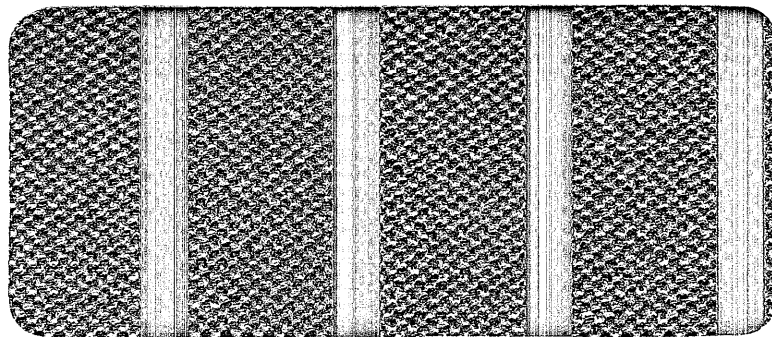


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PE906044



WCR (vol. 1)

Kipper - 1

(W930)

COMMONWEALTH OF AUSTRALIA
AUSTRALIA

138 pages,
8 ENCLOSURES
PETROLOGICAL LITH 5 pages

WELL COMPLETION REPORT

KIPPER-1

W930

VOLUME 1

BASIC DATA 13 AUG 1986

PETROLEUM DIVISION

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

Compiled by: M.E.FITTALL

JULY, 1986

KIPPER-1

WELL COMPLETION REPORT

VOLUME 1

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2307L/49

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2

ESSO AUSTRALIA LTD

COMPLETION REPORT

1. WELL DATA

WELL : KIPPER-1

LOCATION : Latitude : 38° 10' 35.855"S.
Longitude : 148° 35' 46.777"E.
X = 639821.23ME
Y = 5,773,368.93MN
Map Projection: UTM AMG Zone 55 CM 147°E.
Geographical Location: Bass Strait, Victoria
Field: Kipper.

PERMIT : Vic/P19

ELEVATION : 21MKB

WATER DEPTH : 94m

TOTAL DEPTH : 2875m KB

PLUG BACK TYPE : Cement Plug.

REASONS FOR PLUGGING BACK : Plug and Abandon.

MOVE IN : 5th March 1986

SPUDED : 5th March 1986

REACHED T.D. : 28th March 1986

RIG RELEASED : 11th April 1986

OPERATOR : Esso Exploration and Production Australia Inc.

PERMITTEE OR LICENCEE : Shell Development (Australia); The News Corporation Limited; TNT Management Pty Ltd; Crusader (Victoria) Pty Ltd; and Mincorp Offshore Pty Ltd.

ESSO INTEREST : 25%.

OTHER INTEREST : BHP Petroleum (Australia) Pty Ltd: 25%; Shell Development (Australia) 20%; The News Corporation Limited: 10%; TNT Management Pty Ltd: 10%; Crusader (Victoria) Pty Ltd: 7.5%; Mincorp Offshore Pty Ltd: 2.5%.

CONTRACTOR : South Seas Drilling Company.

RIG NAME : Southern Cross.

EQUIPMENT TYPE : Semi Submersible.

TOTAL RIG DAYS : 38.

DRILLING AFE NO. : 236176; Production Test AFE No. 236177.

TYPE COMPLETION : Plug and Abandonment.

WELL CLASSIFICATION : Before Drilling New Field Wildcat
After Drilling New Field Discovery

2307L/50

2.

OPERATIONS SUMMARY

KIPPER-1

Moving/Mooring

Under tow by the Lady Sally, the Southern Cross departed the Leatherjacket-1 location at 1345 hours on March 4, 1986 and arrived at the Kipper-1 location at 1630 hours the same day. The 10 nautical mile tow was completed in 2.75 hours at an average speed of 3.6 knots. Anchor No. 8 was dropped by the rig on approach to the locations. The remaining seven anchors were run by the Torrens Tide and Lady Sally in a record 4.75 hours. All anchors were pretensioned to 200 kips.

The final rig location was:

Latitude : 38° 10' 35.86" S
Longitude : 148° 35' 46.78" E
X = 639,821m E
Y = 5,773,369m N

AMG Zone 55, Universal Transverse Mercator Projection,
Australian Geodetic Datum.

The rig was located 7.38m at 293° from the called location and approximately 67 km at 120° from Lakes Entrance, Victoria.

Drill 26" Hole for 20" Casing

The drilling template was run and landed at a seafloor depth of 115m. The 26" hole was drilled to 256m using seawater and high viscosity gel slugs to clean the hole. A wiper trip was made to the seafloor and the hole was displaced with 350 bbls of high viscosity gel mud. The 20" casing was run and cemented with the casing shoe at 238m. The BOP stack was run and the collet connector and casing were tested to 500 psi against the shear rams.

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

The cement and 20" casing shoe were drilled and the 17-1/2" hole drilled to 846m using a seawater/gel mud system. After a wiper trip to the shoe, the sonic log was run to the well TD. Poor weather conditions prevented the running of the 13-3/8" casing for 8/75 hours. Another wiper trip was performed before the 13-3/8" casing was run and cemented at 830m.

Drill 12-1/4" Hole to 2875m

The 13-3/8" casing float collar and cement were drilled out to 825m before the casing was tested to 1500 psi. The remaining cement, shoe and 6m of new hole were drilled before a Phase II PIT was run to 1100 psi, indicating a leak off of 16.8 ppg EMW. The 12-1/4" hole was drilled to 2875m, 754m deeper than the original programmed depth. The mud weight remained at 9.2 ppg to a depth of 1730m, where it was increased to 9.6 ppg because of a predicted 165m closure at 1883m. Six plastic sleeve cores were cut in Latrobe and intra-Latrobe sands in the interval of 1427.5m to 1871m.

Beneath an unpredicted 96m volcanic section from 1893m to 1989m, a thick gas sand was penetrated with the 9.7 ppg mud. During a wiper trip at 2140m, gas was swabbed into the wellbore. The gas influx was circulated out without difficulties. The mud weight was raised to 10.5 ppg prior to running intermediate logs. An RFT pretest gave a 9.7 ppg EMW pore pressure at the top of the gas sand. The mudweight remained at 10.3 to 10.5 ppg until the well reached TD at 2875m. During TD logging an RFT pretest at 2845m gave a pore pressure of 9.8 ppg EMW. This sand is thought to be abnormally pressured.

After logs, 9-5/8" casing was run to 2861m for the one production test. Below the Top of Latrobe, the hole showed little washout and averaged 12-3/4" diameter to TD. No unusual hole problems were encountered during the well.

Plug and Abandonment

After the test zone was abandoned, the 9-5/8" casing was cut with a Pengo cutter at 370m. The 4 joints of 10-3/4" casing and 9-5/8" casing stub were retrieved with a casing spear. A cement plug was set from 420m to 329m across the 9-5/8" casing stub. The plug was tagged with a junk basket and pressure tested to 1500 psi. A 13-3/8" bridge plug was set at 300m, just above the cement plug.

The 13-3/8" casing was cut at 220m with a Pengo cutter and retrieved with a spear. A cement plug was set from 255m to 150m across the 13-3/8" casing cut. The plug was pressure tested to 500 psi and the BOP stack was pulled. A 3.9kg explosive charge was run on drillpipe below the wellhead running tool and severed the 20" casing at 127m. The pile joint assembly, template and four post guidebase were retrieved with the running tool.

Pull Anchors

After the rig waited on workboats for 20 hours, the Swan Tide and Lady Caroline pulled all anchors in 17-1/2 hours. The Kipper-1 well was completed at 2400 hours on April 11, 1986. All Esso and 3rd party personnel departed the rig before the Lady Caroline began towing the rig to Eden for demobilization.

Rig Demobilization

The Southern Cross was towed to Twofold Bay at Eden, NSW by the Lady Caroline in 31.5 hours. The rig arrived on location at 0730 hours on April 13, 1986 after the 128 nautical mile tow. The No. 1 anchor was dropped by the rig while the remaining seven anchors were run by the Swan Tide and Lady Caroline.

Both boats were backloaded with all remaining Esso and third party contractor equipment except for the diving gear. The two workboats then returned to BBMT. The diving equipment was removed from the cellar deck and placed on the rig Texas deck for backloading. Deep swells delayed the movement of the gear to and from the rig.

South Seas' rig equipment which had been stored at BBMT was transported to Eden by truck. This gear was loaded onto an Esso leased barge at Eden and offloaded on the rig once the swells subsided. The diving equipment was backloaded to the barge for truck transportation back to BBMT and Sale. The rig was released from Esso's service at 1500 hours on 21 April, 1986. Total time for the rig demobilization was 9.62 days of which 4.81 days were lost due to waiting on weather.

3.

KIPPER 1 CASING DATA

CSG O.D. in.	CSG WT. ppf	CSG GRADE	CSG CONN.	CSG LGTH mtrs.	CENTRALIZER POSITION.	SHOE DPTH mRKB	REMARKS
20	94	X-52	JV	13.24		238	Float Shoe Jnt
20	94	X-52	JV	88.26			7 Jnts
20	129	K-55	JV/CC	13.24			Crossover Jnt
24	670		CC	11.00			Wellhead No. EP2-1-2-3
13-3/8	54.5	K-55	Butt.	12.70		830	Float Shoe Jnt.
13-3/8	54.5	K-55	Butt.	11.70	One Above Float Collar	806	Float Collar Jnt.
13-3/8	54.5	K-55	Butt.	693.90	Across Collars on First 7 Jnts		57 Jnts.
13-3/8			Butt.	0.72			Hanger No. EHW36. Seal Assy No. ESW35.
9-5/8	47.0	N-80	Butt.	11.63	Middle of Jnt.	2,861	Float Shoe Jnt.
9-5/8	47.0	N-80	Butt.	12.13	Above Float Collar	2,837	Float Collar Jnt With Baffle Plate In Collar.
9-5/8	47.0	N-80	Butt.	826.67	Across Collars On First 3 Jnts.		71 Jnts.

KIPPER 1 CASING DATA

CSG O.D. in.	CSG WT. ppf	CSG GRADE	CSG CONN.	CSG LGTH mtrs.	CENTRALIZER POSITION.	SHOE DPTH mRKB	REMARKS
9-5/8	47.0	N-80	Butt.	2.90	Across 3 Collars b/n 2150-1900m.	2,011	Pup Jnt.
9-5/8	47.0	N-80	Butt.	152.22			13 Jnts.
9-5/8			Butt.	0.91	Across 3 Collars above & below.	1,856	Stage Collar.
9-5/8	47.0	N-80	Butt.	1,696.64			145 Jnts.
10-3/4	51.0	N-80	Butt.	0.71			9-5/8"x10-3/4" Csg Swedge.
10-3/4	51.0	N-80	Butt.	46.84			4 Jnts.
10-3/4			Butt.	0.71			Hanger.

4.

KIPPER 1 CEMENT DATA

CEMENT JOB TYPE	CEMENT TOP mRKB	CEMENT BTM mRKB	CEMENT ADDITIVES	CEMENT VOLUME sxs	CEMENT WEIGHT ppg	REMARKS
20" Csg.	115	163	2.2% gel w/ 182bbls Seawater	750	12.8	Lead slurry.
20" Csg.	163	238	42bbls Seawater	350	15.8	Tail slurry.
13-3/8" Casing	346	830	125 bbls Seawater	1,050	15.8	Displace w/ 358 bbls. Did not bump plug.
9-5/8" Casing	1,897	2,861	1.4% HR6L w/112 bbls Freshwater	937	15.8	1st. Stage. Bump Plug w/2500 psi.Float Held.
9-5/8" Casing	1,310	1,856	0.6% HR6L w/61 bbls Freshwater	515	15.8	2nd. Stage. Closed Collar w/1800 psi.
P&A Plug No. 1	1,960	2,020	1.0% HR6L w/12 bbls Freshwater	100	15.8	Squeezed 6 bbls Into Perforations w/3500psi.
P&A Plug No. 2	329	420	10 bbls Seawater	180	15.8	Pressure tested to 1500psi. Tagged w/Junk Basket.
P&A Plug No. 3	150	255	58 bbls Seawater.	485	15.8	Pressure tested to 500psi.

CLASS 'G' CEMENT USED.

WELL: KIPPER-1

5. SAMPLES, CONVENTIONAL CORES, SIDEWALL CORES

<u>INTERVAL</u>	<u>TYPE</u>
260-2875m	Cuttings samples - 3 sets of washed and oven dried and 1 set of bagged and air dried cuttings. Sampled from 260-1300m at 10m intervals. Sampled from 1300-1427.5m; 1455.3-1813.2m; 1822.9-1832.2m; and 1851.1-2875m at 5m intervals.
260-2875m	Unwashed canned samples for geochemistry, collected at 15m intervals.
1427.5-1436.0m	Core No. 1, Plastic sleeve, recovered 100% (9.1m).
1436.0-1445.5m	Core No. 2, Plastic sleeve, recovered 100% (9.5m).
1445.5-1455.3m	Core No. 3, Plastic sleeve, recovered 91% (8.9m).
1813.2-1822.9m	Core No. 4, Plastic sleeve, recovered 76% (7.4m).
1832.2-1841.6m	Core No. 5, Plastic sleeve, recovered 91% (8.6m).
1841.6-1851.1m	Core No. 6, Plastic sleeve, recovered 100% (9.5m).
1412.5-2862m	CST Run 1 shot 60, recovered 47. CST Run 2 shot 51, recovered 45.

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WELL: KIPPER-1

6.

WIRELINE LOGS AND SURVEYS

<u>Type and Scale</u>		<u>From</u>	<u>To</u>
<u>Suite 1</u>			
SDT-GR	1:200 1:500	834.8	238m
<u>Suite 2</u>			
DLTE-MSFL-GR-AMS-SP	1:200 1:500	2135	1196
IN COMBINATION WITH LDTC-CNTH-GR-AMS	1:200 1:500	2128.3	1370m
RFT-HP (PRETESTS) RFT-GR (PRETESTS AND SAMPLES)	RUN 1 RUNS 1-6		
<u>Suite 3</u>			
DLTE-MSFL-GR-SP	1:200 1:500	2869	1980m
IN COMBINATION WITH LDTC-CNTH-GR	1:200 1:500	2862.8	1980m
SDT-GR	1:200 1:500	2860.4	832m
IN COMBINATION WITH DITE-GR	1:500	2871.5	832m
HDT-GR	1:200	2870.5	1350m
RFT-HP (PRETESTS)	RUN 7		
RFT-GR (PRETESTS + SAMPLES)	RUNS 7-12		
WST-GR (CHECK SHOT SURVEY)	SHOT 14 LEVELS	2871	421m
CST-GR	RUN 1 SHOT 60; MISFIRES 10; RECOVERED 47; LOST 3.	2862	1412.5m
	RUN 2 SHOT 51; MISFIRES 3; RECOVERED 45; LOST 3.		

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7.

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - KIPPER-1

TEST & SEAT NO.	DEPTH (METRES) K.B.	CHAMBER	RECOVERY (LITRES)				HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS		
			OIL	COND.	GAS	FORMATION WATER	MUD FILTRATE	MPaa	Psia	MPaa		Psia	
			Litres	Litres	Litres	m ³	Litres	Litres					
1/1	2113.0	Pretest							22.67	3287.8	26.57	3854.0	Valid
1/2	2055.5	Pretest							22.56	3271.5	25.88	3753.7	Valid
1/3	2124.0	Pretest							22.68	3289.5	26.73	3876.8	Valid
1/4	2117.2	Pretest							22.68	3289.9	26.67	3868.1	Valid
1/5	2028.5	Pretest							22.50	3263.7	25.61	3713.9	Valid
1/6	2006.5	Pretest							-	-	25.33	3673.9	Seal Failure
1/7	2006.4	Pretest							22.42	3252.1	25.34	3675.1	Terminated Early/Packer Reset
1/8	2006.4	Pretest							22.48	3260.3	25.35	3677.1	Valid
1/9	1992.7	Pretest							22.43	3253.6	25.17	3650.2	Valid
1/10	1890.0	Pretest							18.79	2724.7	23.89	3465.5	Valid
1/11	1855.8	Pretest							18.45	2675.3	23.48	3405.2	Valid
1/12	1842.5	Pretest							18.31	2656.1	23.31	3380.7	Valid
1/13	1832.0	Pretest							18.24	2645.3	23.17	3361.1	Valid
1/14	1823.5	Pretest							-	-	23.07	3346.4	Tight - abandoned
1/15	1823.4	Pretest							18.15	2633.0	23.07	3346.3	Valid
1/16	1816.0	Pretest							18.05	2617.5	22.98	3332.9	Valid
1/17	1812.0	Pretest							18.01	2612.1	22.93	3325.3	Valid
1/18	1814.0	Pretest							18.03	2615.2	22.95	3329.2	Valid
1/19	1801.0	Pretest							17.92	2599.6	22.79	3304.8	Valid
1/20	1782.0	Pretest							17.68	2564.8	22.55	3270.5	Valid
1/21	1745.5	Pretest							17.33	2513.2	22.10	3205.2	Valid
1/22	1736.6	Pretest							17.25	2501.7	21.99	3189.2	Valid
1/23	1719.0	Pretest							17.06	2474.4	21.76	3156.2	Valid
1/24	1474.9	Pretest							14.60	2117.6	18.70	2712.1	Valid
1/25	1459.3	Pretest							14.46	2097.0	18.51	2684.9	Valid
1/26	1446.5	Pretest							-	-	18.35	2661.8	Tight - Abandoned
1/27	1440.0	Pretest							-	-	18.27	2650.1	Tight - Abandoned
1/28	1437.7	Pretest							14.29	2072.3	18.24	2646.2	Valid
1/29	1428.8	Pretest							14.39	2086.8	18.13	2629.2	Invalid
1/30	1433.3	Pretest							-	-	18.18	2637.4	Tight - Abandoned

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - KIPPER-1

TEST & SEAT NO.	DEPTH (METRES) K.B.	CHAMBER Litres	RECOVERY (LITRES)			FORMATION WATER Litres	MUD FILTRATE Litres	HEWLETT-PACKARD FORMATION PRESSURE		HEWLETT-PACKARD HYDROSTATIC PRESSURE		REMARKS
			OIL Litres	COND. Litres	GAS m ³			MPaa	Psia	MPaa	Psia	
1/31	1439.9	Pretest								18.27	2649.2	Tight - Abandoned
2/32	2028.4	45.44 3.8	-	0.65	7.9	-	0.65	MPag 22.40	Psig* 3249	MPag 25.46	Psig* 3693	*Schlumberger gauge used for samples. Valid Pretest - sample taken Sample preserved
3/33	1823.2	45.44 10.4	34.5	-	1.91	-	0.5	18.05	2618	22.88	3319	Valid Pretest - sample taken Sample preserved
4/34	1801.4	45.44 3.8	28.0	-	3.96	-	1.75*	17.84	2587	22.58	3275	Valid Pretest - sample taken 3.8 litres sample preserved *Mud and filtrate.
5/35	1736.5									21.77	3157	Seal failure
5/36	1736.5	45.44 3.8	40.0	-	1.05	-	0.1	17.15	2487	21.77	3158	Valid Pretest - sample taken Sample preserved
6/37	1437.7	45.44 10.4	18.0	-	0.69	-	23.75	14.19	2058	18.01	2612	Valid Pretest - sample taken Sample preserved
7/38	2845.5	Pretest						MPaa 32.68	Psia* 4740.4	MPaa 35.16	Psia* 5099.7	*HP gauge used for pretests. Valid
7/39	2834.5	Pretest						-	-	35.00	5076.1	Tight, abandoned
7/40	2834.5	Pretest						-	-	35.01	5078.0	Tight, abandoned
7/41	2833.0	Pretest						-	-	34.98	5073.8	Tight, abandoned
7/42	2834.0	Pretest						-	-	34.98	5073.6	Tight, abandoned
7/43	2475.0	Pretest						25.24	3661.3	30.59	4436.2	Valid, possibly supercharged
7/44	2457.0	Pretest						24.85	3604.2	30.39	4407.5	Valid
7/45	2448.0	Pretest						24.70	3582.2	30.29	4392.9	Valid
7/46	2390.0	Pretest						24.30	3524.3	29.58	4289.8	Valid
7/47	2276.5	Pretest						22.99	3334.2	28.21	4091.0	Valid
7/48	2269.5	Pretest						22.97	3330.9	28.13	4079.9	Valid
7/49	2249.0	Pretest						22.94	3327.4	27.88	4043.9	Valid, possibly supercharged
7/50	2231.5	Pretest						22.89	3320.2	27.68	4014.3	Valid
7/51	2213.5	Pretest						22.85	3314.8	27.46	3983.4	Valid
7/52	2196.0	Pretest						22.81	3309.0	27.26	3954.1	Valid

SUMMARY OF WIRELINE FORMATION TEST PROGRAMME - KIPPER-1

<u>TEST & SEAT NO.</u>	<u>DEPTH (METRES) K.B.</u>	<u>RECOVERY (LITRES)</u>						<u>HEWLETT-PACKARD FORMATION PRESSURE</u>		<u>HEWLETT-PACKARD HYDROSTATIC PRESSURE</u>		<u>REMARKS</u>
		<u>CHAMBER</u>	<u>OIL</u>	<u>COND.</u>	<u>GAS</u>	<u>FORMATION WATER</u>	<u>MUD FILTRATE</u>	<u>MPaa</u>	<u>Psia</u>	<u>MPaa</u>	<u>Psia</u>	
		Litres	Litres	Litres	m ³	Litres	Litres					
7/53	2157.0	Pretest						22.74	3298.4	26.77	3883.3	Valid
7/54	2124.0	Pretest						22.68	3288.8	26.39	3827.0	Valid
7/55	2006.4	Pretest						22.46	3257.3	24.93	3615.2	Valid
7/56	2338.0	Pretest						-	-	29.04	4212.3	No seal
7/57	2338.0	Pretest						-	-	29.04	4212.7	Tight, abandoned
7/58	2336.0	Pretest						25.00	3626.4	29.02	4208.9	Tight, supercharged
								<u>MPag</u>	<u>Psig*</u>	<u>MPaa</u>	<u>Psig*</u>	*Schlumberger gauge used for samples
8/59	2845.5	45.44 3.8	Tr	-	6.38	-	4.5	32.62	4731	35.20	5105	Valid Pretest - Sample taken Sample preserved
9/60	2276.5	-	-	-	-	-	-	-	-	28.17	4086	Tight - sampling abandoned
9/61	2276.4	45.44 10.4	-	Tr	0.44 0.35	-	32.0 5.3	22.91	3323	28.17	4085	Tight - poor sample Sampling abandoned early
10/62	2269.5	45.44 10.4	-	Tr	1.81	-	34.5	22.88	3319.0	28.07	4071	Tight sample taken, abandoned early Sample preserved
11/63	2221.5	45.44 3.8	-	.09	7.77	-	-	22.78	3304.0	27.44	3980	Valid Pretest - sample taken Sample preserved
12/64	2157.0	45.44 3.8	-	0.50	8.03	-	1.25	22.66	3286.0	26.63	3863	Valid Pretest - sample taken Sample preserved.

8.

TEMPERATURE RECORD - KIPPER-1

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)
<u>Suite 1</u>						
SDT-GR	834.8	44.0	1	3.58 hrs		
<u>Suite 2</u>						
DLTE-MSFL-GR-AMS-SP in combination with LDTC-CNTH-GR	2139.5	71.0	4.15	5.0 hrs		
RFT-GR (pretest & samples)	2124.0	75.4	4.15	9.17 hrs	82.3	32.91
<u>Suite 3</u>						
DLTE-MSFL-GR-SP in combination with LDTC-CNTH-GR	2869.0	82.0	2.0	5.0	120.0	38.13
RFT-GR (pretest & samples)	2845.5	96.5	2.0	13.5		
SDT-DITE-GR	2871.5	115.5	2.0	50.0		
HDT-GR	2870.5	115.5	2.0	56.0		
WST-GR	2870.0	118.5	2.0	60.5		

Figures

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LOCALITY MAP

KIPPER-1

SCALE 1:250 000

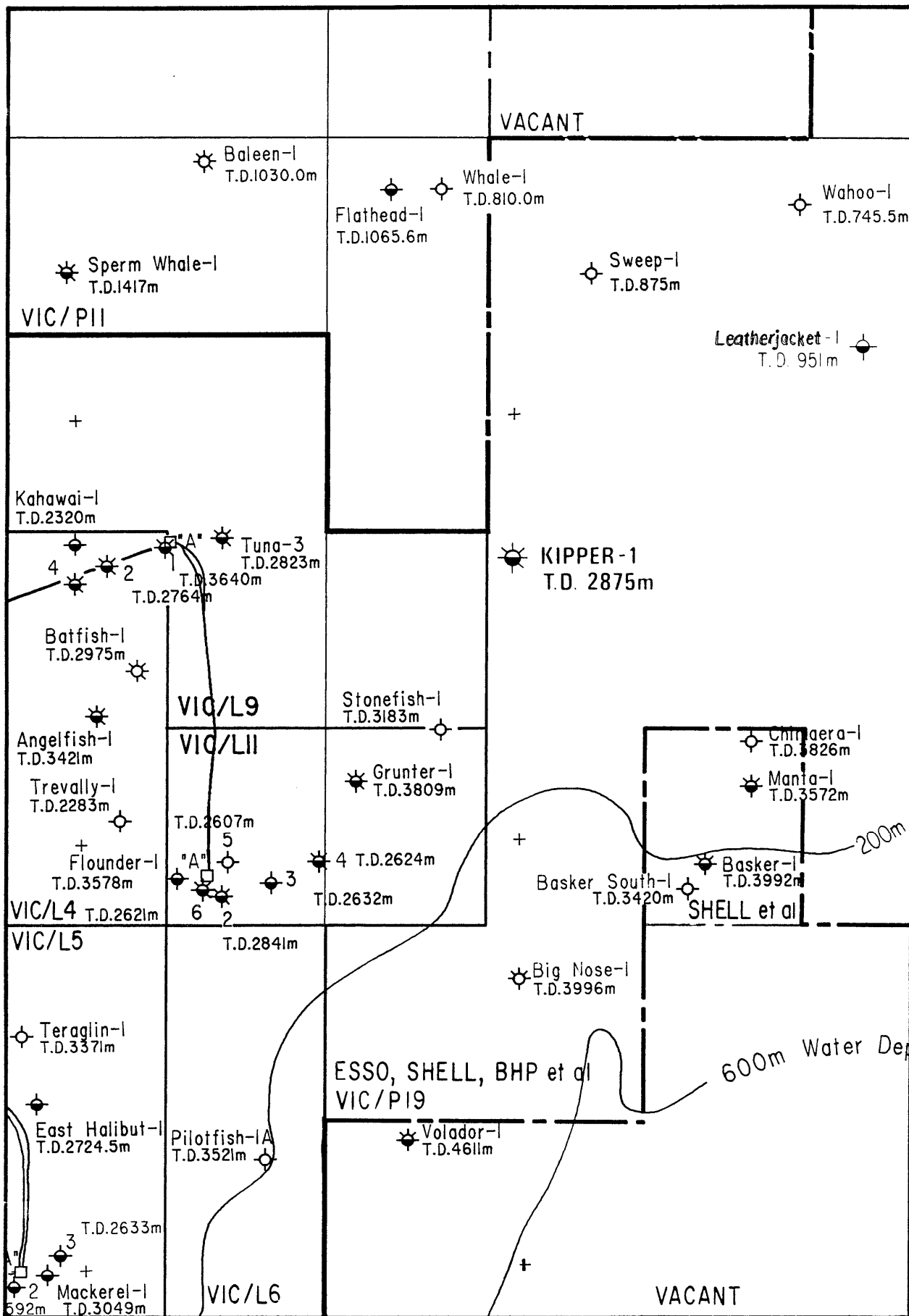


Figure 1

KIPPER 1 PROGRESS CURVE SOUTHERN CROSS

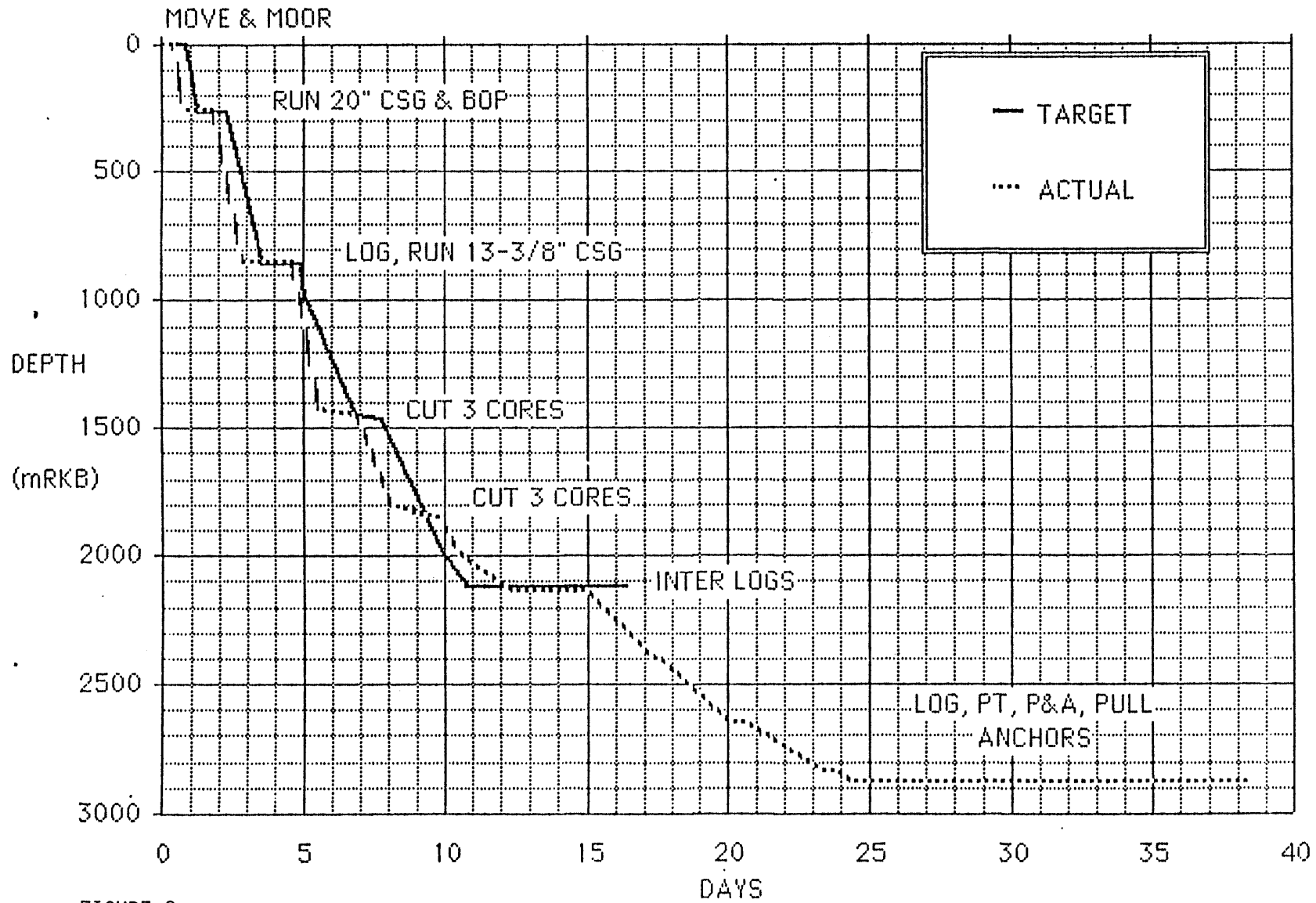
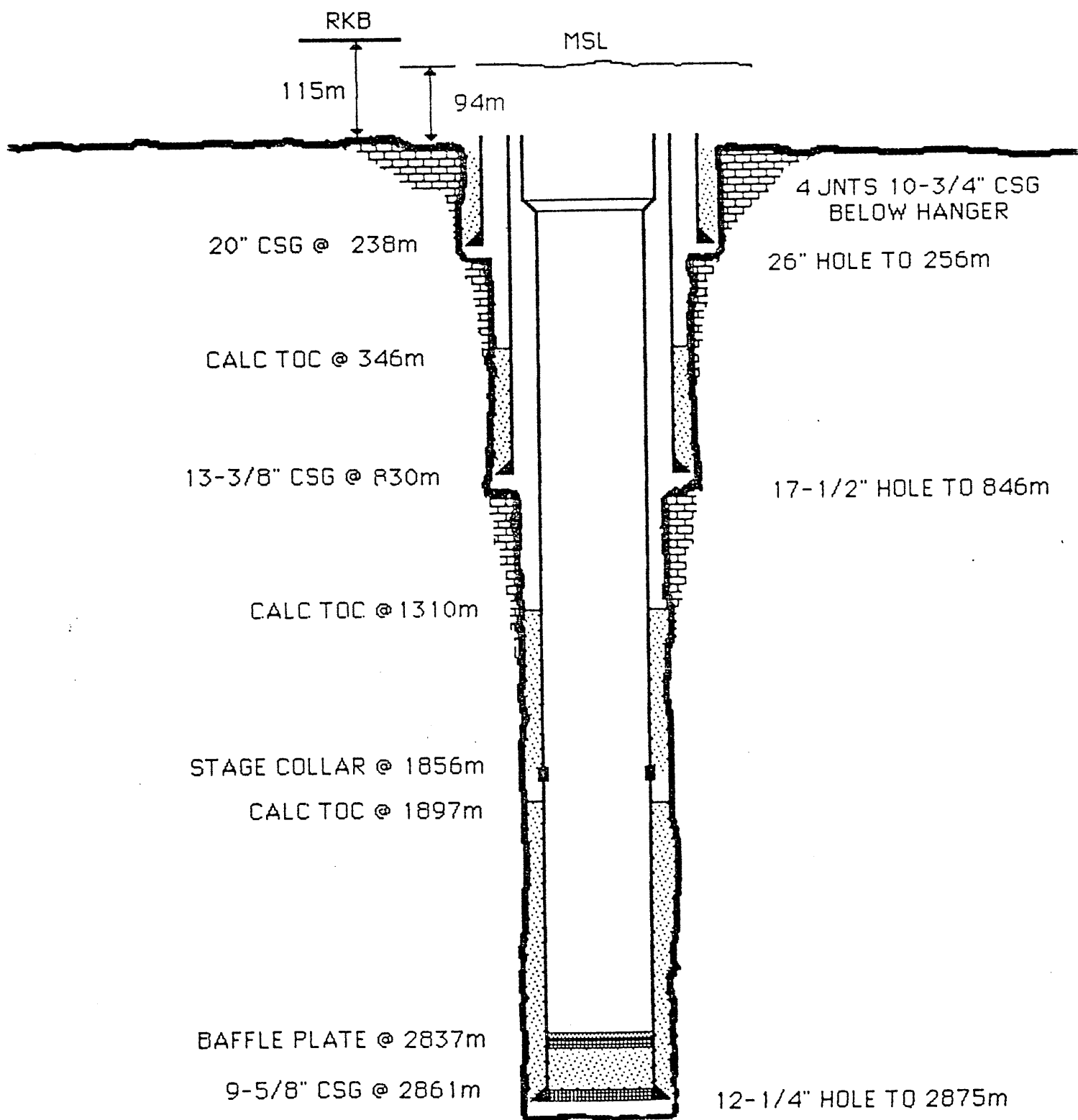


FIGURE 2

KIPPER 1 WELLBORE SCHEMATIC



ALL DEPTHS ARE MEASURED FROM RKB

FIGURE 3

KIPPER 1 ABANDONMENT SCHEMATIC

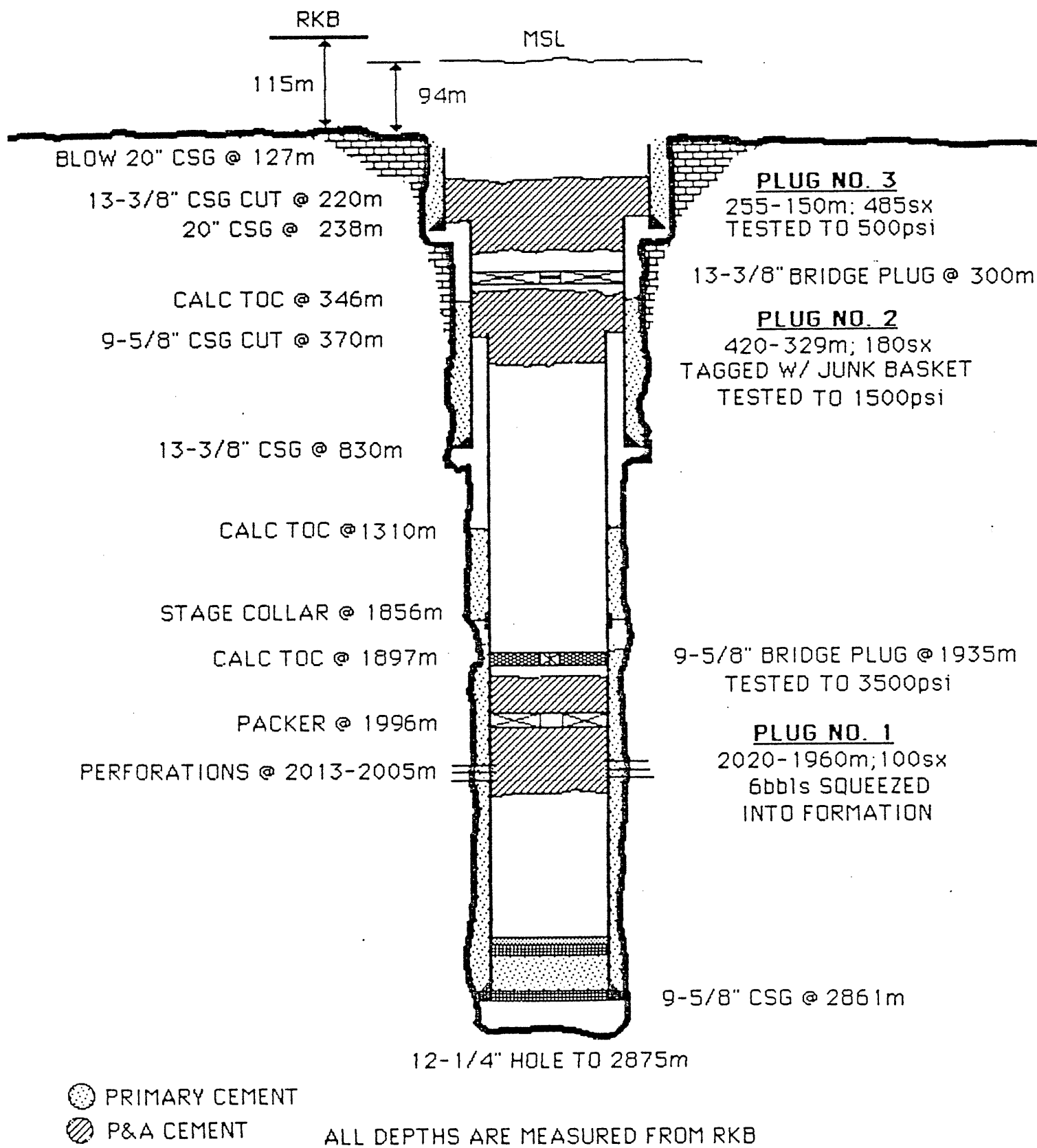


FIGURE 4

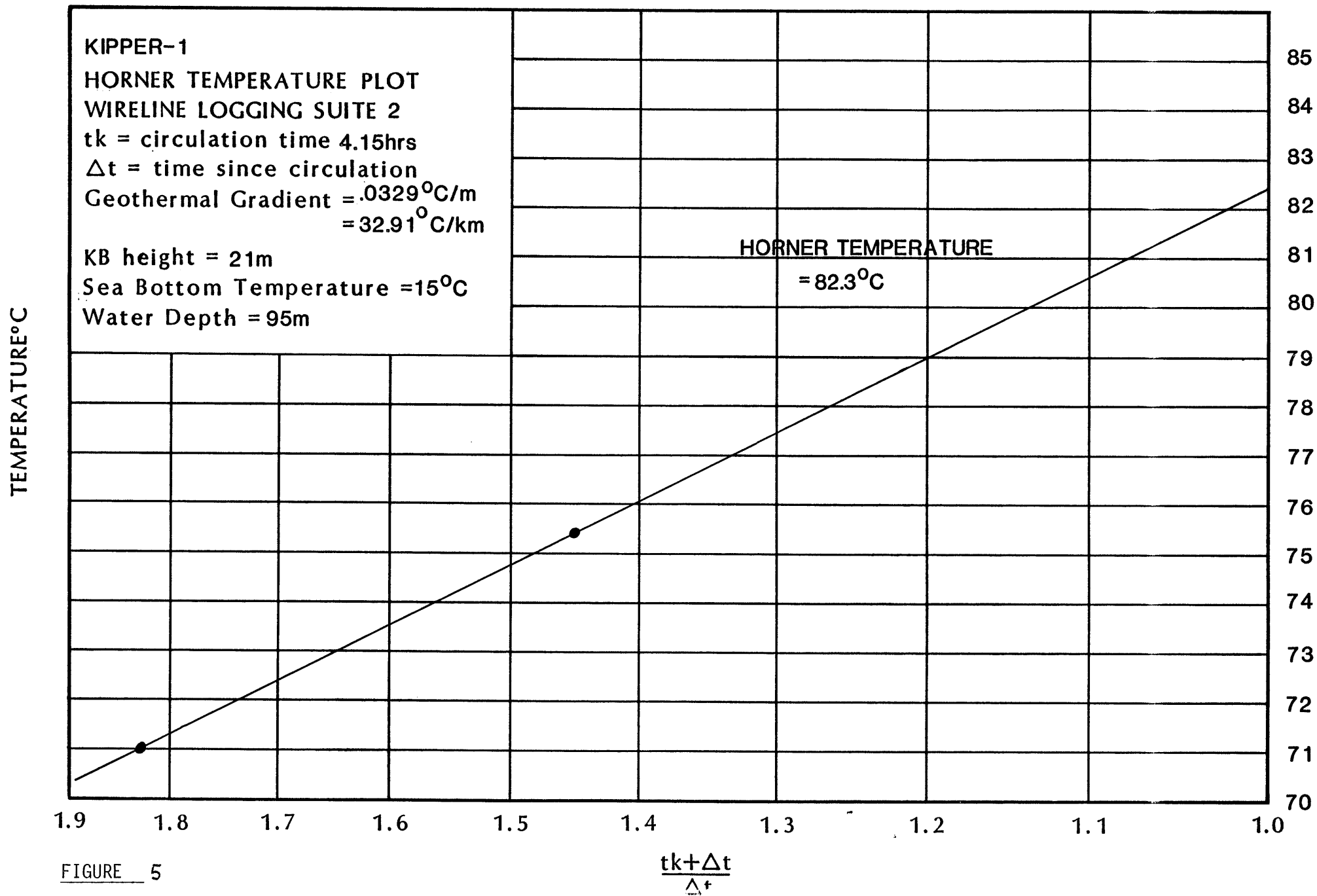


FIGURE 5

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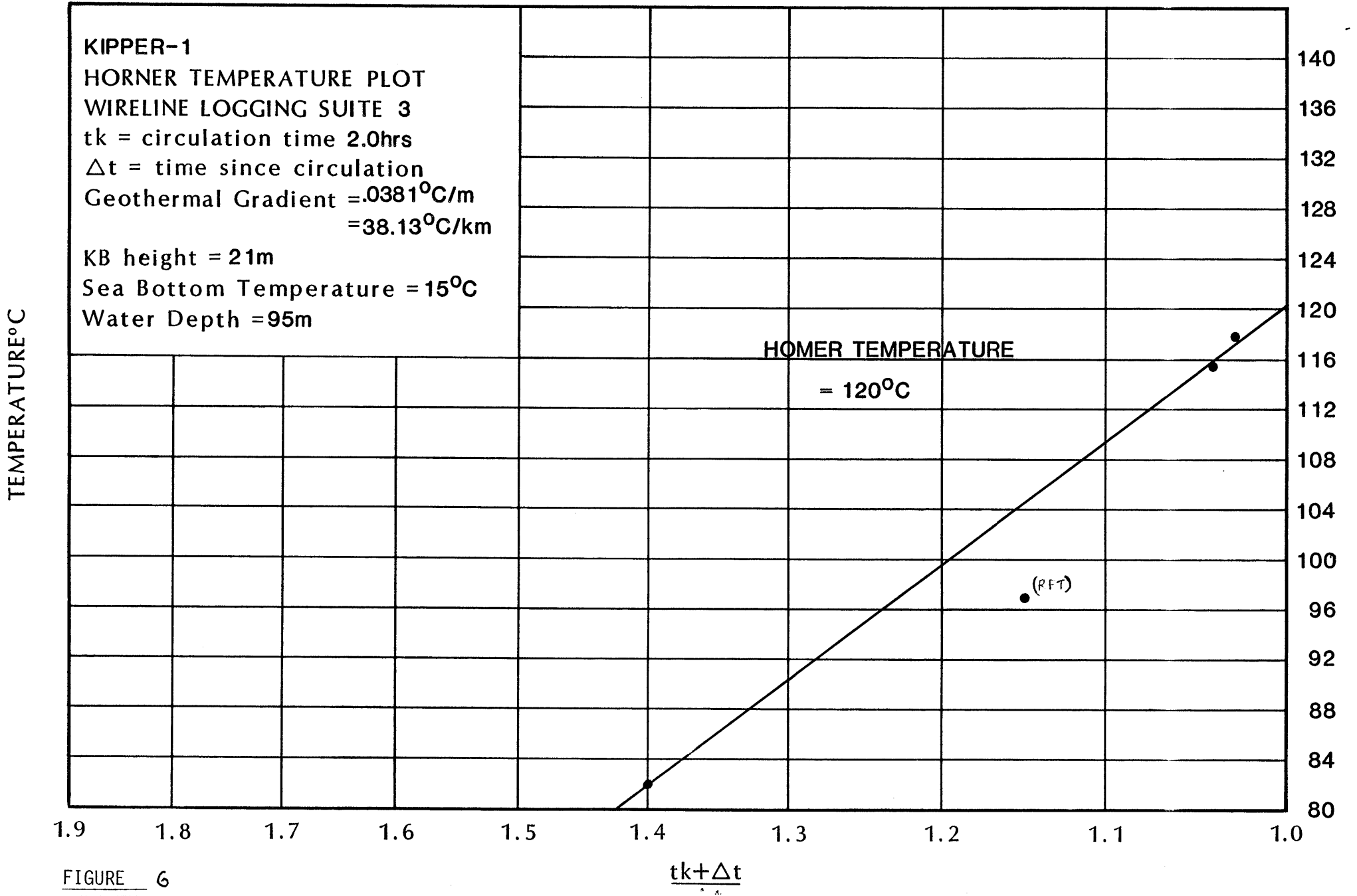


FIGURE 6

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Appendix 1

KIPPER-1

Lithology Descriptions

<u>Depth</u>	<u>%</u>	<u>Descriptions</u>
		20" CASING SHOE AT 238.0m
260 - 270m	50	CALCARENITE: light grey to olive grey, hard, skeletal remains, occasional glauconite inclusions, moderately calcareous.
	50	CEMENT.
	trace	FOSSILS: bryozoans, forams, pelecypods.
270 - 280m	60	CEMENT.
	40	CALCARENITE: as above.
	trace	FOSSILS: as above.
	trace	QUARTZ FRAGMENTS.
280 - 290m	70	CALCARENITE: as above.
	30	CEMENT: as above.
	trace	FOSSILS: as above.
	trace	QUARTZ FRAGMENTS.
290 - 300m	70	CALCARENITE: as above; skeletal.
	30	CEMENT.
	trace	FOSSILS: as above.
	trace	CALCILUTITE: white, soft, moderately calcareous.
300 - 310m	70	CALCARENITE: as above; becoming clayey.
	30	CEMENT.
	trace	FOSSILS: as above.
310 - 320m	60	CALCARENITE: white to buff brown, light grey, moderately hard, fine grained, moderately to extremely calcareous, carbonaceous matter, occasional glauconite.
	30	CALCILUTITE: white to buff brown, very soft, calcareous.
	10	CEMENT.
	trace	FOSSILS: as above.
320 - 330m	50	CALCARENITE: as above; sparry and micritic, ooids in part, skeletal, pellets.
	50	CALCILUTITE: as above; arenaceous.
	trace	CEMENT.
	trace	FOSSILS: as above.
330 - 340m	60	CALCILUTITE: medium grey, sandy, micritic, foram and pelletal inclusions, soft.
	40	CALCARENITE: as above; grades into calcisiltite.
	trace	FOSSILS: forams, bryozoans.
	trace	QUARTZ FRAGMENTS.
340 - 350m	100	CALCARENITE: as above; highly micritic.
	trace	CALCILUTITE: as above.
	trace	FORAMS.
350 - 360m	80	CALCILUTITE: as above; glauconite and sandy inclusions.
	20	CALCARENITE: as above.
	trace	FORAMS.

360 - 370m	50	CALCILUTITE: as above.
	50	CALCARENITE: as above; highly glauconitic in part.
	trace	FORAMS.
370 - 380m	50	CALCILUTITE: as above.
	50	CALCARENITE: as above; micritic, grades into calcisiltite and calcilutite.
	trace	FORAMS.
380 - 390m	80	CALCILUTITE: as above; very soft, very sandy, carbonaceous flecks.
	20	CALCARENITE: as above; soft, micritic.
390 - 400m	50	CALCARENITE: as above.
	50	CALCILUTITE: as above.
	trace	FOSSILS.
400 - 410m	70	CALCILUTITE: as above.
	30	CALCARENITE: as above.
	trace	GLAUCONITE.
	trace	FORAMS.
410 - 420m	50	CALCILUTITE: as above.
	50	CALCARENITE: as above; sparry in part dominantly micritic.
	trace	FORAMS.
420 - 430m	100	CALCARENITE: buff brown, moderately hard, skeletal, sparry and micritic, glauconitic, occasional carbonaceous flecks.
	trace	CALCILUTITE: as above.
	trace	PYRITE.
	trace	FORAMS.
430 - 440m	60	CALCILUTITE: white to buff brown, very soft, sandy, carbonaceous flecks, glauconitic inclusions.
	40	CALCARENITE: as above; becoming sparry.
	trace	FORAMS.
440 - 450m	50	CALCILUTITE: as above.
	50	CALCARENITE: as above.
	trace	FORAMS.
	trace	FOSSIL FRAGMENTS: mostly bryozoans.
450 - 460m	70	CALCARENITE: as above.
	30	CALCILUTITE: as above.
	trace	FOSSIL FRAGMENTS: as above.
	trace	FORAMS.
460 - 470m	50	CALCARENITE: as above.
	50	CALCILUTITE: as above.
	trace	FORAMS.
470 - 480m	70	CALCARENITE: as above; grading into calcisiltite.
	30	CALCILUTITE: as above.
	trace	FOSSIL FRAGMENTS.
	trace	FORAMS.

480 - 490m	40	CALCISILTITE: buff brown to pale brown, hard, sparry, occasional carbonaceous flecks.
	40	CALCILUTITE: light grey to pale brown, soft, sandy and glauconitic inclusions.
	20	CALCARENITE: as above.
	trace	FORAMS.
490 - 500m	90	CALCISILTITE: as above; very sparry, extremely hard.
	10	CALCILUTITE: as above.
	trace	FOSSILS: bryozoans dominant.
	trace	FORAMS.
500 - 510m	70	CALCISILTITE: as above; very hard, sparry.
	30	CALCILUTITE: as above.
	trace	CALCARENITE: as above.
	trace	FORAMS.
510 - 520m	40	CALCISILTITE: as above.
	40	CALCILUTITE: as above.
	20	CALCARENITE: as above.
	trace	FOSSILS.
520 - 530m	70	CALCISILTITE: as above; sparry.
	30	CALCILUTITE: as above.
	trace	CALCARENITE: as above.
	trace	SPARITE. FORAMS.
530 - 540m	90	CALCISILTITE: as above.
	10	CALCARENITE: as above.
	trace	SPARITE: becoming common.
	trace	PYRITE.
	trace	FORAMS.
	trace	BRYOZOANS.
540 - 550m	70	CALCISILTITE: as above.
	20	CALCARENITE: as above.
	10	CALCILUTITE: as above.
	trace	FORAMS.
550 - 560m	trace	SPARITE.
	90	CALCISILTITE: as above; micritic, sparry.
	10	SPARITE: translucent calcite, occasional pellets.
	trace	FORAMS.
560 - 570m	trace	CALCILUTITE: as above.
	80	CALCISILTITE: as above.
	20	CALCILUTITE: as above.
	trace	FORAMS.
570 - 580m	trace	SPARITE.
	70	CALCISILTITE: as above.
	30	CALCILUTITE: as above.
	trace	CALCARENITE: as above.
580 - 590m	trace	FORAMS.
	100	CALCILUTITE: as above.
	trace	CALCISILTITE: as above.
	trace	FORAMS. PYRITE.
590 - 600m	50	CALCILUTITE: as above.
	50	CALCISILTITE: as above.
	trace	FORAMS.

600 - 610m	90 10 trace trace trace	CALCISILTITE: as above; grades into biosparite. CALCILUTITE: as above. CALCARENITE: as above. FOSSILS. FORAMS.
610 - 620m	80 20 trace trace	CALCILUTITE: medium grey, very soft, highly calcareous, occasional glauconite inclusions. CALCISILTITE: as above; sandy inclusions, micritic in part, dominantly sparry. CALCARENITE: as above. FOSSILS.
620 - 630m	60 40 trace trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS. FOSSIL FRAGMENTS.
630 - 640m	80 20 trace	CALCILUTITE: as above. CALCISILTITE: as above; but micritic rather than sparry. CALCARENITE: as above.
640 - 650m	70 30 trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS.
650 - 660m	40 40 20 trace	CALCILUTITE: as above. CALCISILTITE: as above. CALCARENITE: as above. FORAMS.
660 - 670m	100 trace	CALCILUTITE: as above. CALCISILTITE: as above.
670 - 680m	70 30	CALCILUTITE: as above. CALCISILTITE: as above.
680 - 690m	70 30 trace trace	CALCISILTITE: pale brown, moderately hard to very hard, occasional sandy and small carbonaceous inclusions, micritic cement, occasional sparry calcite. CALCILUTITE: pale brown, very soft, minor carbonaceous flecks, highly calcareous. FORAMS. PYRITE: mostly as pyritised shell fragments.
690 - 700m	80 20 trace trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS. PYRITE.
700 - 710m	50 50 trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS.
710 - 720m	50 50 trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS.
720 - 730m	70 30 trace	CALCILUTITE: as above. CALCISILTITE: as above. FORAMS.

730 - 740m	60	CALCILUTITE: as above.
	40	CALCISILTITE: as above.
740 - 750m	60	CALCILUTITE: as above.
	40	CALCISILTITE: as above.
	trace	FORAMS.
750 - 760m	80	CALCILUTITE: as above; becoming sticky.
	20	CALCISILTITE: as above.
760 - 770m	80	CALCILUTITE: light grey to predominantly pale brown, very soft, sticky, sand and silt inclusions.
	20	CALCISILTITE: pale brown to light grey, soft, highly calcareous, occasional carbonaceous flecks.
	trace	FORAMS.
770 - 780m	90	CALCILUTITE: as above.
	10	CALCISILTITE: as above.
	trace	FORAMS.
780 - 790m	70	CALCILUTITE: as above.
	30	CALCISILTITE: as above.
	trace	FORAMS.
	trace	CALCITE.
790 - 800m	50	CALCILUTITE: as above.
	50	CALCISILTITE: as above.
	trace	FORAMS.
800 - 810m	80	CALCISILTITE: yellow grey to pale brown, soft, clayey, blocky cuttings.
	20	CALCILUTITE: as above.
	trace	FORAMS.
810 - 820m	70	CALCISILTITE: as above.
	30	CALCILUTITE: as above.
	trace	CALCITE.
	trace	FORAMS.
820 - 830m	60	CALCILUTITE: as above.
	40	CALCISILTITE: as above.
	trace	FORAMS.
830 - 840m	50	CALCILUTITE: as above.
	50	CALCISILTITE: as above.
	trace	CALCITE.
	trace	FORAMS.
		13-3/8" CASING SHOE AT 830M.
840 - 850m	100	CEMENT.
850 - 860m	80	CALCISILTITE: pale brown, soft to moderately hard, blocky cuttings, occasional sandy inclusions, clayey in parts.
	20	CEMENT.
	trace	FORAMS.
860 - 870m	80	CALCISILTITE: as above; but slightly more sandy.
	20	CEMENT.
	trace	FORAMS.

870 - 880m	90	CALCISILTITE: as above; becoming less calcareous.
	10	CEMENT.
	trace	FORAMS.
880 - 890m	100	CALCISILTITE: as above; decreasing calcareous content with no change in appearance; becoming a calcareous siltstone/marl.
	trace	FORAMS.
890 - 900m	100	CALCISILTITE: as above.
	trace	FORAMS.
900 - 910m	100	CALCAREOUS SILTSTONE: pale brown to medium grey, soft to moderately hard, subrounded cuttings, very fine sandy inclusions, slightly to moderately calcareous, similar in appearance to the above calcisiltite but decreasing calcareous content, no major lithology change.
	trace	FORAMS.
910 - 920m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
920 - 930m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
930 - 940m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
940 - 950m	100	CALCAREOUS SILTSTONE: pale brown, moderately hard, blocky cuttings, slight to moderately calcareous, occasional very fine sandy inclusions, rare dark green glauconite and carbonaceous flecks.
	trace	CALCITE.
	trace	FORAMS.
950 - 960m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
960 - 970m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
970 - 980m	100	CALCAREOUS SILTSTONE: as above; occasional forams.
980 - 990m	100	CALCAREOUS SILTSTONE: as above; occasionally grading to very fine grained calcarenite; occasional forams.
990 - 1000m	100	CALCAREOUS SILTSTONE: medium light grey to medium grey, firm to occasionally moderately hard, slightly calcareous to moderately calcareous, occasionally grading to calcarenite (very fine grained); trace forams and ostracod.
1000 - 1010m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.
1010 - 1020m	100	CALCAREOUS SILTSTONE: as above.
	trace	FORAMS.

1020 - 1030m	100 trace trace	CALCAREOUS SILTSTONE: as above. CALCAREOUS CLAYSTONE. FORAMS.
1030 - 1040m	100 trace	CALCAREOUS CLAYSTONE: as above. FORAMS.
1040 - 1050m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1050 - 1060m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1060 - 1070m	100 trace	CALCAREOUS SILTSTONE: medium grey, firm to moderately hard, moderately calcareous. FORAMS.
1070 - 1080m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1080 - 1090m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1090 - 1100m	100 trace	CALCAREOUS SILTSTONE: dominantly soft; otherwise as above. FORAMS.
1100 - 1110m	100 trace	CALCAREOUS SILTSTONE: dominantly soft; otherwise as above. FORAMS.
1110 - 1120m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1120 - 1130m	100 trace trace	CALCAREOUS SILTSTONE: medium grey, greyish brown, soft to firm, commonly blocky, occasionally fissile, moderately calcareous, occasionally grading to very fine quartzose calcareous sandstone. FORAMS. PYRITE: aggregates.
1130 - 1140m	100 trace trace	CALCAREOUS SILTSTONE: as above. FORAMS. GLAUCONITE NODULES.
1140 - 1150m	100 trace	CALCAREOUS SILTSTONE: medium grey only; otherwise as above. FORAMS.
1150 - 1160m	100 trace	CALCAREOUS SILTSTONE: medium grey only; otherwise as above. FORAMS.
1160 - 1170m	100 trace trace	CALCAREOUS SILTSTONE: as above. FORAMS. GLAUCONITE NODULES.
1170 - 1180m	100 trace trace	CALCAREOUS SILTSTONE: as above. FORAMS. GLAUCONITE NODULES.

1180 - 1190m	100 trace	CALCAREOUS SILTSTONE: medium light grey, medium grey, firm, blocky, very slightly glauconitic (more so than previous samples). FORAMS.
1190 - 1200m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1200 - 1210m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1210 - 1220m	100 trace	CALCAREOUS SILTSTONE: as above. FORAMS.
1220 - 1230m	90 10 trace	CALCAREOUS SILTSTONE: as above; becoming clayey. CLAYSTONE: light grey to medium grey, very soft, water sensitive, slightly calcareous. FORAMS.
1230 - 1240m	70 30	CALCAREOUS SILTSTONE: as above. CLAYSTONE: as above; gummy.
1240 - 1250m	80 20	SILTY CLAYSTONE: medium grey, soft to firm, blocky cuttings, silty, occasional glauconite inclusions, grades into true claystone. CLAYSTONE: as above; gummy, slightly to moderately calcareous.
1250 - 1260m	90 10 trace	SILTY CLAYSTONE: as above; becoming silty again. CLAYSTONE: as above. GLAUCONITE.
1260 - 1270m	90 10	SILTY CLAYSTONE: as above. CLAYSTONE: as above.
1270 - 1280m	70 30	SILTY CLAYSTONE: as above. CLAYSTONE: as above.
1280 - 1290m	100	CLAYSTONE: light to medium grey, very soft to firm, slightly to moderately calcareous, rare carbonaceous flecks.
1290 - 1300m	100	CLAYSTONE: as above; slightly more gummy in parts.
1300 - 1305m	100 trace	CLAYSTONE: as above; about 30% gumbo. CALCAREOUS SILTSTONE: as above.
1305 - 1310m	100	CLAYSTONE: as above.
1310 - 1315m	100	CLAYSTONE: as above.
1315 - 1320m	100	CLAYSTONE: as above; about 20% gumbo.
1320 - 1325m	100	CLAYSTONE: light to medium dark grey, gummy and very soft to firm, slightly to predominantly moderately calcareous, silty in parts, no fossils seen.
1325 - 1330m	100	CLAYSTONE: as above; becoming more silty.
1330 - 1335m	100	CLAYSTONE: as above; increasing silt content.

1335 - 1340m	100	CLAYSTONE: as above.
1340 - 1345m	100	CLAYSTONE: as above.
1345 - 1350m	100	CLAYSTONE: light to medium grey, soft to firm, gummy in parts, moderately calcareous.
1350 - 1355m	100	CLAYSTONE: as above; except siltier.
1355 - 1360m	100	CLAYSTONE: as above.
1360 - 1365m	100	CLAYSTONE: as above.
1365 - 1370m	100	CLAYSTONE: as above; about 40% gumbo.
1370 - 1375m	100	CLAYSTONE: as above.
1375 - 1380m	100	CLAYSTONE: as above; about 40% gumbo, very consistent lithology.
1380 - 1385m	100	CLAYSTONE: as above.
1385 - 1390m	100	CLAYSTONE: as above; except becoming siltier.
1390 - 1395m	100	CLAYSTONE: as above; with 40% gumbo, silty.
1395 - 1400m	100	CLAYSTONE: as above; with 30% gumbo, silty.
1400 - 1405m	100	SILTSTONE: medium grey, medium dark grey, soft to firm, occasionally puggy, moderately calcareous, 20% gumbo.
1405 - 1410m	100	SILTSTONE: light to medium grey; otherwise as above.
1410 - 1415m	100	CLAYSTONE: light to medium grey, soft to firm.
1415 - 1420m	100	CLAYSTONE: as above; with trace translucent, coarse grained sand.
1420 - 1425m	60	CLAYSTONE: light to medium grey, soft to firm, slightly silty texture.
	20	SILTSTONE: dark grey, occasionally light to medium grey, also ochre coloured in part, firm, trace gumbo, slightly calcareous.
	20	SANDSTONE: ochre to translucent, loose, unconsolidated grains, coarse grained, well rounded, subrounded to rounded, well sorted.
POOH AND CUT 3 CORES FROM 1427.5m TO 1455.4m		
1455 - 1461m		BOTTOMS UP SAMPLE
	40	SILTSTONE: brownish grey, carbonaceous flecks, moderately hard, grading to very fine sandstone.
	40	SANDSTONE: milky to clear quartz, loose grains, subrounded to occasionally well rounded, coarse to very coarse grained, moderate sorting; no shows.
	20	COAL: black, shiney, blocky, brittle, conchoidal fracture.
	trace	PYRITE: aggregates.

1461 - 1465m	60	SANDSTONE: as above; quartz grains commonly pitted; no shows.
	30	COAL: as above.
	10	CARBONACEOUS SILTSTONE: greyish red, brownish grey, firm, grading to coal as above, earthy lustre; trace dull, yellow fluorescence on coal, giving a bright, blue-white instantaneous cut that continues to stream for several minutes.
	trace	PYRITE AGGREGATES.
1465 - 1470m	80	SANDSTONE: more subangular, medium to very coarse grained, poorly sorted; otherwise as above; no shows.
	10	CARBONACEOUS SILTSTONE: as above; occasionally shaley.
	10	COAL: as above.
1470 - 1475m	100	SANDSTONE: clear to milky quartz, loose grains, medium to very coarse grained, predominantly coarse grained, subangular to subrounded, predominantly subangular; poorly sorted; no shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
	trace	PYRITE.
1475 - 1480m	60	SANDSTONE: as above; no shows.
	40	COAL: as above.
1480 - 1485m	90	SANDSTONE: as above.
	10	COAL: as above; occasionally pyritised.
	trace	PYRITE: aggregates.
1485 - 1490m	100	SANDSTONE: clear to translucent, occasionally milky quartz, loose grains, medium to very coarse, dominantly coarse, subangular, poorly sorted; no shows.
	trace	COAL: commonly pyritised.
	trace	PYRITE: aggregates.
1490 - 1495m	100	SANDSTONE: as above; no shows.
	trace	COAL: pyritised, with trace dull yellow fluorescence giving slow streaming blue-white cut.
	trace	PYRITE: aggregates.
1495 - 1500m	90	SANDSTONE: as above; no shows.
	10	COAL: grading to carbonaceous shale.
	trace	PYRITE: aggregates.
1500 - 1505m	60	COAL: black, shiney, conchoidal fracture, brittle, moderately hard to hard.
	30	SANDSTONE: as above; no shows.
	10	SHALE: brownish grey, grading to coal.
1505 - 1510m	90	COAL: as above; grading to carbonaceous shale.
	10	SHALE: greyish red, firm.
1510 - 1515m	80	COAL: as above; occasionally pyritised.
	10	SILTSTONE: reddish brown, firm, commonly with carbonaceous laminae, occasionally grading to very fine sandstone.
	10	SANDSTONE: as above; no shows.

1515 - 1520m	60	SANDSTONE: clear to translucent, occasionally milky quartz, loose grains, subangular to subrounded, predominantly subrounded, coarse to very coarse grained, well sorted.
	30	COAL: as above; moderately hard; trace dull, orange-yellow fluorescence giving slow streaming blue-white cut.
	10 trace	SILTSTONE: as above; but also buff. PYRITE: as above.
1520 - 1525m	60	COAL: as above; moderately hard to firm; grading to carbonaceous shale.
	30	SANDSTONE: as above; occasionally well rounded; no shows.
	10	SILTSTONE: as above.
	trace	PYRITE: as above.
1525 - 1530m	70	SANDSTONE: clear to translucent quartz, loose grains, medium to coarse grained, subangular to subrounded; no shows.
	20	COAL: as above; moderately hard to firm; trace shows as per interval 1515.0m to 1520.0m; grading to carbonaceous shale.
	10	SILTSTONE: as above.
	trace	PYRITE.
1530 - 1535m	40	SANDSTONE: as above.
	30	COAL: as above.
	20	SHALE: light grey, carbonaceous specks, firm to soft.
	10	SILTSTONE: as above.
1535 - 1540m	70	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	10	COAL: as above.
	10	SHALE: as above.
	trace	PYRITE.
1540 - 1545m	60	SANDSTONE: 2 types: Type (1) - clear to translucent, loose grains, medium to very coarse grained, subangular to subrounded, poorly sorted. Type (2) - medium grained aggregates, subangular, well sorted; moderate visible porosity.
	30	COAL: black, shiney, brittle, conchoidal fracture, splintery, occasionally grading to carbonaceous shale.
	10	SILTSTONE: greyish red, firm, carbonaceous laminae.
1545 - 1550m	90	SANDSTONE: Type (1) - predominantly coarse grained, subrounded to rounded, moderately sorted; no shows; otherwise as above.
	10	COAL: as above.
	trace	SILTSTONE: as above.
1550 - 1555m	100	SANDSTONE: Type (1) - predominantly coarse grained, subrounded to rounded, moderately sorted; no shows; otherwise as above.
	trace	SILTSTONE: as above.

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1555 - 1560m	90	SANDSTONE: clear to translucent quartz, occasionally milky, loose grained, coarse to very coarse grained, subrounded to occasionally rounded, poorly sorted; no shows.
	10	COAL: as above.
	trace	SILTSTONE: as above.
	trace	PYRITE.
1560 - 1565m	80	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	10	COAL: as above.
1565 - 1570m	100	SANDSTONE: clear to milky white, loose grains, coarse to very coarse grained, subrounded to well rounded, moderately sorted; little inferred matrix and cement; no shows.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE.
1570 - 1575m	90	SANDSTONE: translucent, loose grains, medium to very coarse grained, angular to subangular, moderately well sorted; no shows.
	10	COAL: black, very hard, vitrinite rich, occasionally fissile.
	trace	SILTSTONE.
1575 - 1580m	90	SANDSTONE: as above; no shows.
	10	COAL: as above.
	trace	SILTSTONE.
	trace	PYRITE.
1580 - 1585m	80	SANDSTONE: translucent, loose grains, coarse to very coarse, subangular to rounded, moderately sorted; no shows.
	10	COAL: as above.
	10	SILTSTONE: brownish grey, soft to firm, micaceous, carbonaceous laminae.
	trace	PYRITE.
1585 - 1590m	90	SANDSTONE: translucent, loose grains, medium to very coarse grained, angular to rounded, moderately to poorly sorted; no shows.
	10	SILTSTONE: as above.
	trace	PYRITE.
1590 - 1595m	100	SANDSTONE: as above; except better sorted and rounded; no shows.
	trace	SILTSTONE: as above.
	trace	COAL.
	trace	PYRITE.
1595 - 1600m	90	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	trace	COAL.
1600 - 1605m	60	SILTSTONE: brownish grey, soft to firm, micaceous, carbonaceous.
	20	COAL: black, hard, vitrinite rich, subfissile in parts.
	20	CLAYSTONE: buff to light brown, very soft, sticky.
	trace	SANDSTONE: as above; no shows.

1605 - 1610m	50	SILTSTONE: brownish grey to occasionally brown, predominantly soft, slightly carbonaceous, grades into claystone.
	20	SANDSTONE: translucent, loose grains, medium to very coarse grained, angular to subangular, poorly sorted; no shows.
	20	CLAYSTONE: off white to tan brown, very soft, occasionally sticky.
	10	COAL: black, very hard, grades into carbonaceous siltstone.
1610 - 1615m	80	SANDSTONE: translucent, loose grains, very coarse grained, well sorted, subangular to subrounded; excellent inferred porosity; no shows.
	20	SILTSTONE: as above; except more carbonaceous.
	trace trace	COAL: as above. PYRITE.
1615 - 1620m	100	SANDSTONE: translucent to milky white, very coarse grained, subangular, moderately well sorted; excellent inferred porosity.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
	trace trace	CLAYSTONE: as above. PYRITE.
1620 - 1625m	100	SANDSTONE: as above; no shows.
	trace	COAL: as above.
	trace	SILTSTONE: as above.
1625 - 1630m	100	SANDSTONE: translucent, loose grains, coarse grained, subangular to subrounded, moderately well sorted, inferred clay matrix; no effective cement; no shows.
	trace	SILTSTONE: as above; less carbonaceous.
	trace	CLAYSTONE: as above.
1630 - 1635m	80	SANDSTONE: as above; no shows.
	20	SILTSTONE: pale brown, brownish grey, dark brown, soft to occasionally firm, slightly to highly carbonaceous, subrounded cuttings, grades into coal.
	trace	COAL: as above.
	trace	CLAYSTONE: as above.
1635 - 1640m	80	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	10	CLAYSTONE: as above.
	trace	COAL: as above.
1640 - 1645m	40	SILTSTONE: as above.
	30	CLAYSTONE: off white, very soft, water sensitive, minor sandy and carbonaceous inclusions.
	20	SANDSTONE: as above; no shows.
	10	COAL: as above.
	trace	PYRITE.
1645 - 1650m	40	CLAYSTONE: white to pale brown, very soft, sticky, water sensitive.
	30	SILTSTONE: medium grey, pale brown, dark brown, soft to firm, carbonaceous laminae in parts, blocky cuttings.
	trace	SANDSTONE: as above; no shows.

1650 - 1655m	70	CLAYSTONE: off white to brownish grey, very soft, sticky in parts, occasionally becomes subfissile.
	30	COAL: as above.
	trace	SILTSTONE: as above.
	trace	SANDSTONE: as above; no shows.
	trace	PYRITE.
1655 - 1660m	70	CLAYSTONE: as above; grades into a shale.
	20	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
1660 - 1665m	50	SILTSTONE: pale brown, brownish black, grey brown, soft, blocky cuttings, very slightly to highly carbonaceous, micaceous in parts, subfissile.
	20	SANDSTONE: translucent, loose grains, coarse to very coarse grained, subangular, moderately sorted, moderate to excellent inferred porosity.
	20	COAL: as above.
	10	CLAYSTONE: as above.
	trace	PYRITE.
1665 - 1670m	40	COAL: black, soft to hard, subfissile in parts, earthy lustre, grades into a carbonaceous siltstone.
	30	SILTSTONE: as above.
	20	CLAYSTONE: as above.
	10	SANDSTONE: as above; no shows.
1670 - 1675m	50	SANDSTONE: as above; no shows.
	30	CARBONACEOUS SHALE: dark brownish black, soft, fissile, highly carbonaceous, carbonaceous laminae in part, grades into coal.
	20	COAL: as above.
	trace	CLAYSTONE: as above.
1675 - 1680m	80	SANDSTONE: translucent to milky white, loose grains, angular to subangular, medium to very coarse grained, angular quartz fragments, possibly a pebbly sandstone, moderately sorted, good visible porosity; no shows.
	10	CARBONACEOUS SHALE: as above.
	10	COAL: as above.
	trace	PYRITE.
1680 - 1685m	50	CARBONACEOUS SILTSTONE: dark brownish black, soft, micaceous, carbonaceous, subfissile, grades into a fissile carbonaceous shale.
	40	SANDSTONE: translucent, grey, milky white, loose grains, medium to very coarse grained, probably pebbly, angular to subrounded, poorly sorted, fair to good inferred porosity; no shows.
	10	COAL: as above.
	trace	PYRITE.
1685 - 1690m	30	COAL: black, vitreous to earthy lustre, brittle, subconchoidal fracture.
	30	CARBONACEOUS SHALE: as above; fissile.
	30	SANDSTONE: as above; no shows.
	10	SILTSTONE: pale brown, red brown, brownish grey, soft to firm, carbonaceous and micaceous in parts.
	trace	PYRITE.

1690 - 1695m	70	SANDSTONE: clear, translucent, milky, grey, loose grains, medium to very coarse grained, coarse dominant, subangular to occasionally subrounded, poorly sorted; good visible porosity; no shows.
	10	CARBONACEOUS SHALE: as above.
	10	COAL: as above.
	10	SILTSTONE: as above.
	trace	PYRITE.
1695 - 1700m	100	SANDSTONE: as above; no shows.
	trace	PYRITE.
1700 - 1705m	100	SANDSTONE: dominantly very coarse grained; no shows; otherwise as above.
1705 - 1710m	100	SANDSTONE: clear to translucent, milky quartz, loose grains, medium to very coarse grained, subangular to subrounded, poorly sorted; good visible porosity; no shows.
1710 - 1715m	100	SANDSTONE: dominantly very coarse grained; no shows; otherwise as above.
1715 - 1720m	100	SANDSTONE: dominantly very coarse grained; no shows; otherwise as above.
	trace	CARBONACEOUS SHALE: as above.
1720 - 1725m	90	SANDSTONE: translucent, clear, milky, loose grains, medium grained to granular, dominantly very coarse grained, angular to subangular, occasionally subrounded, very poorly sorted; good visible porosity; no shows.
	10	CARBONACEOUS SHALE: very dark grey to black, firm, grading to coal.
	trace	COAL: as above.
1725 - 1730m	100	SANDSTONE: dominantly coarse grained; no shows; otherwise as above.
	trace	PYRITE.
1730 - 1735m	80	SANDSTONE: clear to translucent, loose grains, medium to very coarse grained; dominantly medium grained, subangular to subrounded, moderately sorted; moderate inferred porosity; trace dull, orange-yellow fluorescence, giving a slow, streaming, blue-white crush cut only.
	20	CARBONACEOUS SHALE: as above.
1735 - 1740m	80	SANDSTONE: as above; with 10-20% dull, orange-yellow fluorescence, giving a slow, streaming, blue-white crush cut.
	20	SILTSTONE: grey, greyish red, carbonaceous flecks, firm.
1740 - 1745m	80	SANDSTONE: as above; with 10% fluorescence and cut as above.
	20	SILTSTONE: as above.
1745 - 1750m	90	SANDSTONE: clear to translucent, loose grains, occasional aggregates, coarse to very coarse, angular to subangular, poorly sorted; trace shows as above.
	10	SHALE/CARBONACEOUS SILTSTONE: grey, greyish red, firm, laminated.
	trace	PYRITE.

1750 - 1755m	90	SANDSTONE: coarse aggregates, trace of shows as above; otherwise as above.
	10	SHALE: grey, firm to hard, occasionally carbonaceous.
	trace	COAL: ?cavings.
1755 - 1760m	90	SANDSTONE: as above; no shows.
	10	CARBONACEOUS SHALE: as above.
1760 - 1765m	90	SANDSTONE: as above; no shows.
	10	CARBONACEOUS SHALE: as above.
1765 - 1770m	60	SANDSTONE: as above; no shows.
	20	SILTSTONE: medium grey, greyish red, firm, carbonaceous.
	20	CARBONACEOUS SHALE: very dark grey, firm.
	trace	PYRITE.
1770 - 1775m	80	SANDSTONE: clear to translucent, milky, loose grains, coarse to very coarse grained, subangular to subrounded, moderately sorted; less than 10% dull, orange-yellow fluorescence with slow, blue-white streaming crush cut.
	10	CARBONACEOUS SHALE: very dark grey, firm to occasionally hard.
	10	SANDSTONE: grey, greyish red, light grey, carbonaceous laminations, firm; no shows.
	trace	PYRITE.
1775 - 1780m	80	SANDSTONE: clear to translucent, fine to coarse grained, dominantly medium grained, subangular to subrounded, poorly sorted; poor inferred porosity; trace shows as above.
	10	SHALE: as above.
	10	SILTSTONE: as above.
	trace	PYRITE.
1780 - 1783m (Bottoms up sample)	90	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	trace	PYRITE.
1783 - 1785m	90	SANDSTONE: as above; no shows.
	10	CARBONACEOUS SHALE: as above.
1785 - 1790m	90	SANDSTONE: as above; no shows.
	10	CARBONACEOUS SHALE: as above.
1790 - 1795m	70	COAL: black, vitreous, blocky, conchoidal fracture to fissile.
	20	CARBONACEOUS SHALE: as above.
	10	SANDSTONE: as above; no shows.
1795 - 1800m	60	CARBONACEOUS SHALE: dark grey brown, soft, fissile to occasionally non fissile, highly carbonaceous.
	30	SANDSTONE: translucent, very coarse loose grains, medium to very coarse grained, angular to subrounded, moderately sorted; very good inferred porosity; trace dull, yellow and blueish fluorescence; no cut; no visible oil stain.
	10	SILTSTONE: light grey to pale brown, soft, non fissile, blocky to subrounded cuttings, slightly carbonaceous in parts.
	trace	PYRITE.
	trace	COAL: as above.

1800 - 1805m	80	SANDSTONE: translucent, loose grains, medium to very coarse grained, angular to subrounded, dominantly subangular, moderately well sorted; excellent inferred porosity; 10% moderately bright, yellow and blue fluorescence; no stain or residue.
	20	SILTSTONE: light grey to dominantly dark grey brown, soft, blocky cuttings, non fissile to occasionally subfissile, highly carbonaceous in part.
	trace	PYRITE.
1805 - 1810m	80	SANDSTONE: translucent to milky white, loose grains, very coarse grained, subangular to subrounded, well sorted; excellent inferred porosity; 10% moderately bright, yellow fluorescence; weak diffuse cut; no visible stain; trace fluorescence from desander sample.
	20	SILTSTONE: as above; more carbonaceous.
	trace	CARBONACEOUS SHALE: as above.
	trace	PYRITE.
1813.5m (Bottoms up)	100	SANDSTONE: translucent to milky white, all loose grains, very coarse to granule sized, angular to dominantly subrounded, very well sorted; excellent inferred porosity; 10% bright blue and yellow fluorescence; very weak diffuse to occasional streaming white cut; no stain or residue.
	trace	SILTSTONE: as above.
		PULLED OUT OF HOLE TO CUT CORE NO. 4
		CORE NO. 4 FROM 1813.2M TO 1822.9M
1823 - 1825m		Contaminated sample. Cavings from Lakes Entrance Formation.
1825 - 1830m	50	SANDSTONE: clear to translucent, loose grains, medium to coarse grained, poorly sorted; good inferred porosity; less than 10% dull, yellow fluorescence giving very slow streaming, milky white cut.
	30	SILTSTONE: brownish grey, firm, carbonaceous.
	20	COAL: black, earthy, firm, fissile, grading to carbonaceous shale.
1832m (Bottoms up sample)	90	SANDSTONE: clear to translucent, milky quartz, loose grains, medium to very coarse grained, moderately sorted, good inferred porosity; 20% dull, yellow fluorescence giving a very slow, weak, milky white cut.
	10	SHALE: carbonaceous in part, grading to greyish red siltstone (carbonaceous).
		PULLED OUT OF HOLE TO CUT CORES NO. 5 AND 6.
		CORE NO. 5 FROM 1832.2M TO 1841.6M.
		CORE NO. 6 FROM 1841.6M TO 1851.1M.
1851 - 1855m	80	CAVINGS: especially from Lakes Entrance Formation.

1855 - 1860m	80	SANDSTONE: clear, translucent, milky, loose grains, medium to very coarse grained, angular to subangular, very poorly sorted; good inferred porosity; no shows.
	20	CARBONACEOUS SILTSTONE: brownish grey, carbonaceous flecks throughout, subfissile, firm.
		Still abundant cavings from Lakes Entrance Formation.
1860 - 1865m	90	SANDSTONE: as above; except coarse to granule sized grains, subrounded to angular; moderate inferred porosity; no shows.
	10	CARBONACEOUS SILTSTONE: as above.
	trace	PYRITE: aggregates.
1865 - 1870m	80	SANDSTONE: translucent, milky quartz, loose grains, coarse to very coarse grained, angular to subangular, poorly sorted; no shows.
	20	CARBONACEOUS SILTSTONE: abundant carbonaceous, laminae; otherwise as above.
1870 - 1875m	90	SANDSTONE: as above; no shows.
	10	CARBONACEOUS SHALE: very dark grey, hard; grading to carbonaceous siltstone as above; with carbonaceous laminae.
	trace	COAL: black, blocky, conchoidal fracture, brittle.
1875 - 1880m	100	SANDSTONE: clear, translucent, milky, loose grains and occasional aggregates, medium to very coarse grained, angular to subangular, poorly sorted; no shows.
	trace	COAL: as above.
1880 - 1885m	100	SANDSTONE: coarse to very coarse grained; no shows; otherwise as above.
1885 - 1890m	80	SANDSTONE: clear, grey, translucent, milky quartz, loose grains, coarse grained to granular, dominantly granular, angular, very poorly sorted; good inferred porosity; no shows.
	20	SILTSTONE: greyish red, light grey, abundant carbonaceous specks.
	trace	COAL: as above.
1890 - 1895m	100	SANDSTONE: as above; quartz fragments - probably conglomeratic sandstone; no shows.
	trace	SILTSTONE: as above.
	trace	PYRITE.
1895 - 1900m	60	SANDSTONE: as above; no shows.
	20	VOLCANICS: basic: dark grey to black, firm to hard, traces of quartz and feldspar, biotite.
	20	CLAYSTONE: cream to yellow brown, soft, quartz and feldspar inclusions, weathered feldspar changing to clay, likely volcanic origin.
	trace	PYRITE.

1900 - 1905m	50	SANDSTONE: as above; no shows.
	50	VOLCANICS: altered: cream, yellow brown, dark grey, soft to moderately hard, clayey, altered feldspar, quartzose, greeny tinge to clay suggests abundant ferromagnesians in original volcanics, likely basic composition, abundant acicular crystals of unidentifiable minerals.
	trace	CARBONACEOUS SILTSTONE: as above.
1905 - 1910m	80	VOLCANICS: altered: red brown, light green, yellow brown, soft to moderately hard, clay replacing feldspar, chlorite replacing ferromagnesians, occasional quartz (small inclusions); iron oxide staining becoming common; basic composition origin, fine texture, probable extrusive or quenched margin of intrusive; biotite, acicular minerals.
	20	SANDSTONE: as above; no shows.
	trace	PYRITE.
1910 - 1915m	90	VOLCANICS: altered: as above; red brown and green becoming more common, chloritic, clayey, occasional large primary quartz fragments.
	10	SANDSTONE: as above; no shows.
	trace	PYRITE.
1915 - 1920m	100	VOLCANICS: altered: as above.
	trace	SANDSTONE: as above; no shows.
	trace	PYRITE.
1920 - 1925m	100	VOLCANICS: altered: as above.
1925 - 1930m	100	VOLCANICS: altered: as above; becoming less altered with depth, chloritic, basic volcanics.
1930 - 1935m	100	VOLCANICS: altered: as above.
1935 - 1940m	100	VOLCANICS: altered: as above; ferromagnesians becoming less altered and coarser texture.
1940 - 1945m	100	VOLCANICS: altered: as above.
1945 - 1950m	100	VOLCANICS: altered: as above; dominantly emerald green to black, abundant ferromagnesians, chloritic, abundant primary quartz fragments, basic to intermediate composition.
1950 - 1955m	100	VOLCANICS: altered: as above.
1955 - 1960m	100	VOLCANICS: altered: as above.
1960 - 1965m	100	VOLCANICS: altered: as above.
1965 - 1970m	100	VOLCANICS: altered: as above.
1970 - 1975m	100	VOLCANICS: altered: as above.
1975 - 1980m	100	VOLCANICS: altered: as above.
1980 - 1985m	100	VOLCANICS: altered: white, pale brown, emerald green, black, soft to extremely hard, clayey, common ferromagnesians, feldspar crystals, chloritic when altered, occasional primary quartz fragments and thin quartz veining, basic to intermediate composition.

1985 - 1990m	100	VOLCANICS: altered: 5% bright, white fluorescence, mostly mineral fluorescence, one grain gave a very weak diffuse cut.
1990 - 1995m	70 30	VOLCANICS: altered: as above. SANDSTONE: translucent to milky white, loose grains, medium to predominantly very coarse grained, subrounded, poorly sorted; fair to good inferred porosity; 5% bright, white to yellow fluorescence, mostly mineral fluorescence, few grains gave a weak diffuse white cut.
1995 - 2000m	70 30	SANDSTONE: translucent to milky white, loose grains medium to very coarse grained, predominantly coarse grained, angular to subangular, poorly sorted, probably pebbly; poor to fair inferred porosity; 10% mineral fluorescence; no cut; no shows. VOLCANICS: altered: as above.
2000 - 2005m	80 10 10 trace trace	SANDSTONE: as above; fair inferred porosity; 10% mineral fluorescence; no shows. VOLCANICS: altered: as above. SILTSTONE: dark brown, soft to moderately hard, carbonaceous flecks and laminae, blocky cuttings. PYRITE. COAL: as above.
CBU AT 2009M		
2010m (Bottoms up sample)	80 20 trace trace trace	SANDSTONE: as above; no shows. SILTSTONE: as above. VOLCANICS: altered: as above. COAL: as above; nearly 5%. PYRITE.
2010 - 2015m	90 10 trace trace	SANDSTONE: clear, translucent, coarse grained to granular, predominantly very coarse grained, angular, poorly sorted; 10% mineral fluorescence. COAL: black, vitreous lustre, blocky, conchoidal fracture, brittle. VOLCANICS: altered: as above. PYRITE.
2015 - 2020m	90 10 trace trace	SANDSTONE: as above; no shows; trace mineral fluorescence. SILTSTONE: brownish grey, carbonaceous flecks, hard, grading to very fine grained sandstone. COAL: as above. VOLCANICS: altered: as above.
2020 - 2025m	100 trace trace trace trace	SANDSTONE: clear, translucent, grey, medium to very coarse grained, predominantly coarse, angular to subangular, moderately sorted; trace mineral fluorescence. SILTSTONE: as above. COAL: as above. VOLCANICS: altered: as above. PYRITE.

2025 - 2030m	100	SANDSTONE: 2 types: Type (1) - 80% clear, translucent, grey, coarse grained to granules, predominantly coarse, angular to subangular, moderately sorted; trace mineral fluorescence. Type (2) - 20% brownish red, very fine grained, grading to silt, well sorted, carbonaceous flecks, moderately hard.
	trace	COAL: as above.
	trace	VOLCANICS: altered: as above.
2030 - 2035m	100	SANDSTONE: Type (1) as above: no shows (less than 10%).
	trace	SILTSTONE: as above.
	trace	VOLCANICS: altered: as above.
2035 - 2040m	90	SANDSTONE: clear, grey, translucent, medium to very coarse grained, very poorly sorted; trace mineral fluorescence.
	10	VOLCANICS: altered: cavings.
	trace	COAL: less than 10%.
2040 - 2045m	80	SANDSTONE: milky, clear, translucent, occasionally rose pink, grey, medium to very coarse grained, very poorly sorted; trace mineral fluorescence.
	10	VOLCANICS: altered: as above.
	10	COAL: as above.
	trace	PYRITE.
2045 - 2050m	90	SANDSTONE: as above; trace mineral fluorescence.
	10	SILTSTONE: as above.
	trace	VOLCANICS: altered: cavings.
	trace	COAL: as above.
2050 - 2055m	90	SANDSTONE: clear, translucent, grey, loose grains, medium to very coarse grained, angular, very poorly sorted; trace mineral fluorescence.
	10	CLAYSTONE: very dark grey, very hard.
	trace	SILTSTONE: as above.
	trace	VOLCANICS: altered; cavings.
	trace	PYRITE: as above.
2055 - 2058m (Bottoms up sample)	90	SANDSTONE: as above.
	10	CLAYSTONE: as above.
	trace	VOLCANICS: altered: as above.
	trace	PYRITE.
2058 - 2060m	80	SANDSTONE: clean, grey, translucent, loose grains, coarse grained to granule, angular, very poorly sorted; no shows.
	10	SILTSTONE: buff, brownish grey, firm to hard.
	10	VOLCANICS: altered: as above; cavings.
	trace	PYRITE.
2060 - 2065m	80	SANDSTONE: as above.
	20	SILTSTONE: as above.
	trace	VOLCANICS: altered: as above.
	trace	COAL: as above.

2065 - 2070m	100	SANDSTONE: clear, translucent, grey, milky, coarse to very coarse grained angular to subrounded, predominantly subangular, very poorly sorted; no shows.
	trace	CLAYSTONE: very dark grey, indurated (possibly clast from within sandstone).
	trace	COAL: as above.
	trace	VOLCANICS: altered: as above.
2070 - 2075m	80	SANDSTONE: as above; no shows.
	10	CLAYSTONE: as above.
	10	SILTSTONE: brownish grey, medium grey, carbonaceous specks, firm.
	trace	VOLCANICS: altered: as above.
	trace	COAL: as above.
2075 - 2080m	100	SANDSTONE: as above; no shows.
	trace	CLAYSTONE: as above.
	trace	COAL: as above.
2080 - 2085m	90	SANDSTONE: clear, milky, translucent, fine grained to granular, predominantly coarse grained, very poorly sorted, angular; no shows.
	10	VOLCANICS: altered: as above; ?cavings.
	trace	CLAYSTONE: as above.
	trace	PYRITE.
2085 - 2090m	90	SANDSTONE: milky, clear to translucent, coarse grained to granular, very poorly sorted, angular; no shows.
	10	CONGLOMERATE/PEBBLY SANDSTONE: loose grains comprising grey black chert.
	trace	VOLCANICS: altered: ?cavings.
2090 - 2095m	80	SANDSTONE: as above; no shows.
	10	CONGLOMERATE/PEBBLY SANDSTONE: as above; also indurated siltstone.
	10	SILTSTONE: buff, firm, carbonaceous specks.
	trace	PYRITE.
2095 - 2100m	80	SANDSTONE: as above; no shows.
	20	SILTSTONE: as above; also greyish red.
	trace	LITHICS: as above.
	trace	COAL: as above.
2100 - 2105m	70	SANDSTONE: as above; no shows.
	20	CONGLOMERATE/PEBBLY SANDSTONE: consisting of broken rounded lithic clasts.
	10	SILTSTONE: as above.
2105 - 2110m	50	SANDSTONE: clear, translucent, milky, grey, loose grains, medium grained to granular, very poorly sorted, angular (some splintery); no shows.
	30	CONGLOMERATE/PEBBLY SANDSTONE: consisting of broken, rounded clasts of black chert, indurated shale and siltstone; green, red, orange volcanics and quartz.
	20	SILTSTONE: as above; also greyish red.
	trace	PYRITE.
2110 - 2115m	50	SANDSTONE: as above; no shows.
	40	CONGLOMERATE/PEBBLY SANDSTONE: as above.
	10	SILTSTONE: as above; but also greyish red.
	trace	PYRITE.

2115 - 2120m	80	SANDSTONE: medium to very coarse grained; otherwise as above.
	20	CONGLOMERATE/PEBBLY SANDSTONE: as above.
2120 - 2125m	70	SANDSTONE: as above; no shows.
	20	CONGLOMERATE/PEBBLY SANDSTONE: as above.
	10	SILTSTONE: as above.
2125 - 2130m	60	SANDSTONE: as above; no shows.
	30	CONGLOMERATE/PEBBLY SANDSTONE: as above.
	10	SILTSTONE: as above.
2130 - 2135m	70	SANDSTONE: clear, grey, milky, loose grains, coarse grained to granular, angular, occasionally splintery, very poorly sorted; no shows.
	20	CONGLOMERATE/PEBBLY SANDSTONE: as above.
	10	SILTSTONE: as above.
	trace	PYRITE.
2135 - 2140m	70	SANDSTONE: as above.
	30	CONGLOMERATE/PEBBLY SANDSTONE: as above.
	trace	PYRITE.
		PULLED OUT OF HOLE FOR WIRELINE LOGGING
2143m	60	VOLCANICS: altered: emerald green, pale brown, greeny black, pale green, resembles the shallower volcanics, hard to very hard, chloritic, clay replacing feldspars, ferromagnesians still unaltered in parts, possibly cavings or large cobbles within a polymictic conglomerate.
	30	SILTSTONE: pale brown to dark brown, firm, tabular to blocky cuttings, carbonaceous in parts.
	10	CALCISILTITE: cavings.
	trace	SANDSTONE: very coarse loose grains.
	trace	COAL: cavings.
	trace	MINERALISED QUARTZ: vein quartz containing intercrystalline pyrite.
	trace	PYRITE.
2140 - 2145m	60	VOLCANICS: altered: as above; occasional cherty fragments, possibly cavings.
	20	SILTSTONE: as above.
	20	CALCISILTITE: cavings.
	trace	SANDSTONE: no shows.
	trace	PYRITE.
	trace	LIGNITE.
2145 - 2150m	60	SILTSTONE: pale brown to dark brown, soft to firm, tabular to blocky cuttings, occasional carbonaceous flecks, occasional carbonaceous laminae.
	20	CALCISILTITE: cavings.
	20	VOLCANICS: altered: as above; probably cavings.
	trace	SANDSTONE: no shows.
	trace	PYRITE.

2150 - 2155m	70	SANDSTONE: translucent, loose grains, medium to coarse grained, angular to subangular, occasionally subrounded, moderately to poorly sorted, probably pebbly; moderate to good inferred porosity; trace dull to moderately bright, white fluorescence with a weak, diffuse, white cut; no oil stain.
	20	SILTSTONE: as above.
	10	ALTERED VOLCANICS AND CALCISILTITE CAVINGS: mostly very large cuttings.
	trace	PYRITE.
	trace	COAL: as above.
2155 - 2160m	70	SANDSTONE: as above; pebbly.
	20	SILTSTONE: as above.
	10	VOLCANICS: altered: as above; probably clasts within a conglomerate, large volcanic cuttings coming over shakers, chert also present.
	trace	COAL: as above.
	trace	PYRITE.
2160 - 2165m	90	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	trace	VOLCANICS: altered: cavings.
2165 - 2170m	80	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	10	VOLCANICS: altered: cavings.
2170 - 2175m	90	SANDSTONE: as above; no shows; pebbly.
	10	VOLCANICS: altered: cavings.
2175 - 2180m	80	SANDSTONE: as above; no shows.
	10	SILTSTONE: as above.
	10	VOLCANICS: altered: cavings.
2180 - 2185m	70	SANDSTONE: as above; no shows.
	30	SILTSTONE: as above.
2185 - 2190m	70	SANDSTONE: clear, translucent, milky, loose grains, coarse to very coarse grained, angular to subangular, moderately sorted; moderately good inferred porosity; no shows.
	30	SILTSTONE: as above.
	trace	CAVINGS.
	trace	PYRITE: aggregates.
2190 - 2195m	70	SANDSTONE: as above; no shows.
	30	SILTSTONE: greyish red, medium dark grey, buff, firm to hard, flat cuttings, carbonaceous in part.
	trace	CAVINGS: volcanics.
	trace	PYRITE.
2195 - 2200m	60	SILTSTONE: as above.
	40	SANDSTONE: as above; no shows.
	trace	CAVINGS: volcanics.
	trace	PYRITE.
2200 - 2205m	50	SANDSTONE: as above; no shows.
	50	SILTSTONE: as above.
	trace	CAVINGS: volcanics.
	trace	PYRITE.

2205 - 2210m	50	SANDSTONE: as above; no shows.
	50	SILTSTONE: as above.
2210 - 2215m	60	SILTSTONE: dark grey, carbonaceous, firm, platy, occasionally grading to very fine sandstone.
	40	SANDSTONE: 2 types: Type (1) - 30% clear, translucent, milky, loose grains, coarse to very coarse grained, angular to subangular, moderately sorted; moderately good inferred porosity; no shows. Type (2) - 10% quartz aggregates, very fine to fine grained, excellent sorting, in a dolomitic cement (very dull, yellow fluorescence and slow reaction with HCl), hard; no shows.
2215 - 2220m	60	SILTSTONE: buff, dark grey, firm to hard, platy; dark grey variety is carbonaceous; buff variety grades to very fine sandstone in silty matrix.
	40	SANDSTONE: 2 types: Type (1) - 30% as above; no shows. Type (2) - as above; no shows (mineral fluorescence).
	trace	VOLCANICS: cavings.
2220 - 2225m	50	SANDSTONE: 2 types: Type (1) - 40% clear, translucent, milky, loose grains, medium to very coarse grained, subangular to subrounded, very poorly sorted; no shows. Type (2) - 10% quartz aggregates, very fine to fine grained, excellent sorting, in a dolomitic cement (very dull, yellow fluorescence and slow reaction with HCl), hard; no shows.
	30	SILTSTONE: as above.
	20	CARBONACEOUS SHALE: firm, very dark grey to black.
	trace	COAL: black, blocky, subfissile, brittle.
	trace	VOLCANICS: cavings.
2225 - 2230m	70	SANDSTONE: 2 types: Type (1) - 60% as above; no shows. Type (2) - 10% as above; no shows.
	20	SILTSTONE: as above.
	10	CARBONACEOUS SHALE: as above.
	trace	COAL: as above.
	trace	PYRITE.
2230 - 2235m	80	SANDSTONE: 2 types: Type (1) - 70% coarse to very coarse grained; otherwise as above; no shows. Type (2) - 10% as above; no shows.
	10	SILTSTONE: as above.
	10	COAL: as above; with conchoidal fracture.
2235 - 2240m	80	SANDSTONE: 2 types: Type (1) - 60% coarse to very coarse grained; trace dull, yellow fluorescence giving very weak, diffuse, milky crush cut; otherwise as above.
	10	Type (2) - 20% as above; no shows.
	10	SILTSTONE: greyish-brown, pale brown to buff, carbonaceous specks.
	trace	VOLCANICS: cavings.
	trace	PYRITE.

2240 - 2245m	100	SANDSTONE: translucent to milky white, occasionally smokey grey, medium to very coarse grained, angular to subangular, moderately sorted, probably pebbly, abundant quartz fragments; fair to good inferred porosity; no shows.
	trace	SILTSTONE: as above.
	trace	COAL: as above.
	trace	CHERT.
	trace	DOLOMITIC SANDSTONE.
2245 - 2250m	90	SANDSTONE: as above; pebbly; no shows.
	10	SILTSTONE: as above.
	trace	COAL: as above.
2250 - 2255m	90	SANDSTONE: as above; but poorly sorted, pebbly; no shows.
	10	SILTSTONE: as above.
	trace	PYRITE.
	trace	COAL: as above.
	trace	CHERT.
2255 - 2260m	90	SANDSTONE: as above; pebbly, medium grained to granule sized quartz fragments; no shows.
	10	SILTSTONE: as above.
	trace	COAL: as above.
	trace	PYRITE.
	trace	CHERT.
2260 - 2265m	90	CONGLOMERATE: translucent, clear, smokey grey, milky white, loose grains and fragments, coarse to granule sized, angular fragments dominate, poorly sorted; poor to fair inferred porosity; no shows.
	10	SILTSTONE: as above.
	trace	CHERT.
	trace	COAL: as above.
2265 - 2270m	80	CONGLOMERATE: as above; no shows.
	20	SILTSTONE: as above.
	trace	CLAYSTONE.
2270 - 2275m	90	CONGLOMERATE: as above; no shows.
	10	SILTSTONE: dark grey-black, firm, blocky cuttings, highly carbonaceous, occasional very fine sandy inclusions.
2275 - 2280m	90	CONGLOMERATE: as above; no shows.
	10	SILTSTONE: as above.
	trace	CLAYSTONE.
	trace	CHERT.
	trace	COAL: as above.
2280 - 2285m	90	CONGLOMERATE: as above; no shows.
	10	SILTSTONE: as above.
	trace	CHERT.
	trace	CLAYSTONE.
2285 - 2290m	80	CONGLOMERATE: as above.
	20	SILTSTONE: as above.
	trace	CLAYSTONE.

2290 - 2295m	60	CONGLOMERATE/SANDSTONE: clear, translucent, milky, grey quartz, loose grains, coarse grained to granular, angular (often splintery), very poorly sorted; moderate to poor inferred porosity; no shows.
	40	SILTSTONE: as above.
	trace	COAL: as above.
2295 - 2300m	80	SILTSTONE: as above; also buff.
	20	SANDSTONE/PEBBLY SANDSTONE: clear, translucent, milky, coarse grained to granular, angular to subangular, poorly sorted; moderate to poor inferred porosity; trace dull, yellow fluorescence giving a slow, milky, white streaming cut.
2300 - 2305m	90	SILTSTONE: as above; also buff.
	10	SANDSTONE: 2 types: Type (1) - dominantly clear, translucent, milky, coarse grained to granular, angular to subangular, poorly sorted; moderate to poor inferred porosity; trace dull, yellow fluorescence giving a slow, milky, white streaming cut.
		Type (2) - very fine to fine grained quartz aggregates, subangular to subrounded, excellent sorting; dolomitic cement (very dull, yellow/green mineral fluorescence); hard; tight; no cut.
	trace	COAL: as above.
2305 - 2310m	100	SILTSTONE: as above; also buff.
	trace	SANDSTONE: Type (1) as above; no shows.
2310 - 2315m	90	SILTSTONE: as above; also buff.
	10	SANDSTONE/PEBBLY SANDSTONE: Type (1) - as above.
	trace	COAL: as above.
2315 - 2320m	100	SANDSTONE: as above; also buff.
	trace	SANDSTONE/PEBBLY SANDSTONE: as above.
2320 - 2325m	100	SILTSTONE: as above.
	trace	COAL: as above.
2325 - 2330m	100	SILTSTONE: as above.
	trace	SANDSTONE: as above; no shows.
2330 - 2335m	100	SILTSTONE: dark to light grey and off-white, soft to firm, blocky to rounded cuttings; finely divided carbonaceous fragments common; some very fine grained sand occurs in the harder siltstone.
2335 - 2340m	100	SILTSTONE: light to dark grey and off-white, very soft to firm, blocky to rounded cuttings; finely divided carbonaceous fragments and laminae common; minor very fine grained sand in a silty matrix; no shows.
	trace	SANDSTONE: clear to opaque, loose grains, coarse to very coarse grained, subangular quartz; no shows.
	trace	COAL: black, vitreous, with a subconchoidal fracture.

2340 - 2345m	100	SILTSTONE: as above; very fine grained sand becoming more common.
2345 - 2350m	90	SILTSTONE: as above.
	10	SANDSTONE: clear to opaque, firm to friable, fine to very fine grained, subrounded to rounded, quartz aggregates, silica cemented with minor silt matrix; tight; no shows.
2350 - 2355m	60	SILTSTONE: as above; except dark grey more dominant.
	40	SANDSTONE: clear, translucent, opaque (?heavy minerals), very fine to fine grained quartz aggregates, subangular to subrounded, excellent sorting, dolomitic cement, hard, very tight; no shows.
	trace	COAL: black, vitreous lustre, blocky, hard.
2355 - 2360m	50	SILTSTONE: as above; except dark grey more dominant.
	30	SANDSTONE: as above; no shows.
	20	SHALE: dark grey, thin platelets, firm, very carbonaceous.
	trace	COAL: as above.
2360 - 2365m	trace	PYRITE: aggregates.
	60	SILTSTONE: as above; except dark grey more dominant.
	30	SANDSTONE: as above; no shows.
	10	SHALE: as above.
2365 - 2370m	trace	COAL: as above.
	50	SANDSTONE: as above; no shows.
	50	SILTSTONE: as above; except dark grey dominant.
2370 - 2375m	trace	COAL: as above.
	60	SANDSTONE: 2 types: Type (1) - 40% clear, translucent, opaque, very fine to fine grained quartz aggregates, subangular to subrounded, excellent sorting, dolomitic cement, hard, very tight; no shows.
		Type (2) - 10% clear, translucent, loose quartz grains, medium to coarse grained, subangular to angular, poorly sorted; no shows.
	30	SILTSTONE: as above; except dark grey dominant.
2375 - 2380m	10	COAL: as above.
	70	SANDSTONE: 2 types: Type (1) - 50% as above; no shows.
		Type (2) - 20% as above; no shows.
	20	SILTSTONE: as above.
2380 - 2385m	10	SHALE: as above.
	trace	COAL: as above.
	40	SILTSTONE: as above.
	40	SANDSTONE: Type (1) - as above; no shows.
2385 - 2390m	10	SHALE: medium grey to dark grey, firm, flat cuttings.
	10	COAL: black, subfissile, flat cuttings, firm to moderately hard, earthy to vitreous.

2385 - 2390m	50	SANDSTONE: 2 types: Type (1) - 60% white, firm to friable, very fine to medium grained, subrounded to rounded, quartz aggregates, moderately to poorly sorted with dominantly silica and minor dolomite cement; poor to no porosity; no shows. Type (2) - 40% clear to opaque, loose, medium to coarse grained, angular to subrounded quartz grains; no shows.
	40	SILTSTONE: dark to light grey and off-white, hard to soft cuttings, blocky, rounded; fine carbonaceous fragments and laminae common; noncalcareous.
	10	SHALE: dark to light grey, hard to firm, platy cuttings.
2390 - 2395m	50	SANDSTONE: Type (1) - 70% as above. Type (2) - 30% as above; no shows.
	50	SILTSTONE: as above.
2395 - 2399m	70	SANDSTONE: Type (1) - 80% as above; with more dolomite cement and minor coarse grained quartz. Type (2) - 20% as above; no shows.
	30	SILTSTONE: as above.
PULLED OUT OF HOLE FOR BIT CHANGE.		
2399 - 2405m	60	SILTSTONE: as above.
	30	SANDSTONE: Type (1) - 20% as above; no shows. Type (2) - 10% as above; no shows.
	10	SHALE: medium to dark grey, firm, flat cuttings.
	trace	COAL: as above.
2405 - 2410m	50	SILTSTONE: as above.
	30	SANDSTONE: Type (1) - as above; no shows.
	20	SHALE: as above.
	trace	COAL: as above.
2410 - 2415m	70	SILTSTONE: brownish grey, medium grey, light grey, blocky, flat and rounded cuttings, firm, carbonaceous flecks and laminae abundant.
	20	SANDSTONE: 2 types: Type (1) - 10% grey to light grey, very fine to fine grained, quartz aggregates with opaque grains (?heavy minerals), moderately hard, dolomitic cement; no shows. Type (2) - 10% milky quartz, loose grains, angular (splintery), coarse grained to granule, very poorly sorted, possible a pebbly sandstone; no shows.
	10	SHALE: as above; also brownish grey.
	trace	COAL: as above.
2415 - 2420m	50	SILTSTONE: as above.
	40	SANDSTONE: Type (1) - 20% as above; no shows. Type (2) - 20% as above; no shows.
	10	SHALE: as above.
	trace	COAL: as above.
2420 - 2425m	60	SILTSTONE: dominantly dark grey; otherwise as above.
	30	SANDSTONE: Type (1) - 20% as above; no shows. Type (2) - 10% as above; no shows.
	10	SHALE: as above.
	trace	COAL: as above.

2425 - 2430m	40	SILTSTONE: dominantly dark grey; otherwise as above.
	30	SANDSTONE: Type (1) - 20% as above; no shows. Type (2) - 10% as above; no shows.
	20	SHALE: as above.
	10	COAL: black, vitreous, blocky, subfissile, hard.
2430 - 2435m	60	SILTSTONE: dominantly dark grey; otherwise as above.
	20	SHALE: as above.
	20	SANDSTONE: 2 types: Type (1) - more than 10% grey to light grey, very fine to fine grained, quartz aggregates with opaque grains (?heavy minerals), moderately hard, dolomitic cement; no shows. Type (2) - less than 10% clear, translucent, milky, loose quartz grains, coarse to very coarse grained, angular to subangular, very poorly sorted; no shows.
2435 - 2440m	50	SHALE: medium to dark grey, firm to hard, blocky to flat cuttings, carbonaceous.
	40	SILTSTONE: as above.
	10	SANDSTONE: Type (1) - as above; no shows.
2440 - 2445m	60	SILTSTONE: as above.
	30	SANDSTONE: Type (1) - as above; no shows. Type (2) - as above; no shows.
	10	SHALE: as above; rarely pyritised.
	trace	PYRITE.
2445 - 2450m	70	SILTSTONE: medium to dark grey, occasionally light grey, flat to blocky cuttings, firm to occasionally hard, carbonaceous flecks and laminae abundant.
	20	SANDSTONE: Type (1) - 20% as above; no shows. Type (2) - trace as above; no shows.
	10	SHALE: brownish grey, flat cuttings, firm, carbonaceous.
2450 - 2455m	60	SILTSTONE: as above.
	40	SANDSTONE: 2 types: Type (1) - 60% light grey to off-white, firm to friable, fine to medium grained, subangular to rounded quartz aggregates, poor to moderately sorted with silica and dolomitic cement; poor to no porosity; no shows. Type (2) - 40% clear to opaque, medium to very coarse grained, subangular to subrounded, loose quartz grains, moderately to poorly sorted; good inferred porosity; no shows.
	trace	SHALE: as above.
2455 - 2460m	60	SANDSTONE: 2 types: Type (1) - 30% as above; no shows. Type (2) - 70% as above; no shows.
	40	SILTSTONE: as above.
2460 - 2465m	50	SANDSTONE: Type (1) - 50% as above; no shows. Type (2) - 50% as above; no shows.
	50	SILTSTONE: as above.

2465 - 2470m	60	SILTSTONE: as above.
	40	SANDSTONE: Type (1) - 70% as above; no shows. Type (2) - 30% as above; no shows.
2470 - 2475m	70	SANDSTONE: Type (1) - 50% as above; no shows. Type (2) - 50% as above; no shows.
	30	SILTSTONE: as above.
	trace	PYRITE: angular fragments of medium grained crystal aggregates and as cement and matrix in the sandstone [Type(2)].
2475 - 2480m	60	SANDSTONE: as above; no shows.
	40	SILTSTONE: as above.
	trace	PYRITE: as above.
2480 - 2485m	60	SILTSTONE: as above.
	40	SANDSTONE: 2 types: Type (1) - 60% as above; no shows. Type (2) - 40% as above; no shows.
	trace	PYRITE: as above; also occurs as matrix for the Type (2) coarse grained sandstone.
	trace	COAL: black, hard, vitreous lustre, subconchoidal fracture.
2485 - 2490m	60	SANDSTONE: 2 types: Type (1) - 40% as above; no shows. Type (2) - 60% as above; no shows.
	40	SILTSTONE: as above.
	trace	PYRITE: as above.
2490 - 2495m	60	SANDSTONE: 2 types: Type (1) - 70% as above; no shows. Type (2) - 30% as above; no shows.
	40	SILTSTONE: as above.
2495 - 2500m	50	SANDSTONE: 2 types: Type (1) - 70% as above; no shows. Type (2) - 30% as above; no shows.
	50	SILTSTONE: as above.
2500 - 2505m	60	SILTSTONE: as above.
	40	SANDSTONE: 2 types: Type (1) - 70% as above; no shows. Type (2) - 30% as above; no shows.
	trace	PYRITE: as above.
2505 - 2510m	70	SILTSTONE: as above.
	30	SANDSTONE: 2 types: Type (1) - 80% as above; no shows. Type (2) - 20% as above; no shows.
	trace	PYRITE: as above.
2510 - 2515m	80	SILTSTONE: as above.
	20	SANDSTONE: 2 types: Type (1) - 80% as above; no shows. Type (2) - 20% as above; no shows.
	trace	COAL: as above.
2515 - 2520m	90	SILTSTONE: as above.
	10	SANDSTONE: Type (1) - as above; no shows.
2520 - 2525m	80	SILTSTONE: as above.
	20	SANDSTONE: Type (1) - as above; no shows.
	trace	PYRITE.

2525 - 2530m	50	SILTSTONE: as above.
	40	SHALE: dark grey, firm to hard, platey, carbonaceous.
	10	SANDSTONE: Type (1) - as above; no shows.
2530 - 2535m	60	SILTSTONE: as above.
	30	SHALE: as above.
	10	SANDSTONE: Type (1) - as above; no shows; rarely with pyritised matrix.
	trace	COAL: as above.
2535 - 2540m	70	SILTSTONE: as above.
	20	SANDSTONE: Type (1) - as above; no shows.
	10	SHALE: as above.
	trace	COAL: as above.
2540 - 2545m	70	SILTSTONE: medium dark to dark grey, blocky to flat cuttings, firm to moderately hard, abundant carbonaceous flecks and laminae.
	20	SHALE: as above.
	10	SANDSTONE: Type (1) - as above; no shows; rarely with pyritised matrix.
2545 - 2550m	80	SILTSTONE: as above.
	20	SHALE: as above.
	trace	SANDSTONE: Type (1) - as above; no shows.
2550 - 2555m	50	SHALE: as above.
	50	SILTSTONE: as above.
	trace	SANDSTONE: Type (1) - as above; no shows.
2555 - 2560m	50	SHALE: as above.
	40	SILTSTONE: as above.
	10	SANDSTONE: Type (1) - 100% as above; no shows.
	trace	PYRITE: as above.
2560 - 2565m	40	SILTSTONE: grey to dark grey, firm to hard, blocky to tabular cuttings with common carbonaceous flecks and laminae.
	30	SANDSTONE: light grey to off-white, firm to friable, very fine to fine grained, occasionally medium grained, subangular to rounded quartz aggregates, grading into a lithic sandstone with feldspar, coal and other rock fragments, poorly sorted; silica and dolomite cement; tight; no shows.
	30	SHALE: dark grey, platey, subfissile fracture, carbonaceous.
2565 - 2570m	40	SANDSTONE: as above; no shows.
	40	SILTSTONE: as above.
	20	SHALE: as above.
SPOT SAMPLE (TOTAL GAS = 79 UNITS)		
2573m	60	SANDSTONE: as above; no shows.
	30	SILTSTONE: as above.
	10	SHALE: as above.
2570 - 2575m	60	SANDSTONE: as above; no shows.
	40	SILTSTONE: as above.
	trace	SHALE: as above.

2575 - 2580m	60 40	SANDSTONE: as above; no shows. SILTSTONE: as above.
2580 - 2585m	60 40	SILTSTONE: as above. SANDSTONE: as above; no shows.
2585 - 2590m	50 50	SANDSTONE: as above; no shows. SILTSTONE: as above.
2590 - 2595m	70 30	SANDSTONE: as above; no shows. SILTSTONE: as above.
2595 - 2600m	50 50	SANDSTONE: as above; no shows. SILTSTONE: as above.
2600 - 2605m	50 40 10	SILTSTONE: as above. SANDSTONE: as above; no shows. SHALE: as above.
2605 - 2610m	60 40	SILTSTONE: as above. SANDSTONE: as above; no shows.
2610 - 2615m	60 40 trace	SILTSTONE: as above. SANDSTONE: as above; no shows. COAL: black, vitreous, conchoidal fracture!
2615 - 2620m	70 30	SILTSTONE: light to medium dark grey, firm to moderately hard, blocky to rounded cuttings, very carbonaceous. SANDSTONE: light grey to off-white, aggregates of quartz (dominant) and opaque minerals, fine grained, dolomitic in part, moderately hard; no shows.
2620 - 2625m	50 50 trace	SILTSTONE: as above. SANDSTONE: as above; no shows. COAL: as above.
2625 - 2630m	70 30	SILTSTONE: as above. SANDSTONE: as above; no shows.
2630 - 2635m	70 30	SILTSTONE: as above. SANDSTONE: as above; no shows.
2635 - 2640m	80 20 trace	SILTSTONE: as above. SANDSTONE: as above; traces of dull yellow mineral fluorescence; no shows. COAL: as above.
2640 - 2645m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
2645 - 2650m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
PULLED OUT OF HOLE FOR BIT CHANGE		
2650 - 2655m	80 10 10	SILTSTONE: as above. SANDSTONE: as above; no shows. CAVINGS: various lithologies.
2655 - 2660m	80 20	SILTSTONE: as above. SANDSTONE: as above.
2660 - 2665m	80 20	SILTSTONE: as above. SANDSTONE: as above; no shows.

2665 - 2670m	90	SILTSTONE: dark to light grey, tabular, firm, carbonaceous and micromicaceous cuttings.
	10	SANDSTONE: light grey to off-white, very fine to medium grained, subangular to rounded quartz aggregates, plus minor feldspar and rock fragments, poorly sorted; dolomitic and silica cemented; tight; no shows.
2670 - 2675m	90	SILTSTONE: as above; minor feldspathic fragments.
	10	SANDSTONE: as above; no shows.
2675 - 2680m	90	SILTSTONE: as above.
	10	SANDSTONE: as above; no shows.
2680 - 2685m	90	SILTSTONE: as above.
	10	SANDSTONE: as above; no shows.
2685 - 2690m	100	SILTSTONE: as above; grading to shale with a significant decrease in carbonaceous matter.
2690 - 2695m	90	SILTSTONE: as above.
	10	SANDSTONE: as above; more feldspar, coal and lithic fragments in the aggregates, still very fine to medium grained; tight; no shows.
2695 - 2700m	90	SILTSTONE: as above.
	10	SANDSTONE: as above; no shows.
2700 - 2705m	90	SILTSTONE: as above; grading into dark silty shale.
	10	SANDSTONE: as above.
GRAB SAMPLE AT 2706M - DRILLING BREAK		
2706m	50	SANDSTONE: light grey to off-white, very fine to medium grained, subangular and rounded quartz aggregates and subordinate feldspar, coal and other rock fragments, poorly sorted; dolomite and silica cemented; tight; no shows.
	50	SILTSTONE: as above.
2705 - 2710m	60	SANDSTONE: as above; argillaceous matrix; no shows.
	40	SILTSTONE: as above.
2710 - 2715m	80	SILTSTONE: as above.
	20	SANDSTONE: as above; no shows.
2715 - 2720m	70	SILTSTONE: as above;
	30	SANDSTONE: as above; no shows.
2720 - 2725m	90	SILTSTONE: as above; grading to shale.
	10	SANDSTONE: as above; no shows.
2725 - 2730m	80	SILTSTONE: as above; minor shale.
	20	SANDSTONE: as above; no shows.
2730 - 2735m	90	SILTSTONE: as above.
	10	SANDSTONE: as above; no shows.
2735 - 2740m	80	SILTSTONE: as above.
	20	SANDSTONE: as above; no shows.

2740 - 2745m	60 40	SILTSTONE: as above. SANDSTONE: as above; no shows.
2745 - 2750m	50 50	SANDSTONE: as above; no shows. SILTSTONE: as above.
2750 - 2755m	60 40	SILTSTONE: as above. SANDSTONE: as above; no shows.
2755 - 2760m	80 20	SILTSTONE: as above. SANDSTONE: as above; no shows.
2760 - 2765m	80 20	SILTSTONE: as above. SANDSTONE: as above.
2765 - 2770m	50 50	SANDSTONE: as above; no shows. SILTSTONE: as above.
2770 - 2775m	70 30	SILTSTONE: as above. SANDSTONE: as above; no shows.
2775 - 2780m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
2780 - 2785m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
2785 - 2790m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
2790 - 2795m	80 20	SILTSTONE: as above. SANDSTONE: as above; no shows.
2795 - 2800m	90 10	SILTSTONE: as above. SANDSTONE: as above; no shows.
2800 - 2805m	100 trace	SILTSTONE: as above; grading to shale. SANDSTONE: as above; no shows.
2805 - 2810m	100 trace trace	SILTSTONE: light to dark grey, firm to hard, blocky to tabular cuttings containing finely divided carbonaceous material, micromicaceous, noncalcareous; grading to shale. SANDSTONE: light grey to off-white, firm to hard, very fine to medium grained, subangular to rounded quartz aggregates, with subordinate feldspar, coal and other rock fragments, poorly sorted; dolomitic and silica cemented; minor argillaceous matrix; tight; no shows. COAL: black, hard, fissile, blocky to tabular cuttings, vitreous lustre.
2810 - 2815m	100 trace trace	SILTSTONE: as above. SANDSTONE: as above; no shows. COAL: as above.
2815 - 2820m	80 20 trace	SILTSTONE: as above. SANDSTONE: as above; no shows. CARBONACEOUS SILTSTONE: black, hard, subconchoidal fracture with very fine grained pyritic lamina.
2820 - 2825m	90 10 trace	SILTSTONE: as above; slightly more shale. SANDSTONE: as above; no shows. CARBONACEOUS SILTSTONE: as above.

2825 - 2830m	70 30 trace	SILTSTONE: as above. SANDSTONE: as above; no shows. COAL: black, hard, vitreous, conchoidal fracture.
2830 - 2835m	60 40 trace	SILTSTONE: as above. SANDSTONE: as above; no shows. COAL: as above.
2835 - 2840m	70 30 trace	SANDSTONE: as above; no shows. SILTSTONE: as above. COAL: as above.
		C.B.U. PRIOR TO PULLING OUT OF HOLE FOR NEW BIT
2840 - 2845m	60 40 trace	SANDSTONE: as above; no shows. SILTSTONE: as above. COAL: as above.
		50% OF TOTAL SAMPLE CONSISTS OF CAVINGS
2845 - 2850m	60 30 10	SANDSTONE: light grey to off-white, firm to hard, very fine to medium grained with minor coarse grained, subangular to rounded quartz aggregates, feldspar, coal and other rock fragments, poorly sorted; dolomitic and silica cemented; minor argillaceous matrix; tight; no shows. SILTSTONE: light to dark grey, firm, tabular cuttings with finely divided carbonaceous matter, noncalcareous. COAL: black, hard, vitreous lustre, conchoidal fracture; exinite with yellow fluorescence and slow cut.
2850 - 2855m	70 30 trace	SANDSTONE: 2 types: Type (1) - 60% as above; no show. Type (2) - 40% clear to translucent, coarse to very coarse grained, subangular to subrounded, loose grains of quartz; good inferred porosity; no shows. SILTSTONE: as above. COAL: as above.
2855 - 2860m	50 50 trace	SANDSTONE: as above; no shows. SILTSTONE: as above. COAL: as above.
2860 - 2865m	70 30	SANDSTONE: as above; no shows; still same proportions of the 2 types of sandstone. SILTSTONE: as above.
2865 - 2870m	50 50	SANDSTONE: as above; no shows. SILTSTONE: as above.
2870 - 2875m	50 50	SANDSTONE: as above; coarse grained sandstone may be fragments of pebbles in the finer grained sandstone; tight; no shows. SILTSTONE: as above.
		C.B.U. PRIOR TO PULLING OUT OF HOLE TO LOG 28/03/86
2191L/1-36		

Appendix 2

Core No. 1

Well : KIPPER-1

Interval Cored : 1427.5 - 1436.0m

Cut : 8.5m

Recovered : 9.1m (100%)

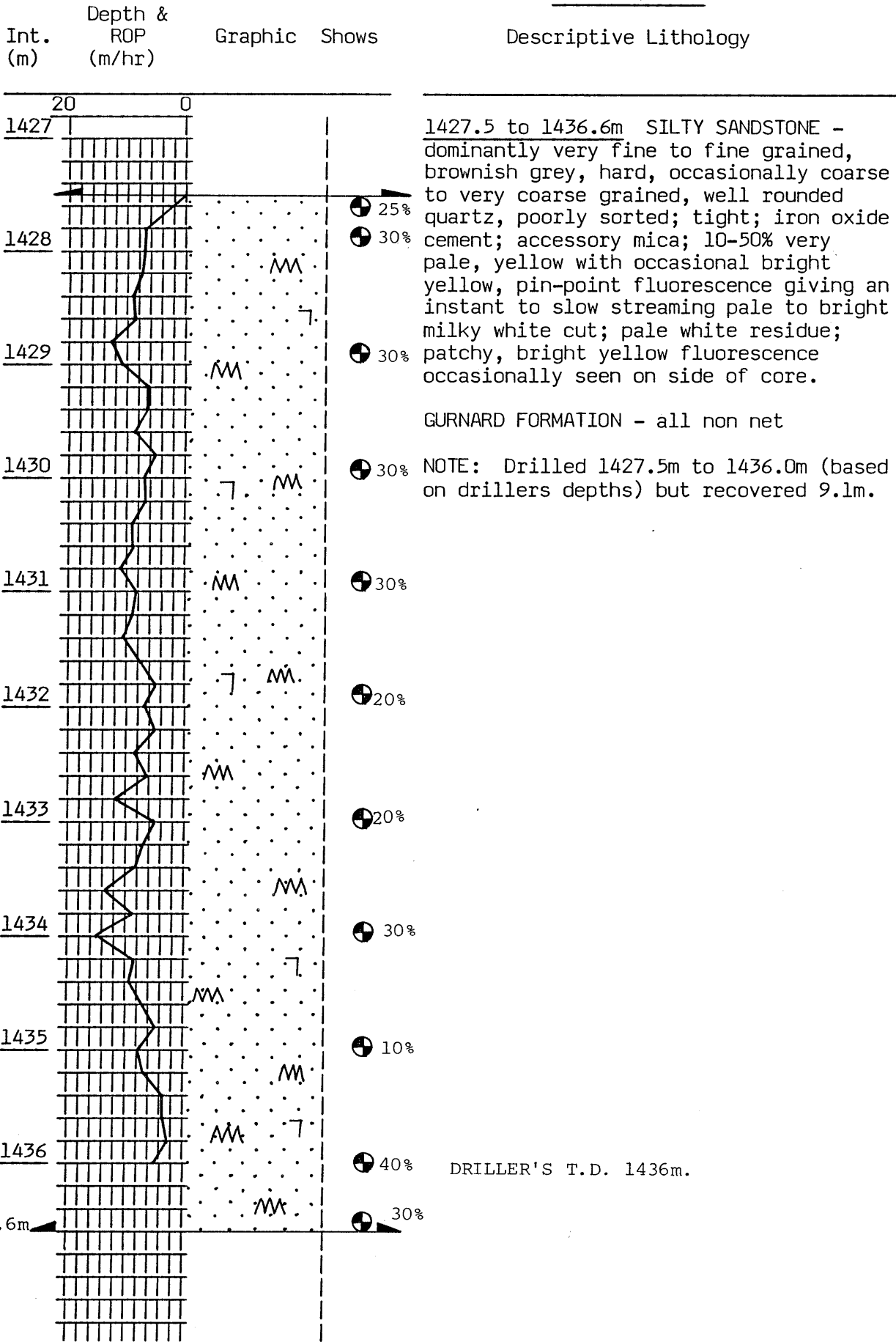
Bit Type : RC476

Bit Size : 9-7/8"

Described by : PAUL FELL

Date : 10/03/86

P.V.C. SLEEVE



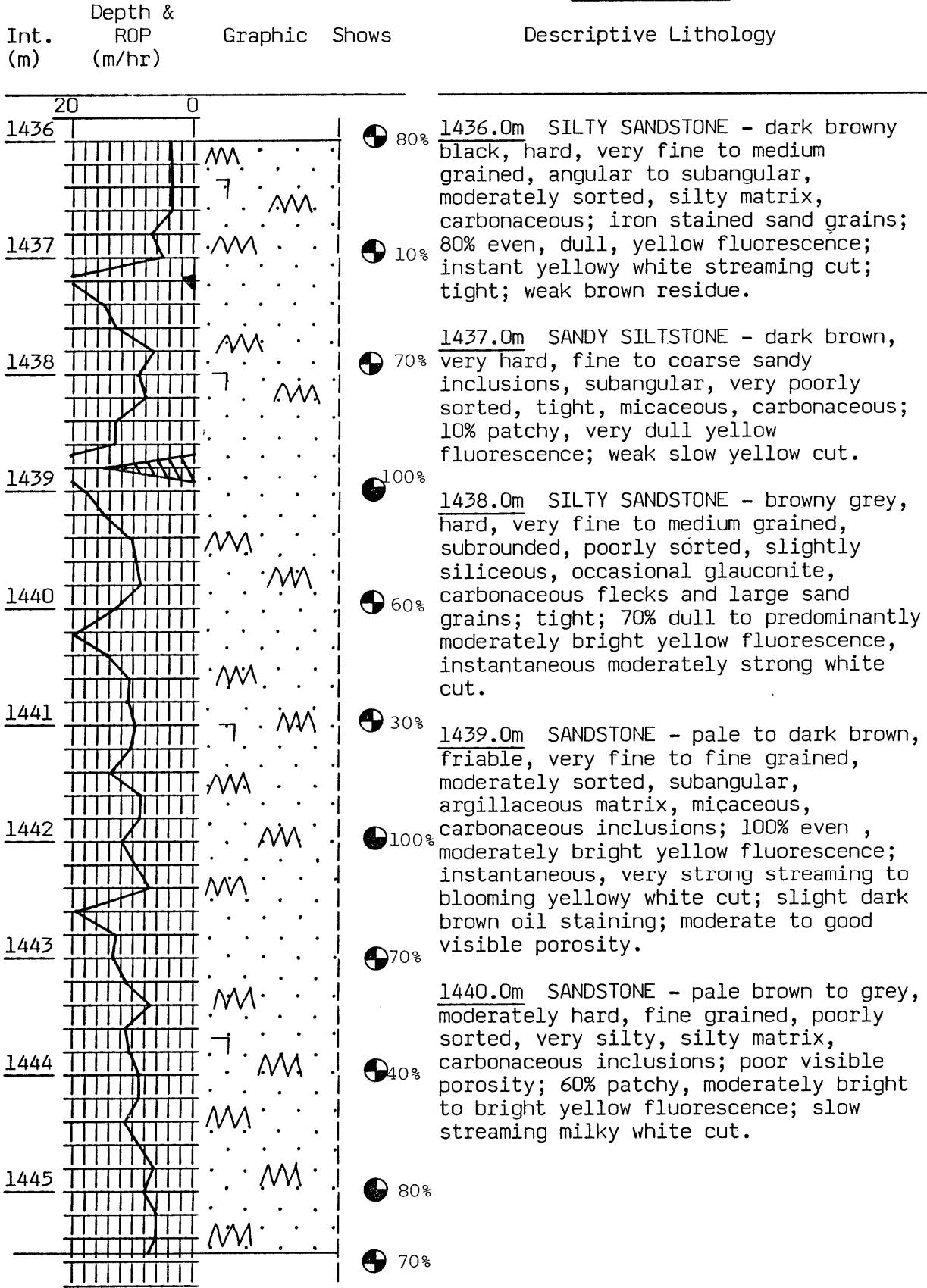
Core No. 2

Well : KIPPER-1

Interval Cored : 1436.0 - 1445.5m
 Cut : 9.5m
 Bit Type : RC 476
 Described by : S. WATTS

Recovered : 9.5m (100%)
 Bit Size : 9-7/8"
 Date : 10/03/86 - 11/03/86

P.V.C. SLEEVE



Core No. 2 cont'd

Well : KIPPER-1

Interval Cored : 1436.0 - 1445.5m

Cut : 9.5m

Bit Type : RC 476

Described by : S. WATTS

Recovered : 9.5m (100%)

Bit Size : 9-7/8"

Date : 10/03/86 - 11/03/86

P.V.C. SLEEVE

Descriptive Lithology

1445.5m SILTY SANDSTONE - as above; carbonaceous, argillaceous and siltstone inclusions, bioturbated, glauconitic; poor visible porosity; 70% even to patchy, dull to moderately bright, yellow fluorescence; slow weak streaming white cut.

N.B: - Majority of the core is interbedded very fine sand and siltstone, mainly tight, few thin fine sands with porosity.

- Lithology change at about 1438.0m probably represents the base of the Gurnard Formation.

Core No. 3

Well : KIPPER-1

Interval Cored : 1445.5 - 1455.3m

Cut : 9.8m

Bit Type : RC 476

Described by : PAUL FELL

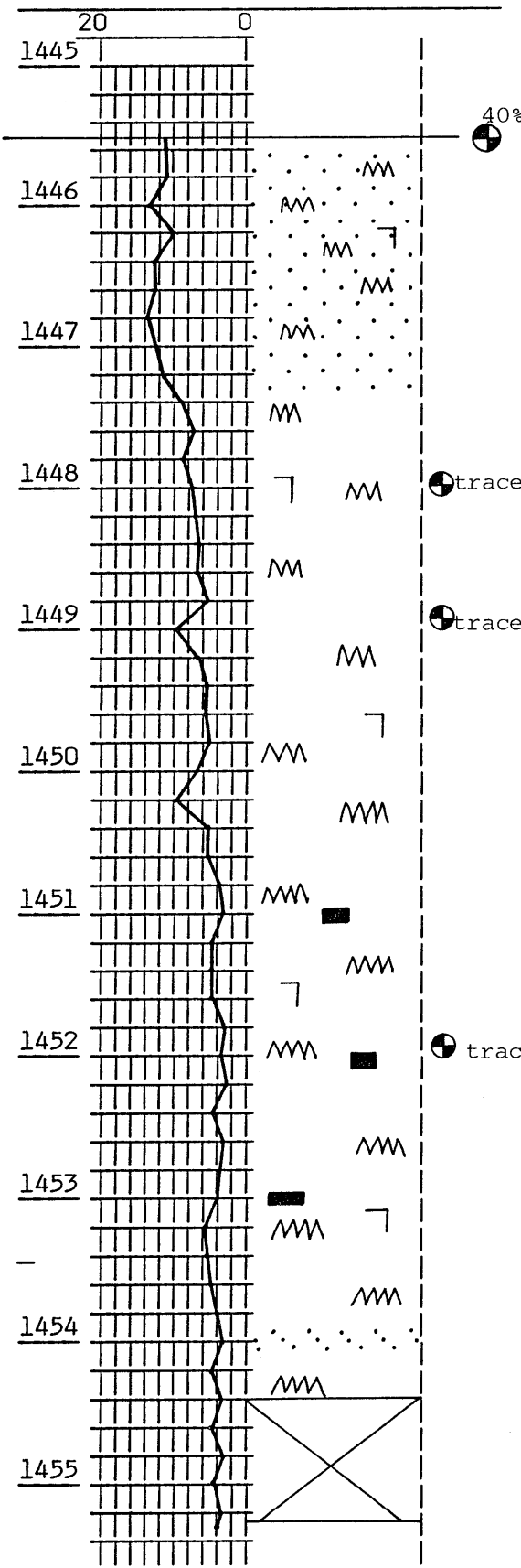
Recovered : 8.9m (91%)

Bit Size : 9-7/8"

Date : 11/03/86

P.V.C. SLEEVE

Int. (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
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1445.5 to 1447.0m SANDSTONE - medium grey, greyish brown, very fine to fine grained, moderately hard, angular to subangular quartz, moderately sorted; poor visible porosity; micaceous, minor carbonaceous matter, silica cement; 40% patchy, dull yellow fluorescence at 1445.5m giving a slow streaming milky white cut.

1447.0 - 1454.4m SILTSTONE with minor Sandstone - brownish grey, moderately hard, occasional iron oxide patches, micaceous, coal fragments; trace shows at 1448.0m, 1449.0m and 1452.0m; very dull yellow fluorescence giving a slow streaming faint white cut (crush).

1453.9m SANDSTONE - medium to light grey, very fine grained, silty, sucrosic texture, friable to moderately hard, moderately sorted, micaceous; moderate visual porosity; no shows.

Oil/Water contact between 1445.5m and 1446.0m.

No Recovery from 1454.4m to 1455.3m.

Core No. 4

Well : KIPPER-1

Interval Cored : 1813.2 - 1822.9m

Cut : 9.7m

Recovered : 7.4m (76%)

Bit Type : RC 476

Bit Size : 9-7/8"

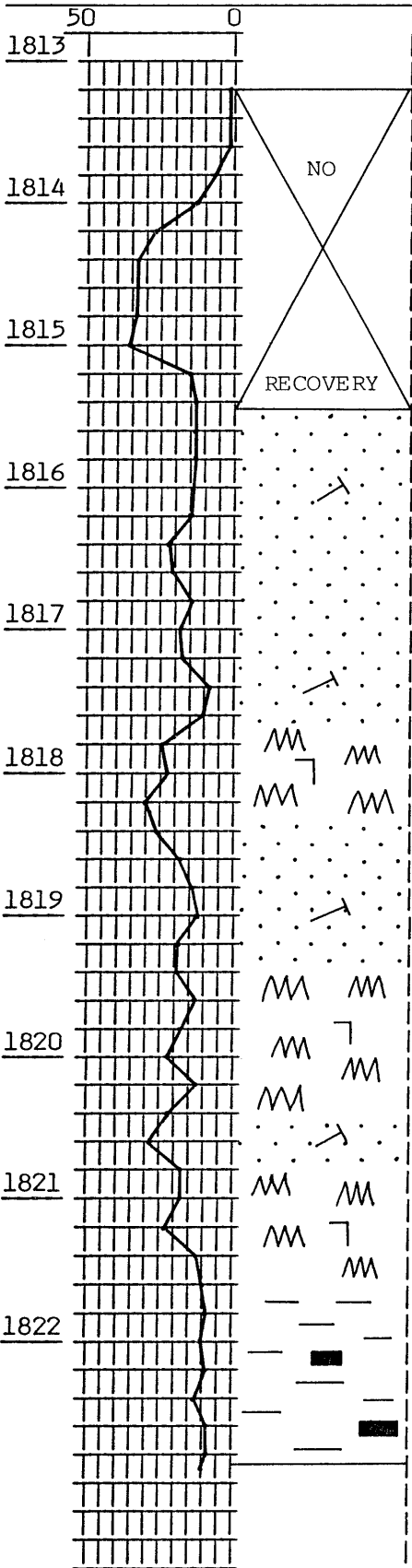
Described by : PAUL FELL

Date : 13/03/86

P.V.C. SLEEVE

Int. (m)	Depth & ROP (m/hr)	Graphic Shows
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Descriptive Lithology



1815.45m SANDSTONE - light grey, clear, translucent quartz, friable, coarse to very coarse grained, angular to subangular, poorly sorted, silty; good inferred porosity; trace heavy minerals and lithic fragments; 90% even, moderately bright, yellow-white fluorescence giving a slow streaming milky white cut; rare brown oil stain.

1816.0m SANDSTONE - light grey, clear, translucent, grey quartz, friable, medium to coarse grained, angular to subangular, very poorly sorted, silty; moderate to good inferred porosity; minor heavies and lithics; 80% fluorescence and cut as for 1815.45m.

1817.0m SANDSTONE - as for 1816.0m; 80% fluorescence and cut as for 1815.45m.

1817.5m 30% patchy, bright yellow fluorescence; oil/water contact between 1817.5m and 1818.0m.

1818.0m SILTSTONE - medium to dark grey, hard, fissile, siliceous, micaceous; no shows.

1819.0m SANDSTONE - light to medium grey, clear to translucent quartz, friable to moderately hard, medium to coarse grained, subangular to subrounded, moderately sorted, partly silica cemented, moderate inferred porosity, minor heavies and lithics; no shows.

1820.0m SILTSTONE - as for 1818.0m; no shows.

1820.75m SANDSTONE - medium grey, clear to translucent quartz, friable, fine to coarse grained, subangular to subrounded, poorly sorted; good inferred porosity; trace heavies and lithics; no shows.

1821.6m SILTSTONE - laminated light grey and dark grey, hard, subfissile; no shows.

1822.3m CARBONACEOUS SHALE - very dark grey, minor light grey laminations, hard.

Core No. 5 Well : KIPPER-1
 Interval Cored : 1832.2 - 1841.6m
 Cut : 9.4m Recovered : 8.6m (91%)
 Bit Type : RC 476 Bit Size : 9-7/8"
 Described by : STEVE WATTS Date : 13/03/86 - 14/03/86

P.V.C. SLEEVE

Int. (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
1832			1832.2m SANDSTONE - translucent to clear, friable, fine to coarse grained, subangular to subrounded, moderately sorted, white clayey cement, occasional pebbly lags, carbonaceous inclusions, erosional base with pebbly lag overlying coal laminae - fining up sequences; 100% even, bright, yellow fluorescence; instantaneous streaming to blooming white cut; weak and rare brown oil stain.
1833			1833.0m SANDSTONE - clear to translucent, friable, medium to coarse grained, angular to subangular, moderately well sorted, pebbles, clay matrix, poor siliceous cementation, carbonaceous inclusions; good visible porosity; 100% even, bright, yellow fluorescence; moderately fast streaming white cut; brown oil stain.
1834			1834.0m SANDSTONE - as above; except medium to very coarse grained; 100% even, bright, yellow fluorescence; slow to moderately fast streaming white cut; weak oil stain; good to very good visible porosity.
1835			1834.5m SANDSTONE - as above; except more silty and carbonaceous inclusions, pebbly; very good visible porosity; 100% even, bright, yellow fluorescence; fast streaming white cut; brown oil stain.
1836			1835.4m SILTSTONE - medium light grey, very hard, clayey and sandy in part; no shows; coaly laminations, plant remains including woody fragments.
1837			1836.4m SANDSTONE - light grey, translucent, friable, medium to very coarse grained, angular to subrounded, poorly sorted; good visible porosity; 100% even, bright, yellow fluorescence; moderately fast streaming white cut; weak brown oil stain.
1838			1837.4m SANDSTONE - as above; except fine to occasionally coarse grained, coaly inclusions; 100% even, bright, yellow fluorescence; fast streaming white cut; weak brown oil stain; good to very good visible porosity.
1839			
1840			
1841			

62

Core No. 5 cont'd

Well : KIPPER-1

Interval Cored : 1832.2 - 1841.6m

Cut : 9.4m

Recovered : 8.6m (91%)

Bit Type : RC 476

Bit Size : 9-7/8"

Described by : STEVE WATTS

Date : 13/03/86 - 14/03/86

P.V.C. SLEEVE

Descriptive Lithology

1838.4m SILTY SANDSTONE - dark grey, moderately hard to occasionally hard, very fine to fine grained, occasionally medium grained, angular to subrounded, poorly sorted, carbonaceous and silty matrix/cement, micaceous; 40% patchy, bright, yellow fluorescence; slow streaming to diffuse white cut; no staining; poor visible porosity.

1839.4m CARBONACEOUS SHALE - black to dark grey, very hard, fissile, micaceous, highly carbonaceous, coaly inclusions.

1840.5m CARBONACEOUS SHALE - black to dark grey as above; sandy bands, silty in part; up to 90% patchy to even, bright yellow fluorescence in sand at about 1840.4m; slow to moderately fast streaming white cut.

1840.8m SANDY SILTSTONE - medium to dark grey, hard, sandy, small scale cross laminations in very fine sandy interbeds, carbonaceous laminae; tight; up to 20% patchy, bright, yellow fluorescence; slow diffuse cut.

1840.8 - 1841.6m NO RECOVERY.

Core No. 6

Well : KIPPER-1

Interval Cored : 1841.6 - 1851.1m
 Cut : 9.5m
 Bit Type : RC 476
 Described by : PAUL FELL

Recovered : 9.5m (100%)
 Bit Size : 9-7/8"
 Date : 14/03/86

P.V.C. SLEEVE

Int. (m)	Depth & ROP (m/hr)	Graphic Shows	Descriptive Lithology
1841			1841.6m SANDSTONE - medium grey, clear, translucent, grey quartz, fine to medium grained, friable to moderately hard, subangular to subrounded, well sorted; good inferred porosity.
1842			1842.0m SANDSTONE - as above; except medium to coarse, angular to subangular.
1843			1843.0m SANDSTONE - as above; except angular to subangular, very poorly sorted; moderate to good inferred porosity; rare coal fragments and occasional plant matter.
1844			1844.0m SANDSTONE - as above; except medium grained to gravel, dominantly very coarse grained; very poorly sorted; moderate to good porosity; accessory coal fragments and lithics (indurated claystone).
1845			1845.0m PEBBLY SANDSTONE - light to medium grey, clear, translucent and milky quartz, friable to moderately hard, medium to pebbly sized grains, angular to subangular, very poorly sorted; moderate to good inferred porosity; pebbles consist of well rounded, black, indurated claystone and angular quartz in a sand matrix, accessory lithics of assorted size range present throughout, plant matter present.
1846			1846.0m SANDSTONE - light to medium grey, clear, translucent, milky quartz, friable to moderately hard, coarse grained, subangular to subrounded, well sorted; good inferred porosity; accessory well rounded lithics (claystone), minor plant matter.
1847			1847.0m SANDSTONE - as for 1841.6m; except fine grained; plant remains.
1848			1848.0m SANDSTONE - as for 1841.6m; except fine to gravel size grains, angular to subrounded, very poorly sorted, accessory lithics (claystone).
1849			
1850			

NO SHOWS

Core No. 6 cont'd

Well : KIPPER-1

Interval Cored : 1841.6 - 1851.1m

Cut : 9.5m

Bit Type : RC 476

Described by : PAUL FELL

Recovered : 9.5m (100%)

Bit Size : 9-7/8"

Date : 14/03/86

P.V.C. SLEEVE

Descriptive Lithology

1849.0m SILTSTONE - light grey, hard, subfissile, wood fragments and other plant matter.

1849.7m SANDSTONE - brownish grey, clear to translucent quartz, very fine to very coarse grained, angular to subangular, very poorly sorted, silty, wood fragments and plant matter.

1850.7m SILTSTONE - medium to dark grey, hard, carbonaceous, minor coarse to very coarse quartz within the siltstone matrix.

1851.1m SILTSTONE - as above; except no quartz grains.

Appendix 3

APPENDIX 3

KIPPER-#1

SIDEWALL CORE DESCRIPTIONS

<u>No.</u>	<u>Depth</u>	<u>Rec.</u> (mm)	<u>Rock</u> <u>Type</u>	<u>Description</u>
1	2862.0	30	SANDY SILTSTONE:	Dark grey with off-white bands of firm, very fine to silt grain size; subrounded to rounded; moderately sorted quartz sandstone with silica and trace dolomite cement and clay matrix; tight, no shows: slightly calcareous, finely divided carbonaceous material common; well bedded.
2	2845.0			MISFIRED
3.	2839.0	15	SANDY SILTSTONE	As above; moderately calcareous cement in the sandy beds; trace yellow-white fluorescence; no shows.
4	2824.0			LOST
5	2786.5			MISFIRED
6	2773.0	20	SILTSTONE	Brown to grey, firm to soft, argillaceous siltstone with very fine grained sand particles; massive, no apparent bedding; non calcareous, mildly water sensitive.
7	2756.5	20	LIMESTONE	Black, light brown and grey, mottled colour, hard, coarse to granular grain sized, very angular clasts and fragments of coal, siltstone, and carbonaceous sandstone in a very coarse grained carbonate cement; discontinuous to chaotic, angular bedding.
8	2730.0			MISFIRED
9	2709.0	20	SILTSTONE	Dark grey, firm, with finely divided carbonaceous matter, non calcareous massive, with minor beds of very fine grained sandstone; tight, no shows.
10	2697.0	28	SHALE	Brown to grey, subfissile fracture, soft, slightly carbonaceous, massive, non calcareous.
11	2686.0	28		MISFIRED
12	2661.0	20	CALCAREOUS SANDSTONE	Grey, soft to firm, moderately bedded, finely laminated and sandy in part, very calcareous; minor carbonaceous matter.
13	2657.0	23	CALCAREOUS SANDSTONE	Off white, friable, very fine to fine grained, subrounded to rounded, quartz grains in a calcareous and argillaceous matrix, moderately sorted, poor to non visible porosity; trace yellow mineral fluorescence; trace hydrocarbon odour, less than 5ppm HC gas.
14	2651.3			MISFIRED

15	2617.0	25	SILTSTONE	Dark grey and off-white bands of finely laminated-carbonaceous siltstone and very fine grained sandstone; tight, no shows.
16	2601.0	20	SILTSTONE	Grey, hard to very hard, massive, discontinuously layered siltstone with minor finely divided carbonaceous matter; non calcareous, micaceous.
17	2599.0			MISFIRED
18	2559.0	25	SHALE	Grey, firm, massive to finely bedded, slightly carbonaceous, non calcareous with thin (1mm) bands of coarser siltstone.
19	2538.0	25	SHALE	As above - no siltstone bands.
20	2533.0			MISFIRED
21	2500.0	28	SHALE	Dark grey, firm, massive, carbonaceous, non calcareous, slightly water sensitive.
22	2483.0			LOST
23	2480.0			MISFIRED
24	2451.0	20	SHALE	Grey firm, massive, non calcareous; slightly water sensitive.
25	2442.0	28	SILTSTONE	Grey to light grey, firm, massive to very finely bedded, minor finely divided carbonaceous matter; non calcareous.
26	2438.3			MISFIRED
27	2396.0	25	SILTSTONE	Dark grey and off white, finely banded, carbonaceous and slightly sandy; non calcareous.
28	2381.0			LOST
29	2378.0			MISFIRED
30	2342.5	30	SILTSTONE/ CARBONACEOUS SHALE	Light grey to black bands of firm to soft siltstone and carbonaceous shale; slightly calcareous, and water sensitive.
31	2320.0	20	SILTSTONE	Grey, firm, massive, non calcareous.
32	2296.5	20	SILTSTONE	Grey, soft to friable, finely bedded to massive, with very fine grained sand; non calcareous.
33	2280.0	30	VOLCANICLASTIC	Light grey-white firm to friable, very coarse to granular grain sized sub-angular to angular quartz in an extensive white clay and silica matrix; angular feldspar crystals of similar grain size also occur; non calcareous.

61

34	2276.5	36	SANDSTONE	White, firm to friable, very coarse to medium grained, sub-angular to rounded quartz in a white clay matrix with minor silica cement; non calcareous; 15% blue white patchy fluorescence, no cut, no crush cut, no residue; poor visible porosity.
35	2270.0	25	SANDSTONE	As above; with faint blue white fluorescence, no cut, no crush cut no residue; poor visible porosity; some quartz clasts in excess of 5mm - rounded.
36	2245.5	32	SANDSTONE	Grey, firm to friable, fine to coarse grained, angular to subrounded quartz, with 15% feldspar clasts and lesser amounts of lithic fragments; poorly sorted, with a white clay matrix; poor visible porosity no shows.
37	2234.0	20	SILTY SHALE	Grey, firm massive, silty in part; non calcareous.
38	2227.0	20	SANDSTONE	Grey to white, friable, very coarse to medium grained (some grains in excess of 5mm) angular to subrounded quartz, minor feldspar and rock fragments; poorly sorted with extensive clay matrix, non calcareous; trace, blue-white fluorescence, no cut; fair to poor porosity.
39	2221.5	20	CONGLOMERATE	White with clear, black and pink clasts; dominantly fine grained quartz and white clay matrix with large subrounded to angular clasts of quartz, coal, and pink volcanic clastics; poorly sorted, tight, with faint blue white fluorescence, no cut.
40	2209.5	25	SHALE	Light to olive grey, firm to soft, non calcareous, massive.
41	2196.5	20	CARBONACEOUS SILTSTONE	Black, soft to fine massive, extensively carbonaceous with a bed of white, friable, fine to medium grained subrounded quartz sandstone; moderately sorted with extensive white clay matrix, poor to fair porosity, trace blue white fluorescence, no cut.
42	2192.0	25	CARBONACEOUS SILTSTONE	As above, very thin (less than 1mm) bands of very fine grained sandstone; no shows.
43	2187.5	20	SILTSTONE	Dark grey firm to friable carbonaceous, massive, non calcareous.
44	2181.0	22	SANDSTONE	Light grey, firm to friable, fine to very coarse grained angular to subrounded quartz, with minor feldspar and rock fragments in a clay matrix with some silica cement; fair porosity; faint blue white fluorescence, no cut; poorly sorted.

45	2173.0	15	SANDSTONE	As above, porosity fair to moderate.
46	2158.0	16	SANDSTONE	As above, moderate porosity, dominantly medium grained and better sorted.
47	2155.0	30	SILTSTONE	Grey, firm, massive with finely divided carbonaceous matter, non calcareous.
48	2148.0	24	SANDSTONE	White, friable, fine to very coarse grained, angular to subrounded, quartz in a white matrix; poorly sorted, non calcareous, poor porosity; trace blue white fluorescence; no cut.
49	2143.0	28	SHALE	Dark to olive grey, massive, firm, non calcareous shale.
50	2128.0	15	CONGLOMERATE	Grey, firm to friable, very coarse to pebble sized quartz and subordinate rock fragments in a clay matrix; poorly sorted with minor, faint blue white fluorescence, no cut.
51	2122.0	30	SANDSTONE	White to light grey, firm, fine to medium grained subangular to rounded quartz with minor feldspar and rock fragments in a clay matrix and minor silica cement; poor porosity, faint blue white fluorescence, no cut.
52	2098.0	35	SANDSTONE	White to light grey, firm to friable, fine to medium with minor coarse grained, subangular to rounded quartz and minor feldspar in a clay matrix; poor to fair porosity, fair sorting, trace blue white fluorescence, no cut.
53	2088.0	15	SILTSTONE	Grey, firm to soft, massive, micaceous, non calcareous.
54	2052.0	30	SILTY SANDSTONE	Grey, soft to friable, very fine to fine grained and silty rounded quartz and clay in very fine laminated beds; micromicaceous with minor carbonaceous matter; non calcareous; tight, no shows.
55	2028.0	25	GRANULAR SANDSTONE	Grey, friable, medium to granular grain size angular to subrounded quartz and minor rock fragments with some clay matrix; good porosity, trace blue white fluorescence, no cut.
56	2025.0	34	SANDSTONE	Light grey, friable to firm, very fine to fine grained, subangular to rounded, quartz and subordinate feldspar in a clay matrix; non calcareous, fair to poor porosity; no shows.
57	2008.0	20	SANDSTONE	Grey, friable, fine to coarse grained, subangular to rounded quartz moderately sorted, minor clay matrix and carbonate cement; fair to good porosity, trace blue white fluorescence, no cut.

58	1998.0	20	SANDSTONE	Grey, friable, fine to granular grain sized, angular to rounded, quartz and minor rock fragments with minor clay matrix; poorly sorted, fair to good porosity, non calcareous; no shows.
59	1993.0	36	SANDSTONE	Grey, friable, medium to very loose grained subangular to rounded quartz with very little clay matrix, no cement, moderately sorted; good porosity, faint blue-white fluorescence, strong hydrocarbon odour; no cut.
60	1990.0	30	SANDSTONE	As above.
61	2845.0	29	SANDSTONE	White, firm to friable, fine to coarse grained angular to subrounded quartz in a clay matrix with trace of carbonate cement; faint blue-white fluorescence, no cut.
62	2824.0	26	SILTSTONE	Grey, firm, finely laminated to massive, water sensitive, non calcareous.
63	2805.0	40	SHALE	Very dark grey, soft to firm, massive, very carbonaceous and water sensitive, non calcareous.
64	2794.0	25	SHALE	As above.
65	2730.0	25	SILTSTONE	Dark grey, soft to firm, massive to finely laminated, carbonaceous and mildly water sensitive, non calcareous.
66	2686.0	24	SHALE	Dark grey firm, massive, carbonaceous and water sensitive; non calcareous.
67	2640.0	20	SILTSTONE	Dark grey, soft to friable, massive, carbonaceous and water sensitive; non calcareous.
68	2635.5	25	SANDSTONE	White to light grey, firm to friable, very fine to medium grained subrounded to rounded quartz sand with clay matrix, tight; thin laminae of carbonaceous material common; faint, blue-white fluorescence; no cut.
69	2581.5	26	SILTSTONE	Dark grey, firm, very carbonaceous massive, non calcareous.
70	2519.5	23	SILTSTONE	As above.
71	2493.0	21	SILTSTONE	As above.
72	2483.0	20	SILTSTONE	As above, finely laminated to massive beds.
73	2460.0	25	SILTSTONE	As above, very dark, carbonaceous with very fine bands of sand; non calcareous.
74	2420.0	18	CARBONACEOUS SHALE	Dark grey brown, friable, massive, non calcareous.

75	2408.0	16	SILTSTONE	Dark grey, firm, carbonaceous, with fine sand layers; non calcareous.
76	2381.0	12	SANDSTONE	Light grey to dark grey, banded, firm to soft very fine to fine grained, subrounded to rounded quartz in a clay matrix, poor porosity, no show; carbonaceous laminae common.
77	2357.0	22	SANDSTONE	As above, less dark grey carbonaceous bands, porosity poor to fair; no shows.
78	2307.0	20	SANDY SILTSTONE	Grey very fine grained sand in silty, non calcareous matrix; poor porosity, moderately bedded.
79	2095.0	30	SANDSTONE	White, firm, very fine to fine grained well rounded quartz in a white clay matrix, large clasts of pyrite crystals common.
80	1973.0			LOST
81	1910.0	32	VOLCANICLASTIC	Red and green, firm to very hard, quartz, mica and amorphous ironoxides; chloritic in part.
82	1888.5			MISFIRE
83	1883.0			LOST
84	1872.0	35	SANDSTONE	White to light grey, friable, fine to medium grained subangular to subrounded quartz in a clay matrix, non calcareous, poor porosity.
85	1814.0	25		MISFIRE
86	1805.0	25	SILTY SANDSTONE	Light to dark grey, firm to friable, very fine grained well rounded quartz in a silty and carbonaceous matrix; well banded & bedded; non calcareous, poor to no porosity; no show.
87	1797.0	30	SANDSTONE	Light grey, friable, very fine to fine grained, subrounded to well rounded quartz with very little clay matrix or cement; fair porosity, 10-15% even yellow-white fluorescence - very slow diffuse cut.
88	1787.0			MISFIRE
89	1760.0	38	SILTSTONE	Grey, firm, laminated to massive, slightly carbonaceous; non calcareous.
90	1743.0	40	SANDSTONE	Grey, very friable, medium to very coarse grained, subangular to subrounded moderately sorted quartz partially cemented with pyrite otherwise, good porosity; no shows.

91	1733.5	22	CARBONACEOUS SILTSTONE	Black, soft to firm, very carbonaceous silt to almost coal, with very coarse grained subangular quartz within the beds; trace yellow white fluorescence with slow diffuse cut.
92	1727.0	30	SILTSTONE	Grey, firm massive, micaceous with isolated coarse to very coarse grained subangular quartz grains; no shows.
93	1688.5	40	SANDSTONE	Light grey, friable, medium to coarse grained, subangular to subrounded; quartz; little or no matrix or cement, good visible porosity; no shows.
94	1682.0			EMPTY
95	1674.0	34	SANDSTONE	Grey, firm to friable, medium to coarse grained, subangular to subrounded quartz, minor clay matrix and cement; good porosity, no shows.
96	1646.0	43	SHALE	Light grey massive, micaceous non calcareous; slightly water sensitive.
97	1627.0	36	SANDSTONE	Light grey, medium grained subrounded to rounded quartz with little or no matrix or cement; good porosity; no shows.
98	1603.0	40	CARBONACEOUS SHALE	Black to brown-black, firm to friable massive carbonaceous shale grading to coal; earthy lustre.
99	1579.6	43	SANDSTONE	Olive grey, friable, fine to medium grained subrounded, quartz with minor clay matrix with fair to good porosity; no shows.
100	1562.5	25	SILTSTONE	Grey, soft to firm, massive non calcareous.
101	1544.0	30	SANDSTONE	Grey-brown, friable, loose coarse to very coarse grained rounded to well rounded quartz with minor clay matrix; trace carbonate; excellent porosity; no shows.
102	1524.0	26	SANDSTONE	Grey, friable well bedded, very fine to fine grained rounded quartz, moderate clay matrix, fair to poor porosity; no shows.
103	1506.0	36	SILTSTONE	Light brown, soft to firm, massive, non calcareous siltstone.
104	1493.0	22	SANDSTONE	Green to grey, friable, massive fine to medium grained subangular to rounded quartz with lesser amounts of glauconite, pyrite and clay; slightly calcareous; poor porosity; no shows.
105	1486.5	20	SILTY SANDSTONE	Light grey, friable banded very fine to fine grained, rounded quartz with minor carbonaceous matter and glauconite; silica cemented, fair to poor porosity; no shows.

106	1478.0	30	COAL	Black, friable, earthy to sub-vitreous lustre finely banded.
107	1464.0	30	SILTY SANDSTONE	Grey, friable, bedded, very fine to fine grained, rounded, quartz with thin bands of carbonaceous matter and common silty matrix; non calcareous, no shows.
108	1457.5	36	SANDSTONE	Tan, friable to loose, very fine grained rounded quartz; good to very good porosity, no shows.
109	1421.0	30	GLAUCONITIC SANDSTONE	Dark green to grey, firm, medium to coarse grained, subrounded quartz, glauconite and clay; tight; no shows.
110	1418.0	38	GLAUCONITIC SILTSTONE	Dark green, yellow, and red silt, glauconite and medium to coarse grained subrounded quartz grains; tight.
111	1412.5	43	CLAYSTONE	Grey, firm, banded and very calcareous claystone.

Appendix 4

RFT PRESSURE DATA

Page 1 of 8

WELL: KIPPER-1
DATE: 17/3/86GEOLOGIST/ENGINEER: P. FELL/E. C.Ie

LONG NOSE PROBE / STANDARD PACKER

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
1/1 PT	2113.0	2092.0	3853.99/3842 26.57	10.7	10:57	1142.68	3287.78/3273 22.67	9.2	75.4	10:59	3856.47/3844	10.7	Good test Moderate perm.
1/2 PT	2055.5	2034.5	3753.67/3741 25.88	10.7	11:13	2359.34	3271.51/3258 22.56	9.4	74.2	11:22	3755.6/3742	10.7	Good test Moderate perm.
1/3 PT	2124.0	2103.0	3876.76/3863 26.73	10.7	11:33	3137.68	3289.51/3275 22.68	9.2	74.2	11:39	3880.12/3866	10.7	Good test Good perm.
1/4 PT	2117.2	2096.2	3868.08/3854 26.67	10.7	11:54	2839.46	3289.9/3273 22.68	9.2	73.8	11:59	3870.24/3857 26.68	10.7	Good test Moderate perm. 12.2 Md
1/5 PT	2028.5	2007.5	3713.9 /3697 25.61	10.7	12:24	3003.04	3263.71/3249 22.50	9.5	73.8	12:30	3713.90/3699	10.7	Good test Good perm.
1/6 PT	2006.5	1985.5	3673.93/3660 25.33	10.7	12:40				73.8	12:43			Seal Failure.
1/7 PT	2006.4	1985.4	3675.08/3661 25.34	10.7	12:47	968.91	3252.12/3234 22.42	9.5	73.8	12:54	3678.19/3660	10.7	Long build-up/aborted Moderate perm.
1/8 PT	2006.4	1985.4	3677.05/3661 25.35	10.7	12:57	2122.48	3260.32/3243 22.48	9.5	73.8	13:04	3678.91/3661	10.7	Good test Moderate perm.
1/9 PT	1992.7	1971.7	3650.24/3636 25.17	10.7	13:11	2766.15	3253.57/3238 22.43	9.7	73.7	13:16	3651.63/3636	10.7	Good test Moderate perm.

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RFT PRESSURE DATA

Page 2 of 8

WELL: KIPPER-1
DATE: 17/3/86GEOLOGIST/ENGINEER: P. Fell / E. C.Ie

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
1/10 PT	1890.0	1869.0	3465.48/3452 23.89	10.7	13:31	2664.87	2724.72/2709 18.79	8.5	72.2	13:37	3468.7/3452 10.7	Good test Good perm.	
1/11 PT	1855.8	1834.8	3405.19/3391 23.48	10.7	13:47	2647.76	2675.30/2662 18.45	8.5	72.9	13:49	3405.73/3390	Good test Excellent perm.	
1/12 PT	1842.5	1821.5	3380.68/3366 23.31	10.7	13:55	2603.57	2656.11/2643 18.31	8.5	72.8	13:58	3381.45/3365	Good test Excellent perm.	
1/13 PT	1832.0	1811.0	3361.06/3347 23.17	10.7	14:06	2637.35	2645.30/2632 18.24	8.5	72.6	14:14	3363.10/3347	Good test Excellent perm.	
1/14 PT	1823.5	1802.5	3346.37/3332 23.07	10.7	14:20				72.2	14:21		Tight / Aborted.	
1/15 PT	1823.4	1802.4	3346.27/3332 23.07	10.7	14:26	2410.83	2633.00/2619 18.15	8.5	72.2	14:34	3347.7/3332	Good Test Good perm.	
1/16 PT	1816.0	1795.0	3332.91/3318 22.98	10.7	14:39		2617.48/2603 18.05	8.5	72.2	14:43	3333.14/3318	Good test Moderate perm.	
1/17 PT	1812.0	1791.0	3325.25/3311 22.93	10.7	14:49	2376.80	2612.07/2599 18.01	8.5	72.2	14:52	3326.1/3311	Good test Good perm.	
1/18 PT	1814.0	1793.0	3329.17/3315 22.95	10.7	14:57	2576.16	2615.20/2601 18.03	8.5	72.2	15:04	3330.3/3315	Good test Moderate perm.	

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RFT PRESSURE DATA

Page 3 of 8WELL: KIPPER-1
DATE: 17/3/86GEOLOGIST/ENGINEER: P. Fell / E. C. Ie

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
1/19 PT	1801.0	1780.0	3304.81/3291 22.79	10.7	15:11	2585.21	2599.56/2587 17.92	8.5	72.1	15:13	3305.38/3292 22.79	10.7	Good test Good perm. k = 287.5 md
1/20 PT	1782.0	1761.0	3270.48/3257 22.55	10.7	15:21	2521.29	2564.84/2552 17.68	8.5	71.7	15:27	3271.79/3257	10.7	Good test Very good perm. k = 85.4 md
1/21 PT	1745.5	1724.5	3205.18/3191 22.10	10.7	15:37	2465.32	2513.15/2499 17.33	8.5	71.6	15:40	3205.77/3191	10.7	Good test Good perm. k = 86.2 md
1/22 PT	1736.6	1715.6	3189.21/3176 21.99	10.7	15:47	398.0	2501.71/2487 17.25	8.5	71.6	15:50	3189.55/3174	10.7	Good test Good perm.
1/23 PT	1719.0	1698.0	3156.17/3143 21.76	10.7	15:58	2124.59	2474.38/2461 17.06	8.5	71.6	16:00	3156.87/3142	10.7	Good test Good perm.
1/24 PT	1474.9	1453.9	2712.05/2699 18.7	10.7	16:18	1975.65	2117.58/2104 14.60	8.5	68.7	16:21	2712.81/2699	10.7	Good test Good perm. k = 29.1 md
1/25 PT	1459.3	1438.3	2684.89/2671 18.51	10.7	16:27	2061.30	2097.02/2084 14.46	8.5	68.7	16:30	2685.51/2671	10.7	Good test Good perm.
1/26 PT	1446.5	1425.5	2661.83/2649 18.35	10.7	16:36				68.6	16:37	2663.4/2647		Very tight / Aborted.

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RFT PRESSURE DATA

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WELL: KIPPER-1
DATE: 17/3/86GEOLOGIST/ENGINEER: P. Fell / E. C.Ie

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
1/27 PT	1440.0	1419.0	2650.08/2637 18.27	10.7	16:44	40.15			68.6		2650.6/2636 10.7	Very tight / Aborted.	
1/28 PT	1437.7	1416.7	2646.15/2633 18.24	10.7	16:50	34.63	2072.27/2058 14.29	8.5	68.4	16:54	2646.51/2633 10.7	Good test Fair perm.	
1/29 PT	1428.8	1407.8	2629.24/2616 18.13	10.7	17:00	23.06	2086.78/2073 14.39	8.6	68.1	17:08	2630.2/2616 10.7	Test invalid Tight (abnormally high F.P.)	
1/30 PT	1433.3	1412.3	2637.37/2625 18.18	10.7	17:14				68.1			Tight / Aborted.	
1/31	1439.9	1418.9	2649.16/2637 18.27		17:23	27.54			68.1	17:25	2650.42/2637	Tight / Aborted.	

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RFT PRESSURE DATA

Page 5 of 8

WELL: KIPPER-1
DATE: 17/3/86GEOLOGIST/ENGINEER: P. Fell / E. C. Ie

MARTINEAU PROBE

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psig (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
2/32 SPT	2028.4	2007.4	- /3693 25.46	10.7	20:46	3047	- /3249 22.40	9.5	82.5	21:04	- /3696	Good test Good perm.	
3/33 SPT	1823.2	1802.2	- /3319 22.88	10.7	12:35	2467	- /2618 18.05	8.5	78.5	01:43	- /3324	Fair to poor perm. Valid. Sample taken.	
4/34 SPT	1801.4	1780.4	- /3275 22.58	10.7	04:35	2511.0	- /2587.0 17.84	8.5	77.9	04:58	- /3276	Good test Good perm.	
5/35 SPT	1736.5	1715.5	- /3157 21.77	10.7	08:22				76.8	08:23		Loss of seal / Abort.	
5/36 SPT	1736.5	1715.5	- /3158 21.77	10.7	08:25	1789	- /2487.0 17.15	8.5	76.8	09:55	- /3159	Valid test Good perm. Sample taken.	
6/37 SPT	1437.7	1416.7	- /2612 18.01	10.6	11:55	1989	- /2058.0 14.19	8.5	68.2	12:25	- /2613	Valid test Good perm. Sample taken.	

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RFT PRESSURE DATA

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WELL: KIPPER-1
DATE: 29/3/86GEOLOGIST/ENGINEER: R. Newport/J. Brown

LONG NOSE PROBE / STANDARD PACKER

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
7/38 PT	2845.5	2824.5	5099.7/5097 35.16	10.5	01:48	3990.0	4740.4/4727 32.68	9.8	96.4	01:59	5102.4/5095	10.5	k=7md Good Pretest.
7/39 PT	2834.5	2813.5	5076.1/5072 35.00	10.5	02:23	46.0			93.0	02:25			Tight.
7/40 PT	2834.5	2813.5			02:26	28.0			93.0	02:28	5078.0/5072 35.01	10.5	Tight.
7/41 PT	2833.0	2812.0	5073.8/5069 34.98	10.5	02:35	17.0			91.8	02:37	- /5069	10.5	Tight.
7/42 PT	2834.0	2813.0	5073.6/5071 34.98	10.5	02:48	25.0			91.8	02:52	5081.0/5070	10.5	Tight.
7/43 PT	2475.0	2454.0	4436.2/4435 30.59	10.5	03:24	340.0	3661.3/3657 25.24	8.7	84.1	03:39	4442.0/4438	10.5	Valid test. k=1.4md Possibly supercharged.
7/44 PT	2457.0	2436.0	4407.5/4407 30.39	10.5	03:51	2658.0	3604.2/3601 24.85	8.6	84.9	04:00	4411.6/4408	10.5	Valid test. k=5md
7/45 PT	2448.0	2427.0	4329.9/4392 30.29	10.5	04:08	3349.0	3582.2/3581 24.70	8.6	84.8	04:18	4395.6/4394	10.5	Valid test. k=20md
7/46 PT	2390.0	2369.0	4289.8/4289 29.58	10.6	04:35	1384.0	3524.3/3520 24.30	8.7	84.8	04:45	4291.8/4290	10.6	Valid test. k=2md

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RFT PRESSURE DATA

Page 7 of 8WELL: KIPPER-1
DATE: 29/3/86GEOLOGIST/ENGINEER: R. Newport/J. Brown

LONG NOSE PROBE / STANDARD PACKER

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP / RFT gauge psia / psig	ppg			HP / RFT gauge psia / psig	ppg			MPa/g	ppg	
7/47 PT	2276.5	2255.5	4091.0/4090 28.21	10.6	05:10	2289.0	3334.2/3331 22.99	8.6	84.2	05:18	4092.8/4090 10.6	Valid test. k=4md	
7/48 PT	2269.5	2248.5	4079.9/4080 28.13	10.6	05:30	3054.0	3330.9/3328 22.97	8.6	84.4	05:34	4480.7/4080 10.6	Valid test. k=15md	
7/49 PT	2249.0	2228.0	4043.9/4045 27.88	10.5	05:47	12.0	3327.4/3322 22.94	8.7	84.2	05:57	4046.7/4045 10.6	k=1md Possibly supercharged.	
7/50 PT	2231.5	2210.5	4014.3/4015 27.68	10.5	06:07	3149.0	3320.2/3317 22.89	8.7	84.2	06:16	4016.2/4015 10.6	Valid test. k=33md	
7/51 PT	2213.5	2192.5	3983.4/3983 27.46	10.5	06:27	3091.0	3314.8/3312 22.85	8.8	84.1	06:36	3985.5/3986 10.6	Valid test. k=25md	
7/52 PT	2196.0	2175.0	3954.1/3954 27.26	10.5	06:46	3107.0	3309.0/3308 22.81	8.8	84.1	06:49	3954.1/3954 10.6	Valid test. k=12md	
7/53 PT	2157.0	2136.0	3883.3/3884 26.77	10.5	07:02	3106.0	3298.4/3296 22.74	9.0	83.5	07:11	3885.7/3885 10.6	Valid test. k=31md	
7/54 PT	2124.0	2103.0	3827.0/3828 26.39	10.5	07:24	3165.0	3288.8/3289 22.68	9.1	83.4	07:28	3827.7/3829 10.6	Valid test. k=42md	
7/55 PT	2006.4	1985.4	3615.2/3617 24.93	10.5	07:48	2861.0	3257.3/3258 22.46	9.6	82.2	07:58	3616.7/3619	Valid test. k=24md	
7/56 PT	2338.0	2317.0	4212.3/4214 29.04	10.5	08:32				85.8	08:34		Seal failure.	

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RFT PRESSURE DATA

Page 8 of 8

WELL: KIPPER-1
DATE: 29/3/86GEOLOGIST/ENGINEER: R. Newport/J. Brown

LONG NOSE PROBE / STANDARD PACKER : MARTINEAU PROBE/STANDARD PACKER FOR SAMPLES

RFT No. Run/Seat	Depth		Initial Hydrostatic		Time Set	Minimum Flowing Pressure psia (Pretest)	Formation Pressure		Temp °C	Time Retract	Final Hydrostatic		Comments
	m MDKB	m TVDSS KB=21	HP	/ RFT gauge			HP	/ RFT gauge			MPa/g	ppg	
RFT TYPE			MPa/g	ppg			MPa/g	ppg			MPa/g	ppg	
7/57 PT	2338.0	2317.0	4212.7/4214 29.04	10.5	08:35				85.8	08:36			Tight.
7/58 PT	2336.0	2315.0	4208.9/4211 29.02	10.5	08:45	259	3626.4/3626 25.00	9.1	85.8	08:58	4211.8/4212		Tight. 10.5 Pressure-not stabilized Supercharged Fm
8/59 SPT	2845.5m	2824.5m	- /5105 35.20	10.5	12:21	3977	- /4731 32.62	9.8	97.1	14:13	- /5099		Segregated sample, 10.5 build up not complete.
9/60 SPT	2276.5	2255.5	- /4086 28.17	10.5	17:42	196			91.0	17:46	- /4088		Tight. 10.5
9/61 SPT	2276.4	2255.4	- /4085 28.17	10.5	17:50	2997	- /3323 22.91	8.6	91.0	19:57	- /4085		Tight - Poor Sample. 10.6
10/62 SPT	2269.5	2248.5	- /4071 28.07	10.5	23:04	3126	- /3319 22.88	8.7	92.3	01:12	- /4068		Tight - Fair Sample. 10.6
11/63 SPT	2221.5	2200.5	- /3980 27.44	10.5	03:52	2861	- /3304 22.78	8.8	91.8	04:55	- /3980		Sample taken. Good per 10.6
12/64 SPT	2157.0	2136.0	- /3863 26.63	10.5	98:05	3170	- /3286 22.66	9.0	90.7	08:26	- /3861		Sample taken. 10.6

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : C. Ie / S. Watts

DATE : 17/03/86

RUN NO. : 2

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	2/32		2/32	
DEPTH	2028.4	m	2028.4	m
A. RECORDING TIMES				
Tool Set	20.46	hrs	21.01	hrs
Chamber Open	20.49	hrs	21.02	hrs
Chamber Full	20.55	hrs	21.02	hrs
Fill Time	6	mins	1	mins
Finish Build Up	20.59	hrs	21.02	hrs
Build Up Time	4	mins	1	mins
Tool Retract	-	hrs	21.04	hrs
Total Time	14	mins	3	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	3693	psig		psig
Initial Form'n Press.	3249	psig	3249	psig
Initial Flowing Press.	2890	psig	3082	psig
Final Flowing Press.	2908	psig	3249	psig
Final Formation Press.	3249	psig	3249	psig
Final Hydrostatic		psig	3696	psig
C. TEMPERATURE				
Max. Tool Depth	2080	m		m
Max. Rec. Temp	82.5	deg C		deg C
Length of Circ.	4.25	hrs		hrs
Time/Date Circ. Stopped	0100 hrs	17/03/86	hrs	/ /
Time since Circ.	19 hrs	46 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	2175	psig		psig
Amt Gas	278.8	cu ft		cu ft
Amt Oil	-	lit		lit
Amt Mud	0.65	lit		lit
Amt Condensate	0.65	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	161793	ppm		ppm
C2	10068	ppm		ppm
C3	2995	ppm		ppm
C4	962	ppm		ppm
C5	829	ppm		ppm
C6+	104	ppm		ppm
CO2/H2S	7 / Nil	%/ppm		%/ppm
Oil Properties	54.1 deg API@	16 deg C	deg API@	deg C
Colour	Light Brown			
Fluorescence	Pale Blue			
GOR	-			
Pour Point	below room temp.			
Water Properties				
Resistivity	ohm-m @	deg C	ohm-m @	deg C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium		DPM		DPM
pH				
Est. Water Type	Mud			
F. MUD FILTRATE PROPERTIES				
Resistivity	.205 ohm-m @	19 deg C	ohm-m @	deg C
NaCl Equivalent	35000	ppm		ppm
Cl-titrated	17000	ppm		ppm
pH	10.5			
Tritium (in Mud)	N/A	DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight	10.5	ppg		ppg
Calc. Hydrostatic	3616	psi		psi
Serial No. (Preserved)	-		1116 RFSAD	
Choke Size/Probe Type	0.030 / Martineau		0.030 / Martineau	
REMARKS	Very good permeability, condensate is slightly darker than typical		Preserved	

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : S. Watts / C. Ie

DATE : 18/03/86

RUN NO. : 3

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	3/33		3/33	
DEPTH	1823.2	m	1823.2	m
A. RECORDING TIMES				
Tool Set	00.35	hrs	01:25	hrs
Chamber Open	00.38	hrs	01:26	hrs
Chamber Full	-	hrs	01:31	hrs
Fill Time	-	mins	5	mins
Finish Build Up	-	hrs	01:41	hrs
Build Up Time	-	mins	10	mins
Tool Retract	-	hrs	01:43	hrs
Total Time	50	mins	18	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	3319	psig	-	psig
Initial Form'n Press.	2618	psig	-	psig
Initial Flowing Press.	90	psig	724	psig
Final Flowing Press.	2504	psig	731	psig
Final Formation Press.	-	psig	2618	psig
Final Hydrostatic	-	psig	3324	psig
C. TEMPERATURE				
Max. Tool Depth	1880	m		m
Max. Rec. Temp	78.5	deg C		deg C
Length of Circ.	4.25	hrs		hrs
Time/Date Circ. Stopped	0100 hrs	17/03/86	hrs	/ /
Time since Circ.	23 hrs	35 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	1400	psig		psig
Amt Gas	67.3	cu ft		cu ft
Amt Oil	34.5	lit		lit
Amt Water (Total)	0.5	lit		lit
Amt Others	-	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	317368	ppm		ppm
C2	57231	ppm		ppm
C3	27648	ppm		ppm
C4	7700	ppm		ppm
C5	2404	ppm		ppm
C6+	768	ppm		ppm
CO2/H2S	2 / 0	%/ppm		%/ppm
Oil Properties	43 deg API@	16 deg C	deg API@	deg C
Colour	Dark Brown			
Fluorescence	Cream			
GOR	336.5 cub. ft/bbl			
Pour Point	Below Room Temperature			
Water Properties				
Resistivity	ohm-m @	deg C	ohm-m @	deg C
NaCl Equivalent	Insufficient	ppm		ppm
Cl-titrated		ppm		ppm
Tritium		DPM		DPM
pH				
Est. Water Type	Filtrate			
F. MUD FILTRATE PROPERTIES				
Resistivity	.205 ohm-m @	19 deg C	ohm-m @	deg C
NaCl Equivalent	35000	ppm		ppm
Cl-titrated	17000	ppm		ppm
pH	10.5			
Tritium (in Mud)	N/A	DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight	10.5	ppg	10.5	ppg
Calc. Hydrostatic	3265.9	psi	3265.9	psi
Serial No. (Preserved)	-		RFS AE 1289	
Choke Size/Probe Type	.030/Martineau		.030/Martineau	
REMARKS	Poor perm, did not wait for build up. Insufficient filtrate to analyse.		Chamber preserved	

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : S. Watts / C. Ie

DATE : 18/03/86

RUN NO. : 4

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	4/34		4/34	
DEPTH	1801.4	m	1801.4	m
A. RECORDING TIMES				
Tool Set	04:35	hrs	04:52	hrs
Chamber Open	04:39	hrs	04:52	hrs
Chamber Full	04:47	hrs	04:54	hrs
Fill Time	8	mins	2	mins
Finish Build Up	04:50	hrs	04:55	hrs
Build Up Time	3	mins	1	mins
Tool Retract	-	hrs	04:58	hrs
Total Time	17	mins	6	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	3275	psig	-	psig
Initial Form'n Press.	2587	psig	-	psig
Initial Flowing Press.	2051	psig	2450	psig
Final Flowing Press.	2587	psig	2444	psig
Final Formation Press.	-	psig	2587	psig
Final Hydrostatic	-	psig	3276	psig
C. TEMPERATURE				
Max. Tool Depth	1835	m		m
Max. Rec. Temp	77.9	deg C		deg C
Length of Circ.	4.25	hrs		hrs
Time/Date Circ. Stopped	0100 hrs	17/03/86	hrs	/ /
Time since Circ.	27 hrs	35 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	1225	psig		psig
Amt Gas	139.7	cu ft		cu ft
Amt Oil	28.0	lit		lit
Amt Water & Mud	1.75	lit		lit
Amt Others	-	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	339763	ppm		ppm
C2	63590	ppm		ppm
C3	37325	ppm		ppm
C4	10588	ppm		ppm
C5	3150	ppm		ppm
C6+	990	ppm		ppm
CO2/H2S	1 / 0	%/ppm		%/ppm
Oil Properties	53 deg API@	16 deg C	deg API@	deg C
Colour	Dark Greeny Brown			
Fluorescence	Cream			
GOR	793.3 cub/ft bbl			
Pour Point	Well below room temp.			
Water Properties				
Resistivity	.308 ohm-m @	20 deg C	ohm-m @	deg C
NaCl Equivalent	22000	ppm		ppm
Cl-titrated	17000	ppm		ppm
Tritium	2535	DPM		DPM
pH	7.6			
Est. Water Type	Filtrate/Mud			
F. MUD FILTRATE PROPERTIES				
Resistivity	.205 ohm-m @	19 deg C	ohm-m @	deg C
NaCl Equivalent	35000	ppm		ppm
Cl-titrated	17000	ppm		ppm
pH	10.5			
Tritium (in Mud)	3444	DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight	10.5	ppg	10.5	ppg
Calc. Hydrostatic	3234.4	psi	3234.4	psi
Serial No. (Preserved)	-		RFS AD 1129	
Choke Size/Probe Type	.030/Martineau		.030/Martineau	
REMARKS	Chamber Preserved			

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : P. Fell

DATE : 18/03/86

RUN NO. : 5

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	5/36		5/36	
DEPTH	1736.5	m	1736.5	m
A. RECORDING TIMES				
Tool Set	0822	hrs	0851	hrs
Chamber Open	0828	hrs	0851	hrs
Chamber Full	0848	hrs	0954	hrs
Fill Time	20	mins	3	mins
Finish Build Up	0850	hrs	0954	hrs
Build Up Time	2	mins	-	mins
Tool Retract	-	hrs	0955	hrs
Total Time	29	mins	4	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	3158	psig		psig
Initial Form'n Press.	2487	psig		psig
Initial Flowing Press.	83	psig	449	psig
Final Flowing Press.	2485	psig	2485	psig
Final Formation Press.		psig	2487	psig
Final Hydrostatic		psig	3159	psig
C. TEMPERATURE				
Max. Tool Depth	1745	m		m
Max. Rec. Temp	76.8	deg C		deg C
Length of Circ.	4.25	hrs		hrs
Time/Date Circ. Stopped	0100 hrs	17/03/86	hrs	/ /
Time since Circ.	31 hrs	22 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	600	psig		psig
Amt Gas	37.0	cu ft		cu ft
Amt Oil	40.0	lit		lit
Amt Water (Total)	-	lit		lit
Amt Others (mud)	less than 0.1	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	355942	ppm		ppm
C2	47163	ppm		ppm
C3	18432	ppm		ppm
C4	7220	ppm		ppm
C5	3730	ppm		ppm
C6+	1472	ppm		ppm
CO2/H2S	2 / Nil	%/ppm		%/ppm
Oil Properties	34.5 deg API@	16 deg C	deg API@	deg C
Colour	Dark brown, green tinge			
Fluorescence	Cream			
GOR	147.1 cub. ft/bbl			
Pour Point	less than room temp.			
Water Properties				
Resistivity	ohm-m @	deg C	ohm-m @	deg C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium		DPM		DPM
pH				
Est. Water Type				
F. MUD FILTRATE PROPERTIES				
Resistivity	ohm-m @	deg C	ohm-m @	deg C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
pH				
Tritium (in Mud)		DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight	10.5	ppg	10.5	ppg
Calc. Hydrostatic	3117.9	psi	3117.9	psi
Serial No. (Preserved)	RFS AD 1157			
Choke Size/Probe Type	.030/ Martineau		.030/Martineau	
REMARKS	Chamber built up to formation pressure		Chamber built up to formation pressure Chamber preserved	

RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : P. FELL

DATE : 18/03/86

RUN NO. : 6

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.5 lit.)	
SEAT NO.	6/37		6/37	
DEPTH	1437.7	m	1437.7	m
A. RECORDING TIMES				
Tool Set	1155	hrs	-	hrs
Chamber Open	1157	hrs	1219	hrs
Chamber Full	1213	hrs	1223	hrs
Fill Time	16	mins	4	mins
Finish Build Up	1218	hrs	1224	hrs
Build Up Time	5	mins	-	mins
Tool Retract	-	hrs	1225	hrs
Total Time	24	mins	6	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	2612	psig	-	psig
Initial Form'n Press.	2058	psig	-	psig
Initial Flowing Press.	119	psig		psig
Final Flowing Press.	2052	psig	2056	psig
Final Formation Press.		psig	2058	psig
Final Hydrostatic	2613	psig	2613	psig
C. TEMPERATURE				
Max. Tool Depth	1470	m		m
Max. Rec. Temp	68.2	deg C		deg C
Length of Circ.	4.25	hrs		hrs
Time/Date Circ. Stopped	0100 hrs	17/03/86	hrs	/ /
Time since Circ.	34 hrs	55 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	650	psig		psig
Amt Gas	24.3	cu ft		cu ft
Amt Oil	18.0	lit		lit
Amt Water (Total)	23.75	lit		lit
Amt Others	-	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	444928	ppm		ppm
C2	16560	ppm		ppm
C3	5184	ppm		ppm
C4	6242	ppm		ppm
C5	2486	ppm		ppm
C6+	600	ppm		ppm
CO2/H2S	Nil / Nil	%/ppm		%/ppm
Oil Properties	47 deg API@	16 deg C	deg API@	deg C
Colour	dark brown, green tinge			
Fluorescence	cream			
GOR	215 cu ft/bbl			
Pour Point	less than room temp.			
Water Properties				
Resistivity	.260 ohm-m @	20 deg C	ohm-m @	deg C
NaCl Equivalent	35000	ppm		ppm
Cl-titrated	19000	ppm		ppm
Tritium	av 2922	DPM		DPM
pH	10.7			
Est. Water Type	Mud Filtrate			
F. MUD FILTRATE PROPERTIES				
Resistivity	.205 ohm-m @	19 deg C	ohm-m @	deg C
NaCl Equivalent	23000	ppm		ppm
Cl-titrated	17000	ppm		ppm
pH	10.5			
Tritium (in Mud)	3280	DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight	10.5	ppg	10.5	ppg
Calc. Hydrostatic	2581.4	psi	2581.4	psi
Serial No. (Preserved)	-		RFS AD 1284	
Choke Size/Probe Type	.030/Martineau		.030/Martineau	
REMARKS	Chamber full		Preserved Chamber full	

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : R. Newport

DATE : 29/03/86

RUN NO. : 8

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	8/59		8/59	
DEPTH	2845.5	m	2845.5	m
A. RECORDING TIMES				
Tool Set	12:20:59	hrs		hrs
Chamber Open	12:24:00	hrs	13:51	hrs
Chamber Full	12:42:00	hrs	13:53	hrs
Fill Time	18:00	mins	2	mins
Finish Build Up	-	hrs	14:10	hrs
Build Up Time	-	mins	-	mins
Tool Retract	13:50	hrs	14:11 / 14:13	hrs
Total Time	-	mins		mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	5105	psig		psig
Initial Form'n Press.	4731	psig	4703*	psig
Initial Flowing Press.	84	psig	1707	psig
Final Flowing Press.	3020	psig	1559	psig
Final Formation Press.	-	psig	4703*	psig
Final Hydrostatic	-	psig	5099	psig
C. TEMPERATURE				
Max. Tool Depth	2855	m		m
Max. Rec. Temp	97.1	deg C		deg C
Length of Circ.	2.0	hrs		hrs
Time/Date Circ. Stopped	11:45 hrs	28/03/86	hrs	/ /
Time since Circ.	24 hrs	36 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	1780	psig		psig
Amt Gas	225.2	cu ft		cu ft
Amt Oil	Scum	lit		lit
Amt Water (Total)	4.5	lit		lit
Amt Others		lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	418611	ppm		ppm
C2	45926	ppm		ppm
C3	10816	ppm		ppm
C4	4008	ppm		ppm
C5	1248	ppm		ppm
C6+	474	ppm		ppm
CO2/H2S	15 /-	%/ppm		%/ppm
Oil Properties Refract *	36.5 deg API@	15.5 deg C	deg API@	deg C
Colour	light brown			
Fluorescence	yellow white			
GOR				
Pour Point				
Water Properties				
Resistivity	0.215 ohm-m @	20 deg C	ohm-m @	deg C
NaCl Equivalent	32000	ppm		ppm
Cl-titrated	21000	ppm		ppm
Tritium	3008	DPM		DPM
pH	6.8			
Est. Water Type	Filtrate			
F. MUD FILTRATE PROPERTIES				
Resistivity	0.184 ohm-m @	24.5 deg C	ohm-m @	deg C
NaCl Equivalent	32000	ppm		ppm
Cl-titrated	22000	ppm		ppm
pH	10.5			
Tritium (in Mud)	3169	DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psi		psi
Serial No. (Preserved)				
Choke Size/Probe Type	0.040"		0.030"	
REMARKS	Stopped at 13:50. Filled at 40psi/min. Dropped to 30psi/min @ 3000psi Terminated test early to avoid sticking.		* Not stabilized Build up 2psi/minute Pulled tool off to avoid sticking. Chamber preserved.	

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : J. Brown

DATE : 29/03/86

RUN NO. : 9

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	9/61		9/61	
DEPTH	2276.4	m	2276.4	m
A. RECORDING TIMES				
Tool Set	17:50	hrs	-	hrs
Chamber Open	17:54	hrs	19:19	hrs
Chamber Full	-	hrs	19:28	hrs
Fill Time	Not Full	mins	Not Full	mins
Finish Build Up	-	hrs	-	hrs
Build Up Time	-	mins	-	mins
Tool Retract	19:17	hrs	19:55/19:57	hrs
Total Time		mins	2:07	mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	4085	psig	-	psig
Initial Form'n Press.	3323	psig	3309	psig
Initial Flowing Press.	11	psig	650	psig
Final Flowing Press.	700-800	psig	279	psig
Final Formation Press.	-	psig	1532*	psig
Final Hydrostatic	-	psig	4085	psig
C. TEMPERATURE				
Max. Tool Depth	2277.0	m		m
Max. Rec. Temp	91	deg C		deg C
Length of Circ.	2.0	hrs		hrs
Time/Date Circ. Stopped	11:45 hrs	28/03/86	hrs	/ /
Time since Circ.	30 hrs	5 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	500	psig	1050	psig
Amt Gas	15.7	cu ft	12.2	cu ft
Amt Oil	-	lit	-	lit
Amt Water (Total)	32.0	lit	5.3	lit
Amt Others(prob. cond.)	Trace/Scum	lit	Trace/Scum	lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	388710	ppm	403660	ppm
C2	59904	ppm	57907	ppm
C3	18171	ppm	17305	ppm
C4	6485	ppm	5345	ppm
C5	2159	ppm	1928	ppm
C6+	767	ppm	590	ppm
CO2/H2S	7.5/0	%/ppm	7.0/0	%/ppm
Oil Properties				
	-	deg API@	-	deg C
Colour	clear		clear	
Fluorescence	pale white		pale white	
GOR				
Pour Point				
Water Properties				
Resistivity	0.222 ohm-m @ 20 deg C		0.223 ohm-m @ 20 deg C	
NaCl Equivalent	31500	ppm	31500	ppm
Cl-titrated	22000	ppm	21500	ppm
Tritium	3213	DPM	2939	DPM
pH	7.6		7.1	
Est. Water Type	Filtrate		Filtrate	
F. MUD FILTRATE PROPERTIES				
Resistivity	0.184 ohm-m @ 24.5 deg C		0.184 ohm-m @ 24.5 deg C	
NaCl Equivalent	32000	ppm	32000	ppm
Cl-titrated	22000	ppm	22000	ppm
pH	10.5		10.5	
Tritium (in Mud)	3475	DPM	3475	DPM
G. GENERAL CALIBRATION				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psi		psi
Serial No. (Preserved)				
Choke Size/Probe Type	0.040"		0.030"	
REMARKS	Probably condensate recovered.		*Building at approx 40psi/ Tool pulled to avoid sticking.	

RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : R. Newport

DATE : 29.03.86

RUN NO. : 10

	CHAMBER 1 (45.4 lit.)	CHAMBER 2 (10.4 lit.)
SEAT NO.	10/62	10/62
DEPTH	2269.5 m	2269.5 m
A. RECORDING TIMES		
Tool Set	23:04 hrs	hrs
Chamber Open	23:07 hrs	0:26 hrs
Chamber Full	23.11 hrs	0:31 hrs
Fill Time	4 mins	5 mins
Finish Build Up	00:21* hrs	01:08 hrs
Build Up Time	mins	- mins
Tool Retract	00:22 hrs	01:10/01:12 hrs
Total Time	1hr 18 mins	2hrs 8 mins
B. SAMPLE PRESSURE		
Initial Hydrostatic	4071 psig	psig
Initial Form'n Press.	3319 psig	3315 psig
Initial Flowing Press.	9 psig	704 psig
Final Flowing Press.	3003* psig	3224* psig
Final Formation Press.	psig	3314 psig
Final Hydrostatic	psig	4068 psig
C. TEMPERATURE		
Max. Tool Depth	2269.5 m	m
Max. Rec. Temp	92.3 deg C	deg C
Length of Circ.	2.0 hrs	hrs
Time/Date Circ. Stopped	11:45 hrs 28/03/86	hrs / /
Time since Circ.	35 hrs 19 mins	hrs
D. SAMPLE RECOVERY		
Surface Pressure	1625 psig	psig
Amt Gas	64.0 cu ft	cu ft
Amt Oil	- lit	lit
Amt Water (Total)	34.5 lit	lit
Amt Others(prob. cond.)	Scum lit	lit
E. SAMPLE PROPERTIES		
Gas Composition		
C1	269107 ppm	ppm
C2	35942 ppm	ppm
C3	16872 ppm	ppm
C4	3340 ppm	ppm
C5	1620 ppm	ppm
C6+	501 ppm	ppm
CO2/H2S	12 /- %/ppm	%/ppm
Oil Properties Refract*	41.5 deg API@ 15.6 deg C	deg API@ deg C
Colour	clear light brown	
Fluorescence	translucent white	
GOR		
Pour Point		
Water Properties		
Resistivity	0.184 ohm-m @ 24.5 deg C	ohm-m @ deg C
NaCl Equivalent	30200 ppm	ppm
Cl-titrated	21500 ppm	ppm
Tritium	3061 DPM	DPM
pH	7.1	
Est. Water Type	Filtrate	
F. MUD FILTRATE PROPERTIES		
Resistivity	0.217 ohm-m @ 20 deg C	ohm-m @ deg C
NaCl Equivalent	32000 ppm	ppm
Cl-titrated	22000 ppm	ppm
pH	10.5	
Tritium (in Mud)	3475 DPM	DPM
G. GENERAL CALIBRATION		
Mud Weight	ppg	ppg
Calc. Hydrostatic	psi	psi
Serial No. (Preserved)		
Choke Size/Probe Type		
REMARKS	Terminated early filling at 10psi/m Probably condensate	Terminated early filling at less than 10psi/m Chamber preserved.

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : J. Brown

DATE : 30/03/86

RUN NO. : 11

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	11/63		11/63	
DEPTH	2221.5	m	2221.5	m
A. RECORDING TIMES				
Tool Set	03:52	hrs	-	hrs
Chamber Open	03:56	hrs	04:44	hrs
Chamber Full	04:09	hrs	04:46	hrs
Fill Time	00:13	mins	00:02	mins
Finish Build Up	04:42	hrs	04:50	hrs
Build Up Time	00:33	mins	00:04	mins
Tool Retract	04:42	hrs	04:52/04:55	hrs
Total Time		mins		mins
B. SAMPLE PRESSURE				
Initial Hydrostatic	3980	psig	-	psig
Initial Form'n Press.	3304	psig	3301	psig
Initial Flowing Press.	146	psig	1228	psig
Final Flowing Press.	1479	psig	2156	psig
Final Formation Press.	3601	psig	3300	psig
Final Hydrostatic	-	psig	3979	psig
C. TEMPERATURE				
Max. Tool Depth	2221.5	m	2221.5	m
Max. Rec. Temp	91.8	deg C	91.8	deg C
Length of Circ.	2.0	hrs		hrs
Time/Date Circ. Stopped	11:45 hrs	28/03/86	hrs	/ /
Time since Circ.	40 hrs	7 mins		hrs
D. SAMPLE RECOVERY				
Surface Pressure	2000	psig		psig
Amt Gas	274.4	cu ft		cu ft
Amt Oil	-	lit		lit
Amt Water (Total)	-	lit		lit
Amt Condensate	0.09	lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	358809	ppm		ppm
C2	95846	ppm		ppm
C3	16926	ppm		ppm
C4	6931	ppm		ppm
C5	1869	ppm		ppm
C6+	676	ppm		ppm
CO2/H2S	13 / 0	%/ppm		%/ppm
Oil Properties	46.6 deg API@ 15.6 deg C		deg API@ deg C	
Colour	translucent - light brown			
Fluorescence	pale white			
GOR				
Pour Point				
Water Properties				
Resistivity	ohm-m @	deg C	ohm-m @	deg C
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
Tritium		DPM		DPM
pH				
Est. Water Type				
F. MUD FILTRATE PROPERTIES				
Resistivity	0.184 ohm-m @ 24.5 deg C		ohm-m @ deg C	
NaCl Equivalent	32000	ppm		ppm
Cl-titrated	22000	ppm		ppm
pH	10.5			
Tritium (in Mud)		DPM		DPM
G. GENERAL CALIBRATION				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psi		psi
Serial No. (Preserved)				
Choke Size/Probe Type				
REMARKS	Chamber Preserved			

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RFT SAMPLE TEST REPORT

Well : KIPPER-1

OBSERVER : J. Brown

DATE : 30/03/86

RUN NO. : 12

	CHAMBER 1 (45.4 lit.)	CHAMBER 2 (3.8 lit.)
SEAT NO.	12/64	12/64
DEPTH	2157.0 m	2157.0 m
A. RECORDING TIMES		
Tool Set	08:05 hrs	- hrs
Chamber Open	08:09 hrs	08:22 hrs
Chamber Full	08:18 hrs	08:23 hrs
Fill Time	00:09 mins	00:01 mins
Finish Build Up	08:21 hrs	08:24 hrs
Build Up Time	00:03 mins	00:01 mins
Tool Retract	08:21 hrs	08:25/08:26 hrs
Total Time	00:16 mins	00:04 mins
B. SAMPLE PRESSURE		
Initial Hydrostatic	3863 psig	- psig
Initial Form'n Press.	3286 psig	3283 psig
Initial Flowing Press.	1154 psig	3193 psig
Final Flowing Press.	3128 psig	3194 psig
Final Formation Press.	3281 psig	3282 psig
Final Hydrostatic	- psig	3861 psig
C. TEMPERATURE		
Max. Tool Depth	2157.0 m	2157.0 m
Max. Rec. Temp	90.7 deg C	90.7 deg C
Length of Circ.	2.0 hrs	hrs
Time/Date Circ. Stopped	11:45 hrs 28/03/86	hrs / /
Time since Circ.	44 hrs 20 mins	hrs
D. SAMPLE RECOVERY		
Surface Pressure	2025 psig	psig
Amt Gas	283.6 cu ft	cu ft
Amt Oil	lit	lit
Amt Water (Total)	1.25 lit	lit
Amt Condensate	0.5 lit	lit
E. SAMPLE PROPERTIES		
Gas Composition		
C1	379740 ppm	ppm
C2	59904 ppm	ppm
C3	20766 ppm	ppm
C4	7896 ppm	ppm
C5	3084 ppm	ppm
C6+	1092 ppm	ppm
CO2/H2S	10 / 0 %/ppm	%/ppm
Oil Properties	48.7 deg API@ 15.6 deg C	deg API@ deg C
Colour	Translucent to v. lt brown	
Fluorescence	pale white	
GOR		
Pour Point		
Water Properties		
Resistivity	0.241 ohm-m @ 20 deg C	ohm-m @ deg C
NaCl Equivalent	30000 ppm	ppm
Cl-titrated	22000 ppm	ppm
Tritium	2363 DPM	DPM
pH	7.6	
Est. Water Type	Filtrate	
F. MUD FILTRATE PROPERTIES		
Resistivity	0.184 ohm-m @ 24.5 deg C	ohm-m @ deg C
NaCl Equivalent	32000 ppm	ppm
Cl-titrated	22000 ppm	ppm
pH	10.5	
Tritium (in Mud)	3475 DPM	DPM
G. GENERAL CALIBRATION		
Mud Weight	10.5 ppg	ppg
Calc. Hydrostatic	psi	psi
Serial No. (Preserved)		
Choke Size/Probe Type		
REMARKS	Chamber Preserved	

Appendix 5

KIPPER-1 PRODUCTION TEST RESULTS SUMMARY

TEST DATA:

1. Interval : 2005-2013 mMDKB. (TCP, 6 SPF, 60 degrees phasing)
2. Average Porosity within perforated interval : 20.9%
3. Estimated formation permeability : 484 md
4. Estimated cumulative production : 11.41 million SCF GAS
235.9 STB condensate
7.0 BBLs formation water
5. Average stabilised gas rate : 24.9 MSCF/D
6. Choke size : 64/64 inch fixed choke
7. Average FWHP : 1205 psig
8. Average FWHT : 116° F
9. Average separator pressure : 565 psig
10. Average separator temperature : 91°F
11. Length of flow during major flow period : 11.57 hours
12. Gravity of gas : 0.74 (AIR = 1.0)
13. Gravity of condensate : 54.6° API @ 60°F
14. Condensate to gas ratio : 21.4 STB/million SCF
15. Average watercut : 2.9%
16. Chlorides of formation water : 800 PPM (titration)
17. Hydrogen sulphide : nil
18. Carbon dioxide : 14.5%
19. Initial pressure @ 1980.3 mMDKB : 3246.4 psia (H.P.)
20. Average flowing pressure : 2995 psia (H.P.) above DHSIT flow area
3199.8 psia (Amerada) below DHSIT flow area
21. Skin above DHSIT/below DHSIT : 45/2.5
22. Maximum BHT : 206°F
23. Average shut-in WHP : 2690 psig
24. Separator samples taken

<u>20 LITRES SEPARATOR GAS</u>	<u>1000CC SEPARATOR CONDENSATE</u>	<u>SENT TO</u>
1	1	Analysis, CORELAB, ADELAIDE
1	1	Analysis, FLOPETROL, ADELAIDE
1	1	Spare, FISHER CONTROL, SALE

25. Atmospheric samples taken:
6 x 25 litres jerry cans stock tank condensate
13 x 1 gallon plastic bottle formation water.

TABLE 2

KIPPER-1 PRODUCTION TEST SEQUENCE OF EVENTS SUMMARY

<u>TIME</u>	<u>DATE</u>	<u>PERIOD (HOURS)</u>	<u>COMMENTS</u>
0639	6 April, 1986	-	Perforate 2005-2013 mMDKB with Schlumberger TCP gun 6 SPF, 60 degrees phasing. Note well was perforated with approximately 840 psi underbalance.
0645-0815	6 April, 1986	1.50	Initial flow and well clean-up period.
0815-1430	6 April, 1986	6.25	Initial shut-in period and rig up to run downhole shut-in tool (DHSIT) and HP/AMERADA pressure gauges.
1430-1512	6 April, 1986	0.70	Major flow.
1512-1556	6 April, 1986	0.73	Well S.I. to re-seat DHSIT in receptacle.
1556-2138	6 April, 1986	5.70	Continue major flow. Flow through separator @ 1630 hours.
2138-0025	6-7 April, 1986	2.78	Well S.I. and attempted to re-seat DHSIT. Lost HP signal @ 2230 hours. Attempted to POH DHSIT. Believed wireline entangled below stuffing box.
0025-0535	7 April, 1986	5.17	Continue major flow. Flow through separator @ 0055 hours. Took separator gas and condensate samples from 0400-0530 hours.
0535-0800	7 April, 1986	2.42	Well S.I. for final build-up prior to killing and plug and abandoning the well.

COMPARISON OF MEASURED BOTTOMHOLE PRESSURES
BETWEEN H.P. GAUGE AND AMERADA GAUGE

	Pressures (psig)		
	<u>H.P.</u> <u>@ 1980.3mKB</u>	<u>AMERADA¹</u> <u>@ 1983.6mKB</u>	<u>CORRECTED²</u> <u>AMERADA</u> <u>@ 1983.6mKB</u>
Initial Pressure	3231.7	3265.7	3231.7
First FBHP during Major Flow	3124.8	3213.3	3179.3
First S.I. at Wellhead	3220.4	3264.2	3230.2
Second FBHP during Major Flow	2980.3	3219.1	3185.1
Second S.I. at Wellhead	3231.3	3262.6	3228.6
Third FBHP during Major Flow	N.A. ³	3214.8	3180.8
Third (final) S.I. at Wellhead	N.A. ³	3262.6	3228.6

Notes:

1. Amerada pressure data uncorrected for error due to zero base line calibration error on scratch chart (i.e. stylus did not return to zero base line when the Amerada gauge was at surface).
2. Corrected Amerada pressure based on -34 psi correction for zero base line calibration error to adjust Amerada initial reservoir pressure to H.P. initial reservoir pressure.
3. No H.P. data available after 2230 hours April 6, 1986 when the H.P. failed.

(U244F:32)

APPENDIX 1: D-FORMS DATA FROM PRODUCTION TEST NO. 1

COMPLETION DATA

Well KIPPER-1 Test 1 Date 4 APRIL 1986

Company Supervisor TOM REES/DAVE EDLEN

Test Engineer D.L. SMITH/K.J. FAGG/S.T. KOH

1. Interval 2005-2013m KB (KB = 21.0m)

2. Well loading fluid DIESEL (47 BBL) WATER (1.6 BBL)

3. Approximate Differential (pf-pw) 840 (psi)

4. Type of perforating gun T.C.P.

5. Perforation density 6 (spf) 60 degrees phasing

6. Mud weight 10.4 (ppg)

7. Cl⁻ of filtrate 20,000 (ppm)

8. Cl⁻ of mud filtrate at time of drilling 17,500 (ppm)

9. Casing: 10. Liner: 11. Tubing:

Size 9⁵/₈" (in.) Size _____ (in.) Size 3¹/₂" (in.)

Weight 47 (lb/ft) Weight _____ (lb/ft) Inside Diameter 2.750 (in.)

Grade N-80 Grade _____ Weight 12.95 (lb/ft)

Capacity 0.0732 (bbl/ft) Capacity _____ (bbl/ft) Grade L-80

Shoe 2861 (m) Top _____ (ft) Capacity 0.00742 (bbl/ft)

Shoe _____ (ft) Connections PH6

Burst pressure 15000 lb

12. Plugged back total depth 2835 (m) KB

13. Depth of packer 1996.1 (m) KB

14. Tubing volume 48.6 (bbl)

15. Volume between packer and lowest perforation 4.1 (bbl)

16. Rathole volume 197 (bbl)

17. Depth of tailpipe - (ft)

18. Location of pressure gauges: HP depth 1980.3m KB gauge number 766

TOP 1983.6 Element No. 38439

AMERADAS bottom depth 1985.4 m KB gauge number 32041

19. Initial WHP before well open 850 psig

PERFORATION

Well KIPPER-1 Test 1 Perforation 2005-2013mKB Date 6/4/86

- 1. Geologist(s): P. FELL
- 2. Test Engineer(s): D.L. SMITH/K.J. FAGG/S.T. KOH
- 3. Service Company/Engineer: SCHLUMBERGER
- 4. Distance between CCL and top of gun: T.C.P. USED ft
- 5. Number of Runs: 1
- 6. Wellhead pressure bled down to zero before perforating?
 / (Yes) (No)
- 7. Wellhead pressure before perforating: 0 psig
- 8. Time of perforation: 6:39 (local time)
- 9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)	Annulus Pressure	Time (Local)	WHP (PSIG)	Temperature
06:39 0643	800 850	3020			55°F
06:40 0644	850 850				
06:41 0645	850 850				
06:42	850				

READINGS ON D-5

- 10. Other perforating runs:

<u>Time</u>	<u>Run</u>	<u>Interval</u>	<u>WHP</u>
- 11. Remarks: _____

INITIAL FLOW PERIOD DATA*

Well KIPPER-1 Test 1 Perforations 2005-2013m Date 6/4/86

1. Wellhead pressure prior to opening well 850 (psi)

2. Time well opened 0645 (6/4/86)

3. Initial choke size 32/64 (64ths)

4. Well response: Well (flowed, ~~did not~~)

Time gas surfaced 0707

Time mud surfaced 0704

Time formation fluid surfaced 0707

5. Well data just prior to shut in

Flowing wellhead pressure 995 (psi)

Choke size 76 (64ths)

Pressure downstream of the choke 0 (psi)

Rate 25 (~~BXD~~, MCFD) (~~measured~~, estimated)

6. Time of shut in 0815

7. Total length of initial flow 90 (min, ~~hr~~)

8. Cumulative production 1 (~~BXD~~, MSCF) (~~measured~~, estimated)

9. Description of produced fluids:

Oil 0 % - °API

Water 0 % Cl⁻ - (ppm)

Gas: Sp Gr 0.75

C₁ 301 (ppm)^k

C₅⁺ 1.7 (ppm)

C₆⁺ 0.6 (ppm)^k

C₂ 62 (ppm)^k

H₂S 0 (ppm, %)

C₃ 25 (ppm)^k

CO₂ 12 (ppm, %)

C₄ 6 (ppm)

* If extended initial flow (clean up) is run, enter production data at 30 min intervals on Production Test Data sheet (D-5).

If well is swabbed, fill out swab report (D-3).

INITIAL BUILDUP DATA

Well KIPPER-1 Test 1 Date 6/4/86

Shut-in Time (min)*	DWT WHP (psig)
0815	Shut-in 995
0816	2650
0817	2680
0818	2685
0819	2685
0820	2685
0825	2680

Shut-in Time (min)	DWT WHP (psig)

* Record WHP at 15 min intervals.

If pressure gauges are run on wireline, make stop at Kelly bushing; record:

DWT 2630 psig
Time 1226 hrs 6/4/86 WHP 2628 psia (HP)

If stops are made while running pressure gauges in the hole, record:

Stop	Time	Depth

Stop	Time	Depth

Time gauges reached bottom: _____

Other events _____

PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013m KB

DATE 6/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO	GRAVITY	
						COND. STB	WATER BBLs	GAS MSCF	COND. STB/D	WATER B/D	GAS MSCF/D		COND. °API @ 60°	GAS AIR = 1
0639	Perforate Well													
0645	Flow Well	835	55		10									
0646		835	55		10									
0647		835	55		10									
0648	Increase choke	845	55		24									
0649		860	55		24									
0650		880	55		24									
0651	Increase choke	880	57		28									
0655	Increase choke	1010	61		32									
0700		1476	70	300	32									
0704	Mud at Surface	2450	85		32									
0705		2450	86		32									
0707	Gas to Surface	2490	90		32									
0710		2545	85		32									
0713	Increase choke	2600	80		48									
0715		1970	80	440	48									

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PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013m KB

DATE 6/4/86

1	2	3	4	5	6	7			8			13	14		15	
						CUMULATIVE PRODUCTION			RATES				CONDENSATE GAS RATIO	GRAVITY		
						COND. STB	WATER BBLS	GAS MSCF	COND. STB/D	WATER B/D	GAS MSCF/D			COND. °API @ 60°		GAS AIR = 1
0720		1975	85		48											
0721	Increase choke	1270	90		64											
0725		1280	93		64											
0726	Change to 1" fixed choke	1220	93		64F											
0730		1250	96		64F											
0735		1255	99		64F											
0740	Sample taken	1255	100		64F											0.728
0745		1250	98	380	64F											
0750	Change to variable choke	1005	98		76											
0755	Sample taken	985	100		76											0.75
0800		995	95	400	76											
0805		990	95		76											
0810		995	95		76											
0815	Well shut-in	995	95		76			1								
0816		2650														
0817		2680														

PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013m KB

DATE 6/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	'14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO BBL/ MSCF	GRAVITY	
						COND. STB	WATER BBLs	GAS MSCF	COND. STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR = 1
0818		2685	100											
0819		2685		340										
0820		2685												
0825		2680	98											
0830	SI Master valve to R/U	BHPG & DHSI tool												
1225	Open Master valve	2630	58											
1230	RIH	2630		300										
1245		2630	58	300										
1300		2630	58	300										
1315		2642	58	280										
1330		2640	58	280										
1345		2640	58	280										
1345)				S.I.									
) SEE D-5A													
1430)													
1430	Flow well for major flow	1910	62	240	32A									

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PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013m KB

DATE 6/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKES 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO	GRAVITY	
						STB	WATER BBLs	GAS MSCF	STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR = 1
1512) SI to Re-seat DHSIT					14		0.7						
1545)													
1556	Open Well				32A	14		0.7						
1630	Flow through separator	1087	105	230	64F									
1745		1149	109	200		50 (EST)		2.5 (EST)					54.9	
1800	First rates taken	1148	109	210	64F	52.6	-	2.75	249	-	24.0	10.4	55.1	0.750
1830		1140	109	340	64F	64.0	-	3.24	548	-	23.8	23.1	54.9	
1900		1145	112	340	64F	74.6	-	3.73	511	-	23.7	21.6	56.1	
1930		1140	112	390	64F	85.0	3 (EST)	4.22	498	-	23.7	21.1	55	0.744
2000		1142	113	410	64F	95.6		4.71	510	-	23.7	21.6	55.1	
2030		1144	113	440	64F	106.2		5.21	510	-	23.7	21.6	54.7	
2100		1147	113	220	64F	116.6	4	5.70	498	16	23.7	21.0	54.7	0.740
2130						126.5		6.20	473		23.8	19.9	54.7	
2138	Well SI @ choke W/L &	DHSI	unseated											
2139		2550	113	220	SI									
2140		2700	116		SI									

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PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013

DATE 6/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKES 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO	GRAVITY	
						COND STB	WATER BBLs	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR = 1
2130						126.5		6.20	473		23.8	19.9	54.7	
2138	Well S.I @ Choke W/L & DHSI Unseated													
2139		2550	113	220	SI									
2140		2700	116		SI									
2145		2700	116		SI									
2150		2680	106		SI									
2200		2682	102	220	SI									
2230	Lost HP while bleeding off WHP to 2000psi													
2240	Attempted to POH BHPG.pulled to 6464ft believe W/L entangled below stuffing box													
		2665	75	300	SI									
0025	7 April 1986. Open Well	2660	66		24A									
0030		2630	69	180	32A									
0035		2580	79		48A									
0037		1870	83		64A									
0040		1235	92		64F									
0045	Flow to Sep @ 0055 Hrs	1210	97	300	64F									

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PRODUCTION TEST DATA SHEET

WELL KLIPPER -1

TEST 1

PERFORATIONS 2005-2013

DATE 6/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	'14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO	GRAVITY	
						COND STB	WATER BBLs	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR = 1
0100		1215	108	430	64F	136.9		6.72	-		25.0	-	54.8	0.740
0130		1220	110	320	64F	147.8		7.25	523		25.2	20.1	54.6	0.740
0200		1218	111	410	64F	159.7		7.77	573		24.9	23.0	54.6	0.740
0230		1211	113	500	64F	170.1	5	8.29	498	16	24.8	20.1	54.5	0.740
0300		1212	113	250	64F	181.2		8.81	535		24.9	21.5	54.6	0.740
0330		1206	116	250	64F	192.9		9.33	560		24.8	22.6	54.4	
0400	started first Sep samples	1205	117	240	64F	203.8	6	9.85	523	16	24.9	21.0	55.1	
0430	started second Sep Samples "		114	200	64F	214.4		10.37	510		24.9	20.5	-	
0500	started third Sep samples "		116	420	64F	225.3		10.89	523		24.9	21.0	-	
0530	end sampling	1207	116	210	64F	235.9	7	11.41	510	16	24.9	20.5	-	
0532	By pass separator													
0535	S.I at surface	1206												
0536		2670												
0537		2710												
0538		2705	118											
0539		2700												

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PRODUCTION TEST DATA SHEET

WELL KIPPER-1

TEST 1

PERFORATIONS 2005-2013 MKB

DATE 7/4/86

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKES 64TH	CUMULATIVE PRODUCTION			RATES			GOR OR CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLs	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR = 1
0540		2700	117											
0541		2695												
0542		2695												
0543		2695												
0544		2693												
0545		2690	112	300										
0550		2688												
0600		2688												

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RIG-FLOOR AND BOTTOMHOLE DATA

WELL KIPPER -1 TEST 1 PERFORATIONS 2005-2013 MKB DATE 6/4/86 PAGE 1 OF 2

1	2	3	4	5	6		1	2	3	4	5	6	
TIME LOCAL	REMARKS	WHP PSIG	WHT DEG. F	CAS. PRESS.	CHOKE 64TH	BHP PSIA	TIME LOCAL	REMARKS	WHP PSIG	WHT DEG. F	CAS. PRESS.	CHOKE 64TH	BHP PSIA
1346	DHSI Tool @ bottom					3272	191	2000	1142				2997.2
1347	Closed DHSI tool					3272	194	2030	1144				2997.2
1352	Start bleed down to	2640	58	280	S.I	3259.7	196	2100	1147				2996.3
1335	press test DHSI tool	2600	58		bleed			2130					2995.8
1358		2000			SI			2138	S.I. Choke				
1400						3236	198	2140					3246.1
1405						3235.6	194	2145					3249.4
1410						3240.8	192.3	2150					3247.0
1412						3242.4	191.9	2155					3245.0
1414						3243.6	191.7	2200					3244.6
1416						3244.6	191.5	2215					3245.6
1418						3245.1	191.4	2230	Bleed off to test and lost	HP signal			
1419						3245.3	191.4						
1420						3245.5	191.4						
1421						3245.8	191.4						
1422						3246.1	191.4						
1423						3246.2	191.4						
1424						3246.4	191.4						
1425	Start pump MEOH												
1426	Open OTIS Choke	2100	62		24A								
1430	Open DHSI tool to Flow well	1910	62	240	32A	3246.8	191.5						
1435	Flow thru 2 burners	2420	66		48A	3270.8	199.8						
1437		2075	75		64A								
1439		2045	78		64F	3238.9	204						

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RIG-FLOOR AND BOTTOMHOLE DATA

WELL KIPPER - 1 TEST 1 PERFORATIONS 2005-2013 MKB DATE 6/4/86 PAGE 2 OF 2

1	2	3	4	5	6		
TIME LOCAL	REMARKS	WHP PSIG	WHT DEG. F	CAS. PRESS.	CHOKE 64TH	BHP PSIA	
1445		2048	90		64F	3222.7	
1452	Bypass heater	1250	96		64F	3209.5	
1500		1155	95			3144.1	
1512	DHSI tool released.	S.I. @ choke manifold					
1546	DHSI tool reseated					3248.8	
1556	Flow well open DHSI				32A		
1607					64F		
1610		1140	95			3036.7	
1615		1120	98	290		3037.0	
1630	Flow thru seperator	1087	105	230		3056.5	
1645	Diff 0-200 out of	1075	107	240		3063	
1700	range changed diff	1079	108	240		3063.5	
1715	and calibrate to	1080	109	210		3062.9	
1730	0-400 completed 1745	1149	109	200		3025.4	
1745	flow cond. to test	1149	109	210		3009.2	
	tank						
1800		1148				3004.9	
1830		1140				3002.2	
1900		1145				2999.8	
1930		1140				3000.0	

1	2	3	4	5	6	
TIME LOCAL	REMARKS	WHP PSIG	WHT DEG. F	CAS. PRESS.	CHOKE 64TH	BHP PSIA

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SEPARATOR DATA SHEET

WELL KIPPER - 1

TEST 1

DATE 6/4/86 Page 1 of 2

1	2	3	4	5	6	7	8	9	10	11	12	13
DATE TIME	SEPARATOR		Tank		WATER Tank 1BBL		GAS METER DATA Daniel GAS METER DIA. 3.826 TYPE Snr				GAS GRAVITY	REMARKS
	PRESS PSIG	TEMP °F	READING inch	ΔBBLs conden- sate	READING BBLs	ΔBBLs	STATIC PSIA	DIFF. IN. H ₂ O	TEMP °F	PLATE IN.		
1745												
1800	530	84	18.0	2.595			545	236	84	3.0	0.750	INI.Tank=13 inches
1830	530	87	40.0	11.418			545	232	87	3.0	0.750	
1900	530	90	60.5	10.64			545	232	90	3.0	0.750	
1930	530	90	80.5	10.38	3 (est)	-	545	232	90	3.0	0.744	
2000	530	90	11.5/32	10.64			545	232	90	3.0	0.744	
2030	530	90	52.5	10.64			545	232	90	3.0	0.744	
2100	530	90	72.5	10.38	4	1	545	232	90	3.0	0.740	
2130	530	90	11/30	9.86			545	234	90	3.0	0.740	
0100	565	82	38 (INIT)	-			580	236	82	3.0	0.740	
0130	570	87	59	10.9			585	240	87	3.0	0.740	
0200	565	89	82	11.9			580	238	89	3.0	0.740	
0230	565	91	12/32	10.4	5	1	580	238	91	3.0	0.740	
0300	565	91	53.5	11.2			580	240	91	3.0	0.740	
0330	565	92	76	11.7			580	238	92	3.0	0.740	
0400	565	92	10.5/31.5	10.9	6	1	580	240	92	3.0	0.740	

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SEPARATOR DATA SHEET

WELL KIPPER -1

TEST 1

DATE 6/4/86 Page 2 of 2

1	2	3	4	5	6	7	8	9	10	11	12	13
DATE TIME	SEPARATOR		TANK		WATER lBBL Tank		GAS METER DATA				GAS GRAVITY	REMARKS
	PRESS PSIG	TEMP °F	READING inch (13)	ΔBBLs condensate	READING BBLs	ΔBBLs	STATIC PSIA	DIFF. IN. H ₂ O	TEMP °F	PLATE IN.		
0430	565	92	52	10.6			580	240	92	3.0	0.740	
0500	565	92	73	10.9			580	240	92	3.0	0.740	
0530	565	92	11.5/32	10.6	7	1	580	240	92	3.0	0.740	

Daniel Snr

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OIL RATE CALCULATIONS

WELL KIPPER - 1

TEST 1

DATE 6/4/86 Page 1 of 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14
DATE TIME	Δ TIME	CONDENSATE								CORRECTED VALUES'			REMARKS
		TEMP °F	GRAVITY °API @ 60°	Test READING inch	Δ BBLs condensate	METER FACTOR	SHRINKAGE	TEMP. CORR.	1 - BSW %	Δ. PROD STB	RATE STB/D	LGR STB/MSCF	
1800	15	60	55.1	18.0	2.595	1.0	1.0	1.0	1.0	2.595	249	10.4	
1830	30	60	54.9	40	11.418	1.0	1.0	1.0	1.0	11.418	548	23.1	
1900	30	60	56.1	60.5	10.64	1.0	1.0	1.0	1.0	10.64	511	21.6	
1930	30	60	55	80.5	10.38	1.0	1.0	1.0	1.0	10.38	498	21.1	
2000	30	61	55.1	11.5/32	10.64	1.0	1.0	0.9994	1.0	10.63	510	21.6	
2030	30	62	54.7	52.5	10.64	1.0	1.0	0.9988	1.0	10.63	510	21.6	
2100	30	62	54.7	72.5	10.38	1.0	1.0	0.9988	1.0	10.37	498	21.0	
2130	30	62	54.7	11/30	9.86	1.0	1.0	0.9988	1.0	9.85	473	19.9	
0100	-	62	54.8	38(initial)	-	-	-	-	-	-	-	-	
0130	30	61	54.6	59	10.9	1.0	1.0	0.9994	1.0	10.9	523	20.8	
0200	30	61	54.6	82	11.9	1.0	1.0	0.9994	1.0	11.9	573	23.0	
0230	30	61	54.5	12/32	10.4	1.0	1.0	0.9994	1.0	10.4	498	20.1	
0300	30	61	54.6	53.5	11.2	1.0	1.0	0.9994	1.0	11.2	535	21.5	
0330	30	61	54.4	76.0	11.7	1.0	1.0	0.9994	1.0	11.7	560	22.6	
0400	30	61	55.1	10.5/31.5	10.9	1.0	1.0	0.9994	1.0	10.9	523	21.0	
0430	30	61	-	52	10.6	1.0	1.0	0.9994	1.0	10.6	510	20.5	
0500	30	61	-	73	10.9	1.0	1.0	0.9994	1.0	10.9	523	21.0	

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OIL RATE CALCULATIONS

WELL KIPPER - 1

TEST 1

DATE 6/4/86 Page 2 of 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14
DATE TIME	Δ TIME	CONDENSATE								CORRECTED VALUES			REMARKS
		TEMP °F	GRAVITY °API @ 60°	TEST READING inch	Δ BBLs condensate	METER FACTOR	SHRINKAGE	TEMP. CORR.	1- BSW %	Δ . PROD STB	RATE STB/D	LGR STB/MSCF	
0530	30	61	-	11.5/32	10.6	1.0	1.0	0.9994	1.0	10.6	510	20.5	

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GAS RATE CALCULATIONS

WELL KIPPER -1

TEST 1

DATE 6/4/86 Page 1 of 2

1	2	3	4	5	6	7	8	9	10	11	12
DATE TIME	GAS METER				BASIC ORIFICE FACTOR F _b	FLOWING TEMP FACTOR F _{tf}	SPECIFIC GRAVITY FACTOR F _g	SUPER- COMPRES- IBILITY F _{pv}	ORIGINAL CONSTANT C' = F _b · F _{tf} · F _g · F _{pv}	RATE Q = .024 C' x $\sqrt{h_w P_f}$ (Mcf/D)	REMARKS
	STATIC (P _f) PSIA	DIFF. (h _w) IN H ₂ O	TEMP °F	PLATE IN.							
1800	545	236	84	3.0	2315.562	0.9777	1.155	1.065	66886.7	24.0	δ=0.750 Y2=1.0013
1830	545	232	87	"	"	0.9750	"	1.063	66809.2	23.8	
1900	"	"	90	"	"	0.9723	1.159	1.061	66544.6	23.7	0.744 "
1930	"	"	"	"	"	"	"	1.061	"	"	
2000	"	"	"	"	"	"	"	"	"	"	"
2030	"	"	"	"	"	"	"	"	"	"	
2100	"	"	"	"	"	"	1.162	1.060	66676.7	"	0.740
2130	"	234	"	"	"	"	"	"	66677.5	23.8	
0100	580	236	82	"	"	0.9795	1.162	1.068	67676.7	25.0	0.740 1.0012
0130	585	240	87	"	"	0.9750	"	1.066	67253.5	25.2	"
0200	580	238	89	"	"	0.9732	1.162	1.065	67032.0	24.9	0.740
0230	580	238	91	"	"	0.9715	1.162	1.064	66852.4	24.8	
0300	580	240	91	"	"	"	"	"	66853.1	24.9	0.740
0330	580	238	92	"	"	0.9706	"	1.063	66763.3	24.8	
0400	580	240	92	"	"	"	"	"	66764.0	24.9	0.740
0430	580	240	92	"	"	"	"	"	"	"	

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GAS RATE CALCULATIONS

WELL KIPPER - 1

TEST 1

DATE 6/4/86 Page 2 of page 2

1	2	3	4	5	6	7	8	9	10	11	12
DATE TIME	GAS METER				BASIC ORIFICE FACTOR F_b	FLOWING TEMP FACTOR F_{tf}	SPECIFIC GRAVITY FACTOR F_g	SUPER-COMPRESIBILITY F_{pv}	ORIGINAL CONSTANT $C' = F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	RATE $Q = .024 C' \times \sqrt{h_w P_f}$ (Mcf/D)	REMARKS
	STATIC (p_f) PSIA	DIFF. (h_w) IN H ₂ O	TEMP °F	PLATE IN.							
0500	580	240	92	3.0	2315.562	0.9706	1.162	1.063	66764.0	24.9	
0530	580	240	92	3.0	2315.562	0.9706	1.162	1.063	66764.0	24.9	

LIQUID SAMPLE FIELD ANALYSIS RECORD

WELL KIPPER -1 TEST 1 DATE 6/4/86

1 TIME SAMPLED	2 SAMPLE POINT	3 SHAKE OUT			6 API° @ 60°F	7 Cl⁻ (ppm) TITRA	8 WATER RES(Ωm) /TEMP	9 pH	10 Cond. T (°F)	DPM
		Cond. Colour	4 WATER	5 BS&W						
1715	Separator	tan-brown			54.1				68.9	
1745	Separator	Light-tan			54.9					
1800	"	"			55.1				63.3	
1830	"	"			54.9				61.0	
1900	"	Gold yellow becoming clearer			56.1	1300	1.93/71	6.4	64.4	0.6
1930	"	Gold yellow clear			55	1300	1.92/70	6.5	65.3	0
2000	"	"			55.1	1650	1.64/79	6.5	64.4	4.6
2030	"	Pale yellow "			54.7	1350	1.67/80	6.4	63.5	0
2100	"	Pale yellow clear			54.7		1.90/73		65.3	0
2130	"	"			54.7		1.91/73		63.5	1
0100	"	"			54.8	850		6.3	62.6	
0130	"	"			54.6				64.4	
0200	"	"			54.6		Nil		64.4	
0230	"	"			54.5				62.6	
0300	"	"			54.6	850		6.3	64.4	
0330	"	"			54.4	800	2.47/81	6.2	60.8	0
0400	"	"			55.1	750	2.46/75	6.2	64.2	0

PRODUCTION TEST SUMMARY

Well KIPPER -1 Test 1 Date 7/4/86

Test Data:

1. Interval 2005-2013
2. Produced fluid Gas
3. Cumulative production 11.41 (MSCF)
4. Stabilized rate 24.9 (MSCF/D)
5. Length of flow period 11.57 (hr) (42+342+310 mins)
6. Choke 64 (64ths) (Fixed)
7. Gravity of oil or condensate 54.6 (°API @ 60°F)
8. Condensate - Gas Ratio 21.4 (STB/MSCF)
9. Water cut 2.9 (%)
10. Chlorides 800 (ppm)
11. H₂S Nil (% , ppm)
12. CO₂ 14.5 (%)
13. Stabilized flowing wellhead pressure 1205 (psig) (DWT)
14. Stabilized flowing wellhead temperature 116 (°F)
15. Wellhead pressure at end of buildup - (psig) (DWT)
16. Initial reservoir pressure 3246.4 (psi A) @ 1980.3 (MKB)
17. Final flowing pressure 2995 (psi A) @ 1980.3 (MKB)
18. Productivity index 89 RB/D/psi
19. Maximum bottom-hole temperature 206 (°F) @ 1980.3 (MKB)
20. Samples taken: 3x20 & Sep Gas, 3x1 & Sep. Cond.
6x25 & Jerry cans cond. 13x1 Gal Sep. Water
21. Remarks: M = Million, K = Thousand, GAS FVF = 0.90 RB/KSCF

BUILDUP ANALYSIS FOR SHUT-IN PERIOD
BETWEEN 2138-0025 HOURS APRIL 6, 1986

1. Rate $q = \underline{23.8}$ (~~XXXX~~; MSCF/D) (FOR 1556-2138 HOURS)
2. Horner Time: $\frac{\text{Cumulative production}}{\text{Last rate}} = 24 \times \frac{\text{--} (\text{STB})}{\text{--} (\text{STB/D})} = \frac{5.70}{(342 \text{ mins})}$ (hr)
3. Fluid and reservoir properties

Viscosity: $\mu = \underline{0.02}$ (cp) $\gamma_g = 0.74$ $C_g = 225 \times 10^{-6} \text{ psi}^{-1}$

Compressibility factor (for gas wells): $z = \underline{0.871}$

Compressibility: $c_t = \underline{212 \times 10^{-6}}$ (1/psi)

Volume factor: $B_g = \underline{0.901}$ (RB/kSCF) at pressure of $\underline{3246}$ (psi)A

Thickness: $h = \text{--}$ (ft)

Perforated thickness: $h_p = \underline{26.2}$ (ft)

Porosity: $\phi = \underline{20.9}$ (%)

Wellbore radius: $r_w = \underline{0.40}$ (ft)

Bottom-hole temperature: $T = \underline{206}$ (°F)
4. Initial pressure: $p_i = \underline{3246.4}$ (psi)A @ 1980.3m KB
5. Flowing bottom-hole pressure: $p_{wf} = \underline{3199.8}$ (psi)A @ 1983.6m KB (AMERADA)
downstream of DHSIT flow area
6. Wellbore storage: $\alpha = \underline{1.19 \times 10^{-2}}$ (RB/psi)
7. End of afterflow: $\Delta t_{af} = \underline{22}$ (min)
8. Middle time region slope: $m = \underline{5.5}$ (psi)/cycle
9. Extrapolated pressure: $p^* = \text{--}$ (psi)
10. Ideal buildup pressure at $\Delta t = 1$ hr: $p_{wi} = \text{--}$ (psi)
11. Permeability-thickness product: $kh = \frac{162.6 \text{ q}\mu\text{B}}{m}$

$$kh = \frac{162.6 (23800) (0.02) (0.901)}{(5.5)} = \underline{12679}$$
 (md-ft)
12. Permeability: $k = \frac{kh}{h} = \frac{(12679)}{(26.2)} = \underline{484}$ (md)

13. Diffusivity: $\eta = \frac{2.637 \times 10^{-4} k}{\phi \mu c}$
 $= \frac{2.637 \times 10^{-4} (484)}{(0.209)(0.02)(212 \times 10^{-6})} = \underline{144027} \text{ (ft}^2/\text{hr)}$
14. Average permeability: $\bar{k} = \frac{141.2 \text{ qmB in } (r_e/r_w)}{h (p^* - p_{wf})} \text{ (ln } r_e/r_w = 6.0-8.0)$
 $\bar{k} = \frac{141.2 (23800) (0.02) (0.901) \ln (672 / 0.40)}{(26.2) ((3246.6) - (3199.8))} = \underline{369} \text{ (md)}$
15. Radius of investigation beginning of MTR:
 $R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4 (144027) (22/60)} = \underline{460} \text{ (ft)}$
16. Skin factor: $s = 1.151 \left[\frac{p_{wi} - p_{wf}}{m} - \log \left(\frac{k}{\phi \mu c r_w^2} \right) + 3.23 \right]$
 $s = 1.151 \left[\frac{((3246.5) - (3199.8))}{(5.5)} - \log \frac{(484)}{(0.209)(0.02)(212 \times 10^{-6})(0.4)^2} + 3.23 \right]$
 $s = 1.151 (8.49 - 9.53 + 3.23)$
 $s = \underline{2.5}$
17. Pressure drop due to skin:
 $\Delta p_s = 0.87 ms = 0.87 (5.5) (2.5) = \underline{12} \text{ (psi)}$
18. Flow efficiency: $E = \frac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$
 $E = \frac{(3246.4) - (3199.8) - (12)}{(3246.4) - (3199.8)} = \underline{0.74}$
19. Damage ratio: $DR = \frac{1}{E} = \frac{1}{(0.74)} = \underline{1.35}$
20. Productivity index: $J = \frac{q}{p^* - p_{wf}} = \frac{(23800 \times 0.901)}{((3246.4) - (3199.8))} = \underline{460} \text{ (RB/D)/psi}$
21. Closest possible boundary: $L_{cb} \text{ --- (ft)}$
22. Radius of investigation at $\Delta t = 47 \text{ mins}$ $R = 672 \text{ ft}$

13. Diffusivity: $\eta = \frac{2.637 \times 10^{-4} k}{\phi \mu c}$
 $= \frac{2.637 \times 10^{-4} (484)}{(0.209)(0.02)(212 \times 10^{-6})} = \underline{144027} \text{ (ft}^2/\text{hr)}$
14. Average permeability: $\bar{k} = \frac{141.2 \text{ qmB ln } (r_e/r_w)}{h (p^* - p_{wf})} \text{ (ln } r_e/r_w \approx 6.0-8.0)$
 $\bar{k} = \frac{141.2 (23800)(0.02)(0.901) \ln(672/0.40)}{(26.2)((3246.4) - (2995))} = \underline{68} \text{ (md)}$
15. Radius of investigation beginning of MTR:
 $R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4(144027)(22/60)} = \underline{460} \text{ (ft)}$
16. Skin factor: $s = 1.151 \left[\frac{p_{wl} - p_{wf}}{m} - \log \left(\frac{k}{\phi \mu c r_w^2} \right) + 3.23 \right]$
 $s = 1.151 \left[\frac{((3246.4) - (2995))}{(5.5)} - \log \frac{(484)}{(0.209)(0.02)(212)(0.4)^2} + 3.23 \right]$
 $s = 1.151 (45.71 - 9.53 + 3.23)$
 $s = \underline{45}$
17. Pressure drop due to skin:
 $\Delta p_s = 0.87 m s = 0.87 (5.5)(45) = \underline{215} \text{ (psi)}$
18. Flow efficiency: $E = \frac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$
 $E = \frac{(3246.4) - (2995) - (215)}{(3246.4) - (2995)} = \underline{0.14}$
19. Damage ratio: $DR = \frac{1}{E} = \frac{1}{(0.14)} = \underline{6.9}$
20. Productivity index: $J = \frac{q}{p^* - p_{wf}} = \frac{(23800 \times 0.901)}{((3246.4) - (2995))} = \underline{85} \text{ (RB/D)/psi}$
21. Closest possible boundary: $L_{cb} \text{ --- (ft)}$

SEPARATOR SAMPLE DATA

Well KIPPER -1 Test 1 Date 7/4/86
 Producing Interval 2005-2013 MKB
 Initial Reservoir Pressure 3246.4 psiA@ 1980.3 (MKB)
 Reservoir Temperature 206 °F @ 1980.3 (MKB)

	<u>GAS</u>		<u>LIQUID</u>	
	<u>Sample No. 1</u>	<u>Sample No. 2</u>	<u>Sample No. 1</u>	<u>Sample No. 2</u>
Time Sampled	<u>0400-0430</u>	<u>0430-0500</u>	<u>0400-0430</u>	<u>0430-0500</u>
Length of Time Well was Produced	<u>10.3 hrs</u>	<u>10.8 hrs</u>	<u>10.3 hrs</u>	<u>10.8 hrs</u>
Container No.	<u>A 11034</u>	<u>A 11028</u>	<u>79A 2779</u>	<u>80A6</u>
Container Volume (cc)	<u>20000</u>	<u>20000</u>	<u>1135</u>	<u>1110</u>
Separator Pressure (psig)	<u>565</u>	<u>565</u>	<u>565</u>	<u>565</u>
Separator Temperature (°F)	<u>92</u>	<u>92</u>	<u>64</u>	<u>64</u>
Wellhead Pressure (psig)	<u>1205</u>	<u>1205</u>	<u>1205</u>	<u>1205</u>
Wellhead Temperature (°F)	<u>117</u>	<u>114</u>	<u>117</u>	<u>114</u>
Flowing Bottom-hole Pressure (psi)		<u>NOT AVAILABLE</u>		
Flowing Bottom-hole Temperature (°F)		<u>NOT AVAILABLE</u>		
Separator Rate (Sep. bbl/D)*	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Separator Gas Rate (MSCF/D)	<u>24.9</u>	<u>24.9</u>	<u>24.9</u>	<u>24.9</u>
Separator GOR (SCF/Sep. bbl)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Well Rate (STB/D) ⁺	<u>510</u>	<u>523</u>	<u>510</u>	<u>523</u>
Well GOR (SCF/STB) ⁺	<u>20.5</u>	<u>21.0</u>	<u>20.5</u>	<u>21.0</u>
Full Wellstream Water Cut (%)	<u>3.5</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>
How Outage was Taken on Liquid Samples	<u>Between separator oil line outlet and oil meter.</u>			
Gas Sampling Method	<u>Evacuated</u>			
Liquid Sampling Method	<u>Brine displacement to 90% with further 5% for gas cap.</u>			
Special Instruction for Lab	<u>No H2 S measured</u>			

Sampled by Otis

* Rates based on Meter Readings corrected for Meter Factor Only.

⁺ Rates corrected to Stock-Tank Conditions as per Form D-7.

SEPARATOR SAMPLE DATA

Well KIPPER -1 Test 1 Date 7/4/86
 Producing Interval 2005-2013 MKB
 Initial Reservoir Pressure 3246.4 psiA@ 1980.3
 Reservoir Temperature 206 °F @ 1980.3

	<u>GAS</u>		<u>LIQUID</u>	
	<u>Sample No. 3</u>	<u>Sample No. 4</u>	<u>Sample No. 3</u>	<u>Sample No. 4</u>
Time Sampled	<u>0500-0530</u>	<u>-</u>	<u>0500-0530</u>	<u>-</u>
Length of Time Well was Produced	<u>11.3 hrs</u>	<u>-</u>	<u>11.3 hrs</u>	<u>-</u>
Container No.	<u>A 12449</u>	<u>-</u>	<u>79A 2732</u>	<u>-</u>
Container Volume (cc)	<u>20000</u>	<u>-</u>	<u>1145</u>	<u>-</u>
Separator Pressure (psig)	<u>565</u>	<u>-</u>	<u>565</u>	<u>-</u>
Separator Temperature (°F)	<u>92</u>	<u>-</u>	<u>64</u>	<u>-</u>
Wellhead Pressure (psig)	<u>1205</u>	<u>-</u>	<u>1205</u>	<u>-</u>
Wellhead Temperature (°F)	<u>116</u>	<u>-</u>	<u>116</u>	<u>-</u>
Flowing Bottom-hole Pressure (psi)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Flowing Bottom-hole Temperature (°F)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Separator Rate (Sep. bbl/D)*	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Separator Gas Rate (MSCF/D)	<u>24.9</u>	<u>-</u>	<u>24.9</u>	<u>-</u>
Separator GOR (SCF/Sep. bbl)	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Well Rate (STB/D) ⁺	<u>510</u>	<u>-</u>	<u>510</u>	<u>-</u>
Well GOR (SCF/STB) ⁺	<u>20.5</u>	<u>-</u>	<u>20.5</u>	<u>-</u>
Full Wellstream Water Cut	<u>3.0</u>	<u>-</u>	<u>3.0</u>	<u>-</u>
How Outage was Taken on Liquid Samples	<u>Between separator oil line outlet and oil meter.</u>			
Gas Sampling Method	<u>Evacuated</u>			
Liquid Sampling Method	<u>Brine displacement to 90% with further 5%</u>			
Special Instruction for Lab	<u>For gas cap. No H2S measured.</u>			
Sampled by	<u>Otis</u>			

* Rates based on Meter Readings corrected for Meter Factor Only.

⁺ Rates corrected to Stock-Tank Conditions as per Form D-7.

Appendix 6

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Schlumberger

ESSO AUSTRALA LIMITED
GEOGRAM PROCESSING REPORT

KIPPER - 1

FIELD : WILDCAT
STATE : VICTORIA
COUNTRY : AUSTRALIA
LOCATION : GIPPSLAND BASIN
COORDINATES : 038° 10' 35.855" S
148° 35' 46.77" E
DATE OF SURVEY : 31-MARCH-1986
REFERENCE NO. : 560401

CONTENTS

- 1 Introduction
- 2 Data Acquisition
- 3 Check Shot Data
- 4 Sonic Calibration
- 5 Sonic Calibration Processing
- 6 GEOGRAM Processing
- 7 Summary of Geophysical Listings

- Fig. 1 Wavelet polarity convention
- Fig. 2 Gun Geometry Sketch

- Well Seismic Computation Request
- Well Seismic Field Report

- Geophysical Airgun Report
- Drift Computation Report
- Sonic Adjustment Parameter Report
- Velocity Report
- Time Converted Velocity Report
- Synthetic Seismogram Table

- Raw and Stacked Checkshot data
- 11 inch Seismic Calibration Log
- 22 inch Seismic Calibration Log
- Geogram

1.0 INTRODUCTION

A velocity check shot survey was conducted in the Kipper - 1 well on 31 March 1986. Fifteen levels from 421 metres to 2871 metres below DF were shot using an airgun source. Fourteen levels have been used in the calibration of the sonic log.

The shot times and calibrated sonic times have been corrected to the seismic reference datum at mean sea level.

2.0 DATA ACQUISITION

Table 1 Field Equipment and Survey Parameters

Elevation SRD	0.0 metres AMSL
Elevation KB	21.0 metres AMSL
Elevation DF	20.7 metres AMSL
Elevation GL	-95.0 metres AMSL
No. of Levels	15
Well Deviation	Nil
Total Depth	2875 metres below DF
Energy Source	Airgun
Source Offset	45.9 metres
Source Depth	9.1 metres below MSL
Reference Sensor	Accelerometer
Sensor Offset	45.9 metres
Sensor Depth	9.1 metres below MSL
Downhole Geophone	Geospace HS-1 High Temp. (350° F) Coil Resist. 225Ω ±10 % Natural Freq. 8-12 hertz Sensitivity 0.45 V/in/sec Maximum tilt angle 60°

Recording was made on the Schlumberger Cyber Service Unit (CSU) using LIS format.

2.1 Survey Details

The survey was shot as a standard offshore velocity survey. A hydrophone was recorded in the moonpool in order to calculate the source offset. No major problems were noted during the survey.

3.0 CHECK SHOT DATA

A total of 14 checkshot levels have been used in the sonic calibration processing. The level at 421 metres below DF was shot going into and coming out of the well. The transit times from both sets of data were similar, however for consistency, only the transit times from the data shot coming up the well have been included. All good shots have been included in the final stack.

A plot of the stacked check shot data is displayed at plot 5 of the 'Raw and Stacked Checkshot Data'.

Table 2 Checkshot levels

Level Depth (metres below DF)	Stacked Shots	Rejected Shots	Quality	Comments
115.7	-	-	Good	Imposed shot - sea floor
245	-	-	Good	Imposed shot - top of sonic
421	7	1	Good	Shot going down
421	5	0	Good	
838	6	0	Good	
1200	5	1	Good	
1420	5	0	Good	
1690	5	1	Good	
1795	4	2	Good	
1893	5	0	Good	
1990	3	2	Good	
2150	6	0	Good	
2280	5	0	Good	
2500	6	0	Good	
2700	5	3	Good	
2845	5	1	Good	
2870	18	5	Good	
2871	1	1	Good	Omitted

4.0 SONIC CALIBRATION

A 'drift' curve is obtained using the sonic log and the vertical check level times. The term 'drift' is defined as the seismic time (from check shots) minus the sonic time (from integration of ed sonic). Commonly the word 'drift' is used to identify the above difference, or to identify gradient of drift verses increasing depth, or to identify a difference of drift between two le

The gradient of drift, that is the slope of the drift curve, can be negative or positive.

For a negative drift $\frac{\Delta drift}{\Delta depth} < 0$, the sonic time is greater than the seismic time over a cert section of the log.

For a positive drift $\frac{\Delta drift}{\Delta depth} > 0$, the sonic time is less than the seismic time over a cert section of the log.

The drift curve, between two levels, is then an indication of the error on the integrated sonic an indication of the amount of correction required on the sonic to have the TTI of the correc sonic match the check shot times.

Two methods of correction to the sonic log are used.

1. **Uniform or block shift** This method applies a uniform correction to all the sonic val over the interval. This uniform correction is applied in the case of positive drift and is average correction represented by the drift curve gradient expressed in $\mu\text{sec}/\text{m}$.
2. **ΔT Minimum** In the case of negative drift a second method is used, called Δt minimum. This applies a differential correction to the sonic log, where it is assumed that the great amount of transit time error is caused by the lower velocity sections of the log. Over a gi interval the method will correct only Δt values which are higher than a threshold, Δt_{min} . Values of Δt which are lower than the threshold are not corrected. The correct is a reduction of the excess of Δt over Δt_{min} , $\Delta t - \Delta t_{min}$.

$\Delta t - \Delta t_{min}$ is reduced through multiplication by a reduction coefficient which rema constant over the interval. This reduction coefficient, named G , can be be defined as:

$$G = 1 + \frac{drift}{\int (\Delta t - \Delta t_{min}) dZ}$$

Where drift is the drift over the interval to be corrected and the value $\int (\Delta t - \Delta t_{min})$ is the time difference between the integrals of the two curves Δt and Δt_{min} , only over t intervals where $\Delta t > \Delta t_{min}$.

Hence the corrected sonic: $\Delta t = G(\Delta t - \Delta t_{min}) + \Delta t_{min}$.

5.5 Sonic Calibration Results

The top of the sonic log (245 metres below DF) is chosen as the origin for the calibration drift curve. The drift curve indicates a number of corrections to be made to the sonic log. A list of shifts used on the sonic data is given below.

Table 3 Sonic Drift

Depth Interval (metres below DF)	Block Shift $\mu\text{sec/m}$	Δt_{min} $\mu\text{sec/m}$	Equiv Block Shift $\mu\text{sec/m}$
245-930	12.99	-	12.99
930-1666	9.51	-	9.51
1666-2097	4.64	-	4.64
2097-2443	-	229.36	-5.78
2443-2870	4.68	-	4.68

The adjusted sonic curve is considered to be the best result using the available data.

6.0 GEOGRAM PROCESSING

GEOGRAM plots were generated using 20, 25, 35 and 40 hertz ricker minimum phase and zero phase wavelets. The presentations include both normal and reverse polarity on a time scale of 3.75 in/sec.

GEOGRAM processing produces synthetic seismic traces based on reflection coefficients generated from sonic and density measurements in the well-bore. The steps in the processing chain are the following:

- Depth to time conversion
- Reflection coefficients
- Attenuation coefficients
- Convolution
- Output.

6.1 Depth to Time Conversion

Open hole logs are recorded from the bottom to top with a depth index. This data is converted to a two-way time index and flipped to read from the top to bottom in order to match the seismic section.

6.2 Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 2 or 4 milliseconds). Reflection coefficients are then computed using:

$$R = \frac{\rho_2 \cdot v_2 - \rho_1 \cdot v_1}{\rho_2 \cdot v_2 + \rho_1 \cdot v_1}$$

where

- ρ_1 = density of the layer above the reflection interface
- ρ_2 = density of the layer below the reflection interface
- v_1 = compressional wave velocity of the layer above the reflection interface
- v_2 = compressional wave velocity of the layer below the reflection interface

This computation is done for each time interval to generate a set of primary reflection coefficients without transmission losses.

6.3 Primaries with Transmission Loss

Transmission loss on two-way attenuation coefficients are computed using:

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$Primary_n = R_n.A_{n-1}$$

6.4 Primaries plus Multiples

Multiples are computed from these input reflection coefficients using the transform technique from the top of the well to obtain the impulse response of the earth. The transform outputs primaries plus multiples.

6.5 Multiples Only

By subtracting previously calculated primaries from the above result we obtain multiples only.

6.6 Wavelet

A theoretical wavelet is chosen to use for convolution with the reflection coefficients previously generated. Choices available include:

- Klauder wavelet
- Ricker zero phase wavelet
- Ricker minimum phase wavelet
- Butterworth wavelet
- User defined wavelet.

Time variant butterworth filtering can be applied after convolution. Polarity conventions are shown in Figure 1. These GEOGRAMS were generated using minimum phase and zero phase ricker wavelets.

6.7 Convolution

Standard procedure of convolution of wavelet with reflection coefficients. The output is the synthetic seismogram.

7.0 SUMMARY OF GEOPHYSICAL LISTINGS

Six geophysical data listings are appended to this report. Following is a brief description of the format of each listing.

7.1 Geophysical Airgun Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from DF : *dkb*, the depth in metres from derrick floor .
3. Vertical depth from SRD : *dsrcd*, the depth in metres from seismic reference datum.
4. Vertical depth from GL : *dgl*, the depth in metres from ground level.
5. Observed travel time HYD to GEO : *tim0*, the transit time picked from the stacked data by subtracting the surface sensor first break time from the downhole sensor first break time.
6. Vertical travel time SRC to GEO : *timv*, is corrected for source to hydrophone distance and for source offset.
7. Vertical travel time SRD to GEO : *shtm*, is *timv* corrected for the vertical distance between source and datum.
8. Average velocity SRD to GEO : the average seismic velocity from datum to the corresponding checkshot level, $\frac{dsrcd}{shtm}$.
9. Delta depth between shots : $\Delta depth$, the vertical distance between each level.
10. Delta time between shots : $\Delta time$, the difference in vertical travel time (*shtm*) between each level.
11. Interval velocity between shots : the average seismic velocity between each level, $\frac{\Delta depth}{\Delta time}$.

7.2 Drift Computation Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from DF : the depth in metres from derrick floor .
3. Vertical depth from SRD : the depth in metres from seismic reference datum.
4. Vertical depth from GL : the depth in metres from ground level.
5. Vertical travel time SRD to GEO : the calculated vertical travel time from datum to downhole geophone (see column 7, Geophysical Airgun Report).
6. Integrated raw sonic time : the raw sonic log is integrated from top to bottom and listed at each level. An initial value at the top of the sonic log is set equal to the checkshot time at that level. This may be an imposed shot if a shot was not taken at the top of the sonic.
7. Computed drift at level : the checkshot time minus the integrated raw sonic time.
8. Computed blk-shft correction : the drift gradient between any two checkshot levels ($\frac{\Delta drift}{\Delta depth}$).

7.3 Sonic Adjustment Parameter Report

1. Knee number : the knee number starting from the highest knee. (The first knees listed will generally be at SRD and the top of sonic. The drift imposed at these knees will normally be zero.)
2. Vertical depth from DF : the depth in metres from derrick floor .
3. Vertical depth from SRD : the depth in metres from seismic reference datum.
4. Vertical depth from GL : the depth in metres from ground level.
5. Drift at knee : the value of drift imposed at each knee.
6. Blockshift used : the change in drift divided by the change in depth between any two levels.
7. Delta-T minimum used : see section 4 of report for an explanation of Δt_{min} .
8. Reduction factor : see section 4 of report.
9. Equivalent blockshift : the gradient of the imposed drift curve.

7.4 Velocity Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from DF : the depth in metres from derrick floor .
3. Vertical depth from SRD : the depth in metres from seismic reference datum
4. Vertical depth from GL : the depth in metres from ground level
5. Vertical travel time SRD to GEOPH : the vertical travel time from SRD to downhole geophone (see column 7, Geophysical Airgun Report)
6. Integrated adjusted sonic time : the adjusted sonic log is integrated from top to bottom. An initial value at the the top of the sonic is set equal the checkshot time at that level. (The adjusted sonic log is the drift corrected sonic log.)
7. Drift=shot time-raw son : the check shot time minus the raw integrated sonic time.
8. Residual=shot time-adj son : the check shot time minus the adjusted integrated sonic time. This is the difference between calculated drift and the imposed drift.
9. Adjusted interval velocity : the interval velocity calculated from the integrated adjusted sonic time at each level.

7.5 Time Converted Velocity Report

The data in this listing has been resampled in time.

1. Two way travel time from SRD : This is the index for the data in this listing. The first value is at SRD (0 milliseconds) and the sampling rate is 2 milliseconds.
2. Measured depth from DF : the depth from DF at each corresponding value of two way time.
3. Vertical depth from SRD : the vertical depth from SRD at each corresponding value of two way time.
4. Average velocity SRD to GEO : the vertical depth from SRD divided by half the two way time.
5. RMS velocity : the root mean square velocity from datum to the corresponding value of two way time.

$$v_{rms} = \sqrt{\sum_1^n v_i^2 t_i / \sum_1^n t_i}$$

where v_i is the velocity between each 2 milliseconds interval.

6. First normal moveout : the correction time in milliseconds to be applied to the two way travel time for a specified moveout distance (default = 3000 feet).
7. Second normal moveout : the correction time in milliseconds to be applied to the two way travel time for a specified moveout distance (default = 4500 feet).
8. Third normal moveout : the correction time in milliseconds to be applied to the two way travel time for a specified moveout distance (default = 6000 feet).
9. Interval velocity : the velocity between each sampled depth. Typically, the sampling rate is 2 milliseconds two way time, (1 millisecond one way time) therefore the interval velocity will be equal to the depth increment divided by 0.001. It is equivalent to column 9 from the the Velocity Report.

7.6 SYNTHETIC SEISMOGRAM TABLE

1. Two way travel time from SRD : This is the index for the data in this listing. The first value is at the top of the sonic. The default sampling rate is 2 milliseconds.
2. Vertical depth from SRD : the vertical depth from SRD at each corresponding value of two way time.
3. Interval velocity : the velocity between each sampled depth. Typically, the sampling rate is 2 milliseconds two way time, (1 millisecond one way time) therefore the interval velocity will be equal to the depth increment divided by 0.001. It is equivalent to column 9 from the the Velocity Report.
4. Interval density : the average density between two successive values of two way time.
5. Reflect. coeff. : the difference in acoustic impedance divided by the sum of the acoustic impedance between any two levels. The acoustic impedance is the product of the interval density and the interval velocity.
6. Two way atten. coeff. : is computed from the series

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

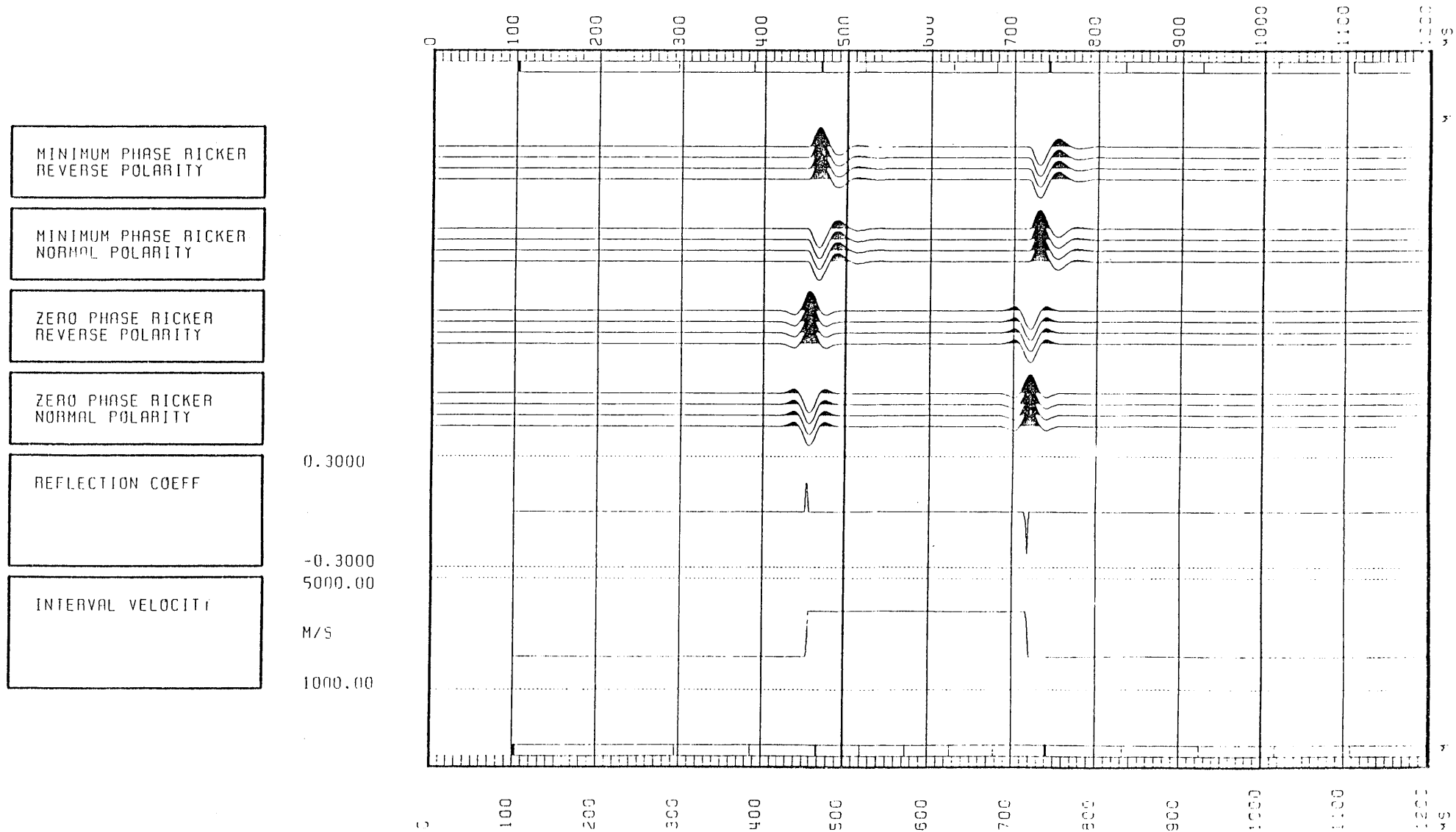
- 7. Synthetic seismo. primary : the product of the reflection coefficient at each depth and the two way attenuation coefficient up to that depth.

$$Primary_n = R_n \cdot A_{n-1}$$

- 8. Primary + multiple : a transform technique is used to calculate multiples from the input reflection coefficients.
- 9. Multiples only : (Primary + multiple) - (Synthetic seismo. primary)

SCHLUMBERGER (SEG-1976) WAVELET POLARITY CONVENTION

Figure 1





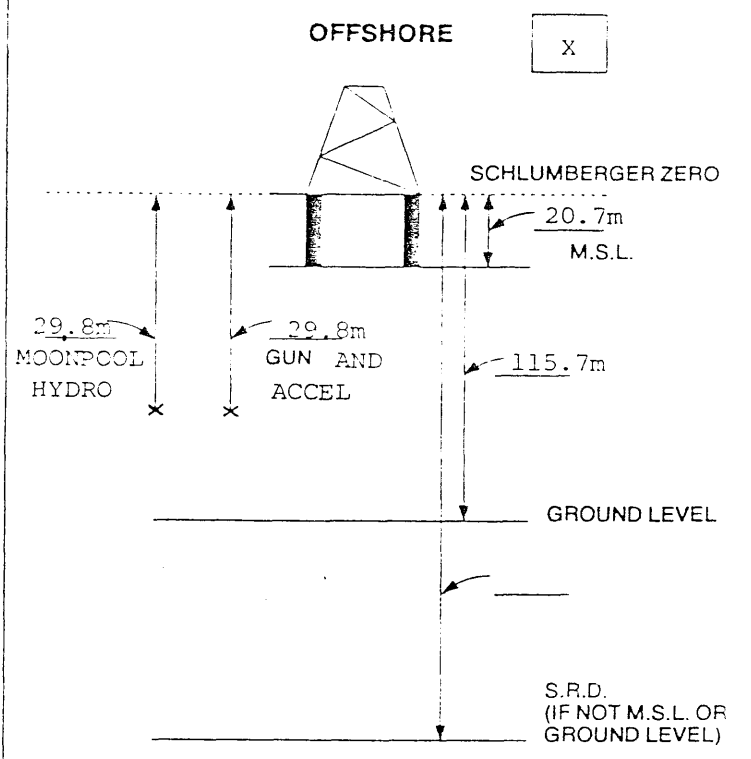
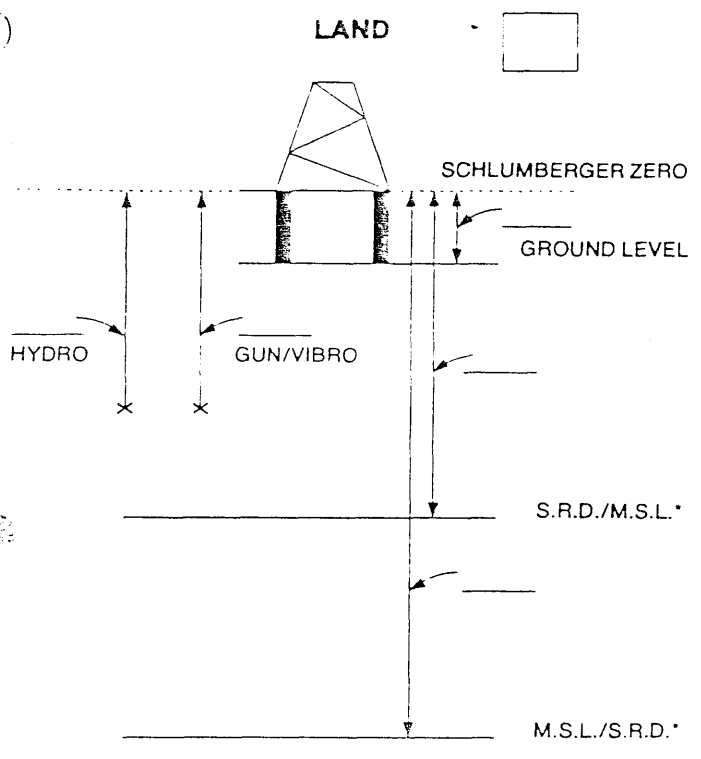
GUN GEOMETRY SKETCH

Figure 2.

CLIENT: ESSO AUSTRALIA LTD

WELL: KIPPEP-1

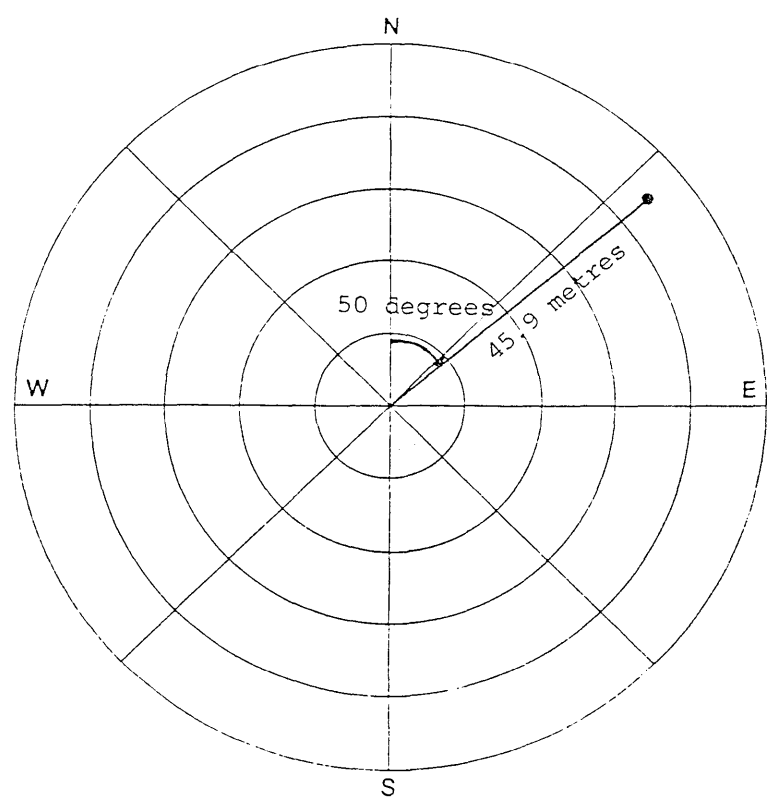
DATE: 31/3/86



INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO
 * DELETE AS APPLICABLE

INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO

SHOT OS'N	GUN OFFSET	ACCEL OFFSET	GUN DEPTH	ACCEL DEPTH
1	45.9m	45.9m	9.1m	9.1m
2				
3				
4				
5				
6				
7				



INDICATE GUN/VIBRO AND HYDROPHONE OFFSET AND AZIMUTH RELATIVE TO NORTH



WELL SEISMIC SERVICE COMPUTATION REQUEST

COMPANY: ESSO AUST. CONTACT: D. LEE
 WELL: KIPPER-1
 FIELD/COUNTRY: WILDCAT/AUSTRALIA
 LOCATION/DIVISION: VEA/ANZ
 DATE WST JOB: 31/3/86
 DATE SENT: _____
 BY: RAMIAH

NUMBER OF COPIES OF RESULTS (CLIENT)

PRODUCT	REPORTS	PLOT TRANSP.	PLOT PRINT	TAPE
WSE	6	1	6	# 1 x 1
WSC	6	1	6	# 2 x 1
GEO	6	1	6	
VSP				

DATA SUPPLIED FOR INTERVALS TO BE PROCESSED

	FROM	TO
A. LOGS: DENSITY	2862.2	1370.0
SONIC	2860.0	238.5
B. SHOTS	2870.0	471.0

UNITS: FEET METRES
 CLIENT TAPE: TAPES#1 TAPES#2
 FORMAT: SEG Y LIS
 DENSITY: 1600 BPI 1600 BPI

SONIC CALIBRATION BY WST (WSC)

URGENT? YES NO

IS A WELL SEISMIC EDIT (WSE) REQUESTED? YES NO
 (WSE IS RECOMMENDED WHERE FIELD STACK QUALITY IS AFFECTED BY BAD HOLE CONDITIONS)
 REQUESTED TIME ORIGIN (SRD) 0.0 METRES ABOVE/BELOW MEAN SEA LEVEL (MSL)
 STATIC CORRECTION TO BE APPLIED: -

_____ MILLISECONDS FROM GROUND LEVEL

OR

LAYER	VELOCITY	FROM	TO
1			
2			
3			

TRUE VERTICAL DEPTH (TVD) CORRECTION? YES NO (TVD IS RECOMMENDED IF DEVIATION EXCEEDS 5°)
 DEVIATION DATA SUPPLIED? YES NO

11 INCH WSC DISPLAY DEPTH SCALES TO BE USED (UP TO TWO) 1/5000 1/1000 OTHER
 22 INCH WIDE TIME/DEPTH DISPLAY SPECIAL TIME FUNCTION? (T-DEPTH/VELOCITY) YES NO VELOCITY
 22 INCH WIDE GEOLOGICAL INTERVAL VELOCITY DISPLAY? YES NO GEOLOGICAL MARKERS SUPPLIED
 SPECIAL SCALES TO BE USED? SPECIFY _____

GEOGRAM

URGENT? YES NO

FREQUENCY TEST TO BE SUPPLIED BEFORE FINALIZATION (8 BAND WIDTHS) YES NO

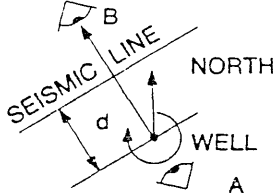
FINAL GEOGRAM PARAMETERS: -
 (ONE GEOGRAM INCLUDES DISPLAYS IN BOTH POLARITIES FOR EACH OF, PRIMARIES, PRIMARIES + MULTIPLES, PRIMARIES WITH TRANSMISSION LOSS, MULTIPLES ONLY FOR THE CHOSEN WAVELET AND T.V.F.)

WAVELET	FREQ.
KLAUDER <input type="checkbox"/>	
MIN PHASE <input checked="" type="checkbox"/>	20, 25
ZERO PHASE <input checked="" type="checkbox"/>	30, 35
OTHER: _____	

T.	T. LOW	T. HIGH	F. LOW	F. HIGH
V.				
F.				

SCALE IS 10 CM/SEC + ONE OTHER - SPECIFY 3.75 in/sec

DIP OPTION YES NO
 SEISMIC LINE NUMBER _____
 (ENCLOSE WELL LOCATION MAP VERSUS SEISMIC LINE)
 DISTANCE BETWEEN TRACES _____
 SECTION PERSPECTIVE: SEEN FROM A FROM B



d _____
 alpha _____
 alpha (CLOCKWISE)

SPECIAL REQUESTS: _____

VERTICAL SEISMIC PROFILE

URGENT? YES NO

UP TO 3 VELOCITY FILTER TESTS WILL BE SENT PROVISIONALLY
 SPECIFY NUMBER OF TRACES IN WINDOW REQUIRED 3 5 7 9 11

TIME VARIANT FILTER (TVF) TO BE APPLIED ON FINAL DISPLAY: -
 SCALE IS 10 CM/SEC + ONE OTHER. SPECIFY _____

TIME 1	TIME 2	FLOW	F. HIGH

SPECIAL REQUESTS?

ENCLOSE SEISMIC SECTION. INDICATE RELATION TO WELL ON A DIAGRAM

COMPANY : ESSO AUSTRALIA LTD

WELL : KIPPER - 1

PAGE 3

LEVEL NUMBER	MEASUR DEPTH FROM KB M	VERTIC DEPTH FROM SRD M	VERTIC DEPTH FROM GL M	OBSERV TRAVEL TIME HYD/GEO MS	VERTIC TRAVEL TIME SRC/GEO MS	VERTIC TRAVEL TIME SRD/GEO MS	AVERAGE VELOC SRD/GEO M/S	DELTA DEPTH BETWEEN SHOTS M	DELTA TIME BETWEEN SHOTS MS	INTERV VELOC BETWEEN SHOTS M/S
1	115.70	95.00	0	65.80	58.03	64.18	1480	129.30	65.19	1983
2	245.00	224.30	129.30	126.00	123.23	129.38	1734	176.00	81.37	2163
3	421.00	400.30	305.30	206.00	204.60	210.75	1899	417.00	157.82	2642
4	838.00	817.30	722.30	363.00	362.42	368.56	2218	362.00	131.20	2759
5	1200.00	1179.30	1084.30	494.00	493.62	499.77	2360	220.00	80.07	2748
6	1420.00	1399.30	1304.30	574.00	573.69	579.84	2413	270.00	88.06	3066
7	1690.00	1669.30	1574.30	662.00	661.75	667.90	2499	105.00	31.02	3335
8	1795.00	1774.30	1679.30	693.00	692.77	698.91	2539	98.00	29.02	3378
9	1893.00	1872.30	1777.30	722.00	721.78	727.93	2572	97.00	29.01	3343
10	1990.00	1969.30	1874.30	751.00	750.79	756.94	2602	160.00	45.02	3554
11	2150.00	2129.30	2034.30	796.00	795.81	801.96	2655	130.00	34.01	3822
12	2280.00	2259.30	2164.30	830.00	829.83	835.98	2703	220.00	53.02	4149
13	2500.00	2479.30	2384.30	883.00	882.85	889.00	2789	200.00	49.01	4080
14	2700.00	2679.30	2584.30	932.00	931.86	938.01	2856	145.00	35.01	4142
15	2845.00	2824.30	2729.30	967.00	966.87	973.02	2903	25.00	5.00	4999
16	2870.00	2849.30	2754.30	972.00	971.87	978.02	2913			

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PE603399

This is an enclosure indicator page.
The enclosure PE603399 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE603399 has the following characteristics:

ITEM_BARCODE = PE603399
CONTAINER_BARCODE = PE906044
NAME = Checkshot Data
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Raw and stacked checkshot data (from
appendix 6 of WCR vol.1) for Kipper-1
REMARKS =
DATE_CREATED = 07/04/1986
DATE_RECEIVED = 13/08/1986
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603400

This is an enclosure indicator page.
The enclosure PE603400 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE603400 has the following characteristics:

ITEM_BARCODE = PE603400
CONTAINER_BARCODE = PE906044
 NAME = Synthetic Seismogram (Geogram)
 BASIN = GIPPSLAND
 PERMIT = VIC/P19
 TYPE = WELL
 SUBTYPE = SYNTH_SEISMOGRAPH
DESCRIPTION = Geogram (synthetic seismogram), from
 appendix 6 of WCR vol.1, for Kipper-1
REMARKS =
DATE_CREATED = 07/04/1986
DATE_RECEIVED = 13/08/1986
 W_NO = W930
 WELL_NAME = KIPPER-1
 CONTRACTOR = SCHLUMBERGER
 CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906045

This is an enclosure indicator page.
The enclosure PE906045 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE906045 has the following characteristics:

ITEM_BARCODE = PE906045
CONTAINER_BARCODE = PE906044
NAME = Seismic Calibration Log
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Seismic Calibration Log (Adjusted
Continuous Velocity Log) from appendix
6 of WCR vol.1.for Kipper-1
REMARKS = This item is clearly titled a Seismic
Calibration Log, yet, appears more like
a Time Depth Curve.
DATE_CREATED = 7/04/86
DATE_RECEIVED = 13/08/86
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

PE906046

This is an enclosure indicator page.
The enclosure PE906046 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE906046 has the following characteristics:

ITEM_BARCODE = PE906046
CONTAINER_BARCODE = PE906044
NAME = Time-Depth Curve
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Time-Depth Curve (from appendix 6 of
WCR vol.1) for Kipper-1.
REMARKS =
DATE_CREATED = 10/04/1986
DATE_RECEIVED = 13/08/1986
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603401

This is an enclosure indicator page.
The enclosure PE603401 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE603401 has the following characteristics:

ITEM_BARCODE = PE603401
CONTAINER_BARCODE = PE906044
NAME = Seismic Calibration Log
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Seismic Calibration Log (Adjusted
continuous velocity log), from appendix
6 of WCR vol.1, for Kipper-1
REMARKS =
DATE_CREATED = 07/04/1986
DATE_RECEIVED = 13/08/1986
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906047

This is an enclosure indicator page.
The enclosure PE906047 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE906047 has the following characteristics:

ITEM_BARCODE = PE906047
CONTAINER_BARCODE = PE906044
NAME = Palynological Chart
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Palynological Chart (1 of 3) for
Kipper-1
REMARKS =
DATE_CREATED = 30/09/1986
DATE_RECEIVED = 27/02/1987
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906048

This is an enclosure indicator page.
The enclosure PE906048 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE906048 has the following characteristics:

ITEM_BARCODE = PE906048
CONTAINER_BARCODE = PE906044
NAME = Palynological Chart
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Palynological Chart (2 of 3) for
Kipper-1
REMARKS =
DATE_CREATED = 30/09/1986
DATE_RECEIVED = 27/02/1987
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE906049

This is an enclosure indicator page.
The enclosure PE906049 is enclosed within the
container PE906044 at this location in this
document.

The enclosure PE906049 has the following characteristics:

ITEM_BARCODE = PE906049
CONTAINER_BARCODE = PE906044
NAME = Palynological Chart
BASIN = GIPPSLAND
PERMIT = VIC/P19
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Palynological Chart (3 of 3) for
Kipper-1
REMARKS =
DATE_CREATED = 30/09/1986
DATE_RECEIVED = 27/02/1987
W_NO = W930
WELL_NAME = KIPPER-1
CONTRACTOR =
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)