

W782

WIRRAH-1

WCR Vol. 1

ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

NOI
WELL COMPLETION REPORT
WIRRAH-1 **W782**
BASIC DATA - 1 MAY 1984
VOLUME 1
OIL and GAS DIVISION

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

WIRRAH-1

WELL COMPLETION REPORT

VOLUME 1

CONTENTS

1. Well Data Record
2. Operations Summary
3. Casing Data
4. Cement Data
5. Samples, Conventional Cores, Sidewall Cores
6. Wireline Logs and Surveys
7. Summary of Formation Test Program
8. Temperature Record

FIGURES

1. Locality Map
2. Well Progress Curve
3. Well Bore Schematic
4. Abandonment Schematic
5. Horner Temperature Plot

APPENDICES

1. Lithological Descriptions
2. Core Descriptions
3. Sidewall Core Descriptions
4. Velocity Survey Report

ESSO AUSTRALIA LTD.

COMPLETION REPORT

1. WELL DATA RECORD

LOCATION

WELL NAME WIRRAH-1	STATE Offshore Victoria	PERMIT or LICENCE VIC/L2	GEOLOGICAL BASIN Gippsland	FIELD Wirraah
CO-ORDINATES LATITUDE 38° 11' 22.33" S LONGITUDE 147° 48' 57.12" E X 571447m Y 5772826m		MAP PROJECTION Transverse Mercator AMG Zone 55	GEOGRAPHICAL LOCATION Bass Strait Victoria	
<u>ELEVATIONS & DEPTHS</u>				
ELEVATIONS KB 21m RT Sea Level	WATER DEPTH 49m	TOTAL DEPTH 3026m MEASURED DEPTH 3026m	Average Angle	
PLUG BACK TYPE Balanced Plug		REASONS FOR PLUGGING BACK Plug & Abandonment		
<u>DATES</u>				
MOVE IN 14-9-82	RIG UP 14-9-82	SPUDED 15-9-82		
RIG DOWN COMPLETE 6-12-82	RIG RELEASED 6-12-82	PRODUCTION UNIT - RIG UP		
PRODUCTION UNIT - RIG DOWN		INITIAL PRODUCTION ESTABLISHED		
<u>MISCELLANEOUS</u>				
OPERATOR Esso Exploration & Production Australia Inc. (EEPA)	PERMITTEE or LICENCE EEPA, BHP Petroleum Pty Ltd.	ESSO INTEREST 50%	OTHER INTEREST 50%	
CONTRACTOR South Seas Drilling Co.	RIG NAME Southern Cross	EQUIPMENT TYPE Semisubmersible Oilwell E-2000		
TOTAL RIG DAYS 85	DRILLING AFE NO. 0500308232008	COMPLETION NO. -	TYPE COMPLETION -	
LAHEE WELL	Before Drilling	New Field Wildcat		
CLASSIFICATION	After Drilling	Plugged & Abandoned New field discovery Oil & Gas		

WIRRAH - 1

2. OPERATIONS SEQUENCE

Move and Moor

The semi-submersible Southern Cross departed the Bream-5 location at 0100 hours on 14 September 1982 and arrived at the Wirrah-1 location at 0800 hours on the same day. The rig was towed 28 km (20 nautical miles) by the workboat Atlas Dampier in 7 hours at any average speed of 4 km/hr (2.9 knots).

Anchor No. 1 was dropped from the rig on approach of the well location while the remaining seven anchors were run by the workboats Atlas Dampier, Bass Tide, and Lady Vera in 11-1/2 hours.

26" Hole for 20" Conductor Casing

The drilling template was landed on the seafloor at 70m RKB. The 26" hole was drilled to 206m using seawater and displaced with high viscosity gel mud before running casing.

The 18-3/4" Cameron wellhead and 20" casing were run and cemented at a shoe depth of 191m. The BOP and riser were run and latched to the wellhead and then pressure tested to 3400 kPa (500 psi).

17-1/2" Hole for 13-3/8" Surface Casing

The 17-1/2" hole was drilled to 799m, even though a spinning chain had been inadvertently dropped in the hole while drilling at 770m. Before running logs, a junk sub was run and 0.7m was made while drilling on the junk. Because the electric logs showed sandstone at TD, a bit was run and the hole was deepened to 845m so that a more competent casing seat could be obtained. The 13-3/8" casing was run and cemented at 830m. The seal assembly was set and pressure tested along with the BOP and 13-3/8" casing.

12-1/4" Hole

The 13-3/8" float equipment and 6m of new hole were drilled and a Phase II PIT was run to 1.62 SG (13.5 ppg) EMW without leakoff. The 12-1/4" hole was drilled to 1356m where the mud weight was increased from 1.09 SG (9.2 ppg) to 1.18SG (9.8 ppg). This increase was programmed so that a 2100 kPa (300 psi) overbalance would be present if the anticipated 50 metres of closure in the top objective sand was gas filled. The mud weight increase was programmed to occur 150 metres above the top of the Latrobe group, which was predicted to be at 1506m.

Drilling continued to 1488m, where the bit was pulled for cores. Three cores were cut to 1524m, with recoveries of 94%, 86% and 22%. Drilling continued to 1537m, where two more cores were cut to 1596m. Core recoveries were 65% and 24%. Drilling then continued to 1770m, where intermediate logs and 9 RFT's were run.

The hole was drilled to the next core point at 2046m. One core was cut to 2061m with 99% recovery. The hole was then drilled to the programmed TD of 2321m, where logs, a velocity survey, and 7 RFT's were run.

Drilling continued after the decision was made to deepen the well to 2800m. A bit trip was made at 2601m, where a J22 bit and shock sub were run. Metamorphic rock was encountered at 2645m, which severely reduced the ROP. The bit was pulled at 2676m and replaced with a J33 bit. The 12-1/4" hole was drilled to 2797m, where the J33 bit was pulled, leaving all three cones in the hole. Again, logs were run along with a velocity survey, sidewall cores, and 8 more RFT's.

9-5/8" Casing/Production Test No. 1

After running logs, a bit was run to 2796m for a conditioning trip. Bad weather prevented off loading the 9-5/8" casing, resulting in a loss of 3.8 days. The 9-5/8" casing was run to 2788m and cemented in two stages with a multiple stage cemented collar at 2313m. After several unsuccessful attempts to set the 9-5/8" seal assembly, a bit was run to drill out the stage collar. A CBL-VDL-GR-CCL log was then run. After modifying the lead thread on the 9-5/8" seal assembly, the seal assembly was rerun and successfully set and pressure tested to 24,100 kPa (3500 psi). The casing and BOP stack were then pressure tested.

A casing scraper was run on open-ended drillpipe to the TOC at 2717m and the hole reverse circulated. Because a 9-5/8" gauge ring/junk basket run was unable to go below 2313m, a bit without nozzles and scraper were run and worked through the stage collar. The hole was again reverse circulated. The 9-5/8" gauge ring/junk basket was then run to 2665m and a 9-5/8" permanent production packer was set at 2603m. The test string was run and pressure tested along with the casing below the packer and the surface equipment to 24,100 kPa (3500 psi). The string was pulled above the packer and displaced with diesel before the test zone was perforated.

8-1/2" Hole

After Production Test No. 1 was killed, the decision was made to deepen the hole. A packer picker was unsuccessfully used to remove the permanent packer, and a junk mill was run to mill up the packer. The open P.T. No. 1 perforations were sealed off by setting a balanced cement plug across the perforations and then bradenhead squeezing 6 barrels of cement. The cement in the casing was drilled out and the casing was successfully pressure tested to 24,100 kPa (3500 psi).

The baffle plate and float equipment were drilled and the mud weight was reduced from 1.17 SG (9.8 ppg) to 1.10 SG (9.2 ppg). The three 12-1/4" cones left in the hole prior to running the casing and the production test were removed after several mill and junk basket trips. During the fishing operation, a PIT was conducted to 1.98 SG (16.5 ppg) EMW without a leakoff. After the junk was removed from the hole, Core No. 7 was cut from 2805m to 2807.8m. Only 8% of the conglomerate core was recovered.

The 8-1/2" hole was drilled with a packed hole assembly to 2914m. Core No. 8 was then cut from 2914 to 2916m. None of the core was recovered. Drilling continued at an average rate of 3.5m/hr before a drilling break was encountered at 2964m. A flow check at 2964m was negative but gas units remained high (100 units and above) until the mud weight was raised in stages from 1.10 SG (9.2 ppg) to 1.28 SG (10.7 ppg).

Drilling was terminated at 3026m with a final mud weight of 1.34 SG (11.2 ppg). Logs, a dipmeter, sidewall cores, a velocity survey, and one RFT were run. The RFT gave a valid pore pressure at 2973.8m of 1.27 SG (10.64 ppg).

Plug and Abandonment/Production Test No. 2

The well was plugged back with a cement plug whose top extended inside the 9-5/8" casing to 2750m. The initial pressure test failed. With the use of a retrievable packer, the leak was located at the Production Test No. 1 perforations and the abandonment plug was tested to 24,100 kPa (3500 psi). After the mud weight was reduced to 1.16 SG (9.7 ppg), two permanent production packers were set at 2668m and 2612m to isolate the leaking perforations. The test string was run and pressure tested along with the casing below the packer and the surface equipment to 24,100 kPa (3500 psi). The string was displaced with diesel before the test zone was perforated.

After P.T. No. 2 was completed, the test string was pulled and a tubing stinger on drill pipe was run inside both packers. Both P.T. No. 1 and P.T. No. 2 perforations were covered by a balanced cement plug. The initial pressure test on the plug was unsuccessful. A bridge plug was set on the top of the production packer, however the pressure leak was still present. With the use of a retrievable packer, the pressure leak was located at the 9-5/8" casing seal assembly, and the abandonment plug was successfully tested to 24,100 kPa (3500 psi). Several unsuccessful attempts were made to tighten and to release the seal assembly while the casing patch equipment was being mobilized to the rig.

While cutting the casing for the patch, the decision was made to abort P.T. No. 3 and abandon the well. After an unsuccessful attempt to retrieve the casing with a casing spear, the casing was recut at 252m and then retrieved. A 13-3/8" cement retainer was set above the cut at 242m. Cement was squeezed below the retainer and a balanced cement plug was set on top of the retainer. The plug was pressure tested to 10,400 kPa (1500 psi) during the cement squeeze.

To seal the 13-3/8" x 20" casing annulus, the 13-3/8" casing was perforated from 151m to 151.5m with a 4 inch casing gun, and an injection rate was established. A 13-3/8" cement retainer was set at 141m and cement was squeezed below the retainer and dumped on top. The top of the cement was calculated to be 105m and the plug was pressure tested to 6900 kPa (1000 psi).

The riser was displaced with seawater and the BOP stack and riser were pulled. A 15kg explosive charge was run and the wellhead and casing stubs were blown free. The wellhead, casing stubs, drilling template and guidebase were then retrieved.

Pulling Anchors

The Atlas Dampier and Bass Tide pulled seven anchors with the rig pulling the No. 8 anchor. The spliced anchor wires on No. 4 and No. 7 anchors were replaced with new anchor wires and the No. 1 anchor fairleader was replaced. The Southern Cross completed the Wirrah-1 well and departed for the Pilotfish-1 well at 1900 hours on 6 December, 1982

02241/52-54

3. CASING DATA

WELL WIRRAH-1

CSG O.D. IN	WT. LBS/FT	GRADE	CONN.	CSG LENGTH METRES	SHOE DEPTH R.K.B.	CENTRALIZER POSITION	REMARKS
24	610	-	CC	11.00			PILE JOINT
20	129	X-52	JVCC	13.25		1 ACROSS COLLAR FOR 5 COLLARS ABOVE SHOE	CROSS OVER JOINT
20	94	X-52	JV	86.70			7 JOINTS
20	94	X-52	JV	13.21	191		FLOAT SHOE JOINT
13 3/8	54.5	K-55	BUTT	3.50		1 ACROSS EACH COLLAR FOR 6 COLLARS ABOVE SHOE	HGR & PUP JT
13 3/8	54.5	K-55	BUTT	734.54			63 JOINTS
13 3/8	54.5	K-55	BUTT	11.93			FLOAT COLLAR JT.
13 3/8	54.5	K-55	BUTT	12.41	830		FLOAT SHOE JT.
9 5/8	47	N80	BUTT	1.85		1 ACROSS EACH COLLAR FOR 13 COLLARS ABOVE FIFTH JOINT OF CSG.	HGR & PUP JT.
9 5/8	47	N80	BUTT	2244.47			191 JOINTS
9 5/8				1.09			D.V. COLLAR

4. CEMENT DATA

WELL WIRBAH-1

DATE	DEPTH METRES	TYPE JOB	TYPE CEMENT	AMOUNT	ADDITIVES	REMARKS
16/9/82	191	20" CSG LEAD	CLASS 'N'	630 sx	3.3% GEL & 0.5% CFR-2	50% FRESHWATER 50% SEAWATER SLURRY WT 12.3 PPG
16/9/82	191	20" CSG TAIL	CLASS 'N'	350 sx	-	SEAWATER SLURRY WT 15.6 PPG
19/9/82	830	13-3/8" CSG LEAD	CLASS 'N'	971 sx		SEAWATER SLURRY WT 15.6 PPG
24/10/82	2788	9-5/8" CSG 1ST STAGE	CLASS 'N'	614 sx	2.3% HR6L & 0.75% CFR-2	FRESHWATER SLURRY WT 15.8 PPG
24/10/82	2788	9-5/8" CSG 2ND STAGE	CLASS 'N'	1150 sx	1.6% HR6L & 0.75% CFR-2	FRESHWATER SLURRY WT 15.6 PPG
7/11/82	2624 - 2633.5	P&A SQUEEZE PERFS ON PT #1 IN 9-5/8" CSG	CLASS 'N'	100 sx	0.8% HALAD 22 0.75% CFR-2 & 1.75% HR6L	TESTED TO 3500 PSI SLURRY WT 15.6 PPG.
21/11/82	3026 - 2903	P&A OPEN HOLE BAL. PLUG	CLASS 'N'	240 sx	2.25% HR6L & 0.75% CFR-2	SLURRY WT 15.6 PPG
21/11/82	2903 - 2750	P&A OPEN HOLE/CSG SHOE BAL PLUG	CLASS 'N'	360 sx	2.25% HR6L & 0.75% CFR-2	TESTED TO 3500 PSI SLURRY WT 15.6 PPG
29/11/82	2750 - 2691	P&A SQUEEZE PERFS ON PT #2 IN 9-5/8" CSG	CLASS 'N'	182 sx	2.2% HR6L 0.75% CFR2	TESTED TO 3500 PSI SLURRY WT 15.8 PPG
3/12/82	RET. @ 242	P&A CASED HOLE BAL. PLUG	CLASS 'N'	25 sx	SEAWATER	
3/12/82	242 - 192	P&A BAL. PLUG ON RETAINER	CLASS 'N'	97 sx	SEAWATER	

WELL: WIRRAH - 1

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

<u>INTERVAL</u>	<u>TYPE</u>
3026 - 206m	5 sets of washed and dried samples, 1 set of washed bagged samples, 1 tin containing unwashed samples from each 15m interval (1/3 tin each 5m).
1488.2 - 1500.6m	Conventional Core No. 1
1500.6 - 1513.4m	Conventional Core No. 2
1513.4 - 1527.0m	Conventional Core No. 3
1573.4 - 1585.6m	Conventional Core No. 4
1585.6 - 1596.6m	Conventional Core No. 5
2046.0 - 2061.2m	Conventional Core No. 6
2805.0 - 2807.8m	Conventional Core No. 7
2914.0 - 2916.0m	Conventional Core No. 8
2800 - 848m	Sidewall Cores - shot 132, recovered 118.
3032 - 2798m	Sidewall Cores - shot 81, recovered 36.

02241/81

Checkshot Survey	8 Levels	1506	2800m
HP Recording	Run 18,19 Run 20 Run 21,22,23,24	2301	2789m
RFT Recording	Run 18,19 Run 20 Run 21,22,23,24	2301	2789m
<u>Pretests:</u>	61 attempted 15 successful		
<u>Samples:</u>	5 attempted 3 successful		
CST GR	Run 1,2,3 132 Shot 118 Recoveries	2800	848m
<u>Suite 5</u>			
DLL MSFL GR	1:200 1:500	2788	3031m
LDL CNL GR	1:200 1:500	2788	3031m
BHC GR	1:200 1:500	2788	3031m
HDT	1:200	2788	3033m
VSP Survey	57 Levels	1405	3020m
HP Recording Production Test	Run 1 Run 2	2624 2624	2633.5m 2633.5m
RFT Recording	Run 25	2973.7	3014.5m
<u>Pretests:</u>	10 attempted 1 successful		
<u>Samples:</u>	10 attempted 1 successful		
CST GR	Run 4,5 81 Shot 36 Recoveries	2798	3032m
Junk Basket & Production Packer Setting & GR CCL	Run 2,3	2500	2755m
Perforation Log	Run 2 Run 3 Run 4	2725 2736 2691	2736m 2747m 2702m
Bridge Plug Setting	Run 1		
Junk Basket GR CCL	Run 2	2500	2620m

02241/82-83

7. SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST	SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)			FILTRATE Litres	HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
				OIL Litres	COND. Litres	GAS m ³		FORMATION WATER Litres	MPaa	Psia	MPaa	
1	1	1757	Pretest					17.107	2481.1	20.350	2951.5	
	2	1740	"					16.942	2457.2	20.145	2921.8	
	3	1717	"					16.720	2425.1	19.878	2883.1	
	4	1710	"					16.655	2415.6	19.800	2871.8	
	5	1689.5	"					16.482	2390.5	19.566	2837.8	
	6	1683	"					16.405	2379.4	19.492	2827.1	
	7	1678	"					16.358	2372.5	19.438	2819.2	
	8	1671	"					16.296	2363.6	19.360	2807.9	
	9	1650	"					-	-	19.121	2773.3	Tight
	10	1649.5	"					16.092	2333.8	19.114	2772.3	
	11	1635	"					15.977	2317.3	18.972	2751.6	
	12	1624.5	"					15.837	2297.0	18.828	2730.8	
	13	1619	"					15.786	2289.6	18.768	2722.0	
	14	1610	"					15.701	2277.3	18.666	2707.3	
	15	1605	"					15.652	2270.1	18.606	2698.6	
	16	1599	"					-	-	18.538	2688.7	Seal Failure
	17	1598	"					15.589	2260.9	18.533	2687.9	
	18	1595	"					15.612	2264.2	18.549	2690.2	
	19	1583.5	"					15.497	2247.4	18.364	2663.4	
	20	1575	"					15.376	2232.0	18.269	2649.5	
	21	1565	"					15.255	2212.5	18.149	2632.1	
	22	1550	"					15.108	2191.1	18.020	2613.4	
	23	1535	"					14.967	2170.6	17.809	2582.8	
	24	1530	"					14.929	2165.2	17.748	2574.0	
	25	1509	"					14.911	2162.5	17.513	2539.9	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST SEAT	DEPTH (METRES)	CHAMBER	RECOVERY (LITRES)				FILTRATE Litres	HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
			OIL	COND.	GAS	FORMATION WATER		MPaa	Psia	MPaa	Psia	
			Litres	Litres	Litres	m ³		Litres	Litres	Litres	Litres	
1	26	1491	"					14.883	2158.5	17.304	2509.6	
	27	1574	"					-	-	18.304	2654.6	Seal Failure
	28	1574	"					15.391	2232.2	18.262	2648.5	
	29	1585	"					-	-	18.373	2664.7	Tight
	30	1585.5	"					-	-	18.380	2665.7	Tight
	31	1594.0	"					15.552	2255.5	18.475	2679.5	
2	32	1576.0	Pretest					-	-	18.268	2649.4	Seal Failure
	33	1574	"					15.382	2230.8	18.245	2646.1	
	34	1595	22.7	22.5		1.06		15.557	2256.3	18.487	2681.1	Sample
			3.8	Sample Preserved				-	-	-	-	Sample
3	35	1592	Pretest					15.549	2255.0	18.449	2675.7	
	36	1571	"					-	-	18.205	2640.3	Tight
	37	1570.5	"					15.364	2228.2	18.202	2639.8	
	38	1575	22.7					-	-	18.255	2647.5	No sample - Seal Failure
	39	1575	22.7	23		1.42		15.837	2231.1	18.253	2647.2	Sample
			3.8	Sample Preserved				-	-	-	-	Sample
4	40	1638	Pretest					-	-	18.982	2753.0	Seal Failure
	41	1638.5	"					-	-	18.982	2753.0	Tight
	42	1633	"					-	-	18.920	2743.9	Tight
	43	1634	"					15.947	2312.8	18.934	2746.0	
	44	1613	22.7					-	-	18.693	2711.1	No sample - Seal Failure
	45	1613	22.7	Scum		22.2		15.727	2280.9	18.693	2711.1	Sample
			10.4			9.0		-	-	-	-	Sample
5	46	1583.5	22.7					-	-	18.356	2662.2	No sample - Seal Failure
	47	1583.5	22.7					15.486	2246.0	18.356	2662.2	No sample - Tight
	48	1584	22.7					-	-	18.357	2662.3	No sample - Tight
	49	1584	22.7					-	-	18.345	2660.6	No sample - Tight
	50	1584	22.7	6		0.139		15.484	2245.7	18.356	2662.2	Sample
	51	1583.5	10.4	Scum		0.0085	6.5	15.459	2242.0	18.352	2661.7	Sample

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST SEAT	DEPTH (METRES)	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS		
			OIL	COND.	GAS	FORMATION WATER	FILTRATE	MPaa	Psia	MPaa		Psia	
	K.B.		Litres	Litres	Litres	m ³	Litres	Litres					
6	52	1678	22.7						-	-	19.428	2817.8	No sample - Seal Failure
	53	1678	22.7	Scum		0.0312	21		16.357	2372.2	19.420	2816.5	Sample
			10.4			0.0142	9	-	-	-	-	-	Sample
7	54	1532	22.7	20		1.719			14.935	2166.0	15.690	2275.6	Sample
			3.8	Sample Preserved					-	-	-	-	Sample
8	55	1641	Pretest						16.016	2322.8	15.571	2258.2	
	56	1605	22.7						-	-	18.595	2696.8	No sample - Seal Failure
	57	1605	22.7	Scum		0.0014	22.0		15.648	2269.4	18.595	2696.9	Sample
			10.4				9.0		-	-	-	-	Sample
9	58	1529.5	22.7	0.10		3.379	0.43		14.935	2166.0	17.731	2571.5	Sample
			3.8	Sample Preserved					-	-	-	-	Sample
10	59	2302	Pretest						22.619	3280.4	26.960	3910.0	
	60	2279	"						-	-	26.680	3869.4	Tight
	61	2280	"						22.426	3252.4	26.680	3869.4	
	62	2264	"						-	-	26.546	3849.9	Tight
	63	2262	"						-	-	26.499	3843.2	Seal Failure
	64	2261	"						-	-	26.496	3842.7	Tight
	65	2258.5	"						23.143	3356.4	26.414	3830.8	Supercharged?
	66	2258.5	"						23.140	3356.0	26.414	3830.8	Supercharged? Slow Seal Failure?
	67	2249	"						22.244	3226.0	26.349	3821.4	
	68	2244	"						22.171	3215.5	26.244	3806.2	
	69	2237	"						22.205	3220.4	26.207	3800.8	
	70	2239	"						22.164	3214.5	26.181	3979.0	
	71	2236	"						22.166	3214.7	26.151	3792.7	
	72	2219	"						-	-	25.942	3762.4	Tight
	73	2205	"						21.733	3151.9	25.942	3737.1	
	74	2196	"						21.724	3150.6	25.666	3722.3	
	75	2167	"						21.256	3082.8	25.387	3681.9	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST	SEAT	DEPTH (METRES)	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS		
			CHAMBER	OIL	COND.	GAS	FILTRATE	MPaa	Psia	MPaa		Psia	
			K.B.										
			Litres	Litres	Litres	m ³	Litres	Litres					
76		2155	"					21.115	3062.3	25.224	3658.2		
77		2113	"					20.738	3007.7	24.770	3592.4		
78		2086	"					20.417	2961.1	24.409	3540.0		
79		2053.5	"					20.117	2914.6	24.039	3486.4		
80		2047	"					-	-	23.968	3476.1	Seal Failure	
81		2046.2	"					20.035	2905.7	23.960	3474.9		
82		2034.5	"					19.923	2889.4	23.827	3455.6		
83		2027.5	"					19.850	2878.8	23.760	3445.9		
84		2005	"					-	-	23.510	3409.6	Tight	
85		2004	"					19.632	2847.3	23.508	3409.3		
86		1926	"					18.813	2728.5	22.610	3279.2		
11	87	2247	Pretest					-	-	26.290	3812.8	Seal Failure	
	88	2249	22.7	18.0		1.702	Trace	22.209	3221.0	26.313	3816.2	Sample	
			3.8			Sample Preserved		-	-	-	-	Sample	
12	89	2205	22.7					-	-	25.770	3737.4	No sample - Seal Failure	
	90	2205	22.7	13.0		1.444		3.0	21.743	3153.4	25.771	3737.6	Sample
			3.8			Sample Preserved		-	-	-	-	Sample	
13	91	2034.5	22.7					-	-	23.836	3456.9	No sample - Seal Failure	
	92	2034.5	22.7					-	-	23.836	3456.9	No sample - Seal Failure	
	93	2034.5	22.7					-	-	23.836	3456.9	No sample - Seal Failure	
	94	2034	22.7					-	-	23.826	3455.5	No sample - Seal Failure	
	95	2031.5	22.7					-	-	23.792	3450.5	No sample - Seal Failure	
	96	2032	22.7					-	-	23.790	3450.2	No sample - Seal Failure	
	97	2032	22.7	6.5		0.77		11	19.910	2887.5	23.788	3450.0	Sample
			3.8			Sample Preserved		-	-	-	-	Sample	
14	98	2280	22.7					-	-	26.548	3850.2	No sample - Seal Failure	
	99	2280	22.7					-	-	26.546	3850.0	No sample - Seal Failure	
	100	2280	22.7			0.082		20.5	22.439	3254.4	36.546	3850.0	Sample
			3.8			0.0085		3.25	-	-	-	-	Sample

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST SEAT	DEPTH (METRES)	RECOVERY (LITRES)					HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS	
		CHAMBER	OIL	COND.	GAS	FORMATION WATER	FILTRATE	MPaa	Psia	MPaa		Psia
		K.B. Litres	Litres	Litres	m ³	Litres	Litres					
15	101.	2046	22.7					-	-	23.903	3466.6	No sample - Seal Failure
	102	2046	22.7	2.75		0.153	17.25	20.043	2906.8	23.903	3467.0	Sample
			10.4	4.75		0.244	2.75	-	-	-	-	Sample
16		RFT 16 Abandoned because of pull on tool.										
17	103	2258.6	22.7					23.363	3388.4	26.314	3816.3	No sample - tight
	104	2261.6	22.7					-	-	26.337	3819.6	No sample - Seal Failure
	105	2261.6	22.7					-	-	26.335	3819.3	No sample - Seal Failure
	106	2259.8	22.7					22.678	3289.0	26.330	3818.7	No sample - Seal Failure
	107	2259.8	22.7					22.595	3277.0	26.325	3817.9	No sample - tight
	108	2196	22.7					-	-	25.627	3706.7	No sample - Seal Failure
	109	2196.2	22.7					-	-	25.569	3708.2	No sample - Seal Failure
	110	2196.2	22.7					-	-	25.569	3708.2	No sample - Seal Failure
	111	2195.3	22.7	0.1		2.52	2.0	21.738	3152.6	25.589	3711.2	Sample
			10.4	0.055		1.25	0.17	-	-	-	-	Sample
18	112	2548	Pretest					25.002	3626.0	29.262	4243.9	
	113	2584.5	"					-	-	29.676	4303.9	Seal Failure
	114	2584.5	"					-	-	29.676	4303.9	Seal Failure
	115	2604.5	"					-	-	29.912	4338.2	Seal Failure
	116	2633	22.7					-	-	30.225	4383.6	No sample - Seal Failure
	117	2633	22.7	Waxy Scum		0.082	19.6	26.133	3709.1	30.225	4383.6	Sample
			10.4	Oil Film		0.0142	3.4	-	-	-	-	Sample
19	118	2781	Pretest					-	-	31.920	4629.4	Seal Failure
	119	2781	"					-	-	31.915	4628.6	Seal Failure
	120	2786	"					-	-	32.009	4642.3	Seal Failure
	121	2786	"					-	-	32.005	4641.7	Seal Failure
	122	2787	"					-	-	31.997	4640.5	Seal Failure
	123	2766	"					-	-	31.733	4602.2	Seal Failure
	124	2756	"					-	-	31.638	4587.9	Seal Failure
	125	2749	"					-	-	31.495	4567.7	Seal Failure

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST	SEAT	DEPTH (METRES)	CHAMBER	RECOVERY (LITRES)				FILTRATE	HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
				OIL	COND.	GAS	FORMATION WATER		MPaa	Psia	MPaa	Psia	
		K.B.		Litres	Litres	Litres	m ³	Litres	Litres				
		126	2693	"					26.905	3902.0	30.868	4476.8	
		127	2604.5	"					25.658	3721.2	30.546	4430.1	
		128	2593	"					-	-	29.619	4295.4	Tight
		129	2583.5	"					-	-	26.621	4296	Tight
20		130	2786	"					-	-	32.173	4666	Seal Failure
		131	2786	"					-	-	32.173	4666	Seal Failure
		132	2789	"					-	-	32.228	4674	Seal Failure
		133	2789	"					-	-	32.228	4674	Tight
		134	2781	"					-	-	32.035	4656	Seal Failure
		135	2781	"					-	-	32.035	4656	Seal Failure
		136	2781.5	"					-	-	32.117	4658	Seal Failure
		137	2760.8	"					-	-	31.876	4623	Tight
		138	2618	"					-	-	30.256	4388	Tight
		139	2621	"					-	-	30.283	4392	Seal Failure
		140	2621	"					-	-	30.283	4392	Seal Failure
		141	2627	"					-	-	30.352	4402	Tight
		142	2576	"					25.615	3715.0	29.732	4312	
		143	2576	Pretest					25.629	3717.0	29.725	4311	
		144	2557	"					25.082	3637.6	29.518	4281	
		145	2583.5	"					-	-	29.821	4325	Tight
		146	2583	"					-	-	29.815	4324	Tight
		147	2624.5	"					25.978	3767.6	30.304	4395	
		148	2516.5	"					-	-	29.043	4212	Seal Failure
		149	2516.5	"					-	-	29.043	4212	Tight
		150	2478	"					24.519	3556.0	28.608	4149	

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

TEST SEAT	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS		
			OIL	COND.	GAS	FORMATION WATER	FILTRATE	MPaa	Psia	MPaa		Psia	
			Litres	Litres	Litres	m ³	Litres	Litres					
151	2461.5	"							24.293	3523.2	28.422	4122	
152	2446	"							24.096	3494.6	28.242	4096	
153	2501.5	"							-	-	28.891	4190	Tight
154	2433	"							-	-	28.098	4075	Tight
155	2402.5	"							23.619	3425.4	27.732	4022	
156	2314	"							22.746	3298.9	26.719	3875	
157	2302	"							-	-	26.615	3860	Seal Failure
158	2302	"							-	-	26.615	3860	Seal Failure
159	2302	"							-	-	26.615	3860	Seal Failure
160	2301	"							22.626	3281.5	26.601	3858	
21	161	2604.5	22.7						25.680	3724.4	30.049	4358	No sample - Seal Failure
	162	2604.5	22.7	Scum		0.0142		20.5	25.671	3723.1	30.049	4358	Sample
			10.4	Scum		0.0142		9.0	-	-	-	-	Sample
22	163	2461.5	22.7	Trace		0.005	20.25		24.234	3514.6	28.435	4124	Sample-Seal Failure
	164	2461	10.4	Trace				5	24.21	3511.2	28.470	4129	Sample - Seal Failure
	165	2461	10.4						-	-	28.463	4128	No sample - Seal Failure
	166	2461	10.4						-	-	28.463	4128	No sample - Seal Failure
23	167	2633	22.7						-	-	30.387	4407	No sample - Seal Failure
	168	2633	22.7	Scum		0.07		20.1	26.095	3784.5	30.394	4408	Sample
			10.4	Trace		0.0312		9.1	-	-	-	-	Sample
24	169	2461.5	22.7	Trace		0.0396		19.6	24.225	3513.4	28.415	4124	Sample
			10.4	Trace					-	-	-	-	Sample - Seal Failure
	170	2461.5	10.4						-	-	28.435	4124	Seal Failure
	171	2461.5	10.4						-	-	28.435	4124	Seal Failure
	172	2461	10.4	Trace		0.0085		9.3	24.222	3512.9	28.435	4124	Sample - Seal Failure

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - WIRRAH-1

<u>TEST SEAT</u>	<u>DEPTH</u> <u>(METRES)</u>	<u>CHAMBER</u>	<u>RECOVERY (LITRES)</u>				<u>HEWLETT-PACKARD</u> <u>FORMATION PRESSURE</u>		<u>HEWLETT-PACKARD</u> <u>HYDROSTATIC PRESSURE</u>		<u>REMARKS</u>	
			<u>OIL</u>	<u>COND.</u>	<u>GAS</u>	<u>FORMATION</u> <u>WATER</u>	<u>FILTRATE</u>	<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>		<u>Psia</u>
	<u>K.B.</u>	Litres	Litres	Litres	m ³	Litres	Litres					
25	173	3013.5	22.7					-	-	39.771	5768	Tight
	174	3013.4	22.7					-	-	39.771	5743	Seal Failure
	175	3013.6	22.7					-	-	39.247	5692	Tight
	176	3014.5	22.7					-	-	38.944	5648	Seal Failure
	177	3001.5	22.7					-	-	39.013	5658	Tight
	178	3001.4	22.7					-	-	38.689	5611	Seal Failure
	179	3001.4	22.7					-	-	38.771	5623	Seal Failure
	180	3005.5	22.7					-	-	38.806	5628	Seal Failure
	181	2973.7	22.7					-	-	38.764	5622	Tight
	182	2973.8	22.7							38.626	5602	Sample - Tight
			3.8					2.0	36.958	5360		Sample - Tight
								0.9	-	-		

TABLE I

8. SUMMARY OF WIRRAH-I WELL PRODUCTION TEST NO. 1 RESULTS

Test No	Date	Perforation Interval (m RKB)	Production Fluid Time (=Hrs)	Choke Size (64th)	Flowing WHP PSIG	Stabilised Prod. Rate (STB/D)	Initial Reservoir PSIA	Flowing BHP PSIA	Maximum BHT (°F)	Damage Ratio	Productivity Index (STB/D/PSI)	Permeability Thickness (md-ft)	Permeability (md)
1	29/10/82 - 4/11/82	2624-2633.5	13.5	28	580	610	3764 psia	2610	221	1.07	0.56	1129	5.8
							@2618mKB						

Note: (1) All depths relative to KB (KB Southern Cross = 21m)

TABLE 1

SUMMARY OF WIRRAH NO. 1 WELL PRODUCTION TEST RESULTS

Test No	Date	Perforation Interval	Production Fluid Time	Choke Size	Flowing WHP	Average Prod. Rate	Initial SBHP*	Flowing BHP	Maximum BHT	Damage Ratio	Productivity Index	Permeability Thickness	Permeability
(1982)	(m RKB)	(-/Hrs)	(64th)	[kPa (gauge)]	(kL/D)	[kPa (abs)]	[kPa (abs)]	(°C)		(ST kL/D/kPa)	(md-ft)	(md)	
2	24-28 Nov	2725-2747	-	-	-	-	-	-	-	-	-	-	-
		2691-2702	Water/14.58	48	0	1.11 (7 STB/D)	27,093 (3929.4 psia) @ 2685m	22,643 (3284 psia) @ 2685m	105.40. (221.7°F) @ 2684m	0.36	2.5x10 ⁻⁴ (0.0109 STB/D/psia)	2.33	0.065

Notes: (1) All depths relative to KB (KB Southern Cross = 21m)

(2) The damage ratio of 0.36 indicate the wellbore or near wellbore region was stimulated. This corresponds to a skin factor of -2.9.

9. WIRRAH-1 TEMPERATURE RECORD

LOGGING RUN	THERMOMETER DEPTH (m)	MAX. RECORDED TEMPERATURE (C°)	CIRCULATION TIME (t _k) (hours)	TIME AFTER CIRCULATION STOPPED (t)	HORNER* TEMPERATURE (C°)	GEOHERMAL GRADIENT (C°/km)
Suite #1 BHC-GR	799.0m	42.7° C	2	3-3/4hrs	-	
Suite #2 DLT-MSFL-GR	1766.3m	60.5° C	0.8	5-1/2hrs	80.5° C	41° C/km
LDT-CNL-GR	1770.0m	66.0° C		10-3/4hrs		
HP Recording	1770.0m	75.0° C		16 hrs		
Suite #3 DLT-MSFL-GR	2318.0m	77.7° C	1	5hrs	96.6° C	39° C/km
LDT-CNL-GR	2304.0m	84.4° C		9-1/2hrs		
Suite #4 DLT-MSFL-GR	2801.0m	97.0° C	1.5	9-1/2hrs	117.0° C	39° C/km
LDT-CNL-GR	2804.0m	102.0° C		14-1/2hrs		
BHC-GR	2803.0m	104.5° C		18-1/2hrs		
HDT-GR	2803.5m	107.0° C		23-1/2hrs		
Suite #5 DLT-MSFL-GR	3031.0m	107.0° C	1½	6-1/2hrs	116.6° C	36° C/km
LDT-CNL-GR	3034.0m	108.0° C		10-3/4hrs		
BHC-GR	3033.0m	113.0° C		14.0hrs		

FIGURES

LOCALITY MAP

WIRRAH - 1

SCALE - 1:250,000

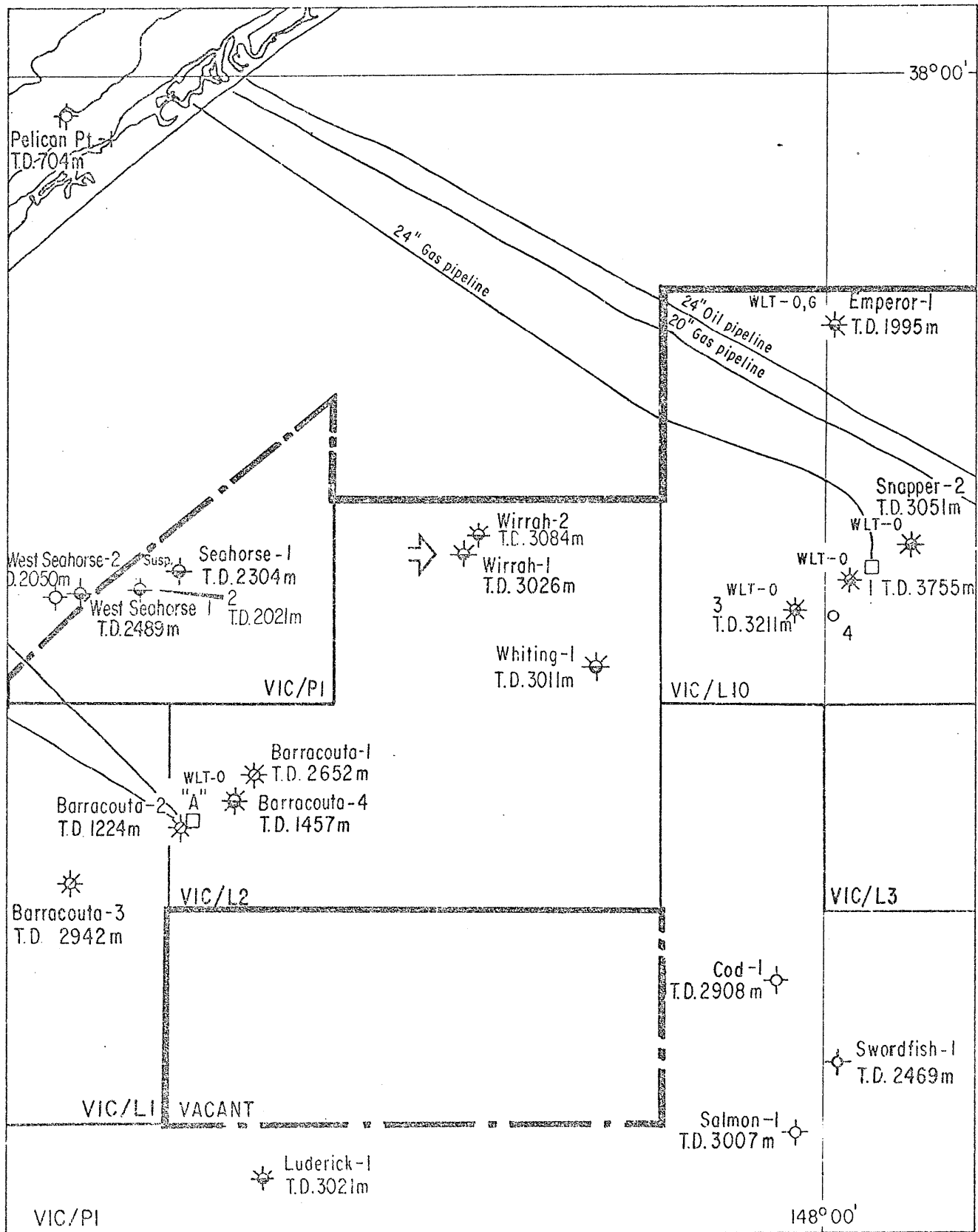
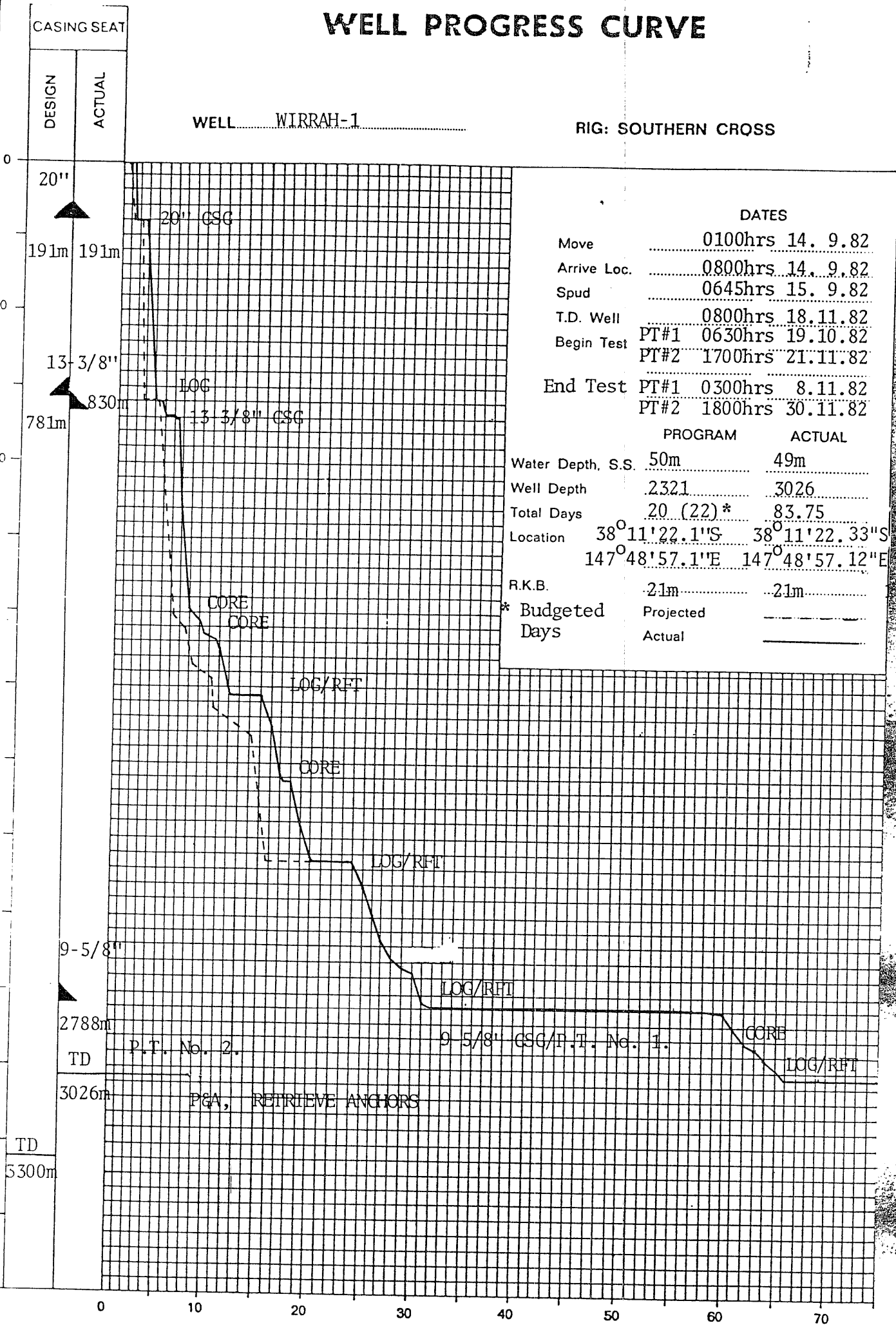


Figure 1

WELL PROGRESS CURVE

WELL WIRRAH-1

RIG: SOUTHERN CROSS



DATES	
Move	0100hrs 14. 9.82
Arrive Loc.	0800hrs 14. 9.82
Spud	0645hrs 15. 9.82
T.D. Well	0800hrs 18.11.82
Begin Test	PT#1 0630hrs 19.10.82
	PT#2 1700hrs 21.11.82
End Test	PT#1 0300hrs 8.11.82
	PT#2 1800hrs 30.11.82

	PROGRAM	ACTUAL
Water Depth, S.S.	50m	49m
Well Depth	2321	3026
Total Days	20 (22)*	83.75
Location	38°11'22.1"S 147°48'57.1"E	38°11'22.33"S 147°48'57.12"E
R.K.B.	21m	21m
* Budgeted Days	Projected	Actual

Figure 2.

Wellbore Schematic

Well: Wirrah-1

RKB

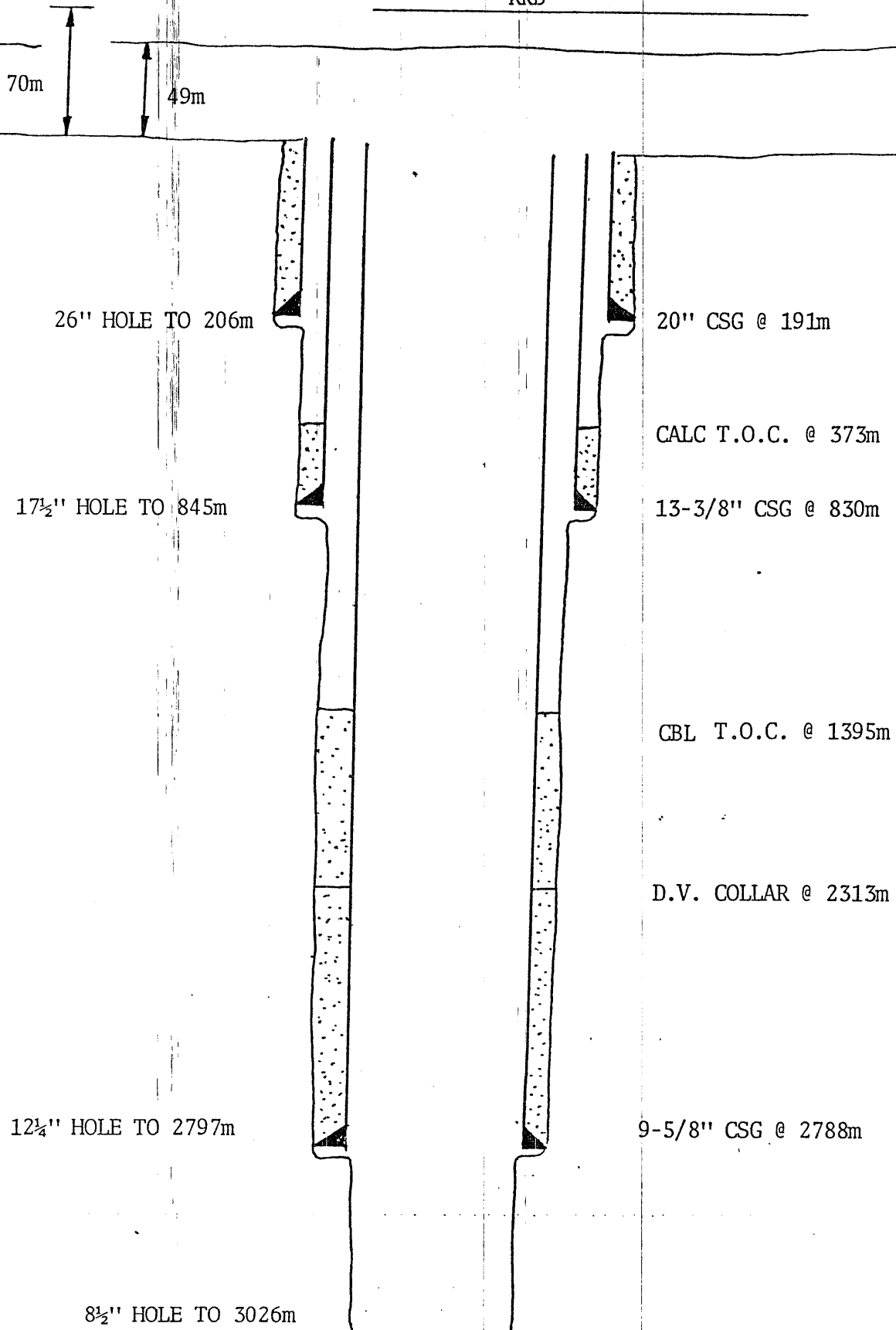


Figure 3.

Abandonment Schematic

Well: Wirrah-1

RKB

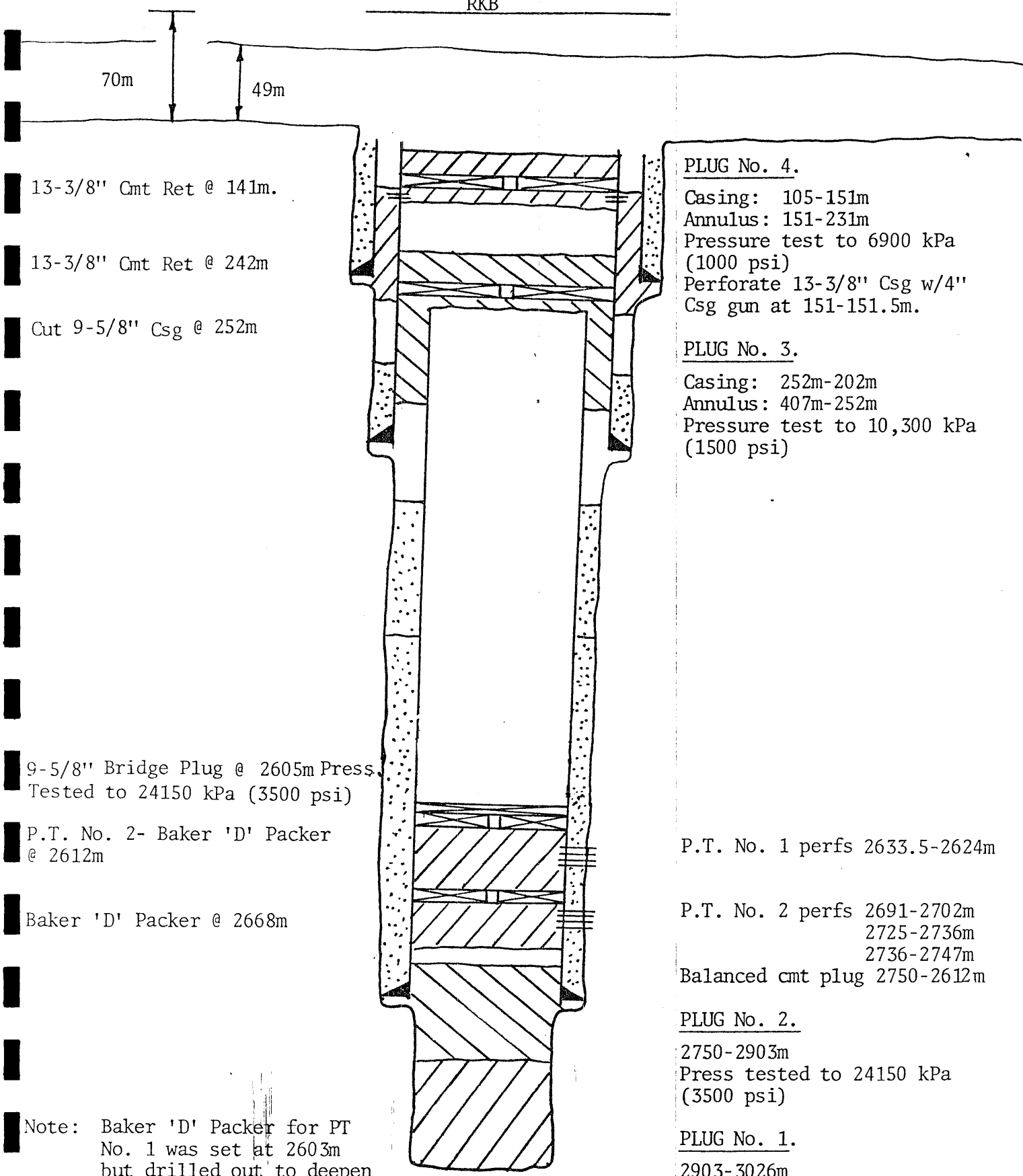


Figure 4.

Note: Baker 'D' Packer for PT No. 1 was set at 2603m but drilled out to deepen well.

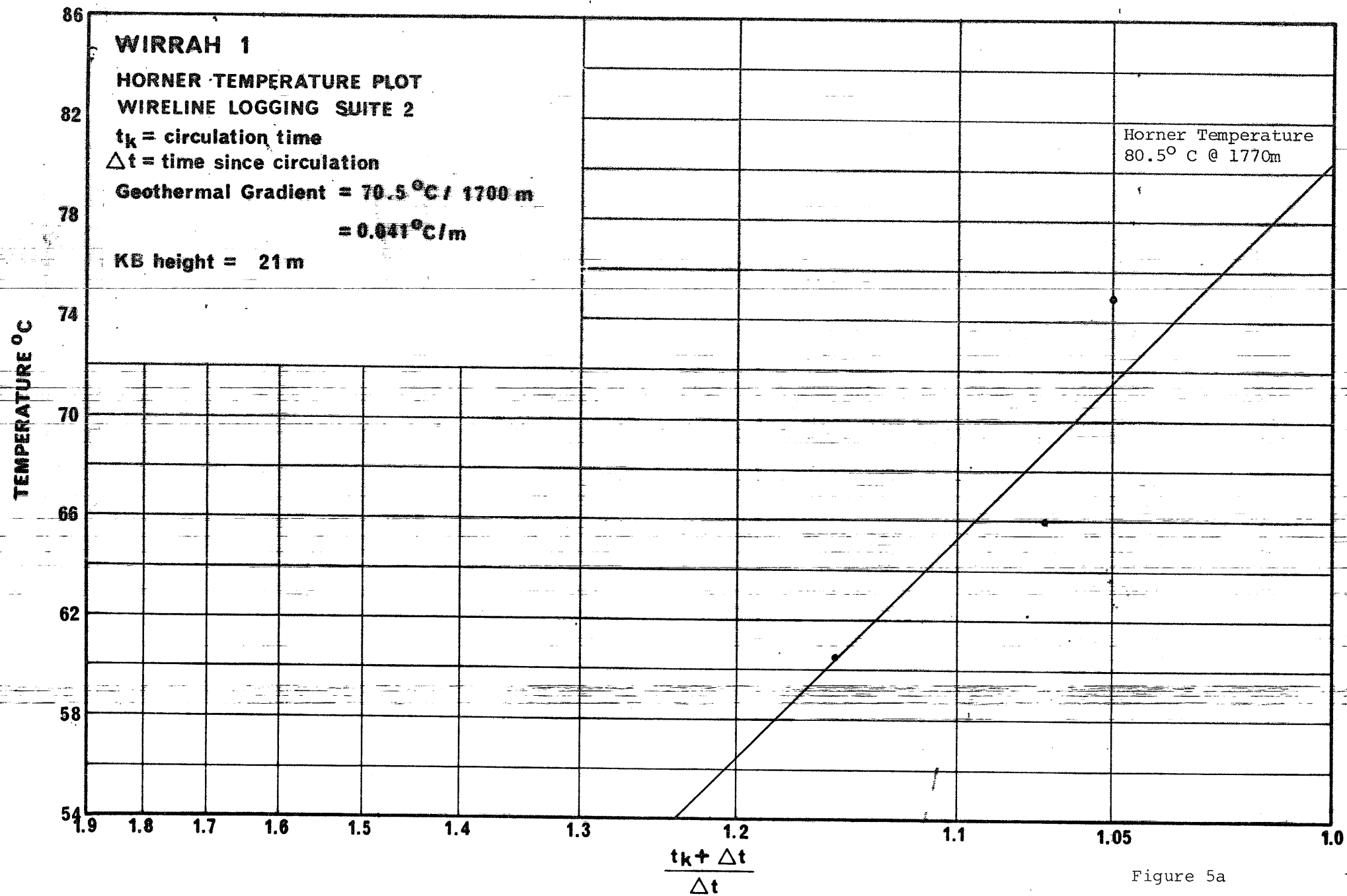


Figure 5a

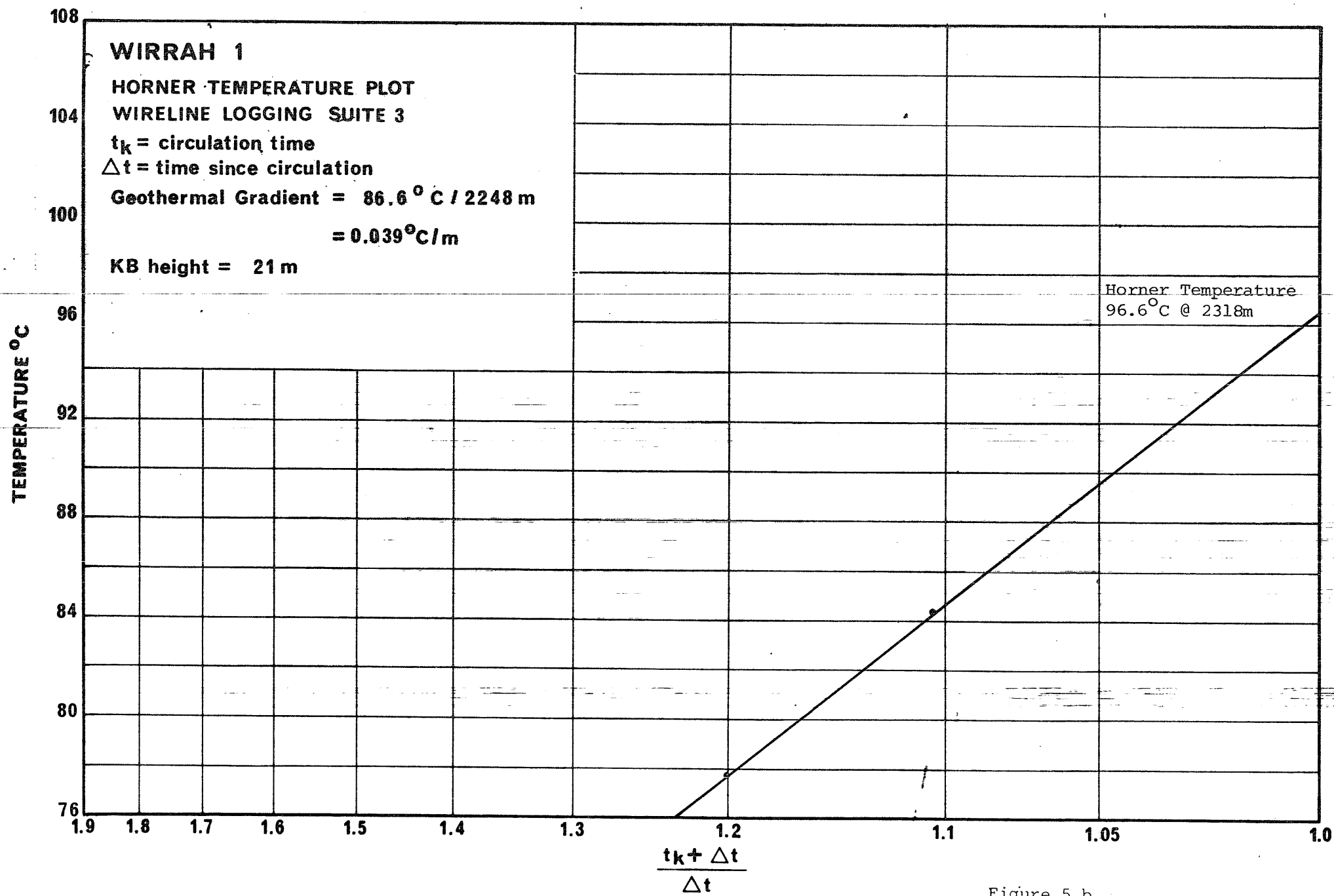


Figure 5 b.

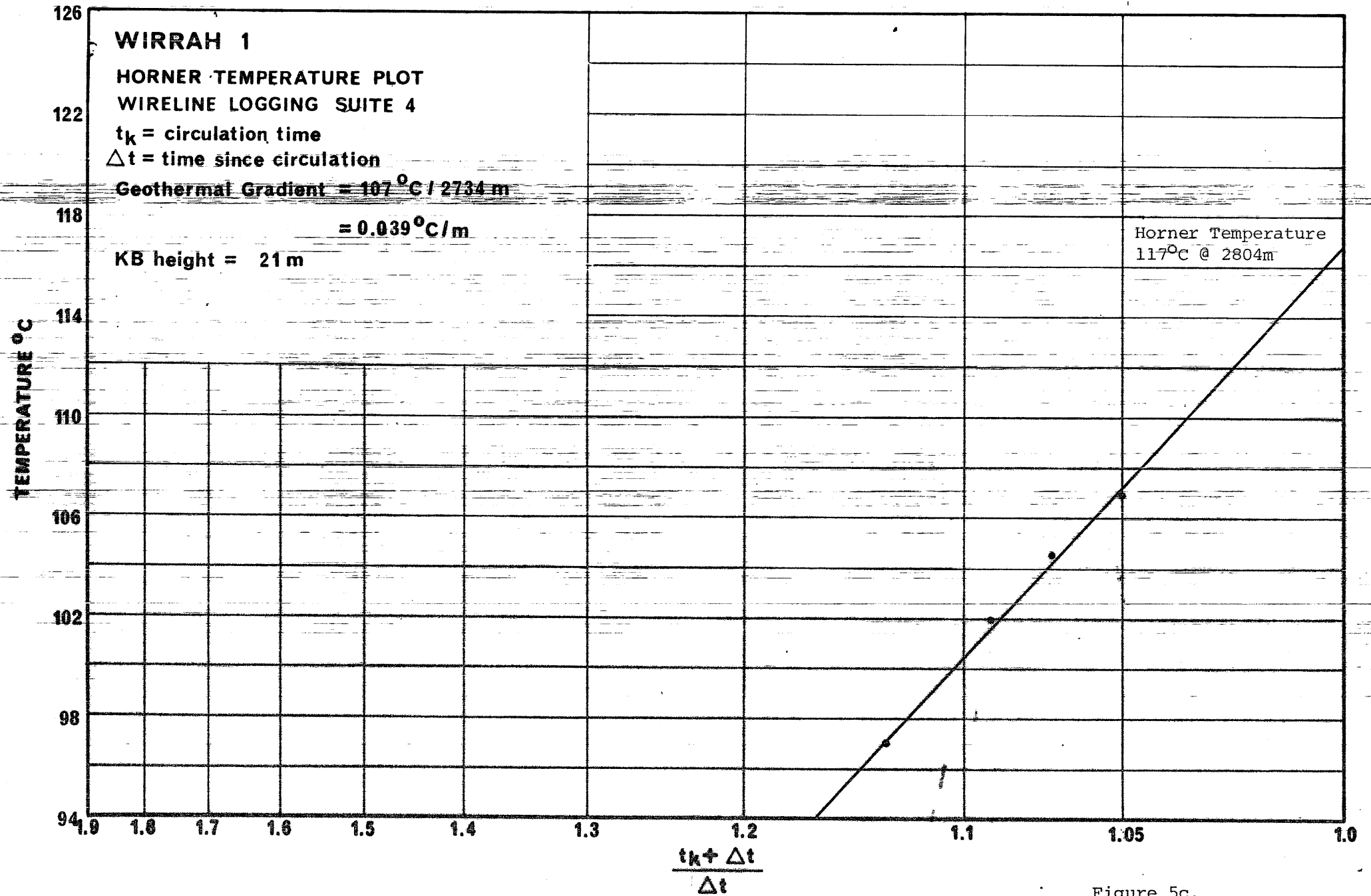


Figure 5c.

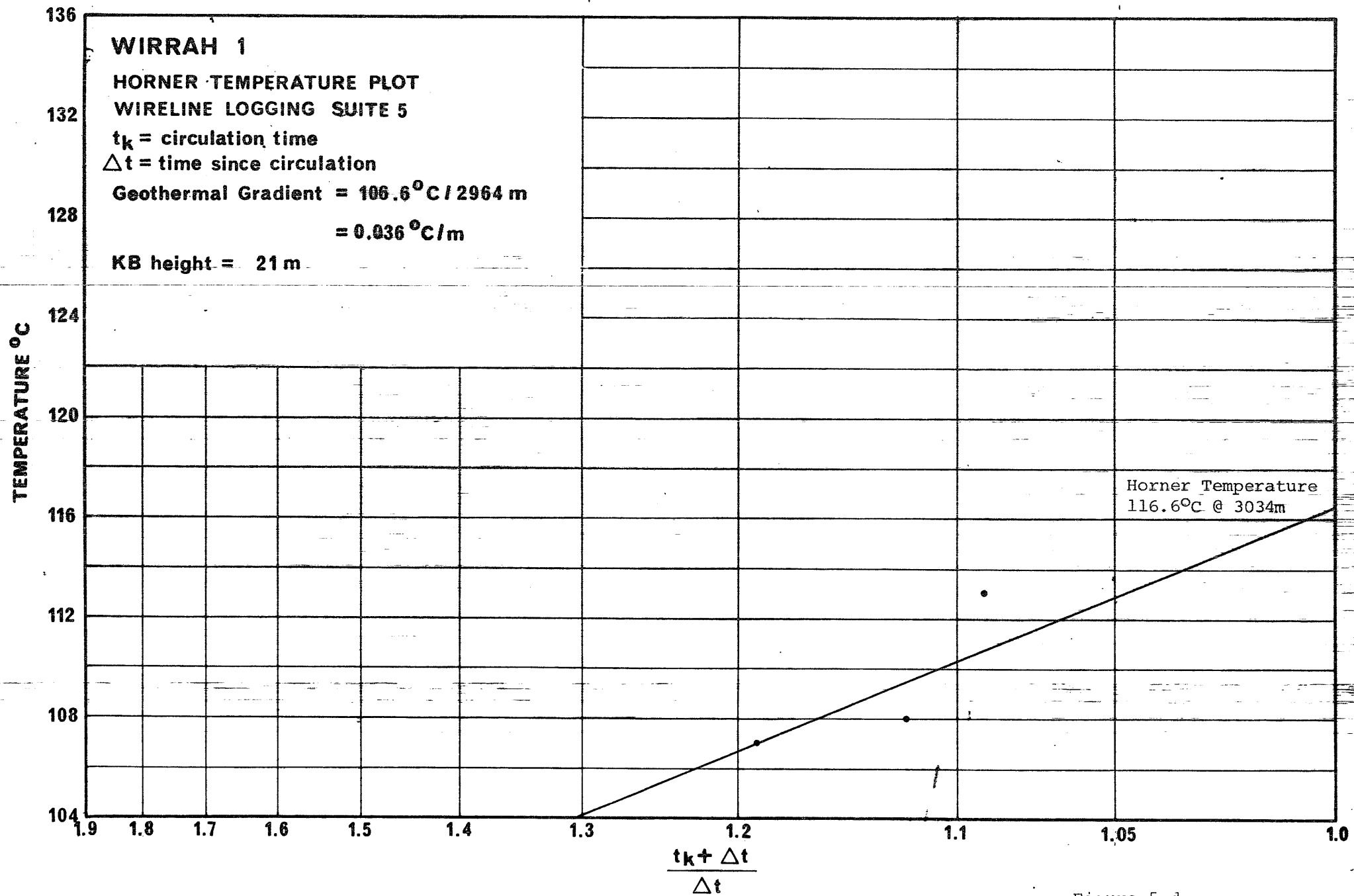


Figure 5 d.

APPENDIX I

APPENDIX --1

LITHOLOGICAL DESCRIPTIONS

WIRRAH - 1

Lithology Description

215 - 220m	50	CALCARENITE: agglomerates of medium to fine grained clasts, medium to light grey, firm, very calcareous, subrounded to subangular clasts, calcareous cement, well sorted, mineral fluorescence.
	40	CEMENT
	trace	Angular shell fragments: quartzose sand sized clasts, white, tan, subangular, hard, forams.
220 - 230m	10	SANDSTONE: red brown, non calcareous, quartzose clasts, fine, hard, some cuttings have calcareous cement.
	70	CALCARENITE: as above.
	30	CEMENT: as above.
	trace	SHELL FRAGMENTS
	trace	SANDSTONE
230 - 240m	trace	QUARTZ CLASTS
	trace	CALCAREOUS SPICULES
	80	CALCARENITE: as above, agglomerates are smaller.
	20	CEMENT: as above.
	trace	SHELL FRAGMENTS
240 - 250m	trace	SANDSTONE
	trace	SANDSTONE CLASTS
	90	CALCARENITE: as above.
	10	SANDSTONE CLASTS: quartzose, coarse sand sized, tan, white, angular.
	trace	SANDSTONE: as above.
250 - 260m	trace	SHELL FRAGMENTS: as above.
	90	CALCARENITE: as above, finer agglomerates than above.
	10	SANDSTONE CLASTS: quartzose, coarse sand sized, tan, white, angular.
	trace	SANDSTONE: as above.
	trace	SHELL FRAGMENTS: as above.
260 - 270m	90	CALCARENITE: as above.
	10	BRYOZOANS
	trace	SANDSTONE CLASTS
	trace	SHALE FRAGMENTS
	trace	SANDSTONE
270 - 280m	95	CALCARENITE: very fine grained, medium light grey with dark flecks, hard and friable, angular to subangular, calcareous cement.
	5	FOSSILS: echinoid spines, bryozoans, forams
280 - 290m	90	CALCARENITE: very fine grained, medium light grey with occasional dark flecks, hard and friable, angular to subangular, calcareous cement.
	10	FOSSILS: echinoid spines, bryozoans, forams, shells.
290 - 300m	100	CALCARENITE: as above, with up to 10% fossils, eg. echinoids, bryozoans, forams, shell fragments, gastropods.
300 - 310m	100	CALCARENITE: as above, but some very soft water sensitive.

310 - 320m	100	CALCARENITE: as above, up to 50% fossils.
320 - 330m	100	CALCARENITE: as above, up to 20% fossils, the finer material forms soft water sensitive aggregates as above, and fossils are mixed with these as well as being found separately.
330 - 340m	100	CALCARENITE: as above, with soft water sensitive material as above, some of the fine material is made up of small aggregates of light to medium grey fine grained calcareous clasts, calcareous cement, rounded to subrounded, firm, well sorted; 15% fossils, as above.
340 - 350m	100	CALCARENITE: as above, 80% fossils, bryozoans, echinoids, gastropods, shells; 20% fine calcareous material, as above, trace of the soft material, as above.
350 - 360m	100	CALCARENITE: as above, 60% fossils, as above; 30% soft material, as above; 10% fine calcareous material, as above.
360 - 370m	100	CALCARENITE: as above, 20% fossils, as above; 30% soft material, as above; 50% fine calcareous material, as above; mineral fluorescence.
370 - 380m	100	CALCARENITE: as above, 10% fossils, as above; 20% soft material, as above; 70% fine calcareous material, as above.
380 - 390m	100	CALCARENITE: as above, trace fossils, 20% soft material, as above; 80% fine calcareous material, as above; many of the bryozoans, and echinoid spines are covered in fine sand clasts with calcareous cement, mineral fluorescence.
390 - 400m	100	CALCARENITE: 90% medium grained, light grey, very calcareous, agglomerates of calcareous cement, fine clasts, rounded, well sorted, dark grey, hard; trace fossils, bryozoans; trace light grey soft masses of calcareous material which is sensitive to water.
400 - 410m	100	CALCARENITE: as above, 90% agglomerates of fine clasts as above, 10% fossils - bryozoans, echinoid spines, trace soft material, as above.
410 - 420m	100	CALCARENITE: as above, 90% agglomerates of fine clasts, as above; bimodal (split 50-50) of very coarse sized aggregates and coarse sized aggregates; 10% fossils - echinoid spines, bryozoans, trace gastropods; trace soft material, as above.
420 - 430m	100	CALCARENITE: as above, 100% agglomerates of fine clasts, as above; trace fossils - bryozoans and echinoid spines; trace soft material, as above.
430 - 440m	100	CALCARENITE: as above.
440 - 450m	100	CALCARENITE: as above.

450 - 460m	100	CALCARENITE: medium light grey to medium dark grey, hard, very fine to fine grained aggregates, well rounded to subangular grains, poorly sorted, calcareous cement, occasional crystalline carbonate, clear to opaque; fossils - bryozoans, forams, echinoid spines.
460 - 470m	100	CALCARENITE: as above.
470 - 480m	100	CALCARENITE: as above, with occasional soft water sensitive claystone.
480 - 490m	100	CALCARENITE: as above, with trace microcrystalline pyrite.
490 - 500m	100	CALCARENITE: as above.
510 - 520m	100	CALCARENITE: as above, with less forams and echinoid spines than above.
520 - 530m	100	CALCARENITE/CALCILUTITE: clear, as above but grading to calcilutite; calcilutite is medium light grey to dark grey, very hard and brittle, occasionally crystalline, angular cuttings.
530 - 540m	100	CALCARENITE/CALCILUTITE: as above, less fossils.
540 - 550m	100	CALCARENITE/CALCILUTITE: as above, in part very soft and water sensitive.
550 - 560m	100	CALCARENITE/CALCILUTITE: as above, in part very soft and water sensitive.
560 - 570m	100	CALCARENITE/CALCILUTITE: predominantly calcilutite, medium light grey to medium grey, soft to very soft, occasionally firm as grain size increases, grades into clear as above, abundant fossil fragments - bryozoans, shell fragments, occasional forams.
570 - 580m	100	CALCILUTITE/CALCARENITE: as above, but less calcilutite and less fossils.
580 - 590m	100	CALCILUTITE/CALCARENITE: light grey to medium light grey, soft and sticky calcilutite, grades to hard, fine grained to very fine grained, clear, well rounded to subangular, well sorted, calcareous cement; occasional fossils; high proportion of soft water sensitive claystone (gumbo) coming over shakers.
590 - 600m	100	CALCILUTITE/CALCARENITE: as above.
600 - 610m	100	CALCARENITE: as above, occasional calcilutite, occasional fossils - forams, bryozoans.
610 - 620m	100	CALCARENITE/CALCILUTITE: as above, occasional fossils.
620 - 630m	100	CALCARENITE/CALCILUTITE: as above.
630 - 640m	100	CALCARENITE/CALCILUTITE: as above.
640 - 650m	100	CALCARENITE/CALCILUTITE: as above.
650 - 660m	100	CALCARENITE/CALCILUTITE: as above, occasional fossil fragments.

660 - 670m	100	CALCARENITE/CALCILUTITE: as above, occasional fossil fragments.
670 - 680m	100	CALCARENITE/CALCILUTITE: light to medium light grey, few soft sticky calcareous aggregates, grading to hard; hard aggregates composed of calcareous angular grains, medium to fine grained, and perhaps small shell fragments, micritic and calcareous cement. Some grains striated (with grain linearments crossed and held together by grain linearments running perpendicular to the first set), medium grained minerals. Also some dark grains, perhaps carbonaceous; occasional fossils - forams, shell fragments, bryozoans, echinoid spines.
	trace	SANDSTONE: quartz grains, hard, subrounded, very coarse, well sorted.
680 - 690m	100	CALCILUTITE/CALCARENITE: as above, trace white to light grey, very soft calcilutite.
690 - 700m	100	CALCILUTITE/CALCARENITE: as above, trace white to light grey, very soft calcilutite.
700 - 710m	100	CALCILUTITE/CALCARENITE: as above, many coarse sand sized cuttings of bryozoans, trace fossils - forams.
710 - 720m	100	CALCILUTITE/CALCARENITE: as above, bryozoans and forams, as above.
720 - 730m	100	CALCILUTITE/CALCARENITE: as above, occasional bryozoan fossils, trace pyrite forming cement around fine sand sized calcareous grains; high proportion of soft water sensitive calcareous clay.
730 - 740m	100	CALCILUTITE/CALCARENITE: as above.
740 - 750m	100	CALCILUTITE/CALCARENITE: as above, occasional bryozoan fossils, forams, echinoids fragments; high proportion of soft water sensitive calcareous clay, as above.
750 - 760m	100	CALCILUTITE/CALCARENITE: as above.
760 - 770m	70	CALCILUTITE/CALCARENITE: as above.
	30	SANDSTONE: quartzose grains, very light grey, calcareous cement, hard, medium to finely sorted, subangular to subrounded, well sorted.
	trace	FOSSILS: forams, bryozoans.
	trace	SANDSTONE: quartzose clear grains, coarse to medium grained, subrounded, moderately well sorted.
770 - 780m	50	CALCILUTITE/CALCARENITE: as above.
	40	SANDSTONE: loose quartz grains, clear, coarse to medium grained, rounded to subrounded, moderately well sorted, trace bryozoans.
	10	SANDSTONE: as above.
780 - 790m	10	CALCILUTITE/CALCARENITE: as above.
	80	SANDSTONE: loose quartz grains, as above.
	10	SANDSTONE: as above.

790 - 800m	80	SANDSTONE: as above, loose quartz grains.
	10	CALCILUTITE/CALCARENITE: as above.
	10	SANDSTONE: as above.
	trace	FOSSILS: bryozoan fragments.
800 - 810m	60	SANDSTONE: loose quartz grains, clear, medium to very coarse grained, well rounded to rarely subangular, occasionally fine grained to medium grained aggregates with dolomitic cement, (mineral fluorescence), aggregate grains angular to subangular.
	40	CALCILUTITE/CALCARENITE: light grey to medium dark grey, soft to firm, rounded to subangular cuttings, carbonaceous cement, trace fossils.
810 - 820m	80	SANDSTONE: as above, medium to very coarse grained, well rounded.
	20	CALCILUTITE/CALCARENITE: as above.
820 - 830m	70	SANDSTONE: as above.
	30	CALCILUTITE/CALCARENITE: some very light grey to white, very soft, argillaceous cuttings, also some very hard with cemented argillaceous quartz aggregates.
830 - 840m	80	CALCILUTITE/CALCARENITE: very light grey to medium light grey, soft to firm, rounded to subangular cuttings, sometimes soft when calcilutite forms matrix for quartzose sand grains, calcareous cement, trace fossil fragments.
	20	SANDSTONE: loose quartz grains, as above.
840 - 845m	100	CALCILUTITE/CALCARENITE: as above.
	trace	SANDSTONE: as above.
845 - 850m	100	CALCILUTITE/CALCARENITE: 3 types of cuttings: medium dark grey (approx. 30%); very hard, very fine grained, calcareous cement, medium light grey (approx. 50%); firm to friable, very fine grained to calcilutite, very light grey (approx. 20%); very soft, water sensitive calcilutite, occasional fossils, (bryozoans and forams).
850 - 855m	100	CALCILUTITE/CALCARENITE: as above.
855 - 860m	100	CALCILUTITE/CALCARENITE: as above.
860 - 865m	100	CALCILUTITE/CALCARENITE: as above, occasional microcrystalline carbonate, hard, brittle, white.
865 - 870m	100	CALCILUTITE/CALCARENITE: as above.
870 - 875m	100	CALCILUTITE/CALCARENITE: as above.
875 - 880m	100	CALCILUTITE/CALCARENITE: as above.
880 - 885m	100	CALCILUTITE/CALCARENITE: predominantly medium light grey, otherwise as above.
885 - 890m	100	CALCILUTITE/CALCARENITE: as above, predominantly medium light grey, very hard to firm, angular cuttings, occasional forams.

890 - 895m	100	CALCILUTITE/CALCARENITE: approx equal proportions of calcilutite and calcarenite; calcilutite is medium dark grey, hard to firm, calcarenite is very light grey to light grey, very fine grained to fine grained, firm to soft, friable; occasionally very light grey to white calcilutite, very soft.
895 - 900m	100	CALCILUTITE/CALCARENITE: as above.
900 - 905m	100	CALCILUTITE/CALCARENITE: as above.
905 - 910m	100	CALCILUTITE/CALCARENITE: as above.
910 - 915m	100	CALCILUTITE/CALCARENITE: as above.
915 - 920m	100	CALCILUTITE/CALCARENITE: as above.
920 - 925m	100	CALCILUTITE/CALCARENITE: as above.
925 - 930m	100	CALCILUTITE/CALCARENITE: as above.
930 - 935m	100	CALCILUTITE/CALCARENITE: as above.
935 - 940m	100	CALCILUTITE/CALCARENITE: majority soft to very soft, medium light grey to light grey, occasionally hard cuttings, otherwise as above.
940 - 945m	100	CALCILUTITE/CALCARENITE: as above.
945 - 950m	100	CALCILUTITE/CALCARENITE: predominantly firm to hard, medium dark grey to medium grey, otherwise as above.
950 - 955m	100	CALCILUTITE/CALCARENITE: as above.
955 - 960m	100	CALCILUTITE/CALCARENITE: as above.
960 - 965m	100	CALCILUTITE/CALCARENITE: as above.
965 - 970m	100	CALCILUTITE/CALCARENITE: as above.
970 - 975m	100	CALCILUTITE/CALCARENITE: as above.
975 - 980m	100	CALCILUTITE/CALCARENITE: as above.
980 - 985m	100	CALCILUTITE/CALCARENITE: medium dark grey to medium light grey to less common very light grey, very soft to firm and friable; calcarenite generally very fine grained to fine grained, calcite cement, rare fossils, forams.
985 - 990m	100	CALCILUTITE/CALCARENITE: as above.
990 - 995m	100	CALCILUTITE/CALCARENITE: as above, some cuttings contain glauconite.
995 - 1000m	100	CALCILUTITE/CALCARENITE: as above.
1000 - 1005m	100	CALCILUTITE/CALCARENITE: trace microcrystalline pyrite, otherwise as above.
1005 - 1010m	100	CALCILUTITE/CALCARENITE: as above, trace microcrystalline carbonate.
1010 - 1015m	100	CALCILUTITE/CALCARENITE: as above.
1015 - 1020m	100	CALCILUTITE/CALCARENITE: as above.

1020 - 1025m	100	CALCILUTITE/CALCARENITE: trace microcrystalline pyrite aggregates, otherwise as above.
1025 - 1030m	100	CALCILUTITE/CALCARENITE: as above.
1030 - 1035m	100	CALCILUTITE/CALCARENITE: as above.
1035 - 1040m	100	CALCARENITE: medium dark grey to light grey, soft to firm and friable, generally fine grained, calcareous cement, occasional fossil: CALCILUTITE
	trace	
1040 - 1045m	100	CALCARENITE: predominantly light grey, otherwise as above.
1045 - 1050m	100	CALCARENITE: as above.
1050 - 1055m	100	CALCARENITE: as above.
1055 - 1060m	100	CALCARENITE: as above, predominantly medium light grey.
1060 - 1065m	100	CALCARENITE: as above, fine grained.
1065 - 1070m	100	CALCARENITE: as above, fine grained.
1070 - 1075m	100	CALCARENITE: as above, fine grained.
1075 - 1080m	100	CALCARENITE: as above, fine grained.
1080 - 1085m	100	CALCARENITE: as above, fine grained, 75% light grey, 25% medium light grey.
1085 - 1090m	100	CALCARENITE: as above, fine grained, 50% light grey, 50% medium light grey; a green mineral is present in some of the light grey cuttings and is fine grained, possibly glauconite.
1090 - 1095m	100	CALCARENITE: as above, fine grained, 50% light grey, 50% medium light grey and green mineral as above; some dark flecks in light grey cuttings.
1095 - 1100m	100	CALCARENITE: as above, fine grained, 60% light grey, 40% medium light grey, and green mineral as above, dark flecks, as above.
1100 - 1105m	100	CALCARENITE: as above, fine grained, 60% light grey, 40% medium light grey and green mineral as above, dark flecks as above.
1105 - 1110	100	CALCARENITE: very light grey, medium light grey, argillaceous, very soft to hard, fine to very fine grained, subrounded, well sorted, some cuttings show light and dark types mottled together, calcareous cement, cuttings generally subrounded to subangular of grit size.
1110 - 1115m	100	CALCARENITE: as above.
1115 - 1120m	100	CALCARENITE: as above.
1120 - 1125m	100	CALCARENITE: as above, occasional bryozoan fossil fragments.
1120 - 1125m	100	CALCARENITE: as above.
1125 - 1130m	100	CALCARENITE: as above.

1130 - 1135m	100	CALCARENITE:	as above.
1135 - 1140m	100	CALCARENITE:	as above.
1140 - 1145m	100	CALCARENITE:	as above.
1145 - 1150m	100	CALCARENITE:	as above, predominantly medium light grey.
1150 - 1155m	100	CALCARENITE:	as above.
1155 - 1160m	100	CALCARENITE:	as above.
1160 - 1165m	100	CALCARENITE:	as above, a fossil foram was observed.
1165 - 1170m	100	CALCARENITE:	as above.
1170 - 1175m	100	CALCARENITE:	as above.
1175 - 1180m	100	CALCARENITE:	as above, a fossil bryozoan fragment was observed.
1180 - 1185m	100	CALCARENITE:	as above.
1185 - 1190m	100	CALCARENITE:	as above, fossil echinoid spines predominate.
1190 - 1195m	100	CALCARENITE:	as above, much water sensitive calcareous material is coming over the shakers.
1195 - 1200	100	CALCARENITE:	as above.
1200 - 1205m	100	CALCARENITE:	as above, predominantly light grey.
1205 - 1210m	100	CALCARENITE:	as above.
1210 - 1215m	100	CALCARENITE:	as above.
1215 - 1220m	100	CALCARENITE:	as above, predominantly soft.
1220 - 1225m	100	CALCARENITE:	as above, predominantly soft.
1225 - 1230m	100	CALCARENITE:	as above.
1230 - 1235m	100	CALCILUTITE/CALCARENITE:	predominantly calcarenite, medium grey, firm, argillaceous, calcareous, fine to very fine grained, weak cement; some calcilutite, light grey, soft and water sensitive, trace microcrystalline pyrite and clear microcrystalline calcite.
1235 - 1240m	100	CALCILUTITE:	as above, trace calcarenite, leaves argillaceous residue when dissolved in HCl.
1240 - 1245m	100	CALCILUTITE:	as above, trace calcarenite.
1245 - 1250m	100	CALCILUTITE:	as above, with approx 40% calcarenite.
1250 - 1255m	100	CALCILUTITE:	as above, with occasional calcarenite.
1255 - 1260m	100	CALCILUTITE:	as above, with occasional calcarenite.

1260 - 1265m	100	CALCILUTITE: as above, with occasional calcarenite.
1265 - 1270m	100	CALCILUTITE: as above.
1270 - 1275m	100	CALCILUTITE/CALCARENITE: as above.
1275 - 1280m	100	CALCILUTITE/CALCARENITE: predominantly calcilutite (approx. 80%), very light grey, very soft, calcareous (argillaceous residue when dissolved in HCl), water sensitive; calcarenite is medium dark grey, firm, calcareous, very fine grained.
1280 - 1285m	100	CALCILUTITE/CALCARENITE: as above.
1285 - 1290m	100	CALCILUTITE/CALCARENITE: as above.
1290 - 1295m	100	CALCILUTITE/CALCARENITE: as above, with trace crystalline carbonate.
1295 - 1300m	100	CALCILUTITE: as above, with trace crystalline carbonate.
1300 - 1305m	100	CALCILUTITE: as above.
1305 - 1310m	100	CALCILUTITE: as above, with minor calcarenite.
1310 - 1315m	100	CALCILUTITE: as above.
1315 - 1320m	70	CALCILUTITE: very light grey to white, very soft, sticky, argillaceous, dissolves in HCl, calcareous.
	30	SILTSTONE: medium grey to medium light grey, firm, calcareous, occasional glauconite, occasional fossil - forams.
1320 - 1325m	80	CALCILUTITE: as above.
	20	SILTSTONE: as above.
1325 - 1330m	50	CALCILUTITE: as above.
	50	SILTSTONE: as above.
1330 - 1335m	90	CALCILUTITE: as above.
	10	SILTSTONE: as above.
1335 - 1340m	90	CALCILUTITE: as above.
	10	SILTSTONE: as above, forams common.
1340 - 1345m	90	CALCILUTITE: as above.
	10	SILTSTONE: as above.
1345 - 1350m	60	CALCILUTITE: as above.
	40	SILTSTONE: as above.
1350 - 1355m	40	CALCILUTITE: as above.
	60	SILTSTONE: as above.
1355 - 1360m	40	CALCILUTITE: as above, trace forams
	60	SILTSTONE: as above.
1360 - 1365m	90	CALCILUTITE: as above.
	10	SILTSTONE: as above.

1365 - 1370m	100	SILTSTONE: two types of cuttings: very light grey, very soft, water sensitive, argillaceous cuttings - previously described as calcilutite - have graded into a less calcareous claystone, approx 60% of sample; medium grey to medium light grey siltstone, firm, blocky, argillaceous, calcareous; occasional fossil foram.
1370 - 1375m	100	SILTSTONE: as above, 40% soft type, 60% firm type.
1375 - 1380m	100	SILTSTONE: as above, 70% soft type, 30% firm type.
1380 - 1385m	100	SILTSTONE: as above, 30% soft type, 70% firm type, occasional foram.
1385 - 1390m	100	SILTSTONE: as above.
1390 - 1395m	100	SILTSTONE: as above.
1395 - 1400m	100	SILTSTONE: as above.
1400 - 1405m	100	SILTSTONE: as above, medium light grey, firm type dominates sample.
1405 - 1410m	100	SILTSTONE: as above, soft type dominates.
1410 - 1415m	100	SILTSTONE: as above, predominantly firm type, angular cuttings.
1415 - 1420m	100	SILTSTONE: as above.
1420 - 1425m	100	SILTSTONE: as above.
1425 - 1430m	100	SILTSTONE: as above, many forams.
1430 - 1435m	100	SILTSTONE: as above.
1435 - 1440m	100	SILTSTONE: as above, trace green mineral, possibly glauconite, some dark flecks in medium grey siltstone cuttings, occasional foram.
1440 - 1445m	100	SILTSTONE: as above.
1445 - 1450m	100	SILTSTONE: as above.
1450 - 1455m	100	SILTSTONE: as above.
1455 - 1460m	100	SILTSTONE: as above.
1460 - 1465m	100	SILTSTONE: as above, trace glauconite.
1465 - 1470m	100	SILTSTONE: rare yellow brown, medium light grey to very light grey, firm to very soft, angular to blocky cuttings, abundant glauconite and black, well rounded, medium grain size grains, trace blocky pyrite, calcareous.
1470 - 1475m	100	SILTSTONE: as above.
1475 - 1480m	5	SANDSTONE: opaque, white to clear, coarse to very coarse, well rounded to subangular, predominantly subrounded, well sorted, no shows.
	95	SILTSTONE: as above.

1480 - 1485m	70	SANDSTONE:	as above, no fluorescence, no shows.
	30	SILTSTONE:	as above.
1486m		Grab Sample	
	80	SANDSTONE:	as above, no fluorescence.
	20	SILTSTONE:	as above.
1487m		Grab Sample	
	70	SANDSTONE:	as above, no fluorescence.
	30	SILTSTONE:	as above.
1488m		Grab Sample	
	10	SANDSTONE:	as above, no fluorescence.
	90	SILTSTONE:	as above.
1488.2 - 1500.6m		See Core Description No. 1	
1500.6 - 1513.4m		See Core Description No. 2	
1513.4 - 1527.0m		See Core Description No. 3	
1527m		Bottoms Up Sample	
	90	SANDSTONE:	quartzose, clear to opaque, white, very coarse to coarse grains, angular to subrounded, predominantly subangular, moderately sorted, no shows.
	10	SILTSTONE:	medium grey to medium dark grey, hard, blocky cuttings, slightly calcareous, trace cubic pyrite crystals.
1527 - 1530m	60	SANDSTONE:	as above.
	40	SILTSTONE:	multicoloured, light grey to medium dark grey, brown, pale brown, with green glauconite and trace pyrite, otherwise as above.
1530 - 1535m	80	SANDSTONE:	as above, trace mineral fluorescence.
	20	SILTSTONE:	cuttings as above, plus brown to black carbonaceous and micaceous, trace glauconite, trace pyrite, calcareous.
1535 - 1540m	80	SANDSTONE:	as above.
	20	SILTSTONE:	cuttings softer than above, otherwise as above, some very soft, water sensitive.
1540 - 1545m	80	SANDSTONE:	as above.
	20	SILTSTONE:	as above.
1545 - 1550m	70	SANDSTONE:	quartzose, clear to opaque, white, very coarse to medium grained, predominantly coarse, subangular to subrounded, moderately sorted, no fluorescence, trace mineral fluorescence, no shows.
	30	SILTSTONE:	medium light grey to light grey, firm to hard, blocky cuttings, mildy calcareous.
1550 - 1555m	70	SANDSTONE:	as above, plus fine dolomite cemented aggregates of angular quartz, trace microcrystalline pyrite, trace mica, trace forams.
	30	SILTSTONE:	as above.
1555 - 1560m	5	SANDSTONE:	as above.
	95	SILTSTONE:	as above.
1560 - 1565m	5	SANDSTONE:	as above.
	95	SILTSTONE:	as above.

1565 - 1570m	50	SILTSTONE: as above.
	50	COAL: black, blocky, angular, vitreous.
	trace	SANDSTONE: as above.
1572.4		<u>Bottoms Up</u> !! Cheers
	95	SANDSTONE: quartzose, predominantly clear, coarse grains, subrounded to rounded, well sorted, fluorescence 20 - 30%, bright yellow to white, dull yellow cut, dull yellow, slow streaming crush cut.
	5	SILTSTONE: as above.
	trace	COAL
1573.4		Grab Sample
	80	SANDSTONE: as above, except very slow streaming crush cut; 20-30% bright yellow to white fluorescence.
	20	SILTSTONE: as above, but grading into dark grey to black carbonaceous siltstone and trace coal (cavings?).
1573.4 - 1585.6m		See Core Description No. 4
1585.6 - 1596.6m		See Core Description No. 5
1596.6 - 1598m		Bottoms Up Sample
	90	SANDSTONE: quartzose, medium light grey, generally loose clasts, very coarse to coarse, hard, subangular to subrounded, moderately well sorted, dolomitic cement, poor visible porosity.
	10	SILTSTONE: medium light grey to dark brown, calcareous.
	trace	CARBONATE Mineral fluorescence, 30% bright yellow; trace hydrocarbon fluorescence, yellow to white, slow diffuse cut and crush cut.
1598 - 1599m		Grab Sample from slow drilling break.
	30	SILTSTONE: as above.
	70	SANDSTONE: 1) 60% loose quartz grains, clear, angular to subangular, moderately well sorted, very coarse to coarse, probably caveins; 2) 10% sandstone with dolomitic cement, clear, coarse clasts, angular, hard, moderately well sorted, fluorescence mineral 10%, no cut.
	trace	COAL: black, blocky, vitreous.
1600m	30	SILTSTONE: 50% light grey, occasional glauconitic grains, calcareous cement, firm; 50% brown, micromicaceous, soft, carbonaceous.
	70	SANDSTONE: 30% loose quartz grains, as above; 40% sandstone with dolomitic cement, as above; mineral fluorescence 40%.
	trace	COAL: as above.
	trace	PYRITE
1600 - 1604m	80	SANDSTONE: two types: dolomite cemented sandstone approx 70% - very hard, medium to coarse grained, angular to subangular, dolomitic cement, mineral fluorescence, no cut; 10% loose quartz grains - clear to white, very coarse, subrounded, no shows, no cut, probably caveins.
	20	SILTSTONE: medium light grey, greenish grey, medium dark grey, (ie. multicoloured), hard, in part carbonaceous.

1604 - 1605m	50	SANDSTONE: two types: 40% with dolomitic cement as above, gives mineral fluorescence, no cut; 10% loose clear quartz grains, very coarse, subangular to angular, no shows or cut.
	50	SILTSTONE: as for 1600m, 90% light grey.
	trace	PYRITE
	trace	COAL: as above.
1605 - 1607.2m	20	Grab Sample
	20	COAL: as above, grading into very carbonaceous dark brown siltstone (see below).
	70	SANDSTONE: two types: approx. 60% dolomitized, very hard, medium to coarse grained, angular to subangular, dolomitic cement, mineral fluorescence, no cut; 10% loose quartz grains, clear to white, very coarse, subrounded, no shows, probably cavings.
	10	SILTSTONE: medium light grey to pale brown, occasionally white, very soft to hard, water sensitive in part, brittle and blocky in part, calcareous cement.
1607.2 - 1610m	100	SANDSTONE: 90% loose clear quartz grains, coarse to very coarse, angular to subangular, moderately sorted, no fluorescence, no cut; 10% sandstone with dolomitic cement, as above, mineral fluorescence, no cut.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
1610 - 1615m	80	SANDSTONE: two types: 20% clear quartz grains, very coarse to coarse grained, angular to subangular, well sorted, no fluorescence; 60% clear, quartz grains, hard cuttings, well cemented, medium grained, well sorted, angular, dolomitic cement, mineral fluorescence, no cut.
	10	SILTSTONE: as above
	trace	PYRITE
	10	COAL: as above.
1615 - 1620m	90	SANDSTONE: 80% loose quartz grains, as above, except being subrounded to subangular, no fluorescence; 10% sandstone aggregates with dolomitic cement, as above, mineral fluorescence, no cut.
	10	COAL: as above.
	trace	SILTSTONE: grey, as above.
	trace	PYRITE
1620 - 1625m	50	SANDSTONE: 40% loose quartz grains, as above; 10% sandstone aggregates with dolomitic cement, as above; 10% yellow mineral fluorescence, no cut.
	50	COAL: as above.
	trace	SILTSTONE: brown, grey, argillaceous, carbonaceous, micromicaceous.
	trace	PYRITE
1625 - 1628m	40	SANDSTONE: loose quartz grains, as above, no fluorescence; trace of sandstone aggregates with dolomitic cement, with yellow mineral fluorescence.
	40	COAL: black, blocky, vitreous, subfissile.
	20	SILTSTONE: as above.

1628 - 1632m		Grab Sample
	60	SANDSTONE: 40% loose clear quartz grains, very coarse to medium grained, moderately well sorted, subrounded to angular; 20% sandstone aggregates with dolomitic cement as above, mineral fluorescence.
	20	SILTSTONE: as above.
	20	COAL: as above, has quite a lot of dolomite mineral fluorescence.
1632 - 1634m		Grab Sample
	90	SANDSTONE: 70% clear quartz grains, as above; 20% sandstone with dolomitic cement, as above, mineral fluorescence.
	10	SILTSTONE: as above, with occasional glauconite grains.
	trace	COAL
1635m		
	70	SANDSTONE: two types: 55% loose quartz grains, white, very coarse to coarse, shattered appearance, low visible porosity, no fluorescence; 15% quartzose aggregates, fine to medium grained, angular to subangular, very hard, dolomitic cement, mineral fluorescence, orange/yellow.
	30	SILTSTONE: medium grey to medium light grey, very soft to very hard, calcareous, trace pyrite, trace mica, blocky to subfissile.
	trace	COAL: as above.
1635 - 1640m		
	100	SANDSTONE: two types, as above: 70% dolomitic cemented aggregates; 30% loose quartz grains.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
1640 - 1645m		
	100	SANDSTONE: two types, as above: 60% dolomitic cemented aggregates; 40% loose quartz grains.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
1645 - 1650m		
	80	SANDSTONE: two types, as above: 10% dolomitic cemented, 70% loose quartz grains.
	trace	SILTSTONE: as above.
	20	COAL: as above.
1650 - 1655m		
	100	COAL: as above.
1655 - 1660m		
	100	COAL: as above.
1660 - 1665m		
	100	COAL: as above.
1665 - 1670m		
	90	COAL: as above.
	5	SILTSTONE: as above.
	5	SANDSTONE: predominantly dolomitic cemented, as above, but trace with hydrocarbon fluorescence.
1670 - 1675m		
	90	SANDSTONE: quartzose, clear to opaque, very coarse, loose, subangular to subrounded, moderately to well sorted, trace mineral fluorescence, some quartz grains have brown black stain (?) but no fluorescence.
	5	COAL: as above.
	5	SILTSTONE: as above.
1675 - 1680m		
	100	SANDSTONE: as above.
	trace	COAL

1680 - 1685m	40	SANDSTONE: loose quartz grains as above, trace dolomitic cemented quartz aggregates as above, with 5-10% yellow mineral fluorescence, no cut.
	20	COAL: as above.
	40	SILTSTONE: medium light grey, light grey, light brown, medium grey, carbonaceous.
1685 - 1690m	30	SANDSTONE: loose quartz grains; as above, some of the grains have a slight dolomitic coating; occasional dolomitic cemented quartz aggregates, as above, 10% yellow mineral fluorescence.
	40	COAL: as above.
	30	SILTSTONE: as above.
1690 - 1695m	10	SANDSTONE: loose quartz grains, as above, trace dolomitic cemented quartz aggregates as above, with yellow mineral fluorescence.
	90	SILTSTONE: medium to light grey, carbonaceous, micromicaceous, calcareous, argillaceous, firm.
	trace	COAL: as above.
1695 - 1700m	90	SILTSTONE: medium light grey, medium grey, light brown grey, micromicaceous, carbonaceous, firm, occasionally calcareous.
	10	COAL: as above.
	trace	SANDSTONE: as above, loose quartz grains, one fine grain aggregate with calcareous cement, subrounded to subangular grains, well sorted, hard, poor visible porosity, weak pale yellow fluorescence, very slow weak streaming cut (pale yellow), weak very pale yellow crush cut. All the rest of the fluorescence was yellow mineral fluorescence from dolomite.
1700 - 1705m	30	SILTSTONE: as above.
	70	SANDSTONE: quartzose, two kinds, predominantly aggregates of clear, medium grained, angular to subangular, hard, well cemented, dolomitic cement, very poor visible porosity, 70% fluorescence, yellow to gold, bright yellow to white cut, bright yellow to gold, immediate, very slow streaming cut; loose quartz grains, as above.
	trace	COAL: as above.
1705 - 1707m	90	SANDSTONE: as above, 90% fluorescence, as above.
	10	SILTSTONE: as above.
	trace	COAL: as above.
1707 - 1710m	100	SANDSTONE: two types: - clear, very coarse to coarse loose grains, subangular to subrounded, well sorted, no fluorescence, 10% sandstone aggregates with dolomitic cement as above, gives 10% fluorescence, bright yellow to gold, immediate yellow/gold slow cut, yellow/gold crush cut.
	trace	COAL
	trace	SILTSTONE: as above.
1710 - 1715m	100	SANDSTONE: clear to opaque, very coarse grained, angular to subangular, well sorted, trace mineral fluorescence in dolomitic cemented aggregates - quartz has shattered appearance - low visible porosity, trace pyritic encrustment.
	trace	SILTSTONE: as above.

1715 - 1720m	100	SANDSTONE:	as above, but angular to subrounded.
1720 - 1722m	80	SANDSTONE:	as above.
	20	COAL:	as above.
1722 - 1723m	80	SANDSTONE:	as above, trace pyrite encrustment on grains.
	10	SILTSTONE:	as above, and some white to very light grey, very soft claystone.
	10	COAL:	as above.
1723 - 1725m	80	SANDSTONE:	as above, trace pyrite encrustment and rutilated quartz.
	10	SILTSTONE:	as above.
	10	COAL:	as above.
1728.4m		CBU	
	60	SANDSTONE:	two types: 1) loose quartz grains, very coarse to medium grained, very angular to subrounded, 2) very hard, fine grained, quartzose, subangular, dolomitic cement, fluorescence, grades to siltstone.
	40	SILTSTONE:	white to medium dark grey, very soft to hard, in part water sensitive, dolomitic cement, grades into very fine sandstone.
1728 - 1730m	100	SANDSTONE:	quartzose, very coarse, angular to subrounded, occasional dolomite cemented aggregates, trace mica.
	trace	COAL:	as above.
	trace	SILTSTONE:	as above.
1730 - 1735m	100	SANDSTONE:	as above.
	trace	COAL:	
1735 - 1740m	100	SANDSTONE:	as above.
1740 - 1745m	80	SANDSTONE:	as above.
	20	SILTSTONE:	very light grey to medium dark grey, very soft to hard, blocky to subfissile, carbonaceous flecks in part, grades to a dirty coal.
1745 - 1750m	90	CLAYSTONE:	very light grey, very soft, sticky, water sensitive.
	10	SANDSTONE:	as above.
1750 - 1755m	70	CLAYSTONE:	as above.
	10	SANDSTONE:	as above.
	20	COAL:	as above.
	trace	SILTSTONE:	
1755 - 1760m	10	COAL:	as above.
	40	CLAYSTONE:	as above.
	20	SANDSTONE:	as above, very coarse to medium grains.
	30	SILTSTONE:	medium light grey to pale brown, soft to firm, blocky to subfissile, slightly calcareous.
1760 - 1765m	20	COAL:	as above.
	10	CLAYSTONE:	as above.
	20	SILTSTONE:	as above.
	50	SANDSTONE:	as above.

1765 - 1770m	50	SANDSTONE: quartzose, white to clear, coarse grained, angular to subangular.
	50	SILTSTONE: as above, grading to claystone.
	trace	COAL
1770 - 1775m	90	SANDSTONE: clear to frosty, subangular to angular, very coarse quartz grains, predominantly loose. Occasionally brown stain on some grains, dolomitic cement with 25% of sample, no shows.
	10	SILTSTONE: moderately firm to hard, grey to dark brown, occasionally carbonaceous, subrounded cuttings, non calcareous.
	trace	PYRITE
1775 - 1780m	100	SANDSTONE: as above, but predominantly medium to coarse grained, dolomitic cement with 20% of sample.
	trace	COAL
	trace	SILTSTONE
	trace	PYRITE
1780 - 1785m	100	SANDSTONE: as above, but predominantly coarse grained, increased amount of cemented fine quartz grains, dolomitic cement with 40% of sample.
	trace	COAL
	trace	SILTSTONE: as above, sometimes very soft, white to light grey.
	trace	PYRITE
1785 - 1790m	100	SANDSTONE: as above, predominantly loose grained although cemented aggregates increasing, dolomite cement with 50% of sample.
	trace	COAL
	trace	SILTSTONE
	trace	PYRITE
1790 - 1795m	100	SANDSTONE: as above, about 50% loose quartz grains and 50% dolomite cemented aggregates.
	trace	SILTSTONE
	trace	PYRITE
1795 - 1800m	100	SANDSTONE: 50% loose very coarse grained, 50% fine to medium sandstone aggregates with dolomitic cement.
1800 - 1805m	100	SANDSTONE: 90% clear to frosty, very coarse, subangular to subrounded loose quartz grains, 10% fine to medium angular quartz grains in a dolomite cement - dull white fluorescence.
	trace	PYRITE
1805 - 1810m	100	SANDSTONE: as above, trace brown staining on some grains, 10% dolomitic cemented sandstone.
	trace	SILTSTONE: as above.
1810 - 1815m	100	SANDSTONE: as above, 100% loose, very coarse quartz grains.
	trace	SANDSTONE: dolomitic.
1815 - 1820m	100	SANDSTONE: as above.
	trace	SANDSTONE: dolomitic.
1820 - 1825m	100	SANDSTONE: as above.
	trace	SANDSTONE: dolomitic.

1825 - 1830m	100	SANDSTONE: clear to frosty, subrounded to subangular, loose, very coarse quartz grains, well sorted, no shows.
1830 - 1835m	20 80	SANDSTONE: as above. COAL: black.
1835 - 1840m	100 trace	COAL: black. SANDSTONE: as above.
1840 - 1845m	60 40 trace trace	COAL: as above. SILTSTONE: brown to dark brown, firm to hard, carbonaceous, subangular to subrounded cuttings, non calcareous. SANDSTONE: as above. PYRITE
1845 - 1850m	10 60 30	COAL: as above. SANDSTONE: as above, loose quartz grains, trace dolomite. SILTSTONE: as above.
1850 - 1855m	60 40	SILTSTONE: as above. SANDSTONE: as above.
1855 - 1860m	60 40	SANDSTONE: as above. SILTSTONE: as above.
1860 - 1865m	100 trace trace	SANDSTONE: predominantly (75%) clear to frosty, subrounded to subangular, loose, well sorted, very coarse quartz grains with (25%) dolomitic cemented fine to medium sandstone aggregates. SILTSTONE: as above. COAL
1865 - 1870m	100 trace	SANDSTONE: 75% coarse quartz grains, 25% dolomitic; as above. SILTSTONE: as above.
1870 - 1875m	100 trace	COAL SANDSTONE: as above.
1875 - 1880m	60 40	COAL SANDSTONE: as above, predominantly very coarse loose quartz grains, 10% with dolomitic cement.
1880 - 1885m	100 trace	COAL SANDSTONE: as above.
1885 - 1890m	40 60 trace	COAL SILTSTONE: brown to dark brown, firm to hard, often very carbonaceous, subrounded cuttings, non calcareous. SANDSTONE: as above.
1890 - 1895m	100 trace trace	COAL SANDSTONE: as above. SILTSTONE: as above.
1895 - 1900m	100 trace trace	SILTSTONE: light brown to dark brown, very soft to hard, very carbonaceous in part, non calcareous; some white clayey material also. COAL SANDSTONE

1900 - 1905m	60	SILTSTONE:	as above.
	30	SANDSTONE:	as above.
	10	COAL:	as above.
1905 - 1910m	80	SILTSTONE:	as above, but engulfed in a white fluffy clay matrix.
	20	SANDSTONE:	as above.
1910 - 1915m	100	SILTSTONE:	in part as above, in part a white to grey, soft, fluffy (kaolinitic?) siltstone, clay rich.
1915 - 1920m	30	SILTSTONE:	as above.
	70	SANDSTONE:	clear to frosty, subangular to subrounded, well sorted, loose very coarse quartz grains, no shows, no dolomite.
1920 - 1925m	100	SANDSTONE:	as above.
	trace	COAL:	as above.
	trace	SILTSTONE:	as above.
1925 - 1930m	40	SANDSTONE:	as above.
	60	SILTSTONE:	in part dark brown - firm; in part white - soft.
1930 - 1935m	60	SANDSTONE:	as above.
	40	SILTSTONE:	as above.
	trace	PYRITE:	increasing amount.
1935 - 1940m	40	SANDSTONE:	as above.
	60	SILTSTONE:	as above.
	trace	PYRITE	
1940 - 1945m	30	SANDSTONE:	as above.
	70	SILTSTONE:	predominantly white, soft, fluffy, non calcareous, engulfs other cuttings.
	trace	PYRITE	
	trace	COAL	
1945 - 1950m	100	SILTSTONE:	as above.
	trace	SANDSTONE	
	trace	PYRITE	
1950 - 1955m	100	SANDSTONE:	coarse quartz grains.
	trace	SILTSTONE	
	trace	COAL	
	trace	PYRITE:	coarse discrete lumps.
1955 - 1960m	100	SANDSTONE:	as above.
	trace	SILTSTONE	
	trace	COAL	
	trace	PYRITE	
1960 - 1965m	90	SILTSTONE:	as above.
	10	SANDSTONE:	as above.
	trace	PYRITE	
1965 - 1970m	40	SILTSTONE:	as above.
	60	SANDSTONE:	as above.
	trace	PYRITE	
1970 - 1975m	90	SANDSTONE:	clear to frosty, subangular, well sorted, loose, very coarse quartz grains, no shows.
	10	SILTSTONE:	as above.

1975 - 1980m	100	SANDSTONE: as above.
	trace	SILTSTONE: as above.
	trace	PYRITE
1980 - 1985m	80	SILTSTONE: light grey to dark brown, often very carbonaceous, non calcareous, subrounded cuttings, soft to hard.
	20	SANDSTONE: coarse quartz grains.
1985 - 1990m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above.
1990 - 1995m	70	SILTSTONE: as above.
	30	SANDSTONE: as above.
1995 - 2000m	80	SILTSTONE: as above.
	20	SANDSTONE: as above.
	trace	COAL
2000 - 2005m	90	SILTSTONE: as above.
	10	SANDSTONE: as above.
	trace	PYRITE
2005 - 2010m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above.
2010 - 2015m	40	SANDSTONE: as above, with some fine sandstone aggregates.
	60	SILTSTONE: as above.
2015 - 2020m	90	SILTSTONE: as above.
	10	SANDSTONE: as above.
2023.5	50	SILTSTONE: as above.
	50	SANDSTONE: predominantly light brown, soft, aggregates of fine to medium quartz grains with a silty matrix. Bright blue to white fluorescence on approx. 40% of sample. Slow streaming blue white fluorescence.
2023.5 - 2025m	60	SANDSTONE: predominantly medium to fine grained quartz aggregates, dull brown, soft to firm, subrounded cuttings, silty matrix; occasional coarse quartz grains; slow to no instant cut, good crush cut, bright blue/white fluorescence and residue on 40% of sample.
	40	SILTSTONE: as above.
	trace	PYRITE
2025 - 2030m	60	SANDSTONE: as above, 40% of sample with bright blue/white fluorescence and crush cut, very slow instant cut.
	40	SILTSTONE: as above.
	trace	PYRITE
2030 - 2032m	20	SANDSTONE: coarse grains and fine aggregates, approx 5% of sample has fluorescence, probably cavings.
	80	SILTSTONE: as above.
2032 - 2035m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above.

2035 - 2040m	40	SANDSTONE: white to light brown, fine to medium grained quartz aggregates, soft to firm, subrounded cuttings often with black or brown staining, silty matrix, most grains have bright blue white fluorescence and crush cut.
	60	SILTSTONE: as above.
2040 - 2046m	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
2046 - 2061m		See Core Description No. 6
2062 - 2065m	100	SILTSTONE: as above.
2065 - 2070m	90	SILTSTONE: as above.
	10	SANDSTONE: as above, no shows.
2070 - 2075m	80	SILTSTONE: grey to brown, soft to very hard, carbonaceous in part, non calcareous.
	20	SANDSTONE: grey, fine to medium quartz aggregates, moderately hard, no shows.
	trace	COAL
	trace	PYRITE
2075 - 2080m	20	COAL
	60	SANDSTONE: as above, no shows.
	20	SILTSTONE: as above.
2080 - 2085m	60	SILTSTONE: as above.
	40	SANDSTONE: as above, no shows.
	trace	COAL
2085 - 2090m	80	SANDSTONE: grey, fine to medium grained, well sorted, quartzose sandstone; very hard, 30% of sample bright blue/white fluorescence, no cut, no crush cut able to be coaxed.
	20	SILTSTONE: as above.
2090 - 2095m	30	SANDSTONE: as above, 15% of sample has bright blue white fluorescence, no cut, bright blue white crush cut.
	50	COAL: as above.
	20	SILTSTONE: as above.
2095 - 2100m	60	SILTSTONE: as above.
	20	COAL: black.
	20	SANDSTONE: as above, trace shows - cavings?
2100 - 2105m	50	SANDSTONE: as above, no shows.
	50	SILTSTONE: as above.
	trace	COAL
2105 - 2110m	80	SILTSTONE: as above.
	20	SANDSTONE: as above, no shows.
2110 - 2115m	60	SANDSTONE: as above, no shows.
	40	SILTSTONE: as above.
	trace	COAL
2115 - 2120m	80	SANDSTONE: white to grey, fine to medium grained, well sorted, hard, silty matrix, low visible porosity, no shows.
	20	SILTSTONE: as above.
2120 - 2125m	50	SANDSTONE: as above.
	50	SILTSTONE: as above.
	trace	COAL

2125 - 2130m	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
2130 - 2135m	60	SILTSTONE: as above.
	40	SANDSTONE: as above.
	trace	COAL
2135 - 2140m	50	SANDSTONE: fine to medium grained sandstone, white to grey, medium to hard, low visible porosity; fluorescence: 15% of sample bright blue/white, cut: weak cut, moderate crush cut, bright blue/white.
	40	SILTSTONE: as above.
	10	COAL: as above.
2140 - 2145m	50	SANDSTONE: trace fluorescence, no cut.
	50	SILTSTONE: as above.
2145 - 2150m	10	COAL: as above.
	50	SANDSTONE: in part fine aggregates, in part loose coarse quartz grains - trace fluorescence - cavings?
	40	SILTSTONE: as above.
2150 - 2155m	35	SANDSTONE: quartzose, clear to creamy white, generally loose quartz grains, some aggregates, medium to coarse grained, occasionally fine aggregates, angular to subangular, poorly sorted, low porosity, no shows.
	65	SILTSTONE: white to medium grey, occasionally brown and dark grey, slightly quartzose, predominantly clay rich, some varieties of siltstone are moderately calcareous, moderate amounts of pyrite.
2155 - 2160m	30	SANDSTONE: as above, becoming subangular to subrounded, some quartz grains are coated with pyrite cement.
	70	SILTSTONE: as above.
2160 - 2165m	10	SANDSTONE: as above.
	90	SILTSTONE: mostly white to light grey, slightly quartzose, clay rich, some cuttings are moderately calcareous, moderate amounts of pyrite, trace mica.
2165 - 2170m	40	SANDSTONE: quartzose, clear, occasionally off white, translucent, fine to coarse grained, poorly sorted, generally loose quartz grains, the fine fraction occurs as aggregates, subangular to subrounded, trace mica books, no shows.
	60	SILTSTONE: many varieties, dark grey, carbonaceous; light grey to white argillaceous and brown cuttings with ferro cement.
2170 - 2175m	15	SANDSTONE: as above.
	85	SILTSTONE: as above.
2175 - 2180m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.
2180 - 2185m	20	SANDSTONE: as above.
	80	SILTSTONE: as above.

2185 - 2190m	40	SANDSTONE: quartzose, firm, light grey to tan, fine to medium grained, well sorted, rounded to subrounded, mainly occurs as aggregates, silica and clay cement, negligible porosity, abundant pyrite, no shows.
	60	SILTSTONE: as above.
2190 - 2195m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
2195 - 2200m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
2200 - 2205m	35	SANDSTONE: as above.
	65	SILTSTONE: as above.
2205 - 2210m	10	SANDSTONE: as above.
	90	SILTSTONE: as above.
2210 - 2215m	100	SILTSTONE: firm to hard, various colours, mainly light to medium grey to black, others are brown, quartzose, mostly argillaceous, abundant mica.
2215 - 2220m	100	SILTSTONE: as above.
2220 - 2225m	100	SILTSTONE: as above.
2225 - 2230m	30	SANDSTONE: clear to white quartz grains, mainly aggregates, <u>medium</u> to <u>coarse</u> grained, angular to rounded, dominantly subangular to subrounded, abundant dolomite cement, very low porosity, trace to 5% blue white fluorescence giving a strong fast milky white cut fluorescence, trace light brown cut residue.
	70	SILTSTONE: as above.
2230 - 2235m	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
2235 - 2240m	50	SANDSTONE: as above.
	50	SILTSTONE: as above.
2240 - 2245m	60	SANDSTONE: quartzose, clear grains, white cement, hard to brittle, <u>medium</u> grains in firm aggregates, subangular to rounded, dominantly subrounded, abundant dolomite cement, low porosity, the sandstone has 50% blue white fluorescence which gives a slow streaming milky white cut and a moderate crush cut.
	40	SILTSTONE: as above.
2245 - 2250m	100	SILTSTONE: quartzose, light to medium grey, firm to very soft, some cuttings are moderately calcareous, others are argillaceous, rich in pyrite.
2250 - 2255m	100	SILTSTONE: as above.
2255 - 2260m	100	SILTSTONE: as above.
2260 - 2265m	100	SILTSTONE: as above.

2265 - 2270m	20	SANDSTONE: fine to coarse grained, mainly aggregates held together by dolomite cement, trace pyrite, bright yellow gold mineral fluorescence.
	80	SILTSTONE: as above.
2270 - 2275m	65	SANDSTONE: white, very hard, consists of quartz aggregates with some loose shattered grains; unbroken grains are fine to coarse, subangular to subrounded, poorly sorted, abundant dolomite cement, common mineral fluorescence and trace blue white fluorescence with weak crush cut.
	35	SILTSTONE: as above.
2275 - 2280m	65	SANDSTONE: as above.
	35	SILTSTONE: as above.
2280 - 2285m	30	SANDSTONE: as above.
	70	SILTSTONE: as above.
2285 - 2290m	20	SANDSTONE: as above, trace blue white fluorescence, no cut.
	60	SILTSTONE: as above, trace pyrite.
	20	CLAYSTONE: medium grey, soft water soluble to firm and brittle, non calcareous, blocky to subfissile.
2290 - 2295m	25	SANDSTONE: as above, dolomite cement, common mineral fluorescence.
	65	SILTSTONE: as above.
	10	CLAYSTONE: as above.
2295 - 2300m	35	SANDSTONE: quartzose, clear, white to medium grey, hard, occurs mainly as aggregates and as fractured grains, very fine to very coarse, poorly sorted, subangular to subrounded, common dolomite cement, low porosity, blue white mineral fluorescence, no cut.
	60	SILTSTONE: as above.
	5	CLAYSTONE: as above.
2300 - 2305m	30	SANDSTONE: as above.
	60	SILTSTONE: as above.
	10	CLAYSTONE: as above.
2305 - 2310m	50	SANDSTONE: as above, abundant dolomite cement, abundant mineral fluorescence, no cut.
	40	SILTSTONE: as above.
	10	CLAYSTONE: as above.
2310 - 2315m	60	SILTSTONE: as above.
	40	SANDSTONE: as above.
2315 - 2321m	80	SILTSTONE: as above.
	20	SANDSTONE: as above.
2321 - 2325m	35	SILTSTONE: as above.
	65	SANDSTONE: as above.
2325 - 2330m	80	SANDSTONE: quartzose, light grey, friable to brittle, fine to very coarse grained, poorly sorted, dolomite and calcareous cement, occurs as aggregates, with occasional loose grains, 100% blue white (mineral?) fluorescence, no cut, very low visual porosity.
	20	SILTSTONE: medium to dark grey, mainly non calcareous, argillaceous, quartzose, trace pyrite.

2330 - 2335m	80	SANDSTONE:	as above, trace very weak crush cut.
	20	SILTSTONE:	as above.
2335 - 2340m	70	SANDSTONE:	as above, trace very weak crush cut.
	30	SILTSTONE:	as above.
2340 - 2345m	30	SANDSTONE:	as above.
	70	SILTSTONE:	as above.
2345 - 2350m	30	SANDSTONE:	as above.
	70	SILTSTONE:	medium to dark grey, soft to hard and brittle, quartzose, mostly argillaceous, some cuttings are calcareous, minor proportion of cuttings contain carbonaceous matter, pyrite crystals common, trace micromica in most cuttings.
2350 - 2355m	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above.
2355 - 2360m	65	SANDSTONE:	as above.
	35	SILTSTONE:	as above.
2360 - 2365m	70	SANDSTONE:	white to light grey, hard, brittle, occasional aggregates are friable, a few loose grains, but mostly consists of aggregates, fine to coarse grained, most aggregates contain well sorted sands, although the main grain size in each aggregate is different, abundant dolomite cement, very low visible porosity and permeability, 50-80% faint blue white (mineral?) fluorescence, no cut.
	30	SILTSTONE:	as above.
2365 - 2370m	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above.
2370 - 2375m	70	SANDSTONE:	as above.
	20	SILTSTONE:	as above.
	10	COAL:	black, shiny to dull, blocky to subfissile, hard, brittle, also contains some carbonaceous siltstone.
2375 - 2380m	40	SANDSTONE:	as above, 100% blue white fluorescence, trace very weak crush cut.
	35	COAL:	as above.
	25	SILTSTONE:	as above.
2380 - 2385m	45	SANDSTONE:	as above.
	35	COAL:	as above.
	20	SILTSTONE:	as above.
2385 - 2390m	25	SANDSTONE:	as above.
	45	SILTSTONE:	as above.
	30	COAL:	as above.
2390 - 2395m	45	SANDSTONE:	quartzose, white, translucent, occasionally light brown, firm to hard, fine to coarse grained, dominantly fine, moderately sorted, angular to subrounded, abundant dolomitic and calcareous cement, no visible porosity or permeability; 5% yellow gold fluorescence which gives a very weak streaming cut and a moderate milky white crush cut fluorescence, 90% blue purple (mineral?) fluorescence, no cut.
	50	SILTSTONE:	as above.
	5	COAL:	as above.

2395 - 2400	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above, with common pyrite clusters.
2400 - 2405m	30	SANDSTONE:	as above.
	70	SILTSTONE:	as above.
2405 - 2410m	70	SANDSTONE:	as above, with 5% yellow gold fluorescence, no cut or crush cut.
	30	SILTSTONE:	as above.
2410 - 2415m	25	SANDSTONE:	as above, with 5-10% yellow gold (mineral?) fluorescence, no cut.
	75	SILTSTONE:	as above.
2415 - 2420m	25	SANDSTONE:	as above, about half of sample now consists of medium to coarse loose quartz grains, subangular to subrounded, the rest consists of dolomitized, calcareous, fine to medium sand aggregates, trace yellow gold mineral fluorescence, no cut.
	75	SILTSTONE:	light to dark grey, also dark brown cuttings are common, soft to hard, quartzose, carbonaceous, pyrite very common, micromica common.
2420 - 2425m	35	SANDSTONE:	as above.
	65	SILTSTONE:	as above.
2425 - 2430m	10	SANDSTONE:	as above.
	90	SILTSTONE:	as above.
2430 - 2435m	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above, with common pyrite.
2435 - 2440m	90	SANDSTONE:	as above.
	10	SILTSTONE:	as above.
2440 - 2445m	10	SANDSTONE:	as above.
	90	SILTSTONE:	quartzose, off white, medium to dark grey, also brown variety, blocky to subfissile, mostly non calcareous, clay rich, pyrite common, mica common.
2445 - 2450m	90	SANDSTONE:	quartzose, clear, mostly white translucent grains, (about 15% of grains are grey to dark grey to black), hard, mostly as aggregates with some loose quartz grains, calcareous/dolomitic cement, very low porosity and permeability, trace to 5% yellow gold mineral fluorescence, no cut.
	10	SILTSTONE:	as above.
2450 - 2455m	100	SANDSTONE:	as above.
2455 - 2460m	20	SANDSTONE:	as above.
	80	SILTSTONE:	as above.
2460 - 2465m	20	SANDSTONE:	as above.
	80	SILTSTONE:	as above.
2465 - 2470m	15	SANDSTONE:	as above, a few of the coarse grains are very well rounded, shiny and smooth, the rest are either angular to subrounded, no shows.
	85	SILTSTONE:	as above, common pyrite and trace micromica.
2470 - 2475m	35	SANDSTONE:	as above.
	65	SILTSTONE:	as above.

2475 - 2480m	100	SANDSTONE: as above, mostly aggregates of fine to medium well cemented quartz grains, cement is calcareous dolomite, trace visible porosity, 10% yellow gold mineral fluorescence and 70% blue violet mineral fluorescence, no cut, no shows.
2480 - 2485m	100	SANDSTONE: as above, no shows.
2485 - 2490m	95	SANDSTONE: as above, no shows.
	5	SILTSTONE: as above, pyrite common.
2490 - 2495m	90	SANDSTONE: as above.
	10	SILTSTONE: mostly dark grey to black, carbonaceous variety, pyrite very common.
2495 - 2500	65	SANDSTONE: as above.
	35	SILTSTONE: as above.
2500 - 2505m	5	SANDSTONE: as above.
	95	SILTSTONE: as above.
2505 - 2510m	100	SANDSTONE: quartzose, off white to light grey brown overall, most grains are milky white translucent, about 10% of grains are medium to dark grey, fine to coarse grained, dominantly fine to medium (as aggregates), the medium to coarse fraction occurs as loose grains, subrounded to angular, moderately to poorly sorted, calcareous dolomite cement, low visible porosity, 5% yellow gold mineral fluorescence, blue to violet mineral fluorescence, no cut.
2510 - 2515m	100	SANDSTONE: as above.
2515 - 2520m	5	SANDSTONE: as above.
	95	SILTSTONE: as above.
2520 - 2525m	trace	SANDSTONE: as above.
	100	SILTSTONE: quartzose, mainly medium grey to dark grey with some light coloured cuttings, argillaceous, non calcareous matrix, pyrite clusters common, trace micromica.
2525 - 2530m	10	SANDSTONE: as above.
	90	SILTSTONE: as above.
2530 - 2535m	100	SILTSTONE: as above.
2535 - 2540m	50	SANDSTONE: as above.
	50	SILTSTONE: as above.
2540 - 2545m	80	SANDSTONE: quartzose, mostly loose quartz grains, with a few aggregates, white to off white, friable, fine to coarse grained, dominantly fine and medium (bimodal), angular to subangular, reasonably well sorted, non calcareous, non dolomitic (clay and silica?) cement, moderate visible porosity, 5% yellow gold fluorescence giving a spontaneous slow streaming milky white cut fluorescence, and a moderate crush cut.
	20	SILTSTONE: as above.
2545 - 2550m	100	SANDSTONE: as above, with shows.

2550 - 2555m	10	SANDSTONE: as above.
	80	SILTSTONE: as above, predominantly dark carbonaceous variety.
	10	COAL: black, shiny to dull, blocky to subfissile, brittle to earthy.
2555 - 2560m	10	SANDSTONE: as above.
	90	SILTSTONE: as above.
2560 - 2565m	100	SILTSTONE: dominantly carbonaceous, as above.
2565 - 2570m	10	SANDSTONE: as above.
	90	SILTSTONE: as above, common pyrite clusters.
	trace	COAL: as above.
2570 - 2575m	70	SANDSTONE: quartzose, pale brown grey overall, grains are mostly white translucent, fine to coarse, fine grains occur as aggregates, the medium to coarse grains occur as loose quartz grains, angular to subrounded, aggregates consist of well sorted fine grains, the loose grains are poorly sorted, some aggregates are non calcareous, while most are moderately calcareous, possibly some clay and silica cement, no quartz overgrowths, moderate porosity and permeability is indicated; the sandstone has 80 - 100% dull to bright blue white even fluorescence which gives spontaneous slow-streaming cut and a strong crush cut from the aggregates and a rapid cut from the coarser grains, leaving behind a clear colourless hydrocarbon stain.
	30	SILTSTONE: carbonaceous, as above.
2575 - 2580m	30	SANDSTONE: with shows as above, 80 - 100% fluorescence.
	70	SILTSTONE: as above.
2580 - 2585m	40	SANDSTONE: as above, with 80 - 100% fluorescence.
	60	SILTSTONE: as above.
2585 - 2590m	10	SANDSTONE: as above, with 80 - 100% fluorescence.
	90	SILTSTONE: as above.
2590 - 2595m	95	SANDSTONE: quartzose, very coarse loose grains and well sorted fine aggregates, conglomerate? interbedded with fine sandstone, 80 - 100% bright to dull blue white fluorescence; loose grains give little if any cut, but fine aggregates give a strong milky white crush cut fluorescence, low porosity and permeability is indicated.
	5	SILTSTONE: as above.
2595 - 2601m	75	SANDSTONE: as above.
	25	SILTSTONE: as above.
2601 - 2605m	30	SANDSTONE: as previously described, with shows.
	70	SILTSTONE: many coloured varieties, off white, light to medium grey, dark grey, brown, dark grey cuttings are carbonaceous, the brown cuttings are non calcareous, and the rest are calcareous, all are argillaceous; pyrite fragments are very common.

- 2605 - 2610m 10 SANDSTONE: as above, with shows.
90 SILTSTONE: as above.
- 2610 - 2615m 80 SANDSTONE: as above, 80 - 100% even, bright,
blue white fluorescence; the fine aggregates
give a spontaneous moderately fast streaming
milky white cut fluorescence and a very strong
instant crush cut, and a clear colourless
residue.
20 SILTSTONE: as above.
- 2615 - 2620m 90 SANDSTONE: as above.
10 SILTSTONE: as above.
- 2625 - 2630m 100 SANDSTONE: mostly loose quartz grains with
some fine to medium aggregates: the loose
quartz grains are white translucent, medium to
very coarse, dominantly coarse, subangular to
subrounded, mostly subrounded (not shattered by
bit suggesting fairly friable sand) well sorted,
no cement visible; the loose quartz grains have
moderate, even, blue white to violet (mineral?)
fluorescence, which gave a very weak blue white
cut; the aggregates are light to dark brown,
fine to medium grained, mostly fine, very well
sorted, subrounded, matrix consists of slightly
calcareous cement in some cuttings, but is
generally non calcareous, moderate porosity and
permeability is indicated; the aggregates have a
strong, even, blue white fluorescence which
gives a spontaneous moderately fast streaming
milky white cut fluorescence and a very strong
crush cut and a clear, colourless residue.
- 2630 - 2635m 100 SANDSTONE: as above, mostly loose quartz
grains, with only a small fraction of
aggregates, shows are same as for previous
description.
- 2635 - 2640m 10 SANDSTONE: as above.
90 IGNEOUS: medium light grey to olive grey, very
hard, massive, crystalline texture, mainly
quartz, also contains ferromagnesian silicates,
small amounts of feldspar and common graphite as
plates and as intercrystalline fill, trace
pyrite.
- 2640 - 2645m 100 IGNEOUS (?): as above.
trace SILTSTONE: (cavings?)
trace SANDSTONE: (cavings?)
- 2645 - 2650m 100 IGNEOUS (?): as above.
- 2650 - 2655m 100 IGNEOUS (?): as above, mostly massive without
any preferred orientation of grains and
crystals, although a few cuttings do show
irregular banding similar to gneiss, feldspar
laths, graphite plates are finer and more
scattered, some chlorite (?).
- 2655 - 2660m 100 IGNEOUS: as above.
- 2660 - 2665m 100 IGNEOUS: as above.
- 2665 - 2670m 100 IGNEOUS: as above.
- 2670 - 2675m 100 IGNEOUS: as above.

2675 - 2682m	100	IGNEOUS:	as above.
2682 - 2684m	65	IGNEOUS:	as above.
	15	SANDSTONE:	quartzose, white, clear, medium to granule size, angular to well rounded (frosted surface), some dolomite cement visible, trace pyrite, no shows.
	20	SILTSTONE:	quartzose, mainly medium grey and reddish brown, firm to soft, some cuttings moderately calcareous, trace pyrite.
2684 - 2690m	50	IGNEOUS:	as above, but becoming finer grained and not as quartz rich as above.
	25	SANDSTONE:	as above.
	25	SILTSTONE:	as above.
2690 - 2695m	15	IGNEOUS:	as above, cavings.
	70	SANDSTONE:	as above, no shows.
	15	SILTSTONE:	as above.
2695 - 2700m	5	IGNEOUS:	as above, cavings.
	55	SANDSTONE:	as above.
	40	SILTSTONE:	as above.
2700 - 2705m	60	SANDSTONE:	as above.
	40	SILTSTONE:	as above.
2705 - 2710m	60	SANDSTONE:	mainly coarse, as above with small proportion of fine aggregates; these have a dull, even yellow gold fluorescence which give a trace spontaneous cut, a very strong milky white crush cut fluorescence and a clear colourless residue.
	40	SILTSTONE:	as above.
2710 - 2715m	65	SANDSTONE:	as above, the broken quartz grains clear, white, also common grey to dark grey quartz grains; trace show as for 2705 - 2710m.
	35	SILTSTONE:	as above.
2715 - 2720m	65	SANDSTONE:	as above.
	35	SILTSTONE:	as above.
2720 - 2725m	60	SANDSTONE:	as above, trace fluorescence and cut as above.
	40	SILTSTONE:	as above.
2725 - 2730m	35	SANDSTONE:	as above, 5% yellow gold fluorescence with slow streaming cut.
	65	SILTSTONE:	as above, abundant pyrite.
2730 - 2735m	40	SANDSTONE:	as above, no cut, no shows.
	60	SILTSTONE:	as above.
2735 - 2740m	50	SANDSTONE:	as above, trace mineral fluorescence, no cut, no shows.
	50	SILTSTONE:	as above.
2740 - 2745m	35	SANDSTONE:	mainly white translucent, some grains are clear and colourless and a few are medium grey to dark grey, consists of fractured loose quartz grains, probably broken granules or pebbles, small fraction consists of fine aggregates, trace dolomite cement, very low visible porosity, no shows.
	65	SILTSTONE:	as above.

2745 - 2750m	40	SANDSTONE: as above.
	60	SILTSTONE: as above.
2750 - 2755m	65	SANDSTONE: as above.
	35	SILTSTONE: as above.
2755 - 2760m	40	SANDSTONE: as above, contains about 10% medium grained aggregates which are very dolomitic, rest are loose quartz grains.
	60	SILTSTONE: white, off white, grey and dark reddish brown, some varieties are calcareous, others are non calcareous, common pyrite, trace mica.
2760 - 2765m	50	SANDSTONE: dolomitic aggregates becoming more common, otherwise as above.
	50	SILTSTONE: as above.
2765 - 2770m	65	SANDSTONE: as above.
	35	SILTSTONE: as above.
2770 - 2775m	65	SANDSTONE: seems to contain granules and pebbles, the medium sized grains are completely dolomitized.
	35	SILTSTONE: as above.
2775 - 2780m	100	SANDSTONE: approximately 50% conglomerate and coarse sandstone, fractured grains in sample, and 50% medium grained sandstone consisting of angular, quartz grains in an abundant dolomite matrix, low visible porosity, no shows.
2780 - 2785m	100	SANDSTONE: as above, no shows.
2785 - 2790m	100	SANDSTONE: as above, no shows.
2790 - 2797m	85	SANDSTONE: as above, no shows.
	15	SILTSTONE: as above.
2797 - 2805m	85	SANDSTONE: as above.
	15	SILTSTONE: as above.
2805 - 2807.8m		See Core Description No. 7.
2807.8 - 2810m	60	CHERT: white to light grey, non crystalline, very hard angular fragments.
	20	SANDSTONE: white, fine grained aggregates, well cemented, subangular grains, minor fluorescence (yellow), very slow streaming cut.
	10	BASALT: black, angular fragments.
	10	SILTSTONE: tan, hard, angular, fine grained, dolomitic fragments.
2810 - 2815m	30	SANDSTONE: clear, medium grained quartz grains, well cemented, siliceous cement, also slightly calcareous, with occasional intrusions of dark grey ?basalt; minor yellow fluorescence, very slow streaming cut.
	60	CHERT: white to light grey, angular fragments, very hard.
	5	SILTSTONE: light brown, subangular fragments, slightly dolomitic, with carbonaceous flecking.
	5	BASALT: black, hard, angular fragments.

- 2815 - 2820m 40 SANDSTONE: as above, becoming friable, with minor very pale yellow to white fluorescence, very slow streaming cut.
60 CHERT: as above.
trace SILTSTONE: as above.
trace BASALT: as above.
- 2820 - 2825m 45 SANDSTONE: clear, subangular to subrounded, fine to medium grained, quartz grains in siliceous and in part slightly calcareous cement, rare whitish fluorescence, very slow, weak crush cut.
55 CHERT: white to medium grey, hard fragments.
trace SILTSTONE: light brown.
trace BASALT: black
trace PYRITE
- 2826.2 Spot Sample corresponding to gas peak of 5.5 units, as above with more sandstone: gas peak corresponds to minor sandstone stringer - has slightly more fluorescence.
- 2825 - 2830m 50 SANDSTONE: clear, subrounded, fine to medium grained, quartz grains in a siliceous and at times slightly calcareous cement, well cemented, with black ?basalt and pyrite inclusions, sandstone has very minor whitish fluorescence - very slow, very weak streaming cut, and weak crush cut.
50 CHERT: milky white to medium grey, hard, angular fragments.
trace SILTSTONE: light brown to occasionally dark grey, hard, subangular fragments, with carbonaceous flecking.
- 2830 - 2835m 55 SANDSTONE: as above, with very minor pale yellow to whitish fluorescence - slow weak, diffuse cut and crush cut. Trace glauconite.
45 CHERT: as above.
trace SILTSTONE: as above, with dark grey siltstone, friable to firm.
- 2835 - 2840m 30 CHERT: as above.
20 SANDSTONE: loose sand grains, coarse, angular grains, poorly sorted.
40 SANDSTONE: white, fine grained aggregates in white clay matrix, siliceous cement.
10 SILTSTONE: light tan, as above.
trace PYRITE: microcrystalline aggregates.
- 2840 - 2845m 50 SANDSTONE: clear, subangular to rounded quartz grains in a white siliceous cement/clay matrix.
15 SANDSTONE: clear to white, fine to coarse grained loose quartz.
5 SILTSTONE: light brown to dark brown-grey, hard, containing inclusions of black material (?basalt).
30 CHERT: whitish to pale grey, very hard, angular to subangular fragments.
trace PYRITE: as above.
Bronze mineral fluorescence, sandstone has very minor, weak, whitish fluorescence and very weak crush cut.

2845 - 2850m	50	SANDSTONE: quartz grains as above in matrix/cement, as above, with soft black material and pyrite inclusions. Minor dull yellow fluorescence - no cut. Also rare whitish fluorescence with slow streaming cut.
	20	SANDSTONE: loose quartz, as above.
	20	CHERT: as above.
	10	SILTSTONE: as above.
2850 - 2855m	60	SANDSTONE: as above.
	30	SANDSTONE: loose grains, as above.
	10	CHERT: as above.
	trace	PYRITE
	trace	SILTSTONE: dark grey to tan, as above.
2855 - 2860m	50	SANDSTONE: white, fine to medium grained, well cemented, poorly sorted, subangular to subrounded, poor visual porosity, common dull yellow fluorescence, weak to no crush cut.
	10	SANDSTONE: clear quartz, loose grains.
	30	SILTSTONE: medium grey to light tan, fine grained, angular cuttings.
	10	BASALT/HORNFELS? very minor dark grey to black, very fine grained, apparently as clasts within sands, slightly conchoidal fracture.
	trace	PYRITE
2860 - 2865m	50	SANDSTONE: clear, very fine to medium grained, subangular quartz grains, occasionally with encrusting pyrite, and very fine, hard, black ?basalt inclusions. Dull yellowish fluorescence - slow streaming cut and crush cut.
	30	SANDSTONE: loose clear to translucent, angular to subangular, medium to very coarse size quartz fragments.
	20	SILTSTONE: yellow grey to pale brown, very friable, with common carbonaceous flecking and some very fine carbonaceous layering.
	trace	BASALT: black, hard, angular fragments.
	trace	CHERT: medium light grey, very hard.
	trace	PYRITE: pyrite aggregates, also encrusting/associated with sandstone.
2865 - 2870m	60	SANDSTONE: aggregates as above, minor yellow fluorescence, very faint crush cut.
	30	SANDSTONE: loose quartz, as above, rare pieces have fluorescence, as above.
	10	SILTSTONE: as above.
	trace	BASALT
	trace	PYRITE
2871.9m		Spot Sample corresponding to Gas Peak of 2 units.
2870 - 2875m	50	SANDSTONE: white to light tan or greenish, fine grained aggregates, subrounded grains in whitish matrix.
	20	SANDSTONE: loose quartz, angular fragments, poorly sorted, coarse grained.
	20	SILTSTONE: dark grey, brown, fine grained, carbonaceous, rounded to angular cuttings.
	10	SILTSTONE: light tan, fine angular grains, slightly dolomitic.
	trace	BASALT/HORNFELS? black, very fine grained.
	trace	PYRITE: microcrystalline aggregates in quartz, cream and yellow fluorescence in sands (40% of sands), very weak cut to no cut.

2871.9m		Spot Sample corresponding to Gas Peak of 2 units. Lithology as above, slightly more fluorescence.
2875 - 2880m	50	SANDSTONE: clear, subangular, very fine to medium grained quartz grains in a partly calcareous cement and clay matrix (some sandstone has very poorly sorted quartz grains ie. size range from very fine to medium. Other sandstone fragments are well sorted ie. grain size range mostly very fine). Dull pale yellow fluorescence, faint to no cut.
	40	SANDSTONE: loose, angular to subangular, fine to very coarse grained quartz.
	10	SILTSTONE: buff to grey/brown, carbonaceous, moderately hard to friable.
	trace	BASALT: black, hard, angular fragments.
	trace	PYRITE
2880 - 2885m	70	SANDSTONE: aggregates, as above, very minor whitish fluorescence - slow, weak cut and crush cut.
	30	SANDSTONE: loose grains, as above.
	trace	SILTSTONE
	trace	BASALT
	trace	PYRITE
2885 - 2890m	80	SANDSTONE: aggregates as above, with sandstone in parts tending to light grey due possibly to common black ?basalt inclusions and pyrite. Non calcareous. Dull pale yellow fluorescence, very faint to no crush cut.
	20	SANDSTONE: clear, translucent loose quartz, as above.
	trace	BASALT: hard, black, angular fragments.
	trace	PYRITE: loose aggregates.
2890 - 2895m	70	SANDSTONE: very fine to medium grained, predominantly fine grained, angular to subangular, quartz grains in a non calcareous matrix, has inclusions of hard, black ?basalt, trace glauconite and pyrite. Sandstone is friable to moderately hard and has dull yellow fluorescence which gives a weak crush cut.
	20	SANDSTONE: clear to translucent, fine to very coarse grained, angular, quartz fragments.
	10	SILTSTONE: white, soft to firm, containing very fine quartz grains and carbonaceous matter.
	trace	BASALT
	trace	PYRITE
2895 - 2900m	60	SANDSTONE: becoming finer grained, otherwise as above, pale yellow fluorescence, no cut.
	20	SANDSTONE: loose quartz as above, whitish fluorescence, slow crush cut.
	20	SILTSTONE: white, as above, with occasional coarse quartz grains, and only minor carbonaceous matter.
	trace	PYRITE
	trace	BASALT

2900 - 2905m	30	SANDSTONE: white quartz fragments, angular, loose, poorly sorted, type 1.
	40	SANDSTONE: white, quartzose, very fine grained to medium grained, poorly sorted, white clay matrix, well cemented, type 2.
	20	SILTSTONE: carbonaceous, blocky angular cuttings, type 1.
	10	SILTSTONE: dark grey, massive angular cuttings, type 2.
	trace	PYRITE
	trace	BASALT/HORNFELS
		30% dull yellow fluorescence, no cut.
2905 - 2910m	30	SANDSTONE: loose quartz grains, as above.
	40	SANDSTONE: fine to medium aggregates, as above.
	20	SILTSTONE: carbonaceous, as above.
	10	SILTSTONE: dark grey, as above.
	trace	CHERT
	trace	PYRITE
	trace	BASALT FRAGMENTS
2910 - 2914m	30	SANDSTONE: loose quartz grains, as above.
	50	SANDSTONE: fine to medium aggregates, as above.
	10	SILTSTONE: carbonaceous, as above.
	10	SILTSTONE: dark grey, as above.
	trace	CHERT
	trace	PYRITE
	trace	BASALT
2914 - 2916m		See Core Description No. 8.
2916 - 2920m	30	SANDSTONE: loose quartz grains, as above.
	40	SANDSTONE: fine to medium aggregates, as above.
	10	SILTSTONE: light tan, dolomitic, hard angular cuttings.
	10	SILTSTONE: carbonaceous, as above.
	10	SILTSTONE: dark grey, as above.
	trace	CHERT
2920 - 2925m	60	SANDSTONE: very fine to fine grained, well sorted quartz grains, moderately well cemented by white clay matrix/or non calcareous cement. Also present: clear, medium to coarse grained, subrounded quartz aggregates with pyrite aggregates between the grains, common white fluorescence, moderately fast streaming cut, weak crush cut.
	20	SANDSTONE: colourless to predominantly translucent, angular, medium to very coarse grain size, loose quartz fragments.
	10	SILTSTONE: white, soft, with common carbonaceous material and occasional very fine, clear quartz grains.
	10	SILTSTONE: greyish-red, firm with carbonaceous flecking.
	trace	CHERT: medium light grey, angular, very hard fragments.
2925 - 2930m	40	SANDSTONE: both coarse and fine grained aggregates as above, whitish fluorescence, weak cut and crush cut.
	30	SILTSTONE: loose quartz fragments, as above.
	20	SILTSTONE: white siltstone, as above.
	10	SILTSTONE: greyish red, as above.
	trace	CHERT: as above.

2930 - 2935m	50	SANDSTONE: coarse and fine grained aggregates as above, minor whitish fluorescence - (only small parts of the quartz grains fluoresce) - fast streaming cut.
	30	SANDSTONE: loose quartz, as above.
	20	SILTSTONE: white siltstone, as above.
	trace	CHERT
	trace	BASALT: black, hard, angular fragments.
2935 - 2940m	60	SANDSTONE: both coarse and fine grained aggregates as above, very minor pale yellow fluorescence, no cut.
	20	SANDSTONE: loose quartz fragments, as above.
	10	SILTSTONE: white with common carbonaceous flecking, as above.
	trace	SILTSTONE: yellow brown, soft, with abundant carbonaceous flecking.
	10	CHERT: as above.
	trace	BASALT: as above.
2940 - 2945m	50	SANDSTONE: both fine and coarse grained aggregates tending to dark grey in part, inclusions of ?basalt fragments and flecks, and pyrite are common. Minor yellow fluorescence, weak cut.
	30	SANDSTONE: loose quartz fragments, as above.
	10	SILTSTONE: white, as above.
	10	BASALT
2945 - 2950m	40	SANDSTONE: as above.
	40	SANDSTONE: as above, quartz fragments.
	10	SILTSTONE: light tan, fine grained, angular fragments.
	10	SILTSTONE: light green, fine grained, subangular fragments.
	trace	BASALT Minor fluorescence in sandstones, 5-10% very weak crush cut.
2950 - 2955m	40	SANDSTONE: as above.
	40	SANDSTONE: as above, quartz fragments.
	10	SILTSTONE: light tan, as above.
	10	SILTSTONE: light green, as above.
	trace	BASALT Minor fluorescence in sandstones, 5-10% very weak crush cut.
2955 - 2960m	40	SANDSTONE: as above.
	30	SANDSTONE: as above, quartz fragments.
	20	SILTSTONE: light tan, as above.
	10	SILTSTONE: light green, as above.
2960 - 2964		C.B.U.
	60	SANDSTONE: white, medium grained, friable, well sorted, subangular to subrounded, white cement and matrix.
	20	SANDSTONE: clear, loose quartz grains, not fragments, as previously.
	10	SILTSTONE: light tan, as above.
	10	SILTSTONE: light green, as above. 5-10% dull yellow fluorescence in sands, weak crush cut.

2964 - 2965	50	SANDSTONE: a) fine grained, well cemented quartz sandstone, generally white, occasionally grey with <u>fine black flecking</u> ; b) clear, medium grained, subangular, well sorted, very slightly calcareous cement, with common black, medium grained, firm to hard inclusions, rare whitish fluorescence, very slow, weak cut and crush cut.
	20	SANDSTONE: translucent, coarse to very coarse grained, angular quartz fragments.
	10	SILTSTONE: medium light grey, friable with common black flecking - carbonaceous?, slightly calcareous.
	20	SILTSTONE: tan, friable, slightly calcareous, common black ?carbonaceous flecking.
	trace	PYRITE: sometimes as discrete aggregates otherwise associated with sandstones.
	trace	BASALT: black, hard, angular fragments.
2965 - 2970m	20	SANDSTONE: a) fine grained, as above: b) medium grained aggregates, as above, rare whitish fluorescence, very slow weak cut and crush cut.
	20	SANDSTONE: loose quartz, as above.
	30	SILTSTONE: tan siltstone, as above.
	20	SILTSTONE: grey siltstone, as above, tending to brownish grey.
	10	SILTSTONE: dark brownish grey, hard.
	trace	BASALT
2970 - 2975m	10	SANDSTONE: fine and coarse grained aggregates, as above, very rare pale whitish yellow fluorescence.
	10	SANDSTONE: loose quartz fragments, as above.
	50	SILTSTONE: buff to tan, as above, soft to friable, blocky cuttings.
	30	SILTSTONE: dark brownish grey, as above, friable to hard, blocky to angular fragments.
2975 - 2980m	30	SANDSTONE: white, coarse to fine grained, angular grains, poorly sorted, finer grains cemented in a white clay matrix, friable, dull yellow white fluorescence in 5-10% of sands, slow streaming cut.
	70	SILTSTONE: argillaceous, dark brown to dark grey, fine grained, blocky rounded cuttings, occasionally fine grained disseminated carbonaceous matter.
	trace	PYRITE: very fine grained.
2980 - 2985m	50	SANDSTONE: white, fine grained, well cemented quartz sandstone; also present: clear, subrounded, medium grained, friable, quartz sandstone, with black, hard, medium grain size inclusions - possibly basalt. Approximately 10-20% of sandstone has pale yellow to white fluorescence - moderately fast cut, strong crush cut.
	30	SANDSTONE: loose angular fragments of quartz.
	20	SILTSTONE: dark brown to dark grey, blocky cuttings, with carbonaceous flecking.
	trace	PYRITE: as above.

2985 - 2990m	30	SANDSTONE: fine and medium grained aggregates as above, approximately 10-20% of the sandstone (both cemented and loose, as below) has patchy whitish fluorescence, very weak to no cut.
	60	SANDSTONE: loose quartz fragments - angular, medium to very coarse or larger size grains, also present: medium to very coarse, subrounded to rounded, possibly loose quartz grains, shows patchy white fluorescence, as above, very weak to no cut.
	10	SILTSTONE: as above, (dark brown to dark grey).
	trace	PYRITE
2990 - 2995m	90	SANDSTONE: white to light grey, dominantly loose angular fragments of quartz, some fine grained aggregates cemented in a white matrix, poor visual porosity in aggregates, 5-10% of grains dull yellow fluorescence, rare weak streaming cut, mostly weak crush cut.
	10	SILTSTONE: as above.
	trace	PYRITE
2995 - 3000m	70	SANDSTONE: as above, mainly fine aggregates.
	30	SILTSTONE: as above.
	trace	PYRITE
	trace	COAL
		10-20% fluorescence in sandstone and siltstone.
3000 - 3005m	60	SANDSTONE: clear to white, coarse to fine grained, poorly sorted, coarse grains, loose angular fragments, finer grains cemented in a white clay matrix, 10-20% moderate yellow fluorescence, immediate streaming cut from some grains, otherwise crush cut, poor visual porosity in aggregates.
	40	SILTSTONE: dark grey, brown, blocky angular cuttings, carbonaceous.
	trace	PYRITE
3005 - 3010m	60	SANDSTONE: as above.
	40	SILTSTONE: as above.
	trace	PYRITE
3010 - 3015m	80	SANDSTONE: as above, 5-10% fluorescence, occasional streaming cut.
	20	SILTSTONE: as above.
	trace	PYRITE
3015 - 3020m	70	SANDSTONE: as above, 0-5% fluorescence, white matrix common.
	30	SILTSTONE: as above.
	trace	PYRITE
3020 - 3025m	80	SANDSTONE: as above, mostly coarse grained, 5-10% fluorescence.
	20	SILTSTONE: as above.
	trace	PYRITE

APPENDIX 2

APPENDIX 2

Core Descriptions

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 1 (Page 1)

Well . WIRRAH . 1 . . .

Interval Cored 1488.2 - 1500.6 m, Cut . . . 12.4 . m, Recovered . . 11.6 m, (. 93.5%) Frm. LATROBE

Bit Type RC-4 Bit Size 8-1/2 in, Desc by . CROWTHER/DAVIDSON Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
30 15 0			1488	1488.2-1489.00 No Recovery
	X		1489	1489.0-1492.48m SANDSTONE: quartzose, light grey, firm, predominantly fine grained, angular to subrounded, well sorted, non calcareous, carbonaceous flecks, no fluorescence, no shows, occasional mica.
	.		1490	1492.48-1493.60m SANDSTONE: quartzose, very light grey, fine to very coarse grained (fining upwards) well sorted, predominantly angular to subrounded, firm, friable, non calcareous, trace carbonaceous matter, trace mica, no fluorescence, no shows.
	.		1491	1493.60-1497.12m SANDSTONE: as above, grading upwards from very coarse grains to fine grains.
	.		1492	1497.12-1497.59m SANDSTONE: dominantly fine grained to occasional coarse grain, calcareous cement, otherwise as above.
	.		1493	1497.59-1499.28m SANDSTONE: quartzose, medium grey, firm, friable, fine to medium grained, angular to subrounded, moderately well sorted, calcareous cement trace mineral fluorescence, orange to yellow; no shows.
	.		1494	1499.28-1499.79m COAL: bituminous, black, vitreous, blocky, hard, clean.
	.		1495	1499.79-1500.6m SANDSTONE: quartzose, olive grey, fine grained to very fine grained, firm and friable, angular to subrounded, calcareous cement in part, argillaceous, micaceous, immediately below coal is interlaminated with siltstone stringers.
	.		1496	
	.		1497	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 1 (Page 2)

Well WIRRAH - 1

Interval Cored 1488.2-1500.6 m, Cut 12.4 m, Recovered 11.6 m, (93.5%) Fm. LATROBE

Bit Type RC-4 Bit Size 8-1/2 in. Desc by CROWTHER/DAVIDSON Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
30			1498	
0	Q			
	Q			
	Q		1499	
	Q			
	Q			
	Q			
	Q			
	Q		1500	
	Q			
	Q			
	Q		1501	
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			
	Q			

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 2 (Page 1)

Well WIRRAH - 1

Interval Cored 1500.6-1513.4 m, Cut 12.8 m, Recovered 9.8 m, (76.5%) Fm. LATROBE

Bit Type RC-4 Bit Size 8-1/2 in. Desc by DAVIDSON/CROWTHER Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 25 0			1500	1500.6-1505.75m SANDSTONE: quartzose, hard and friable, very coarse to very fine grained, (graded bedding), angular to subrounded, predominantly subangular, poor to moderately well sorted, trace mica, dolomite cement decreasing with depth, trace glauconite in upper section, bioturbated in part with burrows up to 1 cm diameter, less consolidated and coarser with depth; no fluorescence, no shows.
			1501	
			1502	
			1503	1505.75-1506.99m INTERBEDDED SANDSTONE/SILTSTONE: quartzose, very fine grained to siltstone, medium light grey to pale brown, very thin carbonaceous laminae, well sorted, non calcareous, bioturbated, micaceous, pale yellow pinpoint fluorescence and slow streaming crush cut (weak and yellow) from sandstone laminae within siltstone.
			1504	
			1505	1506.99-1510.40m SANDSTONE: quartzose, clear to white, very coarse to medium grained, predominantly coarse, very angular to subangular, moderately well sorted, argillaceous, dolomitic matrix, high visual porosity, occasionally coaly and carbonaceous stringers; fluorescence - pale yellow pinpoint with bright yellow, slow streaming cut and crush cut.
			1506	
			1507	1510.40-1513.40m No Recovery.
			1508	
			1509	

CORE DESCRIPTION

Core No. 2 (Page 2)

Well WIRRAH - 1

Interval Cored 1500.6-1513.4 m, Cut 12.8 m, Recovered 9.8 m, (76.5%) Fr. LATROBE

Bit Type RC-4 Bit Size 8-1/2 in, Desc by DAVIDSON/CROWTHER Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 25 0			1510	
		⊙	1511	
			1512	
			1513	
x10			1514	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. ... 3. (Page 1)

Well WIRRAH-1

Interval Cored 1513.4-1527.0 m, Cut 13.6 m, Recovered 2.54 m, (.19 %) Frm. LATROBE

Bit Type RC-4 Bit Size 8-1/2 in, Desc by CROWTHER Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50			1513	<u>1513.4-1513.89</u> SANDSTONE: light grey, quartzose, hard, very poor visual porosity, dolomitic cement, 50% bright yellow mineral fluorescence.
	Q		1514	<u>1513.89-1514.30</u> SANDSTONE: medium light grey, quartzose, very friable, gritty to medium grained, dolomitic cement, very good visual porosity, 20% bright yellow mineral fluorescence.
	Q		1515	<u>1514.3-1514.99</u> SANDSTONE: as above, grading more finely down to:-
	Q	●	1516	<u>1514.99-1515.22</u> SANDSTONE: quartzose, friable, light grey, very coarse to coarse grained, angular to subangular, calcareous cement, no fluorescence, moderate visual porosity.
	Q	●	1517	<u>1515.22-1515.32</u> SILTSTONE: medium dark grey, trace pale yellow fluorescence and cut.
	Q		1518	<u>1515.32-1515.64</u> SANDSTONE: quartzose, light olive grey, fine to medium grained, predominantly fine, clasts very light brown, angular to subangular, predominantly angular, well sorted, very friable, trace carbonaceous, poorly cemented, slightly calcareous. No fluorescence.
	Q		1519	<u>1515.64-1515.74</u> SILTSTONE: as above.
	Q		1520	<u>1515.74-1515.94</u> SANDSTONE: quartzose, medium light grey, medium to coarse grained, predominantly medium, angular to subangular, non calcareous, trace carbonaceous, trace fluorescence, dull yellow, slow diffuse pale yellow cut.
	Q		1521	<u>1515.94-1527.0</u> No Recovery
			1522	

CORE DESCRIPTION

Core No. 3 (Page 2)

Well WIRRAH - 1

Interval Cored 1513.4-1527.0 m, Cut 13.6 m, Recovered 2.54 m, (.19%) Fm LATROBE

Bit Type RC-4 Bit Size 8-1/2 in, Desc by CROWTHER Date 22/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50	0		1523	
			1524	
			1525	
			1526	
			1527	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 4 (Page 1)

Well WIRRAH - 1

Interval Cored 1573.4-1585.6 m, Cut 12.2 m, Recovered 7.9 m, (64.8%) Fm. LATROBE

Bit Type RC-3 Bit Size 8.5 in, Desc by DAVIDSON/CROWTHER Date 23/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50			1573	1573.4-1574.2 COAL: black, bright, hard, brittle, conchoidal fracture.
			1574	1574.2-1575.3 INTERBEDDED COAL/CARBONACEOUS SHALE: medium dark grey, very carbonaceous, with fine bright coal laminae, as above, hard, argillaceous, fissile.
			1575	1575.30-1576.88 COAL: as above.
			1576	1576.88-1577.52 SANDSTONE: quartzose, hard, friable, clear, fine to coarse grained, dominantly medium, angular to well rounded, dominantly subangular, well sorted, no cement, moderate visual porosity, fluorescence: 95-100% bright yellow/white instant blooming bright yellow/white cut and crush cut; yellow brown (very light) residue, pale brown to brown
		●	1577	residue coating grains, strong hydrocarbon odour.
		●	1578	1577.52-1577.90 INTERBEDDED SANDSTONE/COAL: 40% fluorescence, slow pale yellow streaming cut.
			1578	1577.90-1578.48 COAL: as above.
			1579	1578.48-1578.82 INTERBEDDED SANDSTONE/COAL: 40% fluorescence, slow pale yellow streaming cut.
			1579	1578.82-1579.17 COAL: as above.
		●	1580	1579.17-1579.80 INTERLAMINATED SILTSTONE/SANDSTONE: medium light grey sandstone/medium dark grey, carbonaceous siltstone, hard and friable, quartzose, very fine grained, argillaceous, with trace mica; fluorescence: 10% dull to moderate yellow, slow streaming pale to bright yellow white cut and crush cut.
		●	1581	
		●	1582	1579.80-1581.3 SANDSTONE: quartzose, medium to light grey, firm, friable, argillaceous, well sorted, bioturbated, see further descriptions below: Fluorescence 1579.86m fine to medium grained, sub-angular - 60% dull yellow fluorescence, conchoidal in burrows and coarser fractions.

P.T.O.

CORE DESCRIPTION

Core No. 4 (Page 2)

Well WIRRAH - 1

Interval Cored 1573.4-1585.6 m, Cut 12.2 m, Recovered 7.9 m, (.64.8%) Fm. LATROBE
 Bit Type RC 3 Bit Size 8-1/2 in. Desc by DAVIDSON/CROWTHER Date 23/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 			1583	<u>Fluorescence 1580.23m</u> low visible porosity, medium grained, subangular - 80% pale yellow with bright yellow spots (up to 10%), bright yellow slow streaming cut, bright yellow crush cut.
			1584	<u>Fluorescence 1580.54m</u> as above, low visible porosity, 90% bright yellow, slow streaming cut and crush cut - visible brown stain on quartz grains.
			1585	<u>Fluorescence 1580.92m</u> fine to medium grained, predominantly fine grained, friable, visible brown stain, moderate visible porosity, - 60% bright
			1586	yellow slow streaming cut, bright yellow crush cut. <u>Fluorescence 1581.30m</u> as above, 30% bright yellow, slow blooming diffuse cut, dull yellow crush cut.
				<u>1581.3-1585.6</u> No Recovery

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 5 (Page 1)

Well WIRRAH 1

Interval Cored 1585.6-1596.6 m, Cut 11.0 m, Recovered 2.6 m, (.23.6%) Fm. LATROBE

Bit Type CHRIS. RC-3 Bit Size 8-1/2 in. Desc by DAVIDSON/CROWTHER Date 24/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50			1585	1585.6-1586.24m SILTSTONE: quartzose, brown grey, hard, argillaceous, very carbonaceous, micromicaceous trace mineral fluorescence, subfissile.
			1586	1586.24-1587.24m COAL: black, brittle, conchoidal fracture.
			1587	1586.47-1587.24m SANDSTONE: quartzose, medium dark grey to medium light grey, mottled by bioturbation, hard, not easily friable, fine grained with more argillaceous, mottled laminae, carbonaceous, micromicaceous; fluorescence : 80-100%, generally
			1588	2/3 bright yellow-white, white slow streaming cut, 1/3 dull yellow fluorescence, bright fluorescence restricted to less argillaceous fraction.
			1589	1587.24-1588.2m COAL: black, brittle, conchoidal fracture.
			1590	1588.2-1596.6m No Recovery
			1591	
			1592	
			1593	
			1594	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 5 (Page 2)

Well WIRRAH - 1

Interval Cored 1585.6-1596.6 m, Cut 11.0 m, Recovered 2.6 m, (23.6%) Fm. LATROBE

Bit Type CHRIST RC-3 Bit Size 8-1/2 in, Desc by DAVIDSON/CROWTHER Date 24/9/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50	0		1595	
[Grid]	[X]		1596	
[Grid]			1597	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. . . . 6 (Page 1)

Well WIRRAH - 1

2046.0-
Interval Cored 2061.20 m, Cut 15.20 . . . m, Recovered 15.12 . . . m, (.99.5%) Fm. LATROBE
Bit Type . . . CHRIST RC-3 . . . Bit Size . . . 8-1/2 . . . in, Desc by . . . L. FINLAYSON . . . Date . . . 1/10/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50 0 			2046	2046-2048.18m SANDSTONE: grey, hard, medium to grained, well sorted, quartzose, micaceous, moderate visual porosity, fluorescence: 40% bright blue to white, very slow cut, good crush cut, bright blue white.
			2047	2048.18-2049.22m SILTSTONE: grey, very hard, micaceous, trace carbonaceous material, trace pyrite.
			2048	2049.22-2049.58m SANDSTONE: grey, very hard, fine grained, well sorted, micaceous, carbonaceous, low visual porosity, fluorescence: 80% bright blue white, slow streaming cut, good crush cut, bright blue white.
			2049	2049.58-2052.00m SILTSTONE: grey, very hard, micaceous, trace carbonaceous material, trace pyrite.
			2050	2052.00-2054.50m MUDSTONE: light grey, very hard, micaceous, trace carbonaceous material, trace pyrite.
			2051	2054.50-2061.12m SILTSTONE: grey, very hard, micaceous, trace carbonaceous material, trace pyrite.
			2052	2061.12-2061.20m No Recovery
			2053	
			2054	
			2055	

ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 6. (Page 2)

Well WIRRAH-1

Interval Cored 2046.0-2061.20 m, Cut 15.20 m, Recovered 15.12 m, (.99.5%) Frm. LATROBE

Bit Type... CHRIST. RC-3. Bit Size... 8-1/2 in., Desc by... L. FINLAYSON... Date... 1/10/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
50			2056	
	~			
	~			
	~			
	~			
	~		2057	
	~			
	~			
	~		2058	
	~			
	~			
	~		2059	
	~			
	~			
	~		2060	
	~			
	~			
	~		2061	
	~			
	~		2062	

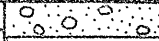









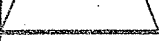



























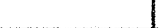
ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 7

Well WIRRAH-1

Interval Cored 2805-2807.8 m, Cut 2.8 m, Recovered 0.22 m, (... 8.%) Fm. LATROBE

Bit Type C 20 Bit Size 8.469 in, Desc by MORETON/PRIEST Date 12/13-11-82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
5	0		2805	<u>2805.00-2805.22m</u> CONGLOMERATE: subangular to well
				rounded coarse to pebble sized clasts in a poorly
			2806	sorted, quartz, dolomitic sandstone matrix (matrix
				supported). Pebble imbrication tends to be
			2807	perpendicular to the core direction - clasts have
				extended C-axis. Very minor fluorescence.
				Contains clasts of quartz: clear to milky white,
				both very coarse, subangular and well rounded
			2808	pebble sized clasts present; shale: dark grey,
				both very coarse grained, subangular and (less
				commonly) well rounded pebble sized clasts;
				cherty sandstone: medium grey, well rounded pebbles;
				also occasionally medium dark grey cherty matrix with
				quartz, minor dark grey shale, ?pyrite; sandstone:
				fine to medium grained, quartz sandstone, slightly
				calcareous, well rounded pebbles, ?basalt:
				dark grey, crystalline, occasional pebbles.
				<u>2805.22-2807.80m</u> No Recovery
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				
				

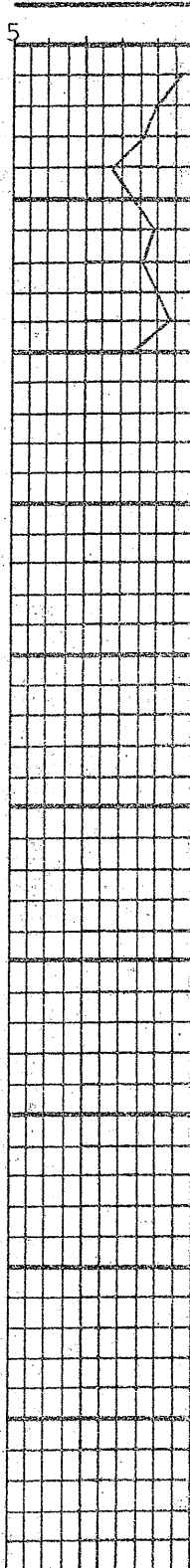
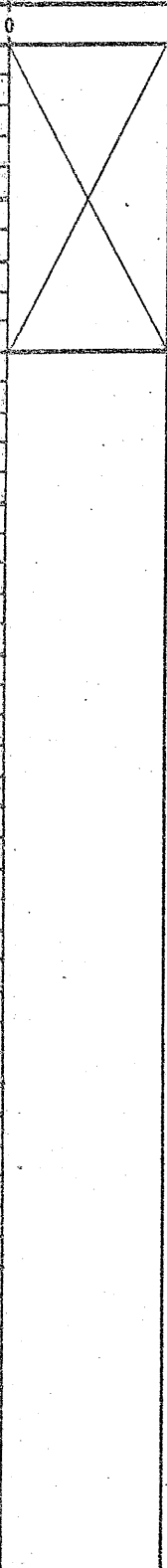
ESSO AUSTRALIA LTD.
CORE DESCRIPTION

Core No. 8

Well WIRRAH - 1

Interval Cored 2914-2916 m, Cut 2 m, Recovered 0 m, (...0%) Fr. LATROBE

Bit Type C.20 Bit Size 8.469 in, Desc by D. MORETON Date 15/11/82

Depth & Coring Rate (m/hr)	Graphic	Shows	Interval (m)	Descriptive Lithology
<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); margin-right: 5px;">5</div>  </div>			<p>2914</p> <p>2915</p> <p>2916</p>	<p>2914-2916m No Recovery</p> <p>Note: 4 pebbles 2-3cm across recovered from core barrel, 1 of which was a fragment of a larger pebble; .2 pebbles of quartz - well rounded; 1 pebble of sandstone/quartzite - subrounded; 1 pebble metamorphic rock - hornfels, dark grey to black, very hard, also well rounded. Consistent with a well worked conglomerate.</p>

APPENDIX 3

APPENDIX 3

Sidewall Core Descriptions

WIRRAH -- 1

SIDEWALL CORE DESCRIPTIONS

<u>No.</u>	<u>Depth</u>	<u>Rec.</u> <u>(mm)</u>	<u>Rock</u> <u>Type</u>	<u>Description</u>
1	2800	40	Siltstone	Blue grey to very light grey, soft, water sensitive, non calcareous.
2	2788	30	Siltstone	As above, with trace dolomite and dull gold fluorescence.
3	2781			No Recovery
4	2778.5	20	Sandstone	Predominantly light grey, quartzose, friable, poorly sorted, fine to very coarse, angular, slightly argillaceous, dolomitic - trace mineral fluorescence, trace pyrite.
5	2760.5	20	Sandstone	Light grey, quartzose, fine grained, very dolomitic - 40% mineral fluorescence.
6	2752.5	30	Siltstone	Medium dark grey, very carbonaceous, occasional coaly pieces, subfissile, soft to firm.
7	2731.0	15	Sandstone	Quartzose, rock fluorescence (powder) to quartz pebbles (5mm), friable, dolomitic matrix, mineral fluorescence.
8	2715.3	20	Siltstone	Dark grey, very carbonaceous, subfissile, soft to firm.
9	2705	25	Siltstone	Medium dark grey, as above, with thin more carbonaceous dark laminae.
10	2693.0			No Recovery
11	2686.0	25	Siltstone	Medium dark grey, as above, trace micropyrite aggregates, no laminae.
12	2684.4	30	Siltstone	Medium grey, hard, abundant micropyrite evenly dispersed throughout, no laminae, trace dolomite.
13	2678.5	30	Sandstone	Shattered quartzose rock with pieces up to 10mm in length, dolomitic cement, fine grained, white to light grey matrix, soft to friable apart from large pieces, black cubic metallic crystalline substances, possibly galena.
14	2677.0	20	Quartzitic?	Shattered quartzitic rock: possibly igneous.
15	2655	20	Quartzitic?	Shattered quartzitic rock: mottled medium dark grey and light grey, calcareous, HCl leaves green residue.

16	2644.5	Siltstone	Mottled medium grey and white, slightly calcareous, soft to firm, very pyritic (approx. 30%), microcrystalline aggregates, no fluorescence.
17	2641.4	Siltstone	White to very light, soft to hard, no visible porosity, but absorbs HCl while being non calcareous (rock fluorescence from SWC?).
18	2640	Sandstone	Very coarse angular grains in a fine quartzose matrix. Very poorly sorted. 90% bright yellow fluorescence with diffuse yellow cut and crush cut. Low visible porosity.
19	2634.2	Sandstone	Very light grey, quartzose, slightly argillaceous, friable, soft to firm, very fine grained, 30% bright yellow hydrocarbon fluorescence in patches (not evenly distributed), diffuse dull yellow cut and crush cut.
20	2633	Sandstone	Very light grey, quartzose, slightly argillaceous, very coarse to medium grained quartz and lithic fragments (basic volcanics), abundant pyrite, slightly argillaceous, 90 - 100% fluorescence, as above.
21	2625m	Sandstone	Very light grey, quartzose, slightly argillaceous, very coarse to medium grained quartz and lithic fragments (basic volcanics), but badly shattered, no visible large grains, 90 - 100% fluorescence, trace dolomite.
22	2621	Sandstone	Quartzose, medium grained, well sorted, angular to subangular, friable, trace dolomite matrix, no cement, trace pyrite, 100% fluorescence with a slow diffuse cut.
23	2615.5	Siltstone	Medium to dark grey, firm, slightly calcareous.
24	2604.5	Sandstone	Medium to dark grey, firm, slightly calcareous, very friable, fine to medium grained, well sorted, probably shattered, 100% fluorescence, bright yellow, slow streaming yellow cut.
25	2598.0	Sandstone	Very poorly sorted, fine to pebble (15mm) size quartz, in part argillaceous, fine sand around pebble, fluorescence as above, more argillaceous section, no fluorescence (note: also found 1 very coarse bipyramidal quartz crystal).
26	2593.5	Sandstone	Very fine to medium grained, angular to subangular, quartzose, moderately sorted, friable, no cement, possibly light brown oil staining, moderate visual porosity, 100% fluorescence, bright yellow, bright yellow streaming cut.

27	2590	30	Siltstone	Medium to dark grey, firm, slightly calcareous.
28	2583			No Recovery
29	2576	15	Sandstone	With minor Siltstone, very fine grain quartzose sandstone, low visual porosity, interbedded with occasional siltstone stringers, trace dolomite; fluorescence 100% in sand only, bright yellow but reluctant diffuse dull yellow crush cut only.
30	2569	30	Siltstone	Medium to dark grey, firm, slightly calcareous.
31	2567.7	40	Siltstone-Coal	Medium light grey, firm, brittle, carbonaceous siltstone with coal in parts; coal - black, brittle, bright.
32	2557.5			No Recovery
33	2543.5	15	Shale	Medium light grey, firm, subfissile, rare coal interlaminae.
34	2525.2	30	Siltstone/Shale	Medium grey, soft to firm, subfissile.
35	2500			No Recovery.
36	2479.5	30	Sandstone/Siltstone	Fine quartzose sandstone, moderately sorted, grades into siltstone - medium grey, micaceous, firm and friable.
37	2478	20	Sandstone	Very fine to fine grained, quartzose, angular to subangular, friable.
38	2455.0	25	Sandstone	Quartzose, medium grained, dolomitic in part, angular to subangular, friable.
39	2452	40	Shale	Medium grey, firm, subfissile, rare coal interlaminae.
40	2435	40	Shale	Medium grey, firm, subfissile, rare coal interlaminae.
41	2433	41	Sandstone	Medium grained, rarely micaceous, quartzose, angular to subangular, friable.
42	2413.5	20	Sandstone	Medium grained, rarely micaceous, quartzose, angular to subangular, friable, trace dolomite.
43	2409.0	20	Shale	Medium dark grey, firm, subfissile, rare coal interlaminae.
44	2401.0	30	Sandstone	Medium grained, rarely micaceous, quartzose, angular to subangular, friable, trace dolomite.
45	2383.0	40	Shale	Medium dark grey, firm, subfissile, with trace coal stringers.
46	2377.0			No Recovery.

47	2363.0	25	Siltstone/ Coal	Medium dark grey, soft to firm, subfissile.
48	2339.5	40	Shale	Medium light grey, trace carbonaceous stringers.
49	2320.0	20	Shale	Medium light grey, trace carbonaceous stringers.
50	2306.0	30	Siltstone	Medium grey, carbonaceous flecks, quartzose, soft, subfissile.
51	2286.0	20	Shale	Medium grey, trace carbonaceous stringers.
52	2255.0	10	Siltstone	Interbedded very pyritic layer with less pyritic layer, medium light grey, soft.
53	2232	30	Shale	Medium grey, trace carbonaceous stringers, with plant fossils.
54	2226	10	Sandstone	Very argillaceous, trace dolomite, medium grained, rarely micaceous, quartzose, angular to subangular, friable.
55	2223.0	20	Sandstone	Quartzose, coarse to very fine grained, predominantly medium grained, angular to rounded, very argillaceous, poorly sorted, dolomitic inclusions and matrix.
56	2219.5	20	Siltstone	Medium dark grey to medium light grey, mottled to very pyritic, 40% fluorescence.
57	2215.9			No Recovery
58	2212.0			No Recovery
59	2198.5	35	Shale	Medium light grey, soft, non calcareous, quartzitic.
60	2186.5	35	Shale	Medium light grey, soft, non calcareous, quartzitic.
61	2164.0	10	Siltstone/ Sandstone	Interbedded medium grey soft siltstone and medium to fine quartzose, friable, sandstone.
62	2142.0	20	Sandstone	Quartzitic, fine to very fine grained, well sorted, subrounded, friable, argillaceous.
63	2106.9	20	Siltstone	Medium dark grey with medium light grey interlaminae, soft, subfissile.
64	2094.0	20	Sandstone	Light grey, quartzose, medium grained, angular to subrounded, well sorted, argillaceous, hard but friable.
65	2072	10	Siltstone	Medium light grey, soft, subfissile.
66	2048	20	Siltstone	Interlaminated light and dark (carbonaceous) laminae - soft, occasionally sandstone, very fine grained to medium grained.

67	2034	30	Sandstone	Quartzose, medium to rare coarse grains, well sorted, subrounded to well rounded, poor visual porosity, slightly brownish oil stain, strong hydrocarbon odour, 100% blue/white fluorescence, with instant streaming blue/white cut.
68	2030.7	20	Sandstone	Quartzose, fine to medium grained, well sorted, subrounded to well rounded, poor visual porosity, slightly brownish oil stain, strong hydrocarbon odour, 100% fluorescence, slow diffuse cut, (dull yellow) and crush cut.
69	2030m	20	Sandstone	Quartzose, fine to medium grained, well sorted, subrounded to well rounded, poor visual porosity, slightly brownish oil stain, strong hydrocarbon odour, 60% fluorescence, dull yellow slow diffuse cut.
70	2029	15	Sandstone	Quartzose, fine to medium grained, well sorted, subrounded to well rounded, poor visual porosity, slightly brownish oil stain, strong hydrocarbon odour, fluorescence as above, but very slow diffuse crush cut although unconsolidated.
71	2025.9	15	Sandstone	Quartzose, fine grained, well sorted, subrounded to well rounded, poor visual porosity, trace fluorescence, no cut.
72	2025.2	25	Shale	Dark grey, carbonaceous.
73	2006.5	25	Sandstone	Quartzose, very fine grained, well sorted, angular grading to siltstone, no cement, slightly argillaceous.
74	1975.0	20	Siltstone	Quartzose, grading to very fine sandstone, light grey.
75	1950.0	40	Siltstone	Quartzose, grading to very fine sandstone, light grey.
76	1929.0	60	Siltstone	Quartzose, grading to very fine sandstone, light grey.
77	1922.0	30	Sandstone	Quartzose, very fine grained, well sorted, angular grading to siltstone, no cement, slightly argillaceous, 30% bright yellow fluorescence, slow diffuse crush cut only.
78	1912.0	55	Claystone	Light grey, very soft and sticky.
79	1896.0	50	Claystone	Light grey, very soft and sticky.
80	1855	50	Claystone	Light grey, very soft and sticky.
81	1840.0	25	Sandstone	Very coarse to very fine grained, quartzose, poorly sorted, angular to subrounded, argillaceous matrix, friable and hard.

82	1817.0		Siltstone	Interlaminated light and dark grey, quartzose, soft, subfissile.
83	1811.0		Siltstone	Medium grey to medium dark grey, quartzose, soft, subfissile.
84	1771.0		Mudstone	Interlaminated siltstone/claystone.
85	1751.0		Claystone/Siltstone.	
86	1726.0		Siltstone	Blue grey, quartzose, soft, subfissile.
87	1702.2	20	Siltstone	Interbedded with minor carbonaceous, dark grey areas, quartzose, soft, subfissile.
88	1685.5	25	Siltstone/ Sandstone	Well sorted mixture of very fine grained sand and siltstone, medium dark grey, soft and friable.
89	1678.0	20	Sandstone	Quartzose, very fine grained, well sorted, angular grading to siltstone, no cement, slightly argillaceous, spotty yellow fluorescence (less than 10%), no cut.
90	1671.0	20	Sandstone	Quartzose, very fine grained, well sorted, angular grading to siltstone, no cement, slightly argillaceous, trace dull yellow fluorescence, dull yellow crush cut.
91	1652.8	30	Sandstone	With minor dark grey carbonaceous siltstone interbeds, very fine to fine grained, fluorescence 60% bright yellow, dull yellow cut and crush cut.
92	1627	20	Sandstone/ Siltstone	Poorly sorted, carbonaceous, mixture of siltstone and fine to very coarse grained quartzose sandstone.
93	1612	40	Sandstone	Medium to very coarse grained, quartzose, dolomitic but very friable.
94	1608	40	Sandstone	Medium to very coarse grained, quartzose, dolomitic.
95	1604.0			No Recovery
96	1590.0	40	Shale	Medium dark grey, firm to hard, subfissile, carbonaceous.
97	1567.0			No Recovery
98	1543	30	Sandstone	Medium to coarse grained, quartzose, dolomitic.
99	1491.0	20	Sandstone	Fine to medium grained, quartzose, well sorted, angular to subrounded.
100	1488	30	Sandstone	Poorly sorted, fine to very coarse grained, very coarse grains well rounded, no fluorescence, abundant glauconite.

101	1482.0	35	Sandstone/ Siltstone	Glauconite pellets, medium to very coarse, dark green to black, occasionally very coarse, well rounded quartz grains, very argillaceous.
102	1478.0	10	Siltstone	Glauconitic pellets, medium grey to dark brown, very soft.
103	2781.0	15	Sandstone	Medium grey, quartzose, angular, white to light grey, very dolomitic, argillaceous, soft, trace pyrite, mineral fluorescence.
104	2693.0	20	Sandstone	Medium to coarse grained, quartzose, angular, white to very light grey, very dolomitic, soft, trace pyrite, 30% mineral fluorescence, no cut.
105	2640		Sandstone	Very coarse angular grains in a fine quartzose matrix. Very poorly sorted. 90% bright yellow fluorescence with diffuse yellow cut and crush cut. Low visible porosity.
106	2621		Sandstone	Quartzose, medium grained, well sorted, angular to subangular, friable, trace dolomite matrix, trace pyrite, 100% fluorescence with slow diffuse cut.
107	2583	10	Sandstone	Quartzose, white to very light grey, predominantly medium grained, angular to subangular, unconsolidated, dolomitic, bright yellow to yellow gold fluorescence, slow bright to dull yellow cut, and crush cut.
108	2557.5			No Recovery
109	2500			No Recovery
110	2377	20	Sandstone	Quartzose, white to very light grey, predominantly medium grained, angular to subangular, unconsolidated, very dolomitic, no cut.
111	1604.0	40	Sandstone	Quartzose, medium to fine grained, subangular, well sorted, low visible porosity, unconsolidated, fluorescence: bright yellow, moderately streaming bright blue-yellow cut, strong hydrocarbon odour.
112	1476	40	Siltstone/ Sandstone	Brownish grey, hard, siltstone grading to very fine quartzose sandstone, argillaceous, interlaminated with dark green medium grained glauconite concentrated in bands, abundant calcareous cement.

113	1472	50	Sandstone/ Siltstone	Brownish grey, hard, siltstone grading to very fine quartzose sandstone, argillaceous, interlaminated with dark green medium grained glauconite concentrated in bands, very calcareous cement, micropyrrite infilling burrows up to 0.5mm in diameter.
114	1446	40	Calcsiltite	Medium light grey, hard, subfissile, trace fine dark green glauconite pellets, calcareous.
115	1412	55	Calcilutite	Medium light grey, soft, very calcareous.
116	1384	50	Calcilutite	Medium light grey, soft, very calcareous.
117	1344	50	Calcilutite	Medium light grey, soft, very calcareous, trace pyrite.
118	1305	35	Calcsiltite	Medium light grey, hard to firm, very calcareous.
119	1275.9	50	Calcilutite	Medium light grey, soft, very calcareous, trace pyrite.
120	1242	35	Calcsiltite	Medium light grey, hard to firm, very calcareous.
121	1208.1	45	Calcsiltite	Medium light grey, hard to firm, very calcareous.
122	1171	50	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite.
123	1141	50	Calcilutite/ Calcsiltite	Medium light grey, hard to firm to soft, very calcareous, poorly sorted.
124	1106	10	Calcilutite	Medium light grey, soft, very calcareous, trace pyrite.
125	1072	15	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite.
126	1038	20	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite.
127	1005	10	Calcilutite	Medium light grey, soft, very calcareous, trace pyrite, trace green soft glauconite, and trace forams.
128	970	35	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite.
129	936	20	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite, trace green soft glauconite and trace forams.
130	902	30	Calcsiltite	Medium light grey, hard to firm, very calcareous, trace pyrite, trace green soft glauconite and trace forams.
131	868	50	Calcilutite	Medium light grey, soft, very calcareous, trace pyrite, trace green soft glauconite, and trace forams.

132	848	50	Calcsiltite	Medium dark grey, hard to firm, very calcareous, trace pyrite, trace green soft glauconite and trace forams.
133	3032	20	Sandstone	Poorly sorted, very fine to medium grain size, subangular quartz, white clay matrix, friable, also medium grain size black grains, trace spotty dull bronze fluorescence, no cut.
134	3030	20	Sandstone	Poorly sorted, very fine to medium grain size, subangular quartz, white clay matrix, friable, also medium grain size black grains, with a trace of faint spotty dull bronze fluorescence, no cut.
135	3028.5			Misfire
136	3026	30	Sandstone	Predominantly very fine grained, otherwise as above, trace of spotty, dull bronze fluorescence, no cut.
137	3021.5	20	Sandstone	Very fine to occasional very coarse quartz grains, predominantly medium, otherwise as above, trace to 5% spotty dull bronze fluorescence.
138	3020			No Recovery
139	3018	30	Sandstone	As above, with a trace of spotty, dull bronze fluorescence.
140	3016.5	20	Sandstone	As above, with 20% patchy diffuse dull bronze fluorescence, and very very weak pale yellow crush cut.
141	3015			Misfire
142	3013.5	25	Sandstone	As above, with 5% dull bronze fluorescence, no cut.
143	3010	15	Sandstone	Grey, friable, fine grained, moderately well sorted, clay matrix, no fluorescence.
144	3007			Misfire
145	3006	20	Sandstone	Grey, very fine to very coarse grained, friable, subangular to subrounded, poorly sorted, clay matrix, occasional very coarse grain sized fragment of chert, no fluorescence.
146	3004.5			Misfire
147	3001.5			Misfire
148	3000			Misfire
149	2998.5			Misfire
150	2994.5			Misfire
151	2993.5			Misfire
152	2992			Misfire

153	2987			Misfire
154	2986			Misfire
155	2985			Misfire
156	2982.5			Misfire
157	2975			Misfire
158	2973.5			Misfire
159	2969.5			Misfire
160	2968.5			Misfire
161	2958			Misfire
162	2945			Misfire
163	2940	15	Siltstone	Grey, friable, with occasional subrounded quartz grains, 5-10% patchy very dull bronze fluorescence, and a trace of diffuse yellow crush cut.
164	2934.5			Misfire
165	2922	15	Conglomerate	Clasts of quartz, chert, quartz fragments in a white clay matrix, grey siltstone with common quartz grains or fragments, poorly sorted, trace in streak of yellow spotty fluorescence, fluorescent grains crush cut, yellow to creamy white.
166	2917.5	20	Siltstone	Sandy, white, friable siltstone with common quartz grains, 5% moderate yellow fluorescence in streak, immediate diffuse creamy yellow cut.
167	2916.5	5	Siltstone	Sandy, grey, friable siltstone with common pyrite and quartz grains, 2% moderate yellow fluorescence in streak, immediate diffuse creamy yellow cut.
168	2906			No Recovery
169	2892			No Recovery
170	2879	10	Conglomerate	Clasts of : green, friable, sandstone, dark grey siltstone, white friable sandstone, quartz grains in a white clay matrix, quartz fragments, trace dull yellow fluorescence, no cut.
171	2866.5	15	Siltstone	Dark grey, friable, no fluorescence.
172	2865	25	Siltstone	Dark grey, friable, no fluorescence.
173	2860	20	Siltstone	Sandy, white, friable with very fine quartz grains, and very occasionally coarse quartz grains, trace dull yellow fluorescence, no cut.

174	2854	30	Sandstone	Silty, very fine grained quartz sandstone with silty matrix, trace pyrite, trace dull bronze fluorescence, no cut.
175	2845.5	20	Conglomerate	Clasts of : quartz fragments, white sandstone with fine to very coarse subrounded grains in a clay matrix, dark grey siltstone, friable conglomerate, trace dull yellow fluorescence, no cut.
176	2843	10	Conglomerate	As above, with the siltstone clasts containing pyrite, no fluorescence.
177	2830.5			Misfire
178	2820	20	Siltstone	Dark grey, friable, with hard quartzose bands, no fluorescence.
179	2815	20	Sandstone	Grey, friable, very fine to medium grains in a clay matrix, with dark grey siltstone, and quartz fragments, trace to 5% dull yellow fluorescence.
180	2806.5	10	Sandstone	White to grey, fine to coarse quartz grains in a clay matrix, friable, trace pyrite, 40% bright yellow fluorescence and instant dull yellow cut.
181	2805	10	Sandstone	As above, 40% dull bronze fluorescence, no cut.
182	2800.5	10	Sandstone	Very carbonaceous, otherwise as above, faint trace of spotty yellow fluorescence.
183	2798.5	10	Sandstone	Moderately carbonaceous, otherwise as above, 50% moderate yellow fluorescence, and strong yellow cream crush cut.
184	3028.5	10	Sandstone	White, very fine to medium grain sized, predominantly fine, angular quartz fragments, white clay matrix, friable, with dark grey bands of carbonaceous rich matrix, minute to spotty yellow fluorescence, no cut.
185	3024	30	Sandstone	With dispersed pyritic, carbonaceous matter, otherwise as above, 30% moderate yellow spotty fluorescence - moderate yellow crush cut.
186	3020	25	Sandstone	Light grey, friable, very fine grained, quartzose, with clay matrix and occasional fine carbonaceous matter, trace pyrite, no fluorescence.
187	3015	20	Sandstone	Fine to medium grained, otherwise as above, trace to 5% dull bronze fluorescence, no cut.
188	3008.5	20	Siltstone	Dark grey, soft, with trace fine grained quartz and pyrite. No fluorescence.

189	3007	25	Sandstone	Light grey, friable, very fine to coarse grained, angular fractured quartz grains, common black fractured grains, trace dull bronze fluorescence - no cut.
190	3004.5	20	Sandstone	Silty, bands of sandstone as above, and siltstone: dark grey, soft, with trace quartz and soft, black ?carbonaceous material, 5-10% dull bronze spotty fluorescence, no cut.
191	3001	20	Sandstone	Angular quartz grains and common carbonaceous matter, friable, 90% bright yellow fluorescence, instant moderate yellow cut.
192	3000	25	Sandstone	Friable, fine to very coarse grained, dominantly medium grain size, subangular to subrounded quartz grains, occasional rounded quartz pebbles, common carbonaceous matter; no fluorescence.
193	2998.5			No Recovery
194	2994.5	15	Sandstone	As above, without quartz pebbles, patchy dull diffuse yellow fluorescence, very weak creamy yellow crush cut.
195	2993.5			Misfire
196	2992			Misfire
197	2987			Misfire
198	2986			Misfire
199	2985			Misfire
200	2982.5			Misfire
201	2975			Misfire
202	2973.5			Misfire
203	2969.5			Misfire
204	2968.5			Misfire
205	2958			Misfire
206	2945			Misfire
207	2934.5			Misfire
208	2930			Misfire
209	2916.5			Misfire
210	2906			Misfire
211	2903			Misfire

212 2892

Misfire

213 2815

Misfire

ND, PP/bjr
02241/39-51
30/11/82

APPENDIX 4

APPENDIX 4

Velocity Survey Report

VELOCITY SURVEY REPORT

1. Marine Velocity Survey report.
2. Processing report.
3. Gun geometry sketch.
4. Check shot data - observed and corrected.
5. Drift Calibration sheet.
6. Sonic Calibratin curve.
7. Time-Depth Curve.
8. Velocity Data well velocity records.
9. Velocity Data sythetic seismogram.
10. Velocity Data vertical seismic profile report.
11. Velocity Data vertical seismic profile displays 1-9.
12. S.S.L. Vertical seismic profile report.
13. S.S.L. Vertical seismic profile display.

0745L

MARINE VELOCITY SURVEY REPORT

WELL : Wirrah-1

BASIN : Gippsland

DATE OF SURVEY : 1st run 4.10.82
2nd run 17.10.82
V.S.P. 20.10.82

CONTRACTOR : Velocity Data Pty. Ltd.

RECORDED BY : W.J. Larson
E.A. Poole

WITNESSED BY : B. Hardiman

WATER DEPTH : 50.0m

K.B. ELEVATION : 21.0m

T.D. WHEN SHOT : 2318mKB

CASING DEPTH : 20" @ 191mKB 13 3/8" @ 830mKB

NO. OF SHOOTING LEVELS : 1st survey - 16
2nd survey - 8
V.S.P. - 54

SOURCE : Marine gas gun 3.5 cub. ft.

WEATHER CONDITIONS : 1st survey - windy and rough
2nd survey - windy and moderate swell
V.S.P. - slight seas

0745L

PROCESSING REPORT

WIRRAH-1

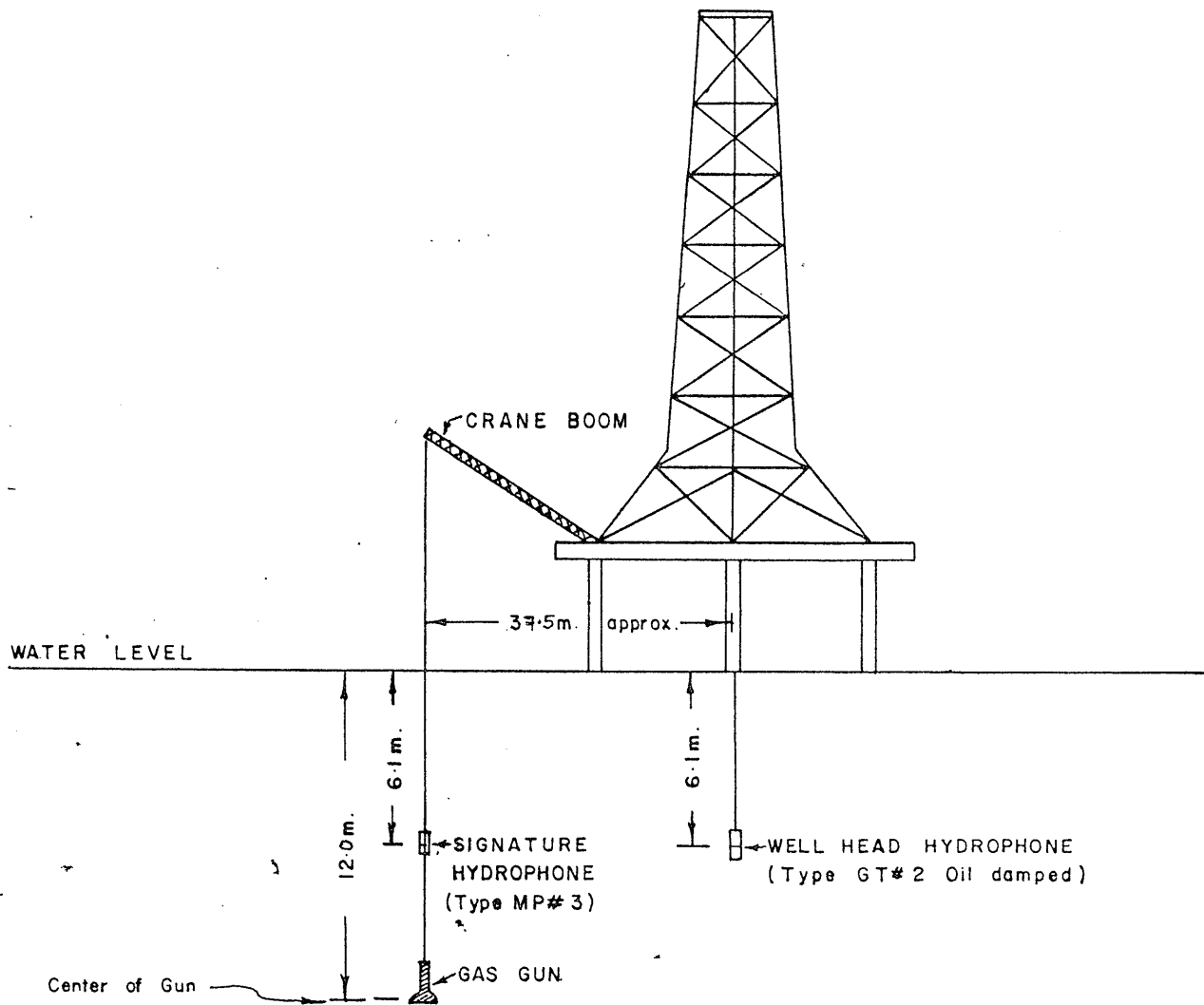
Data Processing Information

Elevation seismic datum - sea level.
Kelly bushing - 21.0m above sea level.
Ground level - 50.0m below sea level.
Hydrophones above gun and in the moonpool at 6.1m below sea level.
Gun depth - 12.0m below sea level.
Gun offset distance to moonpool - 37.5m.
Average velocity between sea level and sea bed - 1500 m/sec.

Vertical Seismic Profile Processing Report

A vertical seismic profile was run by Velocity Data on the 20th October 1982. The data was also forwarded to SSL (England) for processing. Processing Reports from both companies are attached.

0745L



NOT TO SCALE

ESSO AUSTRALIA LTD.

WIRRAH No.1

SHOT POINT LOCATION SKETCH

Figure 2

VELOCITY SURVEY - WIRRAH-1

<u>LEVEL NUMBER</u>	<u>MEASURED DEPTH FROM KB</u> (m)	<u>VERTICAL DEPTH FROM MSL</u> (m)	<u>OBSERVED TRAVEL TIME</u> (ms)	<u>VERTICAL TRAVEL TIME MSL/ GEOPHONE</u> (ms)	<u>AVERAGE VELOCITY MSL/GEOPHONE</u> (m/s)	<u>DELTA DEPTH BETWEEN SHOTS</u> (m)	<u>DELTA TIME BETWEEN SHOTS</u> (ms)	<u>INTERVAL VELOCITY BETWEEN SHOTS</u> (m/s)
1	71.0	50.0	41.0	34.2	1462			
2	450.0	429.0	202.0	208.9	2054	379.0	174.7	2169
3	600.0	579.0	259.5	266.7	2171	150.0	57.8	2595
4	750.0	729.0	305.5	312.9	2330	150.0	46.2	3246
5	850.0	829.0	344.0	351.5	2358	100.0	38.6	2591
6	1050.0	1029.0	411.0	418.6	2458	200.0	67.1	2981
7	1330.0	1309.0	501.5	509.2	2571	280.0	90.6	3091
8	1506.0	1485.0	563.3	571.0	2601	176.0	61.8	2848
9	1705.0	1684.0	630.5	638.2	2639	199.0	67.2	2961
10	1845.0	1824.0	669.0	676.8	2695	140.0	38.6	3627
11	2025.0	2004.0	729.0	736.8	2720	180.0	60.0	3000
12	2140.0	2119.0	755.0	762.8	2778	115.0	26.0	4423
13	2237.0	2216.0	783.0	790.8	2802	97.0	28.0	3464
14	2260.0	2239.0	788.0	795.8	2813	23.0	5.0	4600
15	2375.0	2354.0	812.5	820.4	2869	115.0	24.6	4675
16	2500.0	2479.0	845.0	852.9	2906	125.0	32.5	3846
						140.0	30.5	4590

0678L/70

VELOCITY SURVEY - WIRRAH-1

<u>LEVEL NUMBER</u>	<u>MEASURED DEPTH FROM KB</u> <u>(m)</u>	<u>VERTICAL DEPTH FROM MSL</u> <u>(m)</u>	<u>OBSERVED TRAVEL TIME</u> <u>(ms)</u>	<u>VERTICAL TRAVEL TIME MSL/ GEOPHONE</u> <u>(ms)</u>	<u>AVERAGE VELOCITY MSL/GEOPHONE</u> <u>(m/s)</u>	<u>DELTA DEPTH BETWEEN SHOTS</u> <u>(m)</u>	<u>DELTA TIME BETWEEN SHOTS</u> <u>(ms)</u>	<u>INTERVAL VELOCITY BETWEEN SHOTS</u> <u>(m/s)</u>
17	2640.0	2619.0	875.5	883.4	2964	45.0	9.0	5000
18	2685.0	2664.0	884.5	892.4	2985	115.0	27.5	4181
19	2800.0	2779.0	912.0	919.9	3031			

Note: Values differ slightly from annotations on Time vs Depth Curve due to rounding in curve construction program.

0678L/71

DRIFT CALCULATION SHEET

WIRRAH-1

Depth Rel.S.L. (m)	Depth Interval (m)	Av. Vertical Travel Time check shots (ms)	Ti Check Shots (ms)	Ti Sonic Log (ms)	Ti - Ti Check Sonic (ms)	Drift (ms)																																																																																			
429.0	150.0	208.9	57.8	51.6	6.2	6.2																																																																																			
579.0		266.7					579.0	150.0	266.7	46.2	47.8	-1.6	4.6	729.0	312.9	729.0	100.0	312.9	38.6	35.7	2.9	7.5	829.0	351.5	829.0	200.0	351.5	67.1	63.4	3.7	11.2	1029.0	418.6	1029.0	280.0	418.6	90.6	87.7	2.9	14.1	1309.0	509.2	1309.0	176.0	509.2	61.8	59.2	2.6	16.7	1485.0	571.0	1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73	
579.0	150.0	266.7	46.2	47.8	-1.6	4.6																																																																																			
729.0		312.9					729.0	100.0	312.9	38.6	35.7	2.9	7.5	829.0	351.5	829.0	200.0	351.5	67.1	63.4	3.7	11.2	1029.0	418.6	1029.0	280.0	418.6	90.6	87.7	2.9	14.1	1309.0	509.2	1309.0	176.0	509.2	61.8	59.2	2.6	16.7	1485.0	571.0	1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73										
729.0	100.0	312.9	38.6	35.7	2.9	7.5																																																																																			
829.0		351.5					829.0	200.0	351.5	67.1	63.4	3.7	11.2	1029.0	418.6	1029.0	280.0	418.6	90.6	87.7	2.9	14.1	1309.0	509.2	1309.0	176.0	509.2	61.8	59.2	2.6	16.7	1485.0	571.0	1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																			
829.0	200.0	351.5	67.1	63.4	3.7	11.2																																																																																			
1029.0		418.6					1029.0	280.0	418.6	90.6	87.7	2.9	14.1	1309.0	509.2	1309.0	176.0	509.2	61.8	59.2	2.6	16.7	1485.0	571.0	1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																												
1029.0	280.0	418.6	90.6	87.7	2.9	14.1																																																																																			
1309.0		509.2					1309.0	176.0	509.2	61.8	59.2	2.6	16.7	1485.0	571.0	1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																																					
1309.0	176.0	509.2	61.8	59.2	2.6	16.7																																																																																			
1485.0		571.0					1485.0	199.0	571.0	67.2	62.5	4.7	21.4	1684.0	638.2	1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																																														
1485.0	199.0	571.0	67.2	62.5	4.7	21.4																																																																																			
1684.0		638.2					1684.0	140.0	638.2	38.6	40.1	-1.5	19.9	1824.0	676.8	1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																																																							
1684.0	140.0	638.2	38.6	40.1	-1.5	19.9																																																																																			
1824.0		676.8					1824.0	180.0	676.8	60.0	55.2	4.8	24.7	2004.0	736.8	2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																																																																
1824.0	180.0	676.8	60.0	55.2	4.8	24.7																																																																																			
2004.0		736.8					2004.0	115.0	736.8	26.0	29.2	-3.2	21.5	2119.0	762.8	0702L/73																																																																									
2004.0	115.0	736.8	26.0	29.2	-3.2	21.5																																																																																			
2119.0		762.8																																																																																							
0702L/73																																																																																									

DRIFT CALCULATION SHEET

PAGE 2

WIRRAH-1

Depth Rel.S.L. (m)	Depth Interval (m)	Av. Vertical Travel Time check shots (ms)	Ti Check Shots (ms)	Ti Sonic Log (ms)	Ti - Ti Check Sonic (ms)	Drift (ms)																																																	
2119.0	97.0	762.8	28.0	25.1	2.9	24.4																																																	
2216.0		790.8					2216.0	23.0	790.8	5.0	5.7	-0.7	23.7	2239.0	795.8	2239.0	115.0	795.8	24.6	24.8	-0.2	23.5	2354.0	820.4	2354.0	125.0	820.4	32.5	30.3	2.2	25.7	2479.0	852.9	2479.0	140.0	852.9	30.5	32.1	-1.6	24.1	2619.0	883.4	2619.0	45.0	883.4	9.0	7.4	1.6	25.7	2664.0	892.4	2664.0	115.0	892.4	27.5
2216.0	23.0	790.8	5.0	5.7	-0.7	23.7																																																	
2239.0		795.8					2239.0	115.0	795.8	24.6	24.8	-0.2	23.5	2354.0	820.4	2354.0	125.0	820.4	32.5	30.3	2.2	25.7	2479.0	852.9	2479.0	140.0	852.9	30.5	32.1	-1.6	24.1	2619.0	883.4	2619.0	45.0	883.4	9.0	7.4	1.6	25.7	2664.0	892.4	2664.0	115.0	892.4	27.5	25.2	2.3	28.0	2779.0	919.9				
2239.0	115.0	795.8	24.6	24.8	-0.2	23.5																																																	
2354.0		820.4					2354.0	125.0	820.4	32.5	30.3	2.2	25.7	2479.0	852.9	2479.0	140.0	852.9	30.5	32.1	-1.6	24.1	2619.0	883.4	2619.0	45.0	883.4	9.0	7.4	1.6	25.7	2664.0	892.4	2664.0	115.0	892.4	27.5	25.2	2.3	28.0	2779.0	919.9													
2354.0	125.0	820.4	32.5	30.3	2.2	25.7																																																	
2479.0		852.9					2479.0	140.0	852.9	30.5	32.1	-1.6	24.1	2619.0	883.4	2619.0	45.0	883.4	9.0	7.4	1.6	25.7	2664.0	892.4	2664.0	115.0	892.4	27.5	25.2	2.3	28.0	2779.0	919.9																						
2479.0	140.0	852.9	30.5	32.1	-1.6	24.1																																																	
2619.0		883.4					2619.0	45.0	883.4	9.0	7.4	1.6	25.7	2664.0	892.4	2664.0	115.0	892.4	27.5	25.2	2.3	28.0	2779.0	919.9																															
2619.0	45.0	883.4	9.0	7.4	1.6	25.7																																																	
2664.0		892.4					2664.0	115.0	892.4	27.5	25.2	2.3	28.0	2779.0	919.9																																								
2664.0	115.0	892.4	27.5	25.2	2.3	28.0																																																	
2779.0		919.9																																																					

0702/74

PE902620

This is an enclosure indicator page.
The enclosure PE902620 is enclosed within the
container PE902618 at this location in this
document.

The enclosure PE902620 has the following characteristics:

ITEM_BARCODE = PE902620
CONTAINER_BARCODE = PE902618
 NAME = Sonic Calibration Curve
 BASIN = GIPPSLAND
 PERMIT = VIC/L2
 TYPE = WELL
 SUBTYPE = VELOCITY_CHART
DESCRIPTION = Sonic Calibration Curve (enclosure from
 WCR vol.1) for Wirrah-1
REMARKS =
DATE_CREATED = 31/12/83
DATE_RECEIVED = 1/05/84
 W_NO = W782
 WELL_NAME = Wirrah-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
 AUSTRALIA LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE603950

This is an enclosure indicator page.
The enclosure PE603950 is enclosed within the
container PE902618 at this location in this
document.

The enclosure PE603950 has the following characteristics:

ITEM_BARCODE = PE603950
CONTAINER_BARCODE = PE902618
 NAME = Vertical Seismic Profile
 BASIN = GIPPSLAND
 PERMIT = VIC/L2
 TYPE = WELL
 SUBTYPE = VELOCITY_CHART
DESCRIPTION = Wirrah-1 Vertical Seismic Profile from
 appendix 4 from WCR vol 1
REMARKS =
DATE_CREATED = 24/12/82
DATE_RECEIVED = 1/05/84
 W_NO = W782
 WELL_NAME = WIRRAH-1
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603951

This is an enclosure indicator page.
The enclosure PE603951 is enclosed within the
container PE902618 at this location in this
document.

The enclosure PE603951 has the following characteristics:

ITEM_BARCODE = PE603951
CONTAINER_BARCODE = PE902618
 NAME = Vertical Seismic Profile
 BASIN = GIPPSLAND
 PERMIT = VIC/L2
 TYPE = WELL
 SUBTYPE = VELOCITY_CHART
DESCRIPTION = Wirrah-1 Vertical Seismic Profile from
 appendix 4 from WCR vol 1
REMARKS =
DATE_CREATED = 28/02/83
DATE_RECEIVED = 1/05/84
 W_NO = W782
 WELL_NAME = WIRRAH-1
CONTRACTOR = SEISMOGRAPH SERVICE (ENGLAND) LTD
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603952

This is an enclosure indicator page.
The enclosure PE603952 is enclosed within the
container PE902618 at this location in this
document.

The enclosure PE603952 has the following characteristics:

- ITEM_BARCODE = PE603952
- CONTAINER_BARCODE = PE902618
- NAME = Vertical Seismic Profile
- BASIN = GIPPSLAND
- PERMIT = VIC/L2
- TYPE = WELL
- SUBTYPE = VELOCITY_CHART
- DESCRIPTION = Wirrah-1 Vertical Seismic Profile from
appendix 4 from WCR vol 1
- REMARKS =
- DATE_CREATED = 28/02/83
- DATE_RECEIVED = 1/05/84
- W_NO = W782
- WELL_NAME = WIRRAH-1
- CONTRACTOR = SEISMOGRAPH SERVICE (ENGLAND) LTD
- CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE902619

This is an enclosure indicator page.
The enclosure PE902619 is enclosed within the
container PE902618 at this location in this
document.

The enclosure PE902619 has the following characteristics:

ITEM_BARCODE = PE902619
CONTAINER_BARCODE = PE902618
 NAME = Time Depth Curve
 BASIN = GIPPSLAND
 PERMIT = VIC/L2
 TYPE = WELL
 SUBTYPE = VELOCITY_CHART
DESCRIPTION = Time Depth Curve (enclosure from WCR
 vol.1) for Wirrah-1
REMARKS =
DATE_CREATED = 17/10/82
DATE_RECEIVED = 26/01/84
 W_NO = W782
 WELL_NAME = Wirrah-1
CONTRACTOR = ESSO
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
 AUSTRALIA LTD

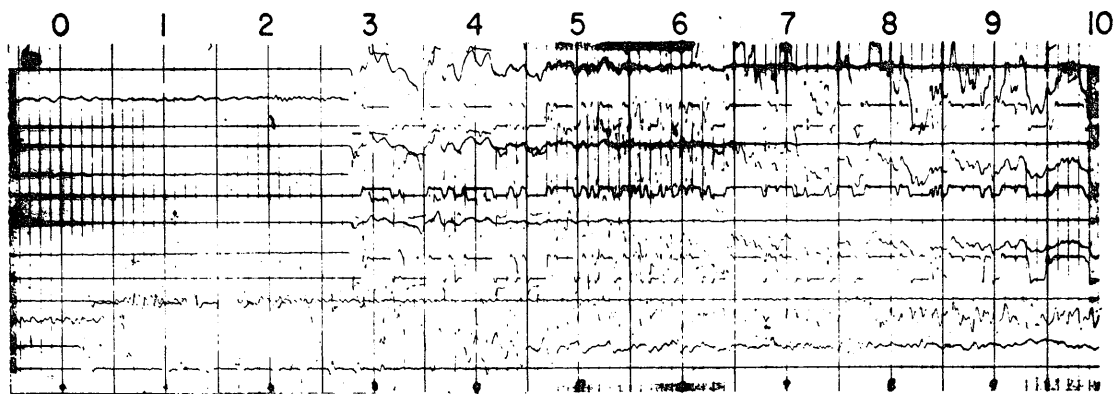
(Inserted by DNRE - Vic Govt Mines Dept)

WIRRAH-1

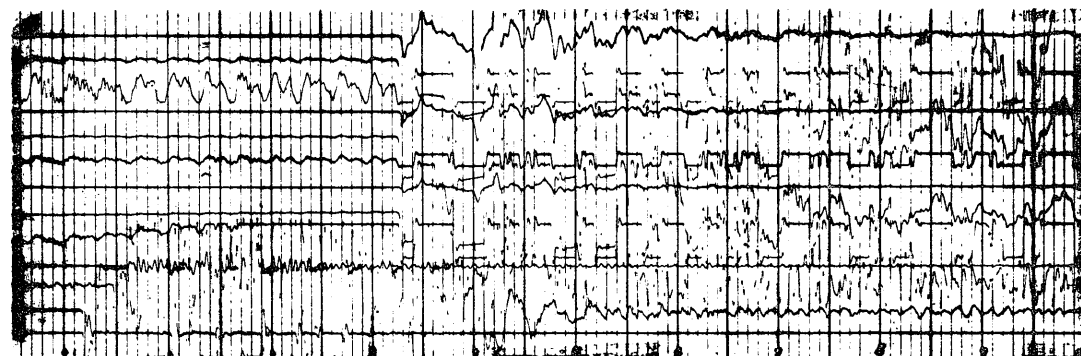
WELL VELOCITY RECORD

4/10/82

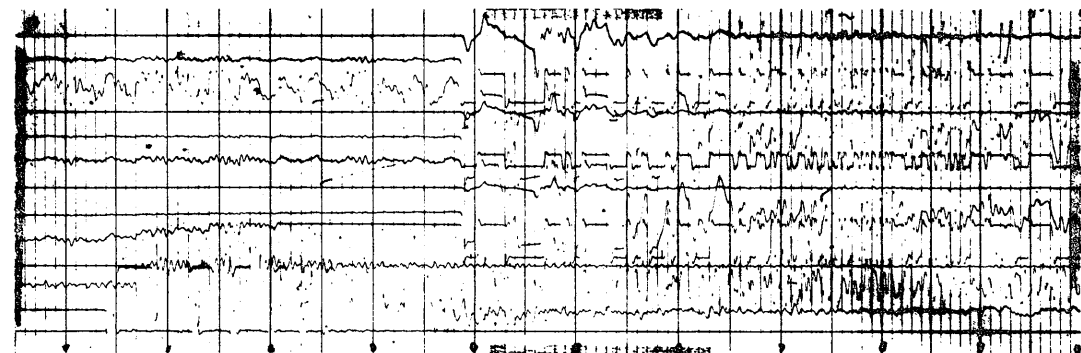
Rec. No. 26
600 m RKB



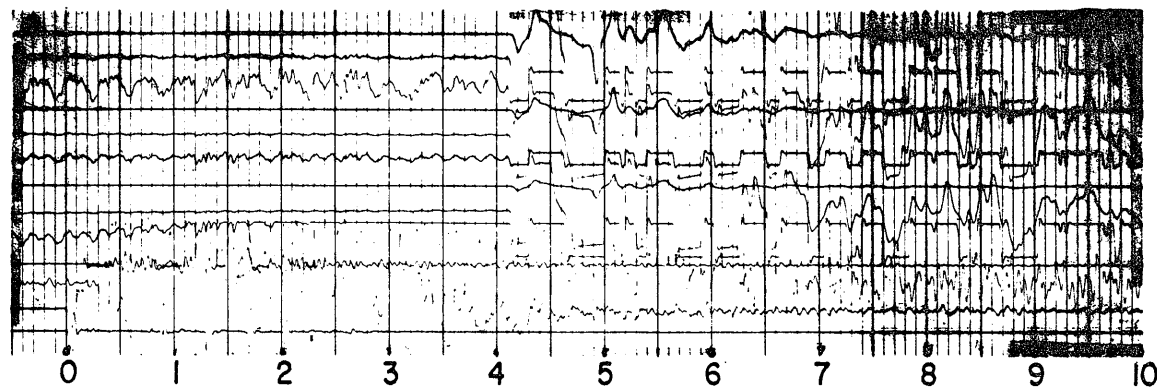
Rec. No. 25
750 m RKB



Rec. No. 21
850 m RKB



Rec. No. 19
1050m RKB

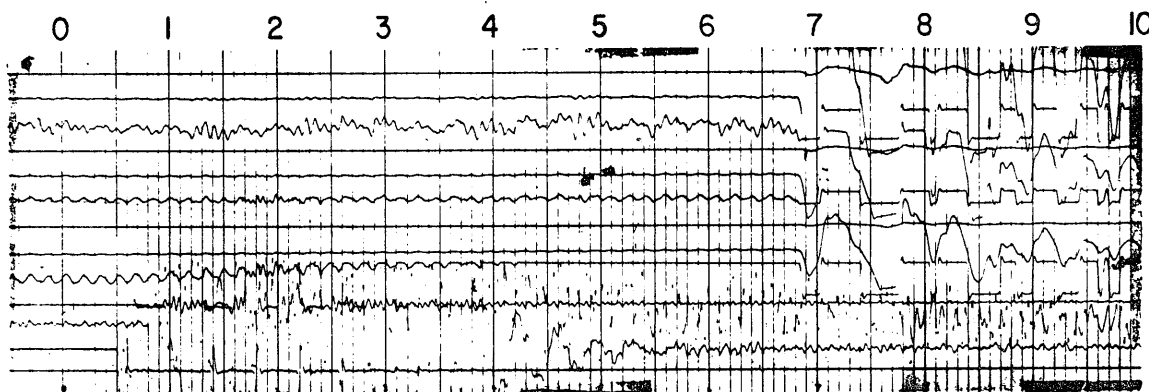


WIRRAH-1

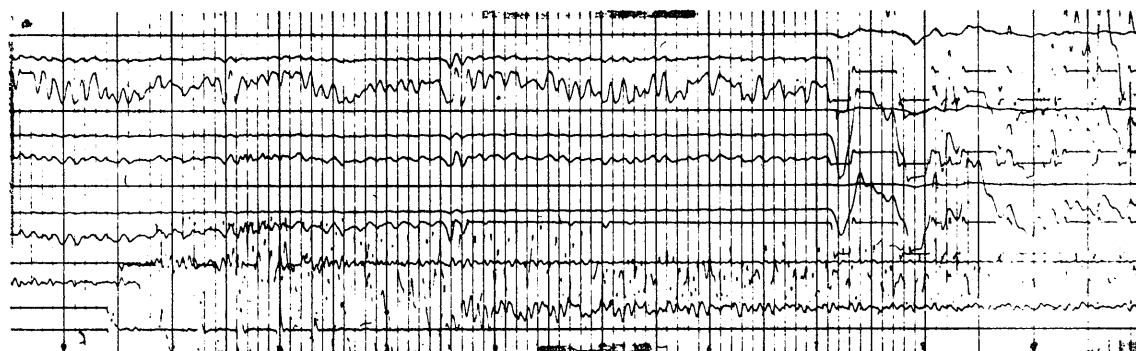
WELL VELOCITY RECORD

4/10/82

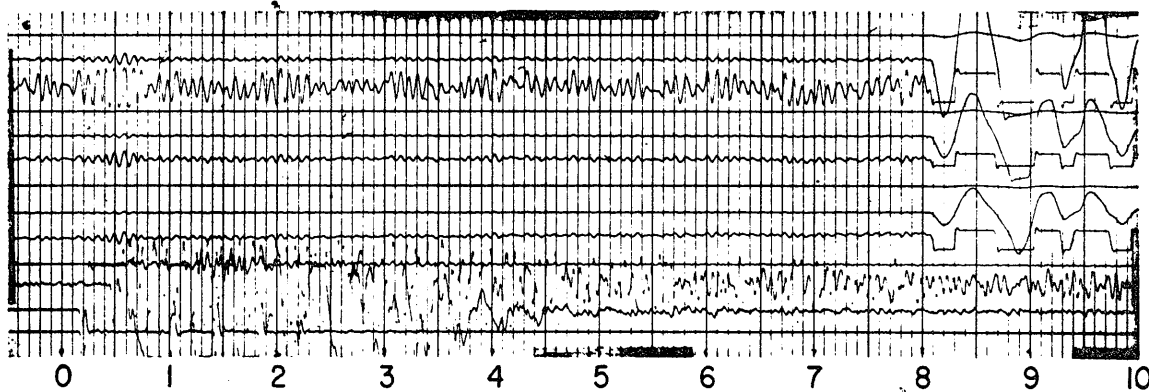
Rec. No. 15
1705 m RKB



Rec. No. 12
1845 m RKB



Rec. No. 5
2260 m RKB

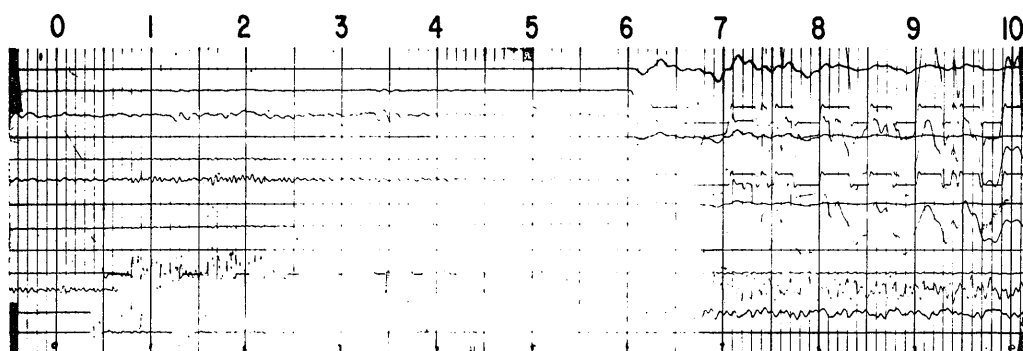


WIRRAH - 1

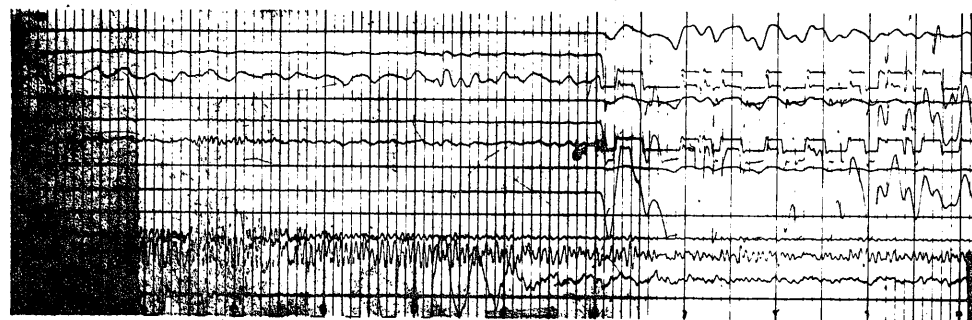
WELL VELOCITY RECORD

17-10-82

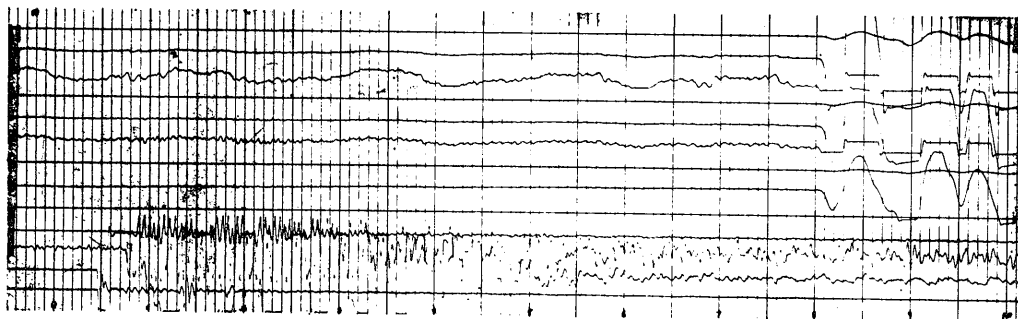
Rec. No. 1
1506m R.K.B.



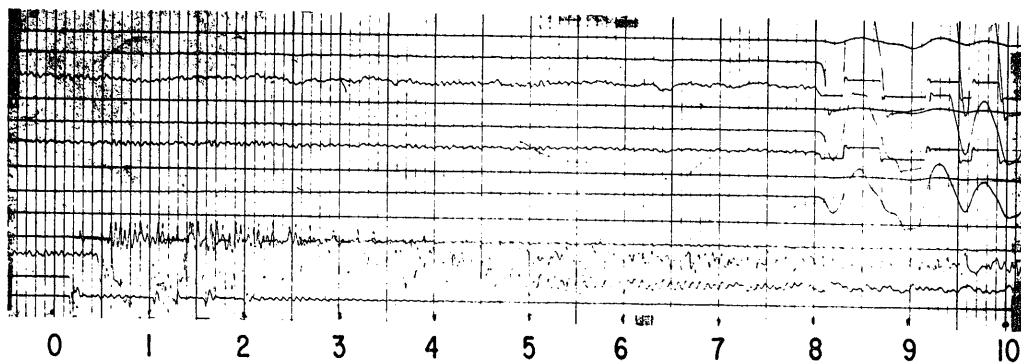
Rec. No. 20
1506m R.K.B.



Rec. No. 19
2140m R.K.B.



Rec. No. 17
2260m R.K.B.

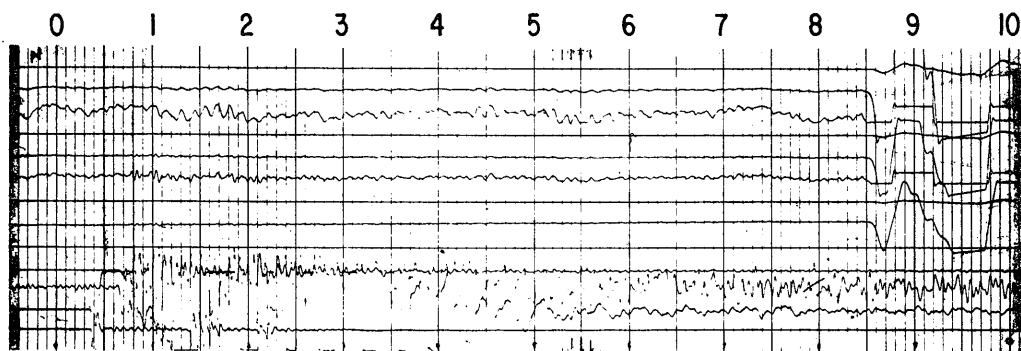


WIRRAH - 1

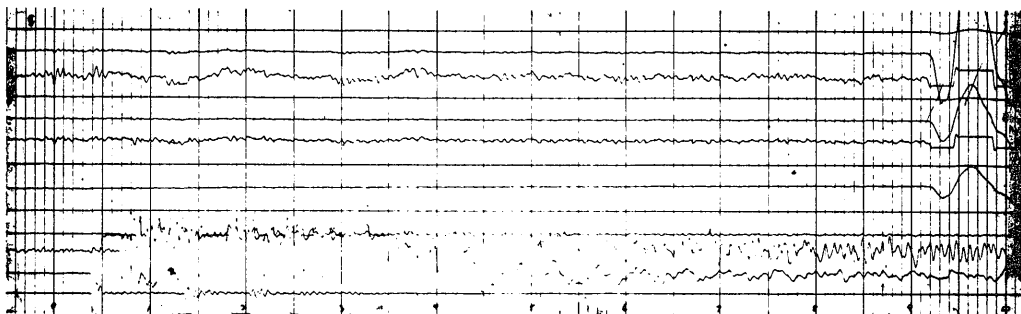
WELL VELOCITY RECORD

17-10-82

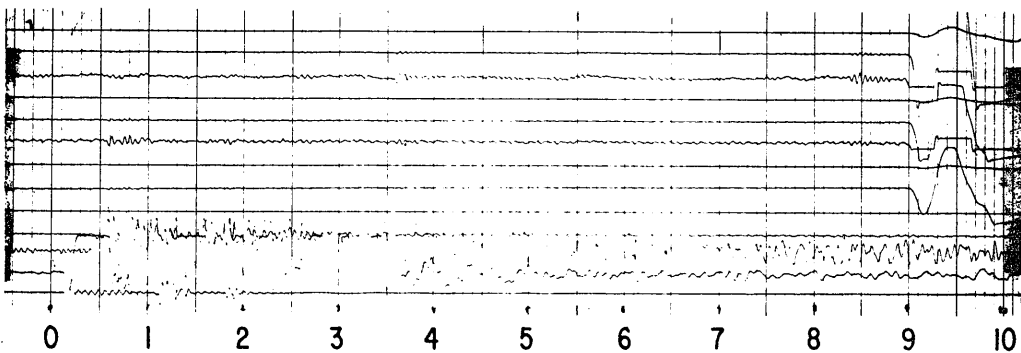
Rec. No. 14
2375m R.K.B.



Rec. No. 8
2640m R.K.B.



Rec. No. 7
2685m R.K.B.



VERTICAL SEISMIC PROFILE

The VSP survey was run between the 1405 and 3020 metre levels. Generally, three shots were taken at each level which were spaced approximately 30 metres apart.

Constant depth traces were stacked to improve the signal to noise ratio.

Full scale playouts of the results accompany this report separately. Reduced copies are bound in the report.

The VSP display panels are as follows:

Panels 1, 2 and 3 are raw data with AGC and a band pass filter applied.

Panel 2 - down-going events flattened

Panel 3 - up-going events flattened

Panel 4 - down-going events flattened with decon.

Panel 5 - down-going events flattened with decon. and an FK filter

Panel 6 - down-going events flattened with decon., FK filter and coherency filter

Panels 7, 8 and 9 have up-going events flattened with the same processes applied as in Panels 4, 5 and 6 respectively.

COMMENTS

Apart from the first arrivals and the water bottom to surface multiple which follows, there is only minor down-going multiple energy above 15Hz in frequency. At frequencies below 10Hz, down-going multiples become dominant and present difficulties in extracting the up-going signals.

The 4.5Hz geophone assembly probably contributed to this problem and geophones with a higher resonant frequency may be preferred.

The correlation between the up-going event display of the VSP, the seismic section and the synthetic seismogram is good.

The strong peak at 1.254 secs. correlates to the P.asperopolus marker. It appears that the two peaks immediately below could be multiple energy associated with this event.

The Upper M.diversus marker at 1.361 secs. correlates to a strong peak on the synthetic seismogram and the VSP. This strong peak is not evident on the seismic section, however, the VSP does indicate that there is some multiple interference with this event.

The strong primary peak at 1.45 secs. on the VSP is not evident on the seismic section. At this level and below, down-going multiples and, to a lesser extent, up-going multiples interfere with the primary reflections. In particular, the Igneous Intrusives at 1.774 secs. and which appear as a strong trough on both the VSP display and the synthetic seismogram, are not well defined on the seismic section.

The following sequences have been applied when processing the VSP data in the Wirrah No. 1 well.

1. Reformat
2. Edit of bad records
3. Vertical stack, 3-fold, to evenly spaced (30m. apart) depth locations.
4. Gap deconvolution, 45 msec. gap, total operator 180 msec. design gate 500 - 2800 msec.
5. Bandpass filter 5-45 Hz.

6. Static shifts to give sections with up-going waves horizontal (double the first breaks) and with down-going waves horizontal (remove first breaks - times relative to the shallowest record)
7. AGC 1200 msec.
8. Design and application of F-K filter to separate up and down-going waves
9. AGC 1200 msec.
10. Coherency filtering pass ± 2 msec./trace with 5-45 Hz. bandpass filter, to both up and down-going sections.
11. AGC 1200 msec.



L.W. Pfitzner



Seismograph Service (England) Limited

Directors:

R.C. Anderson (U.S.A.)
H.W. Lawrence (U.S.A.)
B.G. Baugh (U.S.A.)
E.E. Wolf (U.S.A.)
J.K. Smith
D.A. Hartley
C.R. Hastings-Jones

Registered Office

HOLWOOD,
WESTERHAM ROAD,
KESTON, KENT,
ENGLAND, BR2 6HD.
Registered in England No. 479770
V.A.T. Registration 205 9962 45

Tel Farnborough (Kent) 53355
Telex 24450 SSLHOL G
Cables and Inland Telegrams
'Seislim Bromley'

ESSO AUSTRALIA LIMITED

WELL: WIRRAH NO. 1

V.S.P. PROCESSING COMMENT:

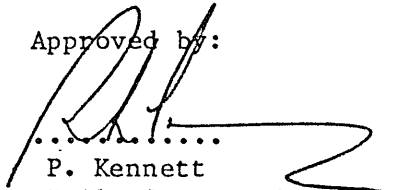
A V.S.P. check shot survey was carried out on 20.11.82, by Velocity Data Pty Ltd., when a total of 56 levels between 3020 and 1405 m below KB were recorded, of which 52 levels between 2990 and 1605 m below RT were V.S.P. processed. Dead traces were inserted for levels 22 and 43 (2365 and 1765 m below KB) as no times could be picked due to noise present. The waveform at 3020 m below KB had been affected by noise and so this level was omitted from the V.S.P. No data was recorded at 1525 m below KB thus dead trace was inserted for this level to maintain even trace spacing

The V.S.P. displays were produced using the processing sequence indicated on the side labels attached to each set of displays.

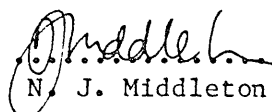
Downgoing wave subtraction and Special V.S.P. deconvolution designed from the appropriate downgoing wave using a window length of 2000 ms were applied as appropriate during the processing.

The displays U, S & V were made using a filter of 1-5, 50-63 Hz designed to match the frequency content of the seismic section. The data prior to deconvolution only contains low frequencies as no source signature deconvolution was applied due to the poor data quality of the hydrophones. The higher frequencies are present after the data was deconvolved.

Approved by:


P. Kennett
Manager, Well Survey Division

Processed by:


N. J. Middleton

25th February, 1983.

/WMD/F

COMPANY: ESSO AUSTRALIA LIMITED

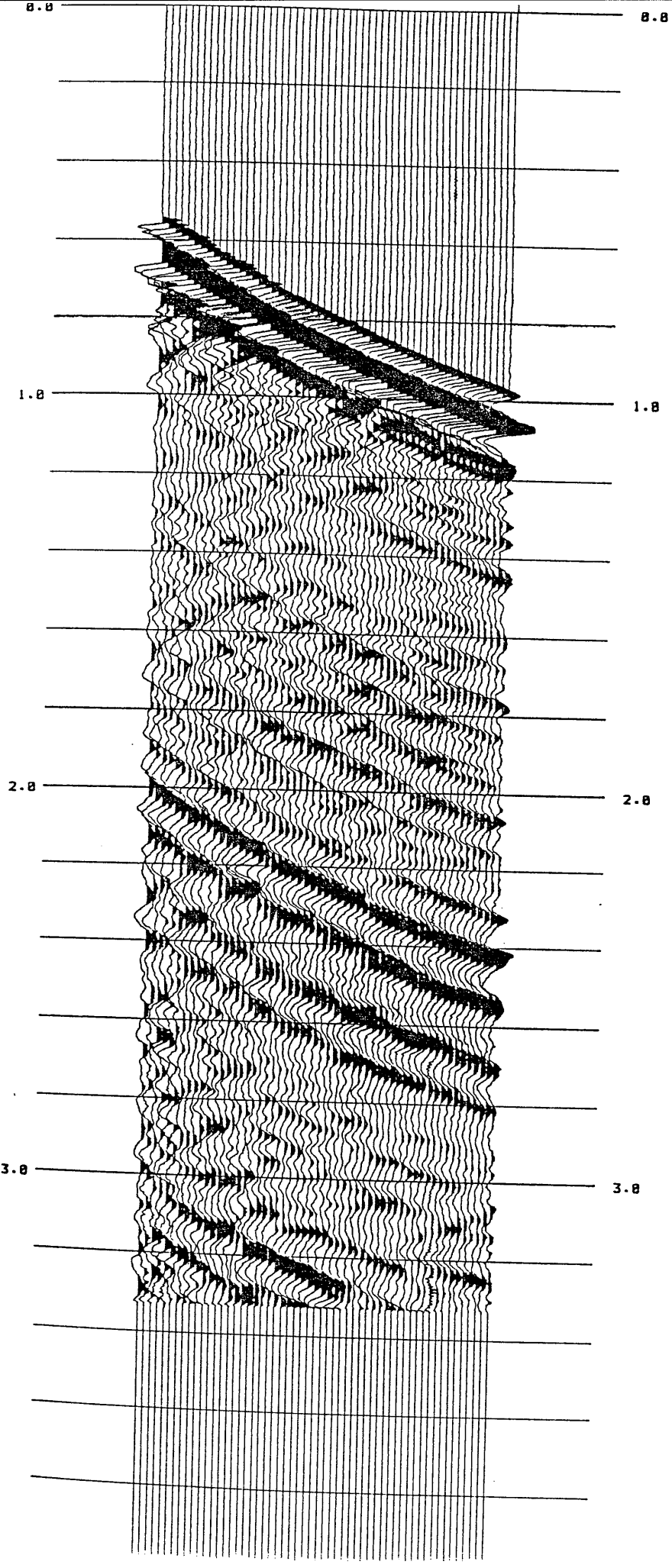
WELL: WIRRAH 1

V.S.P. STACKED GEOPHONE DATA

<u>LEVEL NO.</u>	<u>DEPTH IN FT BELOW KB</u>	<u>STACK</u>	<u>LEVEL NO.</u>	<u>DEPTH IN FT BELOW KB</u>	<u>STACK</u>
1	2990	3	29	2155	3
2	2958	3	30	2125	2
3	2930	2	31	2095	2
4	2900	3	32	2065	2
5	2870	3	33	2035	2
6	2842	2	34	2005	3
7	2818	2	35	1975	2
8	2785	3	36	1945	3
9	2755	2	37	1915	3
10	2725	3	38	1885	2
11	2695	3	39	1855	2
12	2665	1	40	1840	2
13	2642	2	41	1825	1
14	2605	2	42	1795	1
15	2573	1	43	1765	Blank
16	2545	1	44	1735	2
17	2515	1	45	1705	3
18	2485	3	46	1675	2
19	2455	3	47	1654	2
20	2425	3	48	1615	2
21	2395	2	49	1585	1
22	2365	Blank	50	1555	2
23	2335	2	51	1525	Blank
24	2305	2	52	1489	2
25	2275	2	53	1465	2
26	2236	3	54	1435	2
27	2215	1	55	1405	2
28	2190	2			

PROJECT : SPECIAL *RAW DATA, 1200 AGC*
24-DEC-1982 12:10:01.96
POLARITY NORMAL - POSITIVE DATA (4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
JOB NO. 10244
PANEL NO. 1
REF. = 0.1202E+09



24-DEC-1982 12:10:01.96
JOB NO. 10244
PANEL NO. 1
DATA (4000 MILLS @2.000)
POLARITY NORMAL - POSITIVE
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE
REF. = 0.1202E+09

PANEL 2

PROJECT : SPECIAL

RAW DATA, DOWN WAVES FLAT, 1200 AGC

24-DEC-1982 11:57:31.36

POLARITY NORMAL

- POSITIVE DATA(4000 MILLS @2.000)

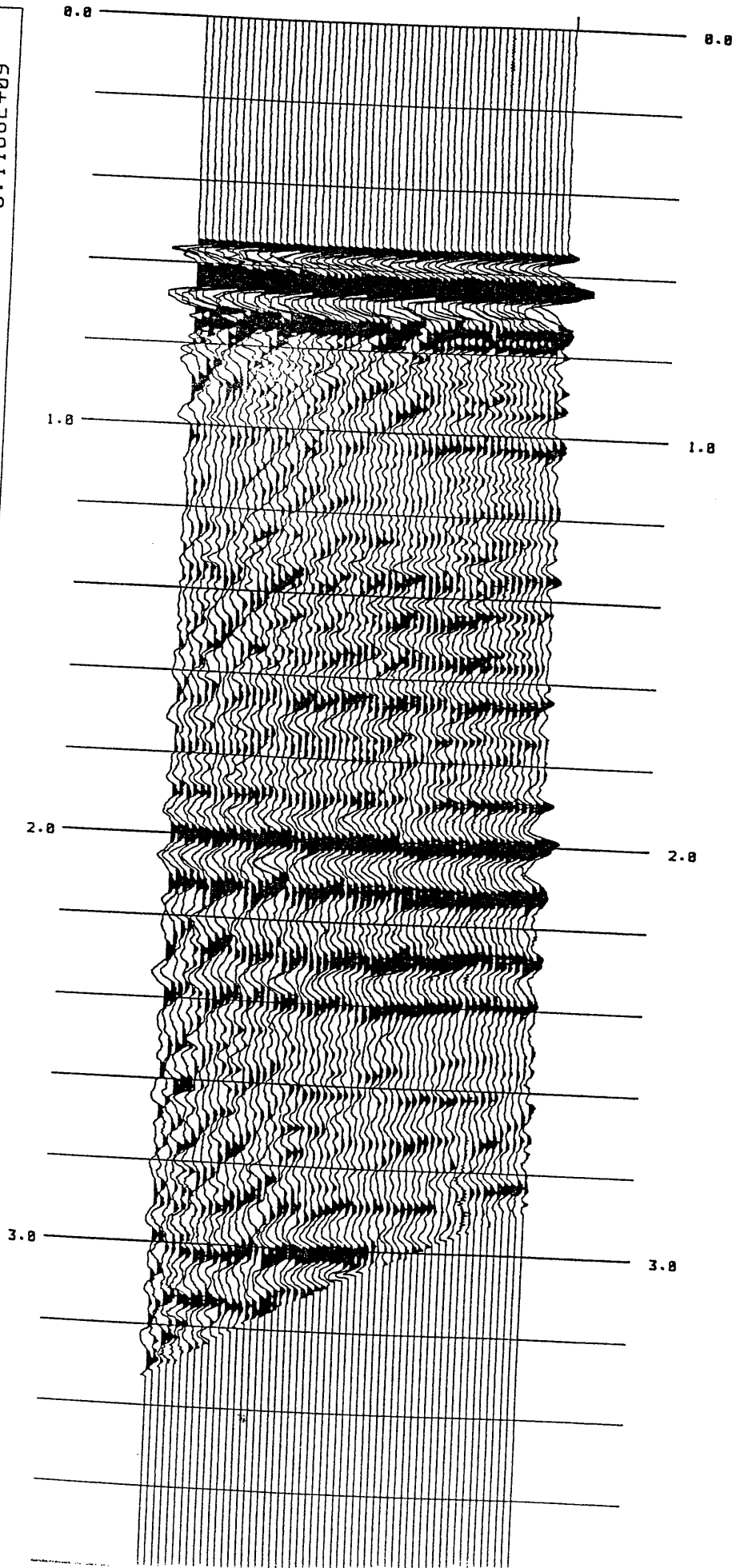
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE VSP

JOB NO. 10233

PANEL NO. 1

REF. = 0.1166E+09

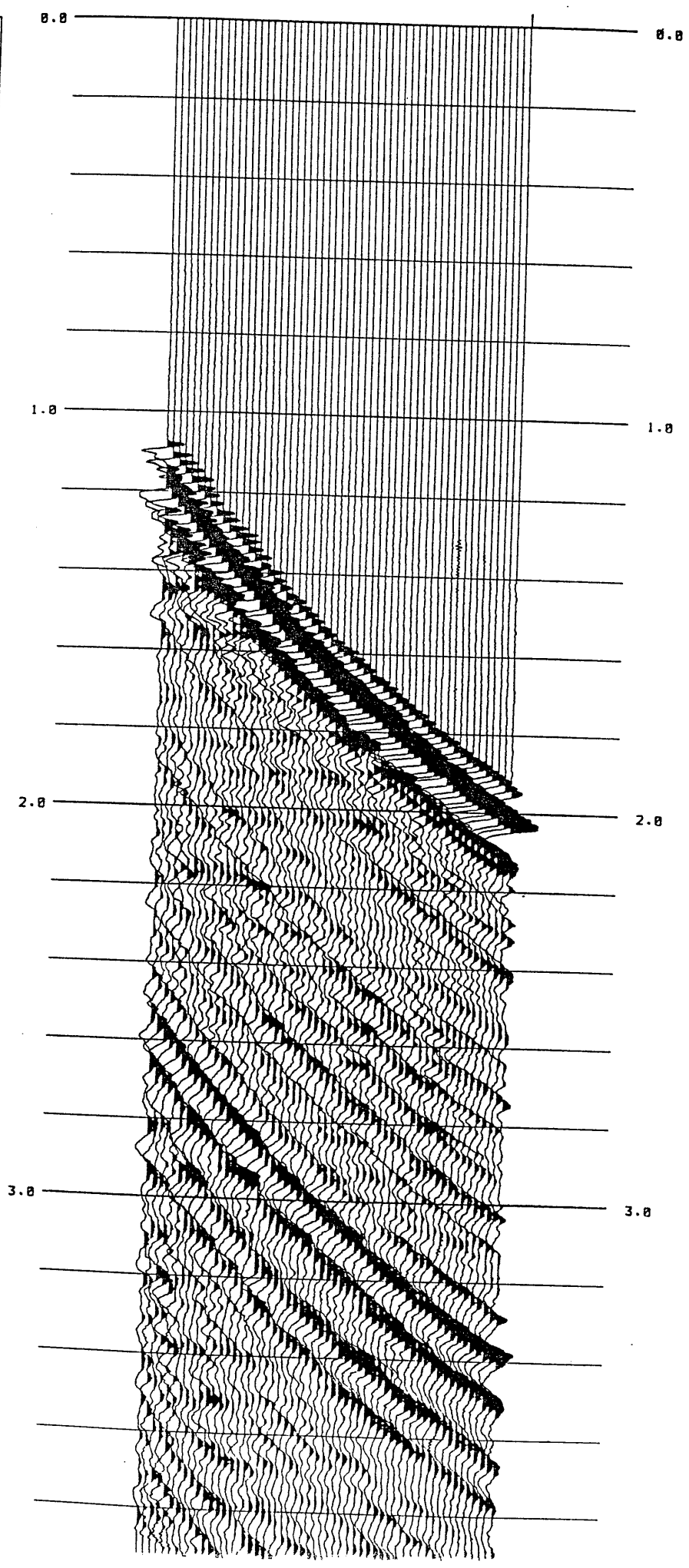


LINE VSP
JOB NO. 10233
PANEL NO. 1
REF. = 0.1166E+09

PROJECT : SPECIAL *RAW DATA, DOWN WAVES FLAT, 1200 AGC*
24-DEC-1982 11:57:31.36
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

PROJECT : SPECIAL *RAW DATA, UP WAVES FLAT, 1200 AGC*
 24-DEC-1982 13:54:17.89
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
 JOB NO. 10249
 PANEL NO. 1
 REF. = 0.1203E+09



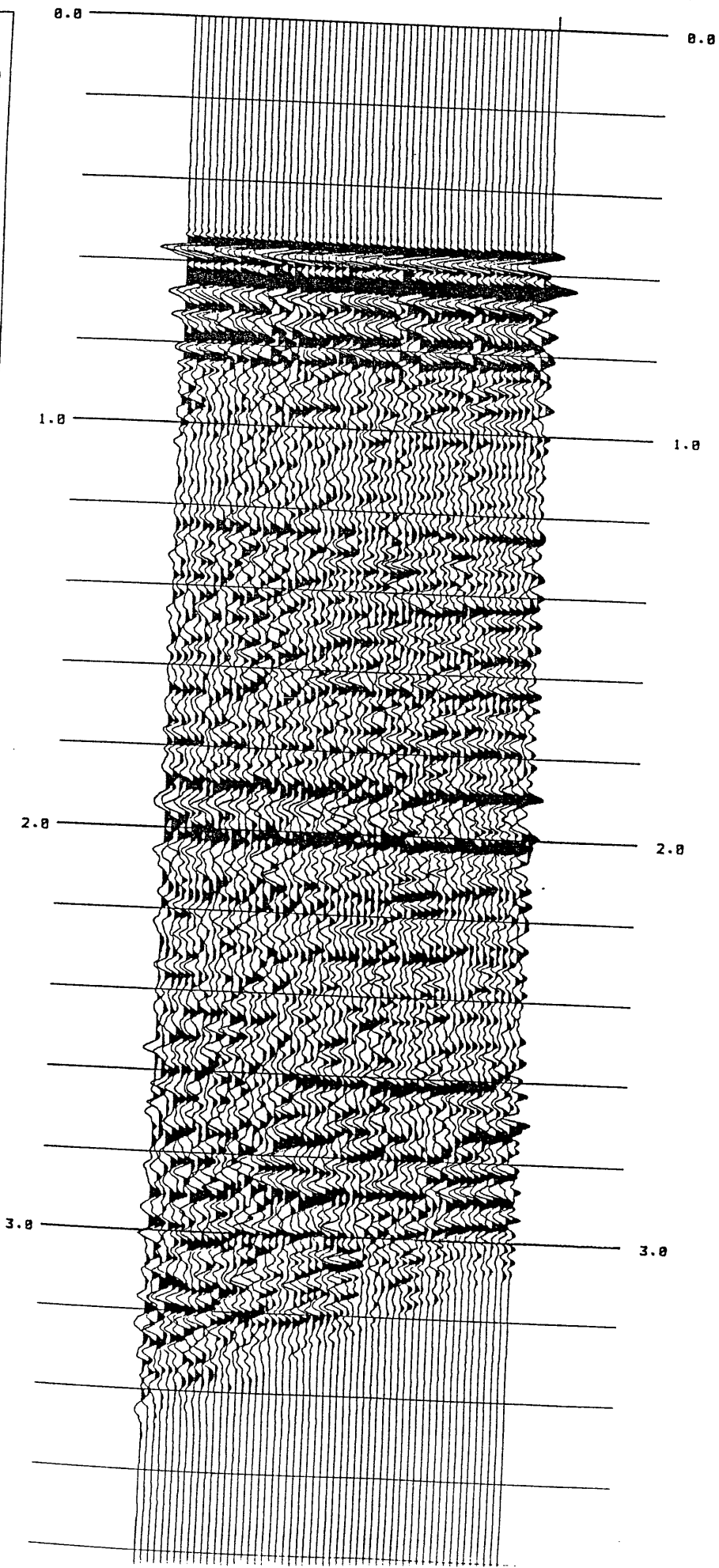
PROJECT : SPECIAL *RAW DATA, UP WAVES FLAT, 1200 AGC*
 24-DEC-1982 13:54:17.89
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
 JOB NO. 10249
 PANEL NO. 1
 REF. = 0.1203E+09

PANEL 4

PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, AGC 1200*
 24-DEC-1982 14:39:15.90
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
 JOB NO. 10253
 PANEL NO. 1
 REF. = 0.1293E+09



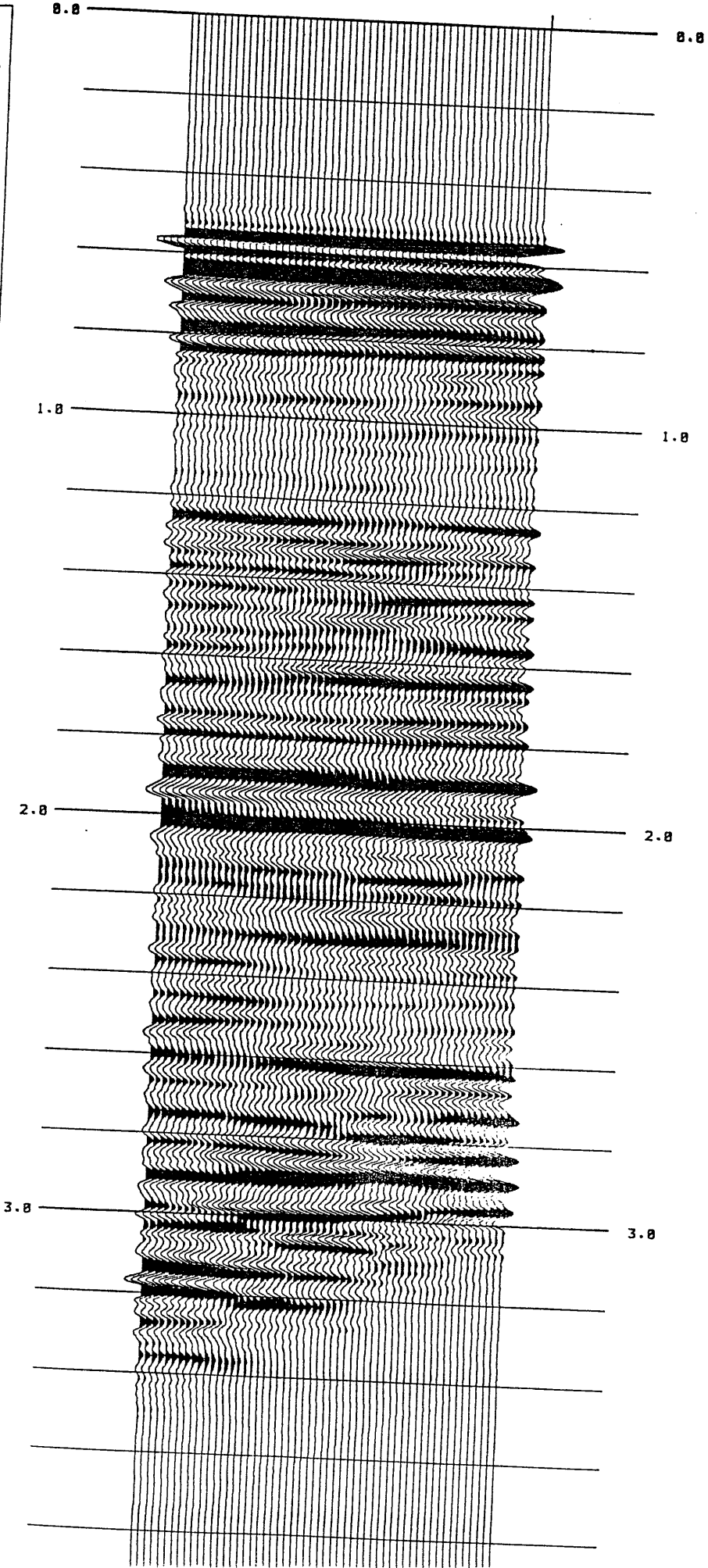
PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, AGC 1200*
 24-DEC-1982 14:39:15.90
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
 JOB NO. 10253
 PANEL NO. 1
 REF. = 0.1293E+09

- SECOND AVERAGE USING 4 WINDC

PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, FK, AGC 1200*
 24-DEC-1982 14:39:34.16
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE VSP
 JOB NO. 10253
 PANEL NO. 1
 REF. = 0.1320E+09



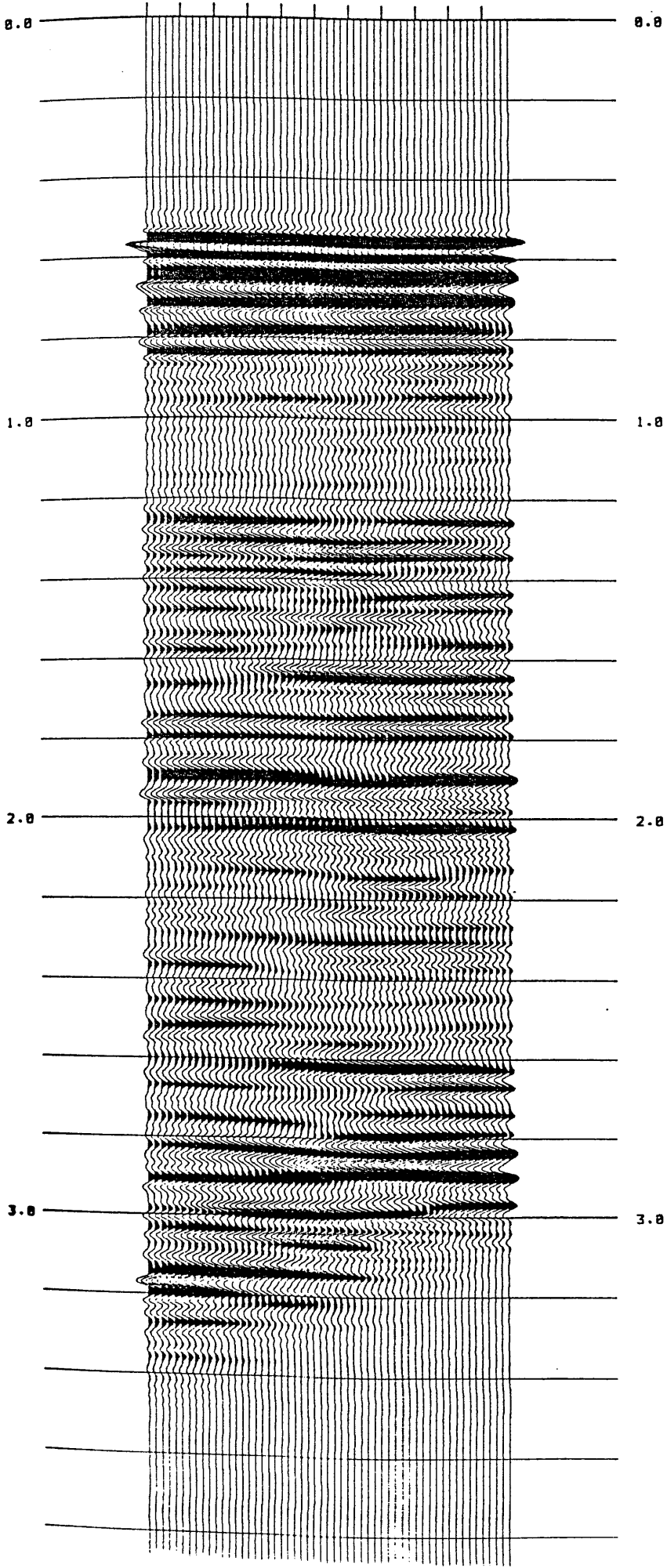
PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, FK, AGC 1200*
 24-DEC-1982 14:39:34.16
 POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
 SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE VSP
 JOB NO. 10253
 PANEL NO. 1
 REF. = 0.1320E+09

SECOND AVERAGE USING 4 WINDC

PANEL 6

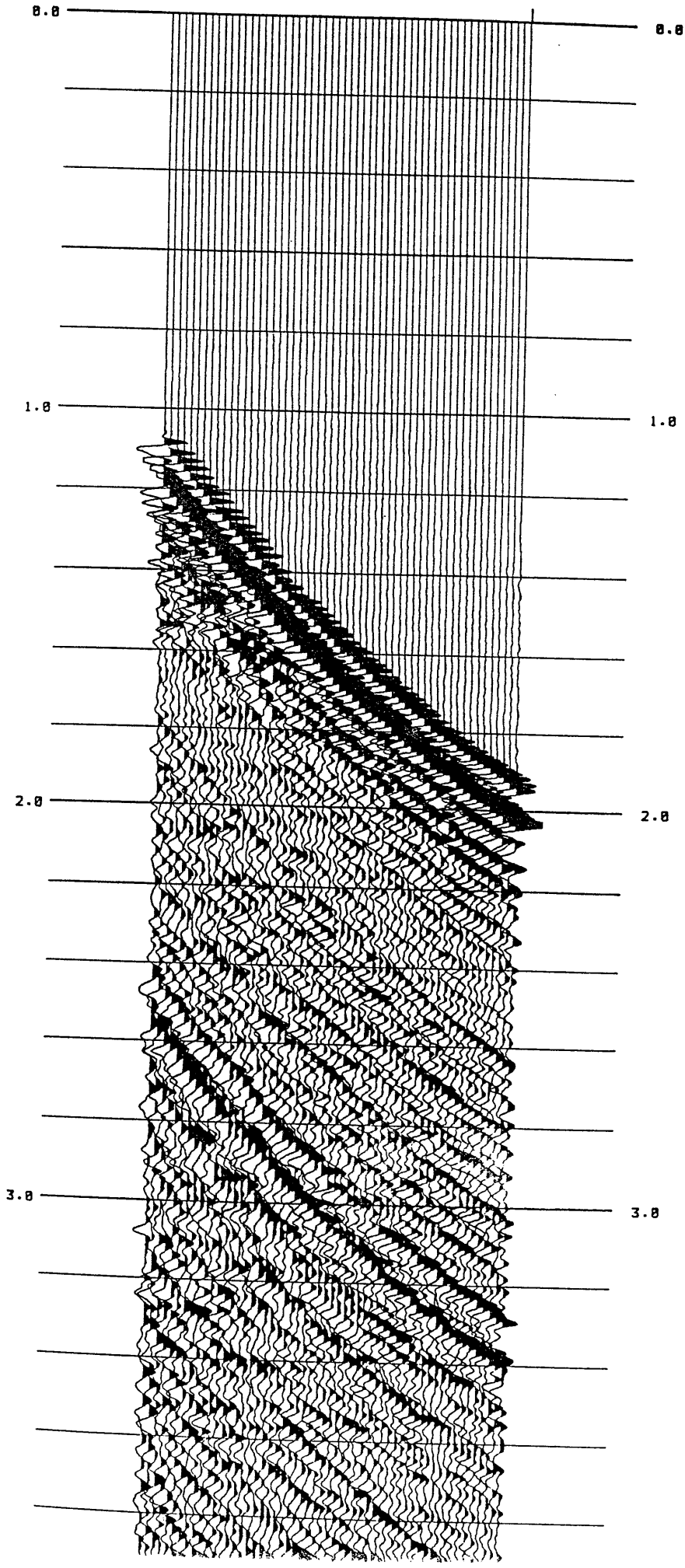
PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, FK, COHERE, AGC LINE USP
24-DEC-1982 14:40:17.16 JOB NO. 10253
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000) PANEL NO. 1
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE REF. = 0.9456E+08



PROJECT : SPECIAL *DOWN WAVES FLAT, DECON, FK, COHERE, AGC LINE USP
24-DEC-1982 14:40:17.16 JOB NO. 10253
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000) PANEL NO. 1
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE REF. = 0.9456E+08

PROJECT : SPECIAL *UP WAVES FLAT, DECON, AGC 1200*
 24-DEC-1982 15:43:14.47
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE VSP
 JOB NO. 10258
 PANEL NO. 1
 REF. = 0.1157E+09



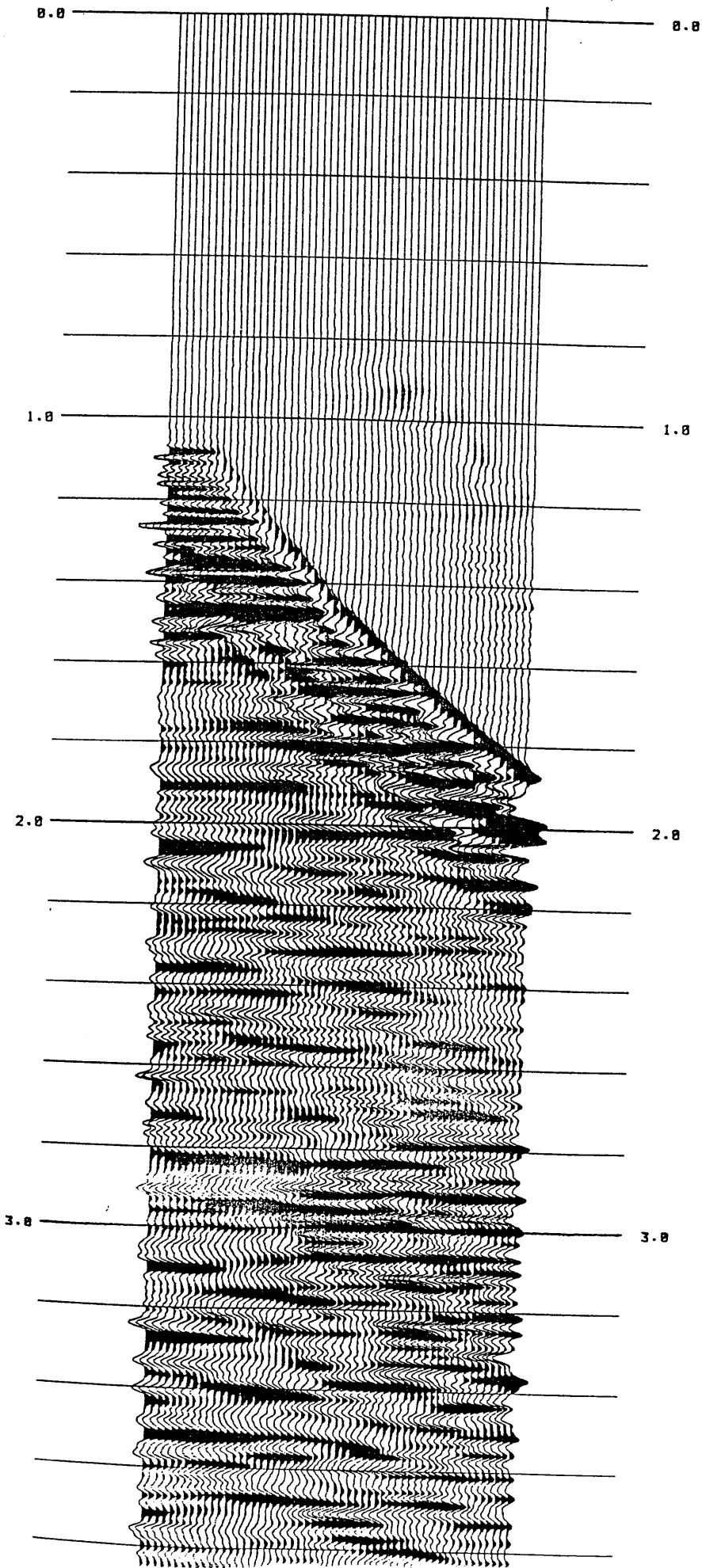
PROJECT : SPECIAL *UP WAVES FLAT, DECON, AGC 1200*
 24-DEC-1982 15:43:14.47
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE VSP
 JOB NO. 10258
 PANEL NO. 1
 REF. = 0.1157E+09

PANEL 8

PROJECT : SPECIAL *UP WAVES FLAT, DECON, FK, AGC 1200*
24-DEC-1982 15:43:20.70
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

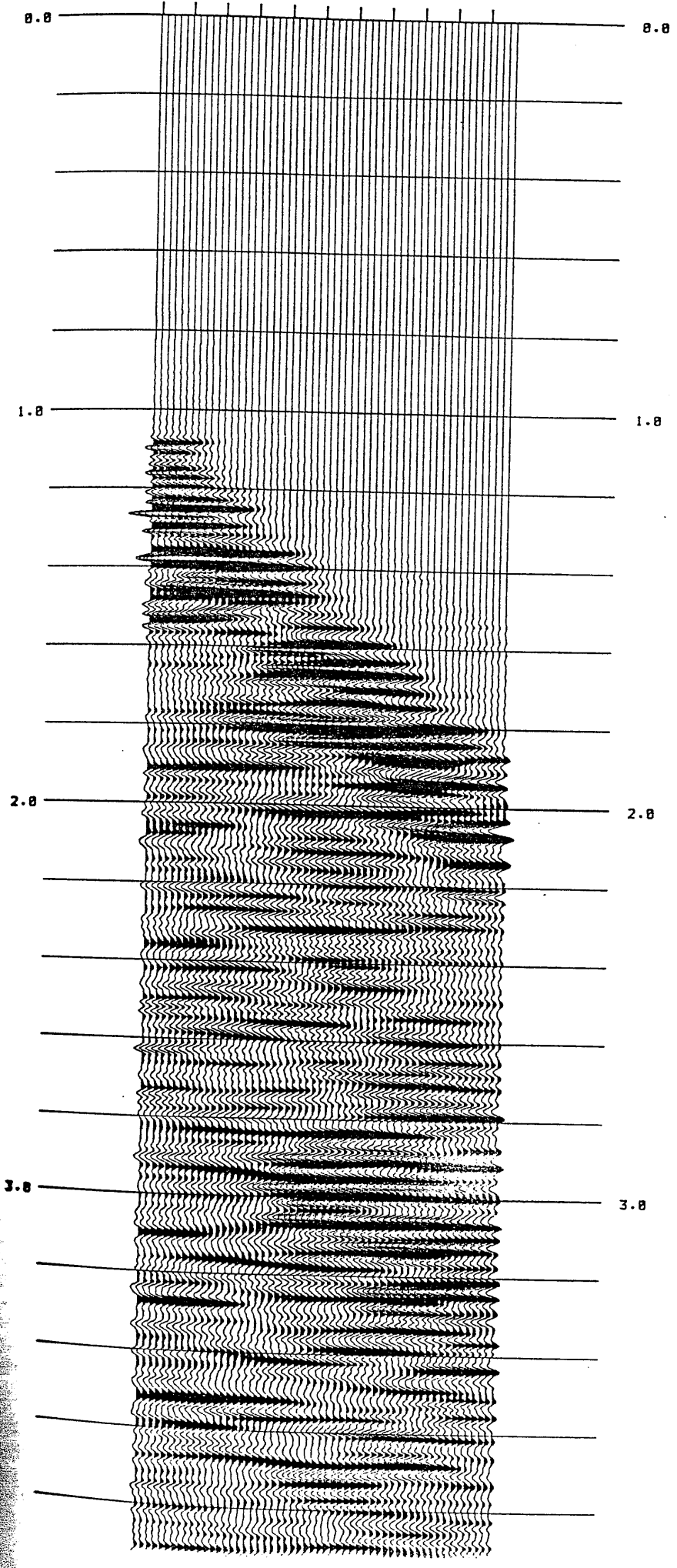
LINE USP
JOB NO. 10258
PANEL NO. 1
REF. = 0.1097E+09



PROJECT : SPECIAL *UP WAVES FLAT, DECON, FK, AGC 1200*
24-DEC-1982 15:43:20.70
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000)
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE

LINE USP
JOB NO. 10258
PANEL NO. 1
REF. = 0.1097E+09

PROJECT : SPECIAL *UP WAVES FLAT, DECON, FK, COHERE, AGC 1 LINE VSP
24-DEC-1982 15:43:37.47 JOB NO. 10258
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000) PANEL NO. 1
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE REF. = 0.8481E+08



UP WAVES FLAT, DECON, FK, COHERE, AGC 1 LINE VSP
24-DEC-1982 15:43:37.47 JOB NO. 10258
POLARITY NORMAL - POSITIVE DATA(4000 MILLS @2.000) PANEL NO. 1
SECOND AVERAGE USING 4 WINDOWS OVER ENTIRE TRACE REF. = 0.8481E+08