WCR

THREADFIN-1

W719

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

W719

80 PAGES
4 ENCL
1 T.

OIL and GAS DIVISION

WELL COMPLETION REPORT

THREADFIN - 1

GIPPSLAND BASIN, VICTORIA

D. J. HENDERSON

MAY, 1979.

CONTENTS

APPENDICES

ENCLOSURES

ATTACHMENTS

ESSO AUSTRALIA LTD.

COMPLETION REPORT

1. WELL DATA RECORD

LOCATION

WELL NAME	STATE	PERMIT or LICENCE	GEOLOGICAL BASIN	FIELD
THREADFIN-1	VICTORIA	VIC/L5	GIPPSLAND	WILDCAT

CO-ORDINATES	MAP PROJECTION	GEOGRAPHICAL LOCATION
LATITUDE 38° 32' 37.71" S LONGITUDE 148° 15' 22.46" E X 609477.27E Y 5733082.63N	UTM ZONE 55	8.5 Km NE of Kingfish 'B' Platform

ELEVATIONS & DEPTHS

ELEVATIONS	WATER DEPTH	TOTAL DEPTH	Average Angle
KB 25m ASL RT 24.7m ASL	76.42 metres	MEASURED DEPTH 2735 m	
	PLUG BACK DEPTH 120 metres	REASONS FOR PLUGGING BACK Abandonment	

DATES

MOVE IN	RIG UP	SPUDDED 00:15 HRS
21 February, 1979.	21, 22 FEBRUARY, 1979	23 February, 1979
RIG DOWN COMPLETE	RIG RELEASED	PRODUCTION UNIT - RIG UP
	11:30 Hrs. 10 March, 1979	

PRODUCTION UNIT - RIG DOWN	INITIAL PRODUCTION ESTABLISHED

MISCELLANEOUS

OPERATOR	PERMITTEE or LICENCEE	ESSO INTEREST 50%
Esso Australia Ltd	He matite Petroleum Pty. Ltd., Esso Exploration & Production Australia Inc.	OTHER INTEREST 50%

CONTRACTOR	RIG NAME	EQUIPMENT TYPE
AUSTRALIAN ODECO	OCEAN ENDEAVOUR	SEMI-SUBMERSIBLE

TOTAL RIG DAYS	DRILLING AFE NO.	COMPLETION NO.	TYPE COMPLETION
17	239 001	N/A	N/A

LAHEE WELL CLASSIFICATION		
	Before Drilling	WILDCAT
	After Drilling	DRY HOLE

WELL

2. CASING - LINER - TUBING RECORD						
Type	Size	Weight	Grade	Thread	No. Joints	Depth
	20"	670	X - 52	CC	1	
	20"	129	X - 52	CC/JV	1	
	20"	94	X - 52	JV	8	224m
	13-3/8"	54.5	K - 55	Buttr.	58	862m

3. CEMENT RECORD					
String	20"		13-3/8"		
Type of Cement	Class N		Class N		
	12% gel	2%$CaCl_2$	Neat	1% $CaCl_2$	
No. of sacks	650	350	800	225	
Slurry Density S.G. (ppg)	1.45 (12.1ppg)	1.87 (15.6ppg)	1.87 (15.6ppg)	1.87 (15.6ppg)	
Cement Top	SEA FLOOR		457m		
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	
Cement Type	Class N + 0.6%HR-12	Class N Neat	Class N Neat	
No. of sacks	370	195	550	
Slurry Density				
Cement Base	2458m	892	Annulus Plug 225	13-3/8Plug 175
Cement Top	2355m	771	175	120
Remarks				

WELL

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES.

INTERVAL	TYPE	INTERVAL	TYPE
2420-1210m	5 sets, 10m washed		
1210-2735m	5 sets, 5m washed		
242-1210m	10 metres unwashed		
1210-2735m	5 metres unwashed		
242-2735m	30m composite canned unwashed cuttings sample.		
2731-875m	SWC, 81 Shot 79 recovered		

6. WIRELINE LOGS AND SURVEYS

Type & Scale		From	To	Type & Scale	From	To
ISF-BHCS-GR RUN-1	1:200 1:500	226m	875m	Velocity Survey 14 levels	600	2732
FDC-GR RUN-1	1:200 1:500	226m GR to	876m 100m			
ISF-BHCS-SP-CAL-GR RUN-2	1:200 1:500	864m	2734.5m			
FDC-CNL-GR RUN-2	1:200 1:500	864m	2735.5m			
HDT and computed results.	1:200	864m	2735.5m			

RFT

SUMMARY OF FORMATION TEST PROGRAMME

THREADFIN-1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		HORIZONTAL PERMEABILITY	REMARKS
				OIL	COND.	GAS	FORMATION WATER	FILTRATE	MPag	Psig	MPag	Psig	millidarcys	
RFT1	1	2683.5m							25.86	3750.6	29.88	4334		
	2	2624m							25.21	3657.0	29.24	4241		
	3	2565							24.61	3569.9	28.59	4147		
	4	2485							23.84	3457.1	27.72	4021		
	5	2409	1					21.00	23.10	3350.3	26.90	3901	-	Repeated chamber plugging.

THREADFIN – 1

STRATIGRAPHIC TABLE

MM YEARS	EPOCH	SERIES	FORMATION HORIZON	PALYNOLOGICAL ZONATION SPORE – POLLEN ASSEMBLAGE ZONES	PLANKTONIC FORAMINIFERAL ZONATIONS	DRILL DEPTH (METRES)	SUBSEA DEPTH (METRES)	THICKNESS (METRES)
			SEAFLOOR			101	-76	
0	PLEIST	E L	GIPPSLAND LIMESTONE		A 1			
	PLIO	L			A 2			
		M			A 3			
		E			A 4			
5	MIOCENE	LATE			B 1			
					B 2			1944
10		MIDDLE			C			
					D 1			
					D 2			
15					E 1			
					E 2	2045	-2020	
		EARLY			F			
20					G			
					H 1			
25	OLIGOCENE	LATE	LAKES ENTRANCE FORMATION	P. tuberculatus	H 2			
					I 1			
30					I 2			
		EARLY			J 1			
35			? ? ?		J 2	2397	-2372	352
		LATE		Upper N. asperus	K			
40	EOCENE			Middle N. asperus				
		MIDDLE		Lower N. asperus				
45								
				P. asperopolus				
50		EARLY		Upper M. diversus				
				Middle M. diversus				
			? ? ?	Lower M. diversus		2397	-2372	
55	PALEOCENE	LATE	LATROBE GROUP "COARSE CLASTICS"	Upper L. balmei				338
60		EARLY	T.D.	Lower L. balmei		2735	-2710	
65	UPPER CRETACEOUS	LATE		T. longus				
				T. lilliei				

DWG. 1925/OP/9

DESCRIPTION OF LITHOLOGICAL UNITS (Depths KB)

THREADFIN - 1

Gippsland Limestone (997 metres to 2045 metres)

242-500m

Calcarenite - white to light grey, fine to very coarse grained with some graunule size, generally poorly sorted, composed of bryozoa, forams, coral and shell fragments, unconsolidated to firm, weakly cemented with micrite, pyritic and glauconitic in part, trace clay, section contains trace to 80%;

Calcisiltite - white to light grey, soft to firm, contains silt size microfossils, argillaceous in part, trace pryite, section contains up to 10%;

Micrite - white to yellow brown, soft to very hard.

500-650m

Calcisiltite - dominant lithology in section, white to light grey, soft, contains abundant silt size forams, minor clay, trace glauconite, trace pyrite grades to;

Calcilutite- white, soft, trace to abundant silt size microfossils, trace glauconite, trace pyrite, thinly interbedded with;

Calcarenite - white to grey, soft to firm, fine to medium grained, some coarse grained, forams, spicules, bryozoa, trace clay, trace pyrite, trace glauconite.
From 590m to 640m section contains trace to 70%;

Marl - white to grey, very soft, minor silt size microfossils, trace pyrite.

650-720m

Calcareous Siltstone - light grey, firm, 25-30% carbonate, mainly silt size microfossils, trace pyrite, trace glauconite and;
Calcareous Mudstone - grey to dark grey, soft to hard, 30% carbonate, occasionally fissile, minor microfossiles, trace pyrite.

720-930m

Calcisiltite - white to light grey, some dark grey, soft to firm, massive, silt size microfossils, bryozoa, spicules, trace pyrite, trace carbonaceous flecks 790-810m, trace to abundant clay, glauconite common 780-790m. From 880m to 930m section contains up to 60%;

Calcarenite - white to light grey, soft to moderately hard, very fine to granules size, poorly sorted, massive, forams, spicules, bryozoa, some shell fragments, trace to abundant clay matrix. From 810m to 870m section contains up to 20%;

Marl - white, soft, some silt size forams, scattered through section are thin beds of Sparite (?), white to yellow, hard, massive.

930-1130m

Subequal quantities of:
Calcareous Mudstone - grey, very soft, estimated 20% carbonate, silt size and some sand size microfossils, forams, spicules, trace pyrite (framboidal), trace glauconite, and;

Calcareous Siltstone - light grey to brown, firm to moderately hard, massive, estimated 30% carbonate, silt size forams, echinoid spines, trace pyrite, rare carbonaceous flecks, grades locally to calcisiltite. Section contains locally abundant;

Marl - white to very light grey, soft, massive, contains silt size microfossils.

1130-1235m

Section mainly:
Marl - white, soft, massive, some silt size microfossils, trace pyrite, section contains 10-60%;

Calcisiltite - light grey to brown, firm, massive, argillaceous, silt size microfossils, forams, spicules, trace pyrite, grades to minor;

.../2

Calcarenite - white, firm, fine to medium grained, massive, contains abundant forams and bryozoa fragments, trace pyrite.

1235-1660m Section mainly:
Calcisiltite - light grey, firm, massive to subfissile, silt size microfossils, forams, spicules, trace pyrite, rare glauconite, rare carbonaceous fragments, argillaceous in part,

Calcisilite - medium to dark grey, firm, subfissile, occasional silt size microfossils, clay rich in part, rare glauconite. Section from 1235m to 1285m contains 5-30%;

Marl - white, soft, massive, silt size forams, trace pyrite.
Section contains rare thin beds of; Sparite(?) - yellow to yellow brown, hard, massive.

1660-1710m Marl - white, very soft, massive, silt size and fine grained forams and bryozoa, trace pyrite.

Calcareous Siltstone - dark grey, firm, fissile, contains silt size forams, trace pyrite, trace glauconite.

Calcareous Mudstone - dark grey, firm, fissile, silt size microfossils, trace pyrite.

1710-2045m Section mainly;
Calcisiltite - light to medium grey, firm, locally abundant microfossile mainly planktonic forams at top of section with benthonic forms increasing with depth, rare carbonaceous flecks, rare glauconite, trace pyrite.

Grades locally to;
Calcarenite - light grey, very fine to fine grained, silty in part, some forams. Below 1950m section appears to be less calcareous with increasing;

Calcareous Mudstone - medium to dark grey, firm, some forams, and;

Calcareous Shale - dark grey, firm, fissile, silty in part, some forams.

Lakes Entrace Formation: (2045m to 2397m)

2045-2200m Calcisiltite - medium dark grey, soft to firm, some partly fissile, sandy in part, some forams, trace glauconite and pyrite.
Gradational to and thinly interbedded with 10-30%;

Calcareous Shale - medium dark grey, silty, contains forams.

2200-2397m Thinly interbeded;
Calcareous Shale - medium dark grey, firm, fissil , silty, silt size forams, trace pyrite, some glauconite, and;
Calcisiltite, light to dark grey, firm, trace pyrite, abundant forams.

Latrobe Group: (2397m to 2735m)

2397-2610m Massive sandstones with minor siltstone and shale interbeds;
Sandstone - clear to white, occasionally green near top of section, very fine to granule size, mainly medium to coarse, most pyritic, micaceous in part, trace glauconite through section, trace to 10% clay matrix, silty in part, locally gradation to;

Siltstone/Shale - medium brown, micaceous, non calcareous, firm to friable, carbonaceous in part.

2610-2635m Thinly interbedded Sandstone and Silty Shale:

Sandstone - clear to white, very friable, fine grained to granule size, frosted grains, weakly cemented with pyrite and silica, micaceous in part.

Shale - brown to black, micaceous, carbonaceous.

.../3

2635-2735m Generally thick massive Sandstone with fining down gradations to Siltstone;

Sandstone - clear to white, fine to very coarse grained, generally fine to medium, trace to 30% clay matrix, silty in part, micaceous in part, carbonaceous flecks, some dark green glauconite pellets. Gradational to;

Siltstone - brown grey, very micaceous, carbonaceous, firm to friable, thinly laminated.

THREADFIN-1

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	99	99	74.5	
	Base of High Velocity Channel				
	Mid-Miocene Marker				
Miocene/Oligocene	Lakes Entrance Formation		2045		
Eocene/Paleocene	Latrobe Group	2410	2397		
	Base of Prograding Unit	2590			
	Upper L. balemi / Lower L. balemi boundary	2625 to 2665			
	T.D. (TVD)	2725			
	T.D. (Driller's MD)	2725			

GEOPHYSICAL ANALYSIS

The Threadfin-1 well encountered the top of Latrobe Group 14 metres high to prediction, a discrepancy of 0.6%. It appears that this is due to a difference in the seismic lags at the well resulting in an error of approximately 0.5% in the time prediction.

Subsequent to the drilling of this well, the lags and velocities in the area were reworked in order to check the validity of the structure. The revised structure map shows a considerable decrease in size of the prospect and it is possible that it may open to the south.

GEOLOGICAL ANALYSIS

Threadfin-1 was drilled to test a top of Latrobe structure between Opah and the Kingfish field. The top of Latrobe Group was intersected at 2396 metres. Good quality reservior sands were encountered immediately below the top of Latrobe Group. These sands are believed to have been deposited in a prograding high energy marine environment. The base of this sequence of sands was encountered at a depth of 2600 metres. No indication of the P. asperopolus channel intersected in Opah-1 was found. The upper section of the Latrobe Group was barren of spore pollen assemblages, below this indefinite zone L. balmei characterized the samples, however, due to poor sample quantity, and thus incomplete assemblages, the destinction between Upper and Lower L. balmei could not be made.

Hydrocarbons

No indications of hydrocarbons were found in Threadfin-1. The lack of a valid trap is thought to be the reason for this. Two alternatives are possible,

1) Velocity gradients due to the overlying Miocene channelling may be greater than expected, plus lag problems in the area could mean that in fact the structure is not closed, but opens towards Kingfish.

or

2) A wedge unit observed on seismic sections, immediately post-dating the Latrobe unconformity does not seal, breaking the structure, allowing migration updip from Threadfin, south-west towards Kingfish. This wedge cycle can be traced to the Kingfish structure, though not intersected by anywells.

APPENDIX 1

APPENDIX 1

CUTTINGS SAMPLES DESCRIPTIONS

LITHOLOGICAL DESCRIPTIONS — V. ZIOLKOWSKI

THREADFIN-1 — 24/2/79

DEPTH	%	DESCRIPTION
242m-250m	90%	Calcarenite - white, unconsolidated, fine to very coarse, loose fossil fragments - bryozoa,forams, coral.
	10%	Micrite - white to yellow brown, very hard.
250m-260m	95%	Calcarenite - white, unconsolidated, fine to very coarse, bryozoa, forams, coral, shell fragments, trace pyrite.
	5%	Micrite - white to yellow brown, very hard.
260m-270m	90%	Calcarenite - white, unconsolidated to minor micritic cement, fine to very coarse, bryozoa, forams, coral, shell fragments, trace pyrite.
	10%	Calcisiltite - white to grey, firm, silt size fossil fragments.
270m-280m	85%	Calcarenite - white, loose fossil fragments, fine to granule, poorly sorted, forams, bryozoa, coral, shell fragments, trace pyrite.
	15%	Calcisiltite - white to grey, firm, silt size fossil fragments.
280m-290m	90%	Calcarenite - white, unconsolidated, fine to granular, poorly sorted, forams, coral, bryozoa, shell fragments, trace glauconite, trace pyrite.
	10%	Calcisiltite - white to grey, firm to soft, silt sized microfossils.
290m-300m	90%	Calcarenite - As above.
	5%	Calcisiltite - As above.
	5%	Micrite - white to yellow, firm.
300m-310m	85%	Calcarenite - As above.
	10%	Calcisiltite - As above.
	5%	Micrite - As above.
310m-320m	50%	Calcarenite - As above.
	30%	Calcisiltite - As above.
	20%	Micrite-Biomicrite - As above.
320m-330m	60%	Calcarenite - As above.
	30%	Calcisiltite - As above.
	10%	Micrite - As above.
330m-340m	80%	Calcarenite - white, loose to soft, fine to granule, forams, shell fragments, bryozoa, coral. Trace pyrite, trace glauconite.

2/.....

LITHOLOGICAL DESCRIPTIONS

V. ZIOLKOWSKI

24/2/79

THREADFIN-1

DEPTH	%	DESCRIPTION
330m-340m		Continued/.....
	15%	Calcisiltite - white, soft, silt sized microfossils, trace pyrite.
	5%	Micrite - white to yellow, firm, grades to biomicrite.
340m-350m	90%	Calcarenite - As above.
	10%	Calcisiltite - As above.
350m-360m	60%	Calcarenite - As above.
	30%	Calcisiltite - As above.
	10%	Micrite - As above.
360m-370m	70%	Calcarenite - As above.
	30%	Calcisiltite - As above.
370m-380m	50%	Calcarenite - As above.
	50%	Calcisiltite - glauconite becoming more common.
380m-390m	30%	Calcarenite - As above.
	70%	Calcisiltite - As above.
390m-400m	60%	Calcarenite - white to light grey, soft, very fine to mediu grain, poor sorting, micritic cement, forams, bryozoa, shell fragments, trace pyrite, trace glauconite.
	30%	Calcisiltite - white to light grey, soft, silt size microfossils.
	10%	Micrite-Biomicrite - white to yellow grey, firm, trace pyrite.
400m-410m	60%	Calcarenite - As above.
	40%	Calcisiltite - As above.
410m-420m	50%	Calcarenite - As above.
	50%	Calcisiltite - As above.
420m-430m	70%	Calcarenite - As above.
	30%	Calcisiltite - As above.
430m-440m	50%	Calcarenite - As above.
	50%	Calcisiltite - As above.
440m-450m	40%	Calcarenite - As above.
	60%	Calcisiltite - As above.
450m-460m	20%	Calcarenite - As above.
		3/.....

LITHOLOGICAL DESCRIPTIONS V. ZIOLKOWSKI

THREADFIN-1 24/2/79

DEPTH	%	DESCRIPTION
450m-460m		Continued/.....
	80%	Calcisiltite - As above.
		25/2/79
460m-470m	20%	Calcarenite - white to light grey, soft to firm, fine to coarse, trace clay, forams, bryozoa, trace pyrite.
	80%	Calcisiltite - white to grey, soft to firm, trace clay, silt size microfossils.
470m-480m	10%	Calcarenite - As above.
	90%	Calcisiltite - As above.
480m-490m	60%	Calcarenite - As above.
	35%	Calcisiltite - As above.
	5%	Micrite - white to yellow, firm.
490m-500m	50%	Calcarenite - As above, trace glauconite.
	50%	Calcisiltite - As above.
500m-510m	40%	Calcarenite - white to grey, soft, fine to medium grained, forams, bryozoa, trace pyrite, trace glauconite, trace clay
	60%	Calcisiltite - As above.
510m-520m	20%	Calcarenite - As above.
	80%	Calcisiltite - As above.
520m-530m	10%	Calcarenite - As above.
	70%	Calcisiltite - As above.
	10%	Calcilutite - white, fine microfossils.
530m-540m	40%	Calcarenite - white to light grey, soft, very fine to medium, massive, forams, spicules, trace pyrite, trace glauconite.
	20%	Calcisiltite - white to light grey, soft, grades to calcilutite.
	20%	Calcilutite - white, soft, occasional silt size microfossils.
540m-550m	30%	Calcarenite - As above.
	30%	Calcisiltite - As above.
	40%	Calcilutite - As above.
550m-560m	20%	Calcarenite - As above.
	60%	Calcisiltite - As above.
		4/.....

DEPTH	%	DESCRIPTION
550m-560m		Continued/.....
	20%	Calcilutite - As above.
560m-570m	40%	Calcarenite - As above, loose forams common.
	20%	Calcisiltite - As above, grades to calcilutite.
	20%	Calcilutite - As above, numerous microfossils, trace clay.
570m-580m	20%	Calcarenite - white to grey, soft, fine to coarse, minor clay, forams, spicules, bryozoa, trace pyrite.
	60%	Calcisiltite - white to light grey, soft, silt sized microfossils, grades into calcilutite, trace glauconite, trace pyrite.
	20%	Calcilutite - white, soft, occasionally silt size microfossils, trace glauconite, trace pyrite.
580m-590m	30%	Calcarenite - As above.
	70%	Calcisiltite - As above.
590m-600m	60%	Calcisiltite - As above.
	10%	Calcilutite - As above.
	30%	Marl - grey, very soft, trace pyrite.
600m-610m	20%	Calcarenite - As above.
	80%	Calcisiltite - As above, minor clay.
610m-620m	30%	Calcarenite - As above.
	60%	Calcisiltite - As above.
	10%	Marl - As above.
620m-630m	20%	Calcarenite - white to grey, firm, fine to medium, poorly sorted, minor clay, forams, ostracods, bryozoa, trace pyrite.
	70%	Calcisiltite - white to light grey, firm, silt sized microfossils, trace pyrite.
	10%	Marl - white, soft, occasional silt size microfossils.
630m-640m	30%	Calcarenite - As above.
	50%	Calcisiltite - As above.
	20%	Marl - As above.
640m-650m	10%	Calcarenite - As above.
	20%	Calcisiltite - As above.
	70%	Marl - As above.

5/.....

DEPTH	%	DESCRIPTION
650m-660m	10%	Calcarenite - As above.
	40%	Calcisiltite - As above.
	50%	Calcareous Mudstone - grey, soft, 30% carbonate, contains minor microfossils.
660m-670m	25%	Calcarenite - As above.
	50%	Calcareous Siltstone - grey, firm, 25% carbonate, silt fragments consist of forams.
	25%	Calcareous Mudstone - As above.
670m-680m	80%	Calcareous Siltstone - light grey, firm, 30% carbonate matter, silt size fossils, trace pyrite, trace glauconite.
	20%	Marl - white, soft, occasional silt size fossils, trace pyrite.
680m-690m	90%	Calcareous Siltstone - As above and loose fossil fragments
	10%	Marl - As above.
690m-700m	100%	Calcareous Siltstone - As above.
700m-710m	90%	Calcareous Siltstone - As above.
	10%	Calcareous Mudstone - dark grey, hard, fissile, trace pyrite.
710m-720m	90%	Calcareous Siltstone - As above.
	10%	Calcareous Mudstone - As above.
720m-730m	100%	Calcisiltite - white to light grey, soft, silt size microfossils, trace pyrite.
730m-740m	100%	Calcisiltite - As above.
740m-750m	100%	Calcisiltite - light grey, moderately hard, fine grained, silt sized microfossils, forams, bryozoa, trace pyrite.
750m-760m	100%	Calcisiltite - As above.
760m-770m	90%	Calcisiltite - As above.
	10%	Micrite - dark grey, hard.
770m-780m	100%	Calcisiltite - As above.
780m-790m	100%	Calcisiltite - As above, glauconite common.
790m-800m	100%	Calcisiltite - As above, trace carbonaceous flecks.
800m-810m	100%	Calcisiltite - As above, trace carbonaceous flecks.
810m-820m	90%	Calcisiltite - As above.
	10%	Marl - soft, white, occasional microfossils.

6/.....

DEPTH	%	DESCRIPTION
820m-830m	100%	Calcisiltite - As above, minor clay. Loose forams.
830m-840m	90%	Calcisiltite - dark grey, firm, silt sized microfossils, trace carbonaceous, trace pyrite, minor clay.
	10%	Marl - white, soft, occasional silt size forams.
840m-850m	95%	Calcisiltite - As above.
	5%	Marl - As above.
850m-860m	80%	Calcisiltite - As above.
	20%	Marl - As above.
860m-870m	80%	Calcisiltite - As above, loose forams.
	20%	Marl - As above.
		27/2/79
870m-880m	90%	Calcisiltite - white to light grey, soft, fine grained, well sorted, massive, silt sized forams, spicules, trace pyrite, trace glauconite, trace clay.
	10%	Sparite - white, massive, hard.
880m-890m	60%	Calcarenite - white to light grey, moderately hard, very fine to coarse, poorly sorted, massive, forams, spicules, coral, trace pyrite,trace glauconite, loose granule sized forams.
	30%	Calcisiltite - As above.
	10%	Sparite - As above.
890m-900m	40%	Calcarenite - As above.
	20%	Calcisiltite - As above.
	10%	Sparite - As above.
	30%	Marl - white to light grey, soft, massive, pyrite common, trace glauconite.
900m-910m	60%	Marl - light grey, very soft, occasional coarse foram fossils, spicules, trace pyrite, 30% clay.
	40%	Calcisiltite - As above.
910m-920m	70%	Calcisiltite - As above.
	30%	Marl - As above.
920m-930m	50%	Calcarenite - white to dark grey, soft, fine to granular, clay rich, forams, spicules, bryozoa, trace pyrite, massive trace glauconite, loose fossils, shell fragments.
	40%	Calcisiltite - white, soft, fine grained, massive, silt sized microfossils, clay rich, trace pyrite.

7/.....

DEPTH	%	DESCRIPTION
920m-930m		Continued/.....
	10%	Sparite - white to yellow, hard, massive.
930m-940m	50%	Calcareous Mudstone - grey, very soft, silt sized microfossils, loose coarse grained microfossils, trace pyrite, trace glauconite.
	50%	Calcisiltite - As above.
940m-950m	60%	Calcareous Mudstone - grey, as above.
	40%	Calcisiltite - As above.
950m-960m	30%	Calcareous Mudstone - As above.
	45%	Calcisiltite - As above.
	5%	Sparite - As above.
	20%	Calcarenite - As above.
960m-970m	60%	Calcareous Siltstone - light grey, moderately firm, massive 30% carbonate, silt size microfossils.
	40%	Marl - white to very light grey, massive, soft, silt size microfossils.
970m-980m	70%	Calcareous Siltstone - As above.
	30%	Marl - As above.
980m-990m	100%	Calcareous Siltstone - Trace pyrite, as above.
990m-1000m	100%	Calcareous Siltstone - As above.
1000m-1010m	100%	Calcareous Mudstone - medium grey, very soft, 20% carbonate occasional sand to granule size forams, trace pyrite, (framboidal).
1010m-1020m	100%	Calcareous Mudstone - As above.
1020m-1030m	100%	Calcareous Mudstone - As above.
1030m-1040m	35%	Calcareous Siltstone - light grey, soft, trace pyrite, trace carbonaceous flecks, silt size microfossils.
	65%	Calcareous Mudstone - As above.
1030m-1040m	40%	Calcisiltite - medium grey, moderately hard, silt size microfossils, occasional sand size forams, trace carbonaceous flecks, pyrite common, spicules, echinoid spines.
	60%	Marl - light grey, very soft, massive, glauconite.
1040m-1050m	80%	Marl - As above.
	20%	Calcisiltite - As above.

8/.....

LITHOLOGICAL DESCRIPTIONS — V. ZIOLKOWSKI

THREADFIN-1 — 27/2/79

DEPTH	%	DESCRIPTION
1050m-1060m	60%	Calcareous Siltstone - grey to brown, hard, fine grained, subfissile, forams, echinoid spines, trace pyrite, carbonaceous flecks, loose fossils.
	40%	Marl - As above.
1060m-1070m	80%	Calcareous Siltstone - As above.
	20%	Marl - As above.
1070m-1080m	60%	Calcareous Siltstone - As above.
	40%	Marl - As above.
1080m-1090m	60%	Calcareous Siltstone - As above.
	40%	Marl - As above.
1090m-1100m	40%	Calcareous Siltstone - light medium grey, moderately hard, poorly sorted, massive, forams, pyrite, spicules, loose forams.
	60%	Calcareous Mudstone - very light grey, very soft, poor sorting, silt size microfossils, spicules, trace pyrite.
1100m-1110m	60%	Calcareous Siltstone - As above.
	40%	Calcareous Mudstone - As above.
1110m-1120m	80%	Calcareous Siltstone - As above.
	20%	Calcareous Mudstone - As above.
1120m-1130m	100%	Calcareous Siltstone - As above.
1130m-1140m	20%	Calcisiltite - brown to grey, firm, forams, spicules, trace pyrite, very clay rich.
	80%	Marl - white to very light grey, soft, occasional silt size microfossils.
1140m-1150m	15%	Calcisiltite - As above.
	85%	Marl - As above.
		28/2/79
1150m-1160m	10%	Calcisiltite - light grey to brown, firm, massive, silt siz microfossils, forams, trace pyrite, abundant clay.
	90%	Marl - white, soft, massive, silt size microfossils.
1160m-1170m	20%	Calcisiltite - As above.
	80%	Marl - As above.
1170m-1180m	100%	Marl - As above.
1180m-1190m	10%	Calcisiltite - As above.

9/.....

DEPTH	%	DESCRIPTION
1180m-1190m		Continued/.....
	90%	Marl - As above.
1190m-1200m	50%	Calcisiltite - As above.
	50%	Marl - As above.
1200m-1210m	30%	Calcisiltite - As above.
	70%	Marl - As above.
		SAMPLING AT 5 METRE INTERVALS
1210m-1215m	20%	Calcisiltite - As above.
	80%	Marl - As above.
1215m-1220m	30%	Calcisiltite - light grey, soft to firm, contains abundant clay, forams, spicules, trace pyrite.
	10%	Calcarenite - white, firm, fine to medium grained, massive, forams, bryozoa, trace pyrite.
	60%	Marl - white, soft, trace pyrite, clay approximately 20%, silt size fossils.
1220m-1225m	50%	Calcisiltite - As above.
	5%	Calcarenite - As above.
	45%	Marl - As above.
1225m-1230m	60%	Calcisiltite - As above.
	5%	Calcarenite - As above.
	35%	Marl - As above.
1230m-1235m	30%	Calcisiltite - As above.
	70%	Marl - As above.
1235m-1240m	60%	Calcisiltite - As above.
	40%	Marl - As above.
1240m-1245m	70%	Calcisiltite - As above.
	30%	Marl - As above.
1245m-1250m	70%	Calcisiltite - light grey, firm, massive, silt size microfossils, forams, spicules, trace pyrite, 20% clay.
	30%	Marl - white, soft, massive, forams, trace pyrite.
1250m-1255m	90%	Calcisiltite - As above, loose forams.
	10%	Marl - As above.
		10/.....

DEPTH	%	DESCRIPTION
1255m-1260m	95%	Calcisiltite - As above.
	5%	Marl - As above.
1260m-1265m	100%	Calcisiltite - As above.
1265m-1270m	100%	Calcisiltite - As above, becoming clayey.
1270m-1275m	95%	Calcisiltite - As above, becoming firmer.
	5%	Marl - As above.
1275m-1280m	100%	Calcisiltite - As above, trace of glauconite.
1280m-1285m	70%	Calcisiltite - As above.
	30%	Marl - As above.
1285m-1290m	95%	Calcisiltite - light grey, firm, massive, forams, bryozoa, trace pyrite, trace glauconite, subfissile, very clay rich (~20%).
	5%	Marl - white, very soft, massive, occasional microfossil, trace pyrite.
1290m-1295m	95%	Calcisiltite - As above.
	5%	Sparite - white to yellow brown, massive, very hard.
1295m-1300m	100%	Calcisiltite - As above, very clay rich.
1300m-1305m	40%	Calcareous Siltstone - light to medium grey, firm, subfissile, forams, spicules, trace pyrite, carbonaceous flecks, carbonate rich (40%). Loose fossils.
	60%	Calcisiltite - As above, very clay rich.
1305m-1310m	100%	Calcisiltite - As above.
1310m-1315m	100%	Calcisiltite - As above.
1315m-1320m	20%	Calcarenite - white, hard, very fine to medium grained, forams, spicules, trace pyrite, trace glauconite.
	80%	Calcisiltite - As above, subfissile.
1320m-1325m	80%	Calcisiltite - medium grey, firm, massive to subfissile, poorly sorted, silt size forams and spicules, pyrite common. Trace glauconite, clay content ~20%.
	5%	Micrite - dark red brown, hard, massive.
	15%	Calcilutite - grey to blue grey, soft to fairly firm, incipient layering, occasional silt size microfossils.
1325m-1330m	95%	Calcisiltite - As above, subfissile.
	5%	Micrite - As above.
1330m-1335m	60%	Calcisiltite - As above, very clay rich.

11/.....

LITHOLOGICAL DESCRIPTIONS V. ZIOLKOWSKI

THREADFIN-1 28/2/79

DEPTH	%	DESCRIPTION
1330m-1335m		Continued/.....
	35%	Calcilutite - As above, very clay rich.
	5%	Marl - white, very soft, massive, silt size microfossils, common, framboidal pyrite.
1335m-1340m	60%	Calcisiltite - As above.
	40%	Calcilutite - As above.
1340m-1345m	80%	Calcisiltite - As above.
	15%	Calcilutite - As above, increasing fissility.
	5%	Sparite - white to yellow brown, very hard, interbedded with calcilutite.
1345m-1350m	80%	Calcilutite - medium to dark grey, firm, fissile to subfissile, occasional silt and sand size forams, bryozoa, trace pyrite, trace glauconite, very clay rich ~ 35%.
	20%	Calcisiltite - medium grey, moderately firm, massive to subfissile, silt size microfossils, trace pyrite, clay common.
1350m-1355m	85%	Calcilutite - As above, clay rich.
	20%	Calcisiltite - As above.
1355m 1360m	100%	Calcilutite - As above.
1360m-1365m	100%	Calcilutite - As above.
1365m-1370m	100%	Calcilutite - As above, some carbonaceous flecks.
1370m-1375m	90%	Calcilutite - As above.
	10%	Calcisiltite - As above.
1375m-1380m	50%	Calcilutite - medium grey, firm, subfissile, occasional silt size fossils.
	50%	Calcisiltite - As above.
		1/3/79
1380m-1385m	75%	Calcilutite - light grey, firm, occasional silt size microfossils, trace pyrite, clay common.
	20%	Calcarenite - white, firm, fine to coarse, forams, bryozoa. Trace glauconite, trace clay, loose fossil fragments.
	5%	Sparite - yellow to yellow brown, hard, massive.
1385m-1390m	60%	Calcilutite - As above, pyrite common, minor glauconite.

12/.....

DEPTH	%	DESCRIPTION
1385m-1390m		Continued/.....
	30%	Calcisiltite - medium olive grey, firm, subfissile, silt size microfossils, forams, trace glauconite, trace pyrite.
	5%	Calcarenite - As above.
	5%	Sparite - As above.
1390m-1395m	60%	Calcilutite - As above.
	40%	Calcisiltite - As above.
1395m-1400m	80%	Calcilutite - As above, clay rich. Clay ~30%.
	20%	Calcisiltite - As above.
1400m-1405m	90%	Calcilutite - As above.
	10%	Calcisiltite - As above.
1405m-1410m	90%	Calcilutite - light grey to medium grey, subfissile, microfossils, pyrite, fissile.
	10%	Calcarenite - white to light grey, firm, fine to medium, forams, bryozoa, spicules, trace pyrite.
1410m-1415m	100%	Calcilutite - As above, clay common.
1415m-1420m	100%	Calcilutite - As above.
1420m-1425m	90%	Calcilutite - As above.
	10%	Calcisiltite - As above.
1425m-1430m	60%	Calcilutite - As above.
	40%	Calcisiltite - As above.
1430m-1435m	100%	Calcilutite - As above.
1435m-1440m	100%	Calcilutite - As above, becoming increasingly fissile.
1440m-1445m	80%	Calcilutite - As above.
	20%	Calcisiltite - As above.
1445m-1450m	80%	Calcisiltite - light grey, firm, fissile, silt size microfossils, forams, trace pyrite.
	20%	Calcilutite - medium grey, firm, fissile, occasional silt size microfossil, trace pyrite, trace glauconite, clay common.
1450m-1455m	100%	Calcilutite - As above, clay rich, clay = 30%.
1455m-1460m	100%	Calcilutite - As above.
1460m-1465m	100%	Calcilutite - As above.

13/.....

DEPTH	%	DESCRIPTION
1465m-1470m	90%	Calcilutite - As above.
	10%	Calcisiltite - As above.
1470m-1475m	100%	Calcilutite - As above.
1475m-1480m	80%	Calcilutite - As above.
	20%	Marl - white, soft, massive, pyrite rich layers, silt size microfossils.
1480m-1485m	90%	Calcilutite - As above.
	10%	Marl - As above.
1485m-1490m	95%	Calcilutite - As above.
	5%	Marl - As above.
1490m-1495m	60%	Calcisiltite - medium grey, firm, subfissile, forams, spicules, trace pyrite, clay rich.
	40%	Calcilutite - medium grey, firm, subfissile, occasional silt size microfossils, pyrite, clay rich.
1495m-1500m	70%	Calcisiltite - brown grey, as above, very fine grained.
	20%	Calcilutite - As above.
	10%	Marl - very light grey to white, very soft, massive, silt size microfossils, trace pyrite.
1500m-1505m	40%	Calcisiltite - As above, trace carbon.
	60%	Calcilutite - As above.
1505m-1510m	80%	Calcilutite - As above.
	20%	Calcisiltite - As above.
1510m-1515m	90%	Calcilutite - As above.
	10%	Marl - As above.
1515m-1520m	100%	Calcilutite - As above.
1520m-1525m	50%	Calcilutite - As above.
	50%	Calcisiltite - As above.
1525m-1530m	70%	Calcisiltite - light grey, firm, very fine to coarse, massive, forams, bryozoa, loose fossil fragments, trace pyrite.
	20%	Calcilutite - medium grey, firm, subfissile, silt size microfossils, trace pyrite, trace carbonaceous fragments.
	10%	Marl - white, soft, massive, 20% clay, trace pyrite.
1530m-1535m	30%	Calcarenite - light grey, firm, very fine to medium, massive, forams, bryzoa, trace pyrite, abundant clay,

14/.....

DEPTH	%	DESCRIPTION
1530m-1535m		Continued/.....
	40%	Calcisiltite - As above.
	30%	Calcilutite - As above.
1535m-1540m	20%	Calcisiltite - As above.
	80%	Calcilutite - As above.
1540m-1545m	80%	Calcilutite - As above.
	20%	Marl - As above.
1545m-1550m	90%	Calcilutite - As above.
	10%	Marl - As above.
1550m-1555m	100%	Calcisiltite - As above.
1555m-1560m	50%	Calcisiltite - medium grey, firm, massive, forams, spicules, trace pyrite, glauconite, trace carbonaceous, clay rich.
	40%	Calcilutite - dark grey, firm, subfissile, spicules, forams, trace pyrite, clay rich.
	10%	Marl - very light grey, very soft, occasional silt size.
1560m-1565m	50%	Calcisiltite - As above.
	50%	Calcilutite - As above.
1565m-1570m	80%	Calcisiltite - As above.
	20%	Calcilutite - As above.
1570m-1575m	60%	Calcisiltite - As above.
	40%	Calcilutite - As above.
1575m-1580m	60%	Calcisiltite - As above.
	30%	Calcilutite - As above.
	10%	Marl - As above.
1580m-1585m	40%	Calcisiltite - light grey, firm, fissile, forams, trace pyrite, trace glauconite, very clay rich.
	60%	Calcilutite - medium grey, firm, fissile, trace pyrite, trace glauconite, trace carbonaceous, very clay rich.
1585m-1590m	20%	Calcisiltite - As above.
	80%	Calcilutite - As above.
1590m-1595m	100%	Calcilutite - As above.
1595m-1600m	20%	Calcisiltite - As above.
		15/.....

DEPTH	%	DESCRIPTION
1595m-1600m		Continued/.....
	70%	Calcilutite - As above.
	10%	Marl - very light grey, very soft, trace pyrite, occasional silt size fossils.
1600m-1605m	10%	Calcisiltite - As above.
	90%	Calcilutite - As above.
1605m-1610m	80%	Calcisiltite - brownish white, moderately firm, silt size microfossils, massive to subfissile, trace pyrite, trace carbon.
	20%	Marl - white, very soft, pyrite, silt size microfossils.
1610m-1615m	80%	Calcisiltite - As above.
	20%	Calcilutite - dark grey, firm, fissile, occasional silt size microfossils, trace pyrite.
1615m-1620m	70%	Calcisiltite - As above.
	20%	Calcilutite - As above.
	10%	Marl - As above.
1620m-1625m	40%	Calcisiltite - As above.
	50%	Calcilutite - As above.
	10%	Marl - As above.
1625m-1630m	40%	Calcisiltite - As above.
	60%	Calcilutite - As above.
1630m-1635m	75%	Calcilutite - As above.
	25%	Calcisiltite - As above.
1635m-1640m	70%	Calcisiltite - As above, very argillaceous.
	30%	Calcilutite - As above, very argillaceous.
1640m-1645m	100%	Calcisiltite - medium grey, firm, fissile, silt size microfossils, trace pyrite, very argillaceous.
1645m-1650m	80%	Calcisiltite - As above.
	20%	Calcilutite - dark grey, firm, fissile, trace pyrite, trace glauconite.
1650m-1655m	60%	Calcilutite - As above.
	40%	Marl - white, silt size microfossils, very soft, trace pyrite.
1655m-1660m	60%	Calcilutite - As above.

16/.....

DEPTH	%	DESCRIPTION
1655m-1660m		Continued/.....
	40%	Marl - As above.
1660m-1665m	50%	Calcilutite - As above.
	50%	Marl - As above.
1665m-1670m	40%	Calcisiltite - As above.
	60%	Marl - As above, abundant loose microfossils, forams.
1670m-1675m	20%	Calcisiltite - As above.
	80%	Marl - As above.
1675m-1680m	50%	Calcareous Mudstone - dark grey, firm, fissile, silt sized microfossils, trace pyrite.
	50%	Marl - white, soft, massive, sand sized forams, bryozoa, pyrite.
1680m-1685m	20%	Calcareous Mudstone - As above.
	80%	Marl - As above.
1685m-1690m	60%	Calcareous Mudstone - As above.
	40%	Marl - As above.
1690m-1695m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
1695m-1700m	100%	Calcareous Mudstone - As above.
1700m-1705m	80%	Calcareous Mudstone - As above.
	20%	Marl - As above.
1705m-1710m	90%	Calcareous Siltstone - dark grey, firm, fissile, silt sized forams, trace pyrite, trace glauconite.
	10%	Marl - As above.
1710m-1715m	90%	Calcisiltite - very calcareous, light to medium grey, very fossiliferous, mainly plankton forams, pyritic, some tubular pyrite, firm.
	10%	Forams - benthonic and mainly planktonic.
1715m-1720m	90%	Calcisiltite - As above.
	10%	Forams - As above.

17/.....

DEPTH	%	DESCRIPTION
1720m-1725m	80%	Calcisiltite - As above.
	10%	Marl - soft, light grey, very soft.
	10%	Forams - planktonic and coiled benthonics.
1725m-1730m	90%	Calcisiltite - As above.
	Trace	Marl.
	10%	Forams.
1730m-1735m	90%	Calcisiltite - As above.
	Trace	Marl - As above.
	10%	Forams.
1735m-1740m	90%	Calcisiltite - As above.
	Trace	Calcarenite - light grey brown, silty, some black grains, poorly sorted, some forams.
	10%	Forams - As above.
1740m-1745m	100%	Calcisiltite - lighter grey, as above.
	Trace	Forams - mainly planktonic and Nodosonids.
1745m-1750m	90%	Calcisiltite - As above.
	Trace	Marl - As above.
	Trace	Forams - As above.
1750m-1755m	100%	Calcisiltite - light to medium grey, forams, trace pyrite, firm.
	Trace	Forams - planktonic.
1755m-1760m	100%	Calcisilite - As above.
	Trace	Marl - light grey, very soft, sticky, forams.
	Trace	Forams - As above.
1760m-1765m	90%	Calcisiltite - As above.
	10%	Marl - As above. Trace forams.
1765m-1770m	70%	Calcisiltite - As above.
	30%	Calcarenite - light grey, silty, some forams, very fine to fine, no porosity.
	Trace	Forams
1770m-1775m	90%	Calcisiltite - As above.
	10%	Calcarenite - As above.
	Trace	Forams

18/.....

LITHOLOGICAL DESCRIPTIONS L.G. ELLIOTT

1/3/79

THREADFIN-1

DEPTH	%	DESCRIPTION
1775m-1780m	60%	Calcisiltite - As above.
	40%	Marl - As above.
	Trace	Forams - As above.
1780m-1785m	90%	Calcisiltite - As above.
	10%	Marl
1785m-1790m	90%	Calcisiltite - As above.
	10%	Marl - As above.
	Trace	Forams, Calcarenite.
1790m-1795m	100%	Calcisiltite
	Trace	Forams, Marl, Calcisiltite
1795m-1800m	100%	Calcisiltite - light to medium grey, sandy, some pyrite, numerous forams, firm, rare carbonaceous flakes.
	Trace	Forams
1800m-1805m	60%	Calcisiltite - As above.
	40%	Marl - As above.
	Trace	Forams.
1805m-1810m	90%	Calcisiltite - As above.
	10%	Marl - As above.
	Trace	Forams
1810m-1815m	100%	Calcisiltite - As above.
	Trace	Marl
	Trace	Forams
1815m-1820m	100%	Calcisiltite - As above
	Trace	Forams
1820m-1825m	100%	Calcisiltite - As above, more pyritic.
	Trace	Forams
1825m-1830m	100%	Calcisiltite - As above.
	Trace	Marl
	Trace	Forams

19/.....

DEPTH	%	DESCRIPTION
1830m-1835m	90%	Calcisiltite - As above.
	10%	Marl - As above.
	Trace	Fossils
1835m-1840m	100%	Calcisiltite
	Trace	Forams
1840m-1845m	100%	Calcisiltite - light to medium grey, sandy, trace pyrite and carbonaceous material, numerous forams, planktonics and benthonics.
	Trace	Marl - light grey, soft.
	Trace	Forams.
1845m-1850m	100%	Calcisiltite - As above, grading to calcarenite.
	Trace	Marl - As above.
	Trace	Forams
1850m-1855m	100%	Calcisiltite - As above.
	Trace	Forams
1855m-1860m	100%	Calcisiltite - As above.
	Trace	Forams
1860m-1865m	100%	Calcisiltite - As above.
	Trace	Forams
1865m-1870m	100%	Calcisiltite - As above.
	Trace	Forams
	Trace	Marl - as above.
1870m-1875m	100%	Calcisiltite - As above, firm to soft.
	Trace	Marl
	Trace	Forams
1875m-1880	100%	Calcisiltite - As above.
	Trace	Forams.
1880m-1885m	90%	Calcisiltite - As above.
	Trace	Marl - As above.
	Trace	Forams
1885m-1890m	100%	Calcisiltite - As above.
	Trace	Forams

20/.....

LITHOLOGICAL DESCRIPTIONS L.G. ELLIOTT

1/3/79

THREADFIN-1

DEPTH	%	DESCRIPTION
1890m-1895m	90%	Calcisiltite - light to medium grey, sandy, becoming slightly fissile, grading to calcarenite, pyritic, numerous forams, planktonics and benthonics.
	10%	Calcarenite - fine to very fine, moderate sorting, no porosity.
1895m-1900m	80%	Calcisiltite - As above.
	10%	Calcarenite - As above.
	10%	Marl - light grey, soft.
	Trace	Forams
1900m-1905m	80%	Calcisiltite
	10%	Calcarenite
	10%	Marl
	Trace	Forams
1905m-1910m	80%	Calcisiltite
	10%	Calcarenite
	10%	Marl
	Trace	Forams
1910m-1915m	100%	Calcisiltite
	Trace	Forams
1915m-1920m	100%	Calcisiltite
	Trace	Forams
	Trace	Marl
	Trace	Calcarenite
	Trace	Calcareous Mudstone - medium grey, trace glauconite, trace pyrite, some forams.
1920m-1925m	80%	Calcisiltite
	20%	Calcarenite
	Trace	Marl
	Trace	Fossils
1925m-1930m	90%	Calcisiltite - light to medium grey, firm to soft, sandy, pyritic, forams numerous, pyritic.
	10%	Calcarenite - light grey, fine to very fine, moderate sorting, forams numerous.
	Trace	Forams
	Trace	Marl - light grey, soft.

21/.....

LITHOLOGICAL DESCRIPTIONS — L.G. ELLIOTT

THREADFIN-1 — 1/3/79

DEPTH	%	DESCRIPTION
		PULLED OUT OF HOLE TO CHANGE BIT.
		2/3/79
1930m-1935m	100%	Calcisiltite - As above.
	Trace	Forams
1935m-1940m	100%	Calcisiltite - As above.
	Trace	Forams
1940m-1945m	100%	Calcisiltite - As above.
	Trace	Forams
	Trace	Calcarenite
	Trace	Marl
1945m-1950m	100%	Calcisiltite
	Trace	Forams
1950m-1955m	100%	Calcisiltite - As above, trace glauconite.
	Trace	Marl
	Trace	Forams
1955m-1960m	100%	Calcisiltite - As above, medium to dark grey.
	Trace	Forams
1960m-1965m	100%	Calcisiltite
	Trace	Forams
1965m-1970m	80%	Calcisiltite - As above.
	20%	Calcareous Mudstone - dark to medium grey, some forams, firm.
	Trace	Forams
1970m-1975m	100%	Calcisiltite - medium to dark grey, firm to soft, trace pyrite, forams becoming rarer.
	Trace	Marl - light grey, soft.
	Trace	Forams
1975m-1980m	100%	Calcisiltite - As above.
	Trace	Marl, Forams
1980m-1985m	100%	Calcisiltite - As above.
1985m-1990m	100%	Calcisiltite - As above, becoming more fissile.
1990m-1995m	100%	Calcisiltite - As above.
	Trace	Forams

22/.....

DEPTH	%	DESCRIPTION
1995m-2000m	100%	Calcisiltite - As above.
		Trace Marl - As above.
2000m-2005m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - dark grey, fissile, some forams, moderately firm, silty.
2005m-2010m	100%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
2010m-2015m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
		Trace Forams.
2015m-2020m	100%	Calcisiltite - As above.
		Trace Forams.
2020m-2025m	100%	Calcisiltite - As above.
		Trace Marl.
		Trace Calcareous Shale.
2025m-2030m	90%	Calcisiltite - As above.
	10%	Marl - As above.
2030m-2035m	100%	Calcisiltite - medium dark grey, trace glauconite and pyrite, firm to soft, some partly fissile, some forams grades to poor calcarenite at times.
2035m-2040m	100%	Calcisiltite - As above.
2040m-2045m	100%	Calcisiltite - As above.
2045m-2050m	100%	Calcisiltite - As above.
		Trace Forams.
2050m-2055m	100%	Calcisiltite - As above.
2055m-2060m	100%	Calcisiltite - As above.
2060m-2065m	100%	Calcisiltite - As above.
2065m-2070m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - medium dark grey, fissile, silty, some forams.
2070m-2075m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.

23/.....

DEPTH	%	DESCRIPTION
2075m-2080m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above, some glauconite.
2080m-2085m	70%	Calcisiltite - As above.
	30%	Calcareous Shale - As above, some slightly greenish.
2085m-2090m	70%	Calcisiltite - As above.
	30%	Calcareous Shale - As above.
2090m-2095m	90%	Calcisiltite - medium dark grey, sandy, trace glauconite and pyrite, some forams.
	10%	Calcareous Shale - medium dark grey, silty, forams.
2095m-2100m	100%	Calcisiltite - As above.
2100m-2105m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
2105m-2110m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
		Trace Marl.
2110m-2115m	80%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
2115m-2120m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
		Trace Marl.
2120m-2125m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
2125m-2130m	70%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
	10%	Marl - As above.
2130m-2135m	90%	Calcisiltite - As above, some large glauconite.
	10%	Calcareous Shale - As above.
2135m-2140m	80%	Calcisiltite - As above.
	20%	Calcareous Shale
2140m-2145m	70%	Calcisiltite - medium dark grey, firm, sandy, forams, traces of large glauconite, pyrite.

24/.....

DEPTH	%	DESCRIPTION
2140m-2145m		Continued/.....
	20%	Calcareous Shale - medium dark grey, silty, forams, some glauconite and pyrite.
	10%	Marl - light grey, very soft.
2145m-2150m	50%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
	30%	Marl - As above.
2150m-2155m	50%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
	30%	Marl - As above.
2155m-2160m	80%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
	10%	Marl - As above.
2160m-2165m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
2165m-2170m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.
		Trace Marl - As above.
2170m-2175m	100%	Calcisiltite - As above.
2175m-2180m	80%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
2180m-2185m	70%	Calcisiltite - As above.
	30%	Calcareous Shale - As above.
2185m-2190m	80%	Calcisiltite - As above.
	20%	Calcareous Shale - As above.
		Trace Marl.
2190m-2195m	70%	Calcisiltite - medium dark grey, forams, trace pyrite, firm.
	30%	Calcareous Shale - medium dark grey, trace pyrite, some glauconite, fissile.
2195m-2200m	90%	Calcisiltite - As above.
	10%	Calcareous Shale - As above.

25/.....

DEPTH	%	DESCRIPTION
2200m-2205m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2205m-2210m	70%	Calcisiltite - As above.
	30%	Calcareous Shale - As above.
2210m-2215m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2215m-2220m	70%	Calcisiltite - As above.
	30%	Calcareous Shale - As above.
2220m-2225m	50%	Calcisiltite - As above.
	50%	Calcareous Shale - As above.
		Trace Marl.
2225m-2230m	50%	Calcisiltite - As above.
	50%	Calcareous Shale - As above.
2230m-2235m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2235m-2240m	50%	Calcisiltite - As above.
	50%	Calcareous Shale - As above, some carbonaceous material.
		Trace Marl.
2240m-2245m	50%	Calcisiltite - medium dark grey, some forams, trace pyrite, firm.
	50%	Calcareous Shale - medium dark grey, silty, fissile, trace pyrite, firm.
2245m-2250m	50%	Calcisiltite - As above.
	50%	Calcareous Shale - As above.
2250m-2255m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2255m-2260m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2260m-2265m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2265m-2270m	60%	Calcareous Shale - As above, some glauconite.

26/.....

DEPTH	%	DESCRIPTION
2265m-2270m		Continued/.....
	40%	Calcisiltite - As above.
2270m-2275m	50%	Calcareous Shale - As above.
	50%	Calcisiltite - As above.
2275m-2280m	50%	Calcareous Shale - As above, some large pyrite.
	50%	Calcisiltite - As above.
2280m-2285m	70%	Calcareous Shale - As above.
	30%	Calcisiltite - As above.
2285m-2290m	50%	Calcareous Shale - As above.
	50%	Calcisiltite - As above.
2290m-2295m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2295m-2300m	70%	Calcareous Shale - medium dark grey, silty, fissile, forams, numerous at times, trace pyrite, firm.
	30%	Calcisiltite - light to dark grey, firm, trace pyrite, forams.
2300m-2305m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2305m-2310m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2310m-2315m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
		Trace Marl.
2315m-2320m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2320m-2325m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2325m-2330m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2330m-2335m.	60%	Calcareous Shale - As above, some glauconite.
	40%	Calcisiltite - As above.

27/.....

DEPTH	%	DESCRIPTION
2335m-2340m	60%	Calcisiltite - As above.
	40%	Calcareous Shale
2340m-2345m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2345m-2350m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2350m-2355m	50%	Calcareous Shale - medium dark grey, fissile, forams, trace pyrite.
	50%	Calcisiltite - light to dark grey, forams, trace pyrite.
2355m-2360m	50%	Calcareous Shale - As above.
	50%	Calcisiltite - As above.
2360m-2365m	60%	Calcisiltite - As above.
	40%	Calcareous Shale - As above.
2365m-2370m	70%	Calcareous Shale - As above.
	30%	Calcisiltite - As above.
2370m-2375m	60%	Calcareous Shale - As above.
	40%	Calcisiltite - As above.
2394m	30%	Sandstone - clear to white to green, some light grey, fine to very coarse, well rounded, very glauconitic, and pyritic, firm to friable, non to moderately calcareous, no fluorescence or cut.
	40%	Calcareous Siltstone - medium to dark grey, glauconite.
	30%	Calcareous Shale - As above.
2395m		
		4/3/79
2400m-2405m	60%	Quartz - loose, clear to white, well rounded, some frosted, medium to very coarse and granule, mostly coarse, some glauconite and pyrite attached to grains.
	40%	Cavings - Calcareous Shale - glauconitic Calcisiltite
2405m-2410m	80%	Quartz - As above.
	20%	Cavings - As above.
		Trace Glauconite and Pyrite.
		Trace Sandstone - green, fine, glauconitic, some pyrite, moderately sorted, friable.

28/.....

DEPTH	%	DESCRIPTION
2410m-2415m	90%	Quartz - As above.
	10%	Cavings - As above.
		Trace Glauconite and Pyrite.
2415m-2420m	90%	Quartz - As above.
	10%	Cavings - As above.
		Trace Glauconite and Pyrite.
2420m-2425m	100%	Quartz - As above.
		Trace Glauconite and Pyrite.
2425m-2430m	100%	Quartz - As above.
		Trace Glauconite and Pyrite.
2430m-2435m	100%	Quartz - As above.
		Trace Glauconite and Pyrite.
2435m-2440m	100%	Quartz - As above.
		Pulled out of hole to change bit at 2444 metres.
2440m-2445m	80%	Cavings - Calcareous Shale Calcisiltite
	20%	Quartz
		Trace Glauconite and Pyrite.
2445m-2450m	40%	Cavings - As above.
	55%	Quartz - loose, medium to granule, mainly coarse, some frosted, well rounded, some pyrite and glauconite attached.
	5%	Sandstone - green, glauconitic, pyritic and quartz, fine to coarse, light green, very fine matrix, non-calcareous, firm, pyrite as cement, glauconite, same size as quartz in pellets.
2450m-2455m	100%	Quartz - As above.
		Trace Sandstone - As above.
		Trace Glauconite and Pyrite.
		Trace cavings.
2455m-2460m	100%	Quartz - As above.
		Trace Glauconite and Pyrite.
2460m-2465m	100%	Quartz - As above, but finer grained, fine to very coarse, mostly medium.
		Trace Glauconite and Pyrite.

29/.....

DEPTH	%	DESCRIPTION
2465m-2470m	100%	Quartz - As above, coarser again. Trace Glauconite and Pyrite.
2470m-2475m	100%	Quartz - As above. Trace Glauconite and Pyrite.
2475m-2480m	100%	Quartz - As above. Trace Glauconite and Pyrite. Trace Siltstone - medium brown, micaceous, carbonaceous, firm to friable, non-calcareous.
2480m-2485m	100%	Quartz - clear to white, loose, medium to granule, mainly coarse, rare pyrite attached, well rounded, some grains frosted. Trace Glauconitic Sandstone - green to white, fine to medium, some pyrite cement, quartz and glauconite about same size, friable, non-calcareous. Trace Pyrite and Glauconite.
2485m-2490m	100%	Quartz - As above. Trace Glauconitic Sandstone - As above, but with green clay matrix. Trace Pyrite and Glauconite.
2490m-2495m	100%	Quartz - As above. Trace Pyrite.
2495m-2500m	100%	Quartz - As above. Trace Pyrite.
2500m-2505m	100%	Quartz - As above. Trace Pyrite and Glauconite.
2505m-2510m	100%	Quartz Trace Sandstone - light grey, fine grades to siltstone ? trace mica, moderately sorted, clayey, friable, carbonaceous.
2510m-2515m	100%	Quartz Trace Sandstone - As above, poorly sorted.
2515m-2520m	100%	Quartz - As above. Trace Sandstone - As above.
2520m-2525m	100%	Quartz Trace Glauconite and Pyrite.

30/.....

LITHOLOGICAL DESCRIPTIONS — L.G. ELLIOTT

THREADFIN-1 — 4/3/79

DEPTH	%	DESCRIPTION
2525m-2530m	100%	Quartz, Sandstone - clear to white, medium to granule, mainly coarse, well rounded, some frosted, more pyrite cemented to the quartz, loose.
		Trace Pyrite.
2530m-2535m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2535m-2540m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2540m-2545m	100%	Quartz - As above, pyrite seems to replace Quartz at times.
		Trace Pyrite and Glauconite.
2545m-2550m	100%	Quartz - As above, more chert present.
		Trace Pyrite and Glauconite.
2550m-2555m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2555m-2560m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2560m-2565m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2565m-2570m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2570m-2575m	100%	Quartz - As above.
		Trace Pyrite.
2575m-2580m	100%	Quartz - As above.
		Trace Pyrite.
2580m-2585m	100%	Quartz - clear to white, loose, medium to granule, mainly coarse, well rounded, some frosted, some pyrite cemented to quartz.
		Trace Pyrite and Glauconite.
2585m-2590m	100%	Quartz - As above.
		Trace Pyrite.
2590m-2595m	100%	Quartz - As above.
		Trace Pyrite.

31/.....

DEPTH	%	DESCRIPTION
2595m-2600m	100%	Quartz - As above.
2600m-2605m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2605m-2610m	100%	Quartz - As above.
		Trace Pyrite and Glauconite.
2610m-2615m	100%	Quartz - As above.
		Trace Siltstone - medium brown, firm, carbonaceous, micaceous, non-calcareous, finely bedded.
		Trace Coal - black, silty earth.
2615m-2620m	90%	Quartz - As above.
	10%	Siltstone - As above.
		Trace Coal - As above.
		Trace Sandstone - fine to medium, pyrite cement, hard.
2620m-2625m	100%	Quartz - As above.
		Trace Coal - As above.
		Trace Siltstone - As above.
2625m-2630m	100%	Quartz
		Trace Pyrite - large lumps of pyrite with ? coal blebs in it, some with Quartz.
		Trace Coal and Siltstone - As above.
2630m-2635m	100%	Quartz - clear to white, loose, well rounded, medium to granule, mainly coarse, some frosted, often pyritic cement attached.
		Trace Pyrite.
2635m-2640m	100%	Quartz
		Trace Pyrite and Glauconite, Sandstone - with green clay matrix.
2640m-2645m	100%	Quartz
		Trace Siltstone - brown grey, very micaceous, carbonaceous, firm to friable.
		Trace Pyrite and Glauconite, Sandstone - As above.
2645m-2650m	100%	Quartz
		Trace Siltstone - As above.
		Trace Sandstone - light grey, fine, friable, very micaceous,

DEPTH	%	DESCRIPTION
2645m-2650m		Continued/.....
		moderate sorting, carbonaceous.
2650m-2655m	100%	Quartz
		Trace Siltstone - As above.
		Trace Sandstone - As above.
		Trace Glauconite and Pyrite, Sandstone - As above.
2655m-2660m	90%	Quartz - As above.
	5%	?Claystone - grey and white, some fine quartz, soft to friable, micaceous, non-calcareous or dolomitic, some micaceous, ?fault fill.
	5%	Sandstone - As above.
		Trace Siltstone - As above.
2660m-2665m	95%	Quartz - As above.
	5%	Pyrite - mainly pure pyrite, some with Quartz and Pyrite.
		Trace Sandstone - As above.
		Trace Siltstone - As above.
		Trace Mudstone - dark grey, numerous small pyrite, crystalline.
2665m-2670m	90%	Quartz - clear to white, loose, medium to granule, mainly coarse, well rounded, pyrite common on grain.
	5%	Pyrite - cement mainly pure sometimes with glauconite or quartz.
		Trace Sandstone - light grey, fine, friable, trace glauconite and pyrite.
		Pulled out of hole to change bit at 2675 metres.
2675m-2680m	80%	Quartz - As above.
	15%	Sandstone - light grey, fine to medium, moderate sorting, micaceous, glauconite, trace pyrite, friable.
	5%	?Claystone - grey to white, friable to brittle, non-calcareous, micaceous, looks like mainly white quartz, burrow infill?
		Trace Pyrite.
2680m-2685m	80%	Quartz - As above, trace glauconite.
	20%	Sandstone - As above, some carbonaceous material, silty, more glauconitic, dark green pellets.

33/.....

LITHOLOGICAL DESCRIPTIONS — L.G. ELLIOTT

THREADFIN-1 — 4/3/79

DEPTH	%	DESCRIPTION
2685m-2690m	100%	Quartz - As above.
		Trace Sandstone - As above.
		Trace Pyrite and Glauconite.
2690m-2695m	90%	Quartz - As above.
	10%	Sandstone - As above, some green glauconite, some chlorite plates, replacing mica.
		Trace ?Claystone - As above, burrow infill.
		Trace Pyrite.
2695m-2700m	100%	Quartz
		Trace Sandstone, Claystone, Pyrite.
2700m-2705m	100%	Quartz - clear to white, loose, medium granule, mainly coarse, well rounded, pyrite common on grains, trace glauconite.
		Trace Sandstone - light grey to brown, fine to medium, friable, micaceous, carbonaceous, silty, trace pyrite.
2705m-2710m	60%	Quartz - As above.
	40%	Sandstone - As above.
		Trace Glauconite, Pyrite.
2710m-2715m	50%	Quartz - As above.
	50%	Sandstone - As above.
		Trace Glauconite, Pyrite.
2715m-2720m	50%	Quartz - As above.
	50%	Sandstone - As above, some glauconite and chlorite.
2720m-2725m	90%	Quartz - As above.
	10%	Sandstone - As above.
2725m-2730m	80%	Quartz - As above, glauconite.
	20%	Sandstone - As above, glauconite.
2730m-2735m	60%	Quartz - As above.
	40%	Sandstone - As above.
		TOTAL DEPTH: 2735 metres.

APPENDIX 2

APPENDIX 2

SIDEWALL CORE DESCRIPTIONS

PAGE 1 OF 6

ATT 81 REC 78

DATE 6/3/79

SWC RUN NO 1

IES RUN NO 2

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

WELL THREADFIN-1

GEOLOGIST L.G. ELLIOTT

SERVICE CO SCHLUMBERGER

NO. 1a	DEPTH m 1	REC cm 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	2731	2	SAND-STONE	mica, glauconite, carbonaceous silty pyrite		grey to brown very dark grey	friable	fine to medium	poor	sr	20%												
2	2723	1½	SAND-STONE	mica, silty, carbonaceous	N	dark grey	friable	fine	poor	sa	30%												
3	2707	2	SAND-STONE	very micaceous, carbonaceous, silty, glauconite	N	medium to dark grey	friable	fine	poor	sa	30%												
4	2678	2	SAND-STONE	glauconite, mica, carbonaceous, silty	N	medium grey	friable	fine	poor	sr	30%												
5	2653	1½	SAND-STONE	carbonaceous, mica, glauconite	N	medium grey	friable	fine to medium	fair	sr	20%												
6	2628	2	SAND-STONE	mica	N	medium grey	friable	fine to very coarse	very poor	sr-r	10%												
7	2616	2	SHALE	mica, carbonaceous	N	black to brown	firm																
8	2600	2	SAND-STONE	mica, carbonaceous, glauconite, silty	N	medium grey	firm to friable	very fine to granular	very poor	sa-wr	10%												Burrowed.
9	2572	1½	SAND-STONE	mica, glauconite, silty, carbonaceous, pyrite	N	medium grey	firm	fine	poor	sa-sr	10%												
10	2555	2	SAND-STONE	glauconite, mica, silty, chlorite, pyrite, carbonaceous	N	medium grey	firm	fine to very coarse	poor	sr	10%												Burrowed.
11	2530	2	SAND-STONE	mica, pyrite	N	medium grey	friable	fine to coarse	poor	r	10%												Burrowed.
12	2509.5	2	SAND-STONE	mica, trace pyrite		medium grey	firm to friable	fine to coarse	poor	r	10%												

FORM R 257 3 72

2/.....

PAGE 2 OF 6

ATT 81 REC 78

DATE 6/3/79

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

IES RUN NO 1 2 SWC RUN NO

SERVICE CO SCHLUMBERGER

GEOLOGIST L.G. ELLIOTT

WELL THREADFIN-1

NO. 1a	DEPTH m 1	REC cm 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
13	2475	NR		NO RETURNS																			
14	2459.5	2	SAND-STONE	mica,pyrite	N	light grey	fri-able	medium to very coarse	fair	r													
15	2432	1½	SAND-STONE	mica,pyrite, glauconite	N	light grey	fri-able	medium to very coarse	fair	r													
16	2430	1½	SAND-STONE	pyrite	N	light grey	fri-able	medium to pebbly	fair	r													
17	2425	1½	SAND-STONE	glauconite, pyrite, mica	N	light grey	fri-able	medium to very coarse	fair	r													
18	2411.5	1½	SAND-STONE	pyrite	N	white	fri-able	medium to gran-ular	fair	r-wr													
19	2407	2	SAND-STONE		N	white	fri-able	medium to coarse	fair	wr													
20	2405	2	SAND-STONE		N	white	fri-able	fine to very coarse	poor	wr													
21	2403	1½	SAND-STONE		N	white	fri-able	fine to coarse	fair	r													
22	2401	2	SAND-STONE	mica	N	light grey	fri-able	fine to gran-ular	poor	r													
23	2399	2½	SAND-STONE		N	white	fri-able	medium to very coarse	fair	r													
24	2398	1½	SAND-STONE	mica, glauconite	N	white	fri-able	medium to very coarse	fair	r													
25	2397	1½	SAND-STONE	pyrite, rutile	N	white	fri-able	medium to very coarse	fair	r													
26	2395	2	SAND-STONE	glauconite, mica,quartz, trace pyrite	N	green to black	firm	fine to coarse	poor	r	10%												Glauconite pellets coarse quartz, fine sand infill, 80% glauconite.
27	2393	3	CALCI-$ILTITE	forams, glauconite	Mod	medium grey	soft																

FORM B 257 3 72

3/.....

PAGE 3 OF 6

ATT 81 REC 78

DATE 6/3/79

SWC RUN NO 1

IES RUN NO 2

SERVICE CO SCHLUMBERGER

GEOLOGIST L.G. ELLIOTT

WELL THREADFIN-1

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

NO. 1a	DEPTH m 1	REC cm 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
28	2391	4	CALCI-SIL-TITE	forams	Mod	medium dark grey	firm																
29	2389	3½	CALCI-SIL-TITE	mica	V	medium dark grey	firm																
30	2387	NR		NO RETURNS																			
31	2385	3	CALCI-SIL-TITE	mica, forams	V	medium dark grey	firm																
32	2383	3	CALCI-SIL-TITE	mica, forams, glauconite	V	medium to dark grey	firm																
33	2381	4	SHALE	calcareous forams	V	medium to dark grey	firm																
34	2379	4	SHALE	calcareous forams	V	medium to dark grey	firm																
35	2377	3½	SHALE	calcareous	V	medium to dark grey	firm																
36	2375	4	SHALE	calcareous, mica	V	medium to dark grey	firm																
37	2373	3	CALCI-SIL-TITE		V	medium to dark grey	firm																
38	2371	4	SHALE	calcareous, mica	V	medium to dark grey	firm																
39	2369	4	SHALE	pyrite, calcareous	V	medium to dark grey	firm																
40	2367	3	SHALE	pyrite, calcareous	V	medium to dark grey	firm																
41	2350	2	CALCI-SIL-TITE	pyrite, glauconite	V	medium grey	firm																
42	2330	3	SHALE	calcareous, pyrite	V	medium grey	firm																

FORM R 257 3 72

4/.....

PAGE 4 OF 6

ATT 81 REC 78

DATE 6/3/79

1

SWC RUN NO

2

IES RUN NO

SERVICE CO SCHLUMBERGER

GEOLOGIST L.G. ELLIOTT

WELL THREADFIN-1

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

NO. 1a	DEPTH m 1	REC cm 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
43	2310	3	CALCI-SIL-TITE	forams, pyrite, mica	V	medium grey	soft																
44	2290	3	CALCI-SIL-TITE	forams, pyrite, mica	V	medium to dark grey	firm																
45	2270	3½	SHALE	calcareous, mica	V	dark grey	firm																
46	2250	3½	SHALE	calcareous, mica	V	dark grey	firm																
47	2230	2	MARL	mica	V	medium grey	soft																
48	2210	4	SHALE	calcareous, mica	V	medium to dark grey	firm																
49	2190	3½	SHALE	calcareous, mica, pyrite	V	medium to dark grey	firm																
50	2170	3	SHALE	calcareous, mica, pyrite	V	medium grey	firm																
51	2150	4	SHALE	calcareous, mica	V	dark grey	firm																
52	2130	3	CALCI-SIL-TITE	mica, pyrite	V	medium grey	firm																
53	2110	4	CALCI-SIL-TITE	mica, pyrite	V	medium grey	firm																
54	2090	3	CALCI-SIL-TITE	mica, pyrite	V	medium grey	firm																
55	2070	4	SHALE	calcareous, mica	V	dark grey	firm																
56	2055	3½	CALCI-SIL-TITE	mica, pyrite	V	dark grey	firm																
57	2050	1½	CALCI-SIL-TITE	mica	V	medium grey	firm																
58	2045	2	SHALE	calcareous, carbonaceous, micaceous, pyrite	V	medium grey	firm																
59	2040	1½	SHALE	calcareous, micaceous, pyrite	V	medium grey	firm																

FORM R 257 3.72

5/.....

PAGE 5 OF 6

ATT 81 REC 78

DATE 6/3/79

1 SWC RUN NO

2 IES RUN NO

ESSO AUSTRALIA LTD.

SIDEWALL CORE DESCRIPTIONS

WELL THREADFIN-1

GEOLOGIST L.G. ELLIOTT

SERVICE CO SCHLUMBERGER

NO. 1a	DEPTH m 1	REC cm 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
60	2035	2	CALCI-SIL-TITE	forams	V	medium grey	hard																
61	1980	2	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
62	1925	1½	CALCI-SIL-TITE	forams	V	medium grey	firm																
63	1870	4	CALCI-LUTITE	dolomite, pyrite	V	medium grey	very hard																
64	1815	3	CALCI-LUTITE	dolomite, pyrite	V	medium grey	very hard																
65	1760	3	CALCI-LUTITE	dolomite, pyrite	V	medium grey	very hard																
66	1705	2½	CALCI-LUTITE	dolomite, mica	V	medium grey	very hard																
67	1650	1½	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
68	1595	1½	MARL	pyrite, forams	V	medium grey	soft																
69	1540	1	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
70	1485	1½	CALCI-SIL-TITE	pyrite, glauconite	V	medium grey	firm																
71	1430	1	CALCI-SIL-TITE	pyrite, forams	V	medium grey	firm																
72	1375	1	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
73	1320	1	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
74	1265	1	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
75	1210	1½	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
76	1155	3	CALCI-SIL-TITE	pyrite, dolomite	V	medium grey	firm																

FORM R 257 3 72

6/.....

ESSO AUSTRALIA LTD.
SIDEWALL CORE DESCRIPTIONS

WELL THREADFIN-1 PAGE 6 OF 6
GEOLOGIST L.G. ELLIOTT ATT 81 REC 78
SERVICE CO SCHLUMBERGER IES RUN NO 2 SWC RUN NO 1 DATE 6/3/79

NO. 1a	DEPTH m 1	REC cm 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	1100	2	CALCI-SIL-TITE	pyrite	V	medium grey	firm																
78	1045	3	CALCI-LUTITE	dolomite, pyrite	V	medium grey	very hard																
79	990	2½	CALCI-LUTITE	dolomite, pyrite	V	medium grey	hard																
80	935	3½	CALCI-LUTITE	dolomite, pyrite	V	medium grey	hard																
81	875	3	CALCI-SIL-TITE	pyrite, mica	V	medium grey	firm																

FORM R 257 3 72

APPENDIX 3

APPENDIX 3

PALYNOLOGICAL REPORT

PALYNOLOGICAL ANALYSIS OF THREADFIN-1,

GIPPSLAND BASIN

by

H.E. Stacy

Esso Australia Ltd

Paleontology Report 1979/20

June 7, 1979

INTRODUCTION

Twenty-four sidewall cores from Threadfin-1 were examined for palynomorphs. In general, the fossil recovery was poor and the diversity of the assemblages was low. Almost half of the samples were barren of organic remains.

Zones and environment/lithological subdivision for the basal part of the Lakes Entrance Formation and Latrobe Group is summarized below. All samples examined are listed in Table-1, while individual fossil occurrence is given on the accompanying distribution charts.

SUMMARY

UNIT/FACES	ZONE	DEPTH
LAKES ENTRANCE FORMATION Marine Marl	*P. tuberculatus*	2385-2395m
LATROBE GROUP		? 2525m
"Shore-face Sand Facies"	Indeterminate	2395-2325m
"Deltaic facies"	Upper *L. balmei*	2530-2731m
		T.D. 2735m

GEOLOGICAL COMMENTS

1. All samples that were processed from the massive sand section, between 2395m and 2525m were barren of any recognizable fossils. The lithology, as shown by the sidewall cores, is a coarse white sand with practically no organic material. Similar barren sand intervals occur at the top of the Latrobe Group in the exploration wells in the Mackerel Field (Partridge 1972a, b, Stover 1973) and in Kingfish-6 (Partridge 1975). The detailed studies of the geology of the Mackerel and Kingfish Fields by the production geology section suggests that these sands are most likely latest Paleocene or earliest Eocene (Lower *M. diversus* Zone) in age. A similar age is suggested for the barren interval in Threadfin-1. A barren interval is also found at the top of Latrobe in the adjacent Opah-1, but in this case the lithology is a glauconitic sandstone considered to represent the Gurnard Formation of Middle to Late Eocene age. Additional evidence for this age placement in Opah-1 is found in the identification of *P. asperpolus* Zone fossils in the underlying sediments, between the barren zone and the first occurrence of *L. balmei*.

.../2

2. Below 2530m, the Paleocene Marker, Lygistepollenites balmei, occurred in all but one sample. Because fossil recovery from this part of the section was not particularly good, the lack of accessory species restricted to the Upper part of the L. balmei Zone below a depth of 2628m means that this interval cannot be assigned with confidence to either the Upper or Lower subzone.

DISCUSSION OF ZONES

Upper Lygistepollenites balmei Zone: 2530 to 2628 to ?2731 metres.

The top of this zone is placed at the highest occurrence of L. balmei. The floras found between 2530m and 2616m also contain accessory species, such as Protaecidites annularis and Cyathidites gigantus, which do not extend below the Upper part of the L. balmei Zone. None of these restricting auxillary species are found in the samples below 2628m.

"Latrobe? Sand Facies": 2395 to 2425 metres.

Since all samples from this section are completely barren fossils, the designation "Latrobe" is based entirely on the position of these sands between sediments containing P. tuberculatus flora and those with recognizable L. balmei Zone fossils.

Proteacidites tuberculatus Zone: 2385 to 2393 metres.

Both Post-Eocene dinoflagellates and spores identify these sediments as coming from the P. tuberculatus Zone.

REFERENCES

PARTRIDGE, A.D., 1972a, Palynology of Mackerel-2, Gippsland Basin. Esso Aust. Ltd., Palaeo. Rept: 1972/7

PARTRIDGE, A.D., 1972b, Palynology of Mackerel-3, Gippsland Basin. Esso Aust. Ltd., Palaeo. Rept: 1972/96.

PARTRIDGE, A.D., 1975, Palynology Report on Kingfish-6, Gippsland Basin. Esso Aust. Ltd., Palaeo. Rept: 1975/3.

PARTRIDGE, A.D., 1977, Palynological Analysis Opah-1, Gippsland Basin. Esso Aust. Ltd., Palaeo. Rept: 1977/15.

STOVER, L.E., 1973, Palynological Determinations for Mackerel-4 Well, Gippsland Basin. ESOA Palaeo. Rept: 1973/05.

TABLE 7

SUMMARY OF PALEONOLOGICAL ANALYSIS, THREADFIN-1, GIPPSLAND BASIN

SAMPLE	DEPTH (m)	DEPTH (ft)	ZONE	AGE	CONFIDENCE RATING	YIELD	DIVERSITY	COMMENTS
SWC 31	2385	7825	*P. tuberculatus*	Oligo-Miocene	2	Very Low	Very Poor	Single *P. simplex* in kerogen slides.
SWC 29	2389	7838	*P. tuberculatus*	Oligo-Miocene	0	Fair	Poor	*C. annulatus* and Post-Eocene dinoflagellates.
SWC 28	2391	7844.5	*P. tuberculatus*	Oligo-Miocene	0	Good	Moderate	
SWC 27	2393	7851	*P. tuberculatus*	Oligo-Miocene	0	Low	Poor	
SWC 26	2395	7857.5	Indeterminate	-	-	-	-	Barren
SWC 25	2397	7864	Indeterminate	-	-	-	-	Barren
SWC 24	2398	7867.5	Indeterminate	-	-	-	-	Barren
SWC 23	2399	7871	Indeterminate	-	-	-	-	Barren
SWC 22	2401	7877	Indeterminate	-	-	-	-	Barren
SWC 21	2403	7884	Indeterminate	-	-	-	-	Barren
SWC 20	2405	7890.5	Indeterminate	-	-	-	-	Barren
SWC 19	2407	7897	Indeterminate	-	-	-	-	Barren
SWC 18	2411.5	7912	Indeterminate	-	-	-	-	Barren
SWC 17	2425	7956	Indeterminate	-	-	-	-	Barren
SWC 11	2530	8300.5	Upper *L. balmei*	Paleocene	1	Low	Poor	
SWC 10	2555	8382.5	Indeterminate	-	-	-	-	Barren
SWC 9	2572	8338	Upper *L. balmei*	Paleocene	1	Fair	Poor	
SWC 8	2600	8530	Upper *L. balmei*	Paleocene	1	Fair	Poor	
SWC 7	2616	8582.6	Upper *L. balmei*	Paleocene	1	Low	Poor	
SWC 6	2628	8622	Upper? *L. balmei*	Paleocene	2	Low	Poor	
SWC 5	2653	8704	Upper? *L. balmei*	Paleocene	2	Low	Poor	
SWC 3	2707	8881	Upper? *L. balmei*	Paleocene	2	Low	Poor	
SWC 2	2723	8934	Upper? *L. balmei*	Paleocene	2	Low	Poor	
SWC 1	2731	8960	Upper? *L. balmei*	Paleocene	2	Low	Poor	

PALYNOLOGY DATA SHEET

BASIN: GIPPSLAND ELEVATION: KB: 25m GL: 74m

WELL NAME: THREADFIN-1 TOTAL DEPTH: 2735m

AGE	PALYNOLOGICAL ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	*T. pleistocenicus*										
	M. lipsis										
	C. bifurcatus										
	T. bellus										
PALEOGENE	*P. tuberculatus*	2385	2	2389	0		2393	0			
	Upper *N. asperus*										
	Mid *N. asperus*										
	Lower *N. asperus*										
	P. asperopolus										
	Upper *M. diversus*										
	Mid *M. diversus*										
	Lower *M. diversus*										
	Upper *L. balmei*	2530	1				2731	2	2628	1	
	Lower *L. balmei*										
LATE CRETACEOUS	*T. longus*										
	T. lilliei										
	N. senectus										
	U. *T. pachyexinus*										
	L. *T. pachyexinus*										
	C. triplex										
	A. distocarinatus										
EARLY CRET.	*C. paradoxus*										
	C. striatus										
	F. asymmetricus										
	F. wonthaggiensis										
	C. australiensis										
PRE-CRETACEOUS											

COMMENTS: Sand Section between 2395m and 2425m is barren of fossils.

CONFIDENCE RATING:

0: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.

1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.

2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.

4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

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

DATA RECORDED BY: H.E. STACY DATE: JUNE 7, 1979

DATA REVISED BY: _____ DATE: _____

Well Name THREADFIN-1 Basin GIPPSLAND Sheet No. 1 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	2385	2389	2391	2393	2395	2397	2398	2399	2401	2403	2405	2407	2411.5	2425	2530	2555	2572	2600	2616	2628	2653	2707	2723	2731						
A. qualumis																														
A. acutulus																														
A. luteoides																														
A. oculatus																														
A. sectus																														
A. triplaxis																														
A. obscurus																			/			/								
B. disconformis																		/	/			/								
B. arcuatus																		/												
B. elongatus																							/							
B. mutabilis																														
B. otwayensis																														
B. elegansiformis																														
B. trigonalis																														
B. verrucosus																														
B. bombaxoides																														
B. emaciatus																														
C. bullatus																														
C. heskermensis																														
C. horrendus																														
C. meleosus																														
C. apiculatus																														
C. leptos																														
C. striatus																														
C. vanraadshooveni																														
C. orthoteichus/major																														
C. annulatus		/	/	/																										
C. gigantis															/															
C. splendens															/			/	/											
D. australiensis			/															/	/											
D. granulatus			/															/	/		/	/	/	/						
D. tuberculatus																														
D. delicatus																														
D. semilunatus																														
E. notensis																														
E. crassiexinus																														
F. balteus																														
F. crater																														
F. lucunosus																														
F. palaequetrus																														
G. edwardsii																					/			/						
G. rudata																		/			/	/	/							
G. divaricatus																														
G. gestus																														
G. catathus																														
G. cranwellae																														
G. wahooensis																														
G. bassensis																														
G. nebulosus																														
H. harrisii		/	/	/					/						/			/	/	/										
H. astrus																														
H. elliottii																			cf.											
I. anguloclavatus																			/											
I. antipodus																			/											
I. notabilis																														
I. gremius																														
I. irregularis			/	/																										
J. peiratus																														
K. waterbolkii																														
L. amplus																														
L. crassus																														
L. ohaiensis																														
L. bainii																														
L. lanceolatus																														
L. balmei															/		/	/	/	/	/	/	/	/						
L. florinii																				/		/								
M. diversus																														
M. duratus																														
M. grandis																														
M. perimagnus																														

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

Well Name THREADFIN-1 Basin GIPPSLAND Sheet No. 2 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	2385	2389	2391	2393	2395	2397	2398	2399	2401	2403	2405	2407	2411.5	2425	2530	2555	2572	2600	2616	2628	2653	2707	2723	2731							
M. subtilis															/																
M. ornamentalis																															
M. hypolaenoides			/																												
M. homeopunctatus																															
M. parvus/mesonesus																															
M. tenuis																															
M. verrucosus																															
M. australis																															
N. asperus																															
N. asperoides																															
N. brachyspinulosus		/	/	/																											
N. deminutus																															
N. emarcidus/heterus				/																											
N. endurus																															
N. falcatus		/	/	/																											
N. flemingii			/												/		/	/	/	/											
N. goniatus																															
N. senectus																															
N. vansteenisii																															
O. sentosa																															
P. ochesis																															
P. catastus																															
P. demarcatus																															
P. magnus																															
P. polyoratus															/		/														
P. vesicus																															
P. densus																															
P. velosus																															
P. morganii/jubatus																															
P. mawsonii															/		/	/	/	/	/	/	/								
P. reticulosaccatus																															
P. verrucosus																															
P. crescentis																															
P. esobalteus																															
P. langstonii																															
P. reticulatus																															
P. simplex																															
P. varus																															
P. adenanthoides (Prot.)															/			/			/										
P. alveolatus																															
P. amplosexinus																															
P. angulatus																		cf.													
P. annularis																		/	/			/									
P. asperopolus																															
P. biornatus																															
P. clarus																															
P. cleinei																															
P. confragosus																															
P. crassis																															
P. delicatus																															
P. formosus																															
P. grandis																															
P. grevillaensis																															
P. incurvatus																															
P. intricatus																															
P. kopiensis																															
P. lapis																															
P. latrobensis																															
P. leightonii																															
P. obesolabrus																															
P. obscurus																															
P. ornatus																															
P. otwayensis																															
P. pachypolus																															
P. palisadus																															
P. parvus																															
P. plemmelus																															
P. prodigus																															
P. pseudomoides																			/	/											
P. recavus																															

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

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

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	2385	2389	2391	2393	2395	2397	2398	2399	2401	2403	2405	2407	2411.5	2425	2530	2555	2572	2600	2616	2628	2653	2707	2723	2731						
P. rectomarginis																														
P. reflexus																														
P. reticulatus																														
P. reticuloconcavus																														
P. reticuloscabratus																														
P. rugulatus																														
P. scitus																														
P. stipplatus																														
P. tenuiexinus																														
P. truncatus																														
P. tuberculatus																														
P. tuberculiformis																														
P. tuberculotumulatus																														
P. xestoformis (Prot.)																														
Q. brossus																														
R. boxatus																														
R. stellatus																														
R. mallatus																														
R. trophus																														
S. cainozoicus																														
S. rotundus																														
S. digitatoides																														
S. marlinensis																														
S. rarus																														
S. meridianus															/							/		/						
S. prominatus																														
S. uvatus																														
S. punctatus																														
S. regium																														
T. multistrixus (CP4)																			/											
T. textus																														
T. verrucosus																														
T. securus																														
T. confessus (C3)																														
T. gillii																														
T. incisus																														
T. longus																														
T. phillipsii																						/								
T. renmarkensis																														
T. sabulosus																														
T. simatus																														
T. thomasii																														
T. waiparaensis																														
T. adelaidensis (CP3)																														
T. angurium																														
T. delicatus																														
T. geraniodes																														
T. leuros			/																											
T. lilliei																														
T. marginatus																														
T. moultonii																														
T. paenestriatus																														
T. retequetrus																														
T. scabratus																														
T. sphaerica																														
T. magnificus (P3)																														
T. spinosus																														
T. ambiguus																														
T. chnosus																														
T. helosus																														
T. scabratus																														
T. sectilis																														
V. attinatus																														
V. cristatus																														
V. kopukuensis			/																											

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

Well Name THREADFIN-1 Basin GIPPSLAND Sheet No. 4 of 4

SAMPLE TYPE *	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
DEPTHS / PALYNOMORPHS	2385	2389	2391	2393	2395	2397	2398	2399	2401	2403	2405	2407	2411.5	2425	2530	2555	2572	2600	2616	2628	2653	2707	2723	2731						
Protoellipsodinium simplex	/	/	/	/																										
Cleistosphaeridium sp.		/	/	/																		/								
H'kolpoma rigaudae		/	/	/																		/								
Impagidium sp.		/		/																										
Nemat. balcombiana		/	/	/																										
Operc. centrocarpum		/	/	/																										
Spin. ramosus		/	/	/																										
Tectat. scabroellipticus		/	/																											
Dinosph. mamitatus			/																											
Polysph. pseudocolligerium			/																											
Achom. alcicornu			/																											
Deflandria sp.				/																			/							
Paral. indentata														/																
Ging. cf. palacocenicum																	/													
Apect. homomorpha (s.sp)																			/					/						
Systematophora sp.																				/	/	/								
Lejunia sp.																				/										
Corrud. corrugatum																				/										
Alisocysta circumtabulata																					/	/								
Schem. speciosus																						/								
Defl. delineata																						/								
Adnat. reticulense																							/							
Isabel. druggii																							/							
Spinidinium sp.																							/							
Apect. hyperacantha																								/						
Defl. pentaradata																								/						

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

WELL NAME: THREADFIN # 1

DEPTH (FT)	SAMPLE TYPE	PRESER-VATION	DIVERSITY	SPORE/POLLEN ZONE	DINOFLAGELLATE ZONE	CONFIDENCE LEVEL	ENVIRONMENT
2385	SWC 31	Barren	-	-	-	-	-
2389	SWC 29	Fair	Moderate	Indeterminate	Unnamed	-	Open marine
2391	SWC 28	Fair	Moderate	? C. annulata	Unnamed	3	Open marine
2555	SWC 10	Barren	-	-	-	-	-
2572	SWC 9	Fair	Very Low	Lower L. balmei	-	4	Non-marine
2600	SWC 8	Good	Low	Lower L. balmei	-	3	Non-marine
2616	SWC 7	Fair	Low	Lower L. balmei	-	4	Non-marine
2628	SWC 6	Barren	-	-	-	-	-
2707	SWC 3	Fair	Low	Lower L. balmei	-	3	? Non-marine
2723	SWC 2	Good	Moderate	Lower L. balmei	Indeterminate	4	Marginal marine
2731	SWC 1	Good	Moderate	Lower L. balmei	Indeterminate	4	Marginal marine

COMMENTS: SAMPLE AT 2628M APPEARS TO CONTAIN ONLY CONTAMINANTS

OIL and GAS DIVISION - 3 FEB 1983

By W.K. HARRIS
FOR AQUITAINE, PHILLIPS, SHELL

Added by DUDE
1/6/99

APPENDIX 4

APPENDIX 4

LOG ANALYSIS REPORT

THREADFIN NO. 1

QUANTITATIVE LOG EVALUATION

1 SUMMARY OF RESULTS

Interval evaluated 2397m - 2725m

INTERVAL	POROSITY AVE.	Vsh Ave.
2397m - 2470m	.203	.10
2476m - 2507m	.201	.08
2510m - 2550m	.185	.10
2558m - 2596m	.189	.10
2596m - 2612m	.190	.15
2614m - 2616m	.180	.27
2618m - 2621m	.193	.22
2622m - 2627m	.196	.15
2629m - 2636m	.197	.28
2636m - 2650m	.210	.10
2682m - 2706m	.211	.19
2719m - 2721m	.202	.25

All zones are interpreted to be water saturated.

Total thickness of sand with log derived porosity above 15% is 254m (average of 20.0%).

Please consult detailed evaluation sheets for details.

.../2

2. Methods

(a) Porosity was derived from the density log after correction for shale effects.

(b) Vsh was derived from the Gamma Ray and by neutron-density crossplot techniques.

The following shale parameters were used.

GRMIN = 30
GRMAX = 138
Psh = 2.52
Ønsh = .35

(c) Sw was calculated using the "Indonesian" shaly sand equation. The Humble formula was used to calculate F.
Rw was calculated using Resistivity - Porosity crossplot techniques. This resulted in an Rw of 0.06 ohm-m at formation temperature.
R_{ILD} was assumed to be equal to R_T.

3. General Data

(a) Log Availible:

ILD - SFL - BHC SONIC
CNL - FDC - GR

(b) Extrapolated B.H.T = 93°C (200°F) at 2375m

(c) Rmf = .28 at 20°C (.11 @ 88°C)
Rmc = .56 at 20°C (.22 @ 88°C)
Rm = .43 at 20°C (.16 @ 88°C)

H. M. GORDON
20/6/79

APPENDIX 5

APPENDIX 5

VELOCITY SURVEY REPORT

VELOCITY SURVEY

Well ....THREADFIN-1.................

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

INTRODUCTION

Esso personnel ....J. HUGHES...............................

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

Supplied (1) Instruments

(2) Personnel

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

Marine Shooter ..G. ATKINSON....

Dynamite ....

(3) Seismic Souce

Gas Gun

Gas Pressures ....

Oxygen ......90 psi..............

Propane ....50 psi........

(3) Licenced Shooting Boat

name ......VICTORIA TIDE.........

date loaded ....

date released ...5/3/1979........

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...4/3/1979....

boarded (rig).OCEAN ENDEAVOUR.... date...5/3/1979....

date of survey.....5/3/1979......

casing depth.......13-3/8" @ 865m

T.D. when shot.....2735m......... FTD ..2735m.........

water depth........74m...........
K.B. 25m

SURVEY PROCEDURE

Weather: sea ....1m. Swell.............................

rig movement .NIL..........................

rig noise ....Slight.......................

Hydrophones: number ....2...........................

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

position ..one on gas gun and............

..one in moon pool next to riser.

Shot Positioning and Charges:

marker buoys (number ..12.2.................

(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: 2-4...

Well phone positioning:

No. of depths 14

Time: first shot ..... 1628 hours

last shot ..... 1815 hours

rig time ..... 1 hour 20 mins

RESULTS

Quality of results (good 16

(fair 7

(poor 9

(not used ..... -

Comparison of Interval Times with Sonic log

/△/average ..9.15..... microsec/metre

/△/max .19.2..... microsec/metre

CONCLUSION

Reliability of T-D curve ..... Fair .....

COMMENTS

Ran in hole at 1605 hours. No problems were encountered during the survey. The records were generally of fair to good quality and the survey was completed in 1 hour 20 minutes. The tool came out of the hole at 1725 hours.

Shothole information:- Elevation, Distance & Direction from Well

Company: ESSO EXPLORATION AUSTRALIA INC.

Well: THREADFIN # 1

Elevation (Derrick Floor): 25m

Total Depth: 2735m

LOCATION

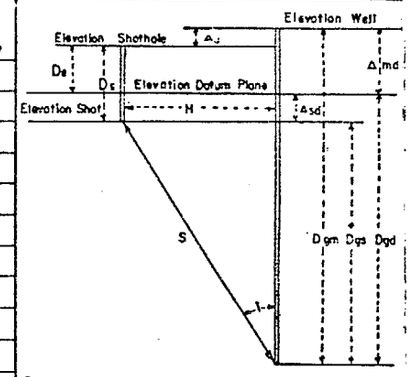
Coordinates: LAT. 38°32'37.71" LONG. 148°15'22.46" DATUM : SEA LEVEL

Section, Township, Range

County

Area or Field: GIPPSLAND BASIN.

Record Number	Shothole Number	Time of Shot	Dgm m	Ds	tus	tr	T Reading	T Polarity	T Grade	Dgs	H m	TAN I	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	Δ Dgd	Δ Tgd	Vi Interval Velocity	Va Average Velocity
31		1814	600				.263	D	G	562.8	41	.0729	.9974	.262	12.2	.008	.270	.270	575				
32		1815	600				.263	D	G						"	"				270	.092	2926	
28		1805	870				.355	D	P						"	"							2127
29		1806	870				.355	D	P	832.8	"	.0492	.9988	.355	"	"	.363	.363	845				
30		1807	870				.355	D	G						"	"							2331
25		1757	1075				.423	D	F						"	"				205	.068	3010	
26		1758	1075				.423	D	G	1037.8	OFFSET	DOES	NOT	.423	"	"	.431	.431	1050				2438
27		1759	1075				.422	D	G			AFFECT	TIME		"	"							
23		1748	1250				.476	D	F	1212.8	"	"	"	.476	"	"	.484	.484	1225	175	.053	3298	2532
24		1749	1250				.476	D	G						"	"							
21		1742	1430				.528	D	G	1392.8	"	"	"	.528	"	"	.536	.536	1405	180	.052	3459	2622
22		1743	1430				.528	D	F						"	"							
19		1736	1600				.579	D	P	1562.8	"	"	"	.579	"	"	.587	.587	1575	170	.051	3331	2684
20		1737	1600				.579	D	G						"	"							
17		1727	1750				.627	D	P	1712.8	"	"	"	.627	"	"	.635	.635	1725	150	.048	3124	2717
18		1728	1750				.627	D	P						"	"							
15		1718	1900				.677	D	G	1862.8	"	"	"	.677	"	"	.685	.685	1875	150	.050	2999	2738
16		1719	1900				.677	D	G						"	"							
13		1707	2046				.722	D	G	2008.8	"	"	"	.722	"	"	.730	.730	2021	146	.045	3243	2769
14		1709	2046				.722	D	G						"	"							
11		1700	2221				.784	D	P	2183.8	"	"	"	.784	"	"	.792	.792	2196	175	.062	2822	2773
12		1701	2221				.784	D	F						"	"							
1		1628	2396				.841	D	F						"	"				175	.056	3124	
2		1629	2396				.840	D	P	2358.8	"	"	"	.840	"	"	.848	.848	2371				2796
3		1630	2396				.840	D	F						"	"							
4		1631	2396				.840	D	G						"	"				104	.029	3585	
9		1651	2500				.869	D	G	2462.8	"	"	"	.869	"	"	.877	.877	2475				2822
10		1652	2500				.869	D	P						"	"							
7		1645	2605				.896	D	P	2567.8	"	"	"	.896	"	"	.904	.904	2580	105	.027	3888	2854
8		1646	2605				.896	D	F						"	"							
5		1639	2732				.928	D	G	2694.8	"	"	"	.928	"	"	.936	.936	2707	127	.032	3968	2892
6		1640	2732				.929	D	G						"	"							



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 Tm Vert. travel time from shot elev. to geophone

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

Dgd = Dgm - Δmd

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

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

Surveyed by: J. HUGHES

Date: 5.03.79

Weathering Data :

Casing Record 20" @ 224.78m K.B.

13.3/8" @ 865m K.B.

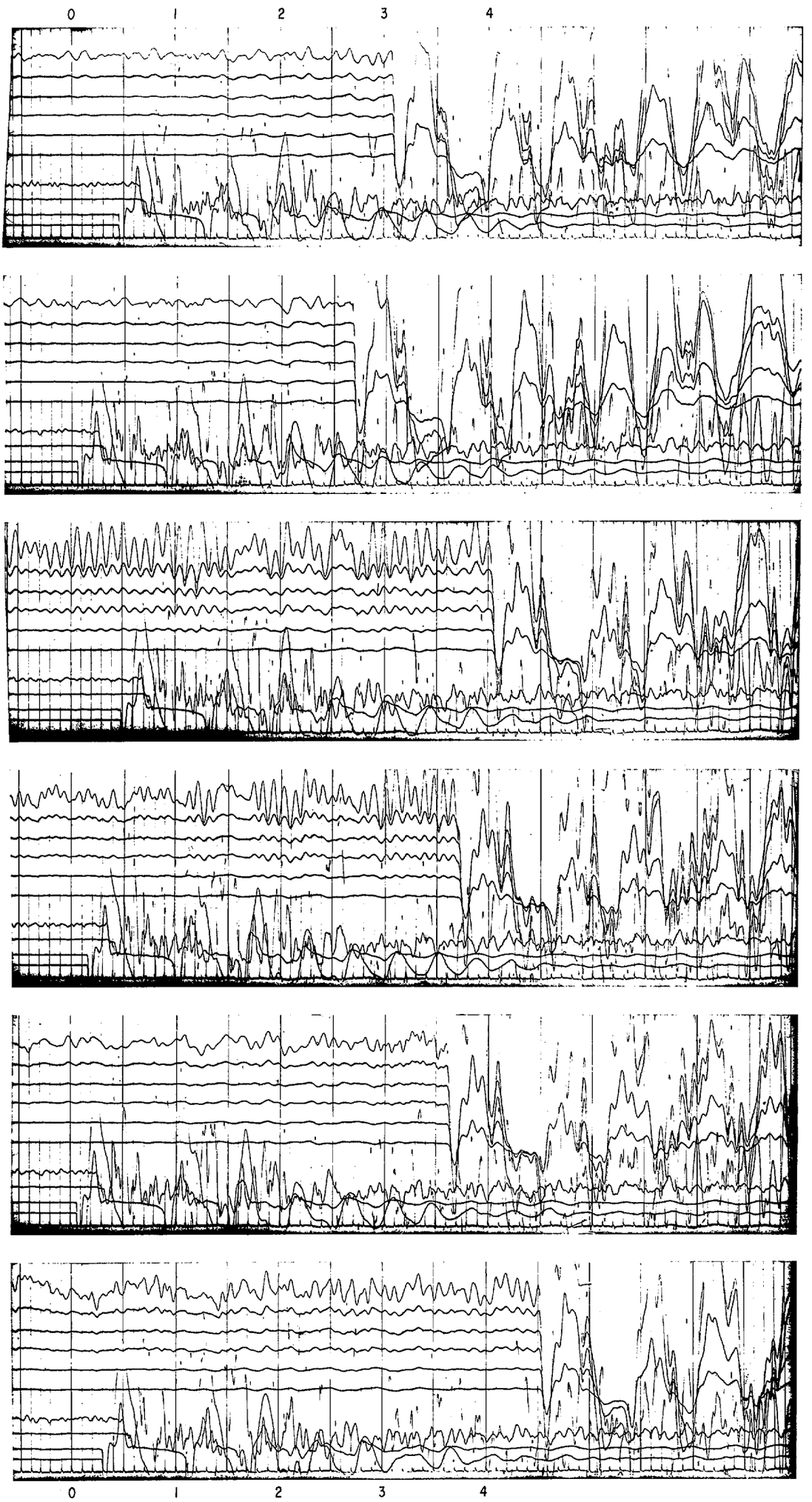
[redacted] THREADFIN-1 VELOCITY SURVEY ERROR CHECK

[redacted] Depth Rel. S.L. [redacted]	Av. Vertical Travel Time (check shots)	Ti Check Shots (sec.)	Ti Sonic Log (sec.)	Δ (Millisecs.) Ti Sonic — Ti Check	Depth Interval (m)	Error (Microsec. per m)
[redacted]575	.262	.092	.091	-1	270	3.7
[redacted]845	.355					
[redacted]845	.355	.068	.066	-2	205	9.8
1050	.423					
1050	.423	.053	.0535	+.5	175	2.9
[redacted]225	.476					
1225	.476	.052	.050	-2	180	11.1
[redacted]405	.528					
[redacted]405	.528	.051	.048	-3	170	17.6
1575	.579					
[redacted]575	.579	.048	.0475	-.5	150	3.3
1725	.627					
1725	.627	.050	.0475	-2.5	150	16.7
[redacted]875	.677					
[redacted]875	.677	.045	.044	-1	146	6.8
2021	.722					
[redacted]021	.722	.062	.059	-3	175	17.1
2196	.784					
2196	.784	.056	.0555	-.5	175	2.9
[redacted]371	.840					
[redacted]371	.840	.029	.027	-2	104	19.2
2475	.869					
[redacted]475	.869	.027	.027	0	105	0
[redacted]580	.896					
2580	.896	.032	.033	+1	127	7.9
[redacted]707	.928					
[redacted]						
[redacted]						
[redacted]						

THREADFIN – 1

WELL VELOCITY RECORD

5 - 3 - 79



Rec. No. 31
600 m K.B.

Rec. No. 32
600 m K.B.

Rec. No. 28
870 m K.B.

Rec. No. 29
870 m K.B.

Rec. No. 30
870 m K.B.

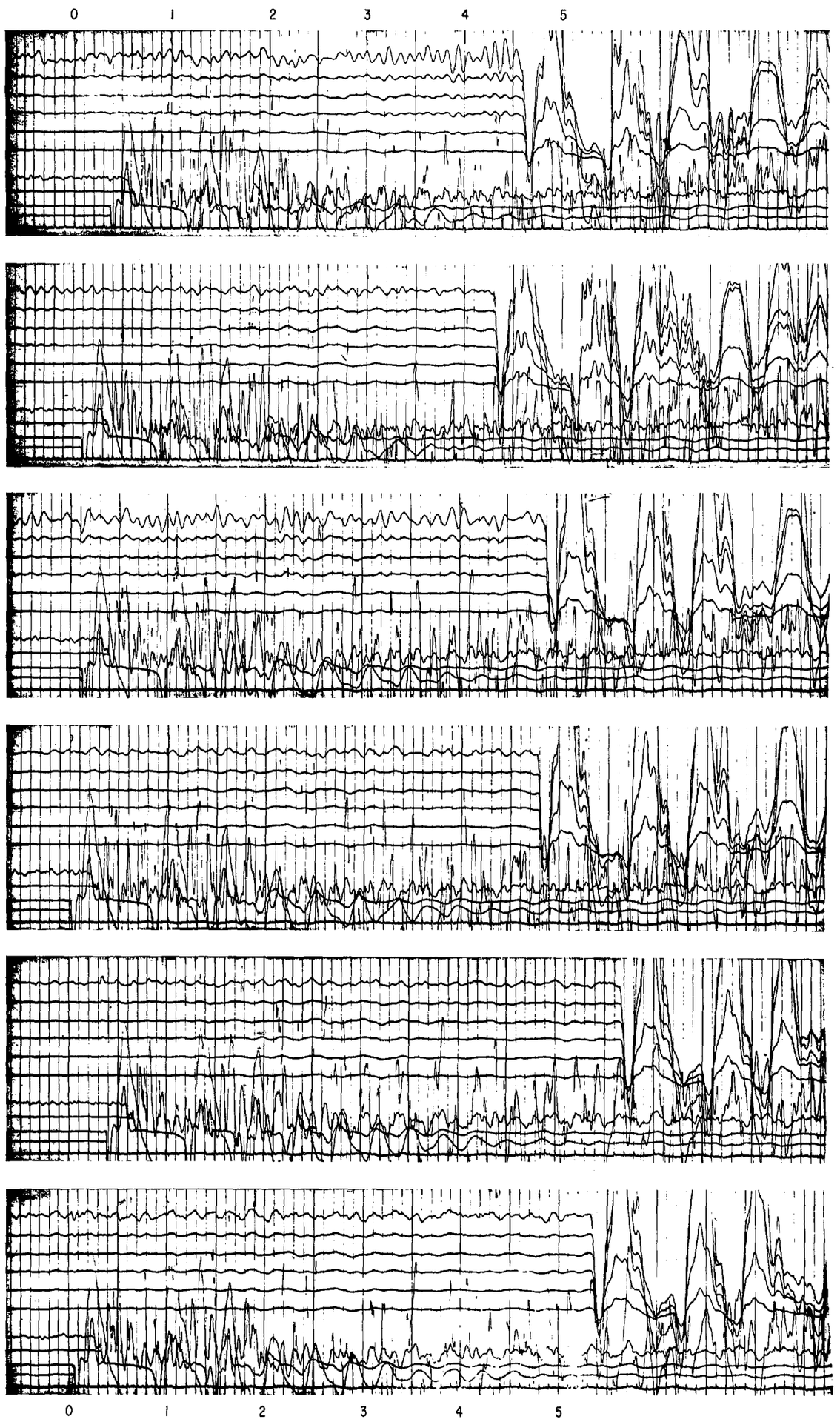
Rec. No. 25
1075 m K.B.

Dwg. 1925/OP/3

THREADFIN – 1

WELL VELOCITY RECORD

5 - 3 - 79

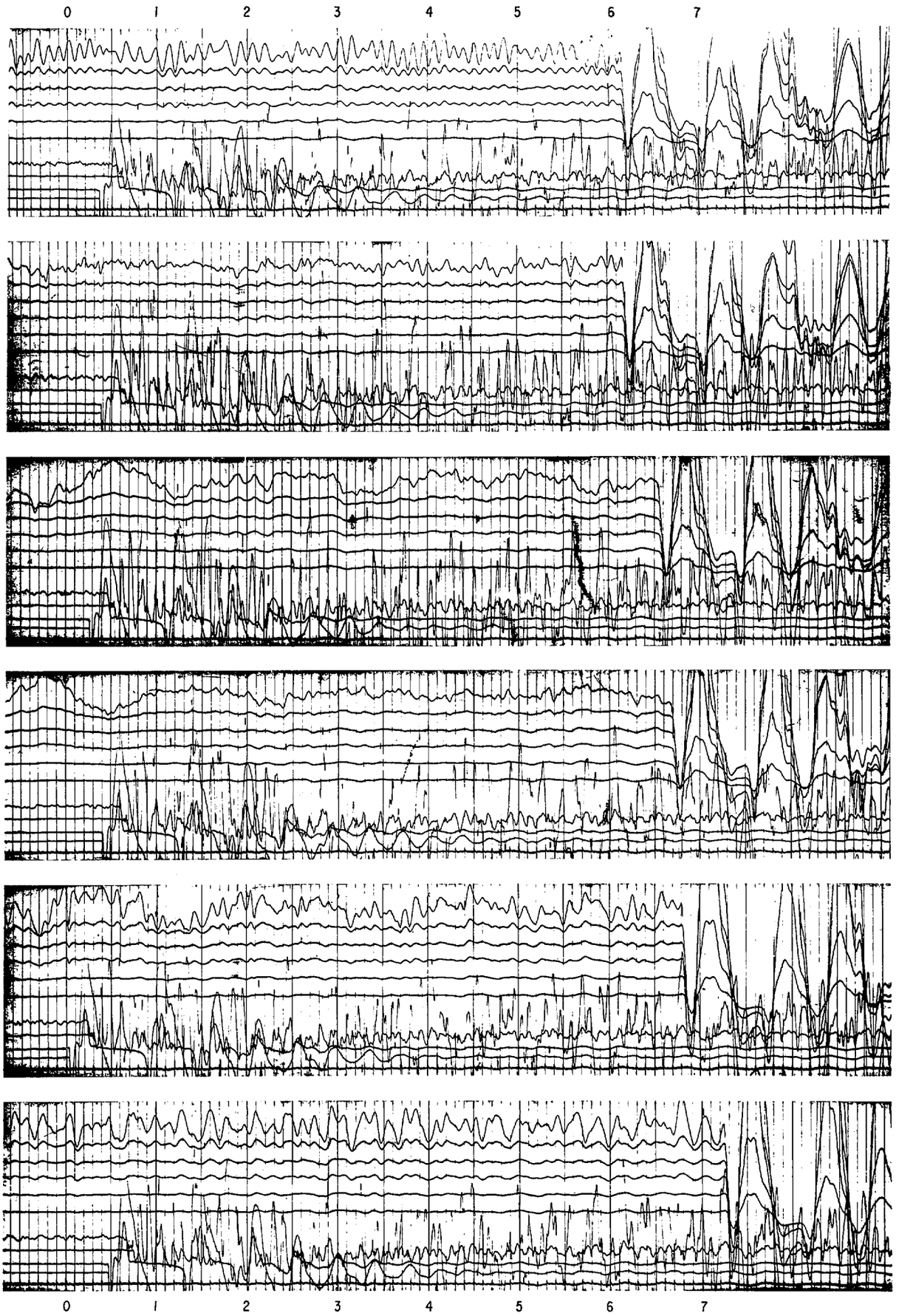


Dwg. 1925/OP/4

THREADFIN - 1

WELL VELOCITY RECORD

5 - 3 - 79

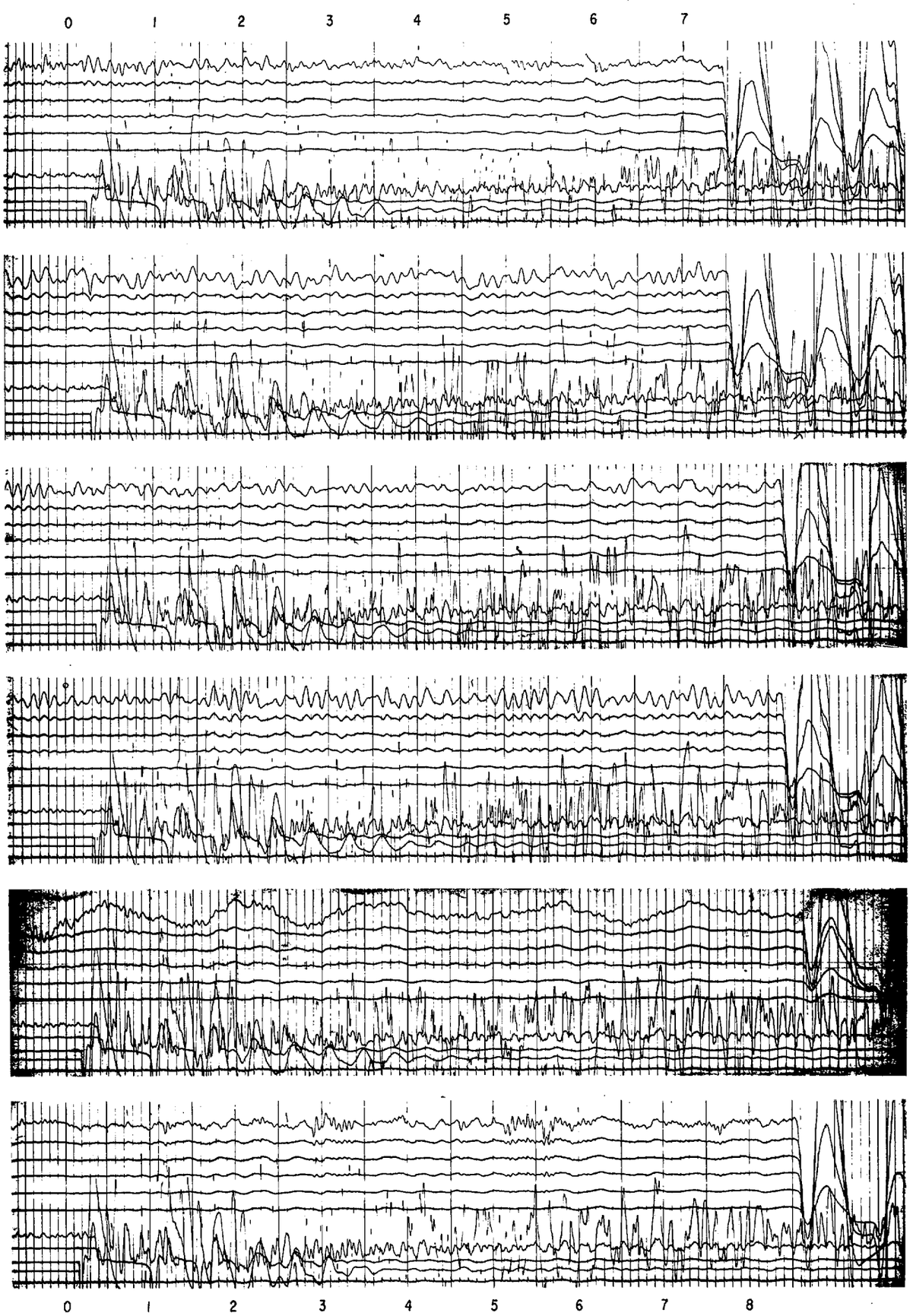


Dwg. 1925/OP/5

THREADFIN – 1

WELL VELOCITY RECORD

5 - 3 - 79

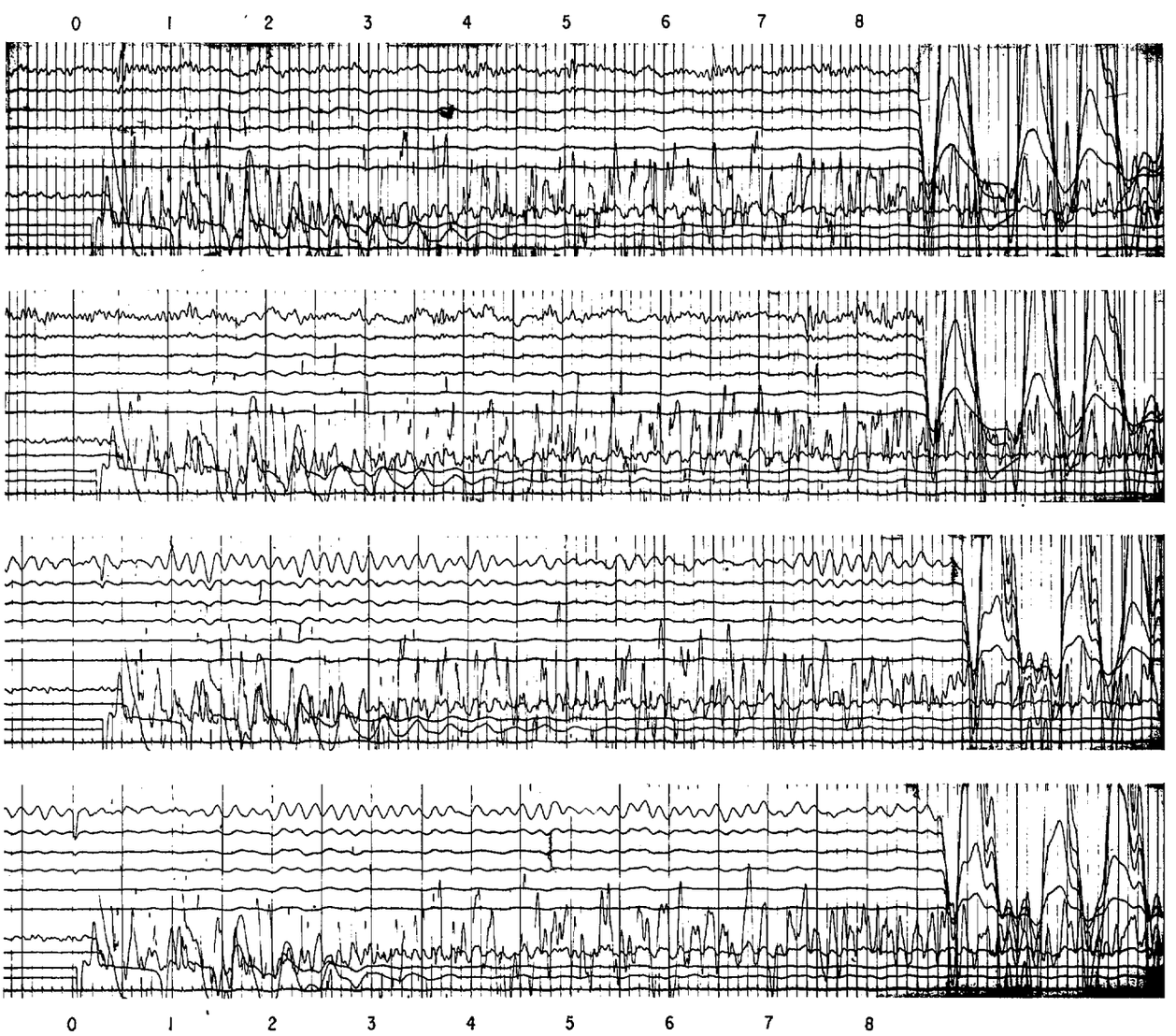


Dwg. 1925/OP/6

THREADFIN – 1

WELL VELOCITY RECORD

5 - 3 - 79



Rec. No. 3
2396 m K.B.

Rec. No. 4
2396 m K.B.

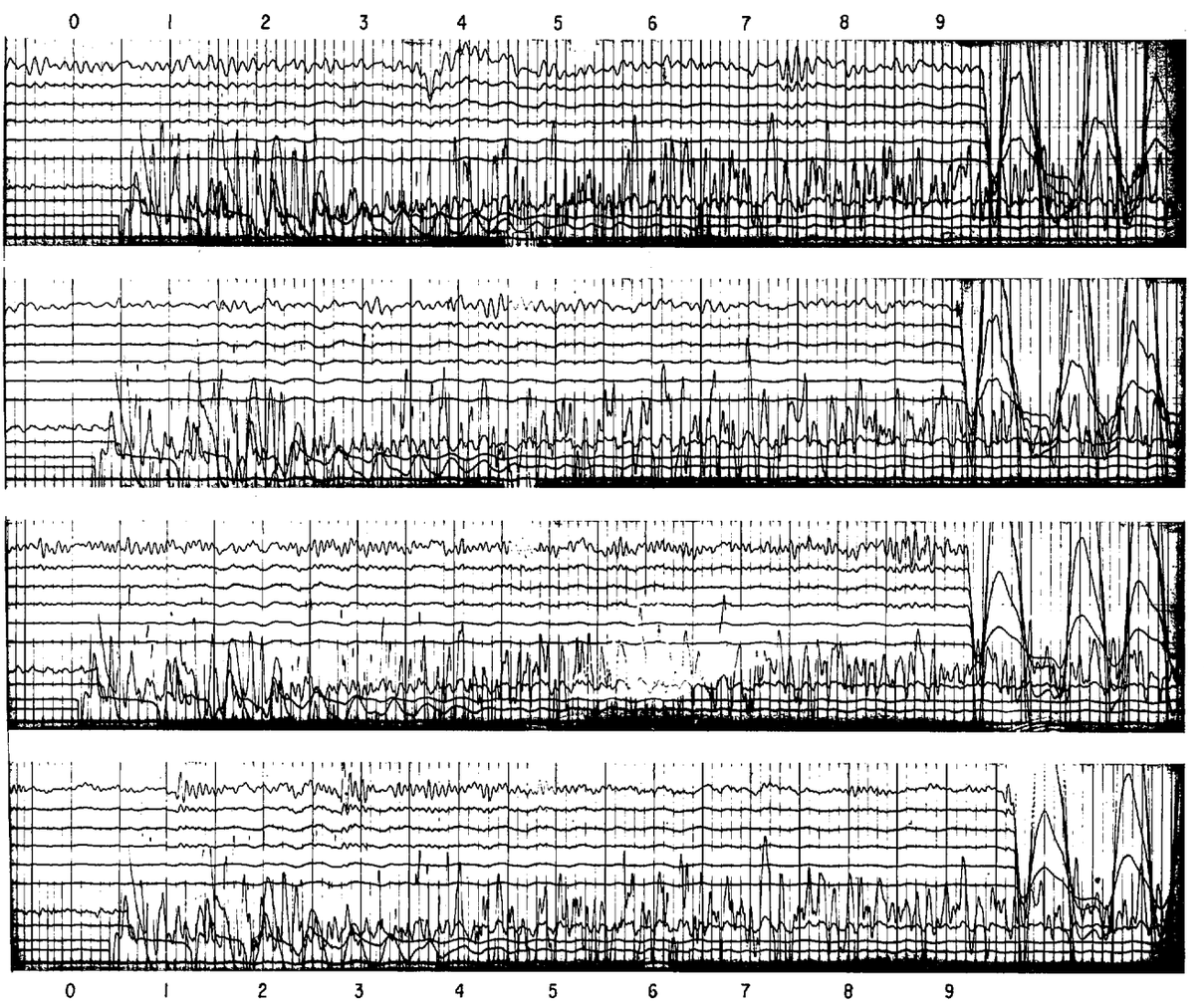
Rec. No. 9
2500 m K.B.

Rec. No. 10
2500 m K.B.

Dwg. 1925/OP/7

THREADFIN - 1

WELL VELOCITY RECORD 5 - 3 - 79



Dwg. 1925/OP/8

APPENDIX 6

APPENDIX 6

REPEAT FORMATION TESTER

REPORT AND ANALYSIS

REPEAT FORMATION TESTER RECORD — PART 1

WELL: THREADFIN-1

RUN #: 1 GEOLOGIST/S: ELLIOTT DATE: 6 March 1979

PRETESTS

	NO.	DEPTH	PRESSURE	REMARKS
SEAT #:	1	2683.5 m	25.86 MPag	3750.6 Psi
SEAT #:	2	2624.0 m	25.21 MPag	3657.0 Psi
SEAT #:	3	2565.0 m	24.61 MPag	3569.9 Psi
SEAT #:	4	2485.0 m	23.84 MPag	3457.1 Psi
SEAT #:	5	2409.0 m	23.10 MPag	3350.3 Psi
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	
SEAT #:		m	MPag	

SAMPLES

	CHAMBER 1 (1.)	CHAMBER 2 (1.)
	SEAT #: 5 DEPTH: 2409 m	SEAT #: 5 DEPTH: 2409 m
Hydrostatic Initial	3901 Psi = 26.90 MPag	3903 Psi = 26.91 MPag
Pretest	3350.3 Psi = 23.10 MPag	3351.3 Psi = 23.11 MPag
Flowing Press. Initial	MPag	MPag
Flowing Press. Final	MPag	MPag
Sampling Range	MPag	MPag
Final Shut-in	3351.4 Psi = 23.11 MPag	3351.3 Psi = 23.11 MPag
Hydrostatic Final	MPag	3903 Psi = 26.91 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: 89.85 °C

Hewlett-Packard Gauge #:

Mud Weight: 9.5 PPG = 1.14 S.G. Calculated Hydrostatic: MPag

RFT Choke Size:

REPEAT FORMATION TESTER RECORD — PART 2

RECORDING TIMES

	CHAMBER 1 (1.)	CHAMBER 2 (1.)
	SEAT #: ____ DEPTH: ____ m	SEAT #: ____ DEPTH: ____ m
Tool Set:		
Pretest Open:		
Time Open:		
Chamber Open:		
Chamber Full:		
Fill Time:		
Start Build-up:		
Finish Build-up:		
Build-up Time:		
Seal Chamber:		
Tool Retract:		
Total Time:		

RECOVERY

Surface Pressure:	0 MPag	MPag
Gas:	1.	1.
Oil:	1.	1.
Water:	2 100 1.	1.
Others:	1.	1.

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:	0.31 Ω @ 20 °C	Ω @ °C
NaCl Equivalent:	ppm	ppm
Cl^- Titrated:	11500 ppm	ppm
NO_3^-:	200 ppm	ppm
Est. Water Type:	FILTRATE	

REMARKS

Mud Properties: FILTRATE Resistivity: 0.28 Ω @ 20 °C

NaCl Equiv.: ____ ppm Cl^- Titrated: 17000 ppm NO_3^-: 105 ppm

ENCLOSURES

Enclosures

PE902719

This is an enclosure indicator page.
The enclosure PE902719 is enclosed within the container PE902717 at this location in this document.

The enclosure PE902719 has the following characteristics:

ITEM_BARCODE	= PE902719
CONTAINER_BARCODE	= PE902717
NAME	= Time Structure Map Top of Latrobe Group
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Time Structure Map Top of Latrobe Group
REMARKS	=
DATE_CREATED	= 1/02/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= Threadfin-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902718

This is an enclosure indicator page.
The enclosure PE902718 is enclosed within the container PE902717 at this location in this document.

The enclosure PE902718 has the following characteristics:

ITEM_BARCODE	= PE902718
CONTAINER_BARCODE	= PE902717
NAME	= Structure Map Top of Latrobe Group
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Structure Map Top of Latrobe Group
REMARKS	=
DATE_CREATED	= 1/07/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= Threadfin-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902720

This is an enclosure indicator page.
The enclosure PE902720 is enclosed within the container PE902717 at this location in this document.

The enclosure PE902720 has the following characteristics:

ITEM_BARCODE	= PE902720
CONTAINER_BARCODE	= PE902717
NAME	= Geological Cross Section A-A'
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= map
DESCRIPTION	= Geological Cross Section A-A'
REMARKS	=
DATE_CREATED	= 1/07/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= Threadfin-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE904250

This is an enclosure indicator page.
The enclosure PE904250 is enclosed within the container PE902717 at this location in this document.

The enclosure PE904250 has the following characteristics:

ITEM_BARCODE	= PE904250
CONTAINER_BARCODE	= PE902717
NAME	= Time-Depth Curve
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= VELOCITY _CHART
DESCRIPTION	= Time-Depth Curve (Basic) for Threadfin-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= THREADFIN-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE904251

This is an enclosure indicator page.
The enclosure PE904251 is enclosed within the container PE902717 at this location in this document.

The enclosure PE904251 has the following characteristics:

ITEM_BARCODE	= PE904251
CONTAINER_BARCODE	= PE902717
NAME	= Sonic Calibration Curve
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= VELOCITY _CHART
DESCRIPTION	= Sonic Calibration Curve for Threadfin-1
REMARKS	=
DATE_CREATED	= 27/03/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= THREADFIN-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE604643

This is an enclosure indicator page.
The enclosure PE604643 is enclosed within the container PE902717 at this location in this document.

The enclosure PE604643 has the following characteristics:

ITEM_BARCODE	= PE604643
CONTAINER_BARCODE	= PE902717
NAME	= Well Completion Log
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= COMPLETION_LOG
DESCRIPTION	= Well Completion Log for Threadfin-1
REMARKS	=
DATE_CREATED	= 30/06/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= THREADFIN-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE904252

This is an enclosure indicator page.
The enclosure PE904252 is enclosed within the container PE902717 at this location in this document.

The enclosure PE904252 has the following characteristics:

ITEM_BARCODE	= PE904252
CONTAINER_BARCODE	= PE902717
NAME	= Drill Progress Curve
BASIN	= GIPPSLAND
PERMIT	= VIC/L5
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Drill Progress Curve for Threadfin-1
REMARKS	=
DATE_CREATED	= 7/02/79
DATE_RECEIVED	=
W_NO	= W719
WELL_NAME	= THREADFIN-1
CONTRACTOR	=
CLIENT_OP_CO	= ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)