE, RARE BEDS OF CALCARENITE: MARL - very light grey to buff, very soft to soft, grading to calcisiltit in part, fossiliferous with predominantly silt size forams, sponge spicules and fossil fragments, minor dark green fine glauconite grains. CALCAREOUS MUDSTONE - light grey to medium grey, brown, firm to moderatel hard, silty and fossiliferous with silt size forams and minor sponge spicules. Trace fine nodular glauconite, and carbonaceous material. CALCARENITE - white to buff and light grey, very fine to medium grained, minor coarse grained, fossiliferous with fragments of coral, bryozoa, forams and spicules, trace to abundant bright green glauconite.
	LAKES ENTRANCE FORMATION (2094m-2420mTVD) MARL GRADING TO CALCAREOUS MUDSTONE, BECOMING SHALEY, INTERBEDDED WITH CALCISILTITE-SILTSTONE: MARL - very light grey to buff, very soft, silty in part, fossiliferous with predominantly silt to medium grained size forams and minor fossil fragments, traces of pyrite and glauconite. CALCAREOUS MUDSTONE - light to medium grey, grey to brown, firm to hard, subfissile and shaley in part, minor silt to fine grained size forams and fossil fragments. Disseminated pyrite common, traces of glauconite and carbonaceous flecks. CALCISILTITE-SILTSTONE - light to medium grey, grey brown, moderately soft to firm, subfissile to blocky, thinly laminated, abundant silt size forams and fossil fragments, traces of pyrite, glauconite and carbonaceous flecks.
	LATROBE GROUP FORMATION (2420m-2607mTVD)
2419m-2605m	INTERBEDDED SANDSTONE AND SILTSTONE WITH THIN COAL SEAMS: SANDSTONE - quartzose, clear to milky, minor yellow to brown, fine to very coarse grained to granular, friable to loose, angular to rounded, poorly sorted, trace of pyritised sandstone.

2/.....

DESCRIPTION OF LITHOLOGICAL UNITS

FORTESCUE-3

DEPTH	DESCRIPTION
	SILTSTONE - medium brown to brown grey, soft to firm, carbonaceous to very carbonaceous, pyrite and mica common, grades to very fine sandstone in part. COAL - black, hard, brittle, conchoidal fracture, pyritised in part.

FORTESCUE-3

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	98	100	-69	1994
	Base of High Velocity Channel	1711	1744	-1713	
	Mid-Miocene Marker	2241	2240	-2209	
Miocene/Oligocene	Lakes Entrance Formation		2094	-2063	325
Eocene/Paleocene	Latrobe Group	2416	2420	-2389	187+
	M-1.0.0 Base Seal	2521	2515	-2484	
	M-1.3.1	2586	2591	-2560	
	T.D. (TVD)		2607		
	T.D. (Driller's MD)		2625		

* All log depths are derived from the TVD logs.

GEOLOGICAL ANALYSIS

Fortescue-3 was drilled for three reasons; namely to confirm the structural interpretation, to confirm the depth of the oil/water contact, and to evaluate the reservoir potential and stratigraphy of the Fortescue Field.

The Latrobe Group section encountered in Fortescue-3 comprises marginal marine to alluvial plain sediments. These can be correlated well with those in Fortescue-1 to the north-west and West Halibut-1 to the south-east.

The uppermost unit at Fortescue-1 (F1; see geological cross section A-A') pinches out to the west of Fortescue-3, where the top of Latrobe Group is represented by marginal marine sandstone and siltstone of the F2 unit. With depth, the facies progressively change to alluvial plain sandstones, shales and coals.

A 29m gross oil column within the F2 unit was cored, but the oil/water contact was not recognised because of core loss. However, the base of known oil is at a depth of 2448m TVD (equivalent to cored depth 2465m). The oil bearing sands in Fortescue-3 pinchout up-dip, west of West Halibut-1.

Formation pressure data indicate that the shales and interbedded coals of the M-1.0.0 base seal form an hydraulic barrier. The formation pressure above the barrier is about 20 psig greater than below it. 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 in the lower sands equate with Halibut Field pressures.

2/.....

GEOPHYSICAL ANALYSIS

Fortescue-3 was drilled to delineate the northern fault block of the Fortescue Field, and confirmed the geophysical prognosis which had been made, all events being encountered well within tolerance.

The latest mapping of the Top of Latrobe seismic Marker is enclosed with this report.

APPENDIX 1

APPENDIX 1

SAMPLES DESCRIPTIONS

LITHOLOGICAL DESCRIPTIONS — P. KEMP

FORTESCUE-3 — 28/11/78

(Depths shown are drillers measured depths)

DEPTH	%	DESCRIPTION
		20" casing shoe at 225 metres.
240m-250m	100%	Calcarenite - very light grey, loose, very fossiliferous with fossil fragments to 1.5mm, dominant bivalve, bryozoa, foraminifera, some minor dark minerals and very rare glauconite. Sample contains about 30% cement.
250m-260m	100%	Calcarenite - As above, with cement.
260m-270m	100%	Calcarenite - As above, sample contains about 10% cement.
270m-280m	100%	Calcarenite - As above, with cement.
280m-290m	100%	Calcarenite - very light grey, very fine grained, angular, clear to very light grey, calcareous matter, with abundant loose fossil fragments as above, some very fine grained, dark, glauconite. Sample contains about 10% cement.
290m-300m	100%	Calcarenite - As above, grains are slightly firm and brittle. Trace cement.
300m-310m	100%	Calcarenite - AS above. Trace cement.
310m-320m	100%	Calcarenite - very light grey, very fine grained, slightly firm and brittle, angular, minor very dark glauconite grain very fossiliferous, dominant bivalves bryozoans and forams, fragments to 1.5mm. Trace cement.
320m-330m	100%	Calcarenite - As above. Trace cement.
330m-340m	100%	Calcarenite - As above, with some medium light grey calcareous grains included. No cement.
340m-350m	100%	Calcarenite - As above, loose very coarse grained fossil fragments, constitute approximately 30% of sample.
350m-360m	100%	Calcarenite - As above.
360m-370m	100%	Calcarenite - As above.
370m-380m	100%	Calcarenite - very light grey, dominantly very fine grained, slightly firm and brittle, angular, minor very dark glauconite grains, very fossiliferous with very coarse grains, loose fossil fragments of bivalves, bryzoans and forams, loose fragments constitute 10-20% of sample.
380m-390m	100%	Calcarenite - As above.
390m-400m	100%	Calcarenite - As above with < 10% loose fossil fragments.

2/.....

LITHOLOGICAL DESCRIPTIONS — P. KEMP

FORTESCUE-3 — 28/11/78

DEPTH	%	DESCRIPTION
400m-410m	100%	Calcarenite - As for 390m-400m.
410m-420m	100%	Calcarenite - very light grey, very fine grained, minor dark grains, rare glauconite, slightly firm and brittle, angular, very little non-calcareous residue after dissolving in HCl. <10% very coarse grains loose fossil fragments
420m-430m	100%	Calcarenite - As above.
430m-440m	100%	Calcarenite - As above.
440m-450m	100%	Calcarenite - As above.
450m-460m	50%	Calcarenite - As above.
	50%	? Marl - very light grey mud, washing out of sample, no discrete grains.
460m-470m	80%	Calcarenite - As above.
	20%	? Marl - As above.
470m-480m	90%	Calcarenite - very light grey, very fine grained, minor dark grains including glauconite, slightly firm and brittle, angular, < 10% loose fossil fragments including bivalves, bryozoans, ?gastropods and forams.
	10%	? Marl - very light grey covering calcisiltite and probably washing out of sample.
480m-490m	80%	Calcarenite - As above.
	20%	? Marl - As above.
490m-500m	50%	Calcarenite - As above. 20% loose fossil fragments with very abundant forams.
	50%	? Marl - As above.
500m-510m	50%	Calcarenite
	50%	? Marl - As above.
510m-520m	50%	Calcarenite - As above.
	50%	? Marl - As above.
520m-530m	80%	Calcarenite - As above.
	20%	? Marl - As above.
530m-540m	80%	Calcarenite - very light grey, very fine grained to silt, minor dark grains and rare glauconite, loose fossils to 20% of sample with forams predominating, slightly firm.
	20%	? Marl - very light grey, covers calcarenite grains, may be washing out of sample.
540m-550m	80%	Calcarenite - As above.
	20%	? Marl - As above.

3/.....

DEPTH	%	DESCRIPTION
550m-560m	90%	Calcarenite - As above.
	10%	? Marl - As above.
560m-570m	100%	Calcarenite - As above.
570m-580m	100%	Calcisiltite - very light grey, silt to very fine grained, and has been a transition from sand to silt size grains, minor glauconite, approximately 10% loose fossil fragments, to 1mm, mainly forams, very rare pyrite.
580m-590m	90%	Calcisiltite - As above.
	10%	? Marl - As above.
590m-600m	100%	Calcisiltite - As above with glauconite becoming common.
600m-610m	100%	Calcisiltite - As above.
610m-620m	100%	Calcisiltite - light grey, silt dominant over very fine grains slightly firm, nodular glauconite common, rare pyrite, approximately 10% loose fossil fragments including forams. Trace Marl - medium to dark grey, firm, very calcareous.
620m-630m	100%	Calcisiltite - As above.
		Trace Marl - As above.
630m-640m	80%	Calcisiltite - As above.
	20%	? Marl - very light grey, disaggregated, very soft, may be washing out of sample.
640m-650m	80%	Calcisiltite - As above.
	20%	?Marl - As above.
650m-660m	80%	Calcisiltite - As above.
	20%	Marl - As above.
660m-670m	100%	Calcisiltite - light grey, silt size grains dominate over very fine grains, slightly firm, common nodular glauconite, rare pryite. Approximately 10% loose fossil fragments to 1.0mm, mainly forams.
670m-680m	100%	Calcisiltite - As above.
680m-690m	100%	Calcisiltite - As above.
690m-700m	100%	Calcisiltite - As above.
700m-710m	100%	Calcisiltite - As above.
710m-720m	100%	Calcisiltite - As above.
720m-730m	100%	Calcisiltite - As above.
730m-740m	100%	Calcisiltite - very light grey, minor very fine grained calcarenite in part, minor nodular glauconite. Approximately 10% loose fossil fragments mainly bryozoans and forams.

4/.....

LITHOLOGICAL DESCRIPTIONS — P. KEMP

FORTESCUE-3 — 28/11/78

DEPTH	%	DESCRIPTION
730m-740m		Continued/....
		Trace Limestone - light grey to buff, hard, microcrystalline
740m-750m	100%	Calcisiltite - As above, includes minor dark grains, some of which appear to be carbonaceous flecks. Very rare? bivalve fossil fragments.
		Trace Limestone - As above.
750m-760m	100%	Calcisiltite - As above.
		Trace Limestone - As above.
760m-770m	100%	Calcisiltite - As above.
		Trace Limestone - As above.
770m-780m	100%	Calcisiltite - light grey, firm, brittle, minor dark grains including nodular glauconite. Approximately 10% loose fossil fragments mainly bryozoans and forams, some within calcisiltite aggregates. Fossil fragments are very coarse grained to 1.0mm.
780m-790m	100%	Calcisiltite - As above.
790m-800m	100%	Calcisiltite - As above with rare pyrite replacing fossils. (EXLOG)
800m-810m	100%	Calcisiltite - light grey, firm, very soft in part, glauconite grains, trace fossil fragments, rare quartz grains, forams (bryozoa + coral stems?).
810m-815m	100%	Calcisiltite - As above, some rare coarser sections.
815m-820m	100%	Calcisiltite - As above, trace fossil fragments.
820m-825m	100%	Calcisiltite - As above, glauconite grains, forams, bryozoa (coral stems?).
825m-830m	100%	Calcisiltite - As above, rare quartz grains.
830m-835m	100%	Calcisiltite - minor fine grained Calcarenite, light grey to light brown grey, glauconite grains, trace fossil fragments, forams.
835m-840m	100%	Calcisiltite - As above, some very soft sections, trace fossil fragments.
840m-845m	100%	Calcisiltite - As above, some with minor marl.
845m-850m	100%	Calcisiltite - minor calcarenite, trace fossils, forams, light grey to light grey brown, hard to brittle, soft in part.
850m-855m	100%	Calcisiltite - As above, forams.
855m-860m	100%	Calcisiltite - As above.
860m-865m	100%	Calcisiltite - As above.
		5/.....

DEPTH	%	DESCRIPTION
865m-870m	100%	Calcisiltite - As above.
870m-875m	100%	Calcisiltite - light grey to light brown grey, hard, brittle some sections soft, glauconite, fossils, forams. Approximately 10% Marl, soft, disaggregated.
		D. HENDERSON 1/12/78
875m-880m		NO RETURNS. BY PASS SHAKERS.
880m-885m	100%	Calcisiltite - light grey to very light brown grey, hard, brittle, 5-10% fine to medium grained fossil fragments, predominantly forams, trace - 1% black glauconite grains.
885m-890m	70%	Calcisiltite - As above, 30% grades to very fine to fine grained Calcarenite.
890m-895m	80%	Calcisiltite - very light grey to very light grey brown, hard, brittle. Trace -5% fossils, predominantly forams, occasional trace of glauconite.
	20%	Calcarenite - gradational with above, grades to very fine to fine grained.
895m-900m	80%	Calcisiltite - As above, grades to
	10%	Calcarenite - very fine to fine grained.
	10%	Limestone - light grey, brown, yellow brown, very hard, massive, brittle, trace glauconite, trace pyrite, sparry in part, grades to Calcisiltite.
900m-905m	90%	Calcisiltite - very light grey, very light brown grey, trace to 1% fine black specks, trace to 5% forams and coral stems, slightly argillaceous, firm to moderately hard.
	10%	Limestone - As above.
905m-910m	100%	Calcisiltite - very light grey, 1% very fine black specks, very soft to firm, very argillaceous, grades to Marl.
910m-915m	100%	Calcisiltite - very light grey, very light brown grey, soft to firm, trace carbonaceous flecks, grades to Calcilutite. Trace forams, sparry.
915m-920m	100%	As above.
920m-925m	100%	Calcisiltite - very light grey, very light brown grey. Trace very fine black flecks, soft to moderately firm, clay size to very fine grains, slightly argillaceous in part, trace fossil fragments, forams.
925m-930m	100%	As above, but becoming moderately hard, brittle.
930m-935m	100%	As above, trace to 5% fossil fragments, coral.
935m-940m	90%	Calcisiltite - very light grey, minor very light brown grey, soft to firm, trace coral fragments, slightly argilla ceous.
	10%	Calcarenite - light tan, firm, friable, medium to coarse

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DEPTH	%	DESCRIPTION
935m-940m	10%	Continued/.....
		grained coral fragments, with Calcisiltite matrix, sparry in part.
940m-945m	95%	Calcisiltite - As above.
	5%	Calcarenite - As above.
945m-950m	100%	Calcisiltite - As above with trace to 5% coarse sparry calcite.
950m-955m	80%	Calcisiltite - very light grey, very light brown grey, trace very fine black specks, very soft to firm, soft variety is clay size and very argillaceous grading to Marl.
	20%	Marl - very light grey, soft, massive, grades to Calcisiltite.
955m-960m	80%	Calcisiltite - As above.
	20%	Marl - As above, gradational.
960m-965m	100%	Calcisiltite - light grey, grades to Marl, soft to firm, minor dark grains, some of which are carbonaceous, minor glauconite, fossils present, mainly forams and ?spicules.
		Trace Limestone - very light grey to buff, hard, micro-crystalline. 60% carbonate.
965m-970m	100%	Calcisiltite - As above.
		Trace Limestone - As above.
970m-975m	100%	Calcisiltite - As above.
975m-980m	100%	Calcisiltite - As above, fraction that tends to marl, is very light grey.
980m-985m	100%	Calcisiltite - light grey to very light grey, minor part grades to marl, soft to slightly firm, minor dark grains, including carbonaceous matter and glauconite, minor fossils including forams.
		Trace Limestone - very light grey to buff, hard, micro-crystalline.
985m-990m	80%	Calcisiltite - As above, fossils mainly forams, and ?spicules
	20%	Marl - very light grey, disaggregated in part, very soft, slightly firmer part tends to calcisiltite.
990m-995m	90%	Calcisiltite - As above.
	10%	Marl - As above.
		Trace Limestone - As above.
995m-1000m	90%	Calcisiltite - As above, forams common to 1.25mm.
	10%	Marl - As above.
		7/.....

DEPTH	%	DESCRIPTION
1000m-1005m	50%	Calcisiltite - As above.
	50%	Marl - As above, tends to calcisiltite in part.
		Trace Limestone - As above.
1005m-1010m	100%	Marl - As above.
		Trace Calcisiltite - As above.
1010m-1015m	100%	Calcisiltite - light grey to very light grey, high calcareous mud content, fossils common, mainly forams and ?spicules. Trace dark grains and rare glauconite, soft to slightly firm. Very rare coarse grained quartz with trace of pyrite coating surface.
1015m-1020m	100%	Calcisiltite - As above, no quartz grains.
1020m-1025m	100%	Calcisiltite - As above.
1025m-1030m	100%	Calcisiltite - As above.
		Trace Limestone - light grey to buff, hard, microcrystalline
1030m-1035m	100%	Calcisiltite - As above.
1035m-1040m	100%	Calcisiltite grades to Marl -light grey to very light grey, soft to slightly firm, minor dark grains which include very dark glauconite grains, fossils common, mainly large forams (to 1.0mm) and ?spicules.
1040m-1045m	100%	Calcisiltite - As above.
1045m-1050m	100%	Marl grades to Calcisiltite - very soft to soft, minor glauconite and fossils. Large amount of HCL insoluble material.
1050m-1055m	100%	Marl - As above.
		NOTE: Change to 10m samples due to high (60m/hr) drilling rate and difficulty of washing the clayey samples.
1050m-1060m	100%	Marl - As above.
1060m-1070m	100%	Marl - tends to calcisiltite, very light grey to light grey, minor dark grains, rare glauconite, fossils common, large acid insoluble residue.
1070m-1080m	100%	Marl - As above, fossils, include ?spicules.
		Trace Limestone - buff to hard, microcrystalline.
1080m-1090m	100%	Marl - As above.
1090m-1100m	100%	Marl - tends to calcisiltite in part, sample grains contain about 20% silt size material, mainly fossils and dark grains very soft to soft, some larger (to 1.00mm) forams.
		Trace Limestone - hard, buff, microcrystalline.
1100m-1110m	100%	Marl - As above.

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DEPTH	%	DESCRIPTION
1110m-1120m	100%	Marl - As above, tends to calcisiltite in part.
1120m-1130m	100%	Marl - As above, part that tends to calcarenite is firm.
1130m-1135m	100%	Marl - very light grey to light grey, tends to calcisiltite in part, contains approximately 20% silt size material, mainly fossils and dark grains, very soft to firm, rare glauconite.
1135m-1140m	100%	Marl - As above.
1140m-1145m	100%	Marl - As above, fossils mainly forams and ?spicules, some larger forams to 1.0mm.
1145m-1150m	100%	Marl - As above.
1150m-1155m	100%	Marl - very light grey to light grey, minor part grades to calcisilitte, sample contains about 20% silt size material mainly fossils. Minor dark grains and rare glauconite, forams common.
1155m-1160m	100%	Marl - As above.
1160m-1165m	100%	Marl - As above.
1165m-1170m	100%	Marl - As above.
1170m-1175m	100%	Marl - As above. Trace dark grey Marl.
1175m-1180m	100%	Marl - very light grey to light grey, minor (20%) silt size material mainly fossils. Minor dark grains, rare glauconite, very soft to slightly firm.
1180m-1185m	100%	Marl - As above.
1185m-1190m	100%	Marl - As above. Trace dark grey Marl.
1190m-1195m	100%	Marl - As above. Larger forams common.
1195m-1200m	100%	Marl - very light grey to light grey, minor silt size grains - mainly fossils including forams and ?spicules very soft to slightly firm, very rare glauconite.
1200m-1205m	100%	Marl - As above.
1205m-1210m	100%	Marl - As above.
1210m-1215m	100%	Marl - As above, minor calcisiltite.
1215m-1220m	100%	Marl - light grey and very light grey, minor part tends to calcisiltite, sample contains some silt size grains which are mainly fossils. Some dark grains and rare glauconite, soft.
1220m-1225m	100%	Marl - As above.
1225m-1230m	100%	Marl - As above.
1230m-1235m	100%	Marl - As above.
1235m-1240m	100%	Marl - both light grey and very light grey, minor part

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DEPTH	%	DESCRIPTION
1235m-1240m	100%	Continued/....
		grades to calcisiltite, some fossil and dark grains, including glauconite, some silt size, soft to very soft.
1240m-1245m	100%	Marl - As above, very soft and disaggregated.
1245m-1250m	100%	Marl - As above, disaggregated and very soft.
1250m-1255m	100%	Marl - both light grey and very light grey, minor part grades to calcisiltite and is firmer, otherwise very soft and often disaggregated minor dark grains, rare glauconite, silt size fossils common, forams and ?spicules.
1255m-1260m	100%	Marl - As above.
1260m-1265m	100%	Marl - As above.
		Pulled out of hole at 1845 hours, to change bit 1271m. D. HENDERSON 2/12/78
1265m-1270m	100%	Marl - very light grey and light olive grey, very soft and disaggregated to firm, slight trace very fine dark grains, trace forams.
1270m-1275m	100%	Marl - As above.
1275m-1280m	70%	Marl - light olive grey, soft to firm, calcisiltitic, very argillaceous, grades to
	30%	Calcisiltite - light olive grey, moderately firm, massive, very argillaceous, trace forams and ?spicules. Slight trace glauconite.
1280m-1285m	70%	Calcisiltite - As above, grading to
	30%	Marl - As above.
1285m-1290m	70%	Calcisiltite - medium light grey to medium grey, firm to hard, brittle, massive, very argillaceous, 1-2% forams, rar glauconite.
	20%	Marl - very light grey, soft, trace forams, grades to Calcisiltite.
	10%	Limestone - olive grey, tan, very hard, brittle, massive, microcrystalline, ?silicified, slightly argillaceous.
1290m-1295m	90%	Calcisiltite - generally as above, very argillaceous, marly, grades to
	5%	Marl - As above.
	5%	Limestone - As above.
1295m-1300m	90%	Calcisiltite - medium grey, medium light grey, very argillaceous, grading to calcareous mudstone, rare glauconite, trace forams and coral fragments, grades to
	10%	Marl - light grey, soft.
1300m-1305m	100%	Calcisiltite - As above, grades to Calcareous Mudstone

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DEPTH	%	DESCRIPTION
1300m-1305m	100%	Continued/.... (Calcareous Siltstone), 30-40% acid insoluble claysize residue.
1305m-1310m	100%	Mudstone - Calcareous - medium to light grey, firm to moderately hard, massive, trace very fine black carbonaceous? specks, forams, rare glauconite.
1310m-1315m	100%	Calcareous Mudstone - As above, abundant forams.
1315m-1320m	80%	Calcareous Mudstone - As above.
	20%	Marl - very light grey, very soft, argillaceous, silty.
1320m-1325m	100%	Calcareous Mudstone - light to medium grey, firm to moderately hard, massive, good trace loose forams, slight trace black? carbonaceous specks. Approximately 40% calcareous silt, 10% micrite, 45% clay, 5% forams and fossil fragments. Trace black carbonaceous(?) specks, rare glauconite.
1325m-1330m	95%	Calcareous Mudstone - As above.
	5%	Marl - light grey, soft.
1330m-1335m	100%	Calcareous Mudstone - As above.
1335m-1340m	95%	Calcareous Mudstone - As above, trace glauconite. Trace very fine black specks, grades to
	5%	Marl - As above. Calcimetry 48%.
1340m-1345m	90%	Calcareous Mudstone - medium light to medium grey, firm to moderately hard, trace black specks, rare glauconite. Approximatey 60% micrite and calcareous silt, 40% clay.
	10%	Marl - very light grey, soft, 1-2% forams.
1345m-1350m	100%	Calcareous Mudstone - As above.
1350m-1355m	100%	Calcareous Mudstone - As above, 40-70% silt size, 30-60% clay size, trace very fine sand size. Massive to thin laminae.
1355m-1360m	90%	Calcareous Mudstone - As above.
	10%	Marl - very light grey, soft, silty, occasionally very fine carbonaceous? flecks. Good trace 2mm forams.
1360m-1365m	90%	Calcareous Mudstone - As above, silt size 40-60%, clay size 40-60%.
	10%	Marl - As above.
1365m-1370m	95%	Calcareous Mudstone - As above, grades to
	5%	Marl - As above.
1370m-1375m	80%	Calcareous Mudstone - light grey to medium light grey, firm to moderately hard, brittle, massive to thin laminae,

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DEPTH	%	DESCRIPTION
1370m-1375m	80%	Continued/.....
		30-50% silt size, 50-70% clay size. Trace very fine sand size, trace black very fine grains (carbonaceous?), good trace forams, grades to
	20%	Marl - very light grey, soft to firm, silty, trace forams.
1375m-1380m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
1380m-1385m	80%	Calcareous Mudstone - As above.
	10%	Marl - As above.
	10%	Limestone - buff, hard, microcrystalline, ? slightly dolomitic, (reacts almost immediately with HCL).
1385m-1390m	70%	Calcareous Mudstone - As above.
	10%	Marl - As above.
	20%	Limestone - As above.
1390m-1395m	80%	Calcareous Mudstone - light grey to medium light grey, firm and brittle in part, contains 20% silt size, minor dark grains some of which are carbonaceous, very rare glauconite, minor forams to 2.0mm.
	10%	Marl - very light grey, soft, slightly silty.
	10%	Limestone - medium light grey, buff, hard, microcrystalline
1395m-1400m	90%	Calcareous Mudstone - light grey to medium light grey, firm and brittle in part, contains approximately 30% silt size grains, minor dark grains.
	10%	Marl - very light grey, soft, slightly silty.
		Trace Limestone - medium light grey to buff, hard, ?slightly dolomitic, microcrystalline.
1400m-1405m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
1405m-1410m	80%	Calcareous Mudstone - As above, some of the dark grains are carbonaceous.
	20%	Marl - As above.
1410m-1415m	80%	Calcareous Mudstone - As above, some large (1.5mm) forams loose in sample.
	20%	Marl - As above.
		64% calcimetry.
1415m-1420m	70%	Calcareous Mudstone - light grey to medium light grey, dominantly firm, occasionally very firm, approximately

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DEPTH	%	DESCRIPTION
1415m-1420m	70%	Continued/.....
		25% silt size grains, minor dark grains -? carbonaceous matter.
	30%	Marl - very light grey, soft to very soft, approximately 15% silty grains.
1420m-1425m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
1425m-1430m	70%	Calcareous Mudstone - As above.
	30%	Marl - As above.
1430m-1435m	70%	Calcareous Mudstone - light grey to medium light grey, dominantly firm, minor part very firm and soft, approximately 25% silt size grains, minor dark ?carbonaceous matter, minor silt size fossils including forams.
	30%	Marl - very light grey, soft to very soft, up to 15% silt size grains.
1435m-1440m	60%	Calcareous Mudstone - As above.
	40%	Marl - As above, occasionally finely interlaminated with medium to dark grey marl, large amount insoluble material in HCL.
1440m-1445m	40%	Calcareous Mudstone - As above (65% carbonate).
	60%	Marl - As above (58% carbonate).
1445m-1450m	90%	Calcareous Mudstone - light grey to medium light grey, dominantly firm, minor very firm and soft, soft fraction tends to marl. Approximately 20% silt size grains, trace ?carbonaceous matter, minor silt size fossils including forams.
	10%	Marl - very light grey, very soft, minor (10-15%) silt size grains.
1450m-1455m	90%	Calcareous Mudstone - As above.
	10%	Marl - As above.
1455m-1460m	90%	Calcareous Mudstone - As above, forams are common (.2-.5mm).
	10%	Marl - As above, rarely finely interlaminated with medium dark grey marl.
1460m-1465m	90%	Calcareous Mudstone - As above, occasionally hard.
	10%	Marl - As above. Loose forams to 1.25 mm.
1465m-1470m	90%	Calcareous Mudstone - light grey to medium light grey, dominantly firm, some soft and some hard. Approximately 35% silt size fraction. Trace carbonaceous matter, minor to rare fossils, mainly forams, dominantly massive.
	10%	Marl - very light grey, very soft, minor (10%) silt fraction
		13/.....

DEPTH	%	DESCRIPTION
1465m-1470m	10%	Continued/.....
		usually massive.
1470m-1475m	90%	Calcareous Mudstone - As above.
	10%	Marl - As above.
1475m-1480m	90%	Calcareous Mudstone - light grey to medium light grey, 20-30% silt fraction, minor carbonaceous matter which is mostly silt size rarely to 0.1mm. Very rare nodular light green glauconite, minor fossils - silt size? mainly forams generally firm and brittle, occasionally hard, occasionally soft tending to marl.
	10%	Marl - very light grey, soft, 10% silt size fraction and minor dark grains.
1480m-1485m	100%	Calcareous Mudstone - As above.
		Trace Marl as above, disaggregated in part and coats calcareous mudstone grains.
1485m-1490m	100%	Calcareous Mudstone - As above.
		Trace -5% Marl- As above.
1490m-1495m	90%	Calcareous Mudstone - As above, approximately 10-20% silt size fraction, remainder clay size.
	10%	Marl - As above.
1495m-1500m	100%	Calcareous Mudstone - light grey to medium light grey, 20-30% silt fraction, minor carbonaceous matter (rare laminae of carbonaceous matter) minor fossils silt size ? mainly forams, generally firm to hard, becoming harder with depth.
		Trace-5% Marl - very light grey, soft, 10% silt fraction.
1500m-1505m	90%	Calcareous Mudstone - As above.
	10%	Marl - As above.
1505m-1510m	100%	Calcareous Mudstone - As above.
		Trace-5% Marl - As above. Good trace sand size forams, loose. Trace very fine Pyrite. Good trace very fine black specks (carbonaceous and/or glauconite).
1510m-1515m	100%	Calcareous Mudstone - medium light grey to light grey, approximately 20-30% silt fraction, minor carbonaceous matter, minor fossils (generally silt size) mainly forams.
		Trace Marl - very light grey, very soft, approximately 10% silt fraction.
1515m-1520m	100%	Calcareous Mudstone - As above.
		Trace Marl - As above.

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DEPTH	%	DESCRIPTION
1520m-1525m	100%	Calcareous Mudstone - As above. Trace Marl - As above.
1526m-1527m		Gas Show. Greater than 2000 units hot wire (saturated). C_1 1,500,000 ppm. C_2 7,500 ppm. C_3 870 ppm. C_4 140 ppm. Check for flow (none) and circulate bottoms up. (Current depth 1535m).
1526m-1527m	70%	Calcareous Mudstone - medium light grey to light grey, approximately 20% silt size fraction, minor dark grains including carbonaceous matter, contains minor fossils including spherical, silica? forams to.2mm, rare glauconite.
	20%	Limestone - medium dark grey to buff, ?slightly dolomitic, very hard, microcrystalline, contains minor spherical, silica ?forams to .2mm.
	5-10%	Silica Grains - clear to white, very coarse to 3mm grains, angular, appear broken, some tabular, some spherical (several layers apparent) and some have very fine grained crystalline coating giving a frosted appearance. Grains have good uniform white to very light yellow fluorescence with an instant white cut.
1527m-1530m	80%	Calcareous Mudstone - As above, no silica ?forams.
	15%	Limestone - As above, rare crystalline silica adhering to Limestone grains!
	Tr-15%	Loose Silica Grains - As above, good fluorescence, do not appear to cut.
1530m-1535m	85%	Calcareous Mudstone - medium light grey to light grey, firm occasionally hard, approximately 20% silt fraction includin minor carbonaceous material, rare glauconite, no silica? forams.
	10%	Limestone - medium dark grey to buff, hard, microcrystallin
	~5%	Loose Silica Grains - clear to white, 1.0-5.0mm, often broken and angular, mostly tabular with minor very fine grained crystalline, white, some grains are spherical with layers evident, one grain has 3 such spheres joined together and appears to be organic ? a foraminifera. All grains have good uniform white to very light yellow fluorescence, some grains (including the elongate spherical ?foram described above) show an instant white to very light yellow cut. Others show no visible cut.

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LITHOLOGICAL DESCRIPTIONS — P. KEMP

FORTESCUE-3 — 4/12/78

DEPTH	%	DESCRIPTION
1536m-1548.6m CORE NO. #1	100%	Calcareous Mudstone - approximately 10-20% silt, occasionally 30-40% silt, medium grey, trace mica, trace glauconite, extensively burrowed with light grey silty material and minor dark grey mudstone infilling burrows, trace carbonaceous matter, minor very fine grained crystalline silica infilling, minor fossils including forams.
1548.6m-1550m	100%	Calcareous Mudstone - medium grey and light grey, light grey portion has up to 40% silt fraction, medium grey is less silty, soft to firm, trace glauconite, minor to occasionally common ? forams spherical and clear to 0.05mm in size.
1550m-1555m	100%	Calcareous Mudstone - As above.
1555m-1560m	100%	Calcareous Mudstone - As above with minor fraction extending into the very fine grained range including carbonaceous flecks.
1560m-1565m	100%	Calcareous Mudstone - dominantly medium grey, minor medium light grey, 20-40% silt fraction, trace glauconite, trace carbonaceous material, trace to common fossils mainly silt size, spherical ? forams, very firm to soft.
1565m-1570m	100%	Calcareous Mudstone - As above.
1570m-1575m	100%	Calcareous Mudstone - medium light grey to medium grey, firm to moderately hard, brittle, clay to very fine grained size range, 40-70% clay size, 30-55% silt size, trace -5% very fine, trace very fine carbonaceous flecks or black glauconite.
1575m-1580m	100%	Calcareous Mudstone - As above.
1580m-1585m	100%	Calcareous Mudstone 40-50% clay size, 50-55% silt size, trace -5% of sand size.
1585m-1590m	90%	Calcareous Mudstone - light grey to medium light grey, soft to moderately hard, 60-70% clay size, 30-35% silt size, trace -5% very fine sand size, good trace very fine black carbonaceous specks, trace silt size forams, trace mica.
	10%	Marl - very light grey, soft, 10-20% silt size.
1590m-1595m	100%	Calcareous Mudstone - As above.
1595m-1600m	100%	Calcareous Mudstone - As above.
		R.C.N. THORNTON 9/12/78
1600m-1605m		Calcisiltite - grey to brown to light brown, firm, comprising predominantly fine silt size forams, set in brown clay matrix. Trace slightly larger forams ($\frac{1}{8}$mm), and other fossil fragments. Trace carbonaceous flecks, rare trace glauconite, rare trace pyrite. Percentage of clay varies from 20-50%.

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DEPTH	%	DESCRIPTION
1605m-1610m		Calcisiltite - As above.
1610m-1615m		Calcisiltite - As above.
1615m-1620m		Calcisiltite - As above.
1620m-1625m		Calcisiltite - As above.
1625m-1630m		Calcisiltite - As above.
1630m-1635m	70%	Calcisiltite - As above, except trace sponge spicules, grading to
	30%	Calcareous Mudstone - in which proportion of forams is less than 50%.
1635m-1640m	70%	Calcisiltite - As above.
	20%	Calcareous Mudstone - As above.
	10%	Marl - buff to light grey, soft, 10-30% forams, sponge spicules, fossil fragments in calcareous clay matrix.
1640m-1645m	80%	Calcisiltite - grey brown to light brown, firm, comprising mainly fine silt size forams, some orange stained, plus trace sponge spicules and other fossil fragments, set in calcareous clay matrix. Trace carbonaceous flecks and pyrite. Percentage of clay varies 20-50%, grading to
	20%	Calcareous Mudstone - in which proportion of forams is less than 50%.
		Trace Marl - buff to light grey, soft, 10-30% forams, sponge spicules, fossil fragments in calcareous clay matrix.
1645m-1650m	60%	Calcisiltite - As above.
	40%	Calcareous Mudstone - As above.
1650m-1655m	70%	Calcisiltite - As above, except more forams are longer tha silt size, more pyrite, rare trace glauconite.
	30%	Calcareous Mudstone - As above.
		Trace large forams (1mm diam.) pyrite aggregates.
1655m-1660m	60%	Calcisiltite - As above.
	40%	Calcareous Mudstone - As above.
		Trace Marl - As above.
1660m-1665m	70%	Calcisiltite - As above.
	30%	Calcareous Mudstone - As above.
1665m-1670m	60%	Calcareous Mudstone - As above.
	40%	Calcisiltite - As above.
1670m-1675m	70%	Calcareous Mudstone - As above.

17/.....

DEPTH	%	DESCRIPTION
1670m-1675m		Continued/.....
	30%	Calcisiltite - As above.
1675m-1680m	70%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
1680m-1685m	50%	Calcareous Mudstone - As above.
	50%	Calcisiltite - As above.
		Trace large loose foram.
1685m-1690m	50%	Calcareous Mudstone - As above.
	50%	Calcisiltite - As above.
1690m-1695m	60%	Calcisiltite - grey to brown, firm, comprising mainly silt size forams, plus minor sponge spicules and other fossil fragments, set in clay matrix. Trace carbonaceous flecks and pyrite. Rare trace glauconite impregnated forams. Percentage clay varies 20-50%. Grading to
	40%	Calcareous Mudstone - grey to brown to light brown, buff, firm, differing from calcisiltite in that clay percentage varies 50-80%.
		Trace Marl - buff, soft, approximately 20% forams and other fossils set in soft highly calcareous clay matrix.
1695m-1700m	50%	Calcareous Mudstone - As above.
	50%	Calcisiltite - As above.
1700m-1705m	70%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
		Trace Marl - As above.
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1705m-1710m	60%	Calcareous Mudstone - As above.
	40%	Calcisiltite - As above.
1710m-1715m	50%	Calcisiltite - light grey to medium light grey, buff, firm, massive to blocky, thin laminae, 50-70% silt size to very fine forams and minor sponge spicules in a calcareous clay matrix, trace glauconite.
	50%	Calcareous Mudstone - very light grey to medium light grey, occasionally buff, soft to firm, 30-50% silt size forams. 50-70% clay size matrix, trace glauconite, gradational with Calcisiltite.
1715m-1720m	70%	Calcisiltite - As above, 60-80% silt size forams, trace pyrite, trace glauconite, grades to
	20%	Calcareous Mudstone - As above.

18/.....

DEPTH	%	DESCRIPTION
1715m-1720m		Continued/.....
	10%	Calcarenite - white, cream, occasionally buff, firm, silt size to coarse grained fragments, coral, bryozoa, trace carbonaceous matter, predominantly medium grained to coarse grained, with silt size matrix.
1720m-1725m	50%	Calcisiltite - As above.
	30%	Calcareous Mudstone - As above, gradational with Calcisiltite.
	20%	Calcarenite - cream, very light grey, firm to hard, silt size to medium grained with occasional coarse grained fragments in silt size matrix, in part gradational with Calcisiltite, occasionally dark grey, very coarse, angular fragments, trace glauconite.
1725m-1730m	50%	Calcisiltite - As above, trace carbonaceous matter, grades in part to Calcarenite and
	40%	Calcareous Mudstone - As above.
	10%	Calcarenite - As above.
1730m-1735m	60%	Calcisiltite - light grey to medium light grey, firm, massive to blocky, 60-80% silt size to very fine grained forams, spicules and fossil debris in clay size matrix, good trace glauconite, slight trace very fine carbonaceous flecks.
	40%	Calcarenite - very light grey, occasionally buff, 40-60% fine grained to medium grained, occasionally coarse grained, angular fragments including forams in a Calcisiltite matrix, abundant bright green glauconite partly gradational with Calcisiltite, as above.
1735m-1740m	70%	Calcisiltite - As above, trace -20% medium grained, angular fossil debris, grades to
	30%	Calcarenite - As above.
1740m-1745m	80%	Calcisiltite - As above.
	20%	Calcarenite - As above.
1745m-1750m	60%	Calcisiltite - As above.
	10%	Calcarenite - As above.
	30%	Calcareous Mudstone - light grey, firm, 20-40% silt, trace glauconite, massive.
1750m-1755m	30%	Calcisiltite
	70%	Marl - very light grey to light grey, slightly buff grey, very soft, 10-30% silt size forams.
1755m-1760m	100%	Marl - As above.
1760m-1765m	100%	Marl - As above.

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LITHOLOGICAL DESCRIPTIONS — D.J. HENDERSON

FORTESCUE-3 — 9/12/78

DEPTH	%	DESCRIPTION
1765m-1770m	90%	Marl - light grey, soft to firm. 10-30% silt size grains.
	10%	Calcisiltite - 40-60% silt size, firm.
1770m-1775m	100%	Marl - light grey, very soft, hygroturqid (dispersive), 10-20% silt size forams, occasional trace pyrite.
1775m-1780m	100%	Marl - As above.
1780m-1785m	100%	Marl - As above.
1785m-1790m	90%	Marl - As above, trace pyrite.
	10%	Calcisiltite - light grey to medium light grey, soft to firm, massive, 30-50% fine silt size forams.
1790m-1795m	100%	Marl - As above.
1795m-1800m	100%	Marl - As above.
1800m-1805m	100%	Marl - very light grey, light grey, very soft, dispersive, massive, approximately 20% fine silt size grains, abundant forams, slight trace pyrite, sometimes as replacement of forams, rare very fine carbonaceous specks.
1805m-1810m	70%	Marl - As above.
	30%	Calcareous Mudstone - medium light grey to medium grey, firm, massive, 30-40% fine silt size forams, trace pyrite.
1810m-1815m	70%	Marl - As above.
	30%	Calcareous Mudstone - As above.
1815m-1820m	90%	Marl - As above, approximately 20% silt size to very fine forams, trace pyrite.
	10%	Calcareous Mudstone
1820m-1825m	50%	Marl - As above.
	40%	Calcareous Mudstone - medium light grey to medium grey, firm, massive, blocky, 30-40% silt size and occasionally very fine fossil fragments and forams, trace carbonaceous specks, good trace pyrite,grades to
	10%	Calcisiltite - medium light grey to medium grey, firm, massive, blocky, 50-60% silt size fragments.
1825m-1830m	70%	Marl - very light grey to light grey, very soft, 20-30% clear silt size forams, good trace pyrite.
	30%	Calcareous Mudstone - As above.
1830m-1835m	70%	Marl - As above.
	30%	Calcareous Mudstone - As above.
1835m-1840m	80%	Marl - As above, 20-25% silt size grains and/or forams, trace pyrite.

20/.....

DEPTH	%	DESCRIPTION
1835m-1840m		Continued/.....
	20%	Calcareous Mudstone - light to medium grey, firm, massive to platey, 20-30% silt size, very abundant forams.
1840m-1845m	90%	Marl - As above.
	10%	Calcareous Mudstone - As above.
		R.C.N. THORNTON
1845m-1850m	70%	Marl - very light grey to buff, very soft, 20-30% clear silt size forams, trace pyrite and carbonaceous flecks, set in highly calcareous clay matrix.
	20%	Calcisiltite - grey to brown, firm, silt size forams, trace sponge spicules and minor amounts of fossil fragments trace pyrite and carbonaceous flecks, set in calcareous clay matrix. Percentage clay varies 20-50%. Grading to
	10%	Calcareous Mudstone - differing from Calcisiltite only in that clay percentage varies 50-80%.
1850m-1855m	40%	Marl - As above.
	30%	Calcisiltite - As above.
	30%	Calcareous Mudstone - As above.
		Trace pyrite nodule, ? replacing coral.
		10/12/78
1855m-1860m	50%	Marl - As above.
	30%	Calcisiltite - As above, except trace orange grains.
	20%	Calcareous Mudstone - As above.
		Trace loose, large forams, some pyrite impregnated.
1860m-1865m	70%	Marl - As above.
	20%	Calcisiltite - As above.
	10%	Calcareous Mudstone - As above.
1865m-1870m	80%	Marl - As above.
	10%	Calcisiltite - As above.
	10%	Calcareous Mudstone - As above.
1870m-1875m	80%	Marl - As above.
	10%	Calcisiltite - As above.
	10%	Calcareous Mudstone - As above.
		Trace loose forams, especially globular forams.

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DEPTH	%	DESCRIPTION
1875m-1880m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
		Trace loqse forams.
1880m-1885m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite
1885m-1890m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
1890m-1895m	40%	Marl - As above.
	30%	Calcareous Mudstone - As above.
	30%	Calcisiltite
		Trace Calcarenite - skeletal limestone or packstone, light brown, hard, predominantly fine grain size forams, and minor other fossil fragments, trace pyrite, trace glauconite set in calcareous cement.
1895m-1900m	40%	Marl - As above.
	30%	Calcisiltite - As above.
	30%	Calcareous Mudstone - As above.
1900m-1905m	70%	Marl - As above, pyrite impregnated forams.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
1905m-1910m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
1910m-1915m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
1915m-1920m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.

22/.....

DEPTH	%	DESCRIPTION
1920m-1925m	70%	Marl - As above.
	20%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
		Trace Calcite fragments, clear, orange.
1925m-1930m	85%	Marl - very light grey to buff, very soft, generally 20-30% forams, mostly silt size, with minor fine to medium grained size, plus minor fossil fragments, set in highly calcareous clay matrix. Trace pyrite impregnated forams, pyrite aggregates or finely disseminated pyrite. Rare trace carbonaceous flecks.
	10%	Calcareous Mudstone - grey to brown, firm, comprising 20-50% silt size forams, sponge spicules and trace fossil fragments, set in calcareous clay matrix. Trace pyrite, finely laminated.Grades to
	5%	Calcisiltite - in which clay percentage is less than 50%.
1930m-1935m	90%	Marl - As above.
	10%	Calcareous Mudstone and Calcisiltite - As above.
1935m-1940m	95%	Marl - As above.
	5%	Calcareous Mudstone and Calcisiltite - As above.
		Trace Calcareous Mudstone fragment and glauconite pellet set in pink calcite.
1940m-1945m	90%	Marl - As above.
	10%	Calcareous Mudstone and Calcisiltite - As above.
1945m-1950m	50%	Marl - As above.
	30%	Calcareous Mudstone - As above.
	20%	Calcisiltite - As above.
1950m-1955m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
1955m-1960m	60%	Calcareous Mudstone - As above.
	20%	Calcisiltite - As above.
	20%	Marl - As above.
		Trace loose, globular forams.
1960m-1965m	50%	Calcareous Mudstone - As above.
	30%	Marl - As above.
	20%	Calcisiltite
		Trace large, loose, globular forams.

23/.....

DEPTH	%	DESCRIPTION
1965m-1970m	50%	Marl - As above.
	30%	Calcareous Marl - As above.
	20%	Calcisiltite - As above.
		Trace Calcite.
1970m-1975m	70%	Calcareous Mudstone - grey to brown, firm, comprising 10-50% silt size forams and minor fossil fragments set in calcareous clay matrix. Trace disseminated pyrite, rare trace carbonaceous flecks.
	20%	Calcisiltite - differing from Calcareous Mudstone only in that percentage of forams and fossil fragment varies 50-80%.
	10%	Marl - very light grey, buff, very soft, silt size forams set in highly calcareous matrix. Rare trace glauconite.
		Trace large, loose forams.
1975m-1980m	50%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	20%	Marl - As above.
1980m-1985m	40%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	30%	Marl - As above.
		Trace very large (1-2mm diameter), loose foram.
1985m-1990m		NO SAMPLE.
1990m-1995m	80%	Calcareous Mudstone - As above, except silt fraction generally 10-20%.
	20%	Marl - As above.
1995m-2000m	90%	Marl - As above.
	10%	Calcareous Mudstone - As above.
2000m-2005m	80%	Marl - As above.
	20%	Calcareous Mudstone - As above.
		Trace large, loose forams.
2005m-2010m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
		Trace loose forams, a few pyrite impregnated.
2010m-2015m	50%	Calcareous Mudstone - As above.
	30%	Marl - As above.

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DEPTH	%	DESCRIPTION
2010m-2015m		Continued/.....
	20%	Calcisiltite - As above.
		Trace Skeletal Limestone - Packstone - brown, hard, forams and other fossil fragments fine grain size, set in calcareous cement, large,loose forams.
2015m-2020m	40%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	30%	Marl - As above.
2020m-2025m	50%	Marl - As above.
	30%	Calcareous Mudstone - As above.
	20%	Calcisiltite - As above.
2025m-2030m	50%	Calcareous Mudstone - grey to brown, light brown, dark grey firm, massive - semifissile, comprising 5-50% silt size forams, minor fine to medium grain size forams and fossil fragments, set in calcareous clay matrix. Trace pyrite aggregates and disseminated pyrite. Grading to
	30%	Calcisiltite - light brown, grey to brown, firm, massive, differing from calcareous mudstone in that percentage clay matrix is less than 50%.
	20%	Marl - very light grey to buff, very soft, 20-30% silt size forams, minor fine to medium grain size forams and fossil fragments, set in highly calcareous clay matrix.
		Trace loose forams, mostly clear, minor white, $^{1}/_{8}$-1mm diameter, trace pyrite impregnated.
2030m-2035m	40%	Calcareous Mudstone - As above.
	40%	Calcisiltite - As above.
	20%	Marl - As above.
		Trace forams as above.
2035m-2040m	60%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	10%	Marl - As above.
2040m-2045m	60%	Calcareous Mudstone - As above, trace glauconite.
	30%	Calcisiltite - As above.
	10%	Marl - As above.
		Trace loose forams ($^{1}/_{8}$-2mm diameter).
2045m-2050m	60%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.

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DEPTH	%	DESCRIPTION
2045m-2050m		Continued/.....
	10%	Marl - As above.
		1010 hours, 10/12/78, stopped drilling at depth 2052m to change bit.
		0034 hours, 11/12/78 recommenced drilling, Bit #8 HTC X3A.
2050m-2055m	80%	Marl - As above - ?cavings.
	20%	Calcareous Mudstone and Calcisiltite - As above.
2055m-2060m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
2060m-2065m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
		Trace Quartz grain, clear, polished, coarse grained, angular, fractured.
2065m-2070m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
		Trace loose forams.
2070m-2075m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
		Trace loose forams, pyrite aggregates. 11/12/78
2075m-2080m	90%	Marl - As above.
	10%	Calcareous Mudstone and Calcisiltite - As above.
2080m-2085m	90%	Marl - As above.
	10%	Calcareous Mudstone and Calcisiltite - As above.
2085m-2090m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
2090m-2095m	80%	Marl - As above.
	20%	Calcareous Mudstone and Calcisiltite - As above.
2095m-2100m	70%	Marl - very light grey to buff, very soft, comprising 10-30% silt to medium grain size forams and minor fossil fragments set in highly calcareous clay matrix. Trace pyrite, rare trace glauconite.
	30%	Calcareous Mudstone - light grey to brown, firm, massive to subfissile, comprising 5-40% silt size and minor fine grain size forams and minor fossil fragments set in calcareous clay matrix. Trace pyrite, trace carbonaceous flecks.

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DEPTH	%	DESCRIPTION
2100m-2105m	80%	Marl - As above.
	20%	Calcareous Mudstone - As above.
2105m-2110m	60%	Marl - As above.
	40%	Calcareous Mudstone - As above, except dominantly 0-5% silt size fraction. Rare trace glauconite.
2110m-2115m	70%	Marl - As above.
	30%	Calcareous Mudstone - As above.
2115m-2120m	50%	Marl - As above.
	50%	Calcareous Mudstone - As above.
		Trace large, loose forams.
2120m-2125m	50%	Marl - As above.
	50%	Calcareous Mudstone - As above.
2125m-2130m	50%	Marl - As above.
	50%	Calcareous Mudstone - As above.
2130m-2135m	40%	Marl - As above.
	40%	Calcareous Mudstone - As above, mostly containing 20-30% silt size fraction.
	20%	Calcisiltite - light brown, grey, firm, comprising 50-80% silt size forams and fossil fragments, set in calcareous clay matrix. Trace pyrite.
2135m-2140m	50%	Marl - As above.
	40%	Calcareous Mudstone - As above.
	10%	Calcisiltite - As above.
2140m-2145m	60%	Calcareous Mudstone - As above.
	20%	Calcisiltite - As above.
	20%	Marl - As above.
		Trace loose forams, mainly 1/8-¼mm diameter.
2145m-2150m	60%	Calcareous Mudstone - As above.
	20%	Calcisiltite
	20%	Marl
		Trace loose forams, some up to 2mm diameter.
2150m-2155m	60%	Calcareous Mudstone - light brown to brown to grey, firm to hard, mainly subfissile, comprising 0-50%, mainly 20-30% silt size forams set in calcareous clay matrix. Disseminated pyrite common, trace glauconite, rare trace

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DEPTH	%	DESCRIPTION
2150m-2155m	60%	Continued/.....
		echinoid spine, trace pyrite impregnated forams. Grading to
	30%	Calcisiltite - light grey to light brown, differing from calcareous mudstone in that forams range 50-80%.
	10%	Marl - As above.
		Trace loose forams mostly ¼-1mm diameter. Skeletal Limestone - brown, hard, comprising fine grain size forams, glauconite and fossil fragments in calcareous clay cement.
2155m-2160m	60%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	10%	Marl - As above.
		Trace forams as above, Limestone, as above. D.J. HENDERSON
2160m-2165m	60%	Calcisiltite - As above.
	40%	Calcareous Mudstone - As above.
		Trace Skeletal Limestone.
2165m-2170m	30%	Marl - very light grey to light grey, very soft, 20-25% silt size forams.
	60%	Calcisiltite - medium light grey, moderately soft to firm, platey cuttings, poorly defined thin laminations, 40-70% predominantly silt size, but occasionally very fine grain forams, disseminated pyrite, slight trace glauconite, grades to
	10%	Calcareous Mudstone - similar to Calcisiltite, but contains less silt size forams (generally 30-40%) in a calcareous clay matrix.
2170m-2175m	80%	Calcisiltite - As above, 40-90% silt size to very fine forams, grades to
	20%	Calcareous Mudstone - As above.
2175m-2180m	80%	Calcisiltite - As above.
	20%	Calcareous Mudstone - As above.
		Trace Marl - As above.
2180m-2185m	80%	Calcisiltite - As above.
	20%	Calcareous Mudstone - As above.
2185m-2190m	40%	Calcareous Mudstone - As above.
	60%	Calcisiltite - generally as above, 5-10% silt size to very fine, moderately sorted quartz.

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DEPTH	%	DESCRIPTION
2190m-2195m	80%	Calcisiltite - As above.
	20%	Calcareous Mudstone - As above.
		Sample Quality: Poor to fair.
2195m-2200m	60%	Calcisiltite - light grey to medium light grey to light tan grey, moderately firm, blocky to platey, weak, thin laminations, 40-80% silt size forams and quartz silt in calcareous clay matrix, quartz silt estimation. Trace-20% of silt size fraction, trace pyrite, trace very fine carbonaceous flecks, slight trace very fine black glauconite, grades to (with decreasing silt fraction).
	40%	Calcareous Mudstone - generally same as Calcisiltite, but with 10-40% silt size fraction.
2200m-2205m	60%	Calcisiltite - As above.
	40%	Calcareous Mudstone - As above.
2205m-2210m	50%	Calcisiltite - As above.
	50%	Calcareous Mudstone - As above.
2210m-2215m	50%	Calcisiltite - As above, very angular, large cuttings.
	50%	Calcareous Mudstone - As above.
2215m-2220m	60%	Calcareous Mudstone - light grey to medium light grey, light tan grey, firm, platey to subfissile, thinly laminated, 20-50% silt size composed of subequal proportions of microfossils and clastic particles, 50-80% calcareous clay matrix, rock appears to be coming less calcareous (% CO_3 approximately 40-60%), good trace pyrite, trace very fine carbonaceous flecks, grades to
	40%	Calcisiltite - light grey to medium grey, grades to brown grey, similar to Mudstone - As above, but with 50-70% silt size fraction, good trace pyrite, trace carbonaceous flecks, grades to a very calcareous siltstone.
2220m-2225m	60%	Calcareous Mudstone - As above.
	40%	Calcisiltite - As above.
		Sample Qualilty: Poor to very poor, below approximately 2210 metres.
2225m-2230m	70%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
2230m-2235m	50%	Calcareous Mudstone - As above, grades to
	50%	Calcisiltite
2235m-2240m	50%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above.
	20%	Marl - very light grey, very soft, swelling clay, 20-25%

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DEPTH	%	DESCRIPTION
2235m-2240m	20%	Continued/.....
		silt size fragments, cuttings may be cavings.
2240m-2245m	70%	Calcareous Mudstone - medium light grey, pale brown grey, soft to firm, thinly laminated, subfissile to blocky, 20-40% silt size, undifferentiated microfossils and clastic, calcareous clay matrix, trace very fine carbonaceous specks. Trace pyrite, grades to
	20%	Calcisiltite-Siltstone - light grey to medium light grey to buff grey, firm, blocky to subfissile, 40-70% silt size to very fine grains of microfossils and clastics. Trace pyrite, trace carbonaceous flecks, estimated $\%CO_3$ approximately 40%.
	10%	Marl - As above, may be cavings.
2245m-2250m	80%	Calcareous Mudstone - As above.
	10%	Calcisiltite-Siltstone - As above.
	10%	Marl - As above.
2250m-2255m	60%	Calcareous Mudstone - As above.
	40%	Calcisiltite-Siltstone - generally as above with 50-70% quartz, silt, 10-20% silt size microfossils.
2255m-2260m	70%	Calcareous Mudstone- As above, grades to
	20%	Calcisiltite-Siltstone - As above.
	10%	Marl - very light grey to light grey, very soft, silty.
		Sample Quality: Poor to very poor.
2260m-2265m	80%	Calcareous Mudstone - medium light grey, buff grey, soft to firm, subfissile, 20-40% silt size to occasionally very fine grains composed of subequal quantities of quartz silt and microfossils (forams and debris), rare ?spicules, trace carbonaceous flecks, trace pyrite, grades to
	20%	Calcareous Siltstone - generally as Calcareous Mudstone but with 40-70% silt size grains in a calcareous clay matrix, poor to very poor sorting.
2265m-2270m	80%	Marl - very light grey, very soft, dispersive, silty, possibly cavings.
	10%	Calcareous Mudstone - As above.
	10%	Calcareous Siltstone - As above.
2270m-2275m	60%	Marl - As above.
	30%	Calcareous Mudstone - As above, grades to
	10%	Calcareous Siltstone - As above.
2275m-2280m	70%	Marl - As above.
		30/.....

DEPTH	%	DESCRIPTION
2275m-2280m		Continued/.....
silty shale-	20%	Calcareous Mudstone - generally as above, subfissile to fissile, grades to
	10%	Calcareous Siltstone - As above.
2280m-2285m	70%	Marl - As above.
	30%	Calcareous Mudstone - medium light grey to medium grey, firm, subfissile to fissile, 20-40% silt size, very calcareous. Trace pyrite, trace carbonaceous material, (?) appears to be interbedded with Marl (?).
2285m-2290m	80%	Marl - As above.
	20%	Calcareous Mudstone - As above.
2290m-2295m	80%	Marl - As above.
	20%	Calcareous Mudstone Sample Quality: Fair to poor.
2295m-2300m	60%	Marl - very light grey, light grey, very soft, dispersive, 10-20% silt size particles, predominantly forams in a calcareous clay matrix.
	40%	Calcareous Mudstone-Shale - medium light grey to medium grey, firm, subfissile, angular cuttings, 10-40% silt size forams, fossil debris, and clastics, calcareous clay matrix, estimated % CO_3 approximately 25-30% rare spicules, good trace carbonaceous streaks, good trace pyrite.
2300m-2305m	60%	Calcareous Mudstone-Shale - As above. Grades to Siltstone.
	40%	Marl - As above.
2305m-2310m	50%	Calcareous Mudstone-Shale - As above.
	50%	Marl - As above.
2310m-2315m	70%	Marl - As above, (?) grades to
	30%	Calcareous Mudstone-Shale - As above, 20-40% fine silt size, grades to Siltstone.
2315m-2320m	50%	Marl - As above.
	50%	Calcareous Mudstone-Shale - As above, very silty, subfissile, good trace pyrite.
2320m-2325m	50%	Marl - As above, grades to
	50%	Calcareous Mudstone-Shale - As above, very silty, calcareous (CO_3 30-40%).
2325m-2330m	50%	Marl - very light grey, very soft, dispersive, massive, 10-20% fine silt size to rare medium grained forams, grades in part to
	50%	Calcareous Mudstone-Shale - light medium grey, buff grey,

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DEPTH	%	DESCRIPTION
2320m-2330m	50%	Continued/.....
		firm, subfissile, angular cuttings, estimated 20-40% fine silt size forams and clastics, estimated 30-40% CO_3, trace carbonaceous flecks, trace pyrite.
		Sample Quality: Fair
2330m-2335m	60%	Marl - As aobve, good trace fine grained forams.
	40%	Calcareous Mudstone-Shale - As above.
2335m-2340m	60%	Marl - As above.
	40%	Calcareous Mudstone-Shale - As above.
2340m-2345m	40%	Marl - As above.
	60%	Calcareous Mudstone-Shale - medium light grey to medium grey, firm, brittle, angular cuttings, subfissile, 20-30% fine silt to occasionally very fine microfossils and clastics, good trace to 1% pyrite.
2345m-2350m	60%	Calcareous Mudstone-Shale - As above, occasionally buff grey, rare very fine carbonaceous flecks, very rare black (?) glauconite.
	40%	Marl - As above.
2350m-2355m	60%	Marl - As above.
	40%	Calcareous Mudstone-Shale - As above, good trace pyrite, rare carbonaceous flecks, rare very fine black glauconite (?).
2355m-2360m	50%	Marl - As above.
	50%	Calcareous Mudstone-Shale
		Trace Siltstone - light brown, buff grey, firm to hard, silt size to very fine, predominantly silt size, well sorted, dolomitic.
2360m-2365m	~ 50%	Marl - As above.
	~ 50%	Calcareous Mudstone-Shale - As above.
		NOTE: Abundant fine grained forams in sample.
2365m-2370m	60%	Calcareous Mudstone-Shale - possibly becoming more silty.
Very poor Sample.	40%	Marl - As above.
		R.C.N. THORNTON 12/12/78
2370m-2375m	60%	Marl - As above.
Very poor sample.	40%	Calcareous Mudstone - As above.

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DEPTH	%	DESCRIPTION
2375m-2380m	60%	Marl - As above.
Very poor sample	30%	Calcareous Mudstone-Shale - light brown to grey brown, firm, subfissile, comprising generally 5-10% silt to fine grained size forams,minor quartz silt and rare trace carbonaceous flecks, rare trace glauconite in calcareous clay matrix. Disseminated pyrite common.
	10%	Siltstone - light grey to light grey brown, firm, massive to subfissile, comprising 80-50% fine quartz silt, plus minor forams and rare trace pyrite,glauconite, carbonaceous flecks set in slightly calcareous clay matrix.
		Trace Pyrite aggregates.
2380m-2385m	50%	Calcareous Mudstone-Shale - As above.
	30%	Marl - As above.
	20%	Siltstone - As above.
		Trace Pyrite aggregates, loose forams, fossil fragment - perhaps echinoid spine, but with radiating pattern in cross section.
2385m-2390m	40%	Calcareous Mudstone-Shale - light grey, light grey to brown grey, as above.
	30%	Siltstone - As above, except more glauconite and quartz silt slightly coarser, forams common.
	30%	Marl - As above.
2390m-2395m	40%	Marl - As above.
	40%	Calcareous Mudstone-Shale - As above, flakey.
	20%	Siltstone - as for 2375m-2380m, flakey. Trace loose forams
2395m-2400m	70%	Calcareous Mudstone-Shale - As above.
	20%	Siltstone - As above.
	10%	Marl - As above.
		Trace large, loose forams.
2400m-2405m	50%	Marl - As above.
	40%	Calcareous Mudstone-Shale - As above.
	10%	Siltstone - As above.
2405m-2409m	50%	Calcareous Mudstone-Shale - As above.
	30%	Siltstone - As above.
	20%	Marl - As above.
		Trace Quartz grains, clear, but orange coated, ferruginous, very coarse grained, angular, fractured.

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DEPTH	%	DESCRIPTION
2409m-2417m		CORED INTERVAL, CORES 2-5.
2417m-2420m	80%	Calcareous Mudstone - light brown, grey to brown, firm, massive, comprising mainly 0-10% (minor 10-50%) silt to fine grain size forams, patches of randomly oriented pyrite rods ($\frac{1}{16}$-$\frac{1}{8}$ mm diameter X ½-1mm long), finely disseminated pyrite, trace carbonaceous material, rare trace glauconite, set in calcareous clay matrix. Grading to
	20%	Calcisiltite - differing from Calcareous Mudstone only in that percentage forams = 50-80%.
2420m-2425m	70%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above, trace (very occasionally common) bright green glauconite. Trace Quartz grains clear, medium grained, angular.
2425m-2430m	70%	Calcareous Mudstone - As above.
	30%	Calcisiltite - As above. Trace loose globular forams. 15/12/78
2430m-2435m	80%	Calcareous Mudstone-Shale - As above.
	20%	Calcisiltite - As above. Trace loose forams.
2435m-2440m	80%	Calcareous Mudstone-Shale - As above.
	20%	Calcisiltite - As above. Trace loose forams, pyrite aggregates, glauconite pellets, quartz grains medium grained, clear, rounded, Calcareous Mudstone -tourquoise, slightly silty. Siltstone - very fine grained Sandstone tourquoise-brown, friable, quartz, minor glauconite. Trace carbonaceous material, trace mica, set in very slightly calcareous clay matrix.
2440m-2480m		CORED INTERVAL, CORES 6-8. J.D. ALDER 18/12/78
2480m-2485m	50%	Sandstone - friable, quartz, clear, milky to yellow brown, polished, very fine grain to granular, angular to subrounded, moderate to well sorted, trace pyrite.
	5%	Siltstone - medium brown, micaceous, carbonaceous, firm.
	45%	Calcareous Siltstone - light grey to grey brown, firm, massive, trace pyrite, trace glauconite, slightly calcareous.
2485m-2490m	85%	Sandstone - friable, quartz, clear to milky,polished, very fine to granule, angular to subrounded, moderately sorted, trace pyrite.
	5%	Siltstone - medium brown, firm, micaceous, carbonaceous.

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DEPTH	%	DESCRIPTION
2485m-2490m		Continued/.....
	10%	Calcareous Mudstone - light grey to grey brown, firm, trace pyrite, trace glauconite, slightly calcareous. Trace coarse pyrite nodules.
2490m-2495m	90%	Sandstone - As above. Trace Siltstone-medium brown,grading to arenite, micaceous, carbonaceous.
	10%	Calcareous Mudstone - As above.
2495m-2500m	90%	Sandstone - friable, quartz, clear to white, polished, very fine to granule, angular to subrounded, poor to moderately sorted, trace pyrite, trace mica.
	10%	Calcareous Mudstone - As above.
2500m-2505m	95%	Sandstone - friable, quartz, clear to milky, polished, fine to coarse grained, trace granule, moderate to well sorted, angular to subrounded, trace pyrite.
	5%	Calcareous Mudstone
2505m-2510m	95%	Sandstone - As above.
	5%	Calcareous Mudstone - As above.
2510m-2515m	95%	Sandstone - friable, quartz, clear to milky, polished to frosted, fine to coarse, trace granule, moderately sorted, subangular to subrounded, trace pyrite.
	5%	Calcareous Mudstone - light grey, firm, trace pyrite, slightly calcareous.
		Trace Coal - black, bituminous.
		Trace Siltstone - red brown, micaceous,carbonaceous,firm.
2515m-2520m	95%	Sandstone - As above.
	5%	Calcareous Mudstone - As above.
2520m-2525m	90%	Sandstone - As above.
	10%	Calcareous Mudstone - As above.
2525m-2530m	90%	Sandstone - As above.
	10%	Calcareous Mudstone - As above.
		Trace Siltstone-medium brown to grey brown,micaceous, carbonaceous, firm.
2530m-2535m	80%	Sandstone - As above.
	10%	Calcareous Mudstone - As above.
	10%	Coal - black, bituminous, brittle, conchoidal fracture, hard, pyritic. Interbedded with minor Siltstone - medium brown, firm, micaceous, carbonaceous.

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DEPTH	%	DESCRIPTION
2535m-2540m	80%	Sandstone - friable, quartz, clear to milky, frosted, fine to coarse, trace granule, moderately sorted, subangular to subrounded, trace pyrite.
	10%	Coal - black, bituminous, brittle, hard, pyritic, concoidal fracture.
	5%	Calcareous Mudstone - light grey, firm, slightly calcareous trace glauconite, trace pyrite.
	5%	Siltstone - medium brown to brown grey, micaceous, carbonaceous.
2540m-2545m	85%	Sandstone - As above.
	5%	Coal - As above.
	5%	Siltstone - As above.
	5%	Calcareous Mudstone - As above.
2545m-2550m	75%	Sandstone - As above.
	5%	Coal - As above.
	10%	Siltstone - As above.
	10%	Calcareous Mudstone - As above.
2550m-2555m	65%	Sandstone - As above.
	30%	Siltstone - As above.
	5%	Calcareous Mudstone - As above. Trace Coal - As above.
2555m-2560m	60%	Sandstone - friable, quartz, clear to milky, frosted, fine to coarse, trace granule, moderate to well sorted, subangular to rounded, trace pyrite.
	30%	Siltstone - medium brown to brown grey, micaceous, carbonaceous, trace coal, black,bituminous, some occasional laminae of very coarse micaceous flecks.
	10%	Calcareous Mudstone - light grey to grey green, slightly calcareous, firm, trace pyrite, trace glauconite.
2560m-2565m	15%	Sandstone - friable, quartz, clear to milky, frosted, fine to coarse, mainly medium to coarse, moderate to well sorted, subangular to rounded, trace pyrite.
	10%	Calcareous Mudstone - light grey to grey green, slightly calcareous, firm, trace pyrite, trace glauconite.
	75%	Siltstone - medium brown to grey brown, micaceous, carbonaceous, pyritic, trace Coal - black, bituminous, grades in part to very fine grain Sandstone, rare laminae of very coarse mica.
2565m-2570m	25%	Coal - black, bituminous, hard, brittle, conchoidal fracture, pyritic in part.
	15%	Sandstone - As above.

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DEPTH	%	DESCRIPTION
2565m-2570m	10%	Calcareous Mudstone - As above.
	50%	Siltstone - As above. R.C.N. THORNTON
2570m-2575m	50%	Siltstone - brown, dark brown, minor pale grey, soft to firm, quartz, pyrite and mica common, carbonaceous to very carbonaceous, and infrequently varies to very fine grained sandstone.
	20%	Quartz - grains, loose, clear, light grey, frosted to polished, subrounded to rounded, well sorted, granules.
	10%	Coal - black, hard, brittle, pyritic.
	20%	Calcareous Mudstone - cavings.
2575m-2580m	50%	Coal - As above, grading to
	10%	Shale - black, hard, pyritic.
	30%	Siltstone - As above.
	5%	Calcareous Mudstone - cavings.
	5%	Quartz - As above.
		Trace Sandstone - quartz, medium grained, pyrite cemented, pyrite aggregates.
2580m-2585m	50%	Siltstone - As above.
	20%	Coal - As above, minor Shale - As above.
	20%	Quartz Grains - As above, except coarse grained to granule.
	10%	Calcareous Mudstone - cavings.
		Trace Sandstone - As above, Pyrite - as above.
2585m-2590m	50%	Siltstone - As above.
	20%	Quartz - As above.
	20%	Calcareous Mudstone - cavings.
	10%	Coal - As above.
		Trace Sandstone - As above, Pyrite - As above.
2590m-2595m	50%	Quartz Grains - loose, clear, minor milky, polished to minor frosted, subrounded to rounded, well sorted, very coarse grained to granule, trace pyrite encrusted.
	30%	Siltstone - light to dark brown, minor light grey, soft to firm, very carbonaceous and pyritic, trace mica.
	10%	Coal - black, brittle, pyritic in part.
	10%	Calcareous Mudstone - cavings.
		Trace Sandstone - clear, quartz, fine to medium grained,

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LITHOLOGICAL DESCRIPTIONS R.C.N. THORNTON

FORTESCUE-3 18/12/78

DEPTH	%	DESCRIPTION
2590m-2595m		Continued/.....
		subangular to subrounded, well sorted, white clay matrix, pyrite cemented in part.
2595m-2600m	80%	Quartz - As above.
	10%	Siltstone - As above.
	10%	Coal - As above.
		Trace Sandstone - As above.
2600m-2605m	50%	Quartz - As above.
	30%	Siltstone - As above.
	20%	Calcareous Mudstone - cavings.
		Trace Sandstone - As above, Pyrite - As above.
2605m-2610m	70%	Quartz - As above.
	20%	Siltstone - As above, except pyrite common.
	8%	Calcareous Mudstone - cavings.
	2%	Pyritic Sandstone - hard, clear quartz grains, polished, subrounded to rounded, poorly sorted, fine to coarse grained, clean except for minor white clay matrix, cemented by pyrite.
2610m-2615m	50%	Quartz Grains - As above.
	30%	Siltstone - As above.
	20%	Calcareous Mudstone - cavings.
		Trace Pyritic Sandstone - As above, fine grained sandstone friable, clear, quartz, well sorted, rounded, clean, minor white clay matrix.
2615m-2620m	50%	Quartz Grains - As above.
	30%	Siltstone - As above.
	20%	Calcareous Mudstone - cavings.
		Trace Pyritic Sandstone - As above; Pyrite aggregates.
		TOTAL DEPTH: 2625 metres

APPENDIX 2

APPENDIX 2

SIDEWALL CORE DESCRIPTIONS

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ATT 51 REC 47

DATE 22.12.78

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

SWC RUN NO 1

IES RUN NO 2

SERVICE CO SCHLUMBERGER

GEOLOGIST RCNT

WELL FORESCUE-3

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	2615	45	SAND STONE / SILT STONE	Mica, carbonaceous, pyrite, mica.		light grey brown	semi friable	very fine	well	sa-sr	30%												
2	2610.5	10	SAND STONE / SILT STONE	Mica, carbonaceous, pyrite, mica		light grey to brown	semi friable	very fine	well	sa-sr	30%												
3	2605.5	30	SILT STONE	trace pyrite, mica, carbonaceous.		light brown	soft																
4	2599.5	35	SAND STONE	trace carbonaceous, mica		light grey	semi friable	very fine	well	sa-sr	30%												
5	2596.5	30	SAND STONE	trace pyrite, trace carbonaceous.		light grey	friable	very fine to very coarse	very poor	sa-r	10%												
6	2589	25	SAND STONE	very carbonaceous.		brown	friable	very fine to very coarse	very poor	sa-r	40%												
7	2585	20	SAND STONE / SILT STONE	very carbonaceous		light grey to brown	friable	very fine	well	a-sr	20%												
8	2576	20	SHALE	carbonaceous trace mica.		brown	soft																
9	2573.2	50	COAL	trace pyrite		black	hard																
10	2571	30	SHALE	very carbonaceous		black	fissile																
11	2568.2	35	SHALE	silty, carbonaceous		brown	soft																
12	2560.8	20	SILT STONE	trace carbonaceous, trace mica		brown	soft																

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ESSO AUSTRALIA LTD.
SIDEWALL CORE DESCRIPTIONS

WELL FORTESCUE-3 | PAGE 2 OF 8
GEOLOGIST RCNT | ATT 51 REC 47
SERVICE CO SCHLUMBERGER | DATE 22.12.78
IES RUN NO 2 | SWC RUN NO 1

NO.	DEPTH	REC	ROCK TYPE	MODIFIERS	CAL	COLOR	INDUR	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
13	2557.2	35	SHALE	Silty laminae		brown	soft																
14	2544	25	SAND STONE	Shale laminae		light grey	friable	very fine	well	sa-r	20%												
15	2540.5	25	SAND STONE	very carbonaceous		brown	friable	very fine	very poor	sa-r	30%												
			SHALE	very carbonaceous		brown	soft	to coarse															
16	2537.7	30	SHALE	massive		dark brown	firm																
17	2535	30	SHALE	silty patches		dark brown	fissile																
18	2532	25	SILT STONE	Trace carbonaceous		light grey	soft																
			SHALE	trace mica		brown	soft																
19	2501.2	40	SAND STONE	clean		light grey	friable	fine to medium	well	a-sr	25%												
20	2491.8	20	SAND STONE	clean		light grey	friable	fine to medium	well	a-sr	25%												
21	2476.5	20	SHALE SAND STONE	carbonaceous clean		brown light grey	firm semi friable	fine to very coarse	very poor	a-sr	25%												
22	2460.5	20	SAND STONE	clean		light grey	friable	very fine	well	sa-sr	10%	-	90	massive	bright	yellow	?	milky					
23	2452.5	30	SILT STONE	very carbonaceous pyrite		brown	firm																
24	2446.3	20	SAND STONE	clean		light grey to brown	friable	very fine	well	sa-sr	25%	-	90	massive	bright	yellow	?	milky					

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SERVICE CO SCHLUMBERGER | IES RUN NO 2 | SWC RUN NO 1 | DATE 22.12.78

ESSO AUSTRALIA LTD.
SIDEWALL CORE DESCRIPTIONS

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NO. 1a	DEPTH 1	REC 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
25	2436.8	0	-	NO RECOVERY																			
26	2433	50	SAND STONE SHALE	Glauconite M trace carbon-aceous, pyrite, mica		grey	firm	very fine	well	sa-sr	30%												
27	2429.0	55	MUD STONE	Pyrite, glauc-onite, mica, carbonaceous	V	dark brown	firm																
28	2425	45	MUD STONE	Forams, trace glauconite	V	grey to brown	firm																
29	2421	70	MUD STONE	Forams, silty	V	grey to brown	firm																
30	2417	65	MUD STONE	Trace mica	V	grey to brown	firm																

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SIDEWALL CORE DESCRIPTIONS

WELL FORTESCUE - 3 PAGE 4 OF 8
GEOLOGIST RCNT:JDA ATT 51 REC 47
SERVICE CO SCHLUMBERGER IES RUN NO 2 SWC RUN NO 1 DATE 22.12.78

NO.	DEPTH	REC	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
31	2413	35	CLAY STONE	Calcareous	M	medium grey	firm	clay	-	-													
32	2409	30	SHALE	Calcareous Micromic-eous	M	medium to light grey	firm	clay	-	-													fissile, pyritic
33	2405	40	SHALE	Calcareous pyritic	M	medium grey	firm	clay	-	-													
34	2401	35	SHALE	Calcareous	M	medium grey	firm	clay	-	-													fissile, pyritic, micromicaceous
35	2379.5	35	SHALE	Calcareous, very thin laminae	M	medium grey	firm	clay	-	-													fissile, pyritic, micromicaceous
36	2350	30	SHALE	Calcareous, micromicaceous laminated	M	medium grey	firm	clay	-	-													fissile, pyritic
37	2321.5	45	SHALE	Calcareous	M	medium grey	firm	clay	-	-													fissile, pyritic, micromicaceous.
38	2297.5	50	MUD STONE	Calcareous	M	medium grey	firm	clay-silt	-	-													Pyritic.
39	2268.5	40	MUD STONE	Calcareous	M	medium grey	firm	clay-silt	-	-													micromicaceous.
40	2235.0	50	MUD STONE	Calcareous, micromicaceous	M	medium grey	firm	clay-silt	-	-													trace pyrite.
41	2196.5	40	CALC-AREOUS MUD STONE	Micromicaceous calcareous	V	medium grey	firm	clay-silt	-	-													
42	2146.5	45	CALC-CAREOUS MUD STONE	Calcareous, micromic-aceous	V	medium grey	firm	clay-silt	-	-													trace pyrite.

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ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

IES RUN NO 1 SWC RUN NO 2

WELL FORTESCUE -3

GEOLOGIST RCNT:JDA

SERVICE CO SCHLUMBERGER

NO.	DEPTH	REC	ROCK TYPE	MODIFIERS	CAL	COLOR	INDUR DEG	GRAIN SIZE	SRTG	RND	DISS CLAY	STAIN	FLOURESCENCE % RK	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	13	14	15	16	17	18	19	20	21	22	23
43	2097.2	35	CALC-AREOUS CLAY STONE	calcareous	V	medium grey	firm	clay	-	-													
44	2048.5		-	MISFIRE																			
45	1999.0	40	CALC-AREOUS MUD STONE	calcareous	V	medium grey	firm	clay-silt	-	-													micromicaceous forams.
46	1946.0	35	CALC-AREOUS MUD STONE	calcareous	V	medium grey	firm	clay-silt	-	-													trace pyrite, trace mica, forams.
47	1891.0		-	MISFIRE						-													
48	1841.0	25	CALCI-SILTITE	calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite
49	1778	25	CALCI-SILTITE	calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite, trace mica
50	1525.5		-	MISFIRE																			trace pyrite, trace mica.
51	1524.5	20	CALCI-SILTITE	calcareous	V	medium to light grey	firm	silt	-	-													trace fine to medium grained quartz.
	RUN-2																						
52	2434.4	10	SAND STONE	quartzose	-	very light grey	friable	fine	well	a-sr	15	brown	100	even	bright	greenish yellow	bright	greenish yellow	tr.	flint yellow			trace mica, low porosity.

FORM R 257 3.72

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ATT 30 REC 24

DATE 22.12.78

SWC RUN NO 2

IES RUN NO 2

SERVICE CO SCHLUMBERGER

GEOLOGIST RCNT:JDA

WELL FORTESCUE-3

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

NO.	DEPTH	REC	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
53	2431	50	MUD STONE	sandy	Sl.	medium grey	firm	fine grain sand clay-silt	-	a-sr	70												
54	2427	50	MUD STONE	calcareous glauconitic	M	medium grey	firm	clay-silt	-	-													trace mica, trace pyrite.
55	2423	45	MUD STONE	calcareous micromicaceous	M	medium to light grey	firm	clay-silt	-	-													trace forams.
56	2419	35	MUD STONE	calcareous micromicaceous	M	medium to light grey	firm to hard	clay-silt	-	-													blocky.
57	2415	50	MUD STONE	calcareous micromicaceous	M	medium to light grey	firm	clay-silt	-	-													laminated, blocky.
58	2411	45	SHALE	calcareous	M	medium to light grey	firm	clay	-	-													fissile.
59	2407	30	CLAY STONE	calcareous	M	yellow brown	firm	clay	-	-													trace glauconite trace fossil fragments.
60	2403	0		MISFIRE																			
61	1718.7	0		no recovery																			
62	1680.5	0		no recovery																			
63	1632.3	25	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite, trace forams
64	1583.3	15	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace glauconite trace carbonac-eous.

FORM R 257 3/72

PAGE 7 OF 8

ATT 30 REC 24

DATE 22.12.78

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

SWC RUN NO 2

IES RUN NO 2

SCHLUMBERGER

SERVICE CO

WELL FORTESCUE-3

GEOLOGIST RCNT: JDA

NO.	DEPTH	REC	ROCK TYPE	MODIFIERS	CAL	COLOR	INDUR DEG	GRAIN SIZE	SRTG	RND	DISS CLAY	STAIN	FLOURESCENCE % RK	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	13	14	15	16	17	18	19	20	21	22	23
65	1525.0	15	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace carbonaceous.
66	1475.0	20	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite, trace forams.
67	1425	30	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite, trace carbonaceous.
68	1375	20	MICRITE	Calcareous	V	yellow brown	hard	-	-	-													trace forams, trace mica.
69	1325	10	CALCI-SILTITE	Calcareous	V	medium grey	hard	silt	-	-													trace fossil fragments.
70	1275	10	CALCI-SILTITE	calcareous	V	medium to light grey	firm	silt	-	-													trace mica, trace carbonaceous.
71	1225	25	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	clay	-	-													trace carbonaceous.
72	1175	25	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	clay	-	-													trace pyrite.
73	1125	25	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace mica, trace pyrite.
74	1075	30	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace mica.
75	1025	35	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace pyrite, forams.
76	975	20	CALCI-SILTITE	grades to calcarenite	V	medium light grey to light grey	firm	silt to medium	-	-													trace carbon flecks, trace fossil fragments.

FORM R 257 3/72

WELL FORTESCUE-3 PAGE 8 OF 8

GEOLOGIST RCNT:JDA

ESSO AUSTRALIA LTD.
SIDEWALL CORE DESCRIPTIONS

ATT 30 REC 24

SERVICE CO SCHLUMBERGER IES RUN NO 2 SWC RUN NO 2 DATE 22.12.78

FORM R 257 3/72

NO. 1a	DEPTH 1	REC 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
77	925	25	CALCI-SILTITE	Calcareous	V	medium to light grey	firm	silt	-	-													trace carbonaceous flecks, trace fossil fragments.
78	880	50	CALCI-SILTITE	Calcareous, glauconite	V	medium light grey to greenish grey	firm	silt	-	-													trace fossil fragments.
79	2048.535		CALCI-LUTITE	calcareous, pyritic	V	medium grey	hard	clay	-	-													
80	1891.035		CALCI-SILTITE	calcareous, pyritic	V	medium to light grey	firm	silt	-	-													
81	1525.510		CALCI-SILTITE	calcareous,	V	medium to light grey	firm	silt	-	-													

SIDEWALL CORE DESCRIPTIONS — R.C.N. THORNTON

FORTESCUE-3 — 22/12/78

RUN-1

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
1	2615m	45mm	Finely interlaminated Sandstone and Siltstone. Sandstone - light grey, semifriable, quartz, clear, well sorted, very fine grained, subangular to sub-rounded, trace mica, 30% clay matrix. Siltstone - dark brown, quartz, highly carbonaceous, trace pyrite, trace mica.
2	2610.5m	10mm	Finely interlaminated Sandstone and Siltstone - As above.
3	2605.5m	30mm	Siltstone - light brown, soft, quartz, clear, trace mica, trace pyrite, trace carbonaceous flecks.
4	2599.5m	35mm	Sandstone - light grey, friable, quartz, clear, well sorted, very fine grained, subangular to subrounded, 30% clay matrix, trace carbonaceous flecks, pyrite.
5	2596.5m	30mm	Sandstone - light grey, friable, quartz, clear, minor light grey, polished, minor frosted, subangular to rounded, very poorly sorted, very fine to very coarse grained, minor clay matrix, trace pyrite, trace carbonaceous material.
6	2589m	25mm	Sandstone - brown, friable, quartz, clear, polished, subangular to subrounded, very poorly sorted, very fine to very coarse grained, abundant carbonaceous clay.
7	2585m	20mm	Finely interlaminated Sandstone and Siltstone. Sandstone - light grey, friable, quartz, clear, well sorted, very fine grained, angular to sub-rounded, trace mica, clean, 20% clay matrix. Siltstone - brown, highly carbonaceous, trace mica.
8	2576m	20mm	Shale - brown, soft, carbonaceous, trace mica.
9	2573.2m	50mm	Coal - black, shiny, hard, brittle, trace pyrite.
10	2571m	30mm	Shale - black, fissile, highly carbonaceous, trace pyrite, trace mica, trace fine grained quartz.
11	2568.2m	35mm	Shale - brown, soft, silty, carbonaceous, trace mica.
12	2560.8m	20mm	Siltstone - brown, soft, quartz, trace carbonaceous material, trace mica.
13	2557.2m	35mm	Shale - brown, soft, minor fine interlaminae of Siltstone - light grey.
14	2544m	25mm	Sandstone - light grey, friable, quartz, clear, polished, subangular to rounded, well sorted, very fine grained, 20% white clay matrix, trace mica, minor fine interlaminae of soft, brown Shale.
15	2540.5m	25mm	Interbedded Sandstone and Shale. Sandstone - brown, friable, quartz, clear, polished,

SIDEWALL CORE DESCRIPTIONS

FORTESCUE-3

RUN-1

R.C.N. THORNTON

22/12/78

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
15	2540.5m	25mm	Continued/.... subangular to rounded, very poorly sorted, very fine to coarse grained, set in abundant brown, highly carbonaceous clay matrix. Shale - brown, soft, silty, carbonaceous, trace mica.
16	2537.7m	30mm	Shale - very dark brown, massive, firm, carbonaceous, trace mica.
17	2535m	30mm	Shale - dark brown, fissile, carbonaceous, trace mica, trace pyrite, silty patches.
18	2532m	25mm	Finely interlaminated Siltstone and Shale. Siltstone - light grey, soft, quartz, trace carbonaceous material, trace mica. Shale - brown, soft.
19	2501.2m	40mm	Sandstone - light grey, friable, quartz, clear, polished, angular to subrounded, well sorted, fine to medium grained, clean, trace carbonaceous flecks, no fluorescence.
20	2491.8m	20mm	Sandstone - light grey, friable, quartz, as above.
21	2476.5m	20mm	Interbedded Shale and Minor Sandstone. Shale - dark brown, firm, carbonaceous. Sandstone - light grey, semifriable, quartz, clear, polished, angular to subrounded, very poorly sorted, fine to very coarse grained, clean, no fluorescence.
22	2460.5m	20mm	Sandstone - light grey, friable, quartz, clear, well sorted, very fine grained, subangular to subrounded, clean, trace carbonaceous flecks, trace mica, minor white clay matrix, massive bright yellow fluorescence, slow milky white cut.
23	2452.5m	30mm	Siltstone - brown, firm, quartz, highly carbonaceous, pyrite common.
24	2446.3m	20mm	Sandstone - light grey to brown, friable, quartz, clear, well sorted, very fine grained, subangular to subrounded, clean, trace carbonaceous flecks, trace mica, trace pyrite, massive bright yellow fluorescence, slow milky white cut.
25	2436.8m	-	EMPTY BULLET.
26	2433.0m	50mm	Sandstone - grey, firm, quartz, clear, very fine grained, trace glauconite, trace mica, trace carbonaceous flecks, trace pyrite. 30% calcareous clay matrix, no fluorescence, minor laminae of Shale - brown, firm, carbonaceous, pyritic.
27	2429.0m	55mm	Calcareous Mudstone - dark brown, massive, firm, bunches of pyrite rods (.01mm diameter X .5mm long)

SIDEWALL CORE DESCRIPTIONS — R.C.N. THORNTON

FORTESCUE-3 — 22/12/78

RUN-1

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
27	2429.0m	55mm	Continued/..... common, trace glauconite, trace mica, trace carbonaceous flecks, trace fossil fragments.
28	2425m	45mm	Calcareous Mudstone - grey brown, massive, firm, abundant forams, trace glauconite.
29	2421m	70mm	Calcareous Mudstone - grey brown, massive, firm, silty, abundant forams, trace mica, trace pyrite.
30	2417m	65mm	Calcareous Mudstone - grey brown, massive, firm, trace mica.

SIDEWALL CORE DESCRIPTIONS J. D. ALDER

FORTESCUE-3 5/1/79

RUN-1

SWC NO.	DEPTH	RECOVERED	DESCRIPTIONS
31	2413m	35mm	Claystone firm to very firm, medium grey, massive, calcareous.
32	2409m	30mm	Shale medium to light grey, calcareous, firm, fissile, pyritic, micromicaceous.
33	2405m	40mm	Shale medium grey, firm, fissile, pyritic, calcareous - often with calcareous nodules ½mm diameter.
34	2401m	35mm	Shale medium grey, firm, fissile, pyritic, micromicaceous, calcareous.
35	2379.5m	35mm	Shale medium grey, firm, very thin laminae, fissile, pyritic, calcareous, micromicaceous.
36	2350.0m	30mm	Shale medium grey, firm very thin laminae, fissile, pyritic, occassional nodules; calcareous, micromicaceous.
37	2321.5m	45mm	Shale medium grey, firm, fissile, pyritic, calcareous, micromicaceous.
38	2297.5m	50mm	Mudstone medium grey, firm, calcareous, massive. Vein of pyrite with soft white mineral (gypsum?).
39	2268.5m	40mm	Mudstone medium grey, firm, calcareous, massive, micromicaceous.
40	2235.0m	50mm	Mudstone medium grey, firm, calcareous, massive, trace pyrite, micromicaceous.
41	2196.5m	40mm	Calcareous Mudstone medium grey, firm, very finely laminated, micromicaceous.
42	2146.5m	45mm	Calcareous Mudstone medium grey, firm, massive, trace pyrite, micromicaceous.
43	2097.2m	35mm	Calcareous Claystone medium grey, firm, massive.
44	2048.5m	-	MISFIRE
45	1999.0m	40mm	Calcareous Mudstone medium grey, firm massive, micromicaceous, rare foram.
46	1946.0m	35mm	Calcareous Mudstone medium to light grey, firm massive, trace pyrite, trace mica. Rare forams, occassional nodules of calcite.
47	1891.0m	-	MISFIRE
48	1841.0m	25mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, occassional calcite nodules.
49	1778.0m	25mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, trace mica.
50	1525.5m	-	MISFIRE

SIDEWALL CORE DESCRIPTIONS — J. D. ALDER

FORTESCUE-3 — 5/1/79

RUN-1

SWC NO.	DEPTH	RECOVERED	DESCRIPTIONS
51	1524.5m	20mm	Calcisiltite medium to light grey - pale brown, massive, firm, trace pyrite, trace mica, trace loose quartz grains, fine to medium grained, clear, angular, abundant white, earthy, calcareous nodules, no fluorescence, no odour.
	RUN-2		
52	2434.4m	10mm	Sandstone very light grey, quartzose, friable, fine grained with rare coarse granule grains. Angular to sub-rounded, well sorted. Clear to milky and frosted, trace mica, trace carbonaceous material 15%, white clay matrix, porosity visually poor. Slight petroliferous odour, slight brown staining near carbonaceous material. Massive, bright greenish yellow, flourescence show, streaming milky cut.
53	2431.0m	50mm	Sandy Mudstone, medium grey, firm massive. 30% fine sand, quartzose, loose grains, angular to subrounded, clear, milky, smokey frosted. 70% clay silt, slight calcareous, some calcareous nodules, trace glauconite, trace pyrite, trace mica. No fluorescence, no odour.
54	2427.0m	50mm	Mudstone medium grey, firm massive, trace mica, calcareous, trace pyrite. 10% glauconite.
55	2423.0m	45mm	Mudstone medium to light grey, firm, massive, micromicaceous, calcareous, trace forams.
56	2419.0m	35mm	Mudstone medium to light grey, firm, hard, massive, blocky, micromicaceous, calcareous, small band of green mudstone near base of core.
57	2415.0m	50mm	Mudstone medium to light grey, firm, laminated, blocky, micromicaceous, very clayey grading to a claystone calcareous.
58	2411.0m	45mm	Shale medium to light grey, firm, friable, Calcareous, trace mica, trace carbonaceous flecks.
59	2407.0m	30mm	Claystone yellow brown, firm very calcareous, with nodules ofmicritic limestone, trace glauconite, trace mica, trace fossil fragments, echinoid spines.
60	2403.0m	0mm	Miss-fire.
61	1718.7m	0mm	No recovery.
62	1680.5m	0mm	No recovery.
63	1632.3m	25mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, trace forams.
64	1583.3m	15mm	Calcisiltite medium to light grey, firm massive, trace glauconite, trace carbonaceous flecks and as brown coating on partings.

SIDEWALL CORE DESCRIPTIONS — J. D. ALDER

FORTESCUE-3 — 5/1/79

RUN-2

SWC NO.	DEPTH	RECOVERED	DESCRIPTIONS
65	1525.0m	15mm	Calcisiltite medium to light grey, firm, massive, trace carbonaceous flecks, trace pyrite, no fluorescence, no odour.
66	1475.0m	20mm	Calcisiltite medium to light grey, firm, massive, trace carbonaceous flecks, trace pyrite, trace forams.
67	1425.0m	30mm	Calcisiltite medium to light grey, firm, massive, trace carbonaceous flecks, trace pyrite.
68	1375.0m	20mm	Micrite yellow brown, hard, very fine, cemented crystaline limestone, trace fossils, forams, trace mica, massive.
69	1325.0m	10mm	Calcisiltite medium grey, firm to hard, massive, trace indeterminate fossil fragments.
70	1275.0m	10mm	Calcisiltite medium to light grey, firm, massive, trace mica, trace carbonaceous flecks.
71	1225.0m	25mm	Calcisiltite medium to light grey, firm, massive, trace carbonaceous flecks.
72	1175.0m	25mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, trace carbonaceous flecks.
73	1125.0m	25mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, trace mica, trace carbonaceous flecks.
74	1075.0m	30mm	Calcisiltite medium to light grey, firm, massive, trace mica.
75	1025.0m	35mm	Calcisiltite medium to light grey, firm, massive, trace mica, trace pyrite, forams and fossil fragments.
76	975.0m	20mm	Calcisiltite grading to calcarenite, medium to light grey to light grey, firm to very firm, silt to medium grained calcareous grains in white calcareous cement, trace of indeterminate fossil fragments, trace carbonaceous flecks.
77	925.0m	25mm	Calcisiltite medium to light grey, firm, silty with occassional medium and granular grains, trace of indeterminate fossil fragments, trace carbonaceous flecks.
78	880.0m	50mm	Calcisiltite medium light grey to greenish grey, firm, silty with occassional medium coarse grains, trace fossil fragments, trace glauconite.
79	2048.5m	35mm	Calcisiltite medium grey, firm to hard, massive trace silt size calcareous nodules.
80	1891.0m	35mm	Calcisiltite medium to light grey, firm, massive, pyritic, occasionally calcite nodules.

SIDEWALL CORE DESCRIPTIONS — J.D. ALDER

FORTESCUE-3 — 5/1/79

RUN-2

SWC NO.	DEPTH	RECOVERED	DESCRIPTION
81	1522.5m	10mm	Calcisiltite medium to light grey, firm, massive, trace pyrite, trace mica, no fluorescence, no odour.

APPENDIX 3

APPENDIX 3

CONVENTIONAL CORE DESCRIPTIONS AND CORE ANALYSIS

CL-511-1

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No._____

CORE ANALYSIS RESULTS

Company ESSO AUSTRALIA LTD Formation _____ File WA-CA-35
Well FORTESCUE NO 3 Core Type _____ Date Report _____
Field FORTESCUE Drilling Fluid _____ Analysts DS
County AUSTRALIA State WA 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 denisty	SAMPLE DESCRIPTION AND REMARKS
19	2459.4	49	18.2	21.2	57.6	2.65	SST: med gy br, fine hd, good sort, sl cly mtx, sil cmt, sub round, worm burrows, sl calc, carb, shale, mica, mod yel flu, slow yel cut.
20	2459.9	157	19.2	19.1	51.4	2.65	SST: med gy, fine, hd,
	2460.9	312	22.2	11.2	68.7	2.61	mod sort, sl cly mtx, si cmt, sub ang, mica, carbonaceous, sl calc, go wt yel flu, immed wt cut
21	2461.2	183	22.8	14.6	68.9	2.63	SST: med gy br, fine, hd mod sort, sl cly mtx, ca cmt, subang, mica, carbon aceous, mod wt yel flu, immed yel cut.
22	2464.2	74	18.1	17.0	50.8	2.65	SST: med gy br, fine, po
	2464.7	93	17.0	17.2	52.9	2.64	sort, sl cly mtx, calc cmt, subang, mica, carbonaceous, mod yel f immed wt yel cut.
23	2464.8	56	15.7	19.9	57.0	2.64	SST: med gy, fine-crs, firm, poor sort, sl cly mtx, calc cmt, subang, subround, mica, carbon-aceous, mod yel flu, imm yel wt cut.

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No._____

CORE ANALYSIS RESULTS

Company ESSO AUSTRALIA LTD Formation _____ File WA-CA-35
Well FORTESCUE NO 3 Core Type _____ Date Report _____
Field FORTESCUE Drilling Fluid _____ Analysts ds
County AUSTRALIA State WA 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
10	2442.8	1.1	9.6	23.1	72.0	2.65	SST: med gy, fine-crs, hd poor sort, sil cmt, suban mica, carbonaceous, shale laminae, good gold flu, immed wt cut.
11	2443.2	87	19.7	14.2	70.7	2.67	SST: med gy, fine, firm, good sort, calc cmt, suba mica, shale laminae, mod y flu, immed yel wt cut.
12	2445.0	<0.1	13.8	10.1	65.9	2.67	SST: med gy, fine hd, goo sort, cly mtx, sil cmt, s bang, no flu or cut.
13	2449.1	73	21.6	18.4	50.0	2.65	SST: med gy, fine, hd goo sort, sl cly mtx, calc cm subround, mica, mod yel f immed wyyel cut.
14	2457.2	139	21.6	12.9	62.5	2.64	SST: med gy, fine-med, hd mod sort, sil cmt, subang mica, calc, carbonaceous, poor yel flu, immed wy c
15	2457.5	162	22.4	12.4	65.8	2.65	SST: med gy, fine-med,
	2457.7	274	23.3	12.2	70.7	2.60	firm, mod sort, calc cmt, subang, mica, good yel wt flu, immed wt cut.
16	2457.9	173	21.7	13.0	56.0	2.64	SST: med gy, fine-med, fir mod sort, sil cmt, subang mica, shale laminae, sl calc good yel flu, immed wt cut.
17	2458.3	242	23.0	9.0	72.7	2.62	SST: med gy, fine-crs, hd
	2458.6	273	23.1	14.0	57.9	2.63	poor sort, sl cly mtx, calc cmt, subang, mica sh laminae, mod yel flu, imm wt cut.
18	2458.9	31	14.7	19.8	70.0	2.65	SST: med gy, fine, hd, go sort, sl cly mtx, sil cmt subang, mica, carbonaceous shale laminae, good yel f immed wt cut,

CL-511-1

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page No._____

CORE ANALYSIS RESULTS

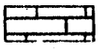
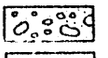
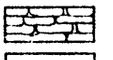
Company ESSO AUSTRALIA LTD Formation _____ File WA-CA-35
Well FORTESCUE NO 3 Core Type _____ Date Report _____
Field FORTESCUE Drilling Fluid _____ Analysts DS
County AUSTRALIA State WA Elev. 31m M.MSL Location BASS STRAIT

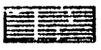
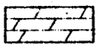
Lithological Abbreviations

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 ~~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
	2440.1	<0.1	10.5	21.0	73.0	2.69	
1	2440.3	<0.1	8.9	9.6	72.0	2.74	SST: med gy, fine, v hd, good sort, sil cmt, sub-ang, shale interbeds, w/ mica, good gold flu, imm wt cut.
2	2440.5	422	24.1	12.9	49.9	2.64	SST: med gy, fine-med, fi mod sort, sil cmt, sub an mod yel flu, immed wt cut
3	2440.8	310	24.6	13.1	51.4	2.63	SST: med gy, fine, v hd, good sort, calc cmt, sub-ang, shale interbeds w/ mica, good yel wt flu, imed wt cut.
4	2440.9	384	24.0	13.1	56.1	2.64	SST: med gy, fine-med so mod sort, sl cly mtx, cal cmt, subround, mica carb-onaceous, poor yel flu, immed wt cut.
5	2441.1	456	26.2	12.5	53.8	2.62	SST: med gy, fine-med, f
	2441.3	466	23.2	5.5	68.2	2.62	mod sort, sl cly mtx, ca cmt, subround, mica, poor yel flu, immed yel cut.
6	2441.5	262	22.2	14.9	63.5	2.64	SST: med gy, fine-med, f
	2441.7	40	17.7	14.5	64.1	2.65	mod sort, sil cmt, subro mica sl calc, poor yel f immed wt cut,
7	2441.8	118	19.4	16.7	54.6	2.64	SST: med gy, fine-med, h
	2441.9	361	21.6	9.4	67.8	2.61	mod sort, sl cly, calc cm subang, mica, poor yel fl immed wt cut.
8	2442.2	671	23.5	10.7	56.8	2.63	SST: med gy, fine-med, fi mod sort, calc cmt, suban
9	2442.5	67	18.3	13.8	71.0	2.63	poor yel flu, immed wt c SST: med gy, fine-med, fi mod sort, sil cmt, subang mica sl calc, mod yel flu immed wt cut.

COMPANY	ESSO AUSTRALIA LTD	DATE ON	FILE NO. WA-CA-35
WELL	FORTESCUE NO 3	DATE OFF	ENGRS. DS
FIELD	FORTESCUE	FORMATION	ELEV. 31m A.MSL
COUNTY	AUSTRALIA STATE	DRLG. FLD.	CORES
LOCATION	BASS STRAIT	REMARKS	

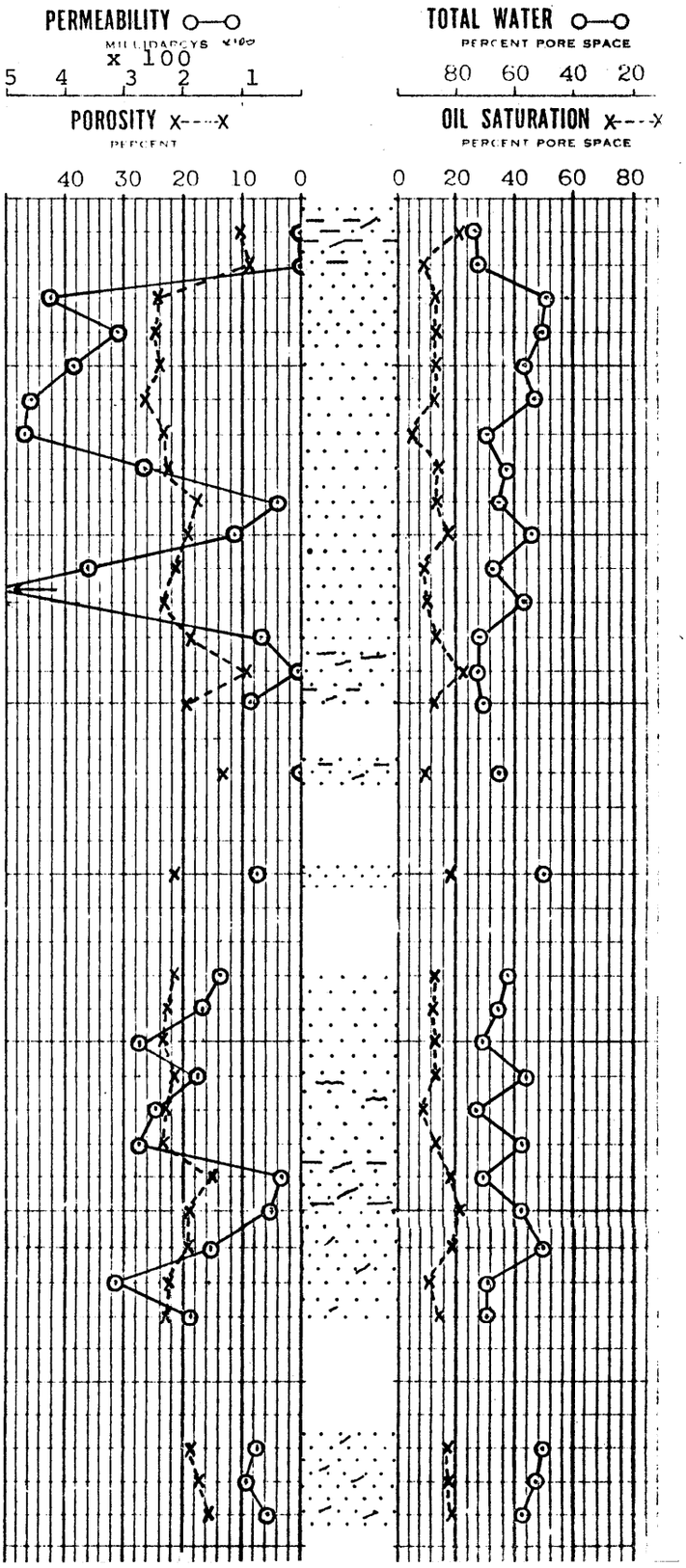
SAND  LIMESTONE  CONGLOMERATE  CHERT 

SHALE  DOLOMITE 

TABULAR DATA and INTERPRETATION

SAMPLE NUMBER	DEPTH FEET xx meter	PERM MD. KL	POROSITY %	RESIDUAL SATURATION % PORE SPACE OIL	RESIDUAL SATURATION % PORE SPACE TOTAL WATER	calc grain density	PROD
1	2440.1	<0.1	10.5	21.0	73.0	2.69	
2	2440.3	<0.1	8.9	9.6	72.0	2.74	
3	2440.5	422	24.1	12.9	49.9	2.64	
4	2440.8	310	24.6	13.1	51.4	2.63	
5	2440.9	384	24.0	13.1	56.1	2.64	
6	2441.1	456	26.2	12.5	53.8	2.62	
7	2441.3	466	23.2	5.5	68.2	2.62	
8	2441.5	262	22.2	14.9	63.5	2.64	
9	2441.7	40	17.7	14.5	64.1	2.65	
10	2441.8	118	19.4	16.7	54.6	2.64	
11	2441.9	361	21.6	9.4	67.8	2.61	
12	2442.2	671	23.5	10.7	56.8	2.63	
13	2442.5	67	18.3	13.8	71.0	2.63	
14	2442.8	1.1	9.6	23.1	72.0	2.65	
15	2443.2	87	19.7	14.2	70.7	2.67	
16	2445.0	<0.1	13.8	10.1	65.9	2.67	
17	2449.1	73	21.6	18.4	50.0	2.65	
18	2457.2	139	21.6	12.9	62.5	2.64	
19	2457.5	162	22.4	12.4	65.8	2.65	
20	2457.7	274	23.3	12.2	70.7	2.60	
21	2457.9	173	21.7	13.0	56.0	2.64	
22	2458.3	242	23.0	9.0	72.7	2.62	
23	2458.6	273	23.1	14.0	57.9	2.63	
24	2458.9	31	14.7	19.8	70.0	2.65	
25	2459.4	49	18.2	21.2	57.6	2.65	
26	2459.9	157	19.2	19.1	51.4	2.65	
27	2460.9	312	22.2	11.2	68.7	2.61	
28	2461.2	183	22.8	14.6	68.9	2.63	
29	2464.2	74	18.1	17.0	50.8	2.65	
30	2464.7	93	17.0	17.2	52.9	2.64	
31	2464.8	56	15.7	19.9	57.0	2.64	

COMPLETION COREGRAPH



ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 3

SCALE .....

CORE No. 1 .....

Interval Cored 1536m-1548.6m Cut 12.6m Recovered 12.6m (100 %) Fm. .....

Bit Type CHRISTENSEN C20 Bit Size 8 15/32 X 3 in., Desc by P. KEMP, D. HENDERSON Date 4/12/78

DEPTH & CORING RATE M/HR	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
0 2 4			OFFSHORE		dom clay 10-30% silt			m gy	none		none	

1536 1538 1540 1542 1544 1546

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SCALE .....

CORE No. 1

Interval Cored 1536m-1548.6m Cut 12.6m Recovered 12.6m (100 %) Fm. .....

Bit Type CHRISTENSEN C20 Bit Size 8 15/32 X 3 in., Desc by P. KEMP, D. HENDERSON Date 4/12/78

DEPTH & CORING RATE	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
1546 0 2 4	M ⊥	~ V			dom. clay			m gy				
	⊥ M	~			10-30% silt							
	M ⊥	V ~										
1548	⊥ M	~										
	M ⊥	~										

Core #1. 100% Calcareous Mudstone - approximately 10-20% silt fraction occasionally higher, medium grey, trace mica, trace glauconite, trace carbonaceous, extensively burrowed with light grey silty material and minor dark grey Mudstone infilling burrows, minor very fine grained crystalline silica infilling, minor fossils including rare forams, occasional fossil fragments show mineral fluorescence, no hydrocarbon shows.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESQUE - 3

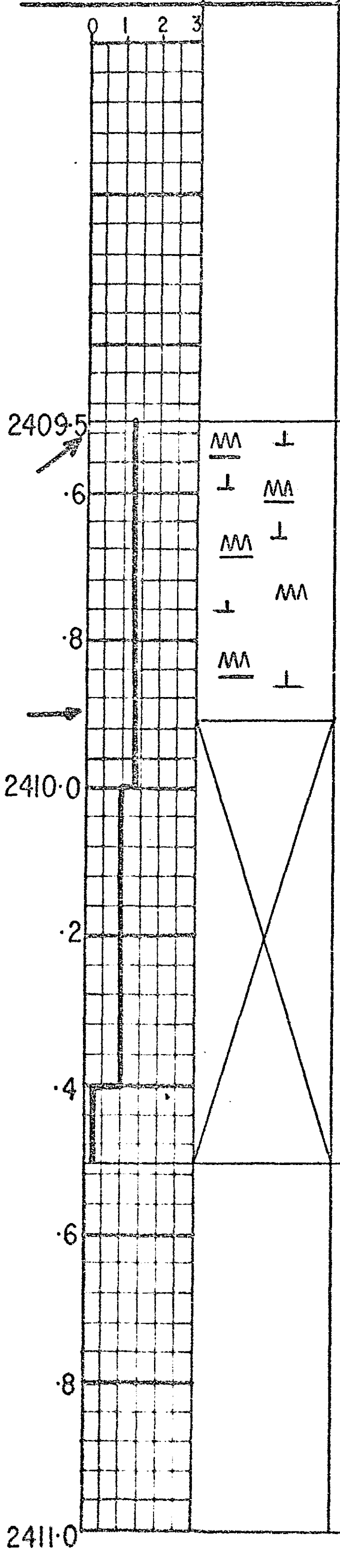
SCALE 1:100

CORE No. 2

Interval Cored 2409.5-2410.5m **Cut** 1.0m **Recovered** 0.4m (40 %) **Fm** LAKES ENTRANCE

Bit Type C20 **Bit Size** $8^{15}/32"$ X 3" in., **Desc by** R.C.N. THORNTON, D.J. HENDERSON **Date** 13/12/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2409.5 – 2410.5		MASSIVE	MARINE	DEEPWATER				dk gy - brn				CALCAREOUS MUDSTONE - dark grey to brown, firm, massive, comprising less than 1% forams (silt to fine grain size), trace mica, trace carbonaceous material, set in calcareous clay matrix (calcimetry = 36%). NOTE: Core barrel jammed.



→ : Sample collected for Palynologic Analysis: Depths: 2409.5m; 2409.9m.

Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SCALE 1:100

CORE No. 3

Interval Cored 2410.5-2416.0m Cut 5.5m Recovered 1.5m (27.%) Fm. LAKES ENTRANCE

Bit Type C20 Bit Size 8 15/32" X 3". in., Desc by R.C.N. THORNTON, D.J. HENDERSON Date 14/12/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN.	CEMENT	POROSITY	REMARKS
0 2 4 6												
2410·0												
·2												
·4												
2410·5 →												
·6												
·8												
2411·0												
·2							G					
·4		MASSIVE	MARINE	DEEPWATER				dk brn				
→							G					
·6												
·8												
2412·0												

CALCAREOUS MUDSTONE - dark brown, hard, massive, comprising less than 5% forams (up to ½mm diameter), pyrite, both finely disseminated and in patches of rods (up to 1/8 mm diameter and 1mm long); generally sub horizontal to bedding -?worm burrows, trace quartz silt, trace mica, trace carbonaceous material, trace glauconite set in calcareous clay matrix.

Minor interbeds of CALCISILTITE - as above, except that silt size proportion is greater than 50%.

→: Sample collected for Palynologic Analysis: 2410.5m; 2411.5m; 2412.0m.

Dwg. HO7/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SCALE 1:100

CORE No. 3

Interval Cored 2410.5-2416.0m Cut 5.5m Recovered 1.5m (27%) Fm. LAKES ENTRANCE

Bit Type C20 Bit Size 8 15/32" X 3" in. Desc by R.C.N. THORNTON, D.J. HENDERSON Date 14/12/78

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

0 2 4

2412·0

·2

·4

·6

·8

2413·0

·2

·4

·6

·8

2414·0

NO RECOVERY:

2412.0-2415.0m

NOTE: Core barrel pulled when severe winds and seas moved rig slightly off location.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SCALE 1:100

CORE No. 3

Interval Cored 2410.5-2416.0m Cut 5.5m Recovered 1.5m (27 %) Fm. LAKES ENTRANCE

Bit Type C20 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, D.J. HENDERSON Date 14/12/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
0 2 4												

2414·0
·2
·4
·6
·8
2415·0
·2
·4
·6
·8
2416·0

Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE - 3

SCALE 1:100

CORE No. 4

Interval Cored 2416-2416m Cut 0m Recovered 0m (.....%) Fm.....

Bit Type C20 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, D.J. HENDERSON Date 15/12/78

DEPTH & CORING RATE	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2416												NO RECOVERY NOTE: No core attempted. Pump pressure failed to build up when bit on bottom.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

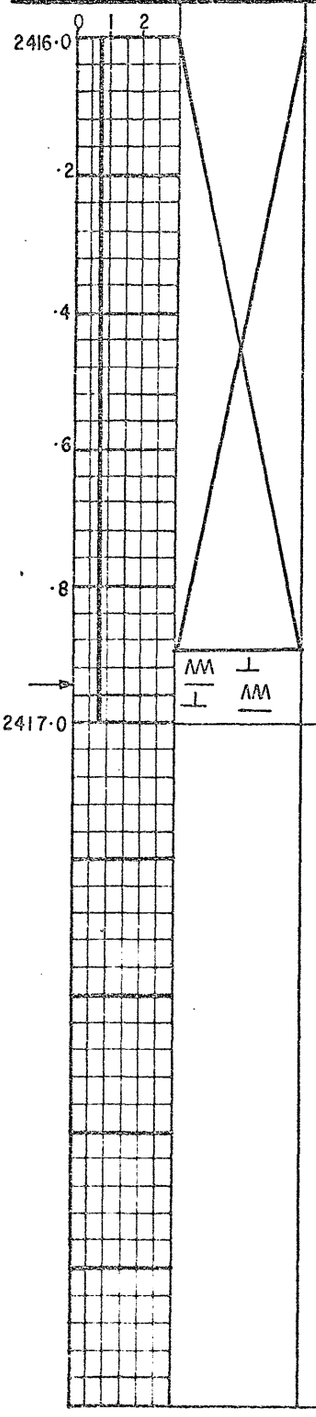
WELL FORTESCUE-3

SCALE 1:100

CORE No. 5

Interval Cored 2416-2417m Cut 1m Recovered 100m (10 %) Fm. LAKES ENTRANCE

Bit Type C20 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, D.J. HENDERSON Date 15/12/78



DEPTH & CORING RATE	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
		MASSIVE	MARINE	DEEPWATER				dk brown				CALCAREOUS MUDSTONE - dark brown, firm, massive, comprising trace forams, trace white mica, trace glauconite pellets, trace pyrite, set in highly calcareous clay matrix (calcimetry = 40%). NOTE: 2416.0-2416.9m: Core lost down hole while attempting to remove jammed core by pumping through kelly. Recovered core was hammered out.

——→: Sample collected for Palynologic Analysis: 2417.0m

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 1 of 8

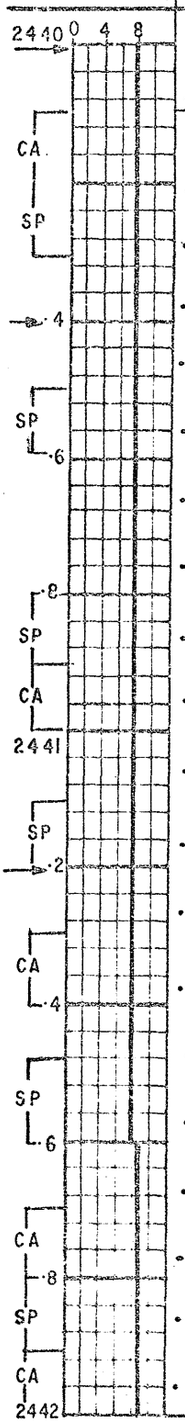
WELL FORTESCUE-3

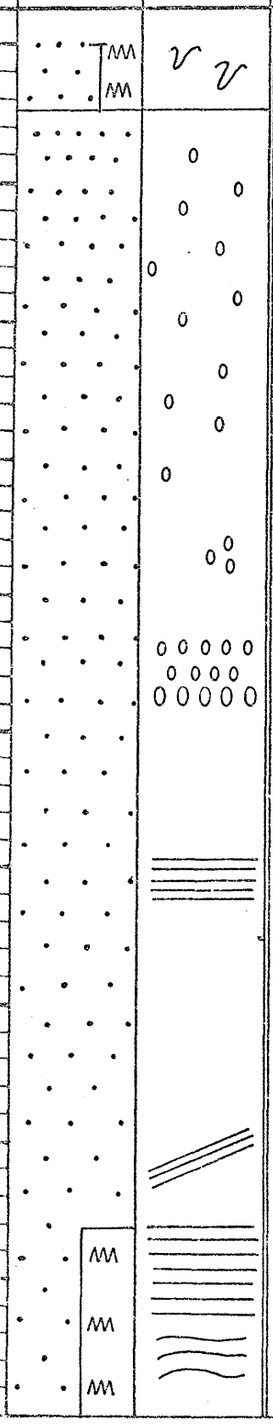
SCALE 1:100

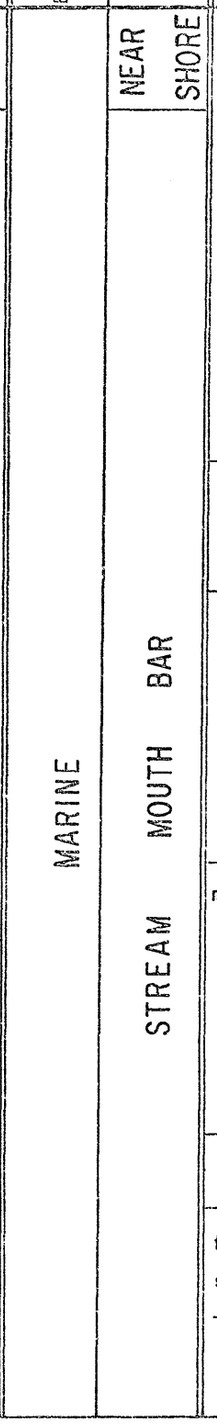
CORE No. 6

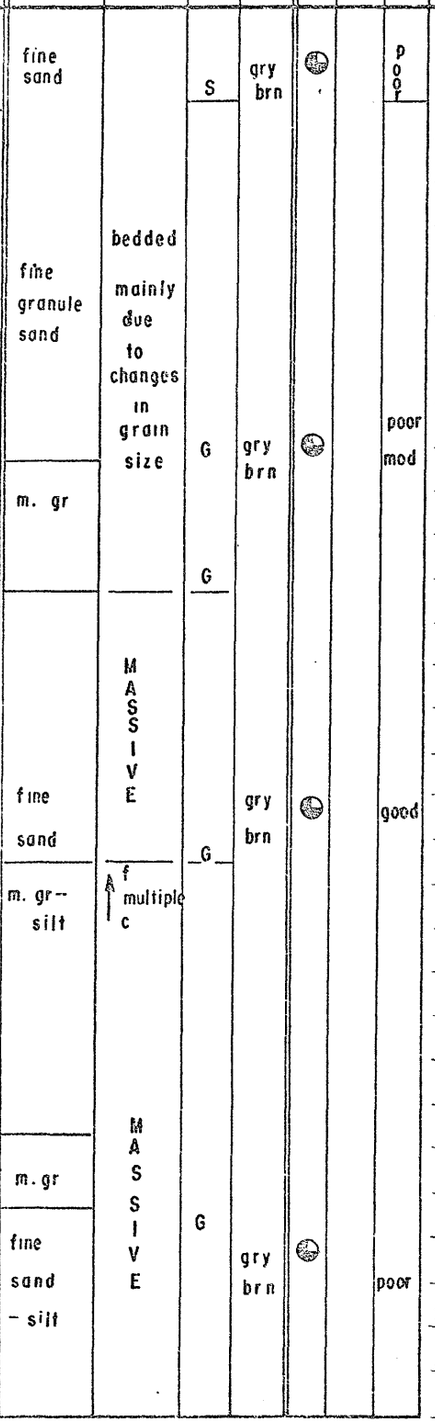
Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78









REMARKS

SANDSTONE - grey to brown, semi-friable quartz, clear, angular to subrounded, well sorted, fine grain, trace mica, carbonaceou streaks and lenses clay choked, poor porosity, brown oil stain, strong petroliferous odour, uniform pale yellow fluorescence, milky white cut.

SANDSTONE - grey to brown, friable, quartz, clear to light grey, polished to frosted, subangular to rounded, very poorly sorted, fin grain to granule, some bimodal distribution. Trace mica, minor carb-onaceous bands, clay choked, poor to moderat porosity, brown oil stained, strong petro-liferous odour, uniform pale yellow fluorescenc milky white cut.

At 2441.2m: Multiple graded beds 5-10mm thi

SP: Seal peeled samples.

CA: Samples collected for core analysis.

→: Sample collected for Palynologic Analysis: 2440.0m; 2440.4m; 2441.2m; 2442.0m; 2443.1m; 2444.0m; 2445.1m; 2446.5m; 2448.0m; 2449.1m; 2450.5m; 2451.4m.

Dwg. 1107/GP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 2 of 8

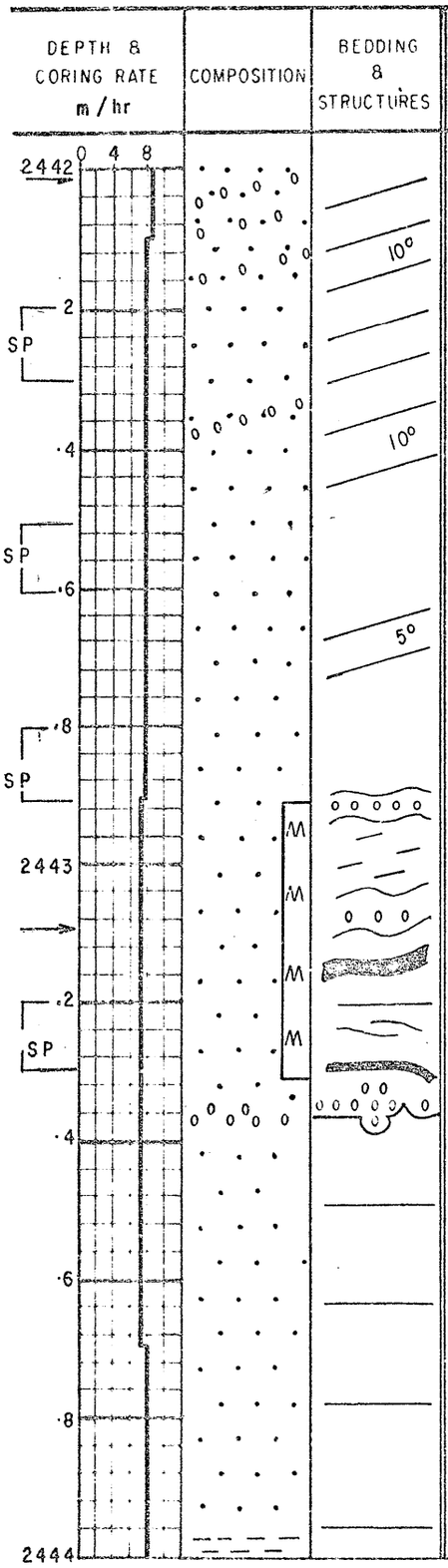
WELL FORTESCUE - 3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71 %) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8^{15}/32$ X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY
MARINE	STREAM MOUTH BAR	C. gr - gran.	bedding due to changes in grain size	G	gry brn			
		med grain sand.		G	gry brn			
		m. gr	? ripple lamin. carb. lamin. & shale bands	G G G				
		congl. fine grain sand		S	gry brn			

REMARKS

At 2442.0m: SANDSTONE - finely laminated, light and dark grey quartz, clear, polished, subangular to subrounded, well sorted, fine grained with sand filled vertical burrows. Light grey Sandstone - 1-2mm clean, but clay choked, poor porosity. Dark grey Sandstone - 2-3mm pyrite, common, trace mica, carbonaceous clay, clay choked, tight

At 2443.1m: SANDSTONE - grey to brown, friable, quartz, clear, polished subangular to rounded, well sorted, medium grain, minor fine grain clean, minor patches of pyrite, trace mica, carbonaceous streaks, moderate porosity, petroliferous odour, uniform pale yellow fluorescence, milky white cut.

At 2443.4m: Conglomerate filled scour into fine grained Sandstone, flat bedded. Near horizontal bedding shown by very minor variations in grain size and colour, conglomerate contains quartz and shale pebbles.

At 2444.0m: Flat shale pebbles, 2mm X.5mm on bedding planes.

Dwg. 1107/DP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

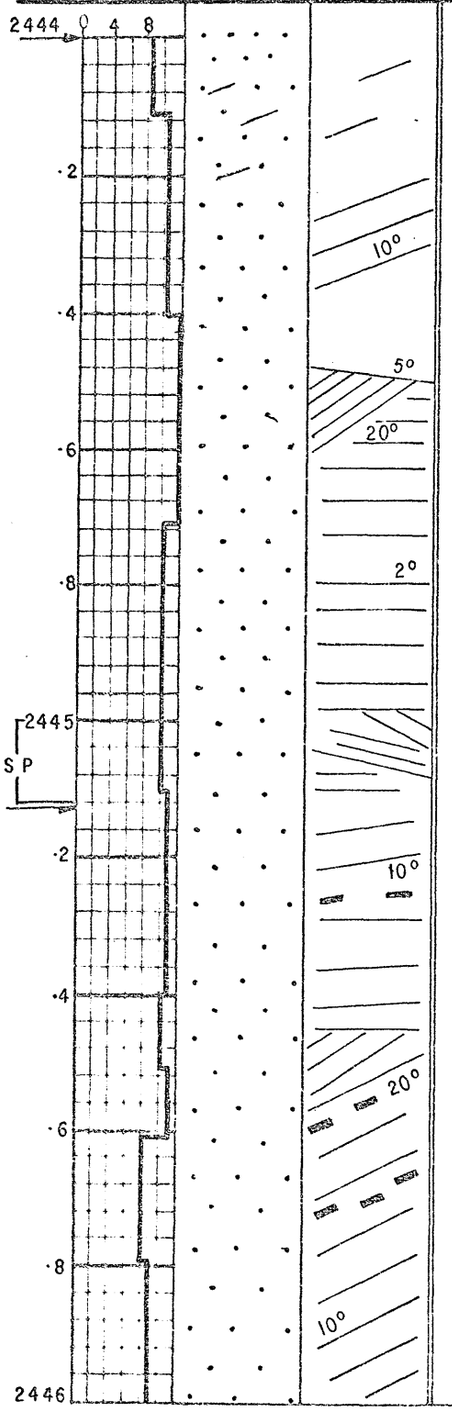
SHEET 3 of 8

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71 %) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



REMARKS

2444.0-2446.4m SANDSTONE - grey, friable quartz, clear, polished, subrounded, very well sorted, very fine grain, trace pyrite, trace mica, trace carbonaceous material, clay choked, poor porosity, petroliferous odour, uniform pale yellow fluorescence, milky white cut.

Brown, flat shale pebbles along bedding planes.

Bedding etched out by very slight variations in colour and grain size.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

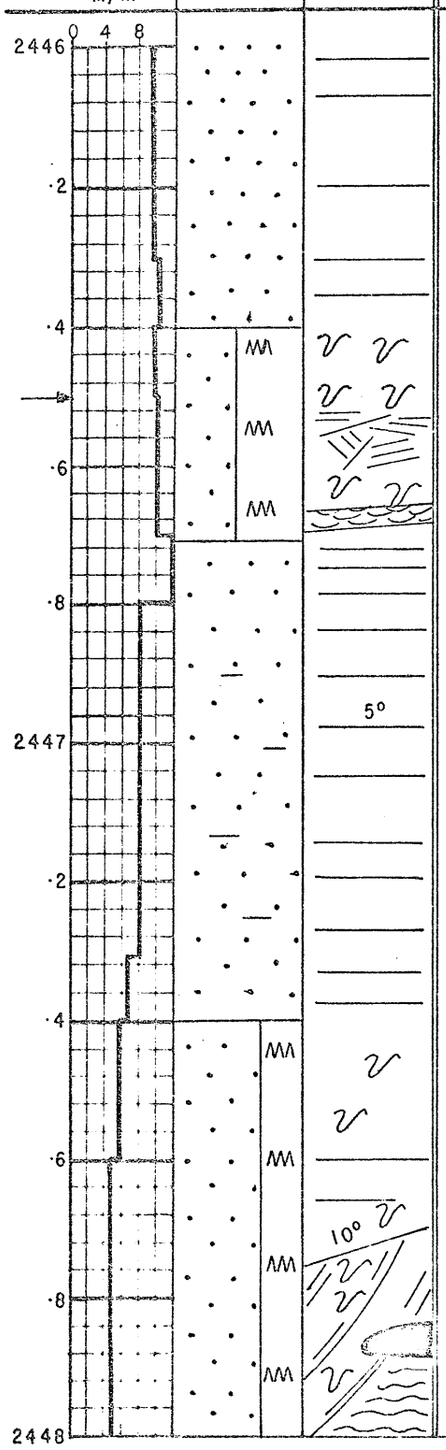
WELL FORTESCUE-3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



REMARKS

2446.4-2446.7m Finely Laminated SANDSTONE/SHALE - 2mm-5mm. SANDSTONE - light grey, hard, quartz, very well sorte very fine grained, trace pyrite, clay choked, tight, no fluorescence, extensively bioturbated laminae disturbed wavy perhaps rippled. SHALE - dark brown, hard, pyritic, micaceous.

Very evenly flat bedded slight dip, bedding etched out by very slight grain size and colour variations.

Trace shale pebbles, 1 X 3mm.

Shale pebble 50 X 20mm.

Shale streaks.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

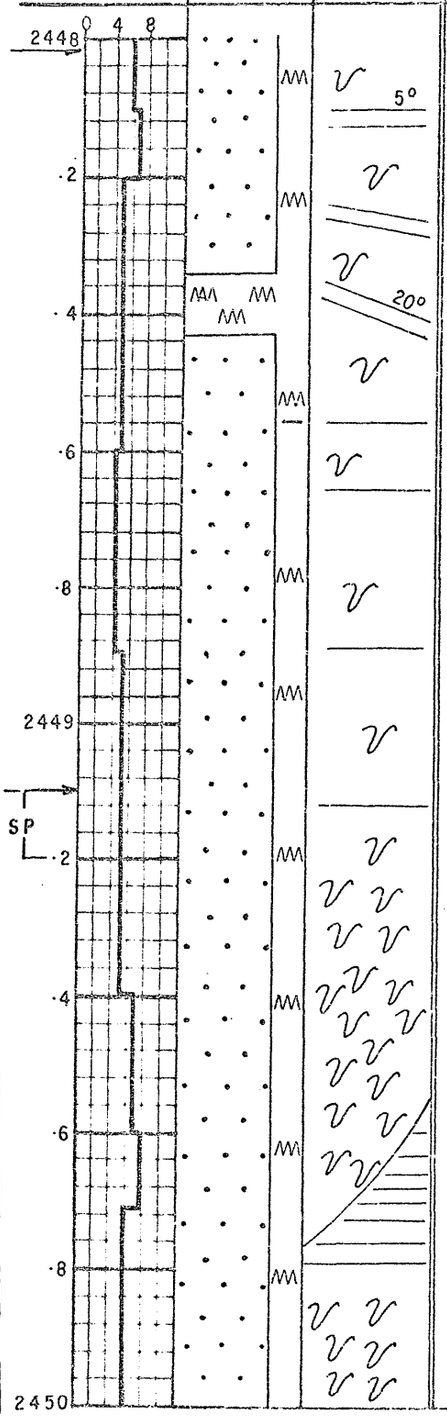
WELL FORTESCUE-3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



REMARKS

SANDSTONE - grey brown, friable, quartz, clear, trace dark grains, polished, subangular to subrounded, well sorted, fine grained, trace pyrite, trace mica, trace carbonaceous material, clay choked, poor porosity, petroliferous odour, uniform pale yellow fluorescence, milky white cut.

Either large slump or scour.

Carbonaceous streaks.

Dwg H07/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

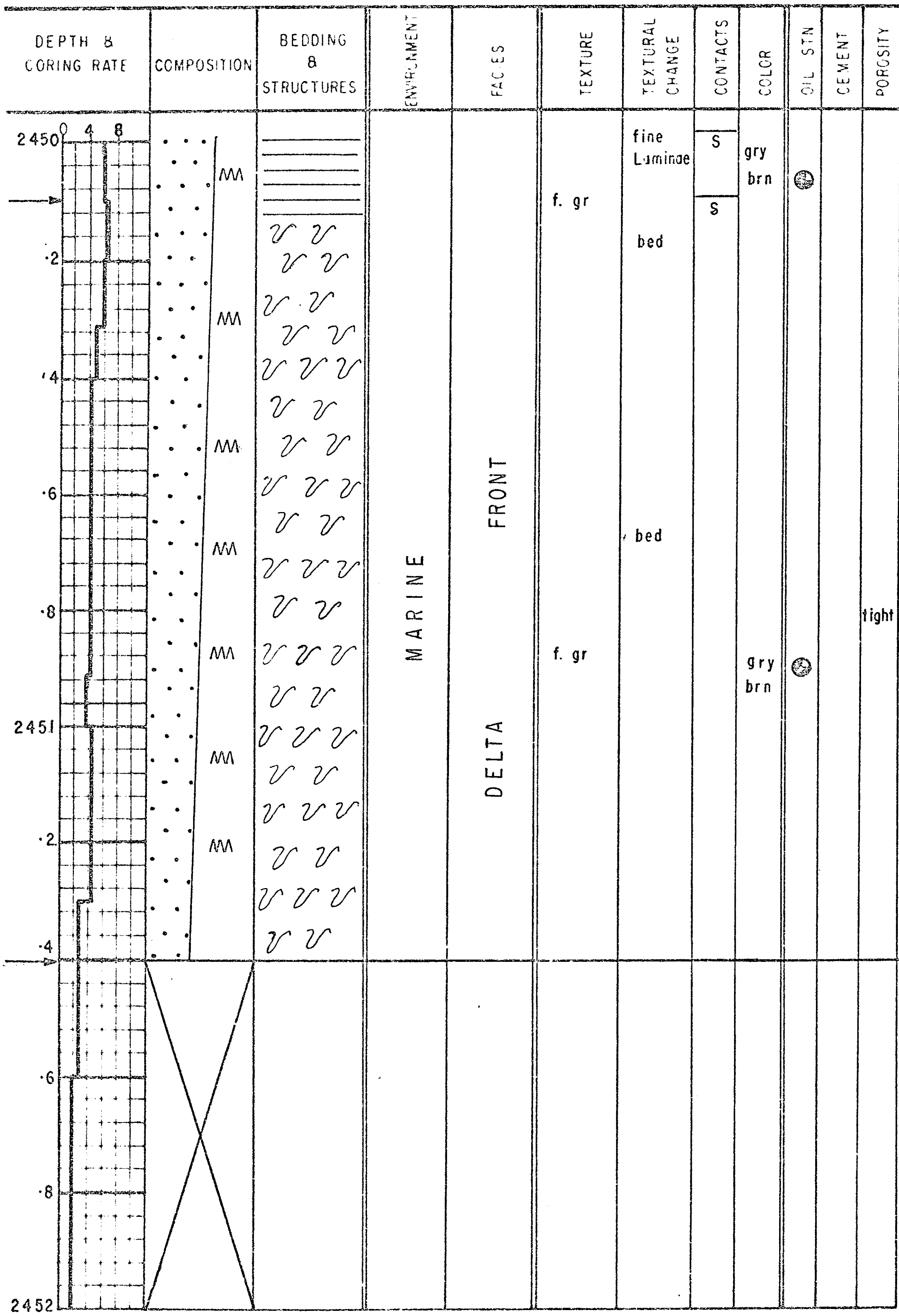
WELL FORTESCUE-3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71%) Fm. LAT ROBE GROUP

Bit Type C22 Bit Size $8\frac{15}{32}$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



REMARKS

SANDSTONE - interlaminated with carbonaceous Siltstone and Shale. Extensively bioturbated Sandstone - grey brown, semi-friable, quartz, clear, polished, very fine grained, well sorted, trace mica, trace pyrite, fine carbonaceous laminae, clay choked, tight.

2451.4-2456.0m: NO RECOVERY.

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CORE DESCRIPTION

SHEET 7 of 8

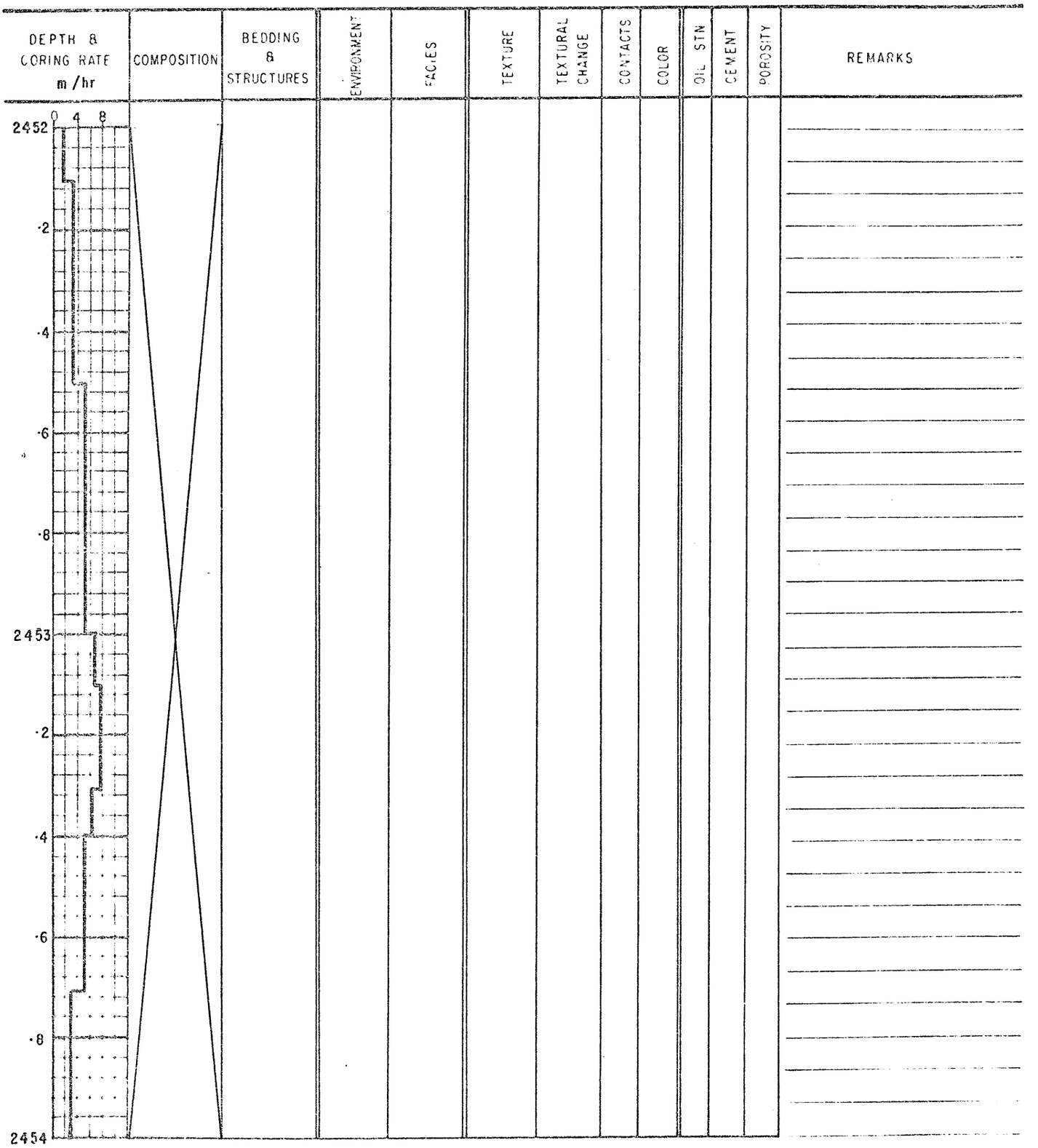
WELL FORTESCUE-3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71 %) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8\frac{15}{32}$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78



Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 8 of 8

WELL FORTESCUE-3

SCALE 1:100

CORE No. 6

Interval Cored 2440.0-2456.0m Cut 16.0m Recovered 11.4m (71%) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8\frac{15}{16}$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 16/12/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
0 4 8												
2454												
·2												
·4												
·6												
·8												
2455												
·2												
·4												
·6												
·8												
2456												

Dwg 1107/CP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

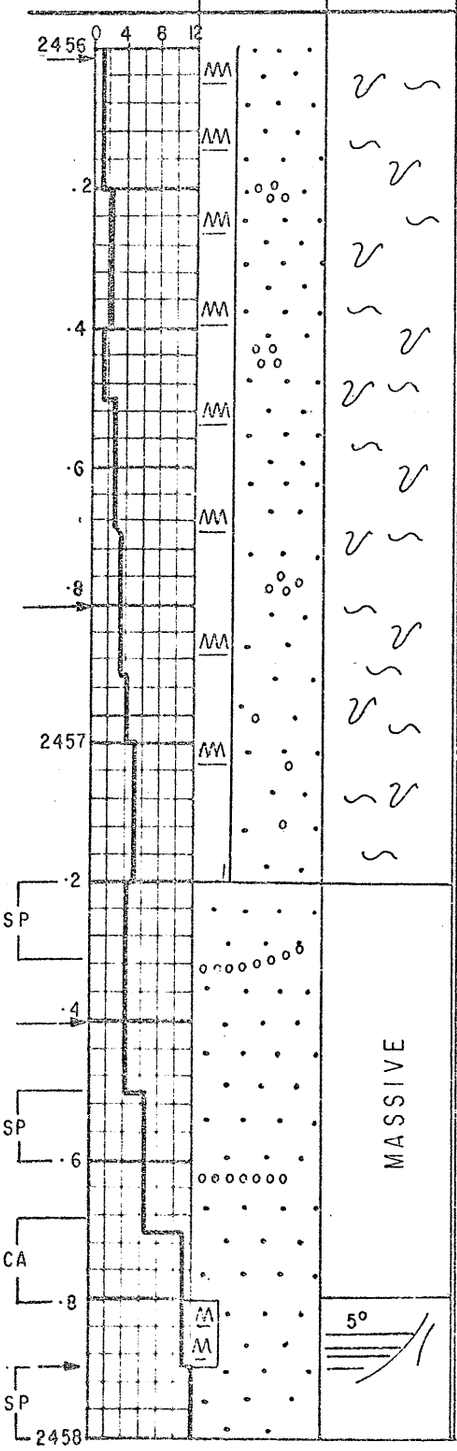
WELL FORTESCUE-3

SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64%) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8^{15}/32$" X 3" in. Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



SANDSTONE - grey to brown to dark grey, hard quartz, clear, subangular to subrounded, generally well sorted, very fine grained, but containing lenses, up to 30mm across, of Sandstone - very poorly sorted, fine to very coarse grained, micaceous, pyrite, carbonaceous material common, trace glauconite clay choked, tight, pyrite cement. .2-1mm interlaminae of SHALE - dark grey, pyrite, mica, carbonaceous. Bioturbated.

SANDSTONE - grey to brown, friable to semi-friable, quartz, clear, polished to frosted, angular to rounded, generally moderately sorted, with 5% patches of quartz granules, grey, frosted, fairly clean, minor pyrite, carbonaceous matter, mica common, moderate porosity. Oil stained brown, strong petroliferous odour, uniform pale yellow fluorescence immediate milky white cut.

SP: Seal peeled sample.

CA: Sample collected for Core Analysis.

⟶: Sample collected for Palynologic Analysis: 2456.0m; 2456.8m; 2457.4m; 2457.9m; 2458.7m; 2459.7m; 2460.1m; 2461.3m; 2462.0m; 2463.0m; 2464.2m; 2464.7m; 2465.0m.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

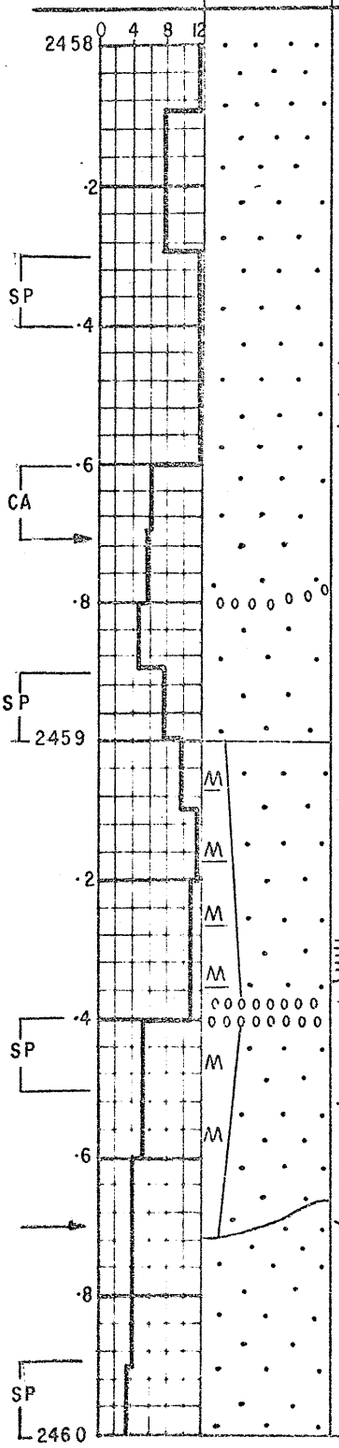
WELL FORTESCUE-3

SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



REMARKS

SANDSTONE - brown, friable, quartz, clear, minor milky, polished, minor frosted, very fine to medium grained, clear, minor mica, trace pyrite, trace carbonaceous material, minor white clay matrix, moderate porosity. Petroliferous odour, uniform pale yellow fluorescence, immediate milky white cut. Laminations shown by slight colour variations

Interlaminated fine grained SANDSTONE and SHALE. Shale laminae 1-5mm thick. Sedimentary structures include (?) ripple bedding, cut and fill, slumping, pebble bands with pebbles 2-3mm diameter and well rounded. Bleeding golden yellow oil.

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ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 3 of 7

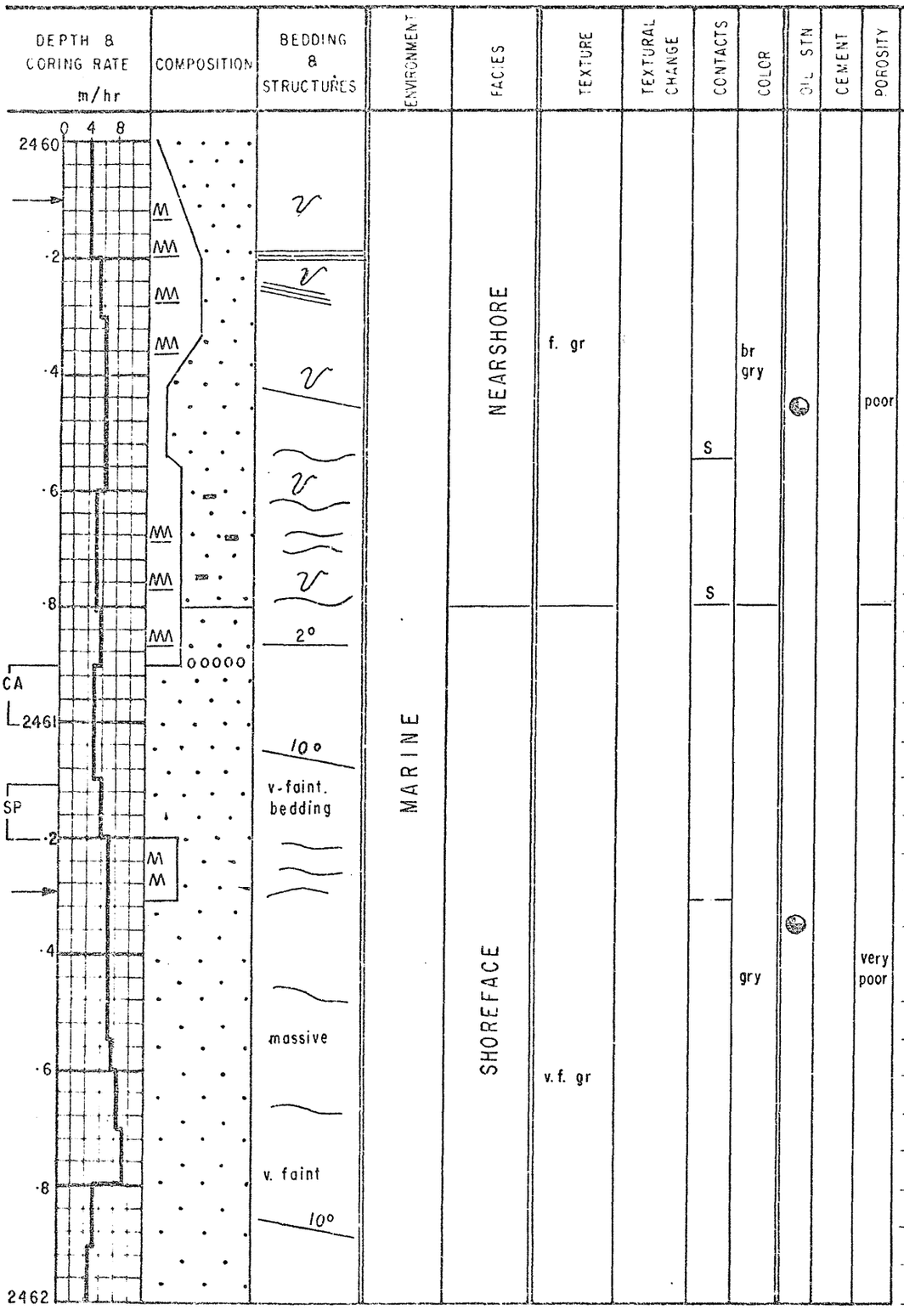
WELL FORTESCUE-3

SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64 %) Fm LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" & 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



REMARKS

SANDSTONE - brown to grey, semi-friable, burrowed, with horizontal burrow infillings, distinguished by their light brown colour, quartz, clear, polished well sorted, fine grained, clay choked, poor porosity. Uniform pale yellow fluorescence, especially in burrow infillings, milky white cut. Bleeding oil. Interlaminated with 1mm thick laminae of SHALE - brown, carbonaceous, micaceous, pyritic laminae.

SANDSTONE - grey, semi-friable, quartz, clear, polished, subangular to subrounded, well sorted very fine grained, mica and carbonaceous material common, trace pyrite, clay choked, very poor porosity. Petroliferous odour, bright yellow fluorescence, milky white cut.

Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

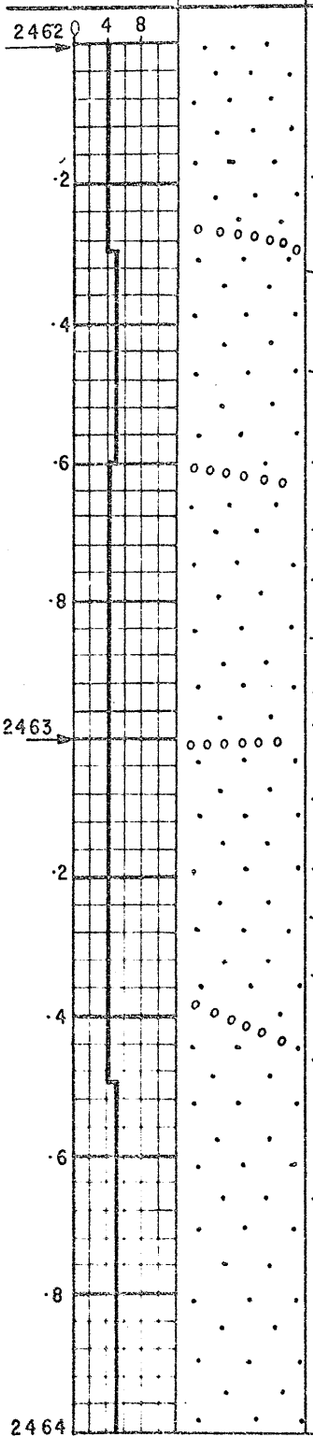
WELL FORTESCUE-3

SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



COMPOSITION

BEDDING & STRUCTURES: 5°; 5°; MASSIVE; 2°; 10°; MASSIVE

ENVIRONMENT: MARINE

FACIES: SHOREFACE

TEXTURE

TEXTURAL CHANGE: f c — multiple graded bedding: each set ·10mm thick.

CONTACTS

COLOR: grey

OIL STN

CEMENT

POROSITY: very poor

REMARKS

SANDSTONE - grey, semi-friable, massive, quartz clear, polished, subangular to subrounded, poorly sorted, very fine to fine grained matrix, with varying amounts of coarse to very coarse grain, resulting in graded bedding, mica and carbonaceous material common, trace pyrite, clay choked, very poor porosity. Petroliferous odour, bright yellow fluorescence, milky white cut.

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CORE DESCRIPTION

SHEET 5 of 7

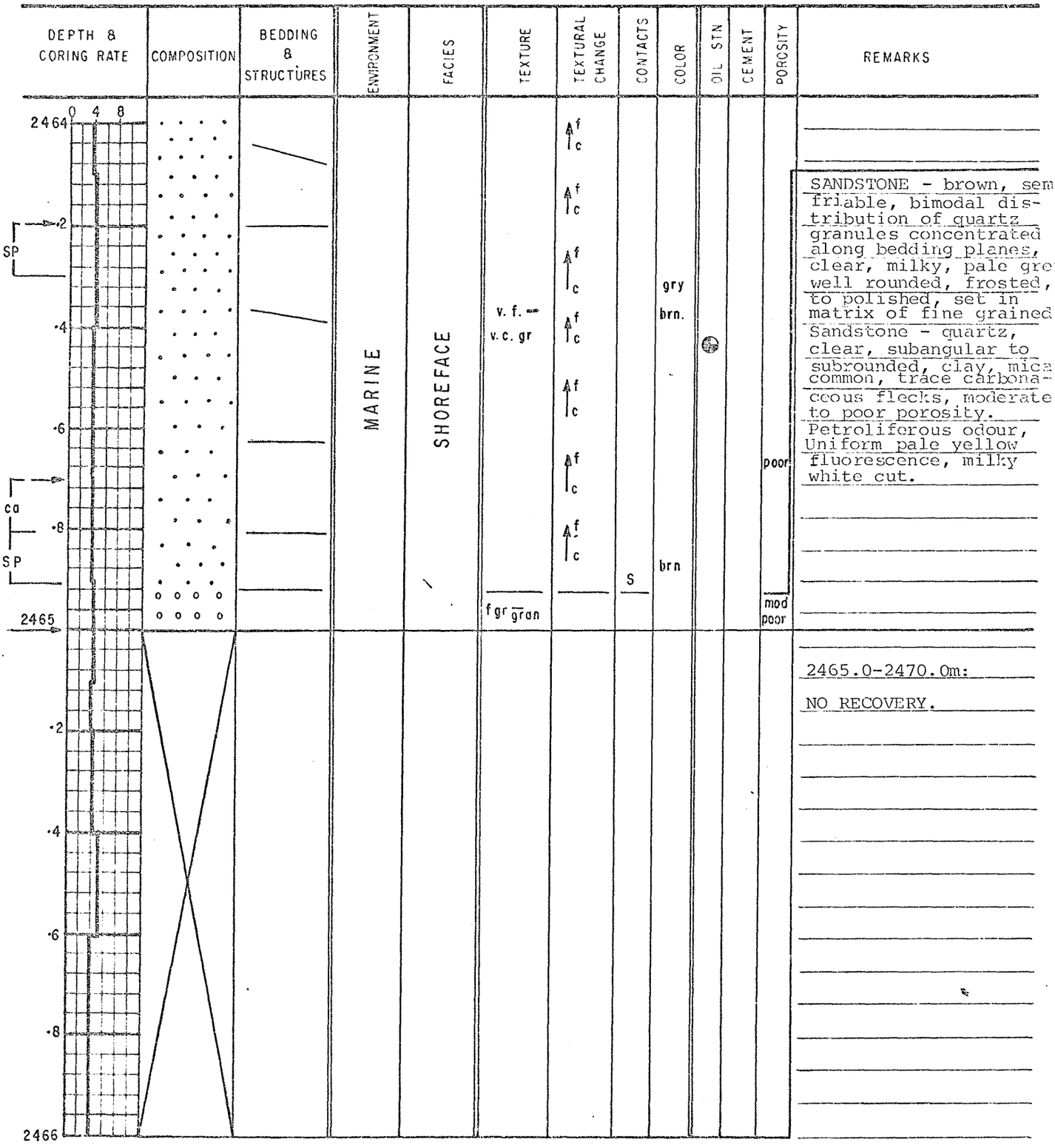
WELL FORTESCUE-3

SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64 %) Fm LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



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ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 6 of 7

WELL FORTESCUE-3

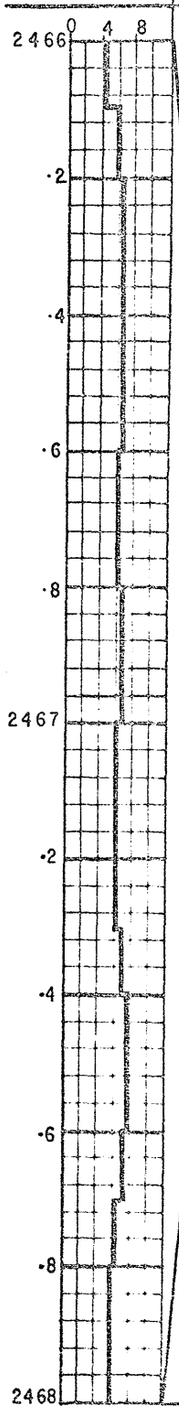
SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64 %) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8\frac{15}{32}$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

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 7 of 7

WELL FORTESCUE-3

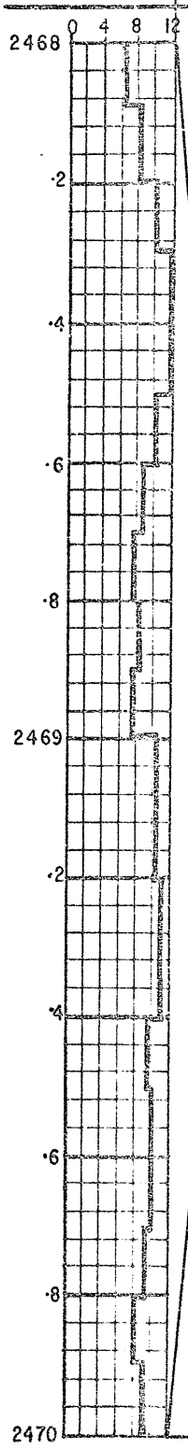
SCALE 1:100

CORE No. 7

Interval Cored 2456-2470m Cut 14.0m Recovered 9.0m (64%) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8^{15}/32$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

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



NOTE: No recovery due (?) to poorly consolidated sand as suggested by increasing drill rate.

Dwg. 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SCALE 1:100

CORE No. 8

Interval Cored 2470-2480m Cut 10.0m Recovered 0m (0%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3". in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

DEPTH & CORING RATE m/hr	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
0 4 8 2470 ·2 ·4 ·6 ·8 2471 2 4 6 8 2472												2470.0-2480.0m: NO RECOVERY. NOTE: Core head badly damaged, suggested coring on a large boulder ahead of bit. Drill rate suggests a poorly consolidated sand initially.

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

SHEET 2 of 5

WELL FORTESCUE-3

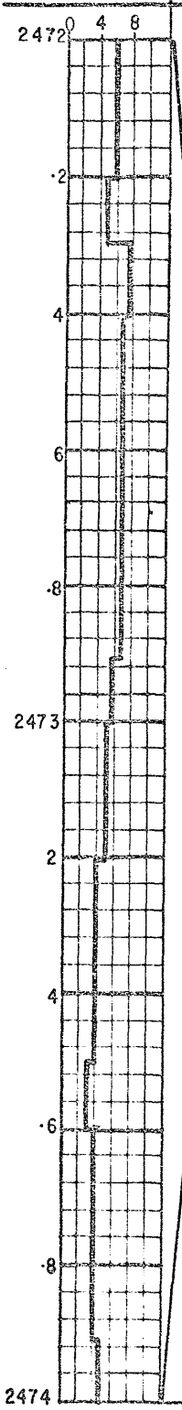
SCALE 1:100

CORE No. 8

Interval Cored 2470-2481m Cut 10.0m Recovered 0m (0%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

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

WELL FORTESCUE-3

SCALE 1:100

CORE No. 8

Interval Cored 2470-2480m Cut 10.0m Recovered 0m (0 %) Fm LATROBE GROUP

Bit Type C22 Bit Size $8^{15}/32$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

DEPTH & CORING RATE m/hr.	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
0 4 8												

2474
·2
·4
·6
·8
2475
·2
·4
·6
·8
2476

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CORE DESCRIPTION

SHEET 4 of 5

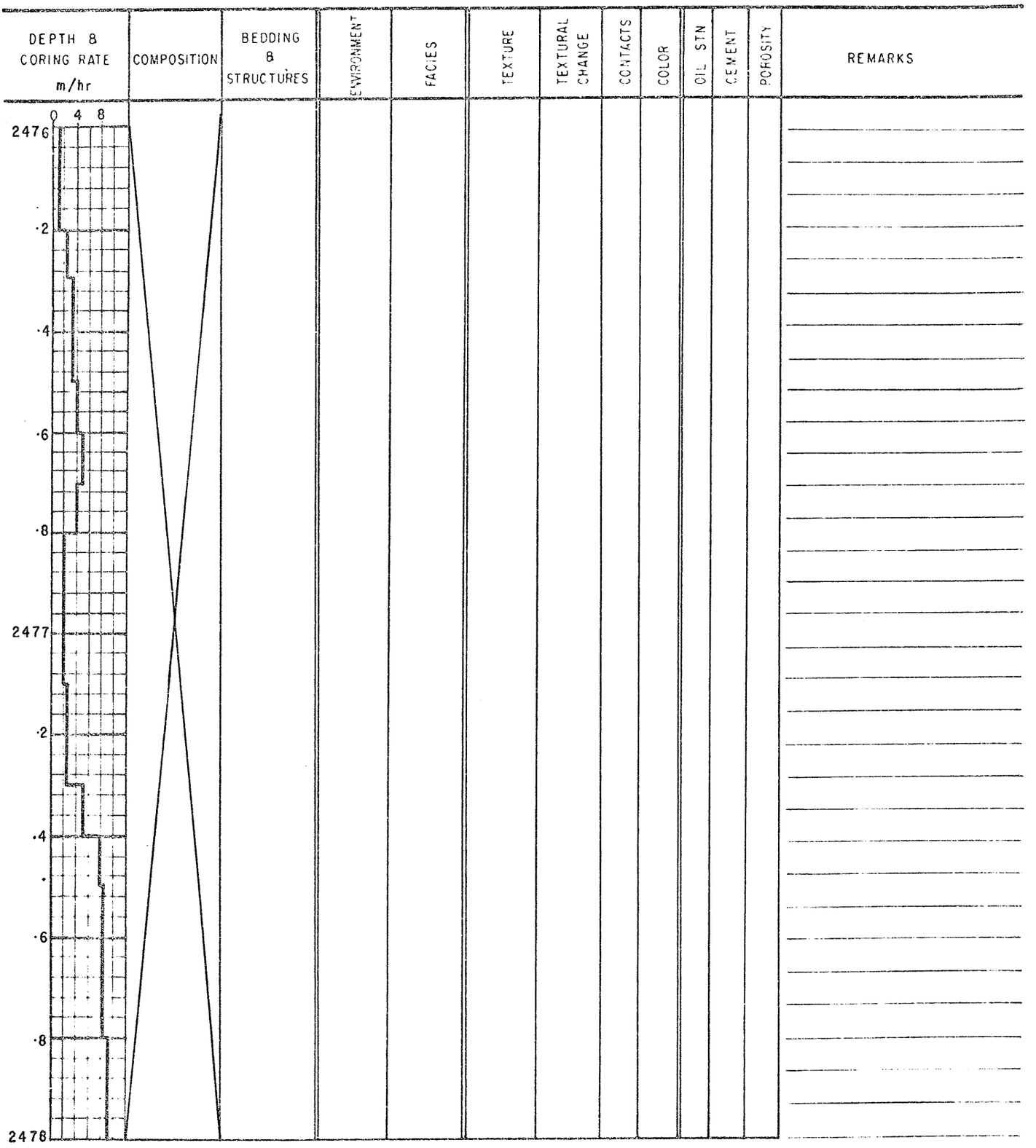
WELL FORTESCUE-3

SCALE 1:100

CORE No. 8

Interval Cored 2470-2480m Cut 10.0m Recovered 0m (0%) Fm. LATROBE GROUP

Bit Type C22 Bit Size 8 15/32" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78



Dwg 1107/OP/87

ESSO AUSTRALIA LTD.

CORE DESCRIPTION

WELL FORTESCUE-3

SHEET 5 of 5

SCALE 1:100

CORE No. 8

Interval Cored 2470-2480m Cut 10.0m Recovered 0m (0 %) Fm. LATROBE GROUP

Bit Type C22 Bit Size $8\frac{15}{32}$" X 3" in., Desc by R.C.N. THORNTON, J.D. ALDER Date 17/12/78

DEPTH & CORING RATE	COMPOSITION	BEDDING & STRUCTURES	ENVIRONMENT	FACIES	TEXTURE	TEXTURAL CHANGE	CONTACTS	COLOR	OIL STN	CEMENT	POROSITY	REMARKS
2478 0 4 8 ·2 ·4 ·6 ·8 2479 ·2 ·4 ·6 ·8 2480												

Dwg 1107/08/67

APPENDIX 4

APPENDIX 4

PALYNOLOGY REPORT

A PALYNOLOGICAL ANALYSIS OF FORTESCUE-3, GIPPSLAND BASIN.

by

H.E. Stacy

and

A.D. Partridge

Esso Australia Ltd
Palaeontology Report 1979/5

March 20, 1979.

INTRODUCTION

Twenty five samples were examined from Fortescue-3 consisting of five conventional core samples and twenty sidewall core sample. Overall the yields from the samples were good, however preservation was generally poor to fair, mainly owing to extensive pyrite pitting of the fossil exines.

The formation and zone subdivision of the section examined is summarised below. Table-1 lists all of the samples examined and summarises the findings, while individual fossil occurrences are recorded on the accompanying Distribution Charts. The zone limits and their confidence ratings are also given on the accompanying Data Sheet.

SUMMARY

UNIT/FACIES	ZONE	*DEPTH (in metres)
LAKES ENTRANCE FORMATION	P. tuberculatus	2417 - 2433m
	UNCONFORMITY AT 2434m	
LATROBE GROUP (Coarse Clastics)	Middle M. diversus	2437 - 2448.4m
	Middle/Lower M. diversus	2452.5 - 2453.8m
	Lower M. diversus *	2476.5 - 2605.5m
	Upper L. balmei *	2610.5
	T.D.	

* Apectodinium (al. Wetzeliella) hyperacantha 2589 - 2610.5
Dinoflagellate Zone.
(Extending across zone boundary)

GEOLOGICAL COMMENTS

1. Dinoflagellates were present in all samples except for the coals at 2571 and 2573 metres.

* Depth shown are drillers measured depths.

.../2

2. Because of the rarity of Middle M. diversus Zone indicator species the interval between 2446.5 metres and 2535 metres can only be referred to either the Lower or Middle subdivisions of the M. diversus Zone at very low levels of confidence. The boundary between these subzones could easily be taken anywhere within the above interval without conflicting with the palynology.

   Electric log correlation with adjacent wells and comparison of the thickness of the Lower M. diversus Zone between Fortescue-3 and adjacent wells suggests that the base of the Middle M. diversus Zone should be taken as low as 2501 metres. This cannot be demonstrated from the palynology although it is conceded that the only sample (i.e. at 2476.5m) assigned to the Lower M. diversus Zone above 2501 metres has been given a 2 confidence rating.

3. In this report the species hyperacantha has been transferred from the genus Wetzeliella to the genus Apectodinium, which affects the name of an important dinoflagellate zone in the Gippsland Basin. This change follows the recent comprehensive reviews of dinflagellate cyst taxonomy by Lentin and Williams (1977) and Stover and Evitt (1978), which are likely to be followed in the future by the majority of workers in the field. It is anticipated that other name changes will be progressively made in future reports to bring our taxonomic terminology up to date.

4. The basal sample in the Lakes Entrance Formation at 2433 metres contains common reworked spores and pollen indicative of the P. asperopolus Zone. The reworked elements are so diagnostic that it can be stated emphatically that they cannot have been derived from the underlying Latrobe coarse clastics at the Fortescue-3 location.

DISCUSSION OF ZONES

Detailed assemblage lists for all samples examined are plotted on the accompanying Distribution Sheets. How the individual zones were identified in this well is summarised below:

.../3

Upper Lygistepollenites balmei Zone: 2610.5 metres.

The common occurrence of the gymnosperm pollen Lygistepollenites balmei in the one sample is characteristic of the Paleocene L. balmei Zone. The presence of the large spores Cyathidites gigantis and Verrucosisporites kopukuensis is diagnostic of the Upper subdivision of the Zone.

Apectodinium (al. Wetzeliella) hyperacantha Zone: 2589 - 2610.5 metres.

The presence of the nominate species in the three samples in this interval is diagnostic of this zone. As in adjacent wells the zone overlaps the Upper L. balmei Zone to Lower M. diversus Zone boundary.

Lower Malvacepollis diversus Zone: 2476.5 - 2605.5 metres.

The base of this zone in Fortescue-3 is identified by the first appearance of Spinizonocolpites prominatus, Polypodiaceoisporites varus and Proteacidites biornatus in the sample at 2605.5 metres. The presence of the following species S. prominatus, P. varus, Crassiretitriletes vanraadshoovenii and Myrtaceoipollenites australis which are normally found in association and are interpreted to be indicative of "mangrove environments" and lack of any large numbers of Proteacidites grandis is characteristic of the samples between 2585 and 2605.5 metres near the base of this zone. The overlying section from 2535 to 2568.2 metres in contrast can be characterised by common P. grandis and the frequent to common occurrence of Rotverrusporites stellatus and could be regarded as more typical of assemblages from the Lower M. diversus Zone. Up to 2535 metres are less definitive but are still referred to this zone on the presence of Tetrocolporites multistrixus at 2476.5 metres and absence of any Middle M. diversus Zone markers. The same rarity of marker fossils precludes assigning the overlying samples at 2452.5 and 2453.8 metres either of the Lower or Middle subdivisions of the M. diversus Zone.

Middle Malvacepollis diversus Zone: 2437 - 2448.4 metres.

The presence of the pollen Proteacidites plemmelus at 2443.5 metres and Tricolporites moultonii at 2448.4 metres is used to assign these and the overlying sample to this zone.

Proteacidites tuberculatus Zone: 2417 - 2433 metres.

Both Cyatheacidites annulatus and various marker species of dinoflagellates including Protoellipsodinium simplex and "Dinosphaera" mamilatus from these samples assign this interval to the P. tuberculatus Zone.

.../4

REFERENCES

LENTIN, J.K., and WILLIAMS, G.L., 1977: Fossil dinoflagellates - index to genera and species, 1977 edition: Bedford Inst. Oceanography Rept. B1-R-77-8, 209pp.

STOVER, L.E., and EVITT, W.R., 1978: Analyses of Pre-Pleistocene Organic-walled Dinoflagellates. Stanford Univ. Publ. Geol. Sciences. Vol. 15, 300pp.

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: + 31m GL: - 69m

WELL NAME: FORTESCUE-3 TOTAL DEPTH: 2625m

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										
	P. tuberculatus	2417	0				2433	2	2429	0	
PALEOGENE	Upper *N. asperus*										
	Mid *N. asperus*										
	Lower *N. asperus*										
	P. asperopolus										
	Upper *M. diversus*										
	Mid *M. diversus*	2440	2	2446.5	1		2451.4	2	2446.5	1	
	Lower *M. diversus*	2476.5	2	2535	1		2605.5	0			
	Upper *L. balmei*	2610.5	0				2610.5	0			
	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: All depths in metres.

Apectodinium (al. Wetzeliella) hyperacantha Dinoflagellate Zone 2589m - 2610.5m.

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 & A.D. PARTRIDGE DATE: MARCH 6, 1979

DATA REVISED BY: _____ DATE: _____

Well Name FORTESCUE-3 Basin GIPPSLAND Sheet No. 1 of 4

SAMPLE TYPE *	C	S	S	C	S	C	C	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
DEPTHS / PALYNOMORPHS	2417	2429	2433	2440	2446.3	2446.5	2451.4	2452.5	2456.8	2476.5	2532	2535	2537.7	2540	2557.2	2560.8	2568.2	2571	2573.2	2576	2585	2589	2605.5	2610.5	2615					
A. qualumis																														
A. acutullus														/						/										
A. luteoides																														
A. oculatus																														
A. sectus																														
A. triplaxis																														
A. obscurus																								/						
B. disconformis						/								/	/ A						/									
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.f.	/										/						
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													/		c.f.									/						
L. ohaiensis																														
L. bainii																														
L. lanceolatus																			/											
L. balmei									R.V								/							/						
L. florinii	/					/	/			/	/	/	/	/	/		/	/	/	/	/			/							
M. diversus			/			/	/		/	/	/	/	/	/	/		/	/	/	/	/	/	/	/						
M. duratus																														
M. grandis																														
M. perimagnus																														

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

Well Name FORTESCUE-3 Basin GIPPSLAND Sheet No. 2 of 4

SAMPLE TYPE *	C	S	S	C	S	C	C	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
DEPTHS / PALYNOMORPHS	2417	2429	2433	2440	2446.3	2446.5	2451.4	2452.5	2456.8	2476.5	2532	2535	2537.7	2540	2557.2	2560.8	2568.2	2571	2573.2	2576	2585	2589	2605.5	2610.5	2615					
M. subtilis			/	/						/				/	A									/						
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	A	A	A	A	/	/	/	/	/	/									
P. grevillaensis																														
P. incurvatus															/		/			/				/						
P. intricatus																														
P. kopiensis																														
P. lapis							?						/			/					/	/		/						
P. latrobensis																														
P. leightonii						?		/									/			?										
P. obesolabrus																														
P. obscurus													/	/																
P. ornatus			/									cf.								?										
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-3 Basin GIPPSLAND Sheet No. 3 of 4

SAMPLE TYPE *	C	S	S	C	S	C	C	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			
DEPTHS / PALYNOMORPHS	2417	2429	2433	2440	2446.3	2446.5	2451.4	2452.5	2456.8	2476.5	2532	2535	2537.7	2540	2557.2	2560.8	2568.2	2571	2573.2	2576	2585	2589	2605.5	2610.5	2615					
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.)																														
O. brossus																														
R. boxatus																														
R. stellatus													R	R																
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-3 Basin GIPPSLAND Sheet No. 4 of 4

SAMPLE TYPE *	C	S	S	C	S	C	C	S	C	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PALYNOMORPHS / DEPTHS	2417	2429	2433	2440	2446.3	2446.5	2451.4	2452.5	2456.8	2476.5	2532	2535	2537.7	2540	2557.2	2560.8	2568.2	2571	2573.2	2576	2586	2589	2605.5	2610.5	2615
APICAL																									
Calig. amiculum	/																								
G. retiintexta *						/																			
Hyst. rigaudae		/	/				/																		
H. varispinosum ms.																									
Hyst. tubiferum *																							/		
System. placacantha		/																		/					
INTERCALARY																									
Apecto. homomorpha * (l.sp.)																									
A. homomorpha (sh. sp)						/		/	/	/A										/	/	/	/	/	
A. hyperacantha																									
D. flounderensis				/																					
D. dartmooria										/A	/	/A	cf.	/											
D. pachyceros (sh. h).															/										
Palae. australinum												/A													
Spinidinium spp.						/	/	/	/											/					
PRECINGULAR																									
Achom. alcicornu	/																								
Apteo. australiense						/																			
C. inodes *						/																	/		
Dinosph. mamilatus		/																							
Impagidinium spp.																									
Lingu. machaerophorum *																									/
Nemat. balcombiana *	/		/																						
Operculod. centrocarpum *	/	/	/						/					/						/			/		/
O. israelianum	/																								
Pent. laticinctum *																									
P. simplex ms.		/	/																						
Pyxid. pontus ms.	/	/																							/
S. ramosus *		/	/			/			/			/A	/	/											/
T. scabroellipticus			/																						
T. peligica *										/															
Tubio. filosa.						/	/																		
COMBINATION																									
Hemic. zoharyi *																									
ACRITARCHS																									
Cyclop. vieta	/																								
Paral. indentata						/		/															/		

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

TABLE - 1

SUMMARY OF PALEONOLOGICAL ANALYSIS, FORTESCUE-3, GIPPSLAND BASIN

SAMPLE	DEPTH(m)	DEPTH(ft)	ZONE	AGE	CONFIDENCE RATING	YIELD	DIVERSITY	COMMENTS
CORE 5	2417	7930	P. tuberculatus	Oligocene	0	Moderate	Moderate	C. annulatus present
SWC 27	2429	7969	P. tuberculatus	Oligocene	0	Moderate	High	C. annulatus present
SWC 26	2433	7982	P. tuberculatus	Oligocene	2	High	Very high	Reworked P.asperopolus zone fossils
CORE 6	2437 *	7995	Middle M. diversus	Early Eocene	2	Fair	Low	P.grandis, Defl. flounderensis
SWC 24	2446.3	8026	Indeterminate			Barren	Barren	
CORE 6	2443.5 *	8017	Middle M. diversus	Early Eocene	1	High	Very High	P. plemmelus present
CORE 6	2448.4 *	8033	Middle M. diversus	Early Eocene	2	High	Very High	T. moultonii present
SWC 23	2452.5	8046	Lower/Middle M.diversus	" "	2	Moderate	Moderate	
CORE 7	2453.8 *	8050	Lower Middle M.diversus	" "				
SWC 21	2476.5	8125	Lower M. diversus	Early Eocene	2	High	Moderate	Highest occurrence T. multistrixus
SWC 18	2532	8307	Lower M. diversus	Early Eocene	2	High	Moderate	
SWC 17	2535	8317	Lower M. diversus	Early Eocene	1	High	High	
SWC 16	2537.7	8326	Lower M. diversus	Early Eocene	1	High	High	
SWC 15	2540.5	8333	Lower M. diversus	Early Eocene	1	High	High	
SWC 13	2557.2	8390	Lower M. diversus	Early Eocene	1	High	High	
SWC 12	2560.8	8402	Lower M. diversus	Early Eocene	1	High	Moderate	
SWC 11	2568.2	8426	Lower M. diversus	Early Eocene	1	High	High	Reworked Paleocene and Early Cretaceous fossils.
SWC 10	2571	8435	Lower M. diversus	Early Eocene	2	Moderate	Low	Coal
SWC 9	2573.2	8442	Lower M. diversus	Early Eocene	1	High	Low	Coal
SWC 8	2576	8451	Lower M. diversus	Early Eocene	1	High	Moderate	
SWC 7	2585	8481	Lower M. diversus	Early Eocene	1	High	High	S. prominatus present
SWC 6	2589	8494	Lower M. diversus	Early Eocene	1	Moderate	High	S. prominatus, A. hyperacantha present
SWC 3	2605.5	8548	Lower M. diversus	Early Eocene	0	High	High	S. prominatus, A. hyperacantha present
SWC 2	2610.5	8565	Upper L. balmei	Paleocene	0	Moderate	High	A. hyperacantha present
SWC 1	2615	8579	(P. tuberculatus)	(Oligocene)	(1)	Moderate	Moderate	Mislabeled or mud contaminated SWC

* NOTE CORRECTIONS TO CORE DEPTHS:

	Labelled Depth		E-Log Adjusted depth
CORE-6	2440m	=	2437m
CORE-6	2446.5m	=	2443.5m
CORE-6	2451.4m	=	2448.4m
CORE-7	2456.8m	=	2453.8m

APPENDIX 5

APPENDIX 5

LOG ANALYSIS

WELL LOG ANALYSIS REPORT

TO

OPERATOR ESSO AUSTRALIA LTD. WELL FORTESCUE-3 DATE 2/1/79

STATE VICTORIA ELEV. 31m KB

DEPTH INTERVAL	POROSITY ESTIMATE	WATER SAT. ESTIMATE	REMARKS
2433.0 - 2434.3 (1.3)	-	-	Tight shale zone.
2434.3 - 2436.0 (1.7)	14.1 - 15.0	42	Shale - probably oil/gas productive.
2436.0 - 2437.2 (0.8)	-	-	Tight shale zone.
2437.2 - 2438.2 (1.0)	19.7 - 20.0	28	Oil Production.
2438.2 - 2439.0 (0.8)	24.0	15	Oil Production.
2439.0 - 2439.9 (0.9)	22.0	12	Oil Production.
2439.9 - 2443.6 (3.7)	21.3 - 22.0	13	Oil Production.
2443.6 - 2445.0 (1.8)	-	-	Silty Shale.
2445.0 - 2447.3 (2.3)	-	-	Silty Shale.
2448.0 - 2449.0 (1.0)	20.0	31	Oil Production.
2449.5 - 2451.3 (1.8)	-	-	Silty Shale.
2451.3 - 2453.5 (2.2)	-	-	Silty Shale.
2453.5 - 2455.5 (2.0)	21.5 - 22.0	29	Oil Production.
2455.5 - 2456.5 (1.0)	13.0	46	Silty, tight, probably marginal water saturations
2456.5 - 2457.8 (1.3)	17.0 - 18.0	41	Shale Tight; " " "
2457.8 - 2461.4 (3.6)	14.8 - 15.0	56	Shale Tight; " " "
2461.4 - 2475.5 (14.1)	20.0	100	Water Sand.

TESTS:

RFT 1 2440.0m; Received 16.10 litres oil, 206.7 litres gas, 1.0 litres filtrate.
RFT 2 2448.5m; Received 0.5 litres oil, 8.5 litres gas, 19.9 litres filtrate.
RFT 3 2462.0m; Received 19.0 litres formation water; slight scum.
RFT 4 2457.5m; Received 19.0 litres filtrate, 56.64 litres gas, brown scum.
RFT 5 2454.5m; Received 3.0 litres oil, 17 litres gas.

FORMATION:

LATROBE

N.B. add 3m to Electric log depths to tie into drillers.

LOGS:

ISF-Sonic-MSFL
FDC-CNL-GR

COMMENTS:

1. 6.4m (interval 2437.2m-2443.6m) net pay and a possible additional 3m net pay in gross interval 2434m-2462m.
2. OWL occurs in a shaley interval 2458.0m - 2461.5m.
3. Results computed on hand calculator.

BY D. J. Henderson.

APPENDIX 6

APPENDIX 6

VELOCITY SURVEY

VELOCITY SURVEY

Well ..... FORTESCUE-3 .....

Basin ..... GIPPSLAND .....

INTRODUCTION

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

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

Supplied (1) Instruments

(2) Personnel

Seismic Observer ... J. LARSON ...

Marine Shooter ..... G. ATKINSON .

Dynamite .....

(3) Seismic Souce

Gas Gun

Gas Pressures .....

Oxygen ...90PSI.....

Propane ..50PSI.....

(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 ..19/12/78.....

boarded (rig)..OCEAN DIGGER..... date...19/12/78.....

date of survey..20/12/78.....

casing depth....20" @ 225m, 13-3/8" @ 867m

T.D. when shot...2625m..... FTD ....2625m.....

water depth.....69m.....

K.B. .....31m,.

SURVEY PROCEDURE

Weather: sea . 2-3m at start, reduced to 1m during survey

rig movement ...slight.....

rig noise ..moderate.....

Hydrophones: number ...three.....

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

position . 2-1m 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

Number of pops per level:.....

amount of powder dumped .....lbs.

Well-phone positioning :

T-bar .....

number of depths .....13.....

Time: first shot .....0400 hours.....

last shot .....0614 hours.....

rig time .....2-5 hours.....

RESULTS

Quality of records (good .....22.....
(fair .....8.....
(poor .....2.....
(not used .....

Comparison of Interval Times with sonic log

/△/average .....9.3.....microsec/metre

/△max/ .....34.5.....microsec/metre

CONCLUSION

Reliability of T-D curve .....FAIR.....

COMMENTS:

Had trouble positioning gun in 40 mph winds.

Tool began to slip at level 2452m due to arm not being able to lock into walls. Reduced slack on cable and was able to position the tool correctly.

Shothole information:- Elevation, Distance & Direction from Well

Company: ESSO EXPLORATION AUSTRALIA INC. Well: FORTESCUE-3

Elevation (Derrick Floor): 31m

Total Depth: 2625m

LOCATION

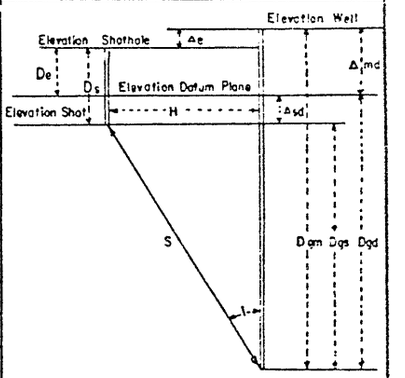
Coordinates: LAT: 38°23'22.876" LONG: 148°16'02.533" DATUM: MEAN SEA LEVEL

Section, Township, Range

County

Area or Field: GIPPSLAND BASIN

Record Number	Shothole Number	Time of Shot	Dgm	Ds	tus	tr	T Reading	T Polarity	T Grade	Dgs	H	TAN i	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	ΔDgd	ΔTgd	Vi Interval Velocity	Va Average Velocity
1		0400	880	12.2			.354		G	836.8	48	.0574	.9984	.353	.008		.361	.361	849				2349
2		0402	880	"			.354		F		"				"					150	.050	2994	
31		0613	1030	"			.404		G	986.8	"	.0486	.9988	.404	"		.412	.412	999				2428
32		0614	1030	"			.403		VP		"				"					150	.047	3186	
29		0605	1180	"			.451		G	1136.8	"	.0422	.9991	.451	"		.459	.459	1149				2505
30		0606	1180	"			.451		G		"				"					150	.048	3121	
27		0600	1330	"			.499		G	1286.8	"	.0373	.9993	.499	"		.507	.507	1299				2564
28		0602	1330	"			.499		G		"				"					195	.054	3607	
3		0411	1525	"			.553		G		"				"								
4		0412	1525	"			.553		G	1481.8	"	.0324	.9995	.553	"		.561	.561	1494	105	.031	3385	2664
5		0413	1525	"			.553		G		"				"								
25		0550	1630	"			.584		G	1586.8	"	.0302	.9995	.584	"		.592	.592	1599				2702
26		0551	1630	"			.584		G		"				"					115	.033	3483	
6		0420	1745	"			.616		P		"				"								
7		0421	1745	"			.617		F	1701.8	"	.0282	.9996	.617	"		.625	.625	1714				2743
8		0422	1745	"			.618		G		"				"					150	.050	2999	
23		0535	1895	"			.666		F		"				"								
24		0537	1895	"			.667		G	1851.8	"	.0259	.9997	.667	"		.675	.675	1864	199	.063	3158	2762
9		0433	2094	"			.731		G		"				"								
10		0434	2094	"			.730		G	2050.8	"	.0234	.9997	.730	"		.738	.738	2063				2796
11		0435	2094	"			.730		G		"				"					146	.051	2862	
12		0445	2240	"			.781		F		"				"								
13		0446	2240	"			.781		F	2196.8	"	.0218	.9998	.781	"		.789	.789	2209				2800
14		0447	2240	"			.781		F		"				"					193	.063	3063	
15		0455	2433	"			.844		G		"				"								
16		0456	2433	"			.843		G	2389.8	"	.0201	.9998	.844	"		.852	.852	2402				2820
17		0457	2433	"			.844		G		"				"					29	.009	3221	
18		0502	2462	"			.853		G		"				"								
19		0503	2462	"			.853		F	2418.8	"	.0198	.9998	.853	"		.861	.861	2431				2824
20		0504	2462	"			.854		F		"				"					156	.040	3899	
21		0522	2618	"			.893		G		"				"								
22		0523	2618	"			.893		G	2574.8	"	.0186	.9998	.893	"		.901	.901	2587				2872



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 " = $\frac{Dgd}{Tgd}$

Surveyed by: K.J. Wood

Date: December 20, 1978

Weathering Data:

Casing Record

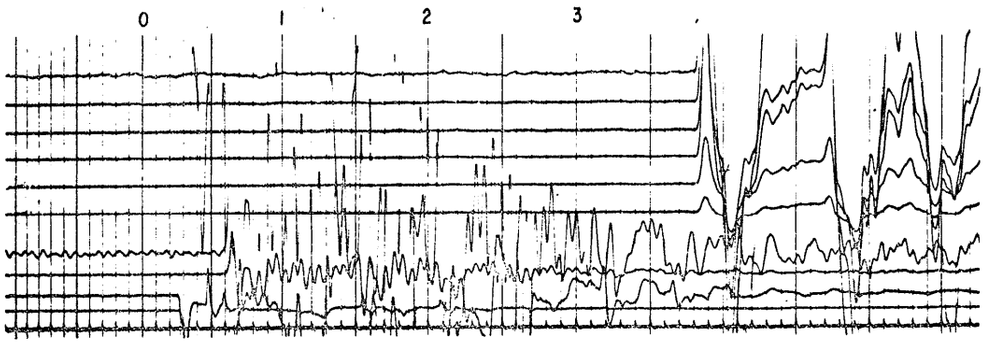
20"@225m, 13 3/8 @867m

DWG. 1107/OP/3

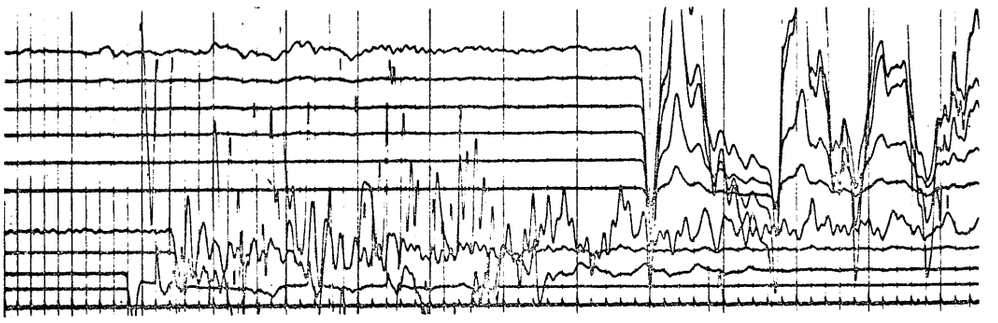
FORTESCUE-3 VELOCITY SURVEY ERROR CHECK

Depth 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)
849	.361					
999	.412	.051	.0485	-2.5	150	16.7
999	.412					
1149	.459	.047	.0475	.5	150	3.3
1149	.459					
1299	.507	.048	.0465	-1.5	150	10.0
1299	.507					
1494	.561	.054	.0545	.5	195	2.6
1494	.561					
1599	.592	.031	.030	-1	105	9.5
1599	.592					
1714	.625	.033	.033	0	115	-
1714	.625					
1864	.675	.050	.048	-2	150	13.3
1864	.675					
2063	.738	.063	.0635	.5	199	2.5
2063	.738					
2209	.789	.051	.050	-1	146	6.8
2209	.789					
2402	.852	.063	.063	0	193	-
2402	.852					
2431	.861	.009	.008	-1	29	34.5
2431	.861					
2587	.901	.040	.042	2	156	12.8

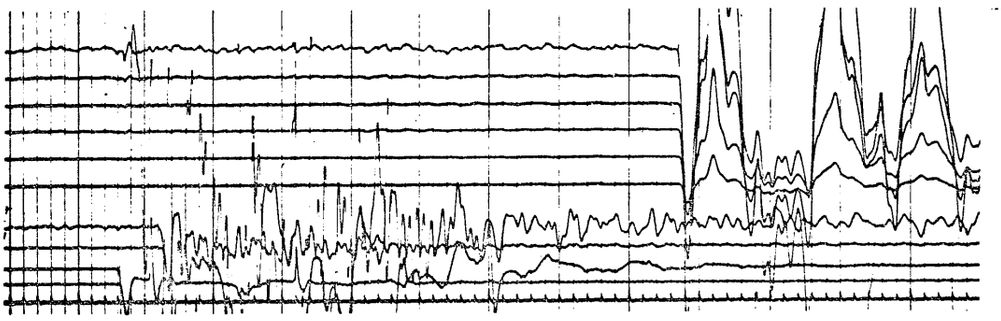
WELL VELOCITY RECORD 20-12-78



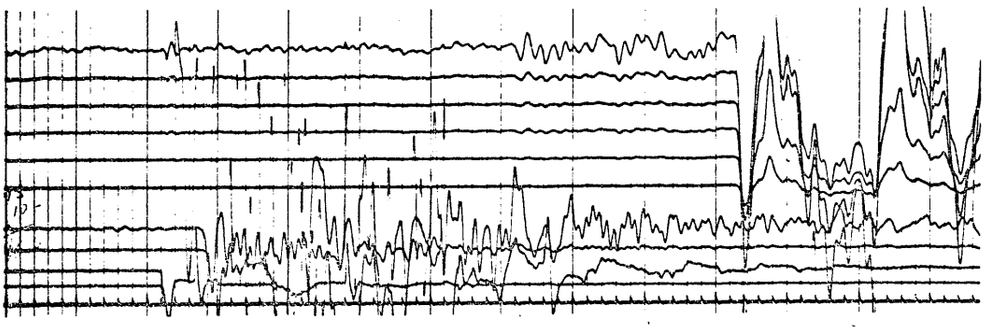
Rec. No. 1
880 m K.B.



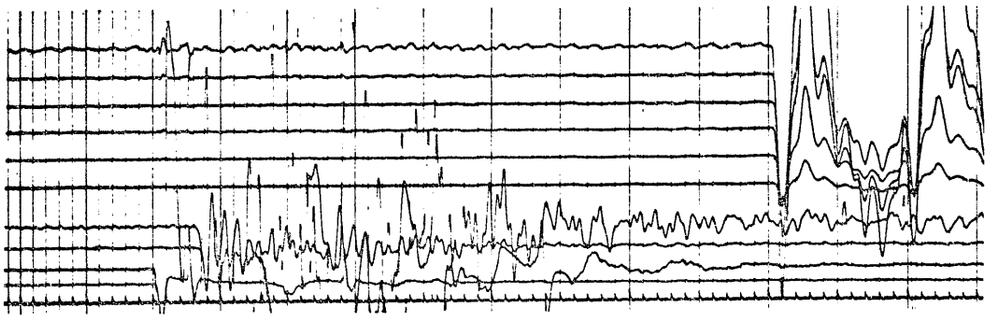
Rec. No. 2
880 m K.B.



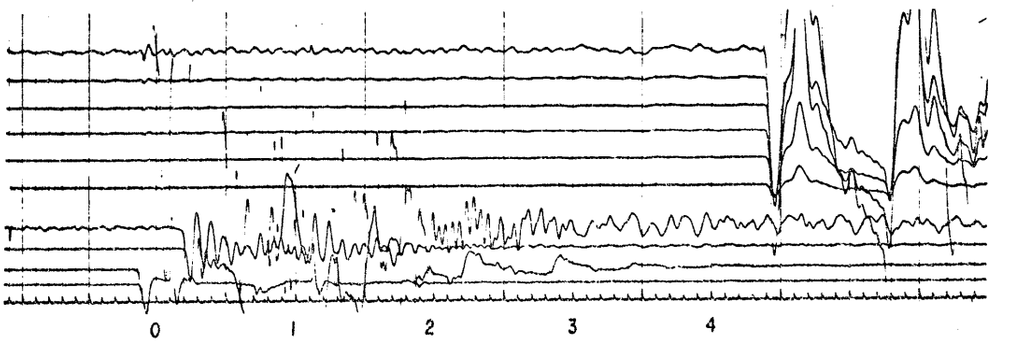
Rec. No. 31
1030 m K.B.



Rec. No. 32
1030 m K.B.



Rec. No. 29
1180 m K.B.



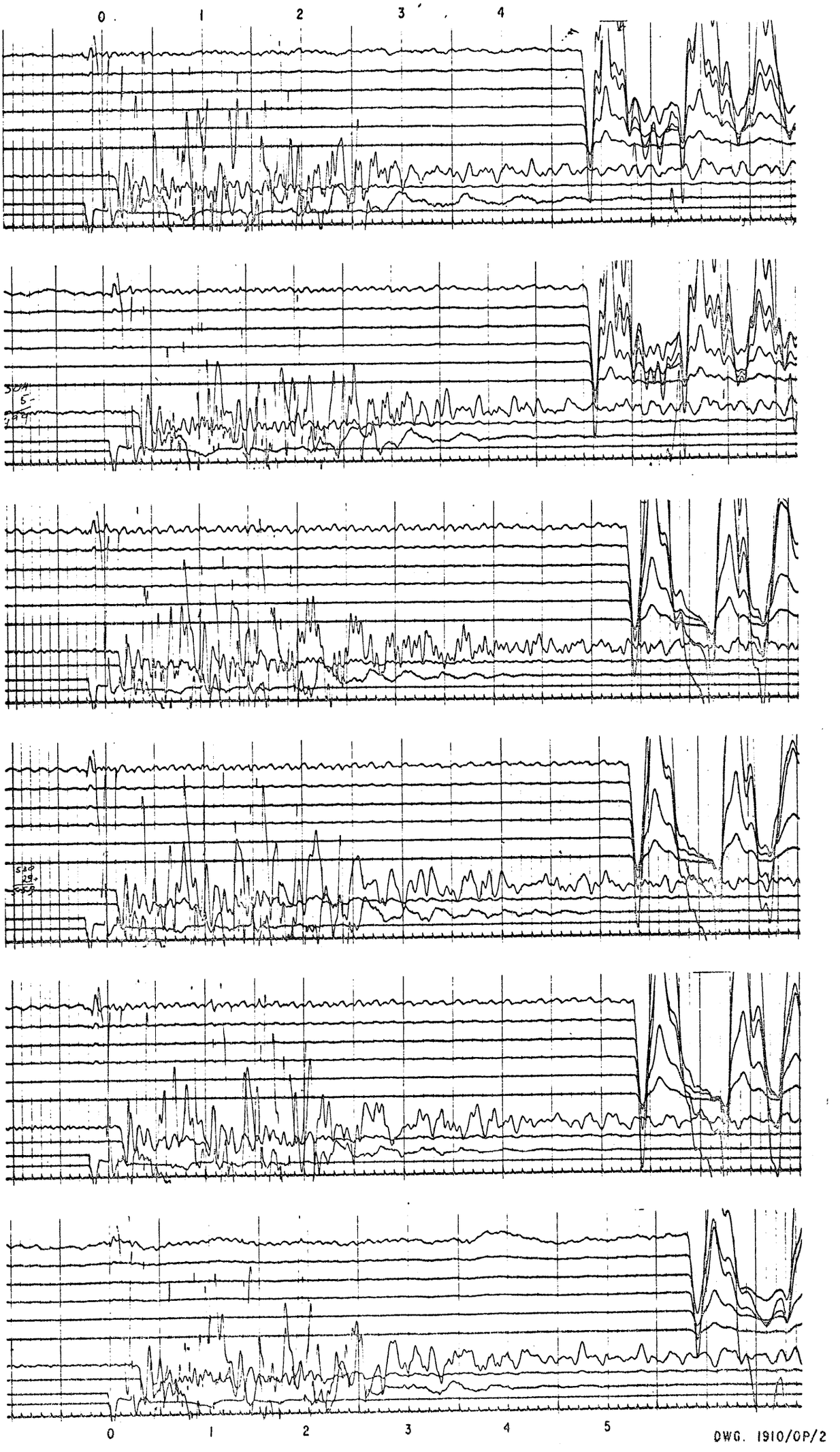
Rec. No. 30
1180 m K.B.

DWG. 1510/OP/1

FORTESCUE - 3

WELL VELOCITY RECORD

20-12-78

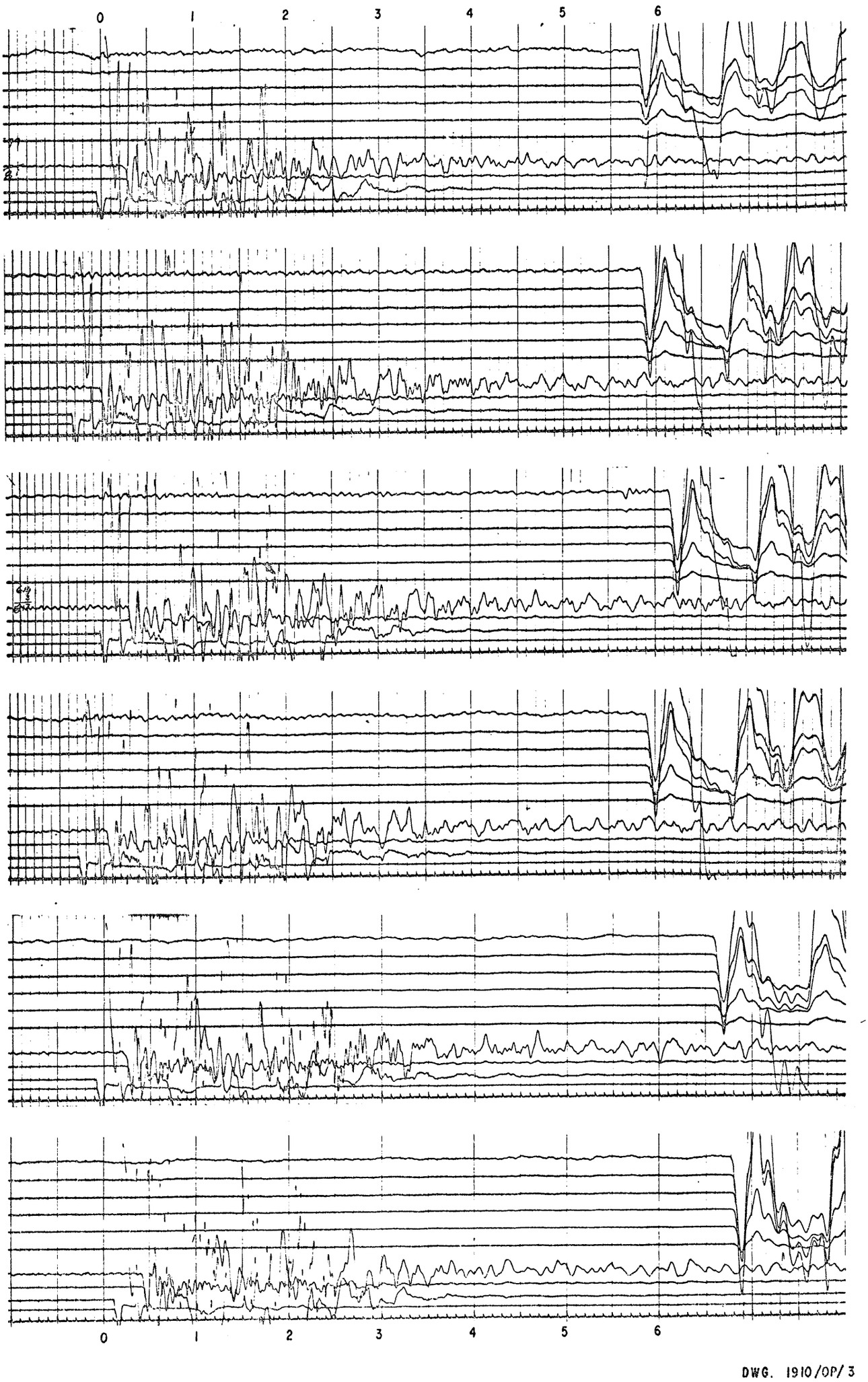


DWG. 1910/OP/2

FORTESCUE – 3

WELL VELOCITY RECORD

20-12-78

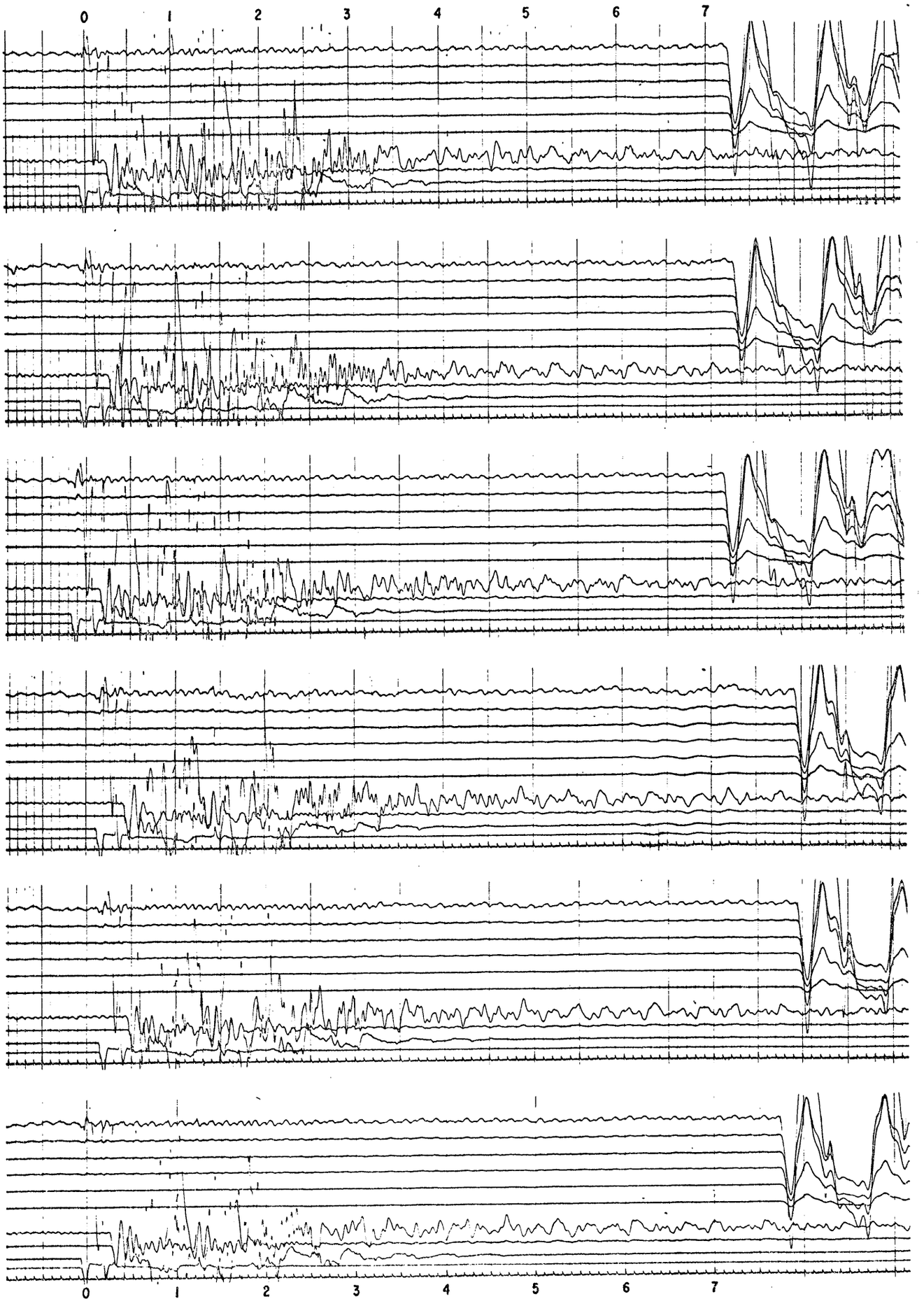


DWG. 1910/OP/3

FORTESCUE - 3

WELL VELOCITY RECORD

20-12-78

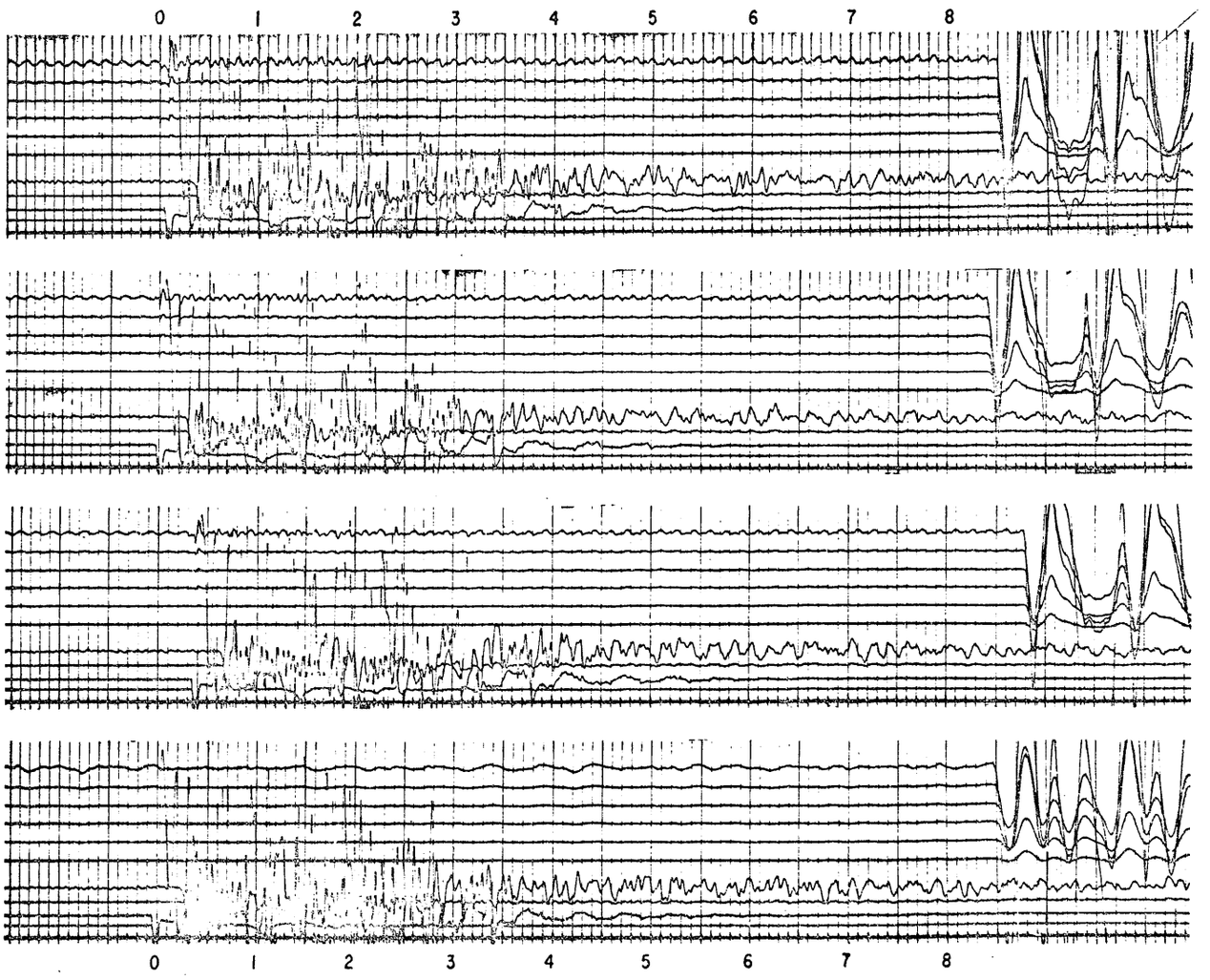


DWG. 1910/OP/4

FORTESCUE – 3

WELL VELOCITY RECORD

20-12-78



Rec. No. 15
2433 m K.B.

Rec. No. 16
2433 m K.B.

Rec. No. 17
2433 m K.B.

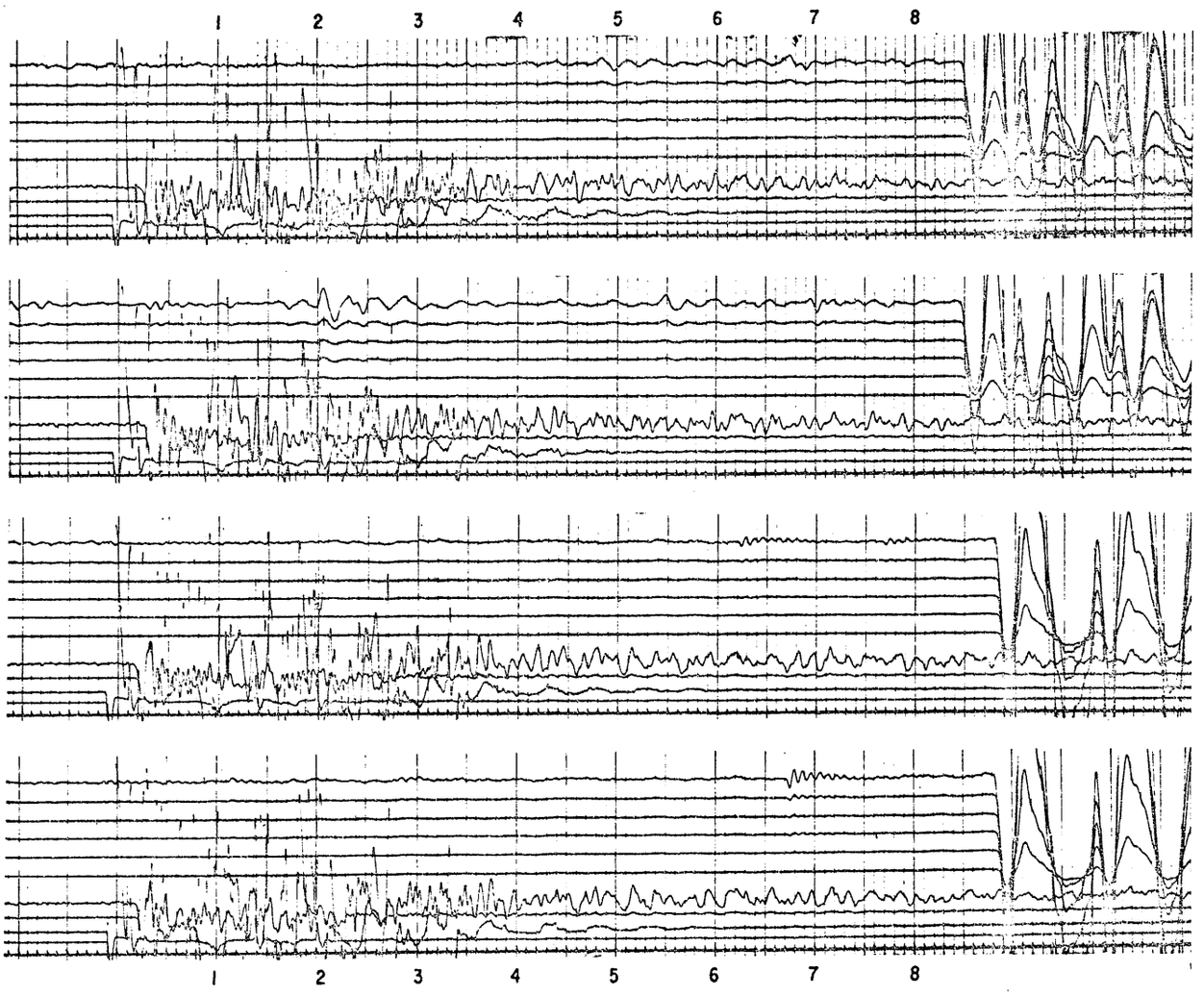
Rec. No. 18
2462 m K.B.

DWG. 1910/OP/5

FORTESCUE - 3

WELL VELOCITY RECORD

20 - 12 - 78



Rec. No. 19
2462 m K.B.

Rec. No. 20
2462 m K.B.

Rec. No. 21
2618 m K.B.

Rec. No. 22
2618 m K.B.

DWG. 1910/OP/6

APPENDIX 7

APPENDIX 7

REPEAT FORMATION TESTER REPORTS

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-3

RUN #: 1 GEOLOGIST/S: J.D. ALDER, R.C.N. THORNTON DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	1	2440.5 m	- MPag	No test - port clogged?
SEAT #:	2	2440.5 m	- MPag	
SEAT #:	4	2594.5 m	3570.84 Psig/ 24.62 MPag	
SEAT #:	5	2591.5 m	3567.04 Psig/ 24.59 MPag	
SEAT #:	6	2583.0 m	3556.08 Psig/ 24.52 MPag	
SEAT #:	7	2578.5 m	3548.13 Psig/ 24.46 MPag	
SEAT #:	8	2563.0 m	3529.66 Psig/ 24.34 MPag	
SEAT #:	9	2554.0 m	3510.31 Psig/ 24.20 MPag	
SEAT #:	10	2547.0 m	3449.59 Psig/ 24.13 MPag	
SEAT #:	11	2539.0 m	- MPag	No seal.

SAMPLES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 3 DEPTH: 2440.0m	SEAT #: 3 DEPTH: 2440.0 m
Hydrostatic Initial	4022.00 Psig/27.73 MPag	MPag
Pretest	3398.47 Psig/23.43 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	3148-3197 Psig/ 21.70-22.04 MPag	2282-2749 Psig/ 15.73-18.95 MPag
Final Shut-in	3398.16 Psig/23.43 MPag	3394.53 Psig/23.40 MPag
Hydrostatic Final	MPag	4017.97 Psig/27.70 MPag
Formation Press. (Horner)	3398.8 Psig/23.43 MPag	MPag

TEMPERATURE

Maximum Recorded: 190°F/ 88°C Time Since Circulation: 9 Hrs

Depth Tool Reached: 2594.5 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3400 Psig/ 23.44 MPag Calibration Temperature: 73.9 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.6ppg/1.15 S.G. Calculated Hydrostatic: 3976 Psig/27.41 MPag

RFT Choke Size: 1 X 0.020", with flow restrictor.

(Depths shown are Log Depths)

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 3 DEPTH: 2440.0 m	SEAT #: 3 DEPTH: 2440.0 m
Tool Set:	01:39:54	
Pretest Open:	01:40:05	
Time Open:	01:37	
Chamber Open:	01:42:42	02:11:47
Chamber Full:	01:56:00	02:12:56
Fill Time:	13:18	01:09
Start Build-up:	01:56:00	02:12:56
Finish Build-up:	02:11:20	02:19:50
Build-up Time:	15:20	06:54
Seal Chamber:	02:11:20	02:19:50
Tool Retract:		02:21:40
Total Time:	31:26	09:53

RECOVERY

Surface Pressure:	80 Psig/0.5516	MPag	Segregator #3001	MPag
Gas:	206.7	l.	Not opened.	l.
Oil:	16.1	l.		l.
Water:	1.00	l.		l.
Others:	Oil/Filtrate emulsion: 1.75	l.		l.

PROPERTIES

Gas Composition	TOP	MIDDLE	BOTTOM	
C_1 (ppm)	640,000	694,612	602,181	
C_2	109,350	121,500	115,920	
C_3	109,575	111,196	103,770	
iC_4/nC_4	35,325 30,150	35,985 17,992	35,850 30,600	
C_5	11,925	6,360	11,900	
C_6+	1,000	1,000	1,000	
CO_2/H_2S	-	-	-	

Oil Properties	45 °API @ 16 °C	°API @ °C
Colour:	Dark chocolate brown	
Fluorescence:	Bright greenish-yellow	
G.O.R.:	72	
Water Properties		
Resistivity:	0.84 Ω @ 15 °C	Ω @ °C
NaCl Equivalent:	8,000 ppm	ppm
Cl^- Titrated:	3,900 ppm	ppm
NO_3^-:	15-20 ppm	ppm
Est. Water Type:	Filtrate	

REMARKS

Mud Properties: Resistivity: 0.63 Ω @ 17 °C

NaCl Equiv.: _____ ppm Cl^- Titrated: 4,400 ppm NO_3^-: 130 ppm

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-3

RUN #: 1 GEOLOGIST/S: R.C.N. THORNTON, J.D. ALDER DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	12	2539.0 m	3490.58 Psig/ 24.07 MPag	
SEAT #:	13	2525.0 m	3494.09 Psig/ 24.09 MPag	
SEAT #:	14	2505.0 m	- MPag	No seal.
SEAT #:	15	" m	3466.89 Psig/ 23.90 MPag	
SEAT #:	16	2485.0 m	3439.03 Psig/ 23.71 MPag	
SEAT #:	17	2470.0 m	3417.44 Psig/ 23.56 MPag	
SEAT #:	18	2438.0 m	- MPag	No seal.
SEAT #:	19	" m	3397.85 Psig/ 23.43 MPag	
SEAT #:	20	" m	- MPag	No seal.
SEAT #:	21	" 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 1

WELL: FORTESCUE-3

RUN #: 2 GEOLOGIST/S: R.C.N. THORNTON, J.D. ALDER DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	22	1524.9 m	- MPag	No seal.
SEAT #:	24	2438.0 m	3397.30 Psig/ 23.42 MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 23 DEPTH: 2448.5m	SEAT #: 23 DEPTH: 2448.5m
Hydrostatic Initial	3991.2 Psig/27.52 MPag	MPag
Pretest	3406.86 Psig/23.49 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	407-2535 Psig/ 2.81-17.48 MPag	1648-1669 Psig/ 11.36-11.51 MPag
Final Shut-in	3405.72 Psig/23.48 MPag	3405.47 Psig/23.48 MPag
Hydrostatic Final	MPag	3981.39 Psig/27.45 MPag
Formation Press. (Horner)	3406.4 Psig/23.49 MPag	MPag

TEMPERATURE

Maximum Recorded: Not recorded °C Time Since Circulation: 20.75 Hrs

Depth Tool Reached: 2448.5 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3414 Psig/ 23.54 MPag Calibration Temperature: 83.7 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.6 ppg/1.15 S.G. Calculated Hydrostatic: 3980 Psig/27.44 MPag

RFT Choke Size: 1 X 0.020" with flow restrictor.

Permeability 596 md.

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3690 1.)
	SEAT #: 23 DEPTH: 2448.5m	SEAT #: 23 DEPTH: 2448.5m
Tool Set:	01:32:58	
Pretest Open:	01:33:12	
Time Open:	02:19	
Chamber Open:	01:36:31	02:07:18
Chamber Full:	01:50:56	02:08:23
Fill Time:	14:25	01:05
Start Build-up:	01:50:56	02:08:23
Finish Build-up:	02:05:51	02:12:14
Build-up Time:	14:55	03:51
Seal Chamber:	02:05:51	02:12:14
Tool Retract:		02:14:20
Total Time:	32:03	07:02

RECOVERY

Surface Pressure:	38 Psig/0.262	MPag	Segregator #3005	MPag
Gas:	8.5	l.	Not opened.	l.
Oil:	0.5	l.		l.
Water:	19.9	l.		l.
Others:		l.		l.

PROPERTIES

Gas Composition		
C_1 (ppm)	Insufficient for analysis	
C_2		
C_3		
iC_4/nC_4		
C_5		
C_6+		
CO_2/H_2S		
Oil Properties	41 °API @ 26 °C	°API @ °C
Colour:	Dark green-brown	
Fluorescence:	Bright greenish-yellow	
G.O.R.:		
Water Properties		
Resistivity:	0.58 Ω @ 17 °C	Ω @ °C
NaCl Equivalent:	12,000 ppm	ppm
Cl^- Titrated:	6,000 ppm	ppm
NO_3^-:	40 ppm	ppm
Est. Water Type:	Filtrate	

REMARKS

Mud Properties: Resistivity: 0.63 Ω @ 17 °C

NaCl Equiv.: ____ ppm Cl^- Titrated: 4400 ppm NO_3^-: 130 ppm

REPEAT FORMATION TESTER RECORD PART 1

WELL: FORTESCUE-3

RUN #: 3 GEOLOGIST/S: R.C.N. THORNTON, J.D. ALDER DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (22.000 l.)		CHAMBER 2 (3.690 l.)	
SEAT #:	25	DEPTH: 2462.0m	SEAT #: 25	DEPTH: 2462.0m
Hydrostatic Initial	4020.86 Psig/27.72	MPag		MPag
Pretest	3400.64 Psig/23.45	MPag		MPag
Flowing Press. Initial		MPag		MPag
Flowing Press. Final		MPag		MPag
Sampling Range	1173-3223 Psig/ 8.09-22.22	MPag	3273 Psig/22.57	MPag
Final Shut-in	3402.76 Psig/23.46	MPag	3403.09 Psig/23.46	MPag
Hydrostatic Final		MPag	4018.54 Psig/27.71	MPag
Formation Press. (Horner)	340316 Psig/23.47	MPag		MPag

TEMPERATURE

Maximum Recorded: 192°F/ 88.9°C Time Since Circulation: 25.5 Hrs

Depth Tool Reached: 2462 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3410 Psig/ 23.51 MPag Calibration Temperature: 88.5 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.6ppg/1.15 S.G. Calculated Hydrostatic: 3995 Psig/27.54 MPag

RFT Choke Size: 1 X 0.020" with restrictor

Permeability: 569 md.

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 l.)	CHAMBER 2 (3.690 l.)
	SEAT #: 25 DEPTH: 2462.0 m	SEAT #: 25 DEPTH: 2462.0 m
Tool Set:	01:06:57	
Pretest Open:	01:07:07	
Time Open:	02:19	
Chamber Open:	01:09:26	01:35:05
Chamber Full:	01:21:47	01:35:28
Fill Time:	12:21	00:23
Start Build-up:	01:21:47	01:35:28
Finish Build-up:	01:34:10	01:37:23
Build-up Time:	12:23	01:55
Seal Chamber:	01:34:10	01:37:23
Tool Retract:		01:38:06
Total Time:	27:13	03:01

RECOVERY

Surface Pressure:	100 Psig/0.6895	MPag	Segregator #3007	MPag
Gas:		l.	not opened.	l.
Oil:	Very slight scum	l.		l.
Water:	19.0	l.		l.
Others:		l.		l.

PROPERTIES

Gas Composition		
C_1 (ppm)		
C_2		
C_3		
iC_4/nC_4		
C_5		
C_6+		
CO_2/H_2S		
Oil Properties	____ °API @ ____ °C	____ °API @ ____ °C
Colour:		
Fluorescence:		
G.O.R.:		
Water Properties		
Resistivity:	0.30 Ω @ 18 °C	____ Ω @ ____ °C
NaCl Equivalent:	23,000 ppm	____ ppm
Cl^- Titrated:	12,000 ppm	____ ppm
NO_3^-:	50 ppm	____ ppm
Est. Water Type:	Formation	

REMARKS

Mud Properties: Resistivity: 0.63 Ω @ 17 °C

NaCl Equiv.: ____ ppm Cl^- Titrated: 4,400 ppm NO_3^-: 140 ppm

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-3

RUN #: 4 GEOLOGIST/S: R.C.N. THORNTON, J.D. ALDER DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	27	2454.0 m	3397.31 Psig/ 23.42 MPag	
SEAT #:	28	2443.0 m	- MPag	No seal
SEAT #:	29	" m	3432.24 Psig/ 23.66 MPag	
SEAT #:	30	2442.0 m	- MPag	No seal
SEAT #:	31	" m	3404.18 Psig/ 23.47 MPag	
SEAT #:	32	2435.5 m	3402.99 Psig/ 23.46 MPag	
SEAT #:	33	2465.0 m	3410.81 Psig/ 23.52 MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 26 DEPTH: 2457.5m	SEAT #: 26 DEPTH: 2457.5m
Hydrostatic Initial	4015.08 Psig/27.68 MPag	MPag
Pretest	3398.08 Psig/23.43 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	272-2080 Psig/ 1.88-14.34 MPag	1337-1543 Psig/ 9.2-10.64 MPag
Final Shut-in	3399.51 Psig/23.44 MPag	3398.50 Psig/23.43 MPag
Hydrostatic Final	MPag	4012.12 Psig/27.66 MPag
Formation Press. (Horner)	3401.0 Psig/23.45 MPag	MPag

TEMPERATURE

Maximum Recorded: 200°F/ 93.3 °C Time Since Circulation: 32.25 Hrs

Depth Tool Reached: 2465.0 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3400 Psig/ 23.44 MPag Calibration Temperature: 89.7 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.6 ppg/1.15 S.G. Calculated Hydrostatic: 4025 Psig/27.75 MPag

RFT Choke Size: 1 X 0.020" with restrictor.

Permeability: 191 md.

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 26 DEPTH: 2457.5 m	SEAT #: 26 DEPTH: 2457.5 m
Tool Set:	04:40:15	
Pretest Open:	04:40:30	
Time Open:	01:49	
Chamber Open:	04:42:19	05:21:05
Chamber Full:	04:58:18	05:22:23
Fill Time:	15:59	1:18
Start Build-up:	04:58:18	05:22:23
Finish Build-up:	05:20:56	05:25:23
Build-up Time:	21:38	3:00
Seal Chamber:	05:20:56	05:25:23
Tool Retract:		05:26:20
Total Time:	37:39	3:15

RECOVERY

Surface Pressure:	26 Psig/0.1793	MPag	Segregator #3003 not	MPag
Gas:	56.64	1.	opened.	1.
Oil:	brown scum	1.		1.
Water:	(oily & oily smell) 19	1.		1.
Others:		1.		1.

PROPERTIES

Gas Composition		
C_1 (ppm)	Insufficient for analysis.	
C_2		
C_3		
iC_4/nC_4		
C_5		
C_6+		
CO_2/H_2S		
Oil Properties	____ °API @ ____ °C	____ °API @ ____ °C
Colour:	Insufficient for analysis.	
Fluorescence:		
G.O.R.:		
Water Properties		
Resistivity:	0.52 Ω @ 18 °C	____ Ω @ ____ °C
NaCl Equivalent:	14,000 ppm	____ ppm
Cl^- Titrated:	6,000 ppm	____ ppm
NO_3^-:	15 ppm	____ ppm
Est. Water Type:	Filtrate	

REMARKS

Mud Properties: Resistivity: 0.63 Ω @ 17 °C

NaCl Equiv.: ____ ppm Cl^- Titrated: 4,400 ppm NO_3^-: 130 ppm

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
	SEAT #: 34 DEPTH: 2454.5 m	SEAT #: 34 DEPTH: 2454.5 m
Tool Set:	00:49:58	
Pretest Open:	00:50:06	
Time Open:	03:18	
Chamber Open:	00:53:24	01:31:56
Chamber Full:	01:10:28	01:33:06
Fill Time:	17:04	01:10
Start Build-up:	01:10:28	01:33:06
Finish Build-up:	01:31:17	01:38:43
Build-up Time:	20:49	05:37
Seal Chamber:	01:31:17	01:38:43
Tool Retract:		01:39:45
Total Time:	41:19	07:49

RECOVERY

Surface Pressure:	40 Psig/0.2758	MPag	Segregator #3008 not	MPag
Gas:	11.3	l.	opened.	l.
Oil:	3.0	l.		l.
Water:	17.0	l.		l.
Others:		l.		l.

PROPERTIES

Gas Composition		
C_1 (ppm)	103,365	
C_2	59,231	
C_3	96,228	
iC_4/nC_4	28,917/26,365	
C_5	7,956	
C_6^+		
CO_2/H_2S	-	
Oil Properties	45 °API @ 20 °C	°API @ °C
Colour:	Dark chocolate brown	
Fluorescence:	Bright greenish-yellow	
G.O.R.:		
Water Properties		
Resistivity:	0.57 Ω @ 16 °C	Ω @ °C
NaCl Equivalent:	17,000 ppm	ppm
Cl^- Titrated:	5,800 ppm	ppm
NO_3^-:	? Very low ppm	ppm
Est. Water Type:	Filtrate	

REMARKS

Mud Properties: Resistivity: 0.63 Ω @ 17 °C

NaCl Equiv.: _____ ppm Cl^- Titrated: 4,400 ppm NO_3^-: 130 ppm

REPEAT FORMATION TESTER RECORD — PART 1

WELL: FORTESCUE-3

RUN #: 5 GEOLOGIST/S: R.C.N. THORNTON, J.D. ALDER DATE: 21/12/78

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (22.000 1.)	CHAMBER 2 (3.690 1.)
SEAT #: / DEPTH:	34 / 2454.5 m	34 / 2454.5 m
Hydrostatic Initial	4009.57 Psig/27.64 MPag	MPag
Pretest	3397.44 Psig/23.42 MPag	MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	349-2125 Psig/ 2.41-14.65 MPag	1010-1402 Psig/ 696-9.67 MPag
Final Shut-in	3387.57 Psig/23.36 MPag	3395.19 Psig/23.41 MPag
Hydrostatic Final	MPag	4005.04 Psig/27.61 MPag
Formation Press. (Horner)	3398.00 Psig/23.42 MPag	MPag

TEMPERATURE

Maximum Recorded: 198°F/ 92.2°C Time Since Circulation: 36.5 Hrs

Depth Tool Reached: 2454.5 m Circulation Stopped: Hrs

Formation Temperature (Horner): °C

REMARKS

Calibration Pressure: 3397 Psig/ 23.42 MPag Calibration Temperature: 92.0 °C

Hewlett-Packard Gauge #: 319

Mud Weight: 9.6ppg/1.15 S.G. Calculated Hydrostatic: 3999 Psig/27.57 MPag

RFT Choke Size: 1 X 0.020" with restrictor.

Permeability: Very low.

APPENDIX 8

APPENDIX 8

WELL DEVIATION SURVEY

Eastman Whipstock

A PETROLANE COMPANY

REPORT of SUB-SURFACE DIRECTIONAL SURVEY

ESSO AUSTRALIA LTD.

COMPANY

FORTESCUE No. 3

WELL NAME

LOCATION

JOB NUMBER

TYPE OF SURVEY

D.T. MULTISHOT

DATE

19/12/78

SURVEY BY

DEKORTE

OFFICE

SALE

FORM C-302 R2

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	845 00	0°00'	845 00		0	0	0	0	0	
	898 00	0°15'	898 00		S63W		0 05		0 10	
	924 20	0°15'	924 20		N53W		0 04		0 21	
	950 40	0°30'	950 40		N58W	0 05			0 35	
5	976 60	0°45'	976 60		N38W	0 24			0 56	
	1002 80	0°45'	1002 80		N26W	0 53			0 75	
	1029 00	0°45'	1028 99		N03W	0 86			0 83	
	1055 20	0°45'	1055 19		N18E	1 20			0 79	
	1081 40	0°45'	1081 39		N44E	1 49			0 61	
10	1107 60	0°45'	1107 59		N55E	1 72			0 35	
	1133 80	0°45'	1133 78		N66E	1 88			0 05	
	1160 00	1°00'	1159 98		N64E	2 05		0 31		
	1186 20	1°00'	1186 18		N65E	2 25		0 72		
	1212 40	1°00'	1212 37		N56E	2 48		1 12		
15	1238 60	0°30'	1238 57		N34E	2 72		1 36		
	1264 80	0°30'	1264 77		N31E	2 91		1 48		
	1291 00	0°30'	1290 97		N03E	3 13		1 55		
	1317 20	0°15'	1317 17		N34W	3 29		1 51		
	1343 40	1°00'	1343 37		S63W	3 35		1 25		
20	1369 60	1°00'	1369 56		S54W	3 12		0 86		

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	1395 80	1°15'	1395 76		S55W	2 82		0 44		
	1422 00	1°15'	1421 95		S57W	2 50			0 03	
	1448 20	1°30'	1448 14		S71W	2 22			0 59	
	1474 40	1°30'	1474 33		S78W	2 04			1 25	
25	1500 60	1°30'	1500 53		S80W	1 91			1 93	
	1526 80	2°00'	1526 71		S88W	1 82			2 72	
	1553 00	2°30'	1552 89		S86W	1 77			3 75	
	1579 20	3°00'	1579 06		S85W	1 67			5 00	
	1605 40	3°30'	1605 22		N84W	1 68			6 49	
30	1631 60	4°00'	1631 36		N69W	2 08			8 15	
	1657 80	5°00'	1657 48		N61W	2 95			10 01	
	1684 00	6°00'	1683 56		N53W	4 32			12 11	
	1710 20	6°45'	1709 60		N46W	6 21			14 32	
	1736 40	7°00'	1735 61		N41W	8 48			16 48	
35	1762 60	7°30'	1761 60		N35W	11 09			18 52	
	1788 80	8°15'	1787 55		N28W	14 15			20 39	
	1815 00	9°00'	1813 46		N21W	17 72			22 02	
	1841 20	9°45'	1839 31		N15W	21 78			23 34	
	1867 40	10°00'	1865 12		N09W	26 17			24 27	
40	1893 60	10°30'	1890 90		N04W	30 80			24 80	

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	1919 80	10°45'	1916 65		N01E	33 65			24 93	
	1946 00	11°00'	1942 38		N06E	40 56			24 63	
	1972 20	11°30'	1968 08		N09E	45 63			23 96	
	1998 40	11°45'	1993 74		N14E	50 80			22 91	
45	2024 60	11°45'	2019 39		N18E	55 93			21 44	
	2050 80	11°15'	2045 06		N21E	60 85			19 69	
	2077 00	11°30'	2070 75		N24E	65 63			17 72	
	2103 20	11°45'	2096 41		N30E	70 33			15 32	
	2129 40	11°45'	2122 06		N35E	74 83			12 46	
50	2156 60	12°00'	2148 68		N41E	79 23			9 01	
	2181 80	12°30'	2173 31		N47E	83 08			5 30	
	2208 00	12°15'	2198 90		N53E	86 69			1 00	
	2234 20	12°15'	2224 50		N59E	89 79		3 61		
	2260 40	12°00'	2250 12		N66E	92 33		8 49		
55	2286 60	11°45'	2275 95		N71E	94 32		13 54		
	2312 80	11°45'	2301 41		N76E	95 83		18 61		
	2339 00	11°30'	2327 07		N82E	96 83		23 79		
	2365 20	11°00'	2352 77		N85E	97 41		28 87		
	2391 40	10°45'	2378 50		N87E	97 76		33 80		
60	2417 60	10°00'	2404 27		N86E	98 05		38 51		

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	2443 80	9°00'	2430 11		S89E	98 16		42 83		
	2470 00	9°00'	2455 98		S87E	98 02		46 93		
	2496 20	8°30'	2481 88		EAST	97 91		50 91		
	2522 40	8°00'	2507 81		N87E	98 01		54 67		
65	2548 60	6°30'	2533 80		N83E	98 30		57 96		
	2574 80	5°15'	2559 86		N86E	98 55		60 63		
	2601 00	4°15'	2585 97		N83E	98 76		62 79		
68	2618 00	3°45'	2602 93		N85E	98 89		63 97		
			Closure	117.8m	N32°54'E					

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	845 00	0°00'	845 00		0	0	0	0	0	
	898 00	0°15'	898 00		S63W		0 05		0 10	
	924 20	0°15'	924 20		N53W		0 04		0 21	
	950 40	0°30'	950 40		N58W	0 05			0 35	
5	976 60	0°45'	976 60		N38W	0 24			0 56	
	1002 80	0°45'	1002 80		N26W	0 53			0 75	
	1029 00	0°45'	1028 99		N03W	0 86			0 83	
	1055 20	0°45'	1055 19		N18E	1 20			0 79	
	1081 40	0°45'	1081 39		N44E	1 49			0 61	
10	1107 60	0°45'	1107 59		N55E	1 72			0 35	
	1133 80	0°45'	1133 78		N66E	1 88			0 05	
	1160 00	1°00'	1159 98		N64E	2 05		0 31		
	1186 20	1°00'	1186 18		N65E	2 25		0 72		
	1212 40	1°00'	1212 37		N56E	2 48		1 12		
15	1238 60	0°30'	1238 57		N34E	2 72		1 36		
	1264 80	0°30'	1264 77		N31E	2 91		1 48		
	1291 00	0°30'	1290 97		N03E	3 13		1 55		
	1317 20	0°15'	1317 17		N34W	3 29		1 51		
	1343 40	1°00'	1343 37		S63W	3 35		1 25		
20	1369 60	1°00'	1369 56		S54W	3 12		0 86		

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S

DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	1395 80	1°15'	1395 76		S55W	2 82		0 44		
	1422 00	1°15'	1421 95		S57W	2 50			0 03	
	1448 20	1°30'	1448 14		S71W	2 22			0 59	
	1474 40	1°30'	1474 33		S78W	2 04			1 25	
25	1500 60	1°30'	1500 53		S80W	1 91			1 93	
	1526 80	2°00'	1526 71		S88W	1 82			2 72	
	1553 00	2°30'	1552 89		S86W	1 77			3 75	
	1579 20	3°00'	1579 06		S85W	1 67			5 00	
	1605 40	3°30'	1605 22		N84W	1 68			6 49	
30	1631 60	4°00'	1631 36		N69W	2 08			8 15	
	1657 80	5°00'	1657 48		N61W	2 95			10 01	
	1684 00	6°00'	1683 56		N53W	4 32			12 11	
	1710 20	6°45'	1709 60		N46W	6 21			14 32	
	1736 40	7°00'	1735 61		N41W	8 48			16 48	
35	1762 60	7°30'	1761 60		N35W	11 09			18 52	
	1788 80	8°15'	1787 55		N28W	14 15			20 39	
	1815 00	9°00'	1813 46		N21W	17 72			22 02	
	1841 20	9°45'	1839 31		N15W	21 78			23 34	
	1867 40	10°00'	1865 12		N09W	26 17			24 27	
40	1893 60	10°30'	1890 90		N04W	30 80			24 80	

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78 3/4

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	1919 80	10°45'	1916 65		N01E	33 65			24 93	
	1946 00	11°00'	1942 38		N06E	40 56			24 63	
	1972 20	11°30'	1968 08		N09E	45 63			23 96	
	1998 40	11°45'	1993 74		N14E	50 80			22 91	
45	2024 60	11°45'	2019 39		N18E	55 93			21 44	
	2050 80	11°15'	2045 06		N21E	60 85			19 69	
	2077 00	11°30'	2070 75		N24E	65 63			17 72	
	2103 20	11°45'	2096 41		N30E	70 33			15 32	
	2129 40	11°45'	2122 06		N35E	74 83			12 46	
50	2156 60	12°00'	2148 68		N41E	79 23			9 01	
	2181 80	12°30'	2173 31		N47E	83 08			5 30	
	2208 00	12°15'	2198 90		N53E	86 69			1 00	
	2234 20	12°15'	2224 50		N59E	89 79		3 61		
	2260 40	12°00'	2250 12		N66E	92 33		8 49		
55	2286 60	11°45'	2275 95		N71E	94 32		13 54		
	2312 80	11°45'	2301 41		N76E	95 83		18 61		
	2339 00	11°30'	2327 07		N82E	96 83		23 79		
	2365 20	11°00'	2352 77		N85E	97 41		28 87		
	2391 40	10°45'	2378 50		N87E	97 76		33 80		
60	2417 60	10°00'	2404 27		N86E	98 05		38 51		

RECORD OF SURVEY

JOB NO. Fortescue 3 D.T. M/S DATE 19.12.78

	MEASURED DEPTH	DRIFT ANGLE	TRUE VERTICAL DEPTH	COURSE DEVIATION	DRIFT DIRECTION	RECTANGULAR COORDINATES NORTH	SOUTH	EAST	WEST	REMARKS
	2443 80	9°00'	2430 11		S89E	98 16		42 83		
	2470 00	9°00'	2455 98		S87E	98 02		46 93		
	2496 20	8°30'	2481 88		EAST	97 91		50 91		
	2522 40	8°00'	2507 81		N87E	98 01		54 67		
65	2548 60	6°30'	2533 80		N83E	98 30		57 96		
	2574 80	5°15'	2559 86		N86E	98 55		60 63		
	2601 00	4°15'	2585 97		N83E	98 76		62 79		
68	2618 00	3°45'	2602 93		N85E	98 89		63 97		
			Closure	117.8m	N32°54'E					

ENCLOSURES

PE902731

This is an enclosure indicator page.
The enclosure PE902731 is enclosed within the container PE902729 at this location in this document.

The enclosure PE902731 has the following characteristics:

ITEM_BARCODE	= PE902731
CONTAINER_BARCODE	= PE902729
NAME	= Time Structure Map Top of Latrobe Group Seismic Marke
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	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902730

This is an enclosure indicator page.
The enclosure PE902730 is enclosed within the container PE902729 at this location in this document.

The enclosure PE902730 has the following characteristics:

ITEM_BARCODE	= PE902730
CONTAINER_BARCODE	= PE902729
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	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902732

This is an enclosure indicator page.
The enclosure PE902732 is enclosed within the container PE902729 at this location in this document.

The enclosure PE902732 has the following characteristics:

ITEM_BARCODE	= PE902732
CONTAINER_BARCODE	= PE902729
NAME	= Structural Cross Section Fortescue-West Halibut -Halibut Gamma Ray Logs
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Structural Cross Section Fortescue-West Halibut -Halibut Gamma Ray Logs. Plate 3 of WCR.
REMARKS	=
DATE_CREATED	= 28/02/1979
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902733

This is an enclosure indicator page.
The enclosure PE902733 is enclosed within the container PE902729 at this location in this document.

The enclosure PE902733 has the following characteristics:

ITEM_BARCODE	= PE902733
CONTAINER_BARCODE	= PE902729
NAME	= Sonic Calibration Curve
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Sonic Calibration Curve. Enclosure 56 of WCR.
REMARKS	=
DATE_CREATED	= 04/01/1978
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE906135

This is an enclosure indicator page.
The enclosure PE906135 is enclosed within the container PE902729 at this location in this document.

The enclosure PE906135 has the following characteristics:

ITEM_BARCODE	= PE906135
CONTAINER_BARCODE	= PE902729
NAME	= Time-Depth Curve
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Time-Depth Curve (basic data) for Fortescue-3. Enclosure 4 of WCR.
REMARKS	=
DATE_CREATED	= 31/01/1979
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= FORTESCUE-3
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE902734

This is an enclosure indicator page.
The enclosure PE902734 is enclosed within the container PE902729 at this location in this document.

The enclosure PE902734 has the following characteristics:

ITEM_BARCODE	= PE902734
CONTAINER_BARCODE	= PE902729
NAME	= Well Deviation Survey Plot
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Well Deviation Survey Plot. Enclosure 6 of WCR.
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= EASTMAN DIRECTIONAL DRILLING AUSTRALIA
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE601413

This is an enclosure indicator page.
The enclosure PE601413 is enclosed within the container PE902729 at this location in this document.

The enclosure PE601413 has the following characteristics:

ITEM_BARCODE	= PE601413
CONTAINER_BARCODE	= PE902729
NAME	= Well Completion Log (TVD) Latrobe Group
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Fortescue-3 Well Completion Log (TVD) Latrobe Group. Enclosure 8 of WCR.
REMARKS	=
DATE_CREATED	= 31/05/1979
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE601414

This is an enclosure indicator page.
The enclosure PE601414 is enclosed within the container PE902729 at this location in this document.

The enclosure PE601414 has the following characteristics:

ITEM_BARCODE	= PE601414
CONTAINER_BARCODE	= PE902729
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Fortescue-3 Well Completion Log. Enclosure 7 of WCR.
REMARKS	=
DATE_CREATED	= 31/05/1979
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= Fortescue-3
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE603475

This is an enclosure indicator page.
The enclosure PE603475 is enclosed within the container PE902729 at this location in this document.

The enclosure PE603475 has the following characteristics:

ITEM_BARCODE	= PE603475
CONTAINER_BARCODE	= PE902729
NAME	= Mud Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= MUD_LOG
DESCRIPTION	= Mud Log for Fortescue-3. Enclosure 9 of WCR.
REMARKS	= (missing accompanying report).
DATE_CREATED	= 18/12/1978
DATE_RECEIVED	= 05/06/1979
W_NO	= W712
WELL_NAME	= FORTESCUE-3
CONTRACTOR	= EXPLORATION LOGGING OF AUSTRALIA INC.
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

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