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PPL1

VAUGHAN-1 (W1124)

WELL
COMPLETION
REPORT

JANUARY 1995

GFE

GFE Resources Ltd

17 JAN 1996

WELL COMPLETION REPORT

VAUGHAN-1

PPL1

OTWAY BASIN, VICTORIA

TEXT & APPENDICES 1 - 10

ENCLOSURES

WCR
Vaughan -1
(W1124).

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GFE RESOURCES LTD

PPL1

OTWAY BASIN, VICTORIA

VAUGHAN-1

WELL COMPLETION REPORT

submitted

January, 1996

KPL/mn:n0106

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1. INTRODUCTION

1.1 Reasons For Drilling

Vaughan-1 exploration well is located in PPL1 (Figure 1), 1.3km south of the Mylor gas discovery and 3km west of the North Paaratte gas field, and lies on the same structural trend as North Paaratte on a tilted fault block. The structure was interpreted to have closure at four mapped horizons the Nullawarre Greensand, Waarre Formation, top Eumeralla Formation and intra-Eumeralla. Vaughan-1 is only the second well drilled based on interpretation of the Waarre 3D Seismic Survey.

The Waarre Formation (Figure 2) was the primary objective for the well. The horizon had associated with it a bright amplitude event indicating the possibility of a gas column being present. Reservoir characteristics were interpreted to be excellent. The Belfast Mudstone was believed to have been adequate to provide lateral and vertical seal. Mapping indicated up to 35m of closure with a recoverable reserve of 5 to 9 BCF.

The Nullawarre Greensand represented the first of the secondary targets in the well. Strong amplitudes do not exist at this level which downgraded the probability of gas. However this was the only structural closure mapped at this horizon within the 3D area and represented the first true test of its reservoir trapping qualities. Nearby well intersections indicated the likelihood of good porosities and net to gross ratios. Mapping indicated a significant reservoir volume of up to 9.7 BCF of gas or 13.4 MMBL of oil in place. However, lateral and vertical seal across the northern fault remained the strong risk with the true extent and quality of the overlying Skull Creek Mudstone being uncertain.

The top Eumeralla Formation had mapped closure at the well location. The presence of good but untested shows at the same level in nearby Mylor-1 represented good potential at this location. Poor reservoir properties and uncertain sealing facies represented the main risks with in-place reserves estimated at 0.7 BCF of gas or 0.7 MMBL of oil.

The final target was located within the Eumeralla Formation and was characterised by a bright amplitude event. This event had mapped closure with the crest 400m to the north-west of the well location, however the well was prognosed to intersect the horizon above the closing contour. Again, hydrocarbon shows in nearby Mylor-1 upgraded the potential of this target. Reservoir properties and uncertain sealing facies again presented the biggest risks. Estimated in-place reserves were calculated as 2.2 BCF of gas or 2.3 MMBL of oil.

The main risk at Vaughan-1 was the subtleness of the prospect. A time closure of only 25 msecs had been mapped at the Waarre level, the integrity of which could have been affected by statics and depth conversion.

Total depth for the well was prognosed at 1918mSS.

1.2 Main Results

Vaughan-1 spudded on 14 February, 1995 and was drilled to a total depth of 2030.0 mKB in 14 days. Vaughan-1 was plugged and abandoned after encountering minor gas shows in the primary target, the Waarre sandstone and non-commercial gas in the underlying Eumeralla Formation.

The Waarre Formation sandstones were not tested. A drill stem test conducted in the Eumeralla Formation between 1778-1823 mKB flowed gas to surface at a rate of 125 MCFD indicating poor reservoir quality.

Log evaluation and strong gas shows suggest that the Waarre Formation might have a very thin, 1.2 m, gas zone at the top of Unit 'C' between 1600.8 and 1602.0 mKB.

The Eumeralla Formation contains a proven gas zone in a sandstone between 1807 - 1823 mKB. The zone was tested by DST-1, therefore, the depth of 1823.0 mKB constitutes the Lowest Known Gas (LKG) level. Below this depth high gas readings persisted in the same sandstone down to 1830.0 mKB suggesting additional pay.

Two more zones in the Eumeralla Formation recorded high gas readings during drilling and they have been included in the 'probable gas' category. The zones are 1699.0 - 1713.0 mKB and 1857 - 1882.0 mKB.

In spite of containing a significant gas resource in place, DST and RFT data indicate poor to tight reservoir quality in the Eumeralla Formation.

All other Formations were found to be water wet.

2. WELL HISTORY

2.1 Location

Surface Location:	Latitude:	38°	32'	30.910"S
	Longitude:	142°	55'	13.582"E
	AMG:	667368.8mE		
		5732292.2mN		
Seismic:	Line:	Inline 6950		
		Crossline 2320		

2.2. General Data

Well Name:	Vaughan-1
Permit:	PPL1 Otway Basin, Victoria
Operator:	GFE Resources Ltd Level 6, 6 Riverside Quay South Melbourne Victoria 3205
Participants:	GFE Resources Ltd 100%
Elevation:	Ground Level (GL): 93.6m AHD Kelly Bushing (KB): 99.3m AHD *(datum)* *(All depths are Drilled Depths relative to KB unless otherwise stated).*
Total Depth:	Driller: 2030.0mKB Logger: 2024.0mKB
Drilling Commenced:	1300 hours, 14 February, 1995
Total Depth Reached:	2000 hours, 28 February, 1995
Rig Released:	1700 hours, 6 March, 1995
Well Status:	Plugged and Abandoned

2.3. Drilling Data

2.3.1 Drilling Contractor

Century Drilling Limited

2.3.2 Drilling Rig

Century Rig 11 (see Appendix 1)

2.3.3 Casing and Cementing Details

A 16" Conductor pipe was cemented at 12 metres (GL) prior to rig up.

Surface Casing

Size:	$9^5/_8$"
Weight & Grade:	36 lb/ft 10 Joints 8RD STC K55 19 Joints Buttress K55
Centralisers:	338m, 329m, 318m and 306m
Float Collar:	329.6m
Shoe:	341.16m
Hole Depth:	346m
Cement:	621 sacks Class "G" neat cement
Method:	Single plug displacement (top plug only)
Equipment:	Dowell/Schlumberger

Cement plugs

Plug No.1	Interval:	1830-1770m
	Cement:	75 sacks class "A" cement
	Method:	Balanced
	Tested:	No
Plug No.2	Interval:	1730-1670m
	Cement:	78 sacks class "A" cement
	Method:	Balanced
	Tested:	No
Plug No.3	Interval:	1630-1570m
	Cement:	98 sacks class "A" cement
	Method:	Balanced
	Tested:	Yes (tagged at 1570m)
Plug No.4	Interval:	1340-1280m
	Cement:	72 sacks class "A" cement
	Method:	Balanced
	Tested:	No
Plug No.5	Interval:	930-870m
	Cement:	66 sacks class "A" cement
	Method:	Balanced
	Tested:	No
Plug No.6	Interval:	370-310m
	Cement:	66 sacks class "A" cement
	Method:	Balanced
	Tested:	Yes (tagged at 338m) Run supplementary plug from 338-310m
Surface Plug	Run by hand with class "A" cement	

2.3.4 *Drilling Fluid*

The drilling fluid program used was that designed and recommended by M-I Australia Pty. Ltd. after consultation with GFE representatives. The well was spudded using M-I Gel and caustic soda with KCl by weight at 0.75%. Water was added whilst drilling to control viscosity increases from native clays. At casing depth of 346 metres the system was treated with sodium bicarbonate to overcome possible effects from cement contamination. At 608 metres premixed KCl and polymer was bled into the system and by 809 metres conversion to a KCl polymer mud system was achieved. Mud weight was maintained between 9.2 and 9.4 lb/gal and KCl 3.0-3.5%. Problems with tight hole were encountered on most trips. Mud losses of 3-5 bbls/hr were present from 1607 metres to total depth. On the first logging run the tools were unable to pass a bridge at 1593 metres - subsequently the mud weight was increased to 9.8 lb/gal with an associated minor reduction to the mud losses. Details of the mud system used and assessment of its performance is contained in the Drilling Fluid Recap (Appendix 2).

2.3.5 *Drilling Bits*

Three drilling bits were used during the drilling of Vaughan-1, and a record of their pertinent details is shown in Table 1.

2.3.6 *Water Supply*

Water was obtained from a roadside shire stand pipe.

2.3.7 *Drilling History*

The following summary of operations and the drilling progress chart (Figure 3) for Vaughan-1 are based on tour sheets and daily drilling reports. A more detailed account can be found in the compilation of the operations summaries from daily drilling reports in Appendix 3.

A 16" conductor pipe was cemented at 12 metres (GL) prior to rig up. Vaughan-1 was spudded at 1300 hours on February 14, 1995 with a $12^1/_4$" bit. The cellar began filling from mud flow up the rat hole at 123 metres - after jetting the cellar and checking the flow rate of the washout drilling recommenced and the problem self cured. Drilling continued to 345 metres where the hole was wiper tripped. During circulating after the wiper trip a mud ring occurred. After the mud ring was circulated out another one metre of $12^1/_4$" hole was drilled to a total depth of 346 metres, the $9^5/_8$" casing point.

After running and cementing the $9^5/_8$" casing at 341.16 metres, then nippling up and pressure testing the Blow Out Preventers (BOPs), the cement and five metres of new formation were drilled with an $8^1/_2$" bit and a Formation Integrity Test was conducted (Equivalent Mud Weight = 21.9 ppg). The $8^1/_2$" hole was then continued with geological samples circulated at 1209 metres and 1319 metres. At 1507 metres the bit was tripped due to hours, with tight hole problems experienced on the trip out. After reaming the tight hole sections drilling $8^1/_2$" hole continued to 1607 metres where the bit was tripped prior to running an open hole drill stem test. Tight hole was encountered on the wiper trip prior to pulling out and after reaming the tight hole sections the bit was pulled to surface.

During make up of the test tool string it was found the pump out sub was not compatible with the drill string and the drill stem test was aborted. Drilling 8.½" hole then continued to a depth of 1794 metres where the hole was wiper tripped with only minor tight hole problems. Drilling continued to 1823 metres with geological samples circulated at 1623 metres, 1664 metres, 1729 metres, 1812 metres, 1818.5 metres and 1823 metres. At 1823 metres the hole was conditioned and the bit pulled where a drill stem test was run.

Drill Stem Test One (DST-1) was conducted over the interval 1798-1823 metres, producing a 19.8 metre column of rat hole mud and a gas flow estimated at 125 MCFD. After reaming severe tight hole on the trip back into hole drilling continued in $8^{1}/_{2}$" hole to a Total Depth of 2030 metres with geological samples circulated at 1869 metres, 1884 metres, 1939 metres and 2002 metres. After conditioning the hole wireline logs were run with BPB. After several unsuccessful attempts to get the logging tools to bottom and hole conditioning attempts, the mud weight was increased to 9.8 lbs/gal. The hole was then successfully logged. After running the wireline logs, six cement plugs were emplaced via open-ended drill pipe, the last of which (across the casing shoe) was tagged at 338 metres and subsequently topped up to 310 metres. The drill pipe was then layed out, the BOPs nippled down, and the surface plug emplaced. The rig was released at 1700 hours on March 6, 1995.

TABLE 1

BIT RECORD

Well: Vaughan-1 **GFE Rep.:** Ken Smith **Rig:** Century Rig 11
Permit: DIGBY JV **Spud:** 1300hrs 14/2/95 **Reached T.D.:** 2000hrs 28/2/95

No.	Size (inch)	Make	Type	Jets	Serial	Depth Out (m)	Mtrs Drld	Hours	Ave Rate (m/hr)	Accum Drlg Hours	Wt. on bit (000lbs)	RPM	Vert Dev. ()	Pump Press. (psi)	GPM	Mud			IADC Dull Grade							
																WT	VIS	PV/YP	I	O		L	B	G	O	Remarks
1RR	12¼	Varel	L-114	2x20 1x18	26776	346	346	15½	22.3	15½	5-15	90-120	0	600	430	8.9	45		1				1	I		Casing T.D.
2	8½	HTC	ATJ-05	3x11	S53BU	1507	1161	65½	23	81	15-25	90-110	¾	1000	300-250	92			3	3			5	1/16		Hours
	All cone shells worn, exposing bases of inserts, 1 broken insert in middle row of 2nd cone. All gauge protection buttons in 3rd cone broken off. Standing proud in other two cones. All seals still effective with some seal drag still evident.																									
3	8½	HTC	ATJ-05	3x11	B77BV	1607	100	11	9	92	20-25	90-100	¾	1075	250	9.3	39	11/12	1	1			1	In		Test
3RR	8½	HTC	ATJ-05	3x11	B77BV	1823	216 (316)	21 (32)	10	113	25	85-90	1¼	1080	250	9.3	38	12/10	1	1			2	In		DST-1
3RR	8½	HTC	ATJ-05	3x11	B77BV	2030	207 (523)	28 (60)	7.4	141	20-25	95	¾	1000	250	9.4	40	14/11	2	2			4	< 1/16		TD
	Av. Penetration 2030m ÷ 141 hrs = 14.4 m/hr																									

2.4 Formation Sampling And Testing

2.4.1 Cuttings

Cuttings samples were collected at ten metre intervals from 60 metres to 340 metres and then at five metre intervals from 340 metres to 2030 metres (TD) and subdivided into sets as follows;

1 set of unwashed and air-dried samples at 10 metre intervals in calico bags from 60 - 2030 metres.
3 sets of washed and dried samples in plastic bags 60 - 2030 metres.
1 set of washed and dried samples in Samplex trays 60 - 2030 metres.

A set of washed and dried samples was subsequently made available to the Victorian Department of Energy and Minerals (Petroleum Division) sample store. The remaining samples were retained by GFE Resources Ltd.

Lithological descriptions of cuttings by the wellsite geologist are provided in Appendix 4A, and a compilation of the lithological descriptions from daily reports issued during the drilling can be found in Appendix 4B.

2.4.2 Cores

2.4.2.1 Conventional Core

No conventional cores were cut in Vaughan-1.

2.4.2.2 Sidewall Cores

A total of 24 sidewall cores were attempted (Appendix 5), of which 21 were recovered.

All recovered sidewall core samples were checked for lithology and hydrocarbon shows.

2.4.3 Testing

2.4.3.1 Drill Stem Testing

One Drill Stem Test (DST) was conducted in Vaughan-1, as outlined below. This test was within the Eumeralla Formation, and produced gas to surface at an estimated rate of 125 MCFD and 19.8 m of rathole mud, was recovered.

DST-1 was a conventional dual-packer, bottom-hole test conducted on 24 February 1995 over the interval 1798.0-1823.0 metres (driller's depth) to evaluate an intra-Eumeralla sandstone sequence.

The tool was opened at 1657 hours for a six minute Pre-Flow, during which no air flow (no bubbles) were observed. The tool was then shut in for 30 minutes. At 1733 hours the tool was reopened with the surface manifold closed - no pressure increase was observed on the surface gauge

and after 4 minutes the bubble hose was opened with a good air blow. This was then considered to be the first opening and the tool was closed at 1739 hours after a flow time of 6 minutes. The tool was closed for 62 minutes and reopened for the final flow at 1841 hours with the surface manifold closed. After five minutes the surface pressure had risen to 35 PSI and the well was opened through a 1/2" choke with gas to surface 6 minutes into the final flow. The flowing pressure then steadily dropped to 10 PSI after 23 minutes when the choke was changed to 1/4". After this the flowing pressure steadily increased until the tool was shut in at 2019 hours after a final flow time of 98 minutes and with a flowing pressure of 70 PSI. The tool was then shut in fore 196 minutes. The calculated maximum flow rate for this gas was 125 MCFD.

Following the Final Shut-In the test was ended and the pipe was pulled with a fluid recovery of 19.8 metres of rat hole mud.
The Drill Stem Test Report and DST gas analysis are found in Appendix 6.

2.4.3.2 Wireline Formation Testing

Repeat Formation Sampler (RFS) pressure readings were carried out in Vaughan-1 within the Waarre and Eumeralla Formations, with pressure readings attempted at 1602.5, 1606.0, 1607.0, 1612.0, 1615.0, 1657.0, 1661.0, 1890.0, 1886.0, 1874.0, 1861.0, 1826.5 and 1864.0 metres. No samples were taken.

The RFS Pressure test report sheet is found in Appendix 7.

2.5 Logging And Surveys

2.5.1 Mud Logging

A standard skid-mounted unit equipped for continuous recording of depth, rate of penetration (ROP), mud gas, pump rate and mud volume data, as well as intermittent mud and cuttings gas (blender) analysis was operative from 60 metres until the well was plugged and abandoned. The Formation Evaluation Log (i.e., "Mud Log") at 1:500 scale and a Gas Ratio Analysis Log at 1:1000 scale are provided in Enclosure 2.

2.5.2 Wireline Logging

Wireline logging was performed by BPB using a skid mounted unit. Only one logging suite was carried out at total depth and comprised the following:-

Run	Tool	Interval (mkb)	BHT (°C)	Hrs Since Circulation Stopped	Comments
1	LSS-LL-MLL-GR-SP-Cali	2022.0 - 341.16	67°	7.5	GR to surface
2	Long Spaced Sonic	2017.0 - 1485.0	67°	14.5	
		WIPER TRIP			
3	Neut-Dens-GR (PDS)	2024.0 - 1250.0	70°	7.0	
4	RFS (Repeat Formation Sampler)	1890.0 - 1602.5	70°	18.0	
5	Checkshots	T.D-Surface			19 levels
6	SWC's				24 attempted 21 recovered

Mud Properties While Logging:

	Run 1 and 2	All Other Runs
Fluid Type	KCL Polymer	KCL Polymer
Density (ppg)	9.8	9.9
Viscosity (sec)	37	42
pH	9	9
Fluid Loss (cc)	6.0	6.2
Rm @ Temp	0.257 @ 23.8°C	0.276 @ 23.3°C
Rmf @ Temp	0.218 @ 21.7°C	0.210 @ 22.2°C
Rmc @ Temp	0.589 @ 24.3°C	0.407 @ 23.1°C

2.5.3 Deviation Surveys

Totco deviation surveys were carried out periodically throughout the drilling of Vaughan-1, with results as shown in Table 2. Using this data a maximum radius of deviation was calculated by summing the products of the component of horizontal shift [*interval length* × sin (*deviation angle*)] for each interval. This indicates that the Waarre Formation primary objective was intersected within a 25-metre radius of the surface location and the bottom hole location was within a 34-metre radius, which equates to an overall deviation of no more than one degree.

TABLE 2

Totco Deviation Surveys

VAUGHAN-1 HOLE DEVIATION								
Depth (m)	Interval (m)	Angle (m)	Sin(angle)	Horizontal distance (m)	Total horizontal (m)	cos(angle)	Vertical distance (m)	Total vertical distance (m)
0								
11	11	0	0.00	0.00	0.00	1.00	11.00	11.00
30	19	1	0.02	0.33	0.33	1.00	19.00	30.00
47	17	0.75	0.01	0.22	0.55	1.00	17.00	47.00
83	36	1	0.02	0.63	1.18	1.00	35.99	82.99
120	37	0.25	0.00	0.16	1.34	1.00	37.00	119.99
174	54	0.5	0.01	0.47	1.82	1.00	54.00	173.99
229	55	0.25	0.00	0.24	2.06	1.00	55.00	228.99
296	67	0.25	0.00	0.29	2.35	1.00	67.00	295.99
335	39	0	0.00	0.00	2.35	1.00	39.00	334.99
439	104	0.5	0.01	0.91	3.25	1.00	104.00	438.98
650	211	0.25	0.00	0.92	4.18	1.00	211.00	649.98
854	204	1	0.02	3.56	7.74	1.00	203.97	853.95
1070	216	2	0.03	7.54	15.27	1.00	215.87	1069.82
1168	98	2	0.03	3.42	18.69	1.00	97.94	1167.76
1254	86	2	0.03	3.00	21.70	1.00	85.95	1253.71
1350	96	1	0.02	1.68	23.37	1.00	95.99	1349.69
1455	105	0.75	0.01	1.37	24.75	1.00	104.99	1454.68
1743	288	1.25	0.02	6.28	31.03	1.00	287.93	1742.61
1934	191	0.75	0.01		33.53	1.00	190.98	1933.60
			Totals	33.53			1933.60	

2.5.4 Velocity Survey

A Velocity Survey (WST-Checkshot) was carried out by Velocity Data and the raw data was corrected to obtain time versus depth values below the seismic reference datum (Mean Sea Level). The procedure used in this correction and the resulting values are presented in Appendix 8.

3. GEOLOGY

3.1 Stratigraphy

The section penetrated in Vaughan-1 is interpreted to have formation tops as shown in Table 3 based on rate of penetration, cuttings descriptions, palynological analyses and wireline logs. Unless stated otherwise, depths mentioned in this report are referenced to kelly bushing (KB).

TABLE 3

VAUGHAN-1 FORMATION TOPS AND THICKNESSES

Stratigraphic Unit	Depth		Thickness
	(mKB)	(mSS)	(m)
Heytesbury Group	5.7	+93.6	
Port Campbell Limestone	5.7	+93.6	105.8
Gellibrand Marl	111.5	-12.2	272.5
Clifton Formation	384.0	-284.7	7.0
Nirranda Group	391.0	-291.7	
Narrawaturk Marl	391.0	-291.7	81.0
Mepunga Formation	472.5	-373.2	60.2
Wangerrip Group	532.7	-433.4	
Dilwyn Formation	532.7	-433.4	209.3
Pember Mudstone	742.0	-642.7	74.5
Pebble Point Formation	816.5	-717.2	52.5
K.T Shale	870.0	-770.7	27.5
Sherbrook Group	897.0	-797.7	
Paaratte Formation	897.0	-797.7	259.5
Skull Creek Mudstone	1157.0	-1057.7	158.4
Nullawarre Greensand (equiv.)	1315.4	-1216.1	119.1
Belfast Mudstone	1434.5	-1335.2	127.0
Waarre Formation	1561.5	-1462.2	
Unit D †	1561.5	-1462.2	39.3
Unit C	1600.8	-1501.5	19.2
Unit B	1620.0	-1520.7	31.3
Unit A	1651.3	-1552.0	43.9
Otway Group	1695.2	-1595.9	
Eumeralla Formation	1695.2	-1595.9	334.8+
Total Depth (Driller)	2030.0	-1930.7	
Total Depth (Logger)	2024.0	-1924.7	

† *Also known as the Flaxman Formation*

3.2 Lithological Descriptions

The following is a summary of the lithological units observed in Vaughan-1 compiled from the descriptions by the wellsite geologist (Appendix 4), as well as the Mud Log (Enclosure 2), and sidewall core descriptions (Appendix 5).

3.2.1 Heytesbury Group (Surface - 391.0 metres)

3.2.1.1 Port Campbell Limestone (Surface - 111.5 metres)

Calcarenite: light grey to light brown grey, very fine to fine to occasionally medium grained, common fossil fragments including bryozoa, echinoid spines, sponge spicules, gastropods, bivalves and forams, fossil fragments are occasionally partially replaced by glauconite, trace black to green lithics, rare very fine to fine quartz sand grains, trace medium grey marly fragments, very strong calcareous cement in part, moderately hard to hard, poor visual porosity with up to 20% gradational to and interbedded with Marl: medium grey to medium brown grey to medium green grey, common very fine to fine dispersed calcarenitic grains, firm, non fissile

3.2.1.2 Gellibrand Marl (111.5 - 384.0 metres)

Marl: medium green grey to medium brown grey, occasionally medium to dark grey, becoming dominantly medium grey to medium green grey with depth, common to occasionally abundant fossil fragments including bryozoa, forams, bivalves, gastropods, sponge spicules and echinoid spines, rare very fine to fine quartz sand grains, rare pyrite, rare glauconite, rare to occasionally common black coaly detritus very soft, sticky, nonfissile.

3.2.1.3 Clifton Formation (384.0 - 391.0 metres)

Sandstone: light to medium brown, very fine to grit, dominantly coarse, subrounded, poorly sorted, very weak calcareous and silica cements, occasionally very strong calcareous cement grading to arenitic limestone, trace to common medium brown argillaceous matrix, brown to orange brown stained quartz grains, trace brown iron oxide nodules, trace pink rhyolitic lithics, trace brown clay lithics, unconsolidated to occasionally hard, poor to very good (dominantly fair to good) inferred porosity, no oil fluorescence. Interbedded with and grading to:

Claystone: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to grit brown stained quartz grains, trace very fine black carbonaceous detritus, soft, moderately dispersive, non-fissile.

3.2.2 Nirranda Group (391.0 - 533.0 metres)

3.2.2.1 Narrawaturk Marl (391.0 - 476.0 metres)

Marl: medium brown grey to occasionally dark grey, common medium green grey in part possibly caving, common glauconite, abundant fossil fragments, trace disseminated pyrite, rare very fine to fine quartz sand grains, minor calcarenitic bands at top, soft, sticky, non-fissile.

3.2.2.2 Mepunga Formation (476.0 - 533.0 metres)

Sandstone: light to medium brown, very fine to grit, dominantly coarse, subrounded, poorly sorted, very weak calcareous and silica cements, occasionally very strong calcareous cement grading to arenitic limestone, trace to common medium brown argillaceous matrix, brown to orange brown stained quartz grains, trace brown iron oxide nodules, trace pink rhyolitic lithics, trace brown clay lithics, unconsolidated to occasionally hard, poor to very good (dominantly fair to good) inferred porosity, no oil fluorescence. Interbedded with and grading to;
Claystone: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to grit brown stained quartz grains, trace very fine black carbonaceous detritus, soft, moderately dispersive, non-fissile.

3.2.3 Wangerrip Group (533.0 - 872.5 metres)

3.2.3.1 Dilwyn Formation (533.0 - 742.5 metres)

Sandstone: light brown to light brown grey, very fine to medium becoming very fine to grit with depth, dominantly fine at top becoming dominantly coarse with depth, subangular to subrounded, moderately to poorly sorted, weak silica cement, rare strong dolomite cement, common to abundant dark brown argillaceous matrix, trace to common decreasing with depth yellow to brown stain on quartz grains, trace green grey lthics, trace black carbonaceous detritus, friable, poor to fair inferred porosity, no oil fluorescence. Interbedded with 20%;

Claystone: dark brown grey, moderately to very silty, often common dispersed very fine to grit quartz sand grains, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace glauconite, trace argillaceous light to medium brown cryptocrystalline dolomite nodules especially towards base, very dispersive, soft, non-fissile.

3.2.3.2 Pember Mudstone (742.5 - 811.5 metres)

Claystone: dark brown grey, moderately to very silty, often common dispersed very fine to grit quartz sand grains, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace glauconite, trace argillaceous light to medium brown cryptocrystalline dolomite nodules, very dispersive, soft, non-fissile. Becoming dominantly dark green grey with depth and with glauconite increasing to common.

3.2.3.3 Pebble Point Formation (811.5 - 870.0 metres)

Sandstone: medium orange brown, very fine to granule, dominantly very coarse, subangular to subrounded, dominantly subrounded, poorly sorted, weak silica and iron oxide cements, very weak calcareous cement in part, common to abundant dark brown argillaceous matrix, common light orange brown to brown stain on quartz grains in general increasing with depth, trace green grey and brown lithics, trace brown clay casts, trace brown iron oxide pellets, trace pyrite, trace black carbonaceous detritus, friable, poor inferred porosity. Grading to and with minor Claystone: medium to dark brown, moderately to very iron oxide rich, common dispersed brown stained quartz grains, rare pyrite, soft, very dispersive, non-fissile.

3.2.3.4 "K-T Shale" (870.0 - 897.5 metres)

Claystone: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to granular quartz grains, trace micromica and fine mica flakes, soft, very dispersive, non-fissile, with minor Sandstone: medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, very poorly sorted, weak silica and calcareous cements, abundant dark brown argillaceous matrix - probably matrix supported, strong brown stain on quartz grains, trace to common brown, grey, black and green volcanic lithics, trace brown rounded clay lithics, trace black carbonaceous detritus, friable, very poor inferred porosity.

3.2.4 Sherbrook Group (897.5 - 1692.0 metres)

3.2.4.1 Paaratte Formation (897.5 - 1157.0 metres)

Sandstone: light grey, very fine to grit, dominantly coarse, angular to subrounded with abundant grains fractured by drill bit, poorly sorted, weak silica cement, trace to common dark grey argillaceous and silt matrix, trace yellow to orange quartz grains, trace clear and brown mica flakes, trace pyrite, trace red cherty lithics, friable, fair to good inferred porosity. Interbedded with 30%;
Claystone: medium to dark grey, very silty, very arenaceous in part, trace coal detritus often with pyritization, trace micromica, firm, very dispersive and washing from samples, slightly subfissile.

3.2.4.2 Skull Creek Mudstone (1157.0 - 1315.0 metres)

(1157.0 - 1287.5 metres)

Claystone: light to dark grey, occasionally light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz, partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, trace glauconite, soft to firn, very dispersive, subfissile. Interbedded and laminated with minor.

Sandstone: light grey, very fine to grit, dominantly very fine, subangular to subrounded, moderately sorted, moderate calcareous cement, trace to common off white to medium grey argillaceous matrix, abundant off white silt matrix in part, trace fine partially altered feldspar, trace black carbonaceous flecks, trace green grey cherty lithics, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.

(1287.5 - 1315.0 metres)

Claystone: medium to dark grey to medium dark brown grey, very silty, occasionally very finely arenaceous, trace very fine off white partially altered feldspars, trace to common black carbonaceous flecks and detritus, trace amber in part, trace medium brown cryptocrystalline dolomite often with common glauconite grains, trace micromica, soft, very dispersive, subfissile, with minor interlaminated

Sandstone: very light green grey, very fine to fine, subangular, moderately to well sorted, weak silica cement, very strong dolomite cement in part, common light green grey silt matrix, common to abundant medium green grey argillaceous matrix, trace green to yellow stained quartz grains, common brown dolomite with abundant medium green lithics, trace coarse green mica flakes, friable, poor inferred porosity, no oil fluorescence.

3.2.4.3 Nullawarre Greensand (equivalent) (1315.0 - 1434.5 metres)

(1315.0 - 1417.0 metres)

Sandstone: light to medium green, very fine to medium, dominantly fine, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common light green argillaceous and silt matrix, common to abundant yellow to green stained quartz grains, friable, fair to good visual porosity, no oil fluorescence, grading in part to;

Claystone: medium to dark green grey, very silty, abundant dispersed very fine to medium quartz sand grains grading to sandstone, common green and black lithics, soft, very dispersive, non-fissile.

(1417.0 - 1434.5 metres)

Claystone: dark grey to dark brown grey, very silty, common dispersed very coarse quartz sand grains, common glauconite, trace dolomite, trace black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, firm, very dispersive, subfissile, with minor matrix supported;

Sandstone: light grey, very fine to very coarse, dominantly very coarse, subangular, moderately sorted, in general dispersed through the claystone, abundant dark grey to dark brown grey argillaceous matrix, trace glauconite, friable, no visual porosity.

3.2.4.4 Belfast Mudstone (1434.5 - 1561.5 metres)

Claystone: dark grey, occasionally dark brown grey, very silty, moderately carbonaceous, rare black coal detritus, common to abundant glauconite in general increasing with depth, common micromica, very slightly calcareous, trace crystalline calcite, common *Inoceramus*, trace pyrite, trace medium brown cryptocrystalline dolomite, rare to trace coarse to very coarse dispersed quartz sand grains, firm, subfissile, with minor interbedded;

Sandstone: light to medium grey, very fine to very coarse, dominantly fine to medium, subangular, very poorly sorted, weak silica cement, moderate calcareous cement, common medium green grey argillaceous and silt matrix in part, abundant off white argillaceous matrix in part, trace very fine red volcanic lithics, friable to moderately hard, no visual porosity, no oil fluorescence. Towards base bands with abundant dolomite cement occur - light brown, cryptocrystalline, trace glauconite, trace black flecks, occasionally very finely arenaceous, occasionally very argillaceous, hard, no visual porosity.

3.2.4.5 Waarre Formation (1561.5 - 1692.0 metres)

3.2.4.5.1 Unit D (1561.5 - 1600.8 metres)

Silty Claystone; medium to dominantly dark brown, occasionally medium to dark grey; abundantly silty and glauconitic; trace to common very fine to very coarse partially yellow-stained quartz, trace pyrite, trace medium brown dolomite bands with fine glauconite pellets, trace micromica and carbonaceous flecks; firm, blocky to dominantly subfissile. Interbedded with minor, thin

Argillaceous Siltstone; light to medium grey, occasionally dark grey, abundantly argillaceous, trace to occasionally abundant, very fine to fine quartz grains, common glauconite pellets, trace carbonaceous flecks, micromica and pyrite, and very minor

Argillaceous Glauconitic Sandstone; medium to occasionally dark green, very fine to coarse, subrounded to dominantly rounded, poorly sorted glauconite and quartz, abundant brownish green argillaceous matrix, friable with abundant loose grains, very poor to nil inferred/visual porosity, and trace

Argillaceous Sandstone; light grey to occasionally clear, very fine to fine, medium to very coarse in part, subangular to subrounded, poorly to moderately well sorted quartz, abundant light grey to light brownish grey argillaceous and silty matrix, very poor to nil visual/inferred porosity.

3.2.4.5.2 Unit C (1600.8 - 1620.0 metres)

Massive Sandstone; very light to light grey, medium grained to dominantly coarse, subangular to angular, moderately to well sorted, week calcareous and siliceous cement, fair to good interred porosity, no show. Grades down to interbedded sandstone with minor claystone.

3.2.4.5.3 Unit B (1620.0 - 1651.3 metres)

Silty Claystone; medium to dominantly dark brown, occasionally medium to dark grey; abundantly silty and glauconitic; trace to common very fine to very coarse partially yellow-stained quartz, trace pyrite, trace medium brown dolomite bands with fine glauconite pellets, trace micromica and carbonaceous flecks; firm, blocky to dominantly subfissile. interbedded with minor, thin

Argillaceous Siltstone; light to medium grey, occasionally dark grey, abundantly argillaceous, trace to occasionally abundant, very fine to fine quartz grains, common glauconite pellets, trace carbonaceous flecks, micromica and pyrite, and trace

Argillaceous Glauconitic Sandstone; medium to occasionally dark green, very fine to coarse, subrounded to dominantly rounded, poorly sorted glauconite and quartz, abundant brownish green argillaceous matrix, friable with abundant loose grains, very poor to nil inferred/visual porosity.

3.2.4.5.4 Unit A (1651.3 - 1692.0 metres)

Sandstone; light grey to clear, fine to coarse; dominantly medium; moderately sorted; subangular to dominantly subrounded quartz; trace to common light grey dispersive argillaceous matrix, trace to common (and locally abundant) calcareous and rarely siliceous and pyritic cement, trace partially altered feldspar and grey to brown lithics; trace carbonaceous detritus throughout with common black Coal and translucent brown amber in top five metres; trace mica; pyrite and dull orange brown mineral fluorescence, friable with abundant loose grains at top becoming moderately hard to hard with depth, mostly very poor to fair visual/inferred porosity, locally improving to fair to good at top. Interbedded/interlaminated (dominantly in middle) with
Silty Claystone; medium to dark grey, medium to dark brown in places, abundantly silty in places, grading to Argillaceous Siltstone, common glauconite, non-calcareous, trace to common micromica and carbonaceous flecks, trace pyrite and amber, rare to trace hard brown dolomite bands, firm to hard, dominantly moderately hard, dominantly subfissile to fissile.

3.2.5 Otway Group (1692.0 - 2030.0+ metres)

3.2.5.1 Eumeralla Formation (1692.0 - 2030.0 metres)

Sandstone: off white to light green grey, with depth becoming medium grey to medium green grey, very fine to coarse, dominantly medium to coarse, subangular to rounded, moderately to well sorted, dominantly moderately sorted, weak to moderate calcareous cement in general decreasing with depth, weak silica cement, common to abundant white to very light green argillaceous matrix, abundant off white, light brown, green grey, black and occasional red lithics, trace coarse brown and green mica flakes, trace black coal detritus, friable, very poor to poor visual porosity. Interbedded with and in part grading to:
Claystone: off white to light green grey, light to medium brown, occasionally dark brown grey, slightly silty in part, trace to occasionally abundant dispersed lithic sand grains, trace black coal detritus, trace micromica, trace pyrite, firm, slightly subfissile.

3.3 Hydrocarbon Indications While Drilling

3.3.1 Mud Gas Readings

Surface To Top Waarre

Between surface and the top of the Waarre Formation mud gas consisted of background only.

Waarre Formation

There were three mud gas shows recorded in the Waarre Formation, the shallowest one at the top of Unit 'D' between 1600.8 and 1610.0 mKB. The remaining two gas shows occurred deeper, in Unit 'C' between 1651.3-1661.0 and 1670-1680 mKB.

The show in Unit 'D' consisted of up to 3% total gas and C_1 to C_4 chromatography. The shows in Unit 'C' consisted of up to 1% total gas and C_1 to C_4 chromatography.

Eumeralla Formation

A significant gas show was recorded at the top of the Eumeralla between 1695.2 and 1715.0 mKB approximately. Total gas climbed to 10% with chromatograph readings of C_1 to C_4 +.

Further strong gas shows were recorded deeper in the section between 1790.0 and 1955.0 m approximately. The shows ranged between 1% and over 10 % total gas with C_1 to C_4 chromatography.

The recovery of gas in DST-1 between 1798 - 1823.0 m indicates that a gas column is present in this section.

3.3.2 Fluorescence

Cuttings samples and sidewall cores were routinely inspected for shows with the following results;

3.3.2.1 Cuttings

Oil fluorescence was noted across the interval 1612.5-1613.0 metres from a poorly sorted tight sandstone beneath a 1 metre thick claystone cap. The fluorescence was 30% patchy bright yellow with weak instant yellow cut, no odour or oil stain. Below this interval the fluorescence gradually reduced and below 1630 metres no more was observed. The fluorescence was confined to the tighter sandstone aggregates.

3.3.2.2 Sidewall Cores

No oil fluorescence was observed in any sidewall cores from Vaughan-1.

3.4 Geochemistry

A cuttings sample from the interval 1610-1620 m was sent to Geotech for saturate GC analysis - Results are contained in Appendix 9.

3.5 Palynology

17 sidewall core samples between 803.0 m and 1899.0 m were analysed in Vaughan-1 by Alan Partridge of Biostrata Pty Ltd. The section analysed comprises sediments ranging in age between late Albian and Eocene. The full palynological analysis is found in Appendix 10.

3.6 Structure

The following table shows the predicted versus actual formation tops encountered in the well.

Stratigraphic Unit Thickness	Predicted Depth (RKB) (m)	Actual Depth (KB) (m)	+/- (m)
Port Campbell Limestone/ Gellibrand Marl	6	5.7	+0.3
Clifton Formation	409	384.0	+25.0
Mepunga Formation	489	472.5	+16.5
Dilwyn Formation	540	532.7	+7.3
Pebble Point Formation	816	816.5	- 0.5
Paaratte Formation	882	897.5	+13.0
Skull Creek Mudstone	1192	1157.0	+35.0
Nullawarre Equiv.	1288	1315.4	-27.4
Belfast Mudstone	1423	1434.5	-11.5
Waarre Fm (Top Porosity)	1603	1600.8	+2.2
Eumeralla Formation	1728	1695.2	-32.8
T.D	**2000**	**2030**	

Horizon tops generally came in close to prediction with the exception of the Skull Creek Mudstone and Eumeralla Formation, the former being notoriously difficult to predict from seismic data and the latter due to a pick one leg too low on the data.

The Nullawarre Formation was found to be water wet, and this indicates that although there certainly is structure at that level, the bounding fault does not seal.

The Waarre Formation had a minor gas column in the Unit D sand with a possible water contact. The inference from this is that the structural closure is indeed too subtle to contain significant reserves. This was one of the perceived risks prior to drilling. No depth conversion was attempted prior to drilling the well because it would have been unable to prove or disprove the time closure.

A significant gas column was encountered within the lower Eumeralla Formation with a base closely approximating the mapped spill point. This indicates that the structure was sound at that level.

3.7 Log Analysis

Log analysis was performed on the wireline logs using Crocker Data Processing's PETROLOG software. Two intervals were analysed, one spanning the Waarre Formation and the second one covering the Eumeralla Formation.

For each zone basic input parameters and a summary of the results are provided in Enclosure 3.

The overall quality of the logs in the ones analysed is regarded as good to very good, which contrasts starkly with the Belfast Mudstone, which was commonly badly caved.

Waarre Formation

Log evaluation agrees well with RFT data indicating that this formation is nearly 100% water wet. The only exception is the thin sand at the top of Unit 'C' between 1600.8 and 1602.0 mKB, where a 1.2 m interval displayed water saturation's of 60% associated with high mud gas. This interval might represent a thin gas zone or it might also indicate an upwards transition towards gas. Results of the evaluation of the Waarre Formation are found in Table 4 below.

Table 4

Log Analysis Results Summary (Waarre Formation)

	Interval (m)	Gross Sand (m)	Net Sand			Net Sand/ Gross interval	Net Pay (m)	Comments
			(m)	Ave ø	Ave Sw			
WAARRE FORMATION								
1600.8-1602	1.2	1.2	1.2	0.22	0.60	1	1.0?	probable hydrocarbon
1602-1603	1	1.0	1.0	0.20	1.0	1	-	Low resistivity, water
1603-1673	70	30.0	30.0	0.20	0.9	0.43	-	RFT pretests plot on water trend.
1673-1699	26	2	-	-	-	-	-	Argillaceous, non net

Cut Offs: Waarre Formation Gross Sand: Vcl < 0.40

Net Sand: Vcl < 0.30, ØE > 0.05

Eumeralla Formation

Log evaluation of this unit rarely achieves satisfactory results. This is due to the complex volcanogenic nature of the sandstones affecting the logs.

The identification of potential reservoir sands and hydrocarbon zones was therefore made with the assistance of cuttings/sidewall core descriptions, RFT data and mud gas data.

Generally, cross plots of core ø vs K for the Eumeralla Formation indicate that porosities in excess of 18% are required to achieve permeabilities higher than 1mD. Therefore, we shall assume that any sand with log derived porosity of 18% or more could constitute a potential reservoir. (There is no calibration for core ø vs log ø).

The second assumption is that any interval with mud gas readings similar to the zone which flowed gas in DST-1 might constitute a hydrocarbon interval. In the tested zone total gas climbed to over 10% between 1807-1830 mKB.

Two other zones within the Eumeralla displayed gas readings of 10% total gas and have been therefore included in the category of 'probable hydrocarbon'.

The table below is a summary of the proven and probable hydrocarbon zones.

Interval (mkb)	Category	Gross (m)	Net Pay (m)	Comments
1699-1713	Probable	14	3 ?	Gas drops at 1713 m within sandstone. Possible OWC at 1713.0?
1807-1823	Proven	26	1 - 2	Gas drops at 1830.0 within shale. Therefore no possible OWC identified.
1823-1830	Probable	7	-	
1857-1882	Probable	25	1 - 2	Gas drops at 1882 within sandstone (i.e Possible OWC)

4. CONCLUSIONS

Waarre Sandstone

* The Waarre Formation, Unit 'C' displays a resistivity log anomaly at the very top suggestive of gas pay. The zone is only 1.2 metres thick and was not tested because the interpreted reserves are considered to be too small and non-commercial.

* The remaining sandstones within the Waarre Formation are water wet as indicated by log analysis and RFT data (Figure 4).

* The absence of a significant gas column is attributed to the subtleness of the time closure. After depth conversion, the closure at top Waarre level is probably very small.

Eumeralla Formation

* A significant gas resource in place has been identified in the lower parts of the Eumeralla Formation.

* The gas is contained in sandstones of poor reservoir quality as indicated by modest flow rates on DST and tight RFT pretests.

* A proven gas zone exists between 1807 - 1823 mKB.

* Probable gas zones were identified at 1699 - 1913, 1823-1830 and 1857 - 1882 mKB.

* Probable gas zones have also poor reservoir quality.

5. IMPLICATIONS

Poor DST results, as a consequence of interpreted poor reservoir quality, are common in the Eumeralla Formation throughout the Otway Basin. This has downgraded the prospectivity of this formation. However, several cores cut in this unit displayed sufficiently high permeabilities to produce a sustainable attractive flow rate. At Vaughan-1 the DST derived permeability was calculated at around 0.01 mD.

The questions of why Eumeralla sands flow so poorly can be due to either;

a) Inherent poor reservoir quality, or

b) Damage with drilling fluids, and/or while conducting testing operations.

If the correct answer was (a), then a potential solution that need to be investigated would be the application of stimulation techniques.

If the correct answer was (b) then perhaps a more careful design of the drilling/testing operations would help prevent the postulated formation damage. Techniques such as underbalanced or air drilling could be tried and, if successful, they would open up a wide range of possibilities within this formation.

Figures

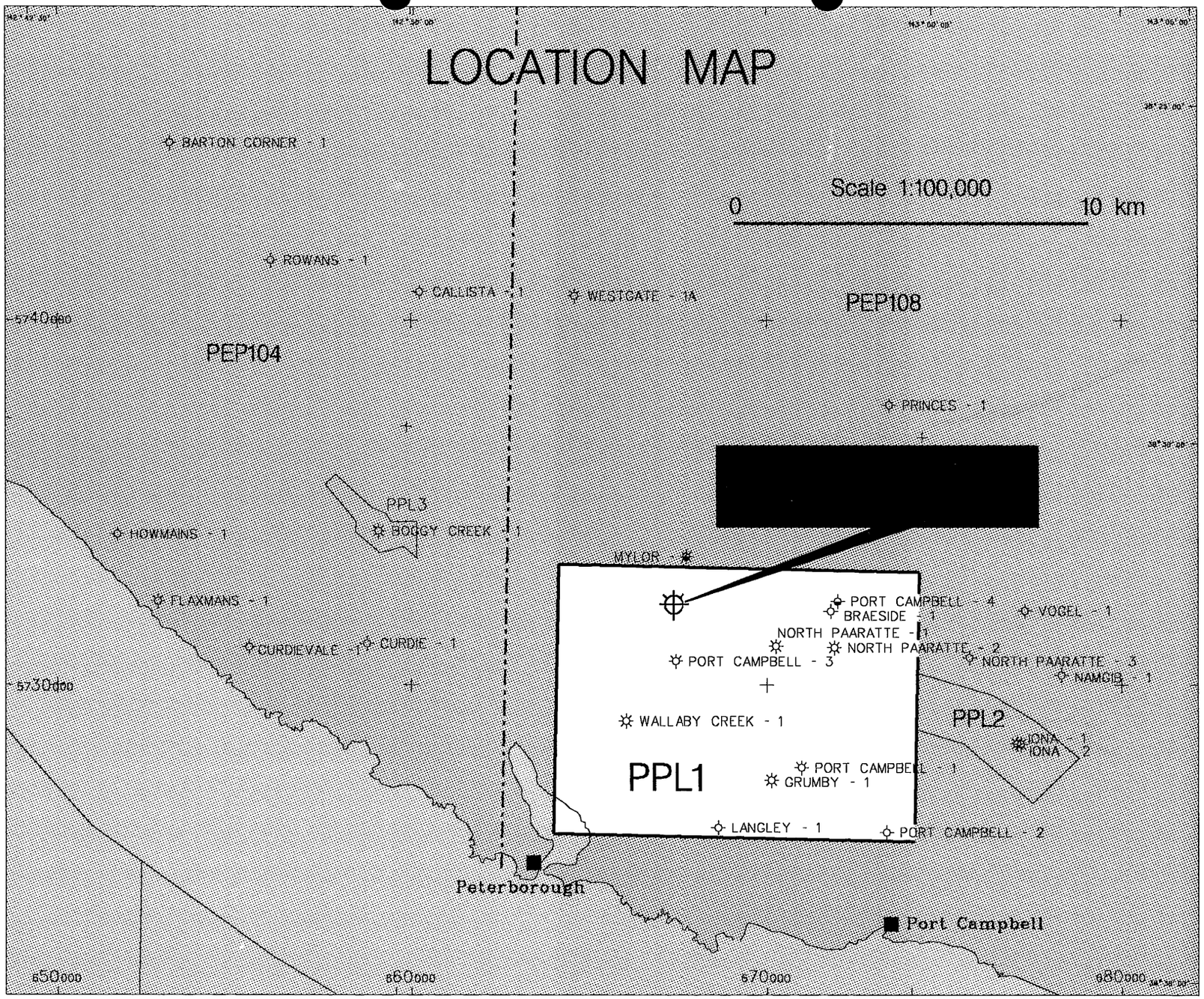

LOCATION MAP
Scale 1:100,000
0
10 km
BARTON CORNER - 1
ROWANS - 1
CALLISTA - 1
WESTGATE - 1A
PEP108
PEP104
5740000
PRINCES - 1
PPL3
BOGGY CREEK - 1
HOWMAINS - 1
MYLOR - 1
FLAXMANS - 1
CURDIEVALE - 1
CURDIE - 1
5730000
PORT CAMPBELL - 4
BRAESIDE - 1
VOGEL - 1
NORTH PAARATTE - 1
NORTH PAARATTE - 2
PORT CAMPBELL - 3
NORTH PAARATTE - 3
NAMOIB - 1
WALLABY CREEK - 1
PPL2
IONA - 1
IONA - 2
PPL1
PORT CAMPBELL - 1
GRUMBY - 1
LANGLEY - 1
PORT CAMPBELL - 2
Peterborough
Port Campbell
650000
660000
670000
680000

FIGURE 1

Cultus Petroleum NL

OTWAY BASIN

OFFSHORE-ONSHORE OPERATIONAL STRATIGRAPHIC TABLE

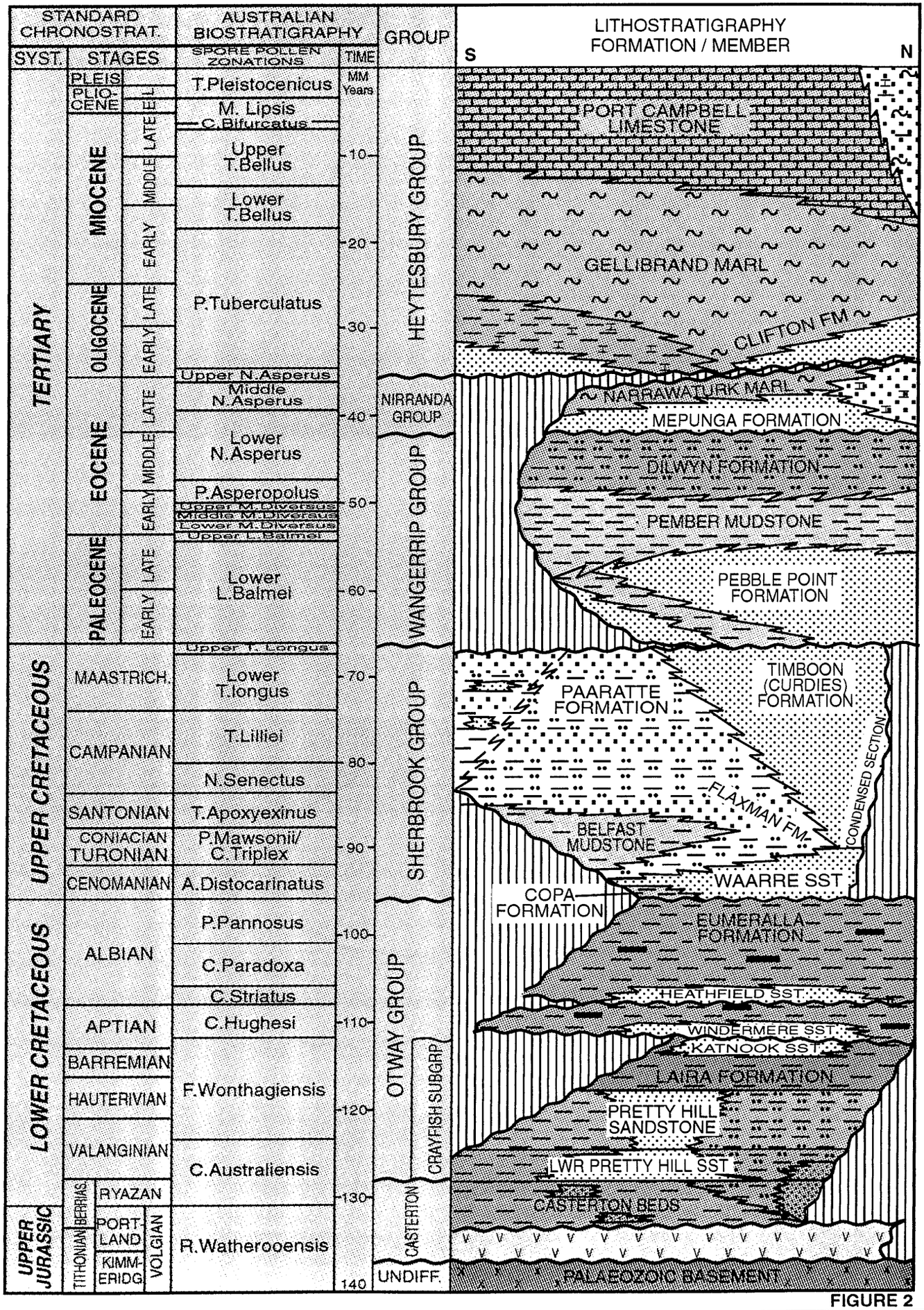


FIGURE 2

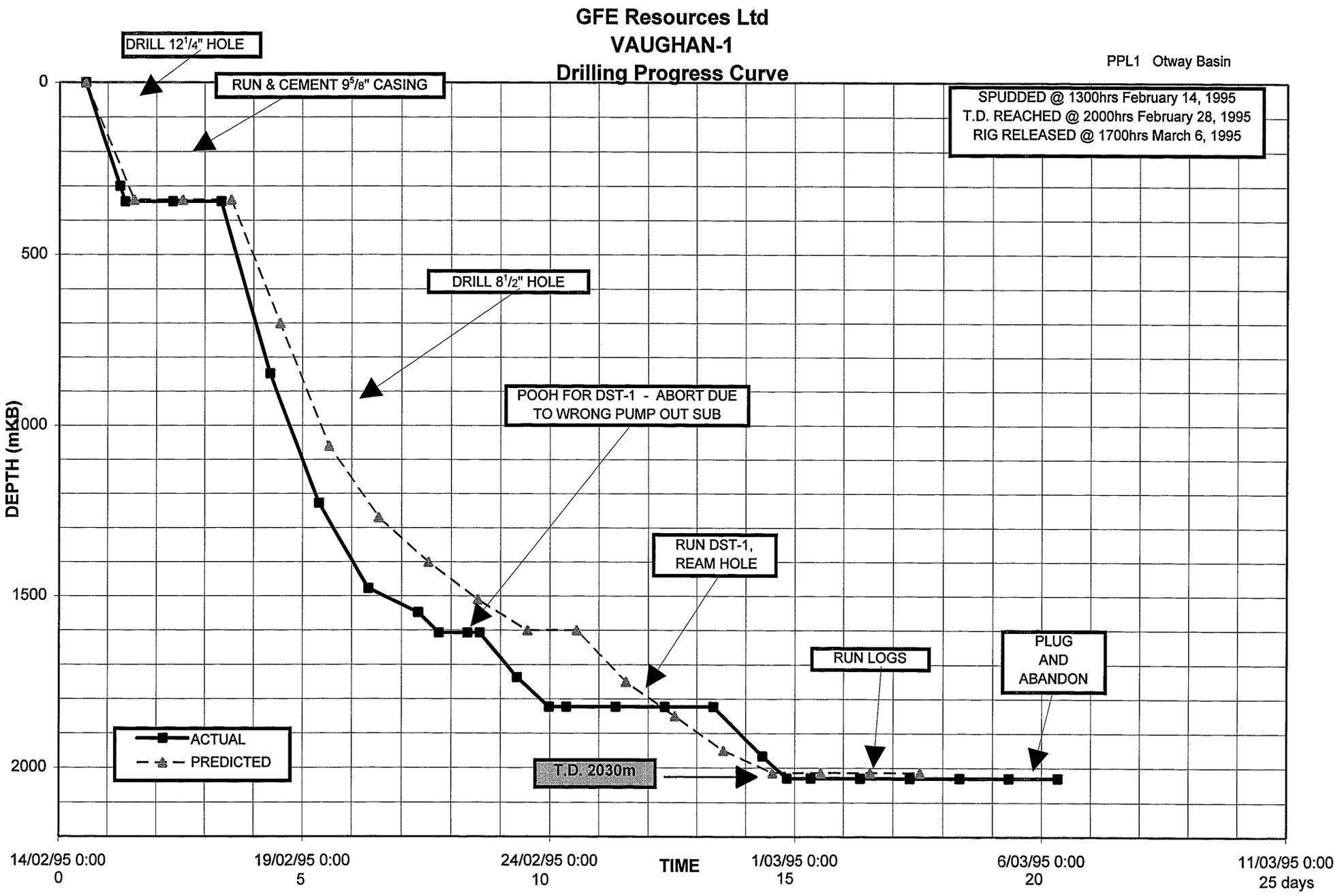

GFE Resources Ltd
VAUGHAN-1
Drilling Progress Curve
PPL1 Otway Basin
DRILL 12 1/4" HOLE
RUN & CEMENT 9 5/8" CASING
SPUDDED @ 1300hrs February 14, 1995
T.D. REACHED @ 2000hrs February 28, 1995
RIG RELEASED @ 1700hrs March 6, 1995
DRILL 8 1/2" HOLE
POOH FOR DST-1 - ABORT DUE TO WRONG PUMP OUT SUB
RUN DST-1, REAM HOLE
RUN LOGS
PLUG AND ABANDON
ACTUAL
PREDICTED
T.D. 2030m
DEPTH (mKB)
0
500
1000
1500
2000
14/02/95 0:00
0
19/02/95 0:00
5
24/02/95 0:00
10
TIME
1/03/95 0:00
15
6/03/95 0:00
20
11/03/95 0:00
25 days

FIGURE 3

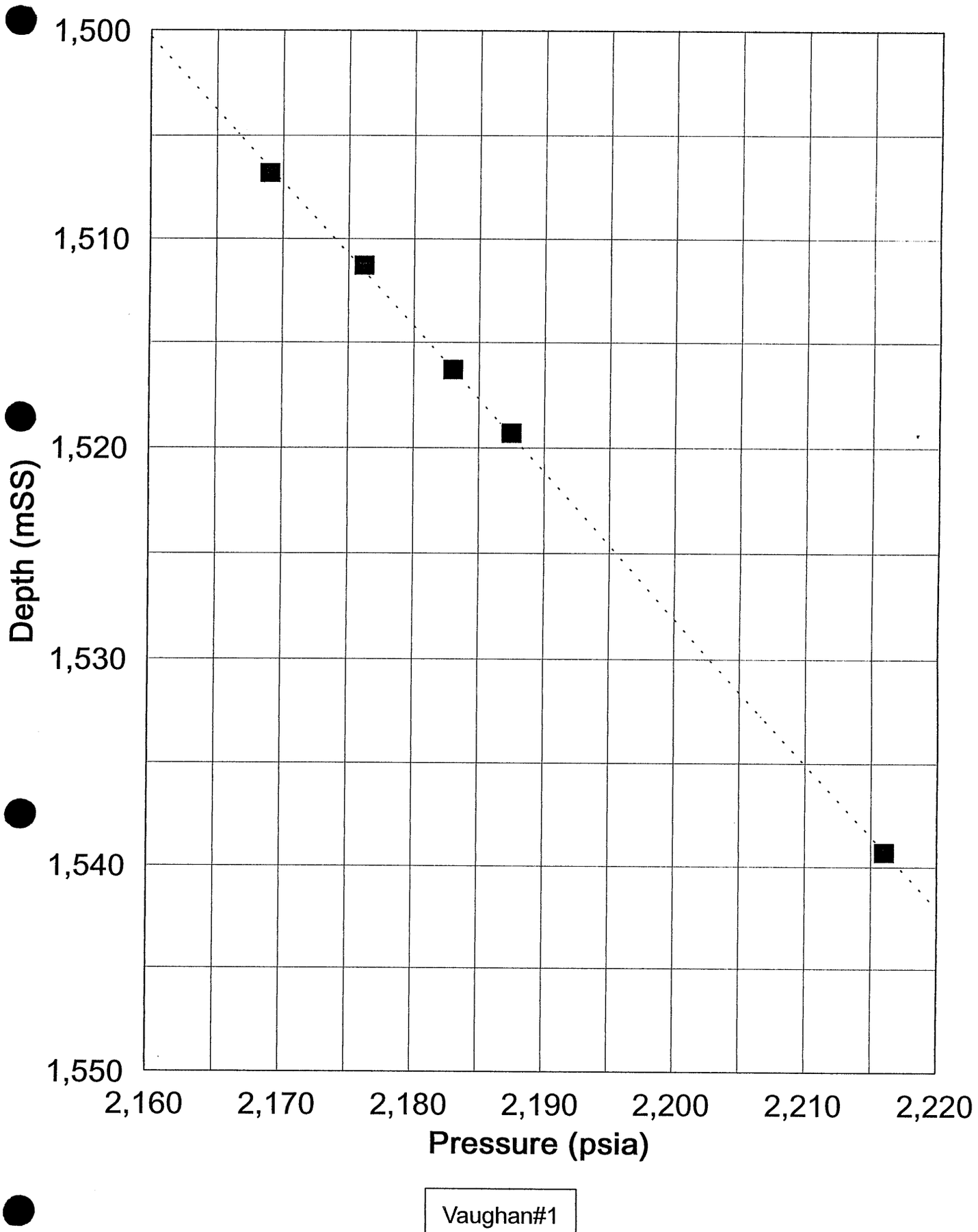

VAUGHAN #1 RFT PRESSURES
1,500
1,510
1,520
1,530
1,540
1,550
Depth (mSS)
2,160
2,170
2,180
2,190
2,200
2,210
2,220
Pressure (psia)
Vaughan#1

FIGURE 4

APPENDIX 1

Appendix 1

APPENDIX 1

RIG SPECIFICATIONS

INVENTORY - RIG #11

CARRIER	Cooper LTO 750 Carrier with triple front and rear axles 54000lb front and 70000lb rear. All necessary highway equipment. Unit levelled with hydraulic jacks when stationary.
SUBSTRUCTURE	17' floor height - 14' below table beams with plates in base.
DRAWWORKS	Cooper 750 H.P. Drawworks. 42" x 12" main drum with Fawick 28VC 1000 clutch and 3000 metres $^{9}/_{16}$" sandline. Driven by 2 each Cat D3406TA Diesel Engines.
ROTARY TABLE	National Rotary Table Model C-175.
DERRICK	Cooper Derrick Model 118-365. Ground height 118'. Maximum rated static hook load 350000 lbs with 10 lines. Mast raised, lowered and telescoped hydraulically.
CROWN BLOCK	Cooper Crown Block with 4 working sheaves. Fast line sheave and dead line sheave. All grooved for 1- $^{1}/_{8}$" line. Sandline sheave grooved for $^{9}/_{16}$" line.
HOOK BLOCK	National Hook Block Model 435 G-175. 175 ton capacity. 4-35" sheaves grooved for 1-$^{1}/_{8}$" line.
SWIVEL	P-200 National.
KELLY SPINNER	Foster Model K-77
SLUSH PUMPS	No. 1: National 8-P-80 Slush Pump. $6^{1}/_{4}$" x $8^{1}/_{2}$" Triplex single acting driven by Cat. D398TA Diesel Engine. No. 2: National 7-P-50 Slush Pump driven by Cat D379TA Diesel Engine.
PULSATION DAMPENER	1 each Hydril Pulsation Dampener type K20-3000.
MUD SYSTEM	2 x 300 bbl tanks incorporating 80 bbl pill tank and 40 bbl trip tank.
SHAKERS	Triton NNF Screening Machine (Linear Motion).
DEGASSER	Drilco Atmosheric Degasser Standard Pit. $7^{1}/_{2}$ H.P. 60 Hz 230v.
DESANDER	Demco Model 122. Two, 12" cone with Warman 6" x 4" Centrifugal pump driven by 50 H.P. Electric Motor.

DESILTER	Pioneer Economaster Model T12-E4. 12 x 4" cones with Warman 6" x 4" Centrifugal pump, driven by a 50 H.P. Electric Motor.
MUD MIXING PUMP	Warman 6" x 4" Centrifugal pump driven by a 50 H.P. Electric Motor.
MUD AGITATORS	4 only Brandt Mud Agitator Model MA 7.5.
B.O.P'S & ACCUMULATOR	10" x 3000 P.S.I. Shaffer Double Gate B.O.P. with $2^{3}/_{8}$", $2^{7}/_{8}$", $3^{1}/_{2}$", $4^{1}/_{2}$", $5^{1}/_{2}$", 7" and Blind. 10" x 3000 P.S.I. Hydril GK Annular B.O.P. Koomey B.O.P. Control Unit. Accumulator Unit Model 100-11S.
CHOKE MANIFOLD	Cameron 5000 psi.
SPOOL	10" x 3000 x 10" x 3000 Flanged Drilling Spool with 3" x 3000 flanged choke and kill outlets.
INSTRUMENTATION	Martin-Decker 6 pen Record-O-Graph Martin-Decker Weight Indicator Type F.S. Martin-Decker Mud Pressure Gauge Martin-Decker Rotary R.P.M. Indicator Martin-Decker Stroke Indicator (2 off) Martin-Decker Rota Torque Indicator Martin-Decker Tong Torque Indicator Martin-Decker Mud Flow Sensor Martin-Decker Mud Flow Fill System Martin-Decker Mud Volume Totaliser (M.V.T.)
AUTOMATIC DRILLER	Satellite Automatic Driller Model SA100-50-1500.
WIRELINE STRIPPER	Guiberson Oil Saver Type H-4.
SURVEY UNIT	Totco 8 Deg Recorder.
MUD LAB	Baroid Rig Laboratory Model 821.
KELLY	$5^{1}/_{4}$" HEX Kelly. $2^{13}/_{16}$" I.D. x 40' long with $6^{5}/_{8}$" API Reg. L.H. Box up 4" I.F. Pin down.
UPPER KELLY VALVE	Upper Kelly Cock. 10000 test $6^{5}/_{8}$" API Reg. L.H. Connections.
LOWER KELLY VALVE	Hydril Kelly Guard. $4^{1}/_{4}$" - 10000 P.S.I. 4" I.F. Pin and Box.
KELLY DRIVE BUSHING	Varco Type 4 KRS Kelly Drive Bushing.
DRILL PIPE	7000' Drill Pipe $4^{1}/_{2}$" O.D. 16.60 lb. Grade E Range 2 with 4" I.F. x 18 degree taper tool joints.
DRILL COLLARS	20 each Drill Collars $6^{1}/_{4}$" O.D. slick $2^{13}/_{16}$" I.D. x 30' long with $4^{1}/_{2}$" XH pin and box connections.

FISHING TOOLS	To suit pipe, collars and tubing.
SUBSTITUTES	To suit drill string.
HANDLING TOOLS	Farr Hydraulic Power Tongs, $13^{3}/_{8}$" Varco SSW-10 spinning wrench. Manual tongs, elevators and slips to handle pipe, collars, casing and tubing.
WELDING EQUIPMENT	Lincoln Electric Welder Model 400AS.
AIR COMPRESSORS	Sullair compressor Package Model 10-30.
AC GENERATOR	2 each Caterpillar 3408TA AC Generator model SR-4. 1800 rpm 60 hz 275 kw.
FUEL TANKS	2 each 10,000 litre - Skid Mounted.
WATER TANK	400 bbl tank with two Warman 3 x 2 pumps driven by 24 hp electric motors.
PIPE RACKS	5 sets 30 feet in length.
CATWALKS	2 piece Catwalk drill pipe construction 42" height.
RADIO	Codan Mobile Transceiver.
TRANSPORTATION	International 530 Payloader. Toyota 4 x 4 Pickup. Toyota 4 x 4 Crew Vehicle.
RIG ACCOMMODATION	2 Skid Mounted Toolpusher/Company Man Units.

CAMP

1- Camp Generator House 31' long x 10' wide skid mounted complete with 2 -3304 T 80 Kw, 50 Hz, 200 - 400 volt generators, camp distribution panel. 6,794 litres fuel storage, 12,000 litres fresh water storage and 24,000 litres shower water storage.

1 Kitchen/Dining Room	40' x 10' x 10'
1 Recreation Room	40' x 10' x 10'
1 Ablution/Laundry	40' x 10' x 10'
3 12 Man Bunkhouses	40' x 10' x 10'
1 Cooler/Freezer	20' x 8' x 8'

Appendix 2

APPENDIX 2

DRILLING FLUID RECAP

M-I Drilling Fluids L.L.C.

F D C 4
DRILLING FLUIDS DATA MANAGEMENT SYSTEM

Operator :	GAS & FUEL EXP.	Spud Date :	02/14/95
Well Name :	VAUGHAN 1	TD Date :	03/04/95
Field/Area :	PPL-1	Loc Code :	ONSHORE
Description :	WILDCAT	Dist Engr :	B JACK
Location :	OTWAY BASIN	Sales Engr :	D RIDLER
Warehouse :	ADELAIDE	Sales Engr :	
Contractor :	CENTURY RIG 11	Well Number :	O0002

Comments : ALL REPORTS TO 24:00 HRS - AS PER THE IADC REPORT

Type	Size in	Depth m	TVD m	Hole in	MaxMW lb/gal	Mud 1	Mud 2	Drilling Problem	Days	Cost
Casing	9.625	341	341	12.250	9.0	FW SPUD MUD			2	1091
OpenH		2030	2030	8.500	8.9	FW GEL MUD	KCL/POLYMER MUD	PARTIAL LOST CIRC	17	27201

Total Depth: 2030 m TVD : 2038 m Water Depth: m Drilling Days: 19 Total Mud Cost: 28292

M-I Drilling Fluids L.L.C.

FDC4

DRILLING FLUIDS DATA MANAGEMENT SYSTEM

GAS & FUEL EXP.
VAUGHAN 1
PPL-1
OTWAY BASIN

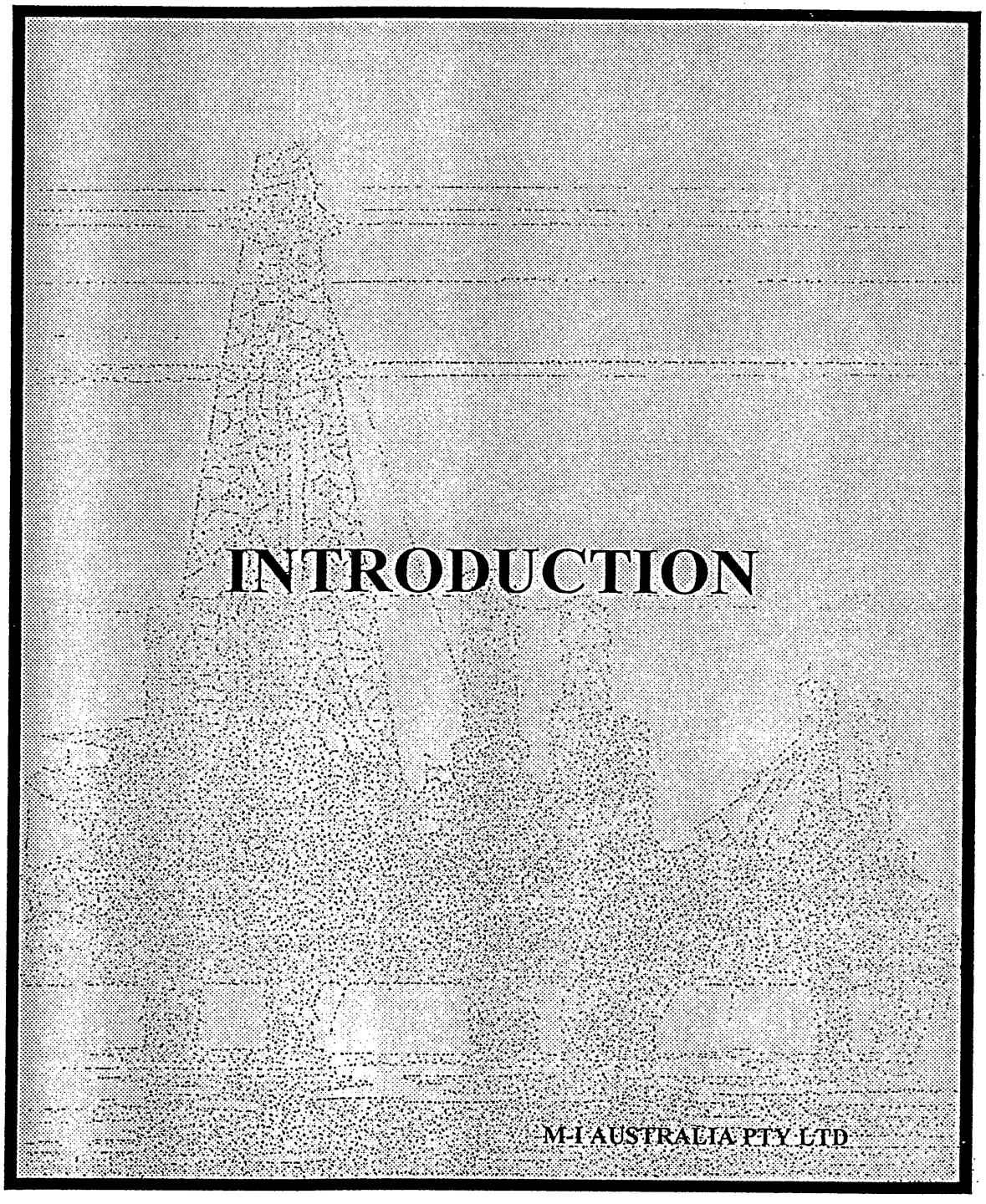
GAS & FUEL EXPLORATION

WELL : VAUGHAN 1

1. INTRODUCTION
2. DISCUSSION BY INTERVAL
3. DAILY DISCUSSION REPORT
4. PRODUCT USAGE BY INTERVAL
5. DAILY VOLUME SUMMARY SHEETS
6. TOTAL MATERIAL CONSUMPTION
7. HYDRAULICS
8. GRAPHS
9. BIT RECORD
10. WEEKLY INVENTORY SHEETS
11. DAILY RECAP
12. DAILY CHEMICAL ADDITIONS
13. DAILY MUD REPORTS

M-I AUSTRALIA PTY LTD

Introduction


INTRODUCTION
M-I AUSTRALIA PTY LTD

M-I Australia Pty. Ltd.

INTRODUCTION:

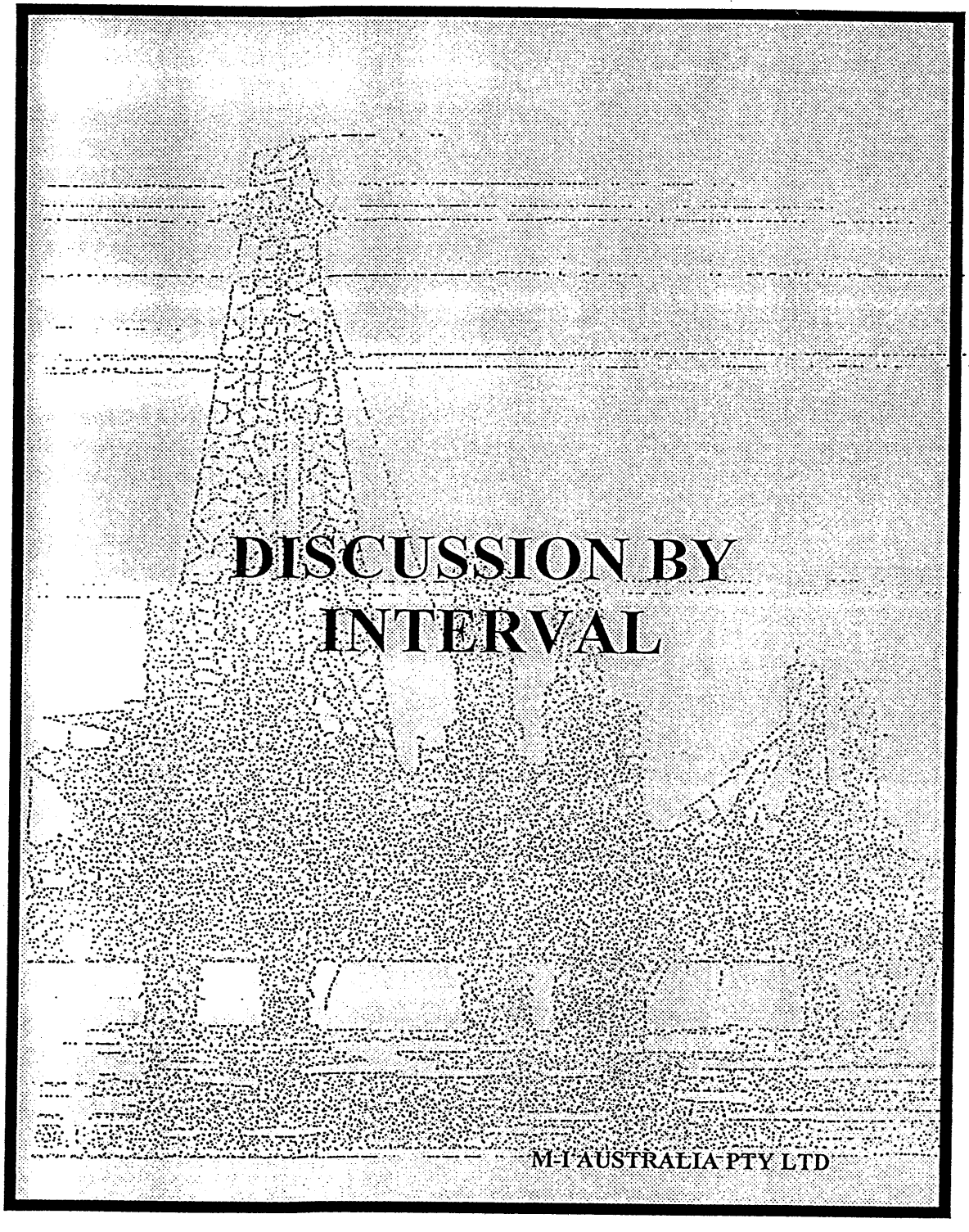
Gas & Fuel Exploration Limited's wildcat well, Vaughan 1, was spudded by Century 11 on 14 February, 1995. The well was located in the Otway Basin in permit PPL-1, Victoria. The well was located at latitude 38° 32' 31.747" south and longitude 142° 55' 13.992" east. The well had a ground level of 90 meters with the kelly bushing at 95.7 meters. The primary objective, the Waarre formation with the Nullawarre Green Sand, Top Eumeralla formation and the Intra Eumeralla formation being the secondary objective.

The well was drilled to a total depth of 2030 meters in 19 days drilling, with tight hole on the first trip for a bit at 1507 meters being the major problem.

The geological formation tops, as supplied by the wellsite geologist, were:

Age	Formation	Lithology	Depth (KB)
Tertiary	Port Campbell Limestone	Calcarenite	6
	Gellibrand Marl	Calcarenite	109
	Clifton Formation	Marl	399
	Narrawaturk Marl	Calcarenite/Marl	412
	Mepunga Formation	Marl	479
	Dilwyn Formation	Sandstone	536
	Pember Mudstone	Sandstone/Claystone	742
	Pebble Point Formation	Claystone	820
Late Cretaceous	Paaratie Formation	Sandstone	897
	Skull Creek Mudstone	Claystone	1181
	Nullawarre Green Sand	Claystone	1316.5
	Belfast Mudstone	Sandstone/Claystone	1417
	Waarre Formation	Claystone	1597
Early Cretaceous	Top Porosity	Sandstone	1601.5
	Eumeralla Formation	Sandstone	1695
	Total Depth		**2030**

Discussion Interval.



DISCUSSION BY INTERVAL

M-I AUSTRALIA PTY LTD

M-I Australia Pty. Ltd.

Interval	0 - 346 Meters	12.1/4" Hole	9.5/8" Casing

MUD TYPE : **SPUD MUD**

HOLE PROBLEMS : **MUD RINGS FOUND AFTER WIPER TRIP**

MUD PROPERTIES :

		Programmed	Actual
Mud Weight	:	minimum	8.7 - 9.0 ppg
Viscosity	:	35 - 45 sec/qt	34 - 50 sec/qt
KCl	:	.75% by weight	.3 - .75% by weight

OPERATIONS:

After drilling mouse and rat holes, the 12.1/4" bit was used to spud the well at 13 : 00 hours on 14 February, 1995. Drilling continued with surveys to the casing point of 346 meters. The hole was circulated clean prior to making a wiper trip to the 8" drill collars. The hole was tight from 146 - 165 meters. The trip in found 2.5 meters fill on bottom, and when circulation commended, a mud ring had to be pumped and cleaned out of the hole. There were no problems encountered on the trip out of the hole.

The 9.5/8" casing was rigged up and ran into the hole, the casing was circulated and cemented with the shoe at 341.16 meters. Cement returns were dumped at surface.

MUD:

The make-up water for this well had the following properties - Pf/Mf: 0/.2, Cl: 400, Ca: 160.

Spud mud (150 bbls) was made up using M-I Gel and Caustic Soda for pH. Water was added while drilling for volume and to control the viscosity provided by the formations drilled. KCl was also added while drilling to keep the KCl% by weight at .75%.

SOLIDS CONTROL EQUIPMENT:

1. One Linear Motion Shaker (3 screen)
2. One Demco Desander (12" x 2 cone)
3. One Sweco Desilter (4" x 12 cone).

The shake shaker was fitted with 3 x 50 mesh screens and these handled the pump rate volume very well. Due to the fact that the desilter was out of commission and the desander was only used for 8 hours, water additions were the main means of keeping the mud weight under control while the desander was working. It's discharge weight was 13.6 ppg at a rate of 3 gpm.

M-I Australia Pty. Ltd.

Interval	346 - 608 Meters	8.1/2" Hole	No Casing Set

MUD TYPE : **KCl/SPUD MUD**

HOLE PROBLEMS : **NONE**

MUD PROPERTIES :

		Programmed	Actual
Mud Weight	:	<9.2 ppg	8.9 ppg
KCl	:	3% by 800m	1.5% by 684m
Viscosity	:	35 - 42 sec/qt	38 sec/qt

OPERATIONS:

As much volume as possible was retained in the mud tanks during the cement job. The cement was displaced with water.

During the nippling up and pressure testing of the BOP's, the surface volume was pretreated with Sodium Bicarbonate and 75 bbls of KCl/Polymer premix were prepared.

The shoe and 5 meters of rat hole were drilled before doing a leak off test equivalent to 21.9 ppg.

The program called for mudding up to occur gradually before the depth of 800 meters. During consultation with the Company Representative and the Well Site Geologist, it was decided to do this at 600 meters.

Up to the depth of 600 meters, the system was kept around 38 sec/qt viscosity and the KCl% at .75.

SOLIDS CONTROL EQUIPMENT:

1. One Linear Motion Shaker
2. One Demco Desander (12" x 2 cone)
3. One Sweco Desilter (4" x 12 cone).

At the start of the section, the shakers were fitted with S110 screens. These worked well while the system had no Polymer in it. Once mudding up commenced, the screens were changed to S110 x 1 and S84 x 2.

The desander worked well, with a discharge of 11 ppg at a rate of 1.4 gl/min. The desilter had a discharge of 14.3 ppg at 0.5 gl/min.

M-I Australia Pty. Ltd.

Interval	346 - 608 Meters	8.1/2" Hole	No Casing Set

CONCLUSIONS AND RECOMMENDATIONS:

The keeping of the spud mud and pretreating with Sodium Bicarbonate, worked well. The 0.75% KCl was quickly depleted by the formations being drilled. It would be beneficial to add KCl premixes at a steady rate to keep the KCl in the system.

M-I Australia Pty. Ltd.

Interval	608 - 2030 Meters	8.1/2" Hole	No Casing Set

MUD TYPE : **KCl/POLYMER**

HOLE PROBLEMS : **TIGHT HOLE ON BIT TRIP @ 1507 METERS.**
MUD LOSSES TO THE HOLE AFTER 1600 METERS (3.5 BBL/HR).
BRIDGES DURING LOGGING OPERATIONS.

MUD PROPERTIES :

		Programmed	Actual
Mud Weight	:	9.2 - 9.3 lb/gl	8.8 - 9.4+ lb/gl
Viscosity	:	35 - 42 sec/qt	37 - 42 sec/qt
Plastic Viscosity	:	10 - 14 cps	11 - 17 cps
Yield Point	:	12 - 16 lb/100 sq ft	11 - 20 lb/100 sq ft
Gels	:	5 - 15 lb/100 sq ft	2 - 4 lb/100 sq ft
Fluid Loss	:	5 - 7 cc by 1600m	5.7 - 6.4 cc
pH	:	9 - 9.5	9 - 9.5
MBT	:	8 - 10 lb/bbl	7.5 - 17.5 lb/bbl
KCl	:	3% by weight	3 - 3.5% by weight
Sulphite	:	120 - 150 ppm	150 ppm

OPERATIONS:

While drilling ahead at 608 meters, the prepared premix of KCl and Polymer was bled into the active system. A further 2 premixes were needed before having the mud in good shape by 809 meters.

A close check was maintained on KCl level and the water loss during drilling to keep the required properties in the drilling mud.

The mud weight stayed below 9.2 ppg until after the bit trip at 1507 meters then it rose to 9.4+ ppg. Dilution made with premixes of sump water were used to control the weight and reduce it to 9.3 ppg by 1823 meters.

Where, due to the tight hole encountered on the trips in and out, the Company Representative requested that the weight be allowed to go up to 9.3 ppg.

Around 990 meters premixes from the turkeys nest water supply were used as the sump water retrieved weighed 9.3 ppg, it was decided to let settle for a few days before commencing retrieval of sump water for the premixes.

M-I Australia Pty. Ltd.

Interval	608 - 2030 Meters	8.1/2" Hole	No Casing Set

Drilling progressed to 1507 meters where a trip for a bit was made, up to that point formation samples were circulated up at 1290 and 1319 meters.

The trip out found tight hole that had to be reamed at: 1438 - 1435, 1398 - 1379, 1302 - 1245, 1112 - 1093 and 902 - 883 meters.

The trip in found tight hole that had to be reamed at 614 - 624, 691 - 700, 883 - 1035, 1306 - 1325, 1372 - 1385 and 1440 - 1507 meters. There was 2 meters of fill on bottom.

While drilling ahead after the trip, sump water was recommenced being used for premixes as it now weighed 8.5 ppg, it was found that the sump water had a water loss of 12 cc's and a KCl content of 0.75%.

Drilling continued to 1607 meters with formation samples having been circulated up at 1603 and 1607 meters. A 25 stand wiper trip at 1607 meters encountered tight hole at 1427 - 1331 meters and 1245 - 1206 meters. On the trip in, the hole was reamed 1584 - 1594 meters but this was suspected to be the stabilizer lounging up, no fill was found. Once bottom was tagged, the hole was circulated for 5 minutes prior to pulling 2 stands and circulating bottoms up. The pipe was then run in, the mud circulated for 10 minutes prior to pumping a slug and pulling out of the hole.

The test tools were made up, but not run due to the incompatibility of the pump out sub to the string.

Drilling continued to 1823 meters with formation samples and wiper trips being carried out at:

1607 meters	:	circulate 15 minutes before drilling ahead.
1624 meters	:	circulate 5 minutes, drill ahead.
1655 meters	:	flow check and circulate up sample.
1657 meters	:	circulate 5 minutes.
1664 meters	:	flow check, pull 2 stands and circulate up sample.
1728 meters	:	circulate up sample flow check.
1794 meters	:	circulate for 15 minutes, pull the string to 1379 meters for a wiper trip. Tight hole was encountered at 1657, 1647 and 1628 meters.
1812 meters	:	circulate for 5 minutes, flow check and pull 2 stands to circulate up a sample.
1818.5 meters	:	circulate for 5 minutes, flow check and pull 2 stands to circulate up a sample.
1823 meters	:	circulate up a sample, do a 12 stand wiper trip, which encountered tight hole at 1695, 1676 and 1657 meters. 2.7 meters of fill were on bottom. The bit was reamed to bottom, the mud circulated for 5 minutes before pulling 2 stands and circulating up a sample. The bit was run back down to 1823 meters, a 20 bbl hi vis pill was spotted and the string pulled out of the hole.

M-I Australia Pty. Ltd.

Interval	608 - 2030 Meters	8.1/2" Hole	No Casing Set

The DST tools were made up, run into the hole and DST #1 conducted. On pulling the tools out of the hole, fluid was recovered at 19.8 meters.

The bit and a new BHA were made-up and ran into the hole which had to be reamed 646 to 1478 meters. The string was pulled out of the hole to run in with the original BHA.

On running into the hole bridges had to be reamed at 1516 and 1574 meters and the pipe jarred free after becoming stuck at 1714 meters.

Drilling then continued to the total depth of 2030 meters which was reached on 28 February, 1995.

While drilling to 2030 meters formation samples were circulated at these depths:

1823 meters	:	circulate 15 minutes before drilling ahead.
1869 meters	:	circulate for 5 minutes, flow check and pull 2 stands to circulate up the sample.
1884 meters	:	circulate for 5 minutes, flow check and pull 3 stands to circulate up the sample.
1939 meters	:	circulate for 10 minutes, pull 2 stands to circulate up a sample. On running back to bottom, the hole was checked for flow before drilling ahead.
2001 meters	:	circulate for 5 minutes, flow check and pull 2 stands to circulate up a sample.
2030 meters	:	bottoms up was circulated, a 33 stand wiper trip made requiring back reaming 1766 - 1785 meters. Tight hole was encountered 1641 - 1670, 1699 - 1718 and 1880 - 1842 meters..

On running back in reaming was done from 1877 - 1890 meters. There was 12 meters of fill found on bottom.

The controlling of the mud weight to below 9.35 ppg was not a problem prior to 1507 meters where it was requested that the weight be brought up to 9.3 ppg due to the tight hole encountered for a trip for a new bit.

The mud weight often went up to 9.4+ ppg and had to be controlled with water and premix additions. These affected the rheology of the mud and a pre hydrated Gel premix was added to the mud just prior to total depth to give the mud more "body" for logging.

Mud losses to the hole were first observed after 1607 meters and these stayed around 3 - 5 bbls/hour for the rest of the well. The addition of Barite to the mud to raise the weight to 9.8 ppg during the logging operations seemed to reduce these losses some what.

On the 1st logging run the tools were unable to pass 1593 meters.

M-I Australia Pty. Ltd.

Interval	608 - 2030 Meters	8.1/2" Hole	No Casing Set

A wiper trip was made that encountered bridges at 1595 and 1614 meters. Both of these were reamed and there was 14 meters of fill found on bottom. While circulating the hole, the mud weight was increased to 9.8 ppg. On the trip out of the hole, a 40 bbl hi vis pill was spotted at 1607 meters.

The logs were then successfully run to bottom until the 3rd run when a bridge was encountered at 393 meters.

A wiper trip was made during which a 75 bbl premix was added to the active system whilst circulating. On the trip out a 40 bbl hi vis pill was spotted at 1607 meters and a 20 bbl hi vis pill spotted at 393 meters.

SOLIDS CONTROL EQUIPMENT:

1. One linear motion shaker.
2. One Demco desander (12" x 2 cone).
3. One Sweco desilter (4" x 12 cone).

The solids control equipment worked well and was in operation whenever drilling or reaming the hole.

The shaker was fitted with 1 x 110 mesh and 2 x 84 mesh screens. There was occasional blinding of the screens with the sands being drilled. Washing of the screens on connections prevented this from being a problem.

The desander had an average discharge of 10.5 - 14 ppg at a rate of 0.5 - 1.6 gpm.

The desilter had an average discharge of 10.5 - 11.8 ppg at a rate of 2 - 7 gpm.

The pits were also fitted with a 12 bbl sand trap and this was dumped and cleaned on connections.

OBSERVATIONS AND RECOMMENDATIONS:

Once mudded up at 800 meters the mud remained in good condition until 1607 meters where the additions of water and premixes to control the mud weight brought the rheology below specifications. A pre hydrated Gel premix at this time would have been beneficial to the system if XCD Polymer had been available, this would also have given the required properties to the mud and in doing so have kept the MBC to below 10 lb/bbl as requested in the mud parameters.

The Belfast mudstone gave the most problems and discussions with the Well Site Geologist have indicated that it could be due to the effect that the KCl has on the formation drying it out and making it become brittle.

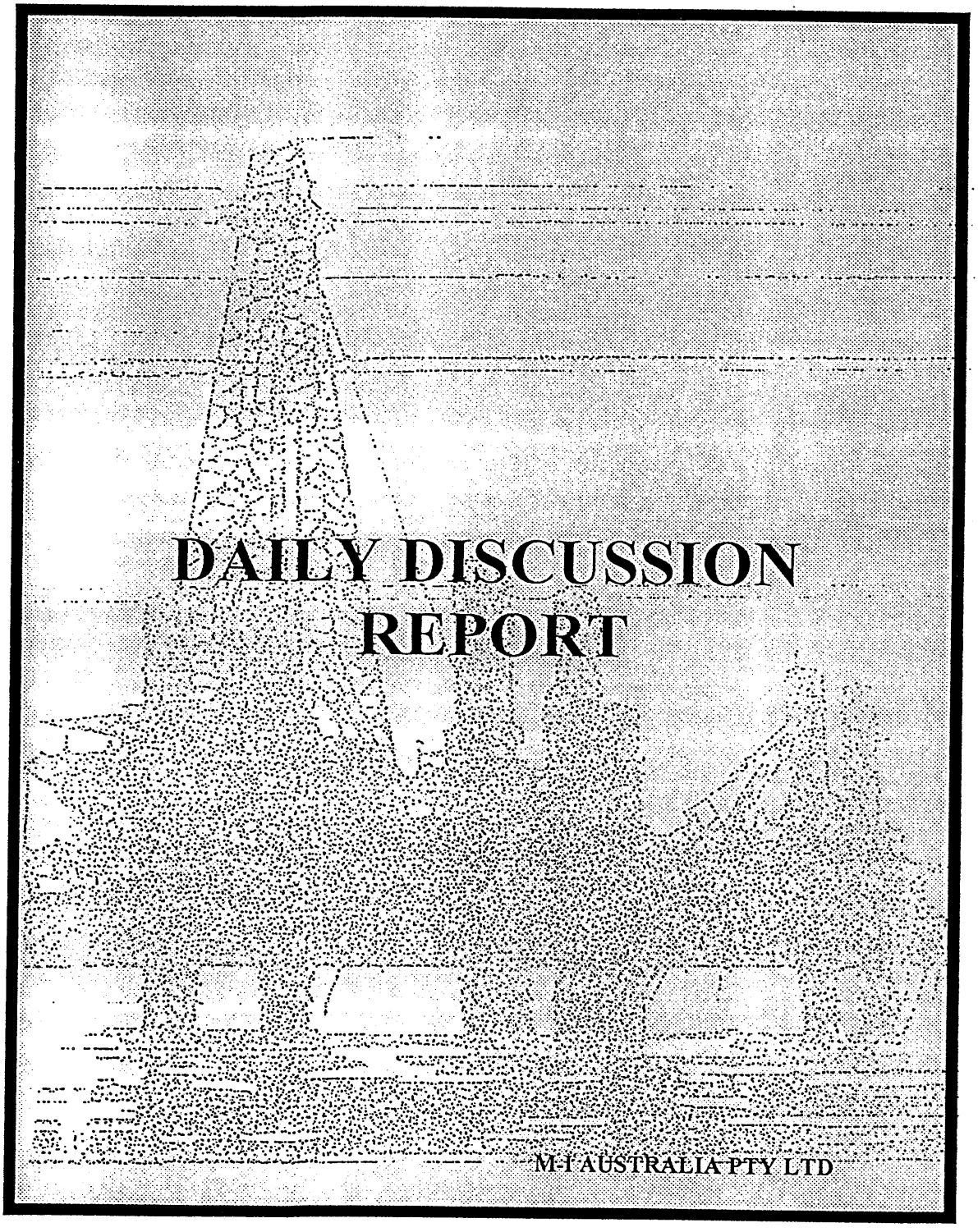
M-I Australia Pty. Ltd.

Interval	608 - 2030 Meters	8.1/2" Hole	No Casing Set

The use of a Gel system could be gentler on the formation and not cause it to bridge off.

The use of sump water for premixes was efficient but the solids took a few days to settle out. Maybe the provision of a few sacks of PHPA to act as a flocculant would enhance the operation.

Daily Discussion Report


DAILY DISCUSSION
REPORT
M-I AUSTRALIA PTY LTD

Date : 14/02/95 Depth : 92.0 Day : 1

The well was spudded at 13:00 hours on 14 February 1995, using a 12.1/4" bit. An initial mix of pre hydrated Gel was used, then native clays were used for viscosity, with additions of water made to control the mud weight and viscosity. KCl at 0.75% was added to control the reactivity of the formation. The properties of the make up water for the well were: pf/mf = 0/0.2, Cl = 400, Ca = 160.

Date : 15/02/95 Depth : 272.0 Day : 2

Drill to the casing point of 345m, circulate the hole and do a wiper trip. The hole was tight from 165 to 146m, 2.5m of fill was found on bottom. The hole was circulated free of mud rings before drilling to 346m, the hole was circulated clean prior to pulling out. The 9.5/8" casing was then ran into the hole.

Date : 16/02/95 Depth : 346.0 Day : 3

The casing was circulated and cemented with the shoe at 329m. After waiting on the cement to set, the BOP's were nippled up. During this time, the mud pit sand traps were dumped and cleaned, a loss of 50 bbls of spud mud. The mud was then pre-treated with Sodium Bicarbonate, water and KCl to 0.75%. A 75 bbl tank of premix was prepared for mudding up.

Date : 17/02/95 Depth : 530.0 Day : 4

The BOP's were pressure tested prior to making up the 8.1/2" BHA and running into the hole, where the cement was tagged at 322m. The cement and 5m of new hole were drilled before doing a FIT equivelent to 21.9 ppg. Drilling then continued to 608m, where the pre-mixed Polymer and KCl were introduced to the active system. The shaker screens were changed at 650m to S84 mesh as the S110 mesh screens were being blinded by the sand comming over them. The change to a larger screen size was successful, and losses were stopped.

Date : 18/02/95 Depth : 809.0 Day : 5

Drilled ahead with surveys to 1144m. The use of sump water for pre-mixes was suspended due to the amount of solids build up, the weight of the retrieved fluid was 9.3 ppg.

Date : 19/02/95 Depth : 1190.0 Day : 6

Drilling continued with formation samples being circulated up at 1290 and 1319m.

Date : 20/02/95 Depth : 1446.0 Day : 7

Drilled to 1507m, circulated bottoms up and pulled out of the hole for a new bit. Tight hole was experienced at; 1438 - 1435, 1398 - 1379, 1302 - 1245, 1112 - 1093 and 902 - 883m. The bit was changed and, on running in, the hole had to be reamed at; 614 - 624, 691 - 700, 883 - 1035m. The pipe was tripped in wherever possible.

Date : 21/02/95 Depth : 1515.0 Day : 8

The trip in continued with further reaming required at; 1306 - 1325, 1372 - 1385 and 1440 - 1507m, 2m fill were found on bottom. Drilling continued to the test point of 1607m, with formation samples circulated up at 1603 and 1607m. A 25 stand wiper trip was made, finding tight hole at; 1427 - 1331 and 1245 - 1206m. The trip in experienced tight hole from 1584 - 1594m, this was suspected to be the stablizer hanging up, no fill was found on bottom. The hole was circulated clean.

Date : 22/02/95 Depth : 1607.0 Day : 9

The hole was circulated clean prior to running to bottom, pumping a slug and pulling out of the hole. The DST tools were made up, but the pump out sub was the wrong thread. The tools were broken down and the bit and BHA were ran back into the hole, having to ream 1594 to 1600m (suspected stabalizer hang up). While drilling ahead, flow checks and formation samples were circulated at; 1655 and 1664m. Drilling continued to 1679m.

Date : 23/02/95 Depth : 1718.0 Day : 10

Drilling progressed to 1823m, where a DST will be carried out. While drilling to 1823m, the following happened:
1728 - circulate up sample, flow check for 5 mins.
1794 - circulate for 15 minutes, do wiper trip to 1379m. tight hole reamed at 1657, 1647 and 1628m.
1812 - circulate for 5 minutes, pull 2 stands and circulate up sample.
1818.5 - the same.
1823 - circulate hole.

Date : 24/02/95 Depth : 1823.0 Day : 11

A formation sample was circulated up, prior to doing a 12 stand wiper trip, at 1695, 1676 and 1657m tight hole was experienced. 2.5m of fill was on bottom. The hole was circulated for 5 minutes before pulling two stands and circulating bottoms up. The string was run in to bottom and a high viscosity pill spotted before pulling 6 stands, pumping a slug and pulling out of the hole. The 20 bbl high viscosity pill was made up of : Gel @ 13.75 ppb and Polypac @ 1.4 ppb. The DST tools were made up and ran into the hole, and DST #1 conducted. The hole was taking 1.5 to 2 bbls/hour during the test.

Date : 25/02/95 Depth : 1823.0 Day : 12

The test tools were pulled out of the hole, with fluid recovered at 19.8m. The BOP's were pressure tested. The bit was re-run into the hole, and due to the stiffer drilling assembly, the hole was reamed from 646 to 1258m, with only 2 stands being run in (774 to 814m), there was high torque experienced from 1070 to 1076m.

Date : 26/02/95 Depth : 1600.0 Day : 13

The hole was reamed to 1478m, where the string was pulled to change the BHA. The string was run in to 1516m, where a bridge was reamed to 1574m. The drill pipe was then run into 1574m, where reaming recommenced.

Date : 27/02/95 Depth : 1699.0 Day : 14

Reaming continued to 1823m, while at 1714m, the pipe became stuck and was jarred free. Drilling continued to 1918m, with formation samples being circulated up at 1869 and 1884m. At 1869m the mud was circulated for 5 mins, the well checked for flow, before pulling 2 stands to circulate. At 1884m the mud was circulated for 5 mins, the well checked for flow, before pulling 3 stands to circulate. It was requested to keep the mud weight below 9.35 ppg, to achieve this required constant additions of premix (with sump water as the base).

Date : 28/02/95 Depth : 1939.0 Day : 15

The total depth of 2030m was reached with samples having been circulated at; 1939m - the mud was circulated for 10 mins before pulling 2 stands and circulating bottoms up. The well was flow checked before drilling ahead. 2001m - the mud was circulated for 5 mins and the well flow checked before pulling 2 stands and circulating bottoms up.
At TD, bottoms up was circulated before doing a 33 stand wiper trip, which encountered tight hole at; 1641 - 1670, 1699 - 1718, 1880 - 1842m. With back-reaming necessary 1766 - 1785m. While drilling to TD, the mud was treated with a premix of PHG, to improve the properties for logging.

Date : 01/03/95 Depth : 2030.0 Day : 16

On the trip back in, the hole had to be reamed from 1877 to 1890m, 12m of fill was on bottom. The hole was circulated clean, checked for flow, then a slug was pumped and the string pulled out. The logging tools were rigged up and run in to the hole, but were unable to pass 1540m. A wiper trip was made, with the hole being reamed from 1547 to 1614 and 1710 to 1743m (8m of fill was found on bottom). The hole was circulated clean prior to pulling to 1590m and spotting a 40 bbl high viscosity pill, 10 stands were then pulled and a slug pumped to continue the trip out.

Date : 02/03/95 Depth : 2030.0 Day : 17

The logging tools were prepared and, on running into the hole, a bridge was encountered at 1593m. The bit and BHA were run in and tagged the bridge at 1595m, the hole was reamed to 1608m. One stand was run in before tagging a bridge at 1614m, the hole was then reamed to 1626m. The trip in continued to 2016m and the hole reamed to bottom, there was 14m of fill. While circulating the mud, the mud weight was raised to 9.8 ppg, using Barite. On the trip out, a tight spot was experienced at 1900 - 1902m, and at 1442m the bit was run back down to 1634m, then pulled back to 1607m and a 40 bbl high viscosity pill spotted. The logs were then successfully run to bottom.

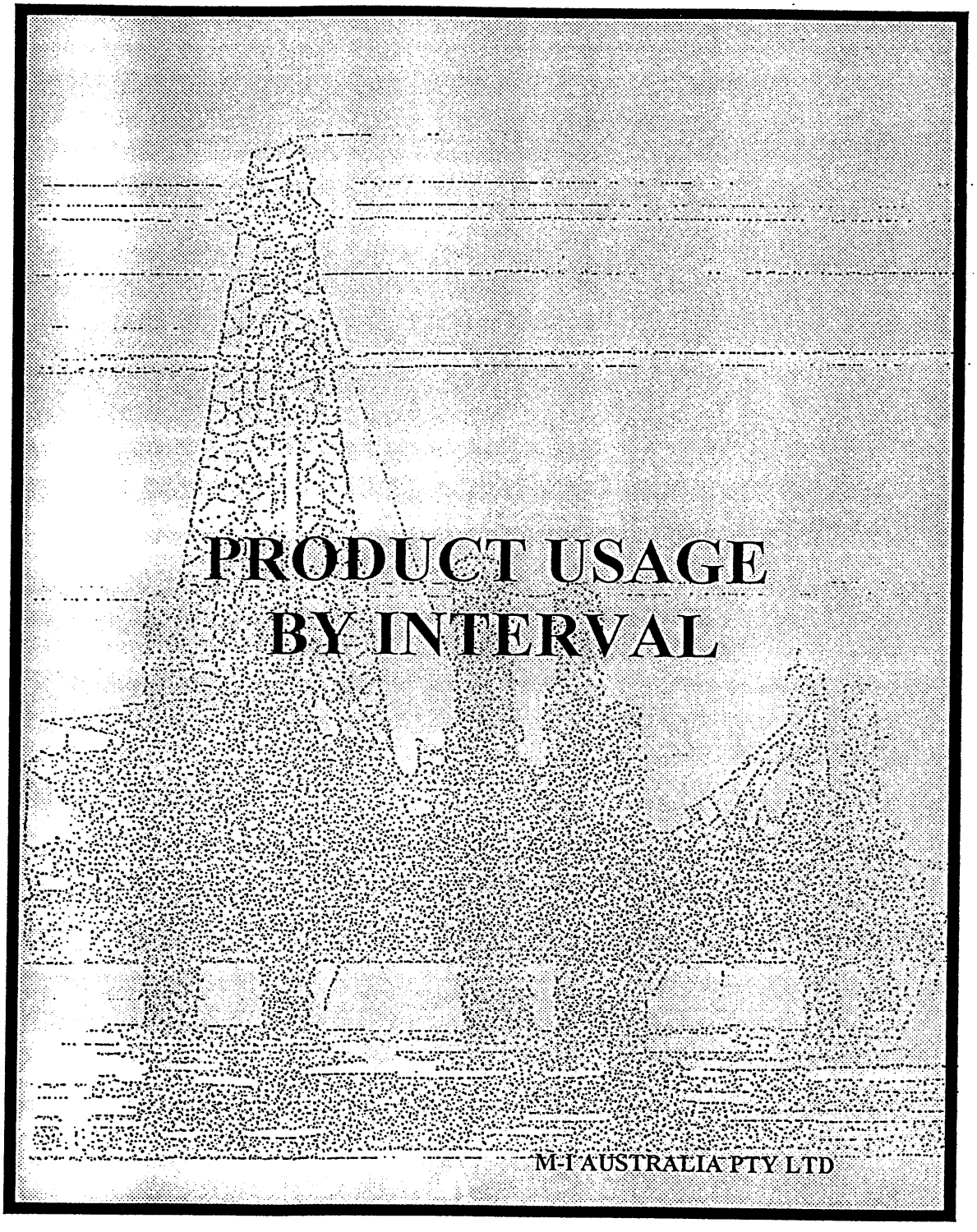
Date : 03/03/95 Depth : 2030.0 Day : 18

A 75 bbl premix was made up and added to the mud while on bottom during the wiper trip, 14m of fill was on bottom. On the third logging run, the tool was unable to pass 385m, while pulling out of the hole, high viscosity pills were spotted at 1607 - 40 bbls and 393 - 20 bbls. The pills were made up of 1.5 ppb Polypac R and 3.7 ppb M-I Gel. The logging tools were prepared to be run.

Date : 04/03/95 Depth : 2030.0 Day : 19

The logs were completed with runs of : #3 PDS, #4 RFT, #5 UDS, #6 SWC. The BHA was then run into the hole in preparation to be laid out sideways.

Product Usagae by Interval


PRODUCT USAGE
BY INTERVAL
M-I AUSTRALIA PTY LTD

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 13/02/95 - 15/02/95, 0 - 346.0 m

12.1/4" Hole 9.5/8" Casing

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
Caustic Soda	25 KG SX	4	22.35	89.40
M-I Gel	25 KG SX	77	9.44	726.88
Potassm Chloride	25 KG SX	24	11.46	275.04

*** INTERVAL WATER-BASE MUD COST TOTAL = 1,091.32

*** TOTAL MUD COST FOR INTERVAL = 1,091.32

M-I Drilling Fluids L.L.C. DRILLING FLUIDS DATA MANAGEMENT SYSTEM O0002 March 9, 1995

Total Meters Drilled : 346 Meters
Cost per Meter : $3.15

Total Days on Interval : 2 days
Cost per Day : $545.66

*** Total Volume Added : 650 bbls**
Cost per Barrel : $1.68

Dilution Rate : 1.88 bbl/mtr - * 1.23 bbl/mtr

*** 225 bbls carried forward to 8.1/2" interval**

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

BREAKDOWN OF COST BY PRODUCT GROUP 13/02/95 - 15/02/95, 0 - 346.0 m

12.1/4" Hole 9.5/8" Casing

WATER BASE MUD PRODUCTS	Cost	% Total
1 - BENTONITE	726.88	66.6
2 - SALTS	275.04	25.2
3 - ALKALIES	89.40	8.2
WATER BASE MUD TOTAL COST	1,091.32	100.0

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 16/02/95 - 04/03/95, 346.0 - 2030.0 m

8.1/2" Hole — No Casing Set

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
CMC TG LV	25 KG SX	72	61.23	4408.56
Caustic Soda	25 KG SX	28	22.35	625.80
M-I Bar	25 KG SX	453	5.53	2505.09
M-I Gel	25 KG SX	103	9.44	972.32
OS-1	25 KG SX	19	50.95	968.05
Polypac R	25 KG SX	86	131.74	11329.64
Potassm Chloride	25 KG SX	547	11.46	6268.62
Sodium Bicarb	25 KG SX	8	15.34	122.72

*** INTERVAL WATER-BASE MUD COST TOTAL = 27,200.80

*** TOTAL MUD COST FOR INTERVAL = 27,200.80

M-I Drilling Fluids L.L.C. DRILLING FLUIDS DATA MANAGEMENT SYSTEM O0002 March 9, 1995

Total Meters Drilled : 1,684 Meters
Cost per Meter : $16.15

Total Days on Interval : 17 days
Cost per Day : $1,600.04

*** Total Volume Added : 2,831 bbls**
Cost per Barrel : $9.61

Dilution Rate : 1.68 bbl/mtr

*** includes 225 bbls brought forward from 12.1/4" interval**

M-I DRILLING FLUIDS PRODUCT SUMMARY

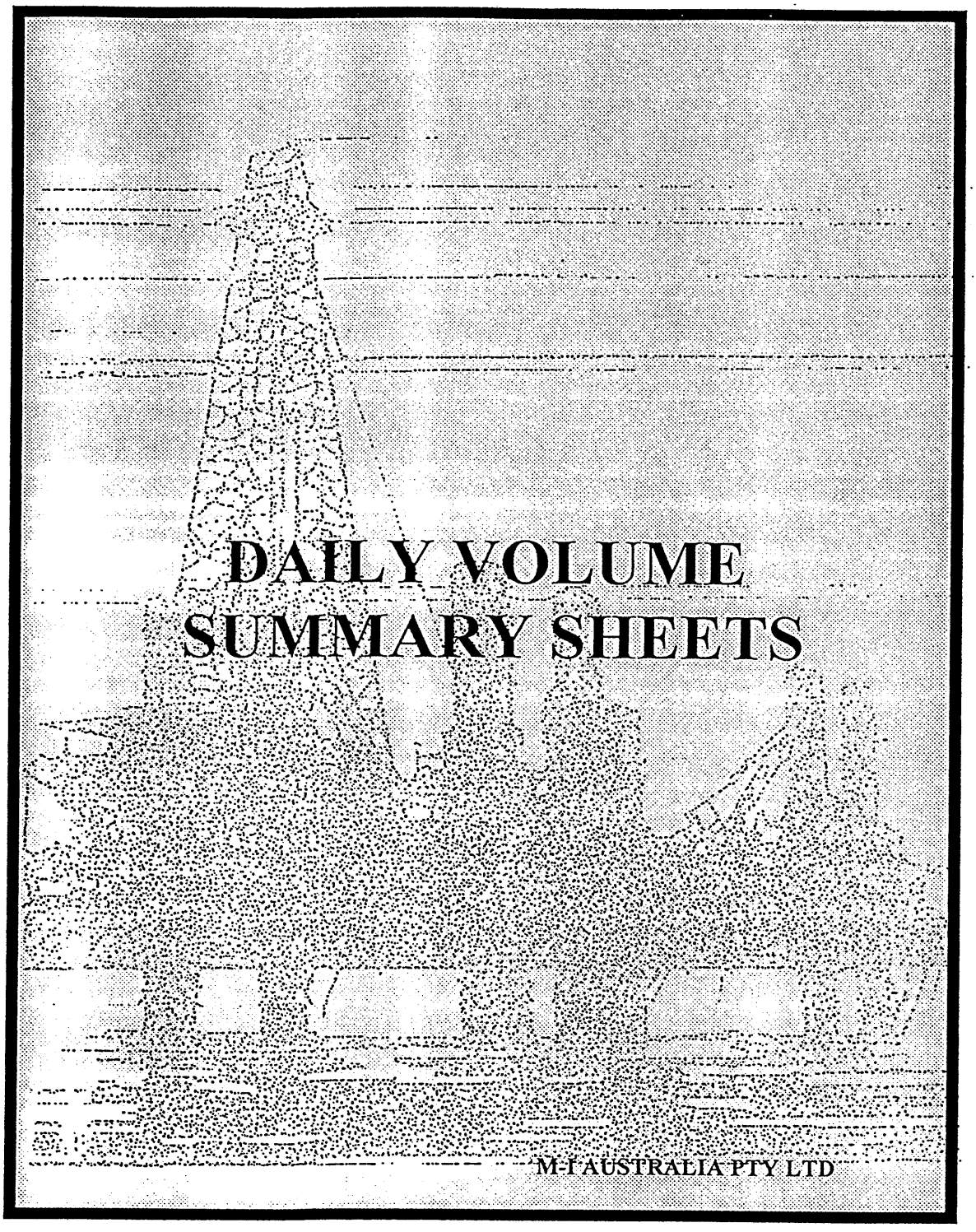
Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

BREAKDOWN OF COST BY PRODUCT GROUP 16/02/95 - 04/03/95, 346.0 - 2030.0 m

8.1/2" Hole — No Casing Set

WATER BASE MUD PRODUCTS	Cost	% Total
1 - WEIGHT MATERIAL	2,505.09	9.2
2 - BENTONITE	972.32	3.6
3 - VISCOSIFIERS	11,329.64	41.7
4 - FLUID LOSS AGENTS	4,408.56	16.2
5 - SALTS	6,268.62	23.0
6 - ALKALIES	748.52	2.8
7 - MISC	968.05	3.6
WATER BASE MUD TOTAL COST	27,200.80	100.0


DAILY VOLUME
SUMMARY SHEETS
M-I AUSTRALIA PTY LTD

Gas Fuel Exploration

DAILY VOLUME SUMMARY SHEETS

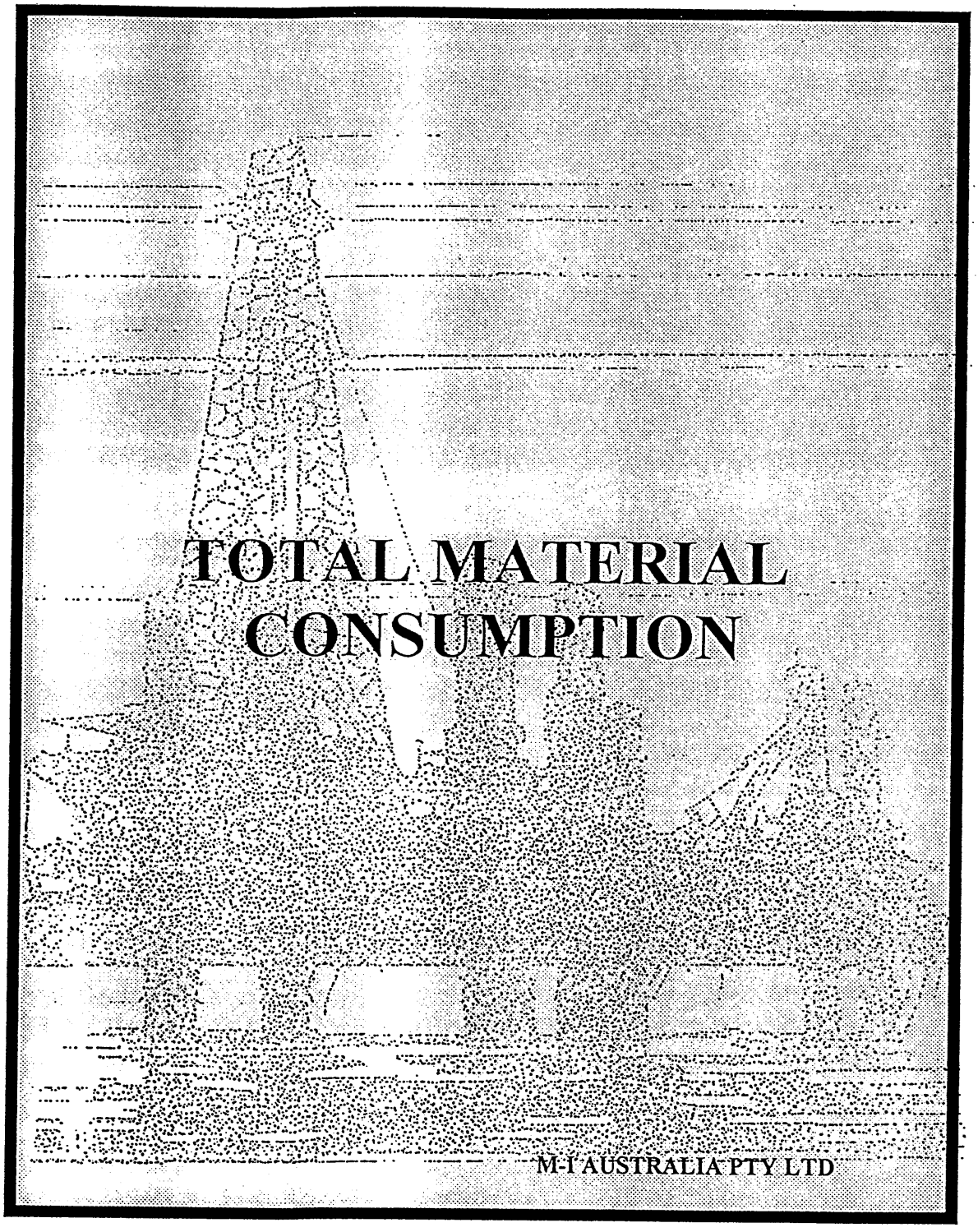
Well Name : Vaughan 1

12.1/4" Hole

	Mud Volume Status					Mud Volume Built						Mud Volume Lost						
Date 1995	Depth	Hole	Surf Active	Res	Total Vol	Water	Mud Built	Bar	Chems	Daily Total	Cum Built	Solids Equip	Surf	Dump	Hole	Casing Plugs	Daily Total	Cummul Lost
14-Feb	159	64	350		414	450	150			600	600	34		100	52		186	186
15-Feb	346	170	110		280	50				50	650			184			184	370

8.1/2" Hole

	Mud Volume Status					Mud Volume Built						Mud Volume Lost						
Date 1995	Depth	Hole	Surf Active	Res	Total Vol	Water	Mud Built	Bar	Chems	Daily Total	Cum Built	Solids Equip	Surf	Dump	Hole	Casing Plugs	Daily Total	Cummul Lost
16-Feb	346	87	270		357	132	*225			357	357						0	0
17-Feb	723	169	320		489	150	150			300	657	26	12	130			168	168
18-Feb	1144	261	450		711	60	350			410	1067	147		41			188	356
19-Feb	1392	306	450		756	15	180			195	1262	108		42			150	506
20-Feb	1507	320	450		770	16	44			60	1322	45		1			46	552
21-Feb	1607	343	410		753	10	100			110	1432	80	12	35			127	679
22-Feb	1679	360	430		790	50	120			170	1602	65		28	40		133	812
23-Feb	1823	383	490		873	10	280			290	1892	103		64	40		207	1019
24-Feb	1823	383	460		843					0	1892				30		30	1049
25-Feb	1823	383	420		803					0	1892				40		40	1089
26-Feb	1823	383	270		653	10	30			40	1932		90		100		190	1279
27-Feb	1918	406	424		830	50	400			450	2382	83	30	80	80		273	1552
28-Feb	2030	434	485		919	40	170			210	2592	72	15		34		121	1673
1-Mar	2030	434	449		883		80			80	2672			32	84		116	1789
2-Mar	2030	490	349		839			9		9	2681				57		57	1846
3-Mar	2030	490	331		821		75			75	2756				89		89	1935
4-Mar	2030	490	362		852		75			75	2831				44		44	1979


TOTAL MATERIAL
CONSUMPTION
M-I AUSTRALIA PTY LTD

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 13/02/95 - 04/03/95, 0 - 2030.0 m

WATER-BASE PROD	SIZE	AMOUNT	UNIT COST	PROD COST
CMC TG LV	25 KG SX	72	61.23	4408.56
Caustic Soda	25 KG SX	32	22.35	715.20
M-I Bar	25 KG SX	453	5.53	2505.09
M-I Gel	25 KG SX	180	9.44	1699.20
OS-1	25 KG SX	19	50.95	968.05
Polypac R	25 KG SX	86	131.74	11329.64
Potassm Chloride	25 KG SX	571	11.46	6543.66
Sodium Bicarb	25 KG SX	8	15.34	122.72

*** INTERVAL WATER-BASE MUD COST TOTAL = 28,292.12

*** TOTAL MUD COST FOR INTERVAL = 28,292.12

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

BREAKDOWN OF COST BY PRODUCT GROUP 13/02/95 - 04/03/95, 0 - 2030.0 m

WATER BASE MUD PRODUCTS	*Cost*	*% Total*
1 - WEIGHT MATERIAL	2,505.09	8.9
2 - BENTONITE	1,699.20	6.0
3 - VISCOSIFIERS	11,329.64	40.0
4 - FLUID LOSS AGENTS	4,408.56	15.6
5 - SALTS	6,543.66	23.1
6 - ALKALIES	837.92	3.0
7 - MISC	968.05	3.4
WATER BASE MUD TOTAL COST	28,292.12	100.0

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

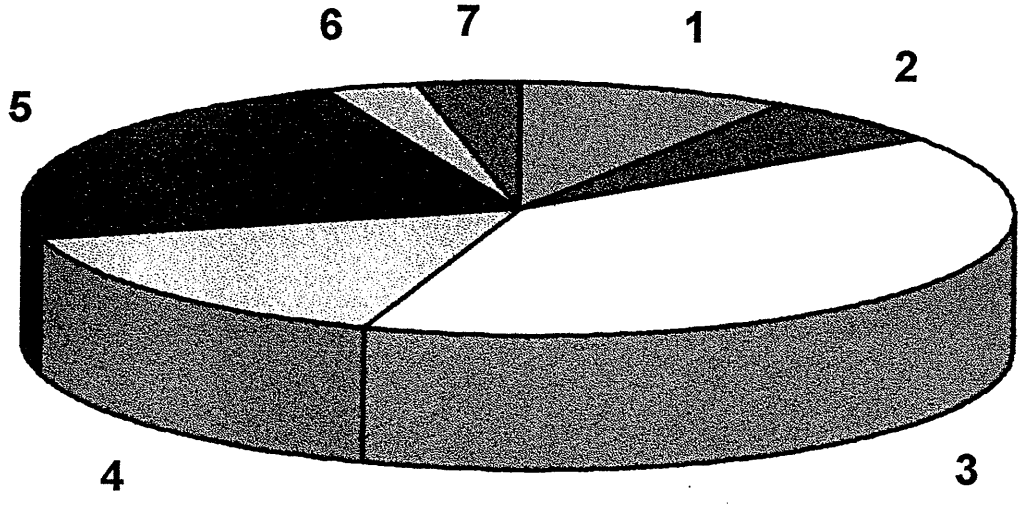
BREAKDOWN OF PRODUCT USAGE BY GROUP 13/02/95 - 04/03/95, 0 - 2030.0 m

WATER BASE MUD

PRODUCT CATEGORY	PRODUCTS USED
WEIGHT MATERIAL	M-I Bar
BENTONITE	M-I Gel
VISCOSIFIERS	Polypac R
FLUID LOSS AGENTS	CMC TG LV
SALTS	Potassm Chloride
ALKALIES	Caustic Soda, Sodium Bicarb
MISC	OS-1

	Operator : GAS & FUEL EXP. Well Name : VAUGHAN 1 Description : WILDCAT Field/Area : PPL-1 Location : OTWAY BASIN	*COST* *ANALYSIS*

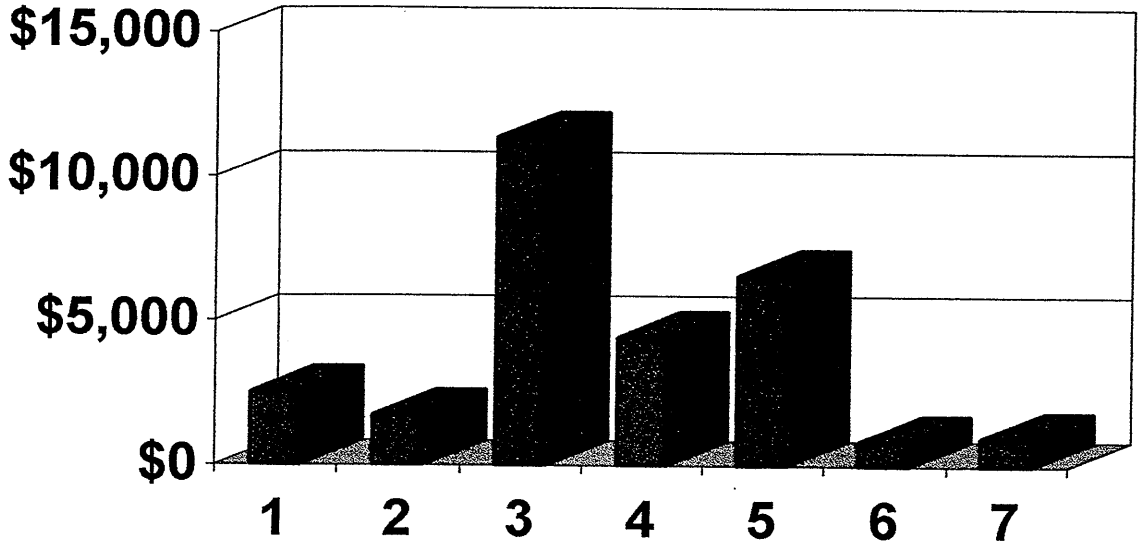
BREAKDOWN OF COST BY PRODUCT GROUP 13/02/95 - 04/03/95, 0 - 2030.0 m



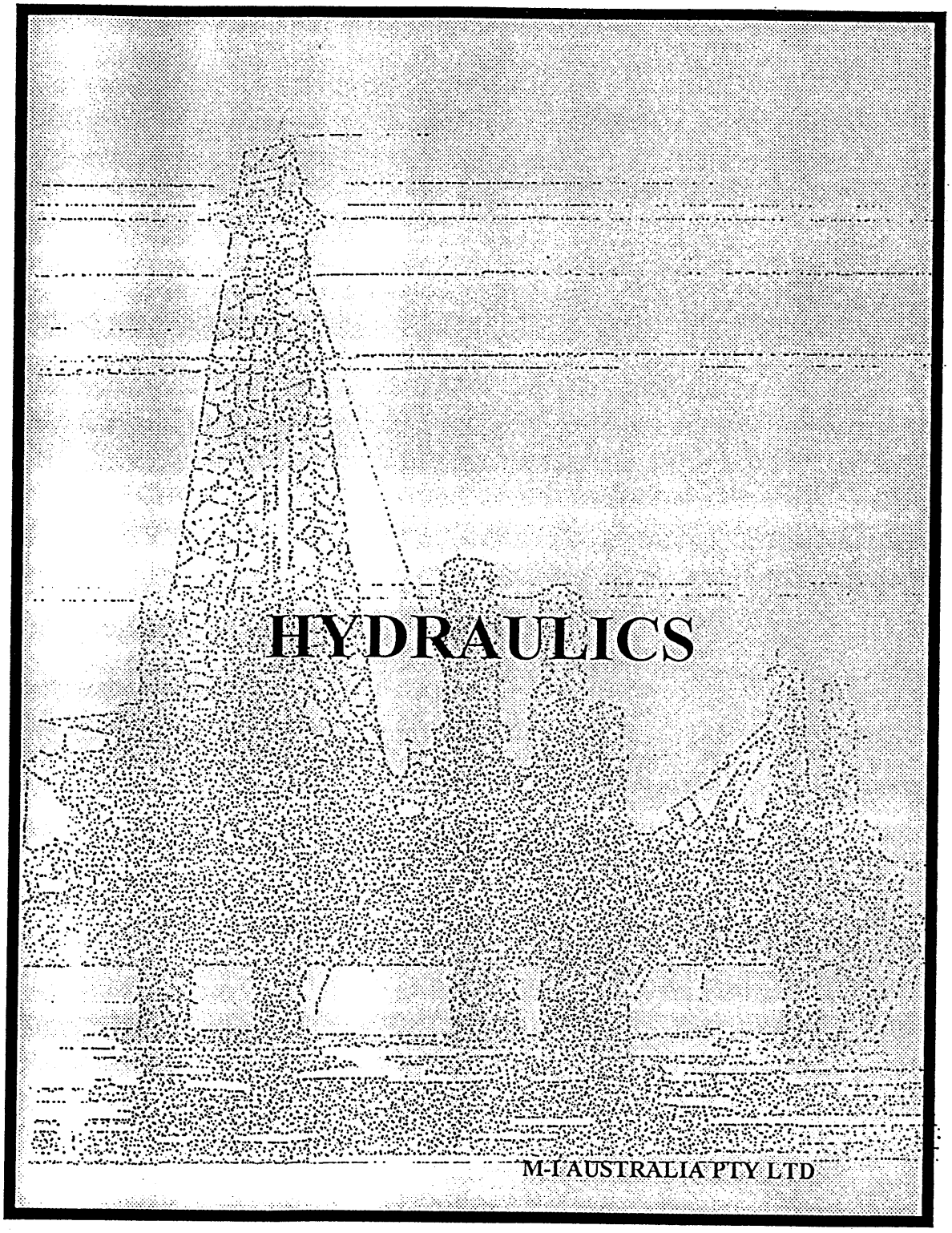
WATER BASE MUD PRODUCTS	Cost	% Total
1 - WEIGHT MATERIAL	*2,505.09*	*8.9*
2 - BENTONITE	*1,699.20*	*6.0*
3 - VISCOSIFIERS	*11,329.64*	*40.0*
4 - FLUID LOSS AGENTS	*4,408.56*	*15.6*
5 - SALTS	*6,543.66*	*23.1*
6 - ALKALIES	*837.92*	*3.0*
7 - MISC	*968.05*	*3.4*
WATER BASE MUD TOTAL COST	*28,292.12*	*100.0*

	Operator : GAS & FUEL EXP. Well Name : VAUGHAN 1 Description : WILDCAT Field/Area : PPL-1 Location : OTWAY BASIN	*COST* *ANALYSIS*

BREAKDOWN OF COST BY PRODUCT GROUP 13/02/95 - 04/03/95, 0 - 2030.0 m



WATER BASE MUD PRODUCTS	Cost	% Total
1 - WEIGHT MATERIAL	*2,505.09*	*8.9*
2 - BENTONITE	*1,699.20*	*6.0*
3 - VISCOSIFIERS	*11,329.64*	*40.0*
4 - FLUID LOSS AGENTS	*4,408.56*	*15.6*
5 - SALTS	*6,543.66*	*23.1*
6 - ALKALIES	*837.92*	*3.0*
7 - MISC	*968.05*	*3.4*
WATER BASE MUD TOTAL COST	*28,292.12*	*100.0*


HYDRAULICS
M-I AUSTRALIA PTY LTD

M-I DRILLING FLUIDS HYDRAULICS RECAP

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

*Date		14/02/95	15/02/95	16/02/95	17/02/95	18/02/95	19/02/95	20/02/95	21/02/95	22/02/95
*Depth		159.0	346.0	346.0	723.0	1144.0	1392.0	1507.0	1607.0	1679.0
*Days Since Spud		1	2	3	4	5	6	7	8	9
*RHEOLOGICAL PROPERTIES										
Mud Wt	-lb/gal	8.7	9.0	8.9	8.9	9.0	9.1	9.1	9.3	9.4
Plastic Visc	-cps	5	9	8	8	14	15	14	16	17
Yield Point	-lb/100ft2	6	36	32	32	20	15	16	14	16
3-rpm Rdg	-Fann deg	2	14	15	4	2	2	2	2	2
np Value		0.540	0.263	0.263	0.263	0.497	0.585	0.552	0.616	0.599
Kp	-lb-sec^n/100ft2	0.4040	9.3204	8.2848	8.2848	1.6334	0.8356	1.0227	0.6858	0.8397
na Value		0.370	0.254	0.213	0.500	0.615	0.588	0.588	0.588	0.609
Ka	-lb-sec^n/100ft2	1.1667	9.8783	11.3078	1.8881	0.7823	0.8178	0.8178	0.8178	0.7906
*FLOW DATA										
Flow Rate	-gal/min	428	428	0	296	250	250	250	250	250
Pump Pressure	-psi	450	600	0	1175	950	1000	1000	1100	1075
Pump	-hhp	112	150	***	203	139	146	146	160	157
*PRESSURE LOSSES										
Drill String	-psi	***	***	***	118	155	193	199	223	237
Bit	-psi	200	200	***	930	670	680	680	690	700
Annulus	-psi	***	***	***	57	50	54	58	61	67
Total System	-psi	***	***	***	1105	875	927	937	974	1004
*BIT HYDRAULICS										
Nozzles	-1/32 inch	20/20/18	20/20/18	/ /	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11
Nozzles	-1/32 inch	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Bit Pressure	-%	44	34	***	79	70	68	68	63	65
Bit	-hhp	49	51	***	160	97	99	99	101	102
Bit HSI	(Index)	0.40	0.40	***	2.80	1.70	1.70	1.80	1.80	1.80
Jet Velocity	-m/sec	48.5	48.5	***	104.0	87.8	87.8	87.8	87.8	87.8
Impact Force	-lbs	307	318	***	465	335	339	341	347	352
*DRILL COLLARS ANNULUS										
Velocity	-m/min	***	***	***	66.6	56.3	56.3	56.3	56.3	56.3
Critical Vel	-m/min	***	***	***	132.8	109.2	101.2	100.8	99.7	103.7
Reynolds Number		***	***	***	990	1049	1163	1170	1189	1126
Crit Re (Lam - Tran)		***	***	***	2785	2627	2664	2664	2664	2636
*DRILL PIPE ANNULUS										
Velocity	-m/min	***	***	***	40.1	33.9	33.9	33.9	33.9	33.9
Critical Vel	-m/min	***	***	***	108.0	82.9	78.2	77.9	77.0	79.1
Reynolds Number		***	***	***	631	761	818	823	836	811
Crit Re (Lam - Tran)		***	***	***	2785	2627	2664	2664	2664	2636
*HOLE CLEANING										
Slip Velocity	-m/min	***	***	***	12.0	17.1	18.1	18.0	17.7	16.6
Rising Velocity	-m/min	***	***	***	28.1	16.8	15.8	15.9	16.2	17.3
Lifting Capacity	-%	***	***	***	70	50	47	47	48	51
Cuttings Conc	-%	***	***	***	1.71	1.43	1.66	1.37	1.48	3.15
Penetration Rate	-m/hr	14.0	22.0	***	22.0	11.0	12.0	10.0	11.0	25.0
*CASING SHOE PRESSURES										
ECD	-lb/gal	***	***	***	9.2	9.2	9.3	9.3	9.5	9.6
ECD+Cuttings	-lb/gal	***	***	***	9.4	9.3	9.5	9.5	9.6	10.0
*TOTAL DEPTH PRESSURES										
ECD	-lb/gal	***	***	***	9.4	9.3	9.3	9.4	9.5	9.7
ECD+Cuttings	-lb/gal	***	***	***	9.6	9.4	9.5	9.5	9.7	10.0

M-I Drilling Fluids L.L.C. DRILLING FLUIDS DATA MANAGEMENT SYSTEM O0002 March 9, 1995

M-I DRILLING FLUIDS HYDRAULICS RECAP

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

*Date	23/02/95	24/02/95	25/02/95	26/02/95	27/02/95	28/02/95	01/03/95	02/03/95	03/03/95
*Depth	1823.0	1823.0	1823.0	1823.0	1918.0	2030.0	2030.0	2030.0	2030.0
*Days Since Spud	10	11	12	13	14	15	16	17	18
*RHEOLOGICAL PROPERTIES									
Mud Wt -lb/gal	9.4	9.3	9.4	9.4	9.4	9.4	9.4	9.8	9.9
Plastic Visc -cps	11	12	13	12	11	12	12	12	12
Yield Point -lb/100ft2	12	10	10	12	8	7	11	8	18
3-rpm Rdg -Fann deg	2	2	2	2	1	1	2	2	2
np Value	0.564	0.628	0.646	0.585	0.659	0.706	0.605	0.678	0.485
Kp -lb-sec^n/100ft2	0.7305	0.4685	0.4369	0.6685	0.3337	0.2485	0.5629	0.3118	1.5538
na Value	0.530	0.521	0.530	0.540	0.639	0.639	0.530	0.500	0.588
Ka -lb-sec^n/100ft2	0.8984	0.9127	0.8984	0.8850	0.3760	0.3760	0.8984	0.9440	0.8178
*FLOW DATA									
Flow Rate -gal/min	250	0	0	238	250	250	236	250	0
Pump Pressure -psi	1080	0	0	1000	1075	1090	1070	1100	0
Pump -hhp	158	***	***	139	157	159	147	160	***
*PRESSURE LOSSES									
Drill String -psi	219	***	***	211	235	253	226	260	***
Bit -psi	690	***	***	640	700	690	620	730	***
Annulus -psi	58	***	***	58	40	42	62	59	***
Total System -psi	967	***	***	909	975	985	908	1049	***
*BIT HYDRAULICS									
Nozzles -1/32 inch	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11	11/11/11
Nozzles -1/32 inch	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Bit Pressure -%	64	***	***	64	65	64	58	66	***
Bit -hhp	101	***	***	88	102	101	85	106	***
Bit HSI (Index)	1.80	***	***	1.60	1.80	1.80	1.50	1.90	***
Jet Velocity -m/sec	87.8	***	***	83.6	87.8	87.8	82.9	87.8	***
Impact Force -lbs	348	***	***	319	350	348	311	365	***
*DRILL COLLARS ANNULUS									
Velocity -m/min	56.3	***	***	53.6	56.3	56.3	53.1	56.3	***
Critical Vel -m/min	86.6	***	***	87.9	67.7	67.9	86.6	78.4	***
Reynolds Number	1455	***	***	1326	2019	2008	1337	1693	***
Crit Re (Lam - Tran)	2743	***	***	2731	2594	2594	2743	2785	***
*DRILL PIPE ANNULUS									
Velocity -m/min	33.9	***	***	32.3	33.9	33.9	32.0	33.9	***
Critical Vel -m/min	69.3	***	***	69.9	50.6	50.8	69.3	63.8	***
Reynolds Number	959	***	***	883	1505	1497	881	1078	***
Crit Re (Lam - Tran)	2743	***	***	2731	2594	2594	2743	2785	***
*HOLE CLEANING									
Slip Velocity -m/min	19.8	***	***	19.6	19.7	19.8	19.8	19.0	***
Rising Velocity -m/min	14.1	***	***	12.6	14.2	14.1	12.2	14.9	***
Lifting Capacity -%	42	***	***	39	42	42	38	44	***
Cuttings Conc -%	1.55	***	***	***	1.23	1.09	***	***	***
Penetration Rate -m/hr	10.0	***	***	***	8.0	7.0	***	***	***
*CASING SHOE PRESSURES									
ECD -lb/gal	9.5	***	***	9.6	9.5	9.4	9.5	9.9	***
ECD+Cuttings -lb/gal	9.7	***	***	***	9.6	9.6	***	***	***
*TOTAL DEPTH PRESSURES									
ECD -lb/gal	9.5	***	***	9.6	9.5	9.5	9.5	10.0	***
ECD+Cuttings -lb/gal	9.7	***	***	***	9.7	9.6	***	***	***

M-I Drilling Fluids L.L.C. DRILLING FLUIDS DATA MANAGEMENT SYSTEM O0002 March 9, 1995

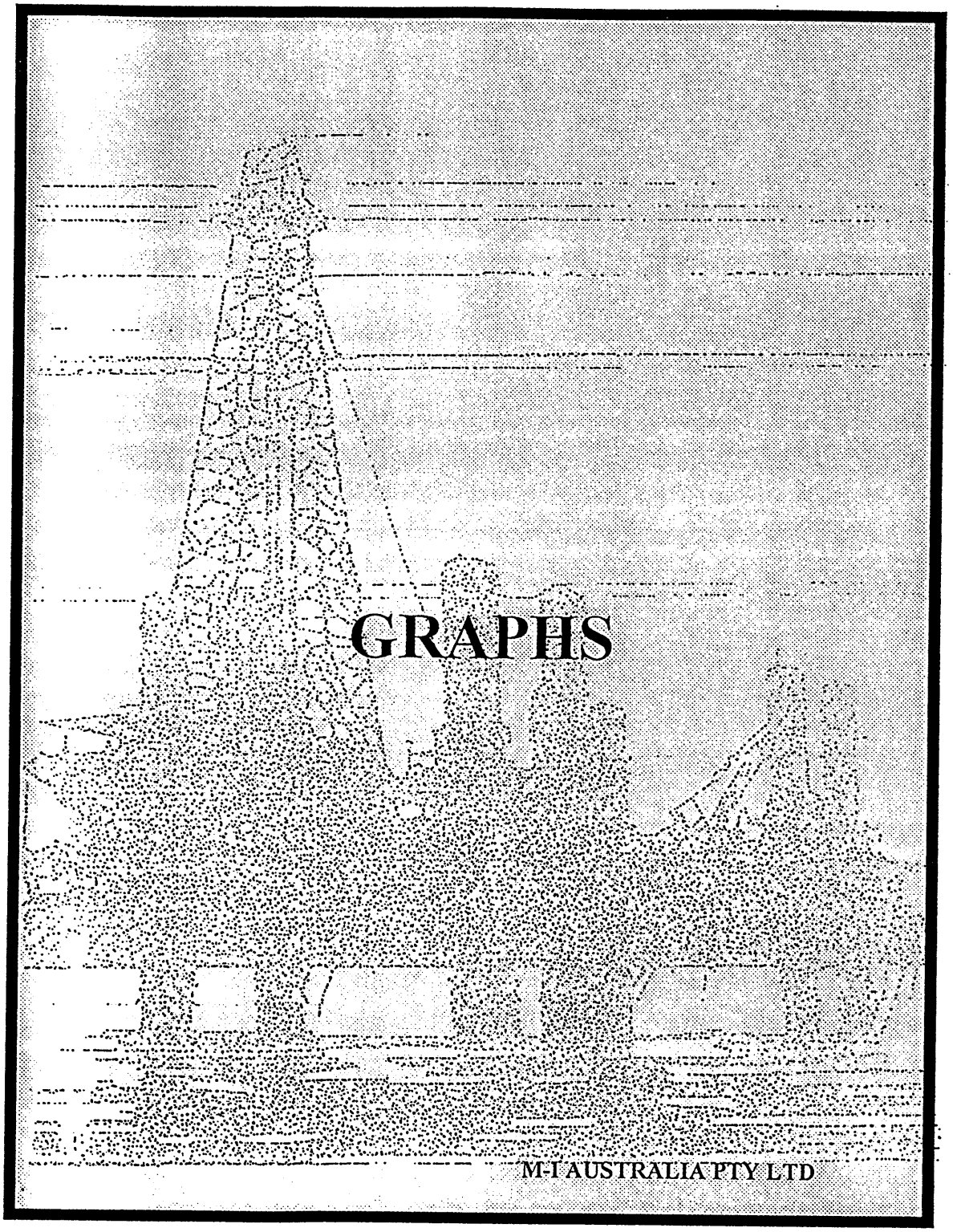
M-I DRILLING FLUIDS HYDRAULICS RECAP

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

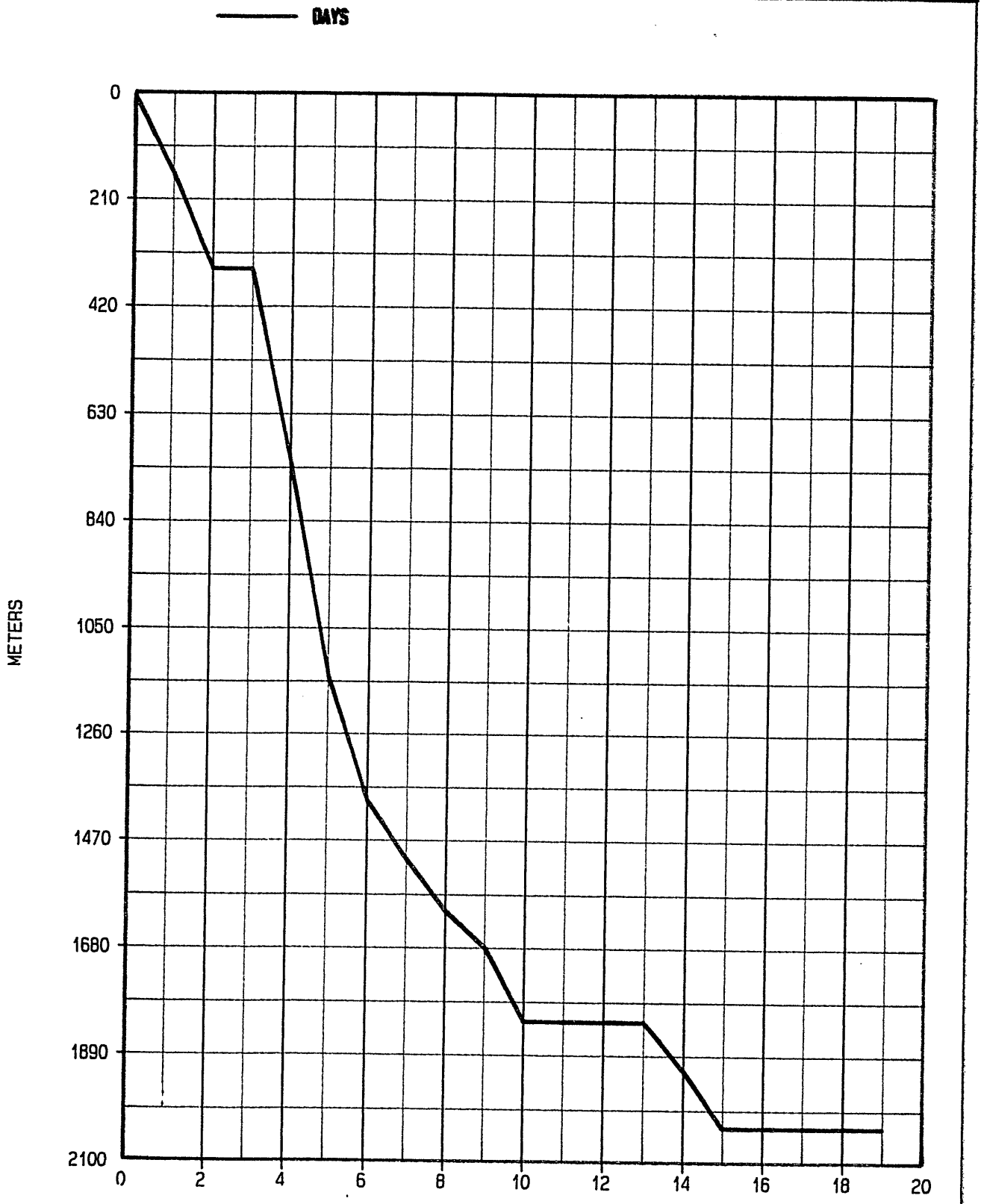
Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

*Date	04/03/95
*Depth	2030.0
*Days Since Spud	19
*RHEOLOGICAL PROPERTIES	
Mud Wt -lb/gal	9.9
Plastic Visc -cps	12
Yield Point -lb/100ft2	18
3-rpm Rdg -Fann deg	2
np Value	0.485
Kp -lb-sec^n/100ft2	1.5538
na Value	0.588
Ka -lb-sec^n/100ft2	0.8178
*FLOW DATA	
Flow Rate -gal/min	0
Pump Pressure -psi	0
Pump -hhp	***
*PRESSURE LOSSES	
Drill String -psi	***
Bit -psi	***
Annulus -psi	***
Total System -psi	***
*BIT HYDRAULICS	
Nozzles -1/32 inch	11/11/11
Nozzles -1/32 inch	/ /
Bit Pressure -%	***
Bit -hhp	***
Bit HSI (Index)	***
Jet Velocity -m/sec	***
Impact Force -lbs	***
*DRILL COLLARS ANNULUS	
Velocity -m/min	***
Critical Vel -m/min	***
Reynolds Number	***
Crit Re (Lam - Tran)	***
*DRILL PIPE ANNULUS	
Velocity -m/min	***
Critical Vel -m/min	***
Reynolds Number	***
Crit Re (Lam - Tran)	***
*HOLE CLEANING	
Slip Velocity -m/min	***
Rising Velocity -m/min	***
Lifting Capacity -%	***
Cuttings Conc -%	***
Penetration Rate -m/hr	***
*CASING SHOE PRESSURES	
ECD -lb/gal	***
ECD+Cuttings -lb/gal	***
*TOTAL DEPTH PRESSURES	
ECD -lb/gal	***
ECD+Cuttings -lb/gal	***

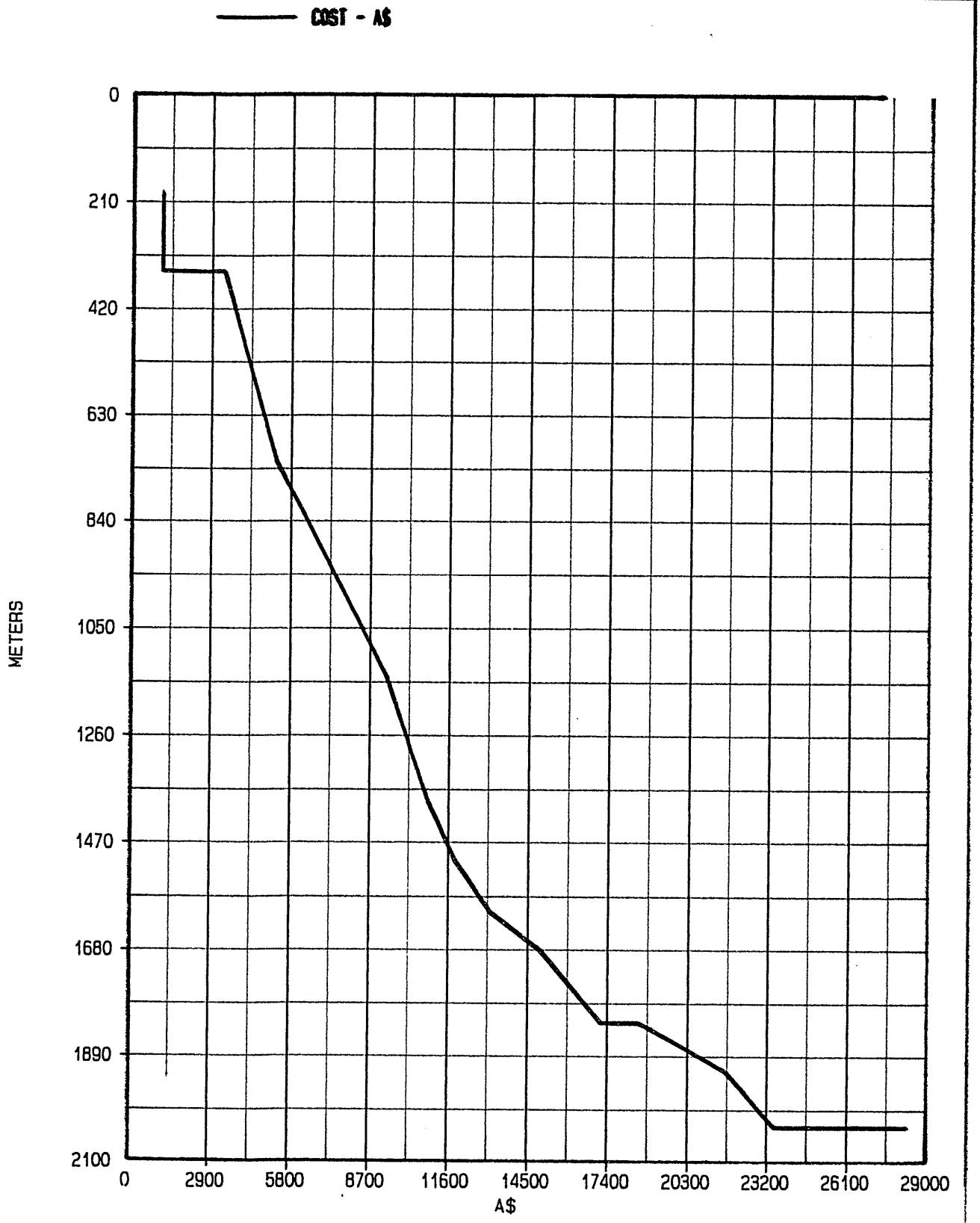
M-I Drilling Fluids L.L.C. DRILLING FLUIDS DATA MANAGEMENT SYSTEM O0002 March 9, 1995


GRAPHS
M-I AUSTRALIA PTY LTD

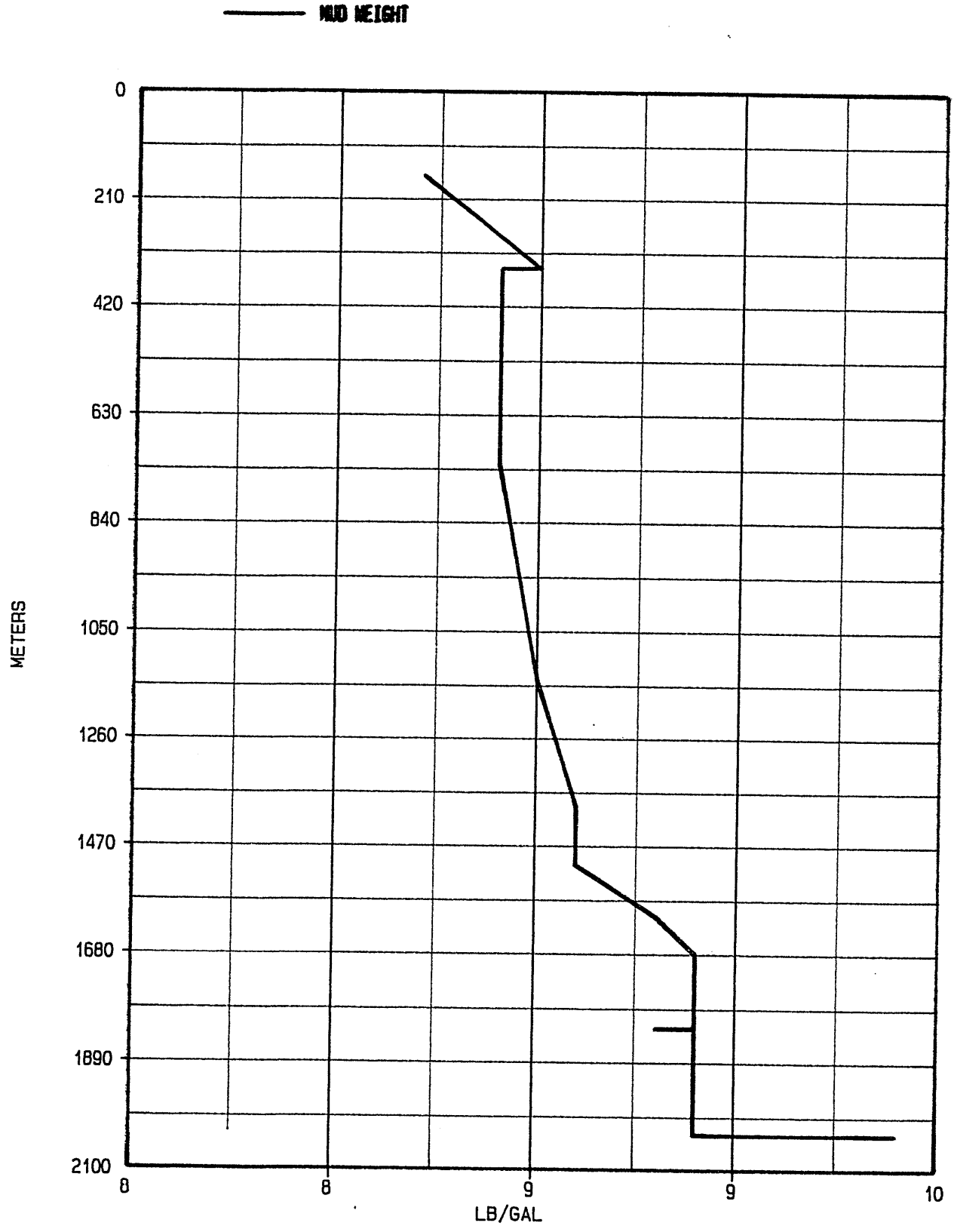
MI SWACO / IMCO	Operator : GAS & FUEL EXPLOR Well Name : VAUGHAN 1 Legal : WILDCAT Field/Block : PPL-1 County/State : OTWAY BASIN	DRILLING FLUID PARAMETERS



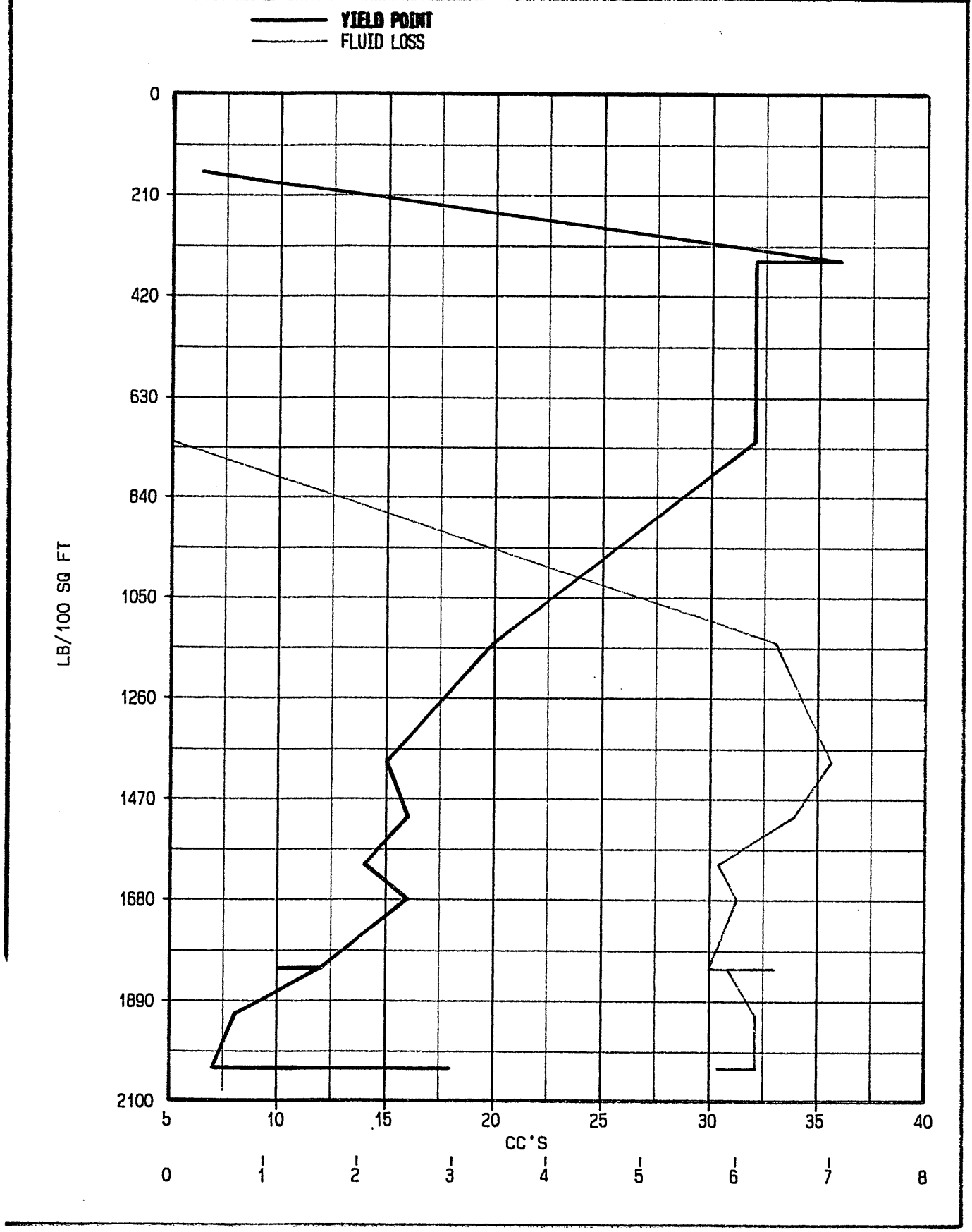
M-I Swaco/IMCO	Operator : GAS & FUEL EXPLOR Well Name : VAUGHAN 1 Legal : WILDCAT Field/Block : PPL-1 County/State : OTWAY BASIN	DRILLING FLUID PARAMETERS

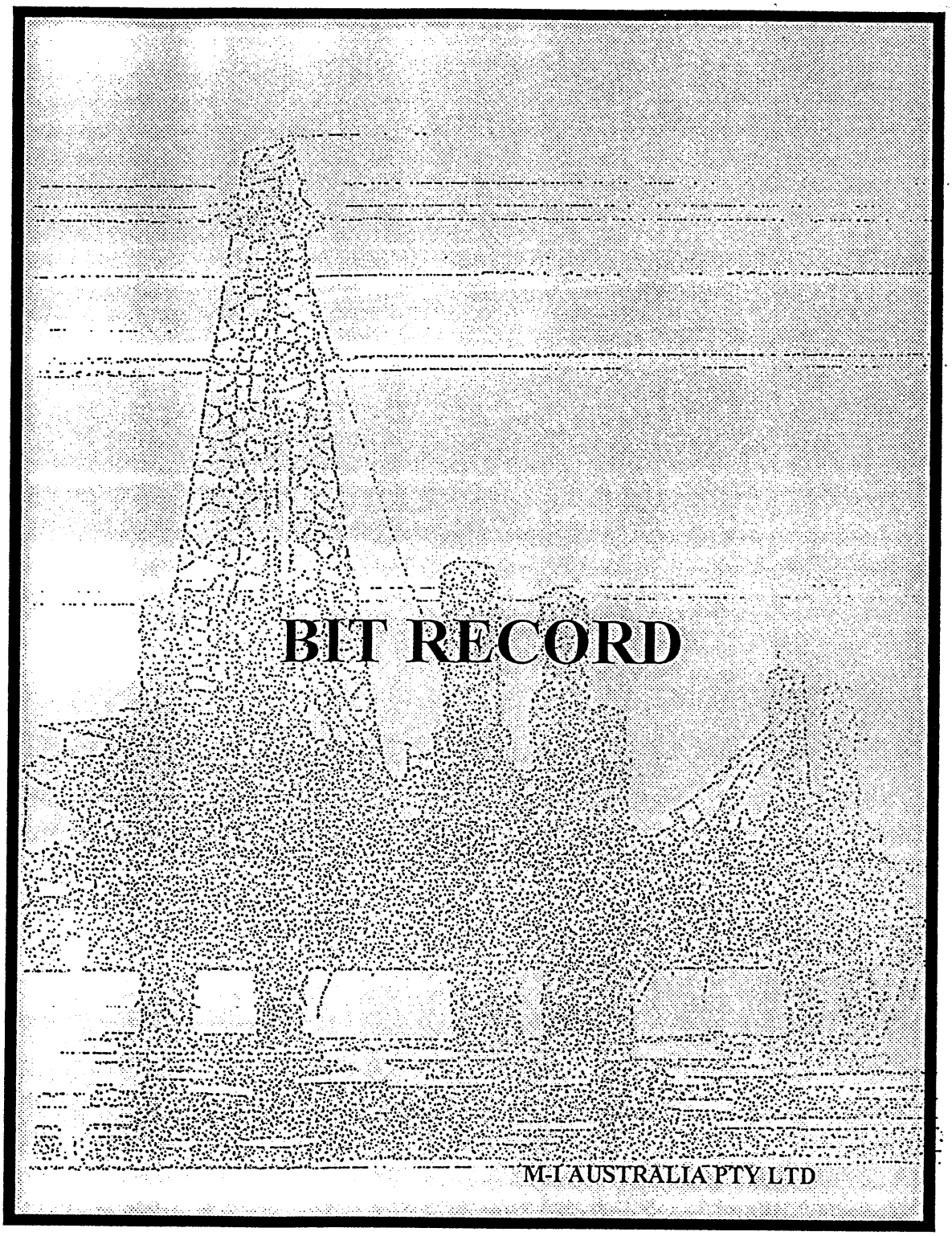


MI SWACO / IMCO	Operator : GAS & FUEL EXPLOR Well Name : VAUGHAN 1 Legal : WILDCAT Field/Block : PPL-1 County/State : OTWAY BASIN	DRILLING FLUID PARAMETERS

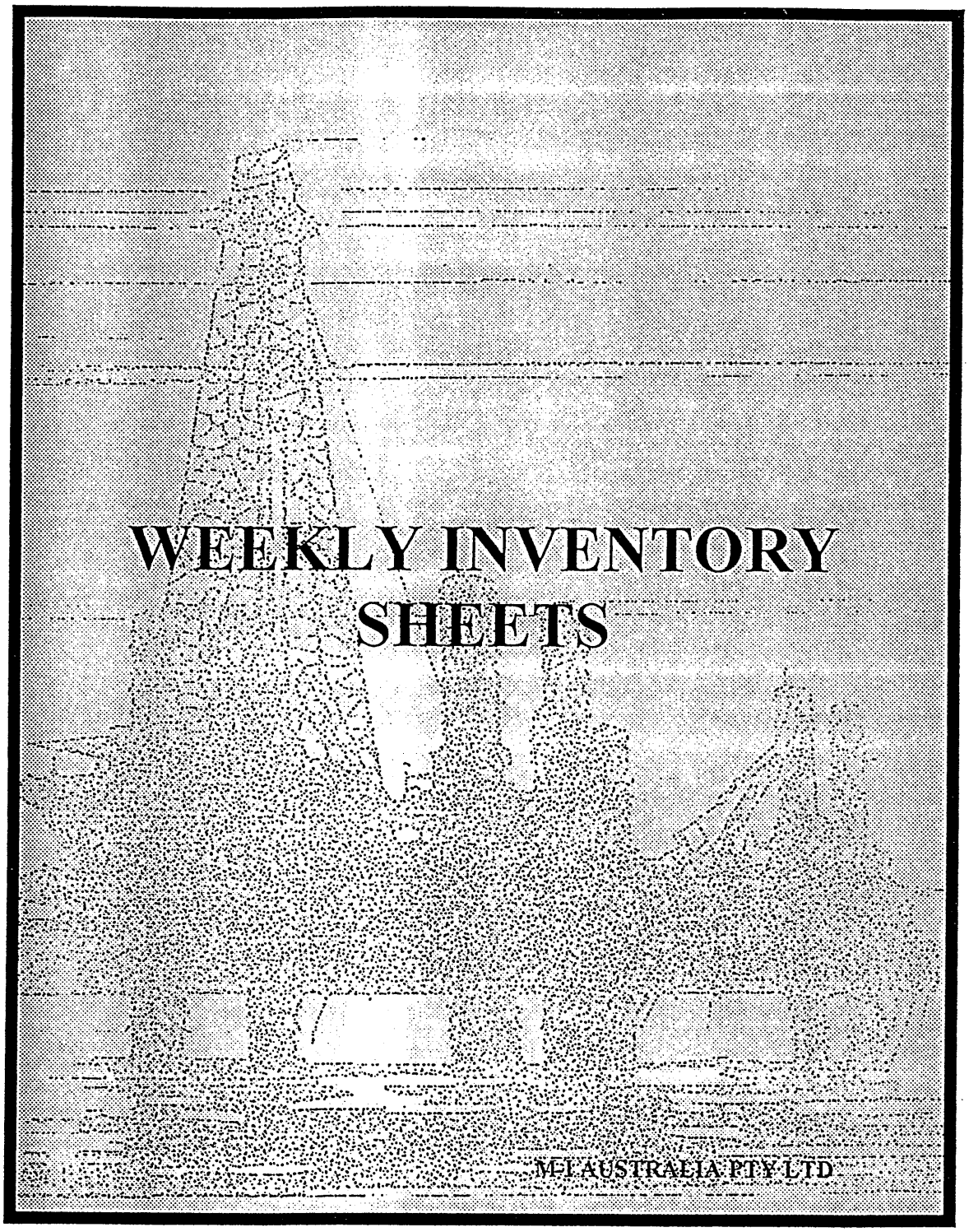


M-I Swaco/TMCO	Operator : GAS & FUEL EXPLOR Well Name : VAUGHAN 1 Legal : WILDCAT Field/Block : PPL-1 County/State : OTWAY BASIN	DRILLING FLUID PARAMETERS




BIT RECORD
M-I AUSTRALIA PTY LTD

Contractor - Century					Location - Otway Basin, Victoria								Well : Vaughan 1		
Operator : Gas & Fuel Exploration													Engineer : D Ridler		
Pump Name		Size	Liner Size/Stroke		Drill Collars OD x ID x Length		Pipe Drill		Tool Joint Type		Wt/Ft		Pump Output bbls/Stks		
National		5/5/06	7.75/8.5		6.25 x 2.7/8		-				16.6		0.054/.0702		
	Run No	Size	Make	Type	Jet Size	Depth Out	Meters Drilled	Hours Run	Wt on Bit	R P M	Pump Pressure	Vert Dev	Stks/min	Ann Vel m/min	Condition T-B-G
	1	12.1/4	Varel	L114	20x2x18	346	346	15.5	5/15	120	600	0-Jan	168	81/96/127	1-1-I
	2	8.1/2	HTC	ATJ05	11 x 3	1507	1161	65.5	15/25	110	1000	3/4	110	118/185	3-5-1/16
	3	8.1/2	HTC	ATJ05	11 x 3	1607	100	11	20/25	100	1075	3/4	110	118/185	1-1-I
	3RR	8.1/2	HTC	ATJ05	11 x 3	1823	216	21	25	90	1080	1.1/4	110	118/185	1-2-I
	3RR	8.1/2	HTC	ATJ05	11 x 3	2030	207	28	25	95	1080	3/4	110	118/185	2-4-1/16


WEEKLY INVENTORY
SHEETS
M.I AUSTRALIA PTY LTD

Gas Fuel Exploration

WEEKLY INVENTORY SHEETS

Well : Vaughan 1

DATE: **1995**

Product Name	Unit	14-Feb Bal	14-Feb Recd	14-Feb Used	15-Feb Bal	15-Feb Recd	15-Feb Used	16-Feb Bal	16-Feb Recd	16-Feb Used	17-Feb Bal	17-Feb Recd	17-Feb Used	18-Feb Bal	18-Feb Recd	18-Feb Used	19-Feb Bal	19-Feb Recd	19-Feb Used	20-Feb Bal	20-Feb Recd	20-Feb Used	Total for Week Bal	Total for Week Recd	Total for Week Used	Total for Week Bal
Barite	25 kg	400			400			400			400			400			400			400			400	0	0	400
Bacban III	1 lt	6			6			6			6			6			6			6			6	0	0	6
Caustic Soda	25 kg	42		4	38			38			38			38		5	33		3	30		1	29	0	13	29
CMC LV	25 kg	80			80			80		12	68		12	56			56		6	50		6	44	0	36	44
Conqor 303A	25 lt	10			10			10			10			10			10			10			10	0	0	10
CaCl2	25 kg	40			40			40			40			40			40			40			40	0	0	40
Defoam A	25 lt	5			5			5			5			5			5			5			5	0	0	5
Kwikseal Med	40 lb	30			30			30			30			30			30			30			30	0	0	30
Mica Medium	50 lb	30			30			30			30			30			30			30			30	0	0	30
OS-1	25 kg	40			40			40			40		2	38		4	34		3	31		2	29	0	11	29
Pipelax W	205 lt	2			2			2			2			2			2			2			2	0	0	2
KCl	25 kg	480		24	456			456		56	400		60	340		140	200		40	160		20	140	0	340	140
Lime	20 kg	20			20			20			20		1*	19			19			19			19	0	1*	19
Polypac R	25 kg	64			64			64		6	58		3	55		16	39		4	35		2	33	0	31	33
Soda Ash	25 kg	20			20			20			20			20			20			20			20	0	0	20
Sodium Bicarb	25 kg	20			20			20		6	14			14			14			14			14	0	6	14
Spersene	25 kg	17			17			17			17			17			17			17			17	0	0	17
M-I Gel	25 kg	192		77	115			115			115			115			115			115			115	0	77	115

* To Camp

Gas Fuel Exploration

WEEKLY INVENTORY SHEETS

Well : Vaughan 1

DATE: 1995

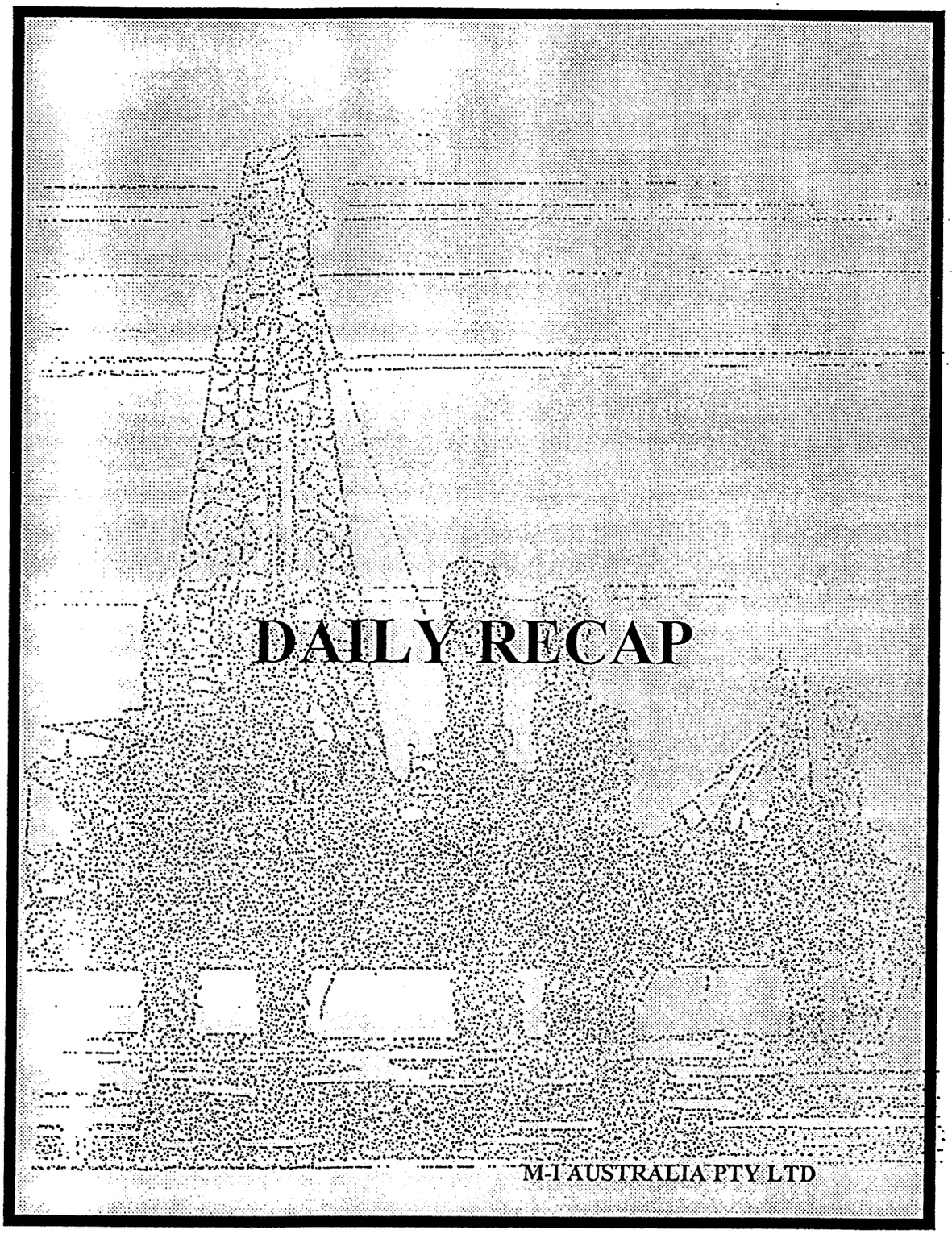
	21-Feb			22-Feb			23-Feb			24-Feb			25-Feb			26-Feb			27-Feb			Total for Week		
Product Name	Unit	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal
Barite	25 kg	400		40	360			360			360		30	330			330			330			330	0	70	330
Bacban III	1 lt	6			6			6			6			6			6			6			6	0	0	6
Caustic Soda	25 kg	29		2	27		1	26		4	22		3	19			19			19		3	16	0	13	16
CMC LV	25 kg	44		7	37		8	29			29		6	23			23			23		9	14	0	30	14
Conqor 303A	25 lt	10			10			10			10			10			10			10			10	0	0	10
CaCl2	25 kg	40			40			40			40			40			40			40			40	0	0	40
Defoam A	25 lt	5			5			5			5			5			5			5			5	0	0	5
Kwikseal Med	40 lb	30			30			30			30			30			30			30			30	0	0	30
Mica Medium	50 lb	30			30			30			30			30			30			30			30	0	0	30
OS-1	25 kg	29		2	27			27		1	26			26			26			26		2	24	0	5	24
Pipelax W	205 lt	2			2			2			2			2			2			2			2	0	0	2
KCl	25 kg	140		20	120		26	94		70	24		14	10	320		330		10	320		40	280	320	180	280
Lime	20 kg	19			19			19			19			19			19			19			19	0	0	19
Polypac R	25 kg	33		2	31		7	24		10	14			14	32		46		2	44		15	29	32	36	29
Soda Ash	25 kg	20			20			20			20			20			20			20			20	0	0	20
Sodium Bicarb	25 kg	14			14		2	12			12			12			12			12			12	0	2	12
Spersene	25 kg	17			17			17			17			17			17			17			17	0	0	17
M-I Gel	25 kg	115			115			115			115		22	93			93			93			93	0	22	93

Gas Fuel Exploration

WEEKLY INVENTORY SHEETS

Well : Vaughan 1

DATE:	28-Feb			1-Mar			2-Mar			3-Mar			4-Mar			5-Mar			6-Mar			Total for Week		
Product Name	Unit	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal	Recd	Used	Bal
Barite	25 kg	330			330		70	260		239	21	960	47	934		27	907			907			907	960	383	907
Bacban III	1 lt	6			6			6			6			6			6			6			6	0	0	6
Caustic Soda	25 kg	16		3	13		1	12			12		1	11		1	10			10			10	0	6	10
CMC LV	25 kg	14			14			14			14		3	11		3	8			8			8	0	6	8
Conqor 303A	25 lt	10			10			10			10			10			10			10			10	0	0	10
CaCl2	25 kg	40			40			40			40			40			40			40			40	0	0	40
Defoam A	25 lt	5			5			5			5			5			5			5			5	0	0	5
Kwikseal Med	40 lb	30			30			30			30			30			30			30			30	0	0	30
Mica Medium	50 lb	30			30			30			30			30			30			30			30	0	0	30
OS-1	25 kg	24		4	20			20			20			20			20			20			20	0	4	20
Pipelax W	205 lt	2			2			2			2			2			2			2			2	0	0	2
KCl	25 kg	280			280		38	242	-80		162			162		13	149			149			149	-80	51	149
Lime	20 kg	19			19			19			19			19			19			19			19	0	0	19
Polypac R	25 kg	29		9	20		3	17		2	15		3	12		2	10			10			10	0	19	10
Soda Ash	25 kg	20			20			20			20			20			20			20			20	0	0	20
Sodium Bicarb	25 kg	12			12			12			12			12			12			12			12	0	0	12
Spersene	25 kg	17			17			17			17			17			17			17			17	0	0	17
M-I Gel	25 kg	93		45	48		5	43		6	37		15	22		10	12			12			12	0	81	12


DAILY RECAP
M-I AUSTRALIA PTY LTD

M-I DRILLING FLUIDS RECAP

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

Date - Day	14/02/95- 1	15/02/95- 2	16/02/95- 3	17/02/95- 4	18/02/95- 5	19/02/95- 6	20/02/95- 7
Depth/TVD -m	159.0 /159.0	346.0 /346.0	346.0 /346.0	723.0 /723.0	1144.0/1144.0	1392.0/1392.0	1507.0/1507.0
Activity	DRILLING	RUN CSGG	BOPS	DRILLING	DRILLING	DRILLING	RIH
Mud Type Code	200	200	200	252	252	252	252
Hole Size -in	12.25	12.25	8.5	8.5	8.5	8.5	8.5
Circ Volume -bbl	414	370	357	489	711	756	770
Flow Rate -gal/min	428	428		296	250	250	250
Circ Pressure -psi	450	600		1175	950	1000	1000
Avg ROP -m/hr	14	22		22	11	12	10
Sample From	FL 19:30	FL 05:00	FL 00:45	FL 15:30	FL 04:30	FL 04:15	FL 04:30
Flow Line Temp -^F	79	79	80	80	30	35	95
Mud Wt -lb/gal	8.7	9	8.9	8.9	9	9.1	9.1
Funnel Vis -s/qt	34 @ 79 ^F	50 @ 79 ^F	45 @ 80 ^F	38 @ 80 ^F	42 @ 80 ^F	42 @ 95 ^F	41 @ 95 ^F
PV -cps	5 @ 79 ^F	9 @ 79 ^F	8 @ 80 ^F	8 @ 80 ^F	14 @ 80 ^F	15 @ 90 ^F	14 @ 90 ^F
YP/R3 -lb/100ft2	6 / 2	36 / 14	32 / 15	32 / 4	20 / 2	15 / 2	16 / 2
10s/10m Gel	2 / 2	15 / 20	16 / 24	4 / 8	3 / 8	2 / 4	2 / 4
API Filtrate -cm3	NC	NC	NC	NC	6.4	7	6.6
HTHP Filtrate -cm3							
Cake API/HT -1/32"	3 /	3 /	3 /	2 /	1 /	1 /	1 /
Solids -%vol	2	3	3.6	3.7	4	4.2	4.2
Oil/Water -%vol	0 / 98	0 / 97	0 / 96.4	0 / 96.3	/ 96	0 / 95.8	/ 95.8
Sand -%vol	0.5	0.5	0.5	0.25	0.5	0.5	0.5
MBT -lb/bbl	5	20	25	10	7.5	10	12.5
pH	8.5 @ 79 ^F	8.5 @ 79 ^F	8.3 @ 79 ^F	9.5 @ 79 ^F	9 @ 79 ^F	9 @ 90 ^F	9 @ 90 ^F
Alkal Mud (Pm)							
Pf/Mf	.1 / .3	.05 / .2	.05 / .2	.15 / .6	.1 / .5	.1 / .5	.1 / .55
Chlorides -mg/L	11000	5500	4000	7000	19000	20000	20000
Hardness (Ca)-mg/L	200	160	160	120	240	120	120
KCL %	0.75	0.3	0	0.75	3.5	3	3.5
				4800	18700	16040	18700
				0	80	150	150
Daily Mud Cost -	1091		2259	1919	4028	1573	984
Cumml Mud Cost -	1091	1091	3350	5270	9298	10870	11855
Sales Engineer	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.
Products Used	GEL 77		KCL 56	KCL 60	CAUS 5	CAUS 3	CAUS 1
	CAUS 4		CMCL 12	CMCL 12	KCL 140	KCL 40	KCL 20
	KCL 24		PACR 6	PACR 3	PACR 16	CMCL 6	CMCL 6
			BCAR 6	OS-1 2	OS-1 4	PACR 4	PACR 2
						OS-1 3	OS-1 2

Remarks

14/02 : Spud well at 13:00 hours. Drill ahead with surveys.
15/02 : Drill ahead with surveys to 345m. Wiper trip. Circulate out mud rings. POOH. Run 9.5/8" casing.
16/02 : Circulate casing and cement with the shoe at 329m.
17/02 : Pressure test BOP's. Make up BHA, RIH. Drill ahead.
18/02 : Drill ahead.
19/02 : Drilled ahead with formation samples circ. at 1290 and 1319m.
20/02 : Drill to 1507m, POOH for new bit. Tight hole experianced, out and in.

M-I DRILLING FLUIDS RECAP

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT

Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN

Date - Day	21/02/95- 8	22/02/95- 9	23/02/95- 10	24/02/95- 11	25/02/95- 12	26/02/95- 13	27/02/95- 14
Depth/TVD -m	1607.0/1607.0	1679.0/1679.0	1823.0/1823.0	1823	1823	1823.0/1823.0	1918.0/1918.0
Activity	CIRC	DRILLING	CIRC HOLE	DST #1	REAMING	REAMING	DRILLING
Mud Type Code	252	252	252	252	252	252	252
Hole Size -in	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Circ Volume -bbl	753	790	873	843	803	723	830
Flow Rate -gal/min	250	250	250			238	250
Circ Pressure -psi	1100	1075	1080			1000	1075
Avg ROP -m/hr	11	25	10				8
Sample From	FL 05:15	FL 00:20	FL 04:30	FL 03:35	FL 23:15	FL 22:30	FL 05:00
Flow Line Temp -^F	31	33	96	36	29	31	32
Mud Wt -lb/gal	9.3	9.4	9.4	9.3	9.4	9.4	9.4
Funnel Vis -s/qt	42 @ 89 ^F	42 @ 93 ^F	39 @ 96 ^F	38 @ 96 ^F	40 @ 85 ^F	39 @ 85 ^F	38 @ 85 ^F
PV -cps	16 @ 88 ^F	17 @ 90 ^F	11 @ 90 ^F	12 @ 90 ^F	13 @ 85 ^F	12 @ 85 ^F	11 @ 85 ^F
YP/R3 -lb/100ft2	14 / 2	16 / 2	12 / 2	10 / 2	10 / 2	12 / 2	8 / 1
10s/10m Gel	2 / 4	2 / 6	2 / 4	2 / 3	2 / 3	2 / 4	2 / 3
API Filtrate -cm3	5.8	6	5.7	6.4	6.2	5.9	6.2
HTHP Filtrate -cm3							
Cake API/HT -1/32"	1 /	1 /	1 /	1 /	1 /	1 /	1 /
Solids -%vol	5.2	6.5	5.8	5.2	5.2	6.5	6
Oil/Water -%vol	0 / 94.5	0 / 93.5	0 / 94.2	0 / 94.8	0 / 94.8	0 / 93.5	0 / 94
Sand -%vol	0.5	0.25	0.25	0.25	TR	0.25	TR
MBT -lb/bbl	15	17.5	15	15	15	15	15
pH	9 @ 90 ^F	9 @ 90 ^F	8.5 @ 90 ^F	9 @ 90 ^F	9 @ 80 ^F	8.5 @ 80 ^F	9 @ 80 ^F
Alkal Mud (Pm)							
Pf/Mf	.1 / .55	.1 / .6	.1 / .55	.1 / .6	.1 / .6	.05 / .65	.1 / .65
Chlorides -mg/L	20000	19000	18000	19000	20000	20000	20000
Hardness (Ca) -mg/L	120	120	120	80	80	80	80
KCL %	3.5	3.2	3	3.5	3.5	3.5	3.5
K+	18700	17300	16040	18700	18700	18700	18700
SULPHITE	150	150	150	150	120	120	150
Daily Mud Cost -	1289	1763	2260	968		378	3155
Cumml Mud Cost -	13144	14907	17167	18135	18135	18513	21668
Sales Engineer	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.
Products Used	CAUS 2	CAUS 1	CAUS 4	GEL 22		KCL 10	CAUS 3
	KCL 20	KCL 26	KCL 70	CAUS 3		PACR 2	KCL 40
	CMCL 7	CMCL 8	PACR 10	KCL 14			CMCL 9
	PACR 2	PACR 7	OS-1 1	CMCL 6			PACR 15
	OS-1 2	BCAR 2		BAR 30			OS-1 2
	BAR 40						

Remarks

21/02 : Drill to DST point of 1607m, do 25 stand wiper trip.

22/02 : Circ. hole, POOH, make up test tools, break down tools, RIH. Drill ahead, circulate samples as required.

23/02 : Drill to and circ. samples at 1728, 1812, 1818.5 and 1823 Wiper trip to 1379m at 1794m.

24/02 : 12 stand wiper trip at 1823m, conduct DST #1.

25/02 : Pull out test tools, change BHA, RIH reaming hole.

26/02 : Ream to 1478, POOH, change BHA, RIH ream hole.

27/02 : Ream to 1823m, drill ahead, circ. samples at 1869 + 1884. Heavy dilution of mud to control mud weight.

M-I DRILLING FLUIDS RECAP

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT

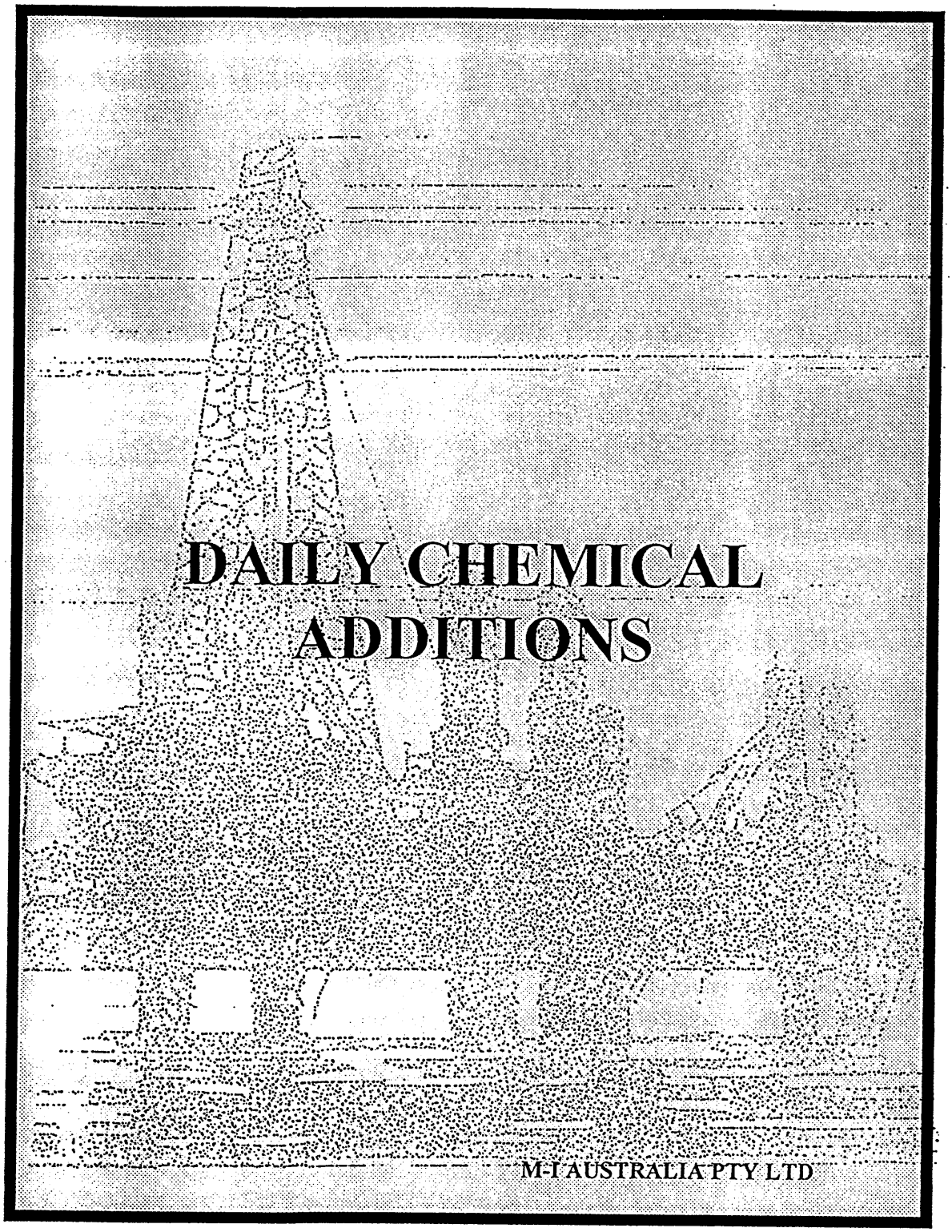
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN

Date - Day	28/02/95- 15	01/03/95- 16	02/03/95- 17	03/03/95- 18	04/03/95- 19
Depth/TVD -m	2030.0/2030.0	2030	2030	2030	2030
Activity	WIPER TRIP	POOH	LOGGING	LOGGING	RIH
Mud Type Code	252	252	252	252	252
Hole Size -in	8.5	8.5	8.5	8.5	8.5
Circ Volume -bbl	919	883	835	821	852
Flow Rate -gal/min	250	236	250		
Circ Pressure -psi	1090	1070	1100		
Avg ROP -m/hr	7				
Sample From	FL 04:15	FL 02:40	FL 14:00	FL 19:10	PIT 23:00
Flow Line Temp -^F	39	37	32	29	
Mud Wt -lb/gal	9.4	9.4	9.8	9.9	9.9
Funnel Vis -s/qt	37 @ 90 ^F	39 @ 90 ^F	37 @ 90 ^F	42 @ 85 ^F	42 @ 85 ^F
PV -cps	12 @ 85 ^F	12 @ 85 ^F	12 @ 85 ^F	12 @ 85 ^F	12 @ 85 ^F
YP/R3 -lb/100ft2	7 / 1	11 / 2	8 / 2	18 / 2	18 / 2
10s/10m Gel	1 / 3	2 / 4	2 / 4	3 / 8	4 / 10
API Filtrate -cm3	6.2	5.8	6.2	6	6
HTHP Filtrate -cm3					
Cake API/HT -1/32"	1 /	1 /	1 /	1 /	1 /
Solids -%vol	5.7	5.8	9	10.1	10.1
Oil/Water -%vol	0 / 94.3	0 / 94.2	0 / 91	0 / 89.9	0 / 89.9
Sand -%vol	TR	TR	TR	TR	TR
MBT -lb/bbl	15	17.5	17.5	17.5	17.5
pH	9.5 @ 80 ^F	9 @ 80 ^F	9 @ 80 ^F	9 @ 80 ^F	9 @ 80 ^F
Alkal Mud (Pm)					
Pf/Mf	.15 / .8	.1 / .8	.1 / .7	.1 / .7	.1 / .7
Chlorides -mg/L	18500	18500	18500	18000	18000
Hardness (Ca) -mg/L	120	80	120	120	120
KCL %	3.2	3.2	3.2	3.2	3.2
K+	17300	17300	17300	17300	17300
SULPHITE	150	150	120	40	40
Daily Mud Cost -	1830	1287	1642	1003	862
Cumml Mud Cost -	23498	24785	26427	27430	28292
Sales Engineer	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.	RIDLER.D.
Products Used	GEL 45	GEL 5	GEL 6	GEL 15	GEL 10
	CAUS 3	CAUS 1	PACR 2	CAUS 1	CAUS 1
	PACR 9	KCL 38	BAR 239	CMCL 3	KCL 13
	OS-1 3	PACR 3		PACR 3	CMCL 3
		BAR 70		BAR 47	PACR 2
					BAR 27

Remarks

28/02 : Drill to TD of 2030m, circ samples at 1939 + 2001M. Wiper trip encountered tight hole.
01/03 : RIH, circ hole, POOH. Logs unable to pass 1540m. RIH for wiper trip. POOH.
02/03 : Logging bridge at 1593m. RIH with bit, raise weight to 9.8 ppg. POOH and log OK.
03/03 : Logging, wiper trip, logging.
04/03 : Logging.

Daily Chemical Additions


DAILY CHEMICAL
ADDITIONS
M-I AUSTRALIA PTY LTD

M-I DRILLING FLUIDS DAILY MUD ADDITIONS

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT | Page: 1

Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN | Well: 00002

Date	:	14/02/95	15/02/95	16/02/95	17/02/95	18/02/95	19/02/95	20/02/95
Depth	-m:	159.0	346.0	346.0	723.0	1144.0	1392.0	1507.0
Daily Mud Cost	:	1091		2259	1919	4028	1573	984
Cumulative Mud Cost	:	1091	1091	3350	5270	9298	10870	11855
CMC TG LV	25 KG S:			12	12		6	6
Caustic Soda	25 KG S:	4				5	3	1
M-I Bar	25 KG S:							
M-I Gel	25 KG S:	77						
OS-1	25 KG S:				2	4	3	2
Polypac R	25 KG S:			6	3	16	4	2
Potassm Chloride	25 KG S:	24		56	60	140	40	20
Sodium Bicarb	25 KG S:			6				

M-I DRILLING FLUIDS DAILY MUD ADDITIONS

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT | Page: 2
Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN | Well: 00002

Date	:	21/02/95	22/02/95	23/02/95	24/02/95	25/02/95	26/02/95	27/02/95
Depth	-m:	1607.0	1679.0	1823.0	1823.0	1823.0	1823.0	1918.0
Daily Mud Cost	:	1289	1763	2260	968		378	3155
Cumulative Mud Cost	:	13144	14907	17167	18135	18135	18513	21668
CMC TG LV	25 KG S:	7	8		6			9
Caustic Soda	25 KG S:	2	1	4	3			3
M-I Bar	25 KG S:	40			30			
M-I Gel	25 KG S:				22			
OS-1	25 KG S:	2		1				2
Polypac R	25 KG S:	2	7	10			2	15
Potassm Chloride	25 KG S:	20	26	70	14		10	40
Sodium Bicarb	25 KG S:		2					

M-I DRILLING FLUIDS DAILY MUD ADDITIONS

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT | Page: 3
Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN | Well: 00002

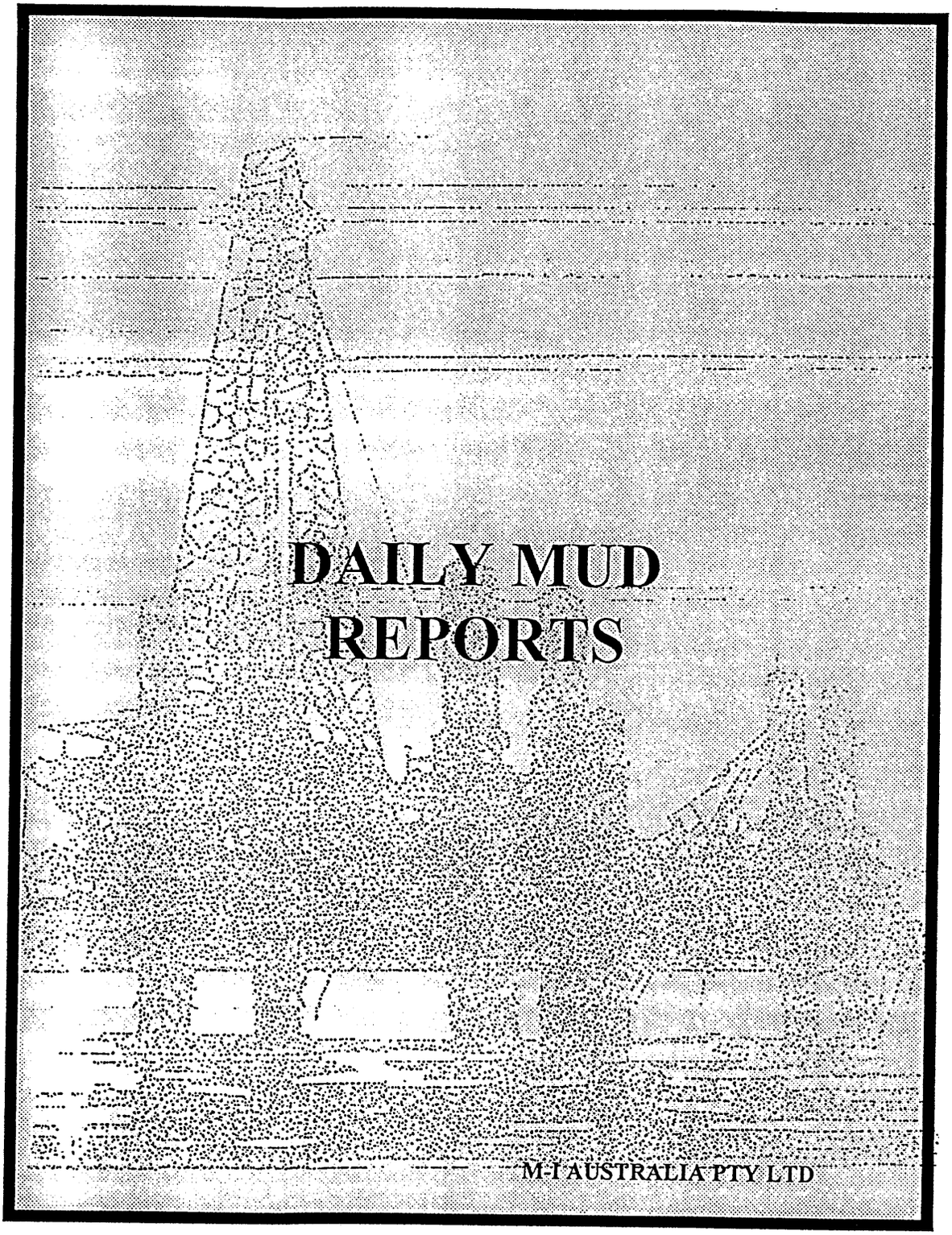
Date	:	28/02/95	01/03/95	02/03/95	03/03/95	04/03/95
Depth	-m:	2030.0	2030.0	2030.0	2030.0	2030.0
Daily Mud Cost	:	1830	1287	1642	1003	862
Cumulative Mud Cost	:	23498	24785	26427	27430	28292
CMC TG LV	25 KG S:				3	3
Caustic Soda	25 KG S:	3	1		1	1
M-I Bar	25 KG S:		70	239	47	27
M-I Gel	25 KG S:	45	5	6	15	10
OS-1	25 KG S:	3				
Polypac R	25 KG S:	9	3	2	3	2
Potassm Chloride	25 KG S:		38			13
Sodium Bicarb	25 KG S:					

M-I DRILLING FLUIDS PRODUCT SUMMARY

Operator : GAS & FUEL EXPLOR | Contractor : CENTURY RIG 11 | Description : WILDCAT | Well: 00002
Well Name : VAUGHAN 1 | Field/Area : PPL-1 | Location : OTWAY BASIN

SUMMARY OF PRODUCT USAGE FOR INTERVAL FROM 14/02/95 - 04/03/95, 159.0 m - 2030.0 m

WATER-BASE PROD	SIZE	AMOUNT
CMC TG LV	25 KG SX	72
Caustic Soda	25 KG SX	32
M-I Bar	25 KG SX	453
M-I Gel	25 KG SX	180
OS-1	25 KG SX	19
Polypac R	25 KG SX	86
Potassm Chloride	25 KG SX	571
Sodium Bicarb	25 KG SX	8



DAILY MUD REPORTS

M-I AUSTRALIA PTY LTD

WATER BASE MUD REPORT - Day : 1

M-I Drilling Fluids Company — Date : 14/02/95 — Depth : 159.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 12.250 in
Nozzles:20/20/18/ / / 1/32"
Drill Pipe 1 OD : in 139 m
Drill Pipe 2 OD : 6.250 in m
Drill Collar OD : 8.000 in 20.0 m

CASING
Casing OD : in Liner OD : in
Casing ID : in Liner ID : in
Casing TD : m Liner TD : m
Casing TVD : m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume :
Pits Volume :
Circulating Volume : 414
Mud : FW SPUD MUD

MUD PROPERTIES

Sample From	FL 19:30
Flow Line Temp	79 ^F
Depth/TVD -m	159.0 /159.0
Mud Wt -lb/gal	8.7
Funnel Vis -s/qt	34 @ 79 ^F
Plastic Visc -cps	5 @ 79 ^F
YP/R3 -lb/100ft2 /deg	6 / 2
10s/10m Gel -lb/100ft2	2 / 2
API F Loss -cc/30 min	NC
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	3
Solids -%vol	2
Oil/Water -%vol	0 /98
Sand -%vol	.5
MBT -lb/bbl	5.0
pH	8.5 @ 79 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .3
Chlorides -mg/l	11000
Hardness Ca	200
KCL %	.75
np Value	0.540
Kp -lb-sec^n/100ft2	0.40404
na Value	0.370
Ka -lb-sec^n/100ft2	1.16669

CIRCULATION DATA

Flow Rate -gal/min	428
DP Annular Vel -m/min	
DC Annular Vel -m/min	
DP Critical Vel -m/min	
DC Critical Vel -m/min	
Circ. Pressure -psi	450
Bottoms Up -min	
Total Circ Time -min	

PRODUCTS USED LAST 24 HOURS

M-I Gel	25 KG S	77
Caustic Soda	25 KG S	4
Potassm Chloride	25 KG S	24

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.3 / 4
KCl	0.3 / 3
Low Gravity Solids	0.8 / 7
Bentonite	0.5 / 5
Drill Solids	0.2 / 2
Weight Material	1 / 8
Chemical Conc	- / 0.5

Inert/React : 0.36 Average SG : 3.26

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S50X3	11
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	8
Desilter		
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	52
Water Added	450	Solids	34
Mud Built	150	Dump	100
Mud Received	600		
Mud Disposed	186		

Remarks :
Spud well at 13:00 hours. Drill ahead with surveys.
The well was spudded at 13:00 hours on 14 February 1995, using a 12.1/4" bit.
An initial mix of pre hydrated Gel was used, then native clays were used for viscosity, with additions of water made to control the mud weight and viscosity. KCl at 0.75% was added to control the reactivity of the formation.
The properties of the make up water for the well were: pf/mf = 0/0.2, Cl = 400, Ca = 160.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1091 Cumul Cost : 1091

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 14.2.95 | DEPTH 159.

SPUD DATE 14/2 | PRESENT ACTIVITY DRILLING

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR SEAN KELLY | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

	TYPE	JET SIZE
BIT SIZE 12¼	L114	20.20.18

	TYPE	LENGTH
DRILL PIPE SIZE		
DRILL PIPE SIZE		
DRILL COLLAR SIZE 8" 2" 6¼		139

CASING

SURFACE in. @ ft.

INTERMEDIATE in. @ ft.

INTERMEDIATE in. @ ft.

PRODUCTION OR LINER in. @ ft.

MUD VOLUME (BBL)

HOLE 60 | CAP 4 | PITS 350

TOTAL CIRCULATING VOLUME 414

IN STORAGE | WEIGHT

MUD TYPE SPUD

CIRCULATION DATA

PUMP SIZE 5.5 X 7.75 / 6 X 8.5

ANNULAR VEL (ft/min) DP 96 DC 122

PUMP MAKE, MODEL NAT 7P50 8P80 | ASSUMED EFF 95 %

CIRCULATION PRESSURE (psi) 450

bbl/stk 0.054 / 0.07 | 94 / 74 stk/min

BOTTOMS UP (min) (strk) 6

10.2 bbl/min | 428 gal/min

TOTAL CIRC TIME (min) (strk) 41

MUD PROPERTIES

	☐ F.L. ☐ PIT	☑ F.L. ☐ PIT
Sample From		
Time Sample Taken	19:30	05:00
Flowline Temperature (°F)	79	80
Depth (ft) M (TVD / ft)	92	172
Weight ☐ ppg) ☐ (lb/cu ft) ☐ (sp gr)	8.7	9.0
Funnel Viscosity (sec/qt) API @ °F	34	50
Plastic Viscosity cp @ °F	5	9
Yield Point (lb/100 ft²)	6	36
Gel Strength (lb/100 ft²) 10 sec/10 min	2/2	15/20
Filtrate API (cm³/30 min)	N/C	N/C
API HTHP Filtrate (cm³/30 min) @ °F	-	-
Cake Thickness (32nd in. API/HTHP)	31-	31-
Solids Content (% by Vol) ☐ calculated ☐ retort	1	3
Liquid Content (% by Vol) Oil/Water	0/99	0/97
Sand Content (% by Vol)	.5	.5
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	5	20
pH ☐ Strip ☐ Meter @ °F	8.5	8.5
Alkalinity Mud (P_m)		
Alkalinity Filtrate (P_f/M_f)	.1/1.3	.0/4.2
Chloride (mg/L)	11000	5500
Total Hardness as Calcium (mg/L)	200	160
KCL % by Wt	0.75	0.3

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
MIN	35 - 45	-

RECOMMENDED TOUR TREATMENT

MAKE UP WATER:

pf/mf : 0/0-2

Cl : 400

Ca : 160

REMARKS

SPUD WELL @ 13:00 HRS + DRILL AHEAD WITH SURVEYS TO 159 M.

- LETTING NATIVE CLAYS BUILD VIS.
- USING GEL SWEEPS AS NECESSARY TILL VIS. BUILT UP.

DESANDER UP 13.6 OF 8.9 GPM 3

PRODUCT INVENTORY

	GEL	CAUSTIC	VCL
STARTING INVENTORY	192	42	480
RECEIVED			
USED LAST 24 hr	77	4	24
CLOSING INVENTORY	115	38	456
COST LAST 24 hr	726.88	89.40	275.04
USED (from IADC)			

SOLIDS EQUIPMENT

SHAKER #1 S59 x 3 mesh

SHAKER #2 / mesh

MUD CLEANER - mesh

CENTRIFUGE - hours

DESANDER 8 hours

DESILTER - hours

M-I REPRESENTATIVE DAVE RIDLER | PHONE 09 325 4822 | WAREHOUSE PHONE | DAILY COST $1091.32 | CUMULATIVE COST 1091.32

TIME DISTRIBUTION (hrs)

Rig Up/Service	13.5
Drilling	8.5
Reaming/Coring	
Circulating	
Tripping	
Survey	2.0
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	450
Mud Built (bbl)	150
Mud Received (bbl)	600
Mud Disposed (bbl)	186
HOLE	52
SOLIDS	34
DUMP	100
Starting Depth	0
Ending Depth	159
New Hole Vol. (bbl)	78

SOLIDS ANALYSIS

Low Gravity %	
Low Gravity, ppb	
Bentonite %	
Bentonite, ppb	
Drill Solids %	
Drill Solids, ppb	
Shale CEC, ppb	
D/B Ratio	
High Gravity %	
High Gravity, ppb	

MUD RHEOLOGY and HYDRAULICS

Zero Gel		Avg ROP		ECD @	
n Factor		% Cutting		Leak Off @	
k Factor		psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size						
Pipe OD						
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

WATER BASE MUD REPORT - Day : 2

M-I Drilling Fluids Company — Date : 15/02/95 — Depth : 346.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : RUN CSGG

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 12.250 in
Nozzles:20/20/18/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 182 m
Drill Pipe 2 OD : 6.250 in 144.0 m
Drill Collar OD : 8.000 in 20.0 m

CASING

Casing OD : in Liner OD : in
Casing ID : in Liner ID : in
Casing TD : m Liner TD : m
Casing TVD : m Liner TVD : m

MUD VOLUME (bbl)

Hole Volume :
Pits Volume :
Circulating Volume : 370
Mud : FW SPUD MUD

MUD PROPERTIES :

Sample From	FL 05:00
Flow Line Temp	79 ^F
Depth/TVD -m	346.0 /346.0
Mud Wt -lb/gal	9.0
Funnel Vis -s/qt	50 @ 79 ^F
Plastic Visc -cps	9 @ 79 ^F
YP/R3 -lb/100ft2 /deg	36 / 14
10s/10m Gel -lb/100ft2	15 / 20
API F Loss -cc/30 min	NC
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	3
Solids -%vol	3
Oil/Water -%vol	0 /97
Sand -%vol	.5
MBT -lb/bbl	20.0
pH	8.5 @ 79 ^F
Alkal Mud (Pm)	
Pf/Mf	.05 / .2
Chlorides -mg/l	5500
Hardness Ca	160
KCL %	.3
np Value	0.263
Kp -lb-sec^n/100ft2	9.32038
na Value	0.254
Ka -lb-sec^n/100ft2	9.87830

CIRCULATION DATA

Flow Rate -gal/min	428
DP Annular Vel -m/min	
DC Annular Vel -m/min	
DP Critical Vel -m/min	
DC Critical Vel -m/min	
Circ. Pressure -psi	600
Bottoms Up -min	
Total Circ Time -min	

PRODUCTS USED LAST 24 HOURS

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.2 / 2
KCl	0.1 / 1
Low Gravity Solids	0.8 / 7
Bentonite	2.4 / 22
Drill Solids	-1.6 / -15
Weight Material	2 / 28
Chemical Conc	- / 0.5

Inert/React : -0.65 Average SG : 3.71

SOLIDS EQUIPMENT Size Hours

Shaker #1	S50X3	11
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	8
Desilter		
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	50	Solids	
Mud Built		Dump	184
Mud Received	50		
Mud Disposed	184		

Remarks :
Drill ahead with surveys to 345m. Wiper trip. Circulate out mud rings. POOH. Run 9.5/8" casing.
Drill to the casing point of 345m, circulate the hole and do a wiper trip.
The hole was tight from 165 to 146m, 2.5m of fill was found on bottom. The hole was circulated free of mud rings before drilling to 346m, the hole was circulated clean prior to pulling out. The 9.5/8" casing was then ran into the hole.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 0 Cumul Cost : 1091

WATER BASE MUD REPORT SUPPLEMENT - Day : 2

M-I Drilling Fluids Company - - Date : 15/02/95 Depth : 346.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : RUN CSGG

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From	:	FL 05:00	FL 15:00
Flow Line Temp	:	79 ^F	80 ^F
Depth/TVD -m	:	346.0 /346.0	346.0
Mud Wt -lb/gal	:	9.0	8.9
Funnel Vis -s/qt	:	50 @ 79 ^F	43 @ 80 ^F
Plastic Visc -cps	:	9 @ 79 ^F	6 @ 80 ^F
YP/R3 -lb/100ft2 /deg	:	36 / 14	30 / 13
10s/10m Gel -lb/100ft2	:	15 / 20	14 / 22
API F Loss -cc/30 min	:	NC	NC
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F
Cake API/HT -1/32"	:	3	3
Solids -%vol	:	3	3.5
Oil/Water -%vol	:	0 /97	0 /96.5
Sand -%vol	:	.5	.5
MBT -lb/bbl	:	20.0	22.5
pH	:	8.5 @ 79 ^F	8.5 @ 80 ^F
Alkal Mud (Pm)	:		
Pf/Mf	:	.05 / .2	.05 / .2
Chlorides -mg/l	:	5500	5000
Hardness Ca	:	160	160
KCL %	:	.3	.1
	:		520
	:		
	:		
np Value	:	0.263	0.222
Kp -lb-sec^n/100ft2	:	9.32038	9.60566
na Value	:	0.254	0.221
Ka -lb-sec^n/100ft2	:	9.87830	9.66993

Remarks :
Drill ahead with surveys to 345m. Wiper trip. Circulate out mud rings. POOH. Run 9.5/8" casing.

M-I Sales Engineer : RIDLER.D. FDC4

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 15. 2. 19 95 | DEPTH 346'

SPUD DATE 14/2 | PRESENT ACTIVITY RIH 9 5/8 Csg.

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR SEAN KELLY | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

	TYPE	JET SIZE	LENGTH
BIT SIZE 12 1/4	HARRIS L114	20.20.18	
DRILL PIPE SIZE 4 1/2	TYPE 16.6		LENGTH 127
DRILL PIPE SIZE 4 1/2	TYPE HW		LENGTH 55
DRILL COLLAR SIZE 8": 2.0 6 1/4			LENGTH 144

CASING

SURFACE in. @ ft.

INTERMEDIATE in. @ ft.

INTERMEDIATE in. @ ft.

PRODUCTION OR LINER in. @ ft.

MUD VOLUME (BBL)

HOLE 170 | PITS 110

TOTAL CIRCULATING VOLUME 280

IN STORAGE | WEIGHT

MUD TYPE SPUD

CIRCULATION DATA

PUMP SIZE 5.5 x 7.75 IN. 6 x 8.5

ANNULAR VEL (ft/min) DP 196 DC 373

PUMP MAKE, MODEL 7P50 NAT 8P 80

ASSUMED EFF 95 %

CIRCULATION PRESSURE (psi) 600

bbl/stk 0054 0.07

94 stk/min 74

BOTTOMS UP (min) (strk) 16

10.2 bbl/min

428 gal/min

TOTAL CIRC TIME (min) (strk) 27

MUD PROPERTIES

	☑ F.L. ☐ PIT	☑ F.L. ☐ PIT
Sample From		
Time Sample Taken	15:00	00:45
Flowline Temperature (°F)	26	26
Depth (M) (TVD / ft)	346	346
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	8.9	8.9
Funnel Viscosity (sec/qt) API @ °F	43	45
Plastic Viscosity cp @ °F	6	8
Yield Point (lb/100 ft²)	30	32
Gel Strength (lb/100 ft²) 10 sec/10 min	14/22	16/24
Filtrate API (cm³/30 min)	N/C	N/C
API HTHP Filtrate (cm³/30 min) @ °F	-	-
Cake Thickness (32nd in. API/HTHP)	1/-	1/-
Solids Content (% by Vol) ☐ calculated ☐ retort	3.5	3.5
Liquid Content (% by Vol) Oil/Water	0 / 96.5	0 / 96.5
Sand Content (% by Vol)	.5	.5
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	22.5	25
pH ☐ Strip ☐ Meter @ °F	8.3	8.3
Alkalinity Mud (P_m)		-
Alkalinity Filtrate (P_f/M_f)	.05/1.2	.05/1.2
Chloride (mg/L)	5000	4000
Total Hardness as Calcium (mg/L)	160	160
KCl % by Wt	0.1	Tr
K^+	520	Tr

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
MIN	35 - 45	-

RECOMMENDED TOUR TREATMENT

- USING ONLY SUCKSION PIT FOR FINAL STAGES OF DRILLING DUE TO WATER SHORTAGES.

REMARKS

DRILL WITH SURVEYS TO 345M, CIRC + POOH TO 8" DC FOR WIPER TRIP (HOLE TIGHT 146 - 165 M). RIH (2.5M FILL). CIRC OUT MUD RINGS. DRILL TO 346 M. CIRC HOLE CLEAN + POOH. RIG UP + RUN 9 5/8" CSG.

PRODUCT INVENTORY

STARTING INVENTORY	
RECEIVED	
USED LAST 24 hr	NO MATERIALS USED
CLOSING INVENTORY	
COST LAST 24 hr	
USED (from IADC)	

SOLIDS EQUIPMENT

SHAKER #1 S 50, x 3 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE - hours

DESANDER - hours

DESILTER - hours

M-I REPRESENTATIVE DAVE RIDLER | PHONE 09 325 4822 | WAREHOUSE PHONE | DAILY COST $0 | CUMULATIVE COST $1091.32

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)

Rig Up/Service	3
Drilling	7
Reaming/Coring	
Circulating	1
Tripping	5
Survey	2
Logging	
Running Casing	6
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	50
Mud Built (bbl)	
Mud Received (bbl)	50
Mud Disposed (bbl)	184
HOLE DUMP	- 184
Starting Depth	159
Ending Depth	346

SOLIDS ANALYSIS

Low Gravity %	2.7
Low Gravity, ppb	24
Bentonite %	2.4
Bentonite, ppb	22
Drill Solids %	0.2
Drill Solids, ppb	2
Shale CEC, ppb	-
D/B Ratio	.1
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS

Zero Gel	15	Avg ROP	22	ECD @				
n Factor	.2	% Cutting		Leak Off @				
k Factor	9.6	psi	%	hhp	HSI	Jet Vel		
Bit Hydraulics		202	34	50	.4	159		
Annular Section		1	2	3	4	5		
Hole Size		12.25	12.25	12.25				
Pipe OD		4.5	6.25	8				
Critical Velocity		417	430	488				
Annular Velocity		88	95	132				
Viscosity		430	310	194				
Annular Pressure		1.5	2.3	0.5				

WATER BASE MUD REPORT - Day : 3

M-I Drilling Fluids Company — Date : 16/02/95 — Depth : 346.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : BOPS

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles: / / / / / 1/32"
Drill Pipe 1 OD : in 346 m
Drill Pipe 2 OD : in m
Drill Collar OD : in m

CASING
Casing OD : in Liner OD : in
Casing ID : in Liner ID : in
Casing TD : m Liner TD : m
Casing TVD : m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume :
Pits Volume :
Circulating Volume : 357
Mud : FW SPUD MUD

MUD PROPERTIES		CIRCULATION DATA		SOLIDS ANALYSIS	(% / lb/bbl)
Sample From	: FL 00:45	Flow Rate -gal/min	:	NaCl	: 0.2 / 2
Flow Line Temp	: 80 ^F	DP Annular Vel -m/min	:	KCl	: 0.0 / 0
Depth/TVD -m	:346.0 /346.0	DC Annular Vel -m/min	:	Low Gravity Solids	: 2.8 / 26
Mud Wt -lb/gal	: 8.9	DP Critical Vel -m/min	:	Bentonite	: 2.7 / 25
Funnel Vis -s/qt	: 45 @ 80 ^F	DC Critical Vel -m/min	:	Drill Solids	: 0.0 / 0
Plastic Visc -cps	: 8 @ 80 ^F	Circ. Pressure -psi	:	Weight Material	: 1 / 8
YP/R3 -lb/100ft2 /deg	: 32 / 15	Bottoms Up -min	:	Chemical Conc	: - / 0.5
10s/10m Gel -lb/100ft2	: 16 / 24	Total Circ Time -min	:	Inert/React : 0.01	Average SG : 2.87
API F Loss -cc/30 min	: NC				
HTHP F Loss -cc/30 min	: @ ^F				
Cake API/HT -1/32"	: 3				
Solids -%vol	: 3.6				
Oil/Water -%vol	: 0 /96.4				
Sand -%vol	: .5				
MBT -lb/bbl	: 25.0				
pH	: 8.3 @ 79 ^F				
Alkal Mud (Pm)	:				
Pf/Mf	: .05 / .2				
Chlorides -mg/l	: 4000				
Hardness Ca	: 160				
KCL %	: 0				
	:				
	:				
	:				
np Value	: 0.263				
Kp -lb-sec^n/100ft2	: 8.28478				
na Value	: 0.213				
Ka -lb-sec^n/100ft2	: 11.30777				

PRODUCTS USED LAST 24 HOURS

Potassm Chloride	25	KG S	56
CMC TG LV	25	KG S	12
Polypac R	25	KG S	6
Sodium Bicarb	25	KG S	6

SOLIDS EQUIPMENT	Size	Hours
Shaker #1 :	S50X3	
Shaker #2 :		
Shaker #3 :		
Shaker #4 :		
Mud Cleaner :		
Centrifuge :		
Desander :	12X2	
Desilter :		
Degasser :		

MUD VOLUME ACCOUNTING	bbl		
Oil Added :		Hole :	
Water Added :	132	Solids :	
Mud Built :		Dump :	
Mud Received:	225		
Mud Disposed:			

Remarks :
Circulate casing and cement with the shoe at 329m.
The casing was circulated and cemented with the shoe at 329m. After waiting on the cement to set, the BOP's were nippled up. During this time, the mud pit sand traps were dumped and cleaned, a loss of 50 bbls of spud mud. The mud was then pre-treated with Sodium Bicarbonate, water and KCl to 0.75%. A 75 bbl tank of premix was prepared for mudding up.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 2259 Cumul Cost : 3350

WATER BASE MUD REPORT SUPPLEMENT - Day : 3

M-I Drilling Fluids Company - - Date : 16/02/95 Depth : 346.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : BOPS

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From	:	FL 00:45	PIT 23:00
Flow Line Temp	:	80 ^F	^F
Depth/TVD -m	:	346.0 /346.0	346.0
Mud Wt -lb/gal	:	8.9	8.8
Funnel Vis -s/qt	:	45 @ 80 ^F	35 @ 80 ^F
Plastic Visc -cps	:	8 @ 80 ^F	6 @ 80 ^F
YP/R3 -lb/100ft2 /deg	:	32 / 15	12 / 5
10s/10m Gel -lb/100ft2	:	16 / 24	5 / 8
API F Loss -cc/30 min	:	NC	NC
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F
Cake API/HT -1/32"	:	3	3
Solids -%vol	:	3.6	2.5
Oil/Water -%vol	:	0 /96.4	/97.5
Sand -%vol	:	.5	0
MBT -lb/bbl	:	25.0	10.0
pH	:	8.3 @ 79 ^F	8.5 @ 80 ^F
Alkal Mud (Pm)	:		
Pf/Mf	:	.05 / .2	.05 / 1.1
Chlorides -mg/l	:	4000	8000
Hardness Ca	:	160	160
KCL %	:	0	0.75
	:		4700
	:		
	:		
np Value	:	0.263	0.415
Kp -lb-sec^n/100ft2	:	8.28478	1.44569
na Value	:	0.213	0.278
Ka -lb-sec^n/100ft2	:	11.30777	3.38915

Remarks :
Circulate casing and cement with the shoe at 329m.

M-I Sales Engineer : RIDLER.D.

FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 16.2 19 95 | DEPTH 346

SPUD DATE 14.2 | PRESENT ACTIVITY NIPPLE UP BOP'S.

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR SEAN KELLY | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA		
BIT SIZE 8½	TYPE	JET SIZE	SURFACE 9⅝ in. @ 329M	HOLE 87	PITS 270	PUMP SIZE 5.5 X 7.5 IN. / 6 X 8.5		ANNULAR VEL (ft/min) DP DC
DRILL PIPE SIZE	TYPE	LENGTH	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 357		PUMP MAKE, MODEL 7P50 NAT 8P80	ASSUMED EFF 95 %	CIRCULATION PRESSURE (psi)
DRILL PIPE SIZE	TYPE	LENGTH	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 / 0.07 stk/min		BOTTOMS UP (min) (strk)
DRILL COLLAR SIZE		LENGTH	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL/SPUD MUD.		bbl/min gal/min		TOTAL CIRC TIME (min) (strk)

MUD PROPERTIES	☐ F.L. ☐ PIT	☐ F.L. ☑ PIT
Sample From		
Time Sample Taken		23:00
Flowline Temperature (°F)		
Depth (M) (TVD / ft)		346
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)		8.8
Funnel Viscosity (sec/qt) API @ °F		35
Plastic Viscosity cp @ °F		6
Yield Point (lb/100 ft²)		12
Gel Strength (lb/100 ft²) 10 sec/10 min	/	5/8
Filtrate API (cm³/30 min)		N/C
API HTHP Filtrate (cm³/30 min) @ °F		-
Cake Thickness (32nd in. API/HTHP)	/	31-
Solids Content (% by Vol) ☑ calculated ☐ retort		2.5
Liquid Content (% by Vol) Oil/Water	/	97.5
Sand Content (% by Vol)		0
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud		10
pH ☐ Strip ☐ Meter @ °F		8.5
Alkalinity Mud (P_m)		
Alkalinity Filtrate (P_f/M_f)	/	.05/1.1
Chloride (mg/L)		8000
Total Hardness as Calcium (mg/L)		160
KCL %/by Wt		0.75
K^+		4700

MUD PROPERTY SPECIFICATIONS		
WEIGHT <9.2	VISCOSITY 35-42	FILTRATE 8cc.

RECOMMENDED TOUR TREATMENT

- PRE TREAT SAVED MUD WITH BICARB. AND KCL.
- PRE MIXED 75 Bbls KCL / POLYMER IN PREPERATION FOR MUD UP

REMARKS

HEAD UP SURFACE EQU. & CIRC 130 BBLS. UNABLE TO PASS CONDUCTOR COLLAR - RECTIFY. MAKE UP CMT HEAD + CMT CSG - DISP. WITH WATER. WOC NIPPLE UP BOP'S + FUNCTION TEST.

PRODUCT INVENTORY	KCL	CMC LV	PAC	SOD. BIC												
STARTING INVENTORY	456	80	64	20												
RECEIVED																
USED LAST 24 hr	56	12	6	6												
CLOSING INVENTORY	400	68	58	14												
COST LAST 24 hr	641.76	734.76	790.44	92.04												
USED (from IADC)																

SOLIDS EQUIPMENT

SHAKER #1 S110 x 3. mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER hours

DESILTER hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	03 325 4822		$ 2259	$ 3350.32

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	13	Water Added (bbl)	132	Low Gravity %	1.1
Drilling		Mud ~~Built~~ SAVED (bbl)	225	Low Gravity, ppb	10
Reaming/Coring		Mud Received (bbl)		Bentonite %	1.1
Circulating	1.5	Mud Disposed (bbl)		Bentonite, ppb	10
Tripping				Drill Solids %	0
Survey				Drill Solids, ppb	0
Logging				Shale CEC, ppb	
Running Casing	2.5			D/B Ratio	0.03
Testing		Starting Depth	346	High Gravity %	0
Fishing		Ending Depth		High Gravity, ppb	0
WOC	7	New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS						
Zero Gel		Avg ROP		ECD @		
n Factor		% Cutting		Leak Off @		
k Factor		psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size						
Pipe OD						
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

WATER BASE MUD REPORT - Day : 4

M-I Drilling Fluids Company — Date : 17/02/95 — Depth : 723.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 547 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 143
Pits Volume : 346
Circulating Volume : 489
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 15:30
Flow Line Temp	80 ^F
Depth/TVD -m	723.0 /723.0
Mud Wt -lb/gal	8.9
Funnel Vis -s/qt	38 @ 80 ^F
Plastic Visc -cps	8 @ 80 ^F
YP/R3 -lb/100ft2 /deg	32 / 4
10s/10m Gel -lb/100ft2	4 / 8
API F Loss -cc/30 min	NC
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	2
Solids -%vol	3.7
Oil/Water -%vol	0 /96.3
Sand -%vol	.25
MBT -lb/bbl	10.0
pH	9.5 @ 79 ^F
Alkal Mud (Pm)	
Pf/Mf	.15 / .6
Chlorides -mg/l	7000
Hardness Ca	120
KCL %	.75
K+	4800
SULPHITE	0
np Value	0.263
Kp -lb-sec^n/100ft2	8.28478
na Value	0.500
Ka -lb-sec^n/100ft2	1.88809

CIRCULATION DATA

Flow Rate -gal/min	296
DP Annular Vel -m/min	42.5
DC Annular Vel -m/min	66.6
DP Critical Vel -m/min	109.6
DC Critical Vel -m/min	132.8
Circ. Pressure -psi	1175
Bottoms Up -min	16.0
Total Circ Time -min	69.4

PRODUCTS USED LAST 24 HOURS

Potassm Chloride	25 KG S	60
CMC TG LV	25 KG S	12
Polypac R	25 KG S	3
OS-1	25 KG S	2

SOLIDS ANALYSIS

	(% / lb/bbl)
NaCl	0.1 / 1
KCl	0.3 / 3
Low Gravity Solids	3.7 / 34
Bentonite	0.8 / 7
Drill Solids	2.7 / 24
Weight Material	N/A / N/A
Chemical Conc	- / 2.5

Inert/React : 2.15 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	14
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	10
Desilter	4X12	8
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	150	Solids	26
Mud Built	150	Dump	142
Mud Received	150		
Mud Disposed	168		

Remarks :
Pressure test BOP's. Make up BHA, RIH. Drill ahead.
The BOP's were pressure tested prior to making up the 8.1/2" BHA and running into the hole, where the cement was tagged at 322m. The cement and 5m of new hole were drilled before doing a FIT equivelent to 21.9 ppg. Drilling then continued to 608m, where the pre-mixed Polymer and KCl were introduced to the active system. The shaker screens were changed at 650m to S84 mesh as the S110 mesh screens were being blinded by the sand comming over them. The change to a larger screen size was successful, and losses were stopped.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1919 Cumul Cost : 5270

WATER BASE MUD REPORT SUPPLEMENT - Day : 4

M-I Drilling Fluids Company - - Date : 17/02/95 Depth : 723.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DRILLING

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From	:	FL 15:30	FL 22:15
Flow Line Temp	:	80 ^F	^F
Depth/TVD -m	:	723.0 /723.0	684.0
Mud Wt -lb/gal	:	8.9	8.9
Funnel Vis -s/qt	:	38 @ 80 ^F	36 @ 80 ^F
Plastic Visc -cps	:	8 @ 80 ^F	6 @ 80 ^F
YP/R3 -lb/100ft2 /deg	:	32 / 4	9 / 2
10s/10m Gel -lb/100ft2	:	4 / 8	2 / 5
API F Loss -cc/30 min	:	NC	9.5
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F
Cake API/HT -1/32"	:	2	1
Solids -%vol	:	3.7	3.7
Oil/Water -%vol	:	0 /96.3	0 /96.3
Sand -%vol	:	.25	.5
MBT -lb/bbl	:	10.0	7.5
pH	:	9.5 @ 79 ^F	9 @ 79 ^F
Alkal Mud (Pm)	:		
Pf/Mf	:	.15 / .6	.1 / .4
Chlorides -mg/l	:	7000	11000
Hardness Ca	:	120	240
KCL %	:	.75	1.5
K+	:	4800	7500
SULPHITE	:	0	40
	:		
np Value	:	0.263	0.485
Kp -lb-sec^n/100ft2	:	8.28478	0.77691
na Value	:	0.500	0.438
Ka -lb-sec^n/100ft2	:	1.88809	1.04531

Remarks :
Pressure test BOP's. Make up BHA, RIH. Drill ahead.

M-I Sales Engineer : RIDLER.D.

FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 17.2 19 95 | DEPTH 723

SPUD DATE 14.2 | PRESENT ACTIVITY DRILLING

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR SEAN KELLY	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA		
BIT SIZE / TYPE / JET SIZE	8½ / HTC ATJ05 / 11 x 3		SURFACE 9⅝ in. @ 329M ft.	HOLE DP 135/34	PITS 320	PUMP SIZE 5.5 x 7.75 IN. / 6 x 8.5	ANNULAR VEL (ft/min) DP 141 DC 222	
DRILL PIPE SIZE / TYPE / LENGTH	4½ / 16.6# / 578		INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 489		PUMP MAKE, MODEL 7 P 50 NAT 8 P 80	ASSUMED EFF 95 %	CIRCULATION PRESSURE (psi) 1175
DRILL PIPE SIZE / TYPE / LENGTH	4½ / HW / 55		INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk .054 / .0705 x stk/min 101		BOTTOMS UP (min) (strk) 20
DRILL COLLAR SIZE / LENGTH	6¼ / 176		PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL SPUD.		7.12 bbl/min 300 gal/min		TOTAL CIRC TIME (min) (strk) 69

MUD PROPERTIES			
Sample From	FL	☐ PIT	☐ PIT
Time Sample Taken	15:30	22:15	04:30
Flowline Temperature (°F)	26	26	30
Depth (M) (TVD)	530	684	809
Weight ☑ (ppg) ☐ (lb/cu ft)	Sp.Gr.	8.9	9.0
Funnel Viscosity (sec/qt) API @ °F	38	36	42
Plastic Viscosity cp @ °F	8	6	14
Yield Point (lb/100 ft²)	32	9	20
Gel Strength (lb/100 ft²) 10 sec/10 min	4/8	2/5	3/8
Filtrate API (cm³/30 min)	N/C	9.5	6.4
API HTHP Filtrate (cm³/30 min) @ °F			
Cake Thickness (32nd in. API/HTHP)	2/32	1	1
Solids Content (% by Vol) ☑ Calculated ☐ Direct		3.7	4
Liquid Content (% by Vol) Oil/Water	0/96.3	0/96.3	0/96
Sand Content (% by Vol)	.75	.5	.5
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	12.5	7.5	7.5
pH ☑ Strip ☐ Meter @	9.5	9.0	9.0
Alkalinity Mud (P_m)			
Alkalinity Filtrate (P_f/M_f)	.15/.6	.1/.4	.1/.5
Chloride (mg/L)	7000	11000	19000
Total Hardness as Calcium (mg/L)	120	240	280
KCl % by Wt	.75	1.5	3.5
K^+ PPM	4800	7500	18700
SO_3 PPM	0	40	80

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
<9.2	35-42	8 cc

RECOMMENDED TOUR TREATMENT

- USING RECLAIMED SUMP WATER FOR PRE MIXES.
- CHANGE SCREENS TO 2 x 84, 1 x 110 TO RETAIN MORE DRILLING FLUID.

REMARKS

PRESSURE TEST THE BOP's. MAKE UP THE 8½" BIT + BHA + RIH. TAG CMT @ 322 M. DRILL OUT SHOE TRACK + 5M NEW HOLE + DO FIT (EQU TO 21.9) DRILL AHEAD WITH SURVEYS TO 723M.

DE SILTER UF 14.3 OF 9 GPM 0.5
DE SANDER UF 11 OF 9 GPM. 1.4

PRODUCT INVENTORY	KCL	CMC LV	PAC	OSI
STARTING INVENTORY	400	68	58	40
RECEIVED				
USED LAST 24 hr	60	12	3	2
CLOSING INVENTORY	340	56	55	38
COST LAST 24 hr	687.60	734.76	395.22	101.90
USED (from IADC)				

SOLIDS EQUIPMENT

SHAKER #1 S110 x 3 mesh
CHANGED TO
SHAKER #2 S110 S84 S84 mesh
MUD CLEANER ____ mesh
CENTRIFUGE ____ hours
DESANDER 10 hours
DESILTER 8 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	03 325 4822		$1919.48	$5269.80

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)	
Rig Up/Service	6.5
Drilling	13.5
Reaming/Coring	
Circulating	
Tripping	3
Survey	1
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING	
Water Added (bbl)	150
Mud Built (bbl)	150
Mud Received (bbl)	150
Mud Disposed (bbl)	188
SCR	26
DUMP	142
Starting Depth	346
Ending Depth	723
New Hole Vol. (bbl)	88

SOLIDS ANALYSIS	
Low Gravity %	3.6
Low Gravity, ppb	32.9
Bentonite %	0.5
Bentonite, ppb	4.7
Drill Solids %	2.8
Drill Solids, ppb	25.2
Shale CEC, ppb	—
D/B Ratio	3
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS						
Zero Gel	2	Avg ROP	19	ECD @ ____		
n Factor	.29	% Cutting		Leak Off @ 21.9		
k Factor	9.6	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics		962	82	168	2.97	346
Annular Section		1	2	3	4	5
Hole Size		8.681	8.5	8.5		
Pipe OD		4.5	4.5	6.25		
Critical Velocity		270	277	358		
Annular Velocity		133	141	222		
Viscosity		70	68	46		
Annular Pressure		11	11	6.6		

WATER BASE MUD REPORT - Day : 5

M-I Drilling Fluids Company — Date : 18/02/95 — Depth : 1144.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR
Contractor : CENTURY RIG 11
Description : WILDCAT
Well Name : VAUGHAN 1
Field/Area : PPL-1
Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 968 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 233
Pits Volume : 478
Circulating Volume : 711
Mud : N-DISP KCL MUD

MUD PROPERTIES :

Sample From		FL 04:30
Flow Line Temp		30 ^F
Depth/TVD	-m	1144.0/1144.0
Mud Wt	-lb/gal	9.0
Funnel Vis	-s/qt	42 @ 80 ^F
Plastic Visc	-cps	14 @ 80 ^F
YP/R3	-lb/100ft2 /deg	20 / 2
10s/10m Gel	-lb/100ft2	3 / 8
API F Loss	-cc/30 min	6.4
HTHP F Loss	-cc/30 min	@ ^F
Cake API/HT	-1/32"	1
Solids	-%vol	4
Oil/Water	-%vol	/96
Sand	-%vol	.5
MBT	-lb/bbl	7.5
pH		9 @ 79 ^F
Alkal Mud (Pm)		
Pf/Mf		.1 / .5
Chlorides	-mg/l	19000
Hardness Ca		240
KCL %		3.5
K+		18700
SULPHITE		80
np Value		0.497
Kp	-lb-sec^n/100ft2	1.63337
na Value		0.615
Ka	-lb-sec^n/100ft2	0.78229

CIRCULATION DATA

Flow Rate	-gal/min	250
DP Annular Vel	-m/min	35.9
DC Annular Vel	-m/min	56.3
DP Critical Vel	-m/min	84.6
DC Critical Vel	-m/min	109.2
Circ. Pressure	-psi	950
Bottoms Up	-min	30.7
Total Circ Time	-min	119.4

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25	KG S	5
Potassm Chloride	25	KG S	140
Polypac R	25	KG S	16
OS-1	25	KG S	4

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1	1
KCl	1.3	12
Low Gravity Solids	3.5	32
Bentonite	0.5	5
Drill Solids	2.6	24
Weight Material	N/A	N/A
Chemical Conc	-	3.5

Inert/React : 2.83 Average SG : 2.60

SOLIDS EQUIPMENT Size Hours

Shaker #1	S110 S84	24
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	24
Desilter	4X12	24
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	60	Solids	147
Mud Built	350	Dump	41
Mud Received	350		
Mud Disposed	188		

Remarks :
Drill ahead.
Drilled ahead with surveys to 1144m. The use of sump water for pre-mixes was suspended due to the amount of solids build up, the weight of the retrieved fluid was 9.3 ppg.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 4028 Cumul Cost : 9298

WATER BASE MUD REPORT SUPPLEMENT - Day : 5

M-I Drilling Fluids Company - - Date : 18/02/95 Depth : 1144.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DRILLING

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES	PRIMARY		
Sample From	FL 04:30	FL 21:00	FL 12:30
Flow Line Temp	30 ^F	95 ^F	92 ^F
Depth/TVD -m	1144.0/1144.0	1101.0	991.0
Mud Wt -lb/gal	9.0	9.1	9.2
Funnel Vis -s/qt	42 @ 80 ^F	40 @ 95 ^F	45 @ 92 ^F
Plastic Visc -cps	14 @ 80 ^F	13 @ 90 ^F	17 @ 90 ^F
YP/R3 -lb/100ft2 /deg	20 / 2	14 / 1	19 / 3
10s/10m Gel -lb/100ft2	3 / 8	2 / 6	4 / 8
API F Loss -cc/30 min	6.4	6.4	6.4
HTHP F Loss -cc/30 min	@ ^F	@ ^F	@ ^F
Cake API/HT -1/32"	1	1	1
Solids -%vol	4	4.2	5
Oil/Water -%vol	/96	/95.8	/95
Sand -%vol	.5	.5	.5
MBT -lb/bbl	7.5	10.0	10.0
pH	9 @ 79 ^F	9 @ 90 ^F	9 @ 90 ^F
Alkal Mud (Pm)			
Pf/Mf	.1 / .5	.1 / .5	.1 / .4
Chlorides -mg/l	19000	23000	24000
Hardness Ca	240	120	240
KCL %	3.5	3.5	3.5
K+	18700	18700	18700
SULPHITE	80	150	150
np Value	0.497	0.567	0.558
Kp -lb-sec^n/100ft2	1.63337	0.84090	1.18622
na Value	0.615	0.716	0.540
Ka -lb-sec^n/100ft2	0.78229	0.33203	1.32751

Remarks :
Drill ahead.

M-I Sales Engineer : RIDLER.D.

FDC4

M-I Drilling Fluids Co.

Magcobar/IMCO — A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 18.2 19 95 | DEPTH 1144

SPUD DATE 14.2 | PRESENT ACTIVITY DRILLING.

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR SEAN KELLY | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

	TYPE	JET SIZE
BIT SIZE 8½	HTC AT 105	11 x 3
DRILL PIPE SIZE 4½	TYPE 16.6#	LENGTH 959
DRILL PIPE SIZE 4½	TYPE HW	LENGTH 55
DRILL COLLAR SIZE 6¼	LENGTH 176	

CASING

SURFACE 9⅝ in. @ 329M

INTERMEDIATE in. @ ft.

INTERMEDIATE in. @ ft.

PRODUCTION OR LINER in. @ ft.

MUD VOLUME (BBL)

HOLE Pit PITS 450

261 51

TOTAL CIRCULATING VOLUME 711

IN STORAGE | WEIGHT

MUD TYPE KCL POLYMER

CIRCULATION DATA

PUMP SIZE 5.5 x 7.75 IN. 6 x 8.5

PUMP MAKE, MODEL 7 P 50 NAT 8 P 80 | ASSUMED EFF 95 %

bbl/stk 0.054 0.0705 x 110 stk/min

5.94 bbl/min | 250 gal/min

ANNULAR VEL (ft/min) DP 118 DC 185

CIRCULATION PRESSURE (psi) 950

BOTTOMS UP (min) (strk) 44

TOTAL CIRC TIME (min) (strk) 120

MUD PROPERTIES

	FL	☒ F.L. ☐ PIT	☐ F.L. ☐ PIT
Sample From	FL		
Time Sample Taken	12:30	21:00	04:15
Flowline Temperature (°F)	33	35	35
Depth (ft) (TVD /)	991 (ft)	1101	1190
Weight ☒ (ppg) ☐ (lb/cu ft)	9 (ppg)	9.1	9.1
Funnel Viscosity (sec/qt) API @ °F	45	40	42
Plastic Viscosity cp @ °F	17	13	15
Yield Point (lb/100 ft²)	19	14	15
Gel Strength (lb/100 ft²) 10 sec/10 min	4/8	2/6	2/4
Filtrate API (cm³/30 min)	6.4	6.4	7.0
API HTHP Filtrate (cm³/30 min) @ °F	–	–	–
Cake Thickness (32nd in. API/HTHP)	1/32	1/–	1/–
Solids Content (% by Vol) ☒ calculated ☐ retort	5	4.2	4.2
Liquid Content (% by Vol) Oil/Water	0/95	0 / 95.8	0 / 95.8
Sand Content (% by Vol)	.5	.5	.5
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	24000	23000	20000
pH ☒ Strip ☐ Meter @ °F	9	9	9
Alkalinity Mud (P_m)	–	–	–
Alkalinity Filtrate (P_f/M_f)	.1/.4	.1/1.5	.1/1.5
Chloride (mg/L)	10	10	10
Total Hardness as Calcium (mg/L)	240	120	120
KCL % by Wt	3.5	3.5	3.0
K^+ PPM	18700	18700	16040
SO_3 PPM	150	150	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.2	35 - 42	8 cc

RECOMMENDED TOUR TREATMENT

- USED SUMP WATER FOR PRE MIXES TILL THE WEIGHT GOT TO 9.3 PPG. WILL LEAVE FOR A FEW DAYS TO SETTLE. USING TURKEY NEST WATER.

REMARKS

DRILL AHEAD WITH SURVEYS TO 1144M.

DESILTER UF 11.8 OF 9.0+ GPM 2.7

DESANDER UF 11.1 OF 9.0+ GPM 1.6

PRODUCT INVENTORY

	KCL	PAC	CAUSTIC	OSI	SODA ASH	CaOH BICARB								
STARTING INVENTORY	340	55	38	38	20	14								
RECEIVED														
USED LAST 24 hr	140	16	5	4										
CLOSING INVENTORY	200	39	33	34										
COST LAST 24 hr	1604.40	207.84	111.75	203.80										
USED (from IADC)														

SOLIDS EQUIPMENT

SHAKER #1 S110/S84/S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER 24 hours

DESILTER 24 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$4027.79	$9297.59

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)

Rig Up/Service	0.5
Drilling	22.5
Reaming/Coring	
Circulating	
Tripping	
Survey	1
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	20
Mud Built (bbl)	350
Mud Received (bbl)	350
Mud Disposed (bbl)	188
SOLIDS EQ	147
DUMP	41
HOLE	0
Starting Depth	723
Ending Depth	1144
New Hole Vol. (bbl)	97

SOLIDS ANALYSIS

Low Gravity %	4.3
Low Gravity, ppb	39.2
Bentonite %	0.7
Bentonite, ppb	6.7
Drill Solids %	3.2
Drill Solids, ppb	29.5
Shale CEC, ppb	–
D/B Ratio	2.6
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS

Zero Gel 2 | Avg ROP 11 | Bore IF 339

n Factor .58 | % Cutting | Leak Off @ 21.9

k Factor .84

	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics	676	71	99	1.74	288
Annular Section	1	2	3	4	5
Hole Size	8.681	8.5	8.5		
Pipe OD	4.5	4.5	6.25		
Critical Velocity	257	261	332		
Annular Velocity	111	118	185		
Viscosity	71	68	44		

WATER BASE MUD REPORT - Day : 6

M-I Drilling Fluids Company — - - — Date : 19/02/95 — Depth : 1392.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1216 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 286
Pits Volume : 470
Circulating Volume : 756
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 04:15
Flow Line Temp	35 ^F
Depth/TVD -m	1392.0/1392.0
Mud Wt -lb/gal	9.1
Funnel Vis -s/qt	42 @ 95 ^F
Plastic Visc -cps	15 @ 90 ^F
YP/R3 -lb/100ft2 /deg	15 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	7
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	4.2
Oil/Water -%vol	0 /95.8
Sand -%vol	.5
MBT -lb/bbl	10.0
pH	9 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .5
Chlorides -mg/l	20000
Hardness Ca	120
KCL %	3
K+	16040
SULPHITE	150
np Value	0.585
Kp -lb-sec^n/100ft2	0.83559
na Value	0.588
Ka -lb-sec^n/100ft2	0.81775

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	79.7
DC Critical Vel -m/min	101.2
Circ. Pressure -psi	1000
Bottoms Up -min	37.6
Total Circ Time -min	127.0

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	3
Potassm Chloride	25 KG S	40
CMC TG LV	25 KG S	6
Polypac R	25 KG S	4
OS-1	25 KG S	3

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 2
KCl	1.3 / 12
Low Gravity Solids	4.2 / 39
Bentonite	0.8 / 7
Drill Solids	3.1 / 28
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.50 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	24
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	24
Desilter	4X12	24
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	15	Solids	108
Mud Built	180	Dump	42
Mud Received	180		
Mud Disposed	108		

Remarks :
Drilled ahead with formation samples circ. at 1290 and 1319m.
Drilling continued with formation samples being circulated up at 1290 and 1319m.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1573 Cumul Cost : 10870

WATER BASE MUD REPORT SUPPLEMENT - Day : 6

M-I Drilling Fluids Company - - Date : 19/02/95 Depth : 1392.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DRILLING

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY		
Sample From	:	FL 04:15	FL 21:00	FL 12:30
Flow Line Temp	:	35 ^F	95 ^F	95 ^F
Depth/TVD -m	:	1392.0/1392.0	1343.0	1271.0
Mud Wt -lb/gal	:	9.1	9.1	9.2
Funnel Vis -s/qt	:	42 @ 95 ^F	45 @ 95 ^F	41 @ 95 ^F
Plastic Visc -cps	:	15 @ 90 ^F	17 @ 90 ^F	15 @ 90 ^F
YP/R3 -lb/100ft2 /deg	:	15 / 2	20 / 2	15 / 2
10s/10m Gel -lb/100ft2	:	2 / 4	2 / 5	3 / 4
API F Loss -cc/30 min	:	7	6.2	6.6
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F	@ ^F
Cake API/HT -1/32"	:	1	1	1
Solids -%vol	:	4.2	4.2	4.5
Oil/Water -%vol	:	0 /95.8	0 /95.8	0 /95.5
Sand -%vol	:	.5	.5	.5
MBT -lb/bbl	:	10.0	12.5	12.5
pH	:	9 @ 90 ^F	9 @ 90 ^F	9 @ 90 ^F
Alkal Mud (Pm)	:			
Pf/Mf	:	.1 / .5	.1 / .4	.1 / .5
Chlorides -mg/l	:	20000	20000	20000
Hardness Ca	:	120	120	120
KCL %	:	3	3.5	3.2
K+	:	16040	18700	17300
SULPHITE	:	150	150	120
	:			
np Value	:	0.585	0.545	0.585
Kp -lb-sec^n/100ft2	:	0.83559	1.31845	0.83559
na Value	:	0.588	0.634	0.588
Ka -lb-sec^n/100ft2	:	0.81775	0.75921	0.81775

Remarks :
Drilled ahead with formation samples circ. at 1290 and 1319m.

M-I Sales Engineer : RIDLER.D. FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 19.2.19 95 | DEPTH 1392

SPUD DATE 14.2 | PRESENT ACTIVITY DRILLING

OPERATOR: GFE RESOURCES	CONTRACTOR: CENTURY	RIG NO.: 11	
REPORT FOR: KEN SMITH	REPORT FOR: ROGER BINDON	SECTION, TOWNSHIP, RANGE	
WELL NAME AND NO.: VAUGHAN #1	FIELD OR BLOCK NO.: OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA	STATE/PROVINCE: VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE: 8½	TYPE: HTC AT10S	JET SIZE: 11×3	SURFACE: 9⅝ in. @ 329M ft.	HOLE: 306	PITS: 450	PUMP SIZE: 5.5 X 7.75 IN. 6 × 8.5	ANNULAR VEL (ft/min): DP 118 DC 185
DRILL PIPE SIZE: 4½	TYPE: 16.6#	LENGTH: 1215	INTERMEDIATE: in. @ ft.	TOTAL CIRCULATING VOLUME: 756		PUMP MAKE, MODEL: NAT 7P50 8P80	ASSUMED EFF: 95 %
DRILL PIPE SIZE: 4½	TYPE: HW	LENGTH: 55	INTERMEDIATE: in. @ ft.	IN STORAGE	WEIGHT	bbl/stk: .054 / 0.0705 × 110 stk/min	CIRCULATION PRESSURE (psi): 1000
DRILL COLLAR SIZE: 6¼		LENGTH: 176	PRODUCTION OR LINER: in. @ ft.	MUD TYPE: KCL POLYMER		5.94 bbl/min 250 gal/min	BOTTOMS UP (min) (strk): 41
							TOTAL CIRC TIME (min) (strk): 127

MUD PROPERTIES			
Sample From	FL	☒ F.L. ☐ PIT	☒ F.L. ☐ PIT
Time Sample Taken	12:30	21:00	04:30
Flowline Temperature (°C)	35	35	35
Depth (ft) (TVD /)	1271 (ft)	1343	1446
Weight ☒ (ppg) ☐ (lb/cu ft)	9.6 (ppg)	9.1+	9.1+
Funnel Viscosity (sec/qt) API @ °F	41	45	41
Plastic Viscosity cp @ °F	15	17	14
Yield Point (lb/100 ft²)	15	20	16
Gel Strength (lb/100 ft²) 10 sec/10 min	3/4	2 15	2 14
Filtrate API (cm³/30 min)	6.6	6.2	6.6
API HTHP Filtrate (cm³/30 min) @ °F	–	–	–
Cake Thickness (32nd in. API/HTHP)	1/32	1 1 -	1 1 -
Solids Content (% by Vol) ☒ calculated ☐ direct	5	4.2	4.2
Liquid Content (% by Vol) Oil/Water	0/95.5	0 / 95.8	0 / 95.8
Sand Content (% by Vol)	0.5	0.5	0.5
Methylene Blue Capacity ☒ lb/bbl equiv ☐ cm³/cm³ mud	12.5	12.5	12.5
pH ☒ Strip ☐ Meter @	9.0	9.0	9.0
Alkalinity Mud (P_m)	–	–	–
Alkalinity Filtrate (P_f/M_f)	.1 / .5	.1 1.4	.1 1.55
Chloride (mg/L)	20000	20 000	20 000
Total Hardness as Calcium (mg/L)	120	120	120
KCL % by Wt	3.2	3.5	3.5
K+ PPM	17300	18700	18700
SULPHITE PPM	150	150	150

MUD PROPERTY SPECIFICATIONS		
WEIGHT	VISCOSITY	FILTRATE
<9.2	35 - 42	8

RECOMMENDED TOUR TREATMENT

- USING PAC R FOR RHEOLOGY + WATER LOSS CONTROL / CMC LV FOR WATER LOSS CONTROL / KCL TO INHIBIT MUD
- USED ½ MUD ½ WATER IN 1 PRE MIX.

REMARKS

DRILL WITH SURVEYS TO 1290M, FLOW CHECK 5M, PULL 2 STANDS + CIRC UP SAMPLE @ GEO'S REQUEST RIH + DRILL TO 1319M, FLOW CHECK 5 MIN + PULL 2 STANDS + CIRC UP SAMPLE @ GEO'S REQUEST. RIH + DRILL AHEAD.

DESILTER UF 11.3 OF 9.1 GPM 2-7

DESANDER UF 13.2 OF 9.1 GPM .5

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	O.S.I.
STARTING INVENTORY	200	39	56	33	34
RECEIVED					
USED LAST 24 hr	40	4	6	3	3
CLOSING INVENTORY	160	35	50	30	31
COST LAST 24 hr	438.40	526.96	367.38	67.05	152.85
USED (from IADC)					

SOLIDS EQUIPMENT

SHAKER #1 S110/S84/S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER 24 hours

DESILTER 24 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 3254822		$1572.64	$10870.23

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service		Water Added (bbl)	15	Low Gravity %	4.6
Drilling	19.5	Mud Built (bbl)	180	Low Gravity, ppb	42
Reaming/Coring		Mud Received (bbl)	180	Bentonite %	1.0
Circulating	3	Mud Disposed (bbl)	150	Bentonite, ppb	9.2
Tripping		SOLIDS EQ	108	Drill Solids %	3.3
Survey	1.5	DUMP	42	Drill Solids, ppb	29.8
Logging		HOLE	0	Shale CEC, ppb	–
Running Casing				D/B Ratio	2.1
Testing		Starting Depth	1144	High Gravity %	0
Fishing		Ending Depth	11	High Gravity, ppb	0
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS							
Zero Gel	2	Avg ROP	12	ECD @ Bit Imp F: 341			
n Factor	.455	% Cutting		Leak Off @ 21.9			
k Factor	1.02	psi	%	hhp	HSI	Jet Vel	
Bit Hydraulics		679	68	99	1.75	288	
Annular Section		1	2	3	4	5	
Hole Size		8.681	8.5	8.5			
Pipe OD		4.5	4.5	6.25			
Critical Velocity		256	260	331			
Annular Velocity		111	113	185			
Viscosity		71	68	44			
Annular Pressure		9.6	58	127			

WATER BASE MUD REPORT - Day : 7

M-I Drilling Fluids Company — - - — Date : 20/02/95 — Depth : 1507.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : RIH

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1331 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 310
Pits Volume : 460
Circulating Volume : 770
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 04:30
Flow Line Temp	95 ^F
Depth/TVD -m	1507.0/1507.0
Mud Wt -lb/gal	9.1
Funnel Vis -s/qt	41 @ 95 ^F
Plastic Visc -cps	14 @ 90 ^F
YP/R3 -lb/100ft2 /deg	16 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	6.6
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	4.2
Oil/Water -%vol	/95.8
Sand -%vol	.5
MBT -lb/bbl	12.5
pH	9 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .55
Chlorides -mg/l	20000
Hardness Ca	120
KCL %	3.5
K+	18700
SULPHITE	150
np Value	0.552
Kp -lb-sec^n/100ft2	1.02270
na Value	0.588
Ka -lb-sec^n/100ft2	0.81775

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	79.3
DC Critical Vel -m/min	100.8
Circ. Pressure -psi	1000
Bottoms Up -min	40.8
Total Circ Time -min	129.4

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	1
Potassm Chloride	25 KG S	20
CMC TG LV	25 KG S	6
Polypac R	25 KG S	2
OS-1	25 KG S	2

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 2
KCl	1.3 / 12
Low Gravity Solids	4.2 / 39
Bentonite	1.1 / 10
Drill Solids	2.8 / 25
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 1.80 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	11
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	10
Desilter	4X12	10
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	16	Solids	45
Mud Built	40	Dump	1
Mud Received	56		
Mud Disposed	46		

Remarks :
Drill to 1507m, POOH for new bit. Tight hole experianced, out and in.
Drilled to 1507m, circulated bottoms up and pulled out of the hole for a new bit. Tight hole was experienced at; 1438 - 1435, 1398 - 1379, 1302 - 1245, 1112 - 1093 and 902 - 883m. The bit was changed and, on running in, the hole had to be reamed at; 614 - 624, 691 - 700, 883 - 1035m. The pipe was tripped in wherever possible.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 984 Cumul Cost : 11855

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 20.2 19 95 | DEPTH 1507

SPUD DATE 14.2 | PRESENT ACTIVITY RIH

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE / TYPE / JET SIZE			SURFACE	HOLE / DP	PITS	PUMP SIZE	ANNULAR VEL (ft/min)
8 1/2	HTC ATJ05	11 x 3	9 7/8 in. @ 329 ft	254 / 66	450	5.5 x 7.75 IN. 6 x 8-5	DP 118 DC 185
DRILL PIPE SIZE / TYPE / LENGTH			INTERMEDIATE	TOTAL CIRCULATING VOLUME		PUMP MAKE, MODEL / ASSUMED EFF	CIRCULATION PRESSURE (psi)
4 1/2	16.6#	1284	in. @ ft.	770		NAT 7P50 8P80 / 95 %	1000
DRILL PIPE SIZE / TYPE / LENGTH			INTERMEDIATE	IN STORAGE / WEIGHT		bbl/stk x stk/min	BOTTOMS UP (min) (strk)
4 1/2	HW	55	in. @ ft.			0.054 0.0705 x 110	43
DRILL COLLAR SIZE	LENGTH		PRODUCTION OR LINER	MUD TYPE		bbl/min / gal/min	TOTAL CIRC TIME (min) (strk)
6 1/4	176		in. @ ft.	KCL POLYMER		5.94 250	130

MUD PROPERTIES		
Sample From	☒ F.L. ☐ PIT	☒ F.L. ☐ PIT
Time Sample Taken	11:00	05:15
Flowline Temperature (°F)	35	31.5
Depth (☒ MD ☐ TVD / ft)	1507	1515
Weight ☒ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	9.2	9.3
Funnel Viscosity (sec/qt) API @ °F	40	42
Plastic Viscosity cp @ °F	14	16
Yield Point (lb/100 ft²)	15	14
Gel Strength (lb/100 ft²) 10 sec/10 min	2 14	2 14
Filtrate API (cm³/30 min)	6	5.8
API HTHP Filtrate (cm³/30 min) @ °F	—	—
Cake Thickness (32nd in. API/HTHP)	1 / —	1 / —
Solids Content (% by Vol) ☒ calculated ☐ retort	4.6	5.2
Liquid Content (% by Vol) Oil/Water	0 / 95.4	0 / 94.8
Sand Content (% by Vol)	0.5	0.5
Methylene Blue Capacity ☒ lb/bbl equiv ☐ cm³/cm³ mud	15	15
pH ☒ Strip ☐ Meter @ °F	9	9
Alkalinity Mud (P_m)	—	—
Alkalinity Filtrate (P_f/M_f)	.1 / 1.55	.1 / 1.55
Chloride (mg/L)	20000	20000
Total Hardness as Calcium (mg/L)	120	120
KCL % by Wt	3.5	3.5
K^+ PPM	18700	18700
SULPHITE PPM.	150	130

MUD PROPERTY SPECIFICATIONS		
WEIGHT	VISCOSITY	FILTRATE
<9.2	35 - 42	<8

RECOMMENDED TOUR TREATMENT

- LETTING WEIGHT INCREASE TO 9.3 BY CO REQUEST

REMARKS

DRILL TO 1507M, CIRC BTMS UP + POOH, HOLE TIGHT 1438 – 1435, 1398. 1379, 1302 → 1245, 1112 – 1093, 902 - 882. MAKE UP NEW BIT + RIH, REAM :- 614 → 624, 691 → 700, 883 → 1035M, THEN RIH WHEN POSSIBLE.

DE SILTER UF 10.0 OF 9.1 GPM 2.7
DE SANDER UF 12.5 OF 9.1 GPM 0.5

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	OS.1
STARTING INVENTORY	160	35	50	30	31
RECEIVED					
USED LAST 24 hr	20	2	6	1	2
CLOSING INVENTORY	140	33	44	29	29
COST LAST 24 hr	229.20	263.48	367.38	22.35	101.90
USED (from IADC)					

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh
SHAKER #2 / mesh
MUD CLEANER mesh
CENTRIFUGE hours
DESANDER 10 hours
DESILTER 10 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$984.31	$11,854.54

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)	
Rig Up/Service	0.5
Drilling	10
Reaming/~~Coring~~	3.5
Circulating	1.0
Tripping	8.0
Survey	0.5
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING	
Water Added (bbl)	16
Mud Built (bbl)	40
Mud Received (bbl)	60
Mud Disposed (bbl)	46
SOLIDS DUMP	45
DUMP	1
Starting Depth	1392
Ending Depth	1507
New Hole Vol. (bbl)	26

SOLIDS ANALYSIS	
Low Gravity %	5.8
Low Gravity, ppb	52.4
Bentonite %	0.9
Bentonite, ppb	7.9
Drill Solids %	4.6
Drill Solids, ppb	41.5
Shale CEC, ppb	—
D/B Ratio	2.9
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS							
Zero Gel	2	Avg ROP	10	ECD @ 1F	34-7		
n Factor	.62	% Cutting		Leak Off @	21.9 PPG.		
k Factor	.68	psi	%	hhp	HSI	Jet Vel	
Bit Hydraulics		691	69	101	1.78	288	
Annular Section		1	2	3	4	5	
Hole Size		8.681	8.5	8.5			
Pipe OD		4.5	4.5	6.25			
Critical Velocity		253	257	327			
Annular Velocity		111	118	185			
Viscosity		71	68	44			
Annular Pressure		9.6	31.2	17.7			

WATER BASE MUD REPORT - Day : 8

M-I Drilling Fluids Company — Date : 21/02/95 — Depth : 1607.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : CIRC

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1431 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 332
Pits Volume : 421
Circulating Volume : 753
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 05:15
Flow Line Temp	31 ^F
Depth/TVD -m	1607.0/1607.0
Mud Wt -lb/gal	9.3
Funnel Vis -s/qt	42 @ 89 ^F
Plastic Visc -cps	16 @ 88 ^F
YP/R3 -lb/100ft2 /deg	14 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	5.8
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	5.2
Oil/Water -%vol	0 /94.5
Sand -%vol	.5
MBT -lb/bbl	15.0
pH	9 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .55
Chlorides -mg/l	20000
Hardness Ca	120
KCL %	3.5
K+	18700
SULPHITE	150
np Value	0.616
Kp -lb-sec^n/100ft2	0.68576
na Value	0.588
Ka -lb-sec^n/100ft2	0.81775

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	78.4
DC Critical Vel -m/min	99.7
Circ. Pressure -psi	1100
Bottoms Up -min	43.7
Total Circ Time -min	126.5

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	2
Potassm Chloride	25 KG S	20
CMC TG LV	25 KG S	7
Polypac R	25 KG S	2
OS-1	25 KG S	2
M-I Bar	25 KG S	40

SOLIDS ANALYSIS (% / lb/bbl)

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	20.5
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	15
Desilter	4X12	15
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	
Water Added	10	Solids	80
Mud Built	110	Dump	57
Mud Received	120		
Mud Disposed	127		

Remarks :
Drill to DST point of 1607m, do 25 stand wiper trip.
The trip in continued with further reaming required at; 1306 - 1325, 1372 - 1385 and 1440 - 1507m, 2m fill were found on bottom. Drilling continued to the test point of 1607m, with formation samples circulated up at 1603 and 1607m. A 25 stand wiper trip was made, finding tight hole at; 1427 - 1331 and 1245 - 1206m. The trip in experienced tight hole from 1584 - 1594m, this was suspected to be the stablizer hanging up, no fill was found on bottom. The hole was circulated clean.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1289 Cumul Cost : 13144

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 21.2.95 | DEPTH 1607

SPUD DATE 14.2 | PRESENT ACTIVITY CIRC BTMS UP

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR ROGER BINDON | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE 8½	TYPE HTC ATJ05	JET SIZE 11×3	SURFACE 9⅞ in. @ 329M	HOLE 272/71 PIPE	PITS 410	PUMP SIZE 5.5 X 7.75 IN. 6. X 8.5	ANNULAR VEL (ft/min) DP 118 DC 185
DRILL PIPE SIZE 4½	TYPE 16.6#	LENGTH 1376	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 753		PUMP MAKE, MODEL NAT 7P50 8P80	ASSUMED EFF 95 %	CIRCULATION PRESSURE (psi) 1100
DRILL PIPE SIZE 4½	TYPE HW	LENGTH 55	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 0.0705 × 110 stk/min	BOTTOMS UP (min) (strk) 46
DRILL COLLAR SIZE 6¼		LENGTH 176	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		5.94 bbl/min 250 gal/min	TOTAL CIRC TIME (min) (strk) 127

MUD PROPERTIES		
Sample From	☑ F.L. ☐ PIT	☑ F.L. ☐ PIT
Time Sample Taken	13:00	00:20
Flowline Temperature (°F)	36	33
Depth (ft) M (TVD / ft)	1584	1607
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	9.4+	9.4+
Funnel Viscosity (sec/qt) API @ °F	41	42
Plastic Viscosity cp @ °F	14	17
Yield Point (lb/100 ft²)	16	16
Gel Strength (lb/100 ft²) 10 sec/10 min	2 14	2 16
Filtrate API (cm³/30 min)	6.2	6.0
API HTHP Filtrate (cm³/30 min) @ °F	—	—
Cake Thickness (32nd in. API/HTHP)	1 1 –	1 1 –
Solids Content (% by Vol) ☑ calculated ☐ retort	6.5	6.5
Liquid Content (% by Vol) Oil/Water	0 93.5	0 93.5
Sand Content (% by Vol)	.25	.25
Methylene Blue Capacity ☑ lb/bbl equiv ☐ cm³/cm³ mud	17.5	17.5
pH ☑ Strip ☐ Meter @ °F	9.0	9.0
Alkalinity Mud (P_m)	—	—
Alkalinity Filtrate (P_f/M_f)	.11.6	.11.6
Chloride (mg/L)	19500	19000
Total Hardness as Calcium (mg/L)	120	120
KCL % by Wt	3.2	3.2
K+ PPM	17300	17300
SULPHITE PPM	150	150

MUD PROPERTY SPECIFICATIONS		
WEIGHT 9.2 → 9.3	VISCOSITY 35 – 42	FILTRATE 5 – 7.

RECOMMENDED TOUR TREATMENT

- USED BARITE IN SLUG TO COME OUT FOR DST.
- STARTED USING SUMP WATER AGAIN - WEIGHT 8.5ppg.

REMARKS

CONTINUE RIH, REAM 1306 → 1325, 1322 → 1385 AND 1440 → 1507 M. 2 M FILL ON BTM. DRILL AHEAD TO 1603M, CIRC 5MIN. PULL 2 ST + CIRC BTMS UP. RIH + DRILL TO 1607M, CIRC 5 MIN, PULL 2 ST + CIRC BTMS UP. POOH 25 ST. W/T. HOLE TIGHT 1427 – 1331 & 1245 → 1206 M. RIH REAM 1584 → 1594 (SUSPECTED STAB HANGING UP) – NO FILL. CIRC 5 MIN, PULL 2 ST + CIRC BTMS UP.

DESILTER UF 10.3 OF 9.4 GPM 2-7

DESANDER UF 10.5 OF 9.4 GPM 1-1

PRODUCT INVENTORY	KCL	PAC	CMC L.V.	CAUSTIC	OS-1	BARITE
STARTING INVENTORY	140	33	44	29	29	400
RECEIVED						
USED LAST 24 hr	20	2	7	2	2	40
CLOSING INVENTORY	120	31	37	27	27	360
COST LAST 24 hr	229.20	263.48	428.61	44.70	101.90	221.20
USED (from IADC)						

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER 15 hours

DESILTER 15 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$ 1289.09	$13,143.63

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service		Water Added (bbl)	10	Low Gravity %	6.9
Drilling	11	Mud Built (bbl)	110	Low Gravity, ppb	62.8
Reaming/Coring	5	Mud Received (bbl)	120	Bentonite %	1.0
Circulating	4.5	Mud Disposed (bbl)	127	Bentonite, ppb	9.4
Tripping	3.5	SCE	80	Drill Solids %	5.5
Survey		DUMP	35	Drill Solids, ppb	50.4
Logging		WET TRIPS	12	Shale CEC, ppb	–
Running Casing				D/B Ratio	3.0
Testing		Starting Depth	1507	High Gravity %	0
Fishing		Ending Depth	1607	High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS								
Zero Gel	2	Avg ROP	10	ECD @ 1F 352				
n Factor	.6	% Cutting		Leak Off @ 21.9				
k Factor	.84	psi	%	hhp	HSI	Jet Vel		
Bit Hydraulics		702	64	102	1.8	288		
Annular Section		1	2	3	4	5		
Hole Size		8.681	8.5	8.5				
Pipe OD		4.5	4.5	6.25				
Critical Velocity		259	265	340				
Annular Velocity		111	115	135				
Viscosity		74	71	48				

WATER BASE MUD REPORT - Day : 9

M-I Drilling Fluids Company — Date : 22/02/95 — Depth : 1679.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1503 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 346
Pits Volume : 444
Circulating Volume : 790
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 00:20
Flow Line Temp	33 ^F
Depth/TVD -m	1679.0/1679.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	42 @ 93 ^F
Plastic Visc -cps	17 @ 90 ^F
YP/R3 -lb/100ft2 /deg	16 / 2
10s/10m Gel -lb/100ft2	2 / 6
API F Loss -cc/30 min	6
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	6.5
Oil/Water -%vol	0 /93.5
Sand -%vol	.25
MBT -lb/bbl	17.5
pH	9 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .6
Chlorides -mg/l	19000
Hardness Ca	120
KCL %	3.2
K+	17300
SULPHITE	150
np Value	0.599
Kp -lb-sec^n/100ft2	0.83973
na Value	0.609
Ka -lb-sec^n/100ft2	0.79060

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	80.6
DC Critical Vel -m/min	103.7
Circ. Pressure -psi	1075
Bottoms Up -min	45.5
Total Circ Time -min	132.7

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	1
Potassm Chloride	25 KG S	26
CMC TG LV	25 KG S	8
Polypac R	25 KG S	7
Sodium Bicarb	25 KG S	2

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 1
KCl	1.2 / 12
Low Gravity Solids	6.6 / 60
Bentonite	1.4 / 13
Drill Solids	4.8 / 44
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.23 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	12.5
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	12
Desilter	4X12	12
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	:40
Water Added	:50	Solids	:65
Mud Built	:120	Dump	:28
Mud Received:	170		
Mud Disposed:	133		

Remarks :
Circ. hole, POOH, make up test tools, break down tools, RIH. Drill ahead, circulate samples as required.
The hole was circulated clean prior to running to bottom, pumping a slug and
pulling out of the hole. The DST tools were made up, but the pump out sub was
the wrong thread. The tools were broken down and the bit and BHA were ran
back into the hole, having to ream 1594 to 1600m (suspected stabalizer hang
up). While drilling ahead, flow checks and formation samples were circulated
at; 1655 and 1664m. Drilling continued to 1679m.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1763 Cumul Cost : 14907

WATER BASE MUD REPORT SUPPLEMENT - Day : 9

M-I Drilling Fluids Company - - Date : 22/02/95 Depth : 1679.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DRILLING

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY		
Sample From	:	FL 00:20	FL 15:45	FL 22:15
Flow Line Temp	:	33 ^F	90 ^F	96 ^F
Depth/TVD -m	:	1679.0/1679.0	1627.0	1664.0
Mud Wt -lb/gal	:	9.4	9.4	9.4
Funnel Vis -s/qt	:	42 @ 93 ^F	41	39 @ 96 ^F
Plastic Visc -cps	:	17 @ 90 ^F	15 @ 90 ^F	11 @ 90 ^F
YP/R3 -lb/100ft2 /deg	:	16 / 2	15 / 2	12 / 2
10s/10m Gel -lb/100ft2	:	2 / 6	2 / 5	2 / 4
API F Loss -cc/30 min	:	6	5.9	5.7
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F	@ ^F
Cake API/HT -1/32"	:	1	1	1
Solids -%vol	:	6.5	6.5	5.8
Oil/Water -%vol	:	0 /93.5	0 /93.5	0 /94.2
Sand -%vol	:	.25	.25	.25
MBT -lb/bbl	:	17.5	17.5	17.5
pH	:	9 @ 90 ^F	8.5 @ 90 ^F	8.5 @ 90 ^F
Alkal Mud (Pm)	:			
Pf/Mf	:	.1 / .6	.1 / .6	.1 / .55
Chlorides -mg/l	:	19000	18500	18000
Hardness Ca	:	120	160	120
KCL %	:	3.2	3	3
K+	:	17300	16040	16040
SULPHITE	:	150	130	10
	:			
np Value	:	0.599	0.585	0.564
Kp -lb-sec^n/100ft2	:	0.83973	0.83559	0.73048
na Value	:	0.609	0.588	0.530
Ka -lb-sec^n/100ft2	:	0.79060	0.81775	0.89845

Remarks :
Circ. hole, POOH, make up test tools, break down tools, RIH. Drill ahead, circulate samples as required.

M-I Sales Engineer : RIDLER.D. FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 22.2 19 95 | DEPTH 1679M | SPUD DATE 14.2 | PRESENT ACTIVITY DRILLING

OPERATOR GFE RESOURCES | CONTRACTOR CENTURY | RIG NO. 11

REPORT FOR KEN SMITH | REPORT FOR ROGER BINDON | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 | FIELD OR BLOCK NO. OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)			CIRCULATION DATA	
BIT SIZE / TYPE / JET SIZE	8½ / HTC ATJ50S / 11×3		SURFACE 9⅞ in. @ 329M	HOLE 284	PIPE 76	PITS 430	PUMP SIZE 5.5 x 7.75 IN. / 6.0 x 8.5	ANNULAR VEL (ft/min) DP 118 DC 185
DRILL PIPE SIZE / TYPE / LENGTH	4½ / 16.6#	1487	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 790			PUMP MAKE, MODEL NAT 8-P-80	ASSUMED EFF 95 % / CIRCULATION PRESSURE (psi) 1075
DRILL PIPE SIZE / TYPE / LENGTH	4½ / HW	55	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT		bbl/stk 0.054 / 0.0705 x 110 stk/min	BOTTOMS UP (min) (strk) 48
DRILL COLLAR SIZE / LENGTH	6¼	176	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER			5.94 bbl/min 250 gal/min	TOTAL CIRC TIME (min) (strk) 133

MUD PROPERTIES			
Sample From	FL	☑ FL. ☐ PIT	☑ FL. ☐ PIT
Time Sample Taken	15:45	22:15	04:30
Flowline Temperature (°F)	90	96	96 (35-5)
Depth (ft) (TVD)	1627	1664	1718
Weight ☑ (ppg) ☐ (lb/cu ft)	9.2+ gr	9.3+	9.3+
Funnel Viscosity (sec/qt) API @ °F	41	39	39
Plastic Viscosity cp @ °F	15	11	11
Yield Point (lb/100 ft²)	15	12	12
Gel Strength (lb/100 ft²) 10 sec/10 min	2/5	2/4	2/3
Filtrate API (cm³/30 min)	5.9	5.7	5.7
API HTHP Filtrate (cm³/30 min) @ °F	—	—	—
Cake Thickness (32nd in. API/HTHP)	1/32	1 —	1 1 —
Solids Content (% by Vol) ☐ calculated	6.5	5.8	5.8
Liquid Content (% by Vol) Oil/Water	0/93.5	0 / 94.2	0 / 94.2
Sand Content (% by Vol)	.25	.25	.25
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	17.5	17.5	15
pH ☑ Strip ☐ Meter @	8.5	8.5	8.5
Alkalinity Mud (P_m)	—	—	—
Alkalinity Filtrate (P_f/M_f)	.1/.6	.1 1.55	.1 1.55
Chloride (mg/L)	18500	18000	18000
Total Hardness as Calcium (mg/L)	160	120	120
KCl % by Wt	3.0	3.0	3.0
K^+ PPM	16040	16040	16040
SULPHITE PPM.	130	150	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.2 - 9.3	38 - 42	5-7

RECOMMENDED TOUR TREATMENT

- IN THE REDUCTION OF THE MUDWEIGHT, SOME OF THE RHEOLOGICAL PROPERTIES HAVE ALSO BEEN REDUCED.

REMARKS

CIRC HOLE CLEAN, RIH 2 ST, CIRC 10 MIN + PUMP SLUG + POOH. (STRAP). BREAK DWN BHA. MAKE UP TEST TOOLS (PUMP OUT SUB NOT COMPATABLE W/DRILL STRING). BREAK DWN TOOLS. MAKE UP BHA + RIH TO 1594M - REAM TO 1600M (SUSPECTED STAB H UP) TAG BTM @ 1607M, CIRC 15 MIN + DRG TO 1624 CIRC 5 MIN, DRG TO 1655 (FLOW CK + CIRC SAMPLE) DRG TO 1657 (CIRC 5 MIN) DRG TO 1664 (FLOW CK PULL 2 STANDS + CIRC UP SAMPLE). DRG TO 1679M

DESILTER UF 10.7 OF 9.3 GPM 2-7

DESANDER UF 10.8 OF 9.3 GPM 1-1

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	OS-1	S.B.C.
STARTING INVENTORY	120	31	37	27	27	14
RECEIVED						
USED LAST 24 hr	26	7	8	1		2
CLOSING INVENTORY	94	24	29	26		12
COST LAST 24 hr	297.96	922.18	489.84	22.35		30.68
USED (from IADC)						

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER 12 hours

DESILTER 12 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$1763.01	$14,906.64

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	3	Water Added (bbl)	50	Low Gravity %	6.3
Drilling	7.5	Mud Built (bbl)	120	Low Gravity, ppb	57.3
Reaming/Coring		Mud Received (bbl)	170	Bentonite %	1.1
Circulating	5	Mud Disposed (bbl)	133	Bentonite, ppb	10.1
Tripping	8.5	SCE	65	Drill Solids %	4.9
Survey		DUMP	28	Drill Solids, ppb	44.2
Logging		HOLE	40	Shale CEC, ppb	—
Running Casing				D/B Ratio	2.6
Testing		Starting Depth	1607	High Gravity %	0
Fishing		Ending Depth	1679	High Gravity, ppb	0
		New Hole Vol. (bbl)	17		

MUD RHEOLOGY and HYDRAULICS								
Zero Gel	2	Avg ROP	25	ECD @ 1F 348				
n Factor	.56	% Cutting		Leak Off @ 21.9				
k Factor	.73	psi	%	hhp	HSI	Jet Vel		
Bit Hydraulics		694	65	101	1.78	288		
Annular Section		1	2	3	4	5		
Hole Size		8681	8.5	8.5				
Pipe OD		4.5	4.5	6.25				
Critical Velocity		227	231	284				
Annular Velocity		111	118	135				
Viscosity		60	58	36				
Annular Pressure		8.4	41.6	14.5				

WATER BASE MUD REPORT - Day : 10

M-I Drilling Fluids Company — Date : 23/02/95 — Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : CIRC HOLE

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1647 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 377
Pits Volume : 496
Circulating Volume : 873
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 04:30
Flow Line Temp	96 ^F
Depth/TVD -m	1823.0/1823.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	39 @ 96 ^F
Plastic Visc -cps	11 @ 90 ^F
YP/R3 -lb/100ft2 /deg	12 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	5.7
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	5.8
Oil/Water -%vol	0 /94.2
Sand -%vol	.25
MBT -lb/bbl	15.0
pH	8.5 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .55
Chlorides -mg/l	18000
Hardness Ca	120
KCL %	3
K+	16040
SULPHITE	150
np Value	0.564
Kp -lb-sec^n/100ft2	0.73048
na Value	0.530
Ka -lb-sec^n/100ft2	0.89845

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	70.4
DC Critical Vel -m/min	86.6
Circ. Pressure -psi	1080
Bottoms Up -min	49.6
Total Circ Time -min	146.7

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	4
Potassm Chloride	25 KG S	70
Polypac R	25 KG S	10
OS-1	25 KG S	1

SOLIDS ANALYSIS

	(% / lb/bbl)
NaCl	0.2 / 2
KCl	1.1 / 10
Low Gravity Solids	6.7 / 61
Bentonite	1.1 / 10
Drill Solids	5.2 / 48
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.82 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	21
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	21
Desilter	4X12	19
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	:40
Water Added	:10	Solids	:103
Mud Built	:280	Dump	:64
Mud Received	:290		
Mud Disposed	:207		

Remarks :
Drill to and circ. samples at 1728, 1812, 1818.5 and 1823 Wiper trip to 1379m at 1794m.
Drilling progressed to 1823m, where a DST will be carried out. While drilling
to 1823m, the following happened:
1728 - circulate up sample, flow check for 5 mins.
1794 - circulate for 15 minutes, do wiper trip to 1379m. tight hole reamed at
1657, 1647 and 1628m.
1812 - circulate for 5 minutes, pull 2 stands and circulate up sample.
1818.5 - the same.
1823 - circulate hole.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 2260 Cumul Cost : 17167

WATER BASE MUD REPORT SUPPLEMENT - Day : 10

M-I Drilling Fluids Company — Date : 23/02/95 — Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : CIRC HOLE

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES	PRIMARY		
Sample From	FL 04:30	FL 12:30	FL 21:00
Flow Line Temp	96 ^F	36 ^F	37 ^F
Depth/TVD -m	1823.0/1823.0	1787.0	1818.0
Mud Wt -lb/gal	9.4	9.4	9.3
Funnel Vis -s/qt	39 @ 96 ^F	40 @ 97 ^F	39 @ 97 ^F
Plastic Visc -cps	11 @ 90 ^F	40 @ 90 ^F	12 @ 90 ^F
YP/R3 -lb/100ft2 /deg	12 / 2	13 / 2	12 / 2
10s/10m Gel -lb/100ft2	2 / 4	2 / 4	2 / 4
API F Loss -cc/30 min	5.7	6	6.3
HTHP F Loss -cc/30 min	@ ^F	@ ^F	@ ^F
Cake API/HT -1/32"	1	1	1
Solids -%vol	5.8	6	5.2
Oil/Water -%vol	0 /94.2	0 /94	0 /94.8
Sand -%vol	.25	.25	.25
MBT -lb/bbl	15.0	15.0	15.0
pH	8.5 @ 90 ^F	9 @ 90 ^F	9 @ 90 ^F
Alkal Mud (Pm)			
Pf/Mf	.1 / .55	.1 / .5	.1 / .6
Chlorides -mg/l	18000	19500	19000
Hardness Ca	120	80	80
KCL %	3	3.2	5.3
K+	16040	17300	18700
SULPHITE	150	150	150
np Value	0.564	0.811	0.585
Kp -lb-sec^n/100ft2	0.73048	0.36033	0.66847
na Value	0.530	0.712	0.540
Ka -lb-sec^n/100ft2	0.89845	0.66846	0.88501

Remarks :
Drill to and circ. samples at 1728, 1812, 1818.5 and 1823 Wiper trip to 1379m at 1794m.

M-I Sales Engineer : RIDLER.D.

FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 23-2 19 95 | DEPTH 1823

SPUD DATE 14-2 | PRESENT ACTIVITY Circ Hole

OPERATOR: GFE Resources	CONTRACTOR: Century	RIG NO.: 11	
REPORT FOR: Ken Smith	REPORT FOR: Roger Bindon	SECTION, TOWNSHIP, RANGE	
WELL NAME AND NO.: Vaughan #1	FIELD OR BLOCK NO.: Otway Basin	COUNTY, PARISH OR OFFSHORE AREA	STATE/PROVINCE: Victoria

DRILLING ASSEMBLY

BIT SIZE	TYPE	JET SIZE
8½	HTC ATJ05	11x3

DRILL PIPE SIZE	TYPE	LENGTH
4½	16.6#	1592
4½	HW	55

DRILL COLLAR SIZE	LENGTH
6¼	176

CASING

SURFACE	INTERMEDIATE	INTERMEDIATE	PRODUCTION OR LINER
9⅝ in. @ 329M ft.	in. @ ft.	in. @ ft.	in. @ ft.

MUD VOLUME (BBL)

HOLE	PITS
302	490

PIPE: 81

TOTAL CIRCULATING VOLUME: 873

IN STORAGE: | WEIGHT:

MUD TYPE: KCL Polymer

CIRCULATION DATA

PUMP SIZE	PUMP MAKE, MODEL	ASSUMED EFF.	ANNULAR VEL (ft/min)	CIRCULATION PRESSURE (psi)
5.5 x 7.75 IN. 6 x 8.5	NAT 8P80 7P50	95 %	DP 118 DC 185	1080

bbl/stk	stk/min	BOTTOMS UP (min) (strk)	TOTAL CIRC TIME (min) (strk)
0.054 0.0705	110	50	147

5.94 bbl/min | 250 gal/min

MUD PROPERTIES

Sample From	FL	☐ F.L. ☐ PIT	☐ F.L. ☐ PIT
Time Sample Taken	12:30	21:00	03:35
Flowline Temperature (°F)	36.1	37.2	36.1
Depth (M) (TVD)	1787M	1818	1823
Weight ☑ (ppg) ☐ (lb/cu ft)	9 (lb/gal)	9.3	9.3
Funnel Viscosity (sec/qt) API @ °F	40	39	38
Plastic Viscosity cp @ °F	13	12	12
Yield Point (lb/100 ft²)	13	12	10
Gel Strength (lb/100 ft²) 10 sec/10 min	2/4	2/4	2/3
Filtrate API (cm³/30 min)	6.0	6.3	6.4
API HTHP Filtrate (cm³/30 min) @ °F	—	—	—
Cake Thickness (32nd in. API/HTHP)	1/—	1/—	1/—
Solids Content (% by Vol) ☑ calculated ☐ short		5.2	5.2
Liquid Content (% by Vol) Oil/Water	0/94	0/94.8	0/94.8
Sand Content (% by Vol)	.25	.25	.25
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	15	15	15
pH ☑ Strip ☐ Meter @	9	9	9
Alkalinity Mud (P_m)			
Alkalinity Filtrate (P_f/M_f)	.1/.5	.1/.6	.1/.6
Chloride (mg/L)	19500	19000	19000
Total Hardness as Calcium (mg/L)	80	80	80
KCL % by Wt	3.2	3.5	3.5
K⁺ PPM	17300	18700	18700
Sulphite PPM	150	150	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.2 - 9.3	38 - 42	5 - 7

RECOMMENDED TOUR TREATMENT

- USING SUMP WATER PREMIXES TO REDUCE THE WEIGHT + MAINTAIN @ 9.3 to 9.3+.
- SLIGHT LOSSES TO HOLE OCCASIONALLY.

REMARKS

DRILL TO 1728M, CIRC UP SAMPLE + FLOW✓.
DRILL TO 1794M, CIRC 15 MIN - POOH FOR WIPER TRIP TO 1379M - HOLE TIGHT @ 1657, 1647, 1628M. - WORK TIGHT HOLE.
DRILL TO 1812M, CIRC 5 MIN, FLOW✓,
ROLL 2 STANDS TO CIRC BTMS UP
DRILL TO 1818.5M CIRC 5 MIN, FLOW✓
ROLL 2 STANDS + CIRC BTMS UP.
DRILL TO 1823M + CIRC. HOLE.

DESILTER UF 10.4 OF 9.3+ GPM 2.7
DESANDER UF OF GPM 1

PRODUCT INVENTORY

	KLV	PAC	CMC LV	CAUSTIC	0.5
STARTING INVENTORY	94	24	29	26	27
RECEIVED					
USED LAST 24 hr	70	10		4	1
CLOSING INVENTORY	24	14		22	26
COST LAST 24 hr	3082.80	1317.40		89.40	50.95
USED (from IADC)	902.70				

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh
SHAKER #2 / mesh
MUD CLEANER mesh
CENTRIFUGE hours
DESANDER 21 hours
DESILTER 19 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
Dave Ridler	09 325 4822		$2259.95	$17166.59

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)

Rig Up/Service	
Drilling	13.5
Reaming/Coring	
Circulating	7.5
Tripping	2
Survey	1
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	10
Mud Built (bbl)	280
Mud Received (bbl)	290
Mud Disposed (bbl)	207
SCE	103
Dump	64
Hole	40
Starting Depth	1679
Ending Depth	1823
New Hole Vol. (bbl)	33

SOLIDS ANALYSIS

Low Gravity %	5.8
Low Gravity, ppb	53
Bentonite %	1.2
Bentonite, ppb	10.6
Drill Solids %	4.3
Drill Solids, ppb	39.4
Shale CEC, ppb	—
D/B Ratio	7.3
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS

Zero Gel	2	Avg ROP	10	ECD @ 1F: 347			
n Factor	.58	% Cutting		Leak Off @ 21-9			
k Factor	.67	psi	%	hhp	HSI	Jet Vel	
Bit Hydraulics		691	64	101	1.78	288	
Annular Section		1	2	3	4	5	
Hole Size		8.681	8.5	8.5			
Pipe OD		4.5	4.5	6.25			
Critical Velocity		224	228	279			
Annular Velocity		111	118	185			
Viscosity		60	57	35			
Annular Pressure							

WATER BASE MUD REPORT - Day : 11

M-I Drilling Fluids Company — Date : 24/02/95 — Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DST #1

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1647 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 377
Pits Volume : 466
Circulating Volume : 843
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 03:35
Flow Line Temp	36 ^F
Depth/TVD -m	1823.0
Mud Wt -lb/gal	9.3
Funnel Vis -s/qt	38 @ 96 ^F
Plastic Visc -cps	12 @ 90 ^F
YP/R3 -lb/100ft2 /deg	10 / 2
10s/10m Gel -lb/100ft2	2 / 3
API F Loss -cc/30 min	6.4
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	5.2
Oil/Water -%vol	0 /94.8
Sand -%vol	.25
MBT -lb/bbl	15.0
pH	9 @ 90 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .6
Chlorides -mg/l	19000
Hardness Ca	80
KCL %	3.5
K+	18700
SULPHITE	150
np Value	0.628
Kp -lb-sec^n/100ft2	0.46851
na Value	0.521
Ka -lb-sec^n/100ft2	0.91271

CIRCULATION DATA

Flow Rate	-gal/min	
DP Annular Vel	-m/min	
DC Annular Vel	-m/min	
DP Critical Vel	-m/min	69.5
DC Critical Vel	-m/min	85.1
Circ. Pressure	-psi	
Bottoms Up	-min	
Total Circ Time	-min	

PRODUCTS USED LAST 24 HOURS

M-I Gel	25	KG S	22
Caustic Soda	25	KG S	3
Potassm Chloride	25	KG S	14
CMC TG LV	25	KG S	6
M-I Bar	25	KG S	30

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 1
KCl	1.3 / 12
Low Gravity Solids	5.8 / 53
Bentonite	1.2 / 11
Drill Solids	4.3 / 39
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.30 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	3.5
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	30
Water Added		Solids	
Mud Built		Dump	
Mud Received:			
Mud Disposed:	30		

Remarks :
12 stand wiper trip at 1823m, conduct DST #1.
A formation sample was circulated up, prior to doing a 12 stand wiper trip, at 1695, 1676 and 1657m tight hole was experienced. 2.5m of fill was on bottom. The hole was circulated for 5 minutes before pulling two stands and circulating bottoms up. The string was run in to bottom and a high viscosity pill spotted before pulling 6 stands, pumping a slug and pulling out of the hole. The 20 bbl high viscosity pill was made up of : Gel @ 13.75 ppb and Polypac @ 1.4 ppb. The DST tools were made up and ran into the hole, and DST #1 conducted. The hole was taking 1.5 to 2 bbls/hour during the test.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 968 Cumul Cost : 18135

WATER BASE MUD REPORT SUPPLEMENT - Day : 11

M-I Drilling Fluids Company - - Date : 24/02/95 Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DST #1

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From	:	FL 03:35	PIT 23:30
Flow Line Temp	:	36 ^F	^F
Depth/TVD -m	:	1823.0	1823.0
Mud Wt -lb/gal	:	9.3	9.3
Funnel Vis -s/qt	:	38 @ 96 ^F	38 @ 80 ^F
Plastic Visc -cps	:	12 @ 90 ^F	12 @ 80 ^F
YP/R3 -lb/100ft2 /deg	:	10 / 2	10 / 2
10s/10m Gel -lb/100ft2	:	2 / 3	2 / 3
API F Loss -cc/30 min	:	6.4	6.4
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F
Cake API/HT -1/32"	:	1	1
Solids -%vol	:	5.2	5.2
Oil/Water -%vol	:	0 /94.8	/94.8
Sand -%vol	:	.25	TR
MBT -lb/bbl	:	15.0	15.0
pH	:	9 @ 90 ^F	9 @ 80 ^F
Alkal Mud (Pm)	:		
Pf/Mf	:	.1 / .6	.1 / .6
Chlorides -mg/l	:	19000	19500
Hardness Ca	:	80	80
KCL %	:	3.5	3.5
K+	:	18700	18700
SULPHITE	:	150	120
	:		
np Value	:	0.628	0.628
Kp -lb-sec^n/100ft2	:	0.46851	0.46851
na Value	:	0.521	0.521
Ka -lb-sec^n/100ft2	:	0.91271	0.91271

Remarks :
12 stand wiper trip at 1823m, conduct DST #1.

M-I Sales Engineer : RIDLER.D. FDC4

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 24·2 19 95 | DEPTH 1823

SPUD DATE 14·2 | PRESENT ACTIVITY DST #1

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
STATE/PROVINCE	VICTORIA		

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE 8½	TYPE	JET SIZE	SURFACE 9⅝ in. @ 329M	HOLE 383	PITS 460	PUMP SIZE 5.5 X 7.75 IN. 6 · 8.5	ANNULAR VEL (ft/min) DP ____ DC ____
DRILL PIPE SIZE 4½	TYPE	LENGTH	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 843		PUMP MAKE, MODEL NAT 3 P50 & P80	ASSUMED EFF 95 % / CIRCULATION PRESSURE (psi)
DRILL PIPE SIZE 4½	TYPE	LENGTH	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 0.0702 stk/min	BOTTOMS UP (min) (strk)
DRILL COLLAR SIZE 6¼		LENGTH	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		bbl/min gal/min	TOTAL CIRC TIME (min) (strk)

MUD PROPERTIES	☐ F.L. ☐ PIT	☐ F.L. ☐ PIT
Sample From		
Time Sample Taken		23:30
Flowline Temperature (°F)		
Depth (ft) (TVD / ft)		1823
Weight (ppg) ☐ (lb/cu ft) ☐ (sp gr)		9.3
Funnel Viscosity (sec/qt) API @ °F		38
Plastic Viscosity cp @ °F		12
Yield Point (lb/100 ft²)		10
Gel Strength (lb/100 ft²) 10 sec/10 min	/	2/3
Filtrate API (cm³/30 min)		6.4
API HTHP Filtrate (cm³/30 min) @ °F		—
Cake Thickness (32nd in. API/HTHP)	/	1/—
Solids Content (% by Vol) calculated ☐ retort		5.2
Liquid Content (% by Vol) Oil/Water	/	0/94.8
Sand Content (% by Vol)		Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud		15
pH Strip ☐ Meter @ °F		9
Alkalinity Mud (P_m)		—
Alkalinity Filtrate (P_f/M_f)	/	0/1.6
Chloride (mg/L)		19500
Total Hardness as Calcium (mg/L)		80
KCL c/o by Wt		3.5
K⁺ PPM		18700
SULPHITE PPM		120

MUD PROPERTY SPECIFICATIONS		
WEIGHT	VISCOSITY	FILTRATE
9.2 - 9.3	38 - 42	5 - 7

RECOMMENDED TOUR TREATMENT

- MIXED 40 Bbls HI VIS WITH 1-4 PPB PAC AND 13-75 PPB GEL, IN ACTIVE MUD.
- 20 Bbls WERE SPOTTED ON BTM, AND 20 Bbls USED FOR SLUG.
- HOLE TAKING 1.5 - 2 Bbls/Hr DURING DST.

REMARKS

CIRC. UP SAMPLE, DO 12 STAND WIPER TRIP, HOLE TIGHT @ 1695, 1676 AND 1657 M. RIH (27M FILL). REAM TO BTM, CIRC 5MIN, PULL 2 STANDS & CIRC BTMS UP. RIH, SPOT 20 Bbls HI VIS ON BOTTOM. PULL 6 STANDS & PUMP SLUG. POOH.

MAKE UP DST TOOLS & RIH, CONDUCT DST #1.

DESILTER UF OF GPM

DESANDER UF OF GPM

PRODUCT INVENTORY	KCL	PAC	CMC L.V	CAUSTIC	OS.1	GEL	BARITE
STARTING INVENTORY	24	14	29	23	26	115	360
RECEIVED							
USED LAST 24 hr	14		6	3		22	30
CLOSING INVENTORY	10		23	19		93	330
COST LAST 24 hr	160.44		367.38	67.05		207.68	165.90
USED (from IADC)							

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 ____ / ____ mesh

MUD CLEANER ____ mesh

CENTRIFUGE ____ hours

DESANDER ____ hours

DESILTER ____ hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DALE RIDLER	09 325 4822		$968.45	$18,135.04

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	1	Water Added (bbl)		Low Gravity %	5.8
Drilling		Mud Built (bbl)		Low Gravity, ppb	52.7
Reaming/Coring		Mud Received (bbl)		Bentonite %	1.2
Circulating	3.5	Mud Disposed (bbl)	30	Bentonite, ppb	10.7
Tripping	9	HOLE	30	Drill Solids %	4.3
Survey				Drill Solids, ppb	39.1
Logging				Shale CEC, ppb	—
Running Casing				D/B Ratio	2.3
Testing	10.5	Starting Depth	1823	High Gravity %	
Fishing		Ending Depth		High Gravity, ppb	
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS						
Zero Gel		Avg ROP		ECD @ ____		
n Factor		% Cutting		Leak Off @ 21.9		
k Factor		psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size	8.681	8.5	8.5			
Pipe OD	4.5	4.5	6.25			
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

WATER BASE MUD REPORT - Day : 12

M-I Drilling Fluids Company — Date : 25/02/95 — Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : REAMING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1647 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 377
Pits Volume : 426
Circulating Volume : 803
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 23:15
Flow Line Temp	29 ^F
Depth/TVD -m	1823.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	40 @ 85 ^F
Plastic Visc -cps	13 @ 85 ^F
YP/R3 -lb/100ft2 /deg	10 / 2
10s/10m Gel -lb/100ft2	2 / 3
API F Loss -cc/30 min	6.2
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	5.2
Oil/Water -%vol	0 /94.8
Sand -%vol	TR
MBT -lb/bbl	15.0
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .6
Chlorides -mg/l	20000
Hardness Ca	80
KCL %	3.5
K+	18700
SULPHITE	120
np Value	0.646
Kp -lb-sec^n/100ft2	0.43693
na Value	0.530
Ka -lb-sec^n/100ft2	0.89845

CIRCULATION DATA

Flow Rate -gal/min		
DP Annular Vel -m/min		
DC Annular Vel -m/min		
DP Critical Vel -m/min		70.4
DC Critical Vel -m/min		86.6
Circ. Pressure -psi		
Bottoms Up -min		
Total Circ Time -min		

PRODUCTS USED LAST 24 HOURS

SOLIDS ANALYSIS

	(% / lb/bbl)
NaCl	0.1 / 2
KCl	1.3 / 12
Low Gravity Solids	6.5 / 59
Bentonite	1.1 / 10
Drill Solids	5.1 / 46
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.72 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	11.5
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	40
Water Added		Solids	
Mud Built		Dump	
Mud Received:			
Mud Disposed:	40		

Remarks :
Pull out test tools, change BHA, RIH reaming hole.
The test tools were pulled out of the hole, with fluid recovered at 19.8m.
The BOP's were pressure tested. The bit was re-run into the hole, and due to the stiffer drilling assembly, the hole was reamed from 646 to 1258m, with only 2 stands being run in (774 to 814m), there was high torque experienced from 1070 to 1076m.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 0 Cumul Cost : 18135

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 25.2 19 95 | DEPTH 1823

SPUD DATE 14.2 | PRESENT ACTIVITY REAM TO BTM.

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

BIT SIZE	TYPE	JET SIZE
8½	HTC ATJ05	11 x 3

DRILL PIPE SIZE	TYPE	LENGTH
4½	16.6#	1591
4½	HW	55

DRILL COLLAR SIZE 6¼ | LENGTH 177

CASING

SURFACE 9⅝ in. @ 329M ft.

INTERMEDIATE in. @ ft.

INTERMEDIATE in. @ ft.

PRODUCTION OR LINER in. @ ft.

MUD VOLUME (BBL)

HOLE	PITS
383	420

TOTAL CIRCULATING VOLUME 803

IN STORAGE | WEIGHT

MUD TYPE KCL POLYMER

CIRCULATION DATA

PUMP SIZE 5.5 x 7.75 IN. 6 x 8.5 | ANNULAR VEL (ft/min) DP DC

PUMP MAKE, MODEL NAT 7 P 50 8 P 80 | ASSUMED EFF 95 % | CIRCULATION PRESSURE (psi)

bbl/stk 0.054 0.0702 stk/min | BOTTOMS UP (min) (strk)

bbl/min gal/min | TOTAL CIRC TIME (min) (strk)

MUD PROPERTIES

	☐ F.L. ☐ PIT	☑ F.L. ☐ PIT
Sample From		
Time Sample Taken		23:15
Flowline Temperature (°F)		29.4
Depth (M) (TVD / ft)		1823
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)		9.3+
Funnel Viscosity (sec/qt) API @ °F		40
Plastic Viscosity cp @ °F		13
Yield Point (lb/100 ft²)		10
Gel Strength (lb/100 ft²) 10 sec/10 min	1	2 1 3
Filtrate API (cm³/30 min)		6.2
API HTHP Filtrate (cm³/30 min) @ °F		–
Cake Thickness (32nd in. API/HTHP)	1	1 1 –
Solids Content (% by Vol) ☑ calculated ☐ retort		5.2
Liquid Content (% by Vol) Oil/Water	1	0 94.8
Sand Content (% by Vol)		TR
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud		15
pH ☑ Strip ☐ Meter @ °F		9
Alkalinity Mud (P_m)		–
Alkalinity Filtrate (P_f/M_f)	1	.1 1.6
Chloride (mg/L)		20000
Total Hardness as Calcium (mg/L)		80
KCL % by Wt		3.5
K+ PPM		18700
SULPHITE PPM		120

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.2 - 9.3	38 - 45	5 - 7

RECOMMENDED TOUR TREATMENT

REMARKS

POOH WITH DST TOOLS, RECOVER FLUID @ 19.8M. LAY OUT TOOLS. PRESSURE TEST THE BOP'S. MAKE UP BIT RR3 + CHANGE BHA + RIH, WASH + REAM 646 TO 1258M (ONLY ABLE TO RUN 2 STANDS WITHOUT REAMING: 774 TO 816M), EXTREME TABLE TORQUE 1070 - 1076 M

DESILTER UF OF GPM

DESANDER UF OF GPM

PRODUCT INVENTORY	KCL	PAC	CMC L.V.	CAUSTIC	OS-1
STARTING INVENTORY	10	14	23	19	26
RECEIVED	320	32			
USED LAST 24 hr					
CLOSING INVENTORY	330	46			
COST LAST 24 hr					
USED (from IADC)					

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER hours

DESILTER hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	03 3254822		$ 0	$ 18135.04

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)

Rig Up/Service	1
Drilling	
Reaming/~~Coring~~	11.5
Circulating	
Tripping	7.5
Survey	
Logging	
Running Casing	
Testing	3
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	
Mud Built (bbl)	
Mud Received (bbl)	
Mud Disposed (bbl)	40
HOLE	40
Starting Depth	1823
Ending Depth	
New Hole Vol. (bbl)	

SOLIDS ANALYSIS

Low Gravity %	6.1
Low Gravity, ppb	55.9
Bentonite %	1.1
Bentonite, ppb	10.3
Drill Solids %	4.7
Drill Solids, ppb	42.6
Shale CEC, ppb	–
D/B Ratio	2.5
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS

Zero Gel	2	Avg ROP		ECD @		
n Factor	.665	% Cutting		Leak Off @	21.9	
k Factor	.144	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size	8.681	8.5	8.5			
Pipe OD	4.5	4.5	6.25			
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

WATER BASE MUD REPORT - Day : 13

M-I Drilling Fluids Company — Date : 26/02/95 — Depth : 1823.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : REAMING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1647 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 377
Pits Volume : 346
Circulating Volume : 723
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 22:30
Flow Line Temp	31 ^F
Depth/TVD -m	1823.0/1823.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	39 @ 85 ^F
Plastic Visc -cps	12 @ 85 ^F
YP/R3 -lb/100ft2 /deg	12 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	5.9
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	6.5
Oil/Water -%vol	0 /93.5
Sand -%vol	.25
MBT -lb/bbl	15.0
pH	8.5 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.05 / .65
Chlorides -mg/l	20000
Hardness Ca	80
KCL %	3.5
K+	18700
SULPHITE	120
np Value	0.585
Kp -lb-sec^n/100ft2	0.66847
na Value	0.540
Ka -lb-sec^n/100ft2	0.88501

CIRCULATION DATA

Flow Rate -gal/min	238
DP Annular Vel -m/min	34.2
DC Annular Vel -m/min	53.6
DP Critical Vel -m/min	71.0
DC Critical Vel -m/min	87.9
Circ. Pressure -psi	1000
Bottoms Up -min	52.1
Total Circ Time -min	127.6

PRODUCTS USED LAST 24 HOURS

Potassm Chloride	25 KG S 10
Polypac R	25 KG S 2

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 2
KCl	1.3 / 12
Low Gravity Solids	6.5 / 59
Bentonite	1.1 / 10
Drill Solids	5.1 / 46
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.72 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	14.5
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	100
Water Added	10	Solids	
Mud Built	80	Surface	90
Mud Received	40		
Mud Disposed	190		

Remarks :
Ream to 1478, POOH, change BHA, RIH ream hole.
The hole was reamed to 1478m, where the string was pulled to change the BHA.
The string was run in to 1516m, where a bridge was reamed to 1574m. The drill pipe was then run into 1574m, where reaming recommenced.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 378 Cumul Cost : 18513

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 26·2 19 95 | DEPTH 1823

SPUD DATE 14.2 | PRESENT ACTIVITY REAM TO BTM

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE 8 1/2	TYPE HTC ATJ05	JET SIZE 11 x 3	SURFACE 9 5/8 in. @ 329 M ft.	HOLE Pipe 302 81	PITS 340	PUMP SIZE 5.5 x 7.75 IN. 6 x 8.5	ANNULAR VEL (ft/min) DP 112 DC 176
DRILL PIPE SIZE 4 1/2	TYPE 16.6#	LENGTH 1519	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 723		PUMP MAKE, MODEL NAT 8P80	ASSUMED EFF 95 %
DRILL PIPE SIZE 4 1/2	TYPE HW	LENGTH 55	INTERMEDIATE in. @ ft.	IN STORAGE 40	WEIGHT 8.4	bbl/stk 0.054 0.0702	105 stk/min
DRILL COLLAR SIZE 6 1/4		LENGTH 176	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		5.67 bbl/min	238 gal/min

CIRCULATION DATA: CIRCULATION PRESSURE (psi) 1000; BOTTOMS UP (min) (strk) 45; TOTAL CIRC TIME (min) (strk) 127

MUD PROPERTIES		
Sample From	☑ F.L. ☐ PIT	☑ F.L. ☐ PIT
Time Sample Taken	22:30	05:00
Flowline Temperature (°F)	31.6	32.2
Depth (ft) M (TVD / ft)	x	⊗
Weight ☐ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	9.4+	9.4
Funnel Viscosity (sec/qt) API @ °F	39	38
Plastic Viscosity cp @ °F	12	11
Yield Point (lb/100 ft²)	12	8
Gel Strength (lb/100 ft²) 10 sec/10 min	2 14	2 13
Filtrate API (cm³/30 min)	5.9	6.2
API HTHP Filtrate (cm³/30 min) @ °F	—	—
Cake Thickness (32nd in. API/HTHP)	1 1—	1—
Solids Content (% by Vol) ☑ calculated ☐ retort	6.5	6
Liquid Content (% by Vol) Oil/Water	0 93.5	0 94
Sand Content (% by Vol)	-25	Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	15	15
pH ☑ Strip ☐ Meter @ °F	8.5	9
Alkalinity Mud (P_m)	—	—
Alkalinity Filtrate (P_f/M_f)	.05 1.65	.1 1.65
Chloride (mg/L)	20000	20000
Total Hardness as Calcium (mg/L)	80	80
KCL % by Wt	3.5	3.5
K+ PPM	18700	18700
SULPHITE PPM	120	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.2-9.3	38 - 42	5 - 7

RECOMMENDED TOUR TREATMENT

x REAMING @ 1600M.
-- THE 190 BBLS OF MUD LOST ATTRIBUTED TO THE HOLE AND MUD LOST DURING REAMING (ON CONNECTION)
⊗ REAMING @ 1699 M.

REMARKS

REAM TO 1478M POOH + CHANGE BHA RIH TO 1516 REAM BRIDGE TO 1535M. RIH TO 1574 REAM TO 1641M.

1 DESILTER UF OF GPM
1 DESANDER UF OF GPM

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	BS.1										
STARTING INVENTORY	330	46	23	19	26										
RECEIVED															
USED LAST 24 hr	10	2													
CLOSING INVENTORY	320	44													
COST LAST 24 hr	114 60	263. 48													
USED (from IADC)															

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh
SHAKER #2 ____ / ____ mesh
MUD CLEANER ____ mesh
CENTRIFUGE ____ hours
DESANDER ____ hours
DESILTER ____ hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 3254822		$378.08	$18513.12

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	0.5	Water Added (bbl)	10	Low Gravity %	6.5
Drilling		Mud Built (bbl)	80	Low Gravity, ppb	59.4
Reaming/Coring	14.5	Mud Received (bbl)	40	Bentonite %	1.1
Circulating		Mud Disposed (bbl)	190	Bentonite, ppb	9.8
Tripping	9	HOLE	180	Drill Solids %	5.1
Survey		SURFACE	40	Drill Solids, ppb	46.5
Logging				Shale CEC, ppb	—
Running Casing				D/B Ratio	2.8
Testing		Starting Depth	1823	High Gravity %	0
Fishing		Ending Depth		High Gravity, ppb	0
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS

Zero Gel	1	Avg ROP	—	ECD @ TD: 318		
n Factor	.66	% Cutting		Leak Off @ 21.9		
k Factor	.33	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics		633	63	88	1.55	274
Annular Section		1	2	3	4	5
Hole Size		8.681	8.5	8.5		
Pipe OD		4.5	4.5	6.25		
Critical Velocity		166	169	222		
Annular Velocity		106	112	176		
Viscosity		41	39	27		
Annular Pressure		5.2	20	10.2		

WATER BASE MUD REPORT - Day : 14

M-I Drilling Fluids Company — Date : 27/02/95 — Depth : 1918.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : DRILLING

Operator : GAS & FUEL EXPLOR
Contractor : CENTURY RIG 11
Description : WILDCAT
Well Name : VAUGHAN 1
Field/Area : PPL-1
Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1742 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 397
Pits Volume : 433
Circulating Volume : 830
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 05:00
Flow Line Temp	32 ^F
Depth/TVD -m	1918.0/1918.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	38 @ 85 ^F
Plastic Visc -cps	11 @ 85 ^F
YP/R3 -lb/100ft2 /deg	8 / 1
10s/10m Gel -lb/100ft2	2 / 3
API F Loss -cc/30 min	6.2
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	6
Oil/Water -%vol	0 /94
Sand -%vol	TR
MBT -lb/bbl	15.0
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .65
Chlorides -mg/l	20000
Hardness Ca	80
KCL %	3.5
K+	18700
SULPHITE	150
np Value	0.659
Kp -lb-sec^n/100ft2	0.33368
na Value	0.639
Ka -lb-sec^n/100ft2	0.37603

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	51.6
DC Critical Vel -m/min	67.7
Circ. Pressure -psi	1075
Bottoms Up -min	52.2
Total Circ Time -min	139.4

PRODUCTS USED LAST 24 HOURS

Caustic Soda	25 KG S	3
Potassm Chloride	25 KG S	40
CMC TG LV	25 KG S	9
Polypac R	25 KG S	15
OS-1	25 KG S	2

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 2
KCl	1.3 / 12
Low Gravity Solids	6.5 / 59
Bentonite	1.1 / 10
Drill Solids	5.1 / 46
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.72 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	23
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	20
Desilter	4X12	20
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	100
Water Added	50	Solids	83
Mud Built	400	Surface	140
Mud Received	500		
Mud Disposed	323		

Remarks :
Ream to 1823m, drill ahead, circ. samples at 1869 + 1884. Heavy dilution of mud to control mud weight. Reaming continued to 1823m, while at 1714m, the pipe became stuck and was jarred free. Drilling continued to 1918m, with formation samples being circulated up at 1869 and 1884m. At 1869m the mud was circulated for 5 mins, the well checked for flow, before pulling 2 stands to circulate. At 1884m the mud was circulated for 5 mins, the well checked for flow, before pulling 3 stands to circulate. It was requested to keep the mud weight below 9.35 ppg, to achieve this required constant additions of premix (with sump water as the base).

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 3155 Cumul Cost : 21668

WATER BASE MUD REPORT SUPPLEMENT - Day : 14

M-I Drilling Fluids Company - - Date : 27/02/95 Depth : 1918.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : DRILLING

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY		
Sample From	:	FL 05:00	FL 12:30	FL 22:00
Flow Line Temp	:	32 ^F	34 ^F	95 ^F
Depth/TVD -m	:	1918.0/1918.0	1859.0	1906.0
Mud Wt -lb/gal	:	9.4	9.4	9.4
Funnel Vis -s/qt	:	38 @ 85 ^F	40 @ 93 ^F	38 @ 93 ^F
Plastic Visc -cps	:	11 @ 85 ^F	14 @ 90 ^F	12 @ 90 ^F
YP/R3 -lb/100ft2 /deg	:	8 / 1	11 / 2	11 / 1
10s/10m Gel -lb/100ft2	:	2 / 3	2 / 4	1 / 3
API F Loss -cc/30 min	:	6.2	5.6	5.8
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F	@ ^F
Cake API/HT -1/32"	:	1	1	1
Solids -%vol	:	6	6	5.7
Oil/Water -%vol	:	0 /94	0 /94	0 /94.3
Sand -%vol	:	TR	TR	TR
MBT -lb/bbl	:	15.0	15.0	15.0
pH	:	9 @ 80 ^F	9 @ 90 ^F	9.5 @ 90 ^F
Alkal Mud (Pm)	:			
Pf/Mf	:	.1 / .65	.1 / .6	.15 / .8
Chlorides -mg/l	:	20000	21000	20000
Hardness Ca	:	80	120	80
KCL %	:	3.5	3.5	3.5
K+	:	18700	18700	18700
SULPHITE	:	150	150	150
	:			
np Value	:	0.659	0.641	0.605
Kp -lb-sec^n/100ft2	:	0.33368	0.48940	0.56288
na Value	:	0.639	0.548	0.681
Ka -lb-sec^n/100ft2	:	0.37603	0.87230	0.35143

Remarks :
Ream to 1823m, drill ahead, circ. samples at 1869 + 1884. Heavy dilution of mud to control mud weight.

M-I Sales Engineer : RIDLER.D. FDC4

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 27.2 19 95 | DEPTH 1918 | SPUD DATE 14.2 | PRESENT ACTIVITY DRILLING

OPERATOR: GFE RESOURCES | CONTRACTOR: CENTURY | RIG NO. 11

REPORT FOR: KEN SMITH | REPORT FOR: ROGER BINDON | SECTION, TOWNSHIP, RANGE

WELL NAME AND NO.: VAUGHAN #1 | FIELD OR BLOCK NO.: OTWAY BASIN | COUNTY, PARISH OR OFFSHORE AREA | STATE/PROVINCE: VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE 8 1/2	TYPE HTC ATJ05	JET SIZE 11 x 3	SURFACE 9 5/8 in. @ 329M ft.	HOLE PIPE	PITS X	PUMP SIZE 5.5 x 7.75 IN. 6 x 8.5	ANNULAR VEL (ft/min) DP 118 DC 185
				320 86	42.4		
DRILL PIPE SIZE 4 1/2	TYPE 16.6#	LENGTH 1708	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 830		PUMP MAKE, MODEL NAT 7P50 8P80	ASSUMED EFF 95 %	CIRCULATION PRESSURE (psi) 1075
DRILL PIPE SIZE 4 1/2	TYPE HW	LENGTH 55	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 / 0.0702 x 110 stk/min	BOTTOMS UP (min) (strk) 54
DRILL COLLAR SIZE 6 1/4		LENGTH 176	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		5.94 bbl/min 250 gal/min	TOTAL CIRC TIME (min) (strk) 140

MUD PROPERTIES			
Sample From	FL	☑ F.L. ☐ PIT	☑ F.L. ☐ PIT
Time Sample Taken	12:30	22:00	04:15
Flowline Temperature (°F)	33-9	35	38-9
Depth (M) (TVD)	1859M	1906	1939
Weight ☑ (ppg) ☐ (lb/cu ft)	9+ (gr)	9.3+	9.3+
Funnel Viscosity (sec/qt) API @ °F	40	38	37
Plastic Viscosity cp @ °F	14	12	12
Yield Point (lb/100 ft²)	11	11	7
Gel Strength (lb/100 ft²) 10 sec/10 min	2/4	1/3	1/3
Filtrate API (cm³/30 min)	5.6	5.8	6.2
API HTHP Filtrate (cm³/30 min) @ °F	—	—	—
Cake Thickness (32nd in. API/HTHP)	1/-	1/-	1/-
Solids Content (% by Vol) ☐ calculated ☐ retort		5.7	5.7
Liquid Content (% by Vol) Oil/Water	0/94	0 / 94.3	0 / 94.3
Sand Content (% by Vol)	Tr	Tr	Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	15	15	15
pH ☑ Strip ☐ Meter @	9	9.5	
Alkalinity Mud (P_m)	—	—	—
Alkalinity Filtrate (P_f/M_f)	.01/.6	.15/1.8	.15/1.8
Chloride (mg/L)	21000	20000	18500
Total Hardness as Calcium (mg/L)	120	80	120
KCL % by Wt	3.5	3.5	3.2
K PPM	18700	18700	17300
SULPHITE PPM	150	150	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.3 - 9.3+	38 - 42	5 - 7

RECOMMENDED TOUR TREATMENT

× YEST. PIT VOL SHOULD HAVE READ 270 Bbl.
TOTAL VOL = 653 Bbl.
• HAVING TO DILUTE HEAVILY TO MAINTAIN 9.3 - 9.3+ MUDWEIGHT. USING PAC FOR RHEOLOGY + WATER LOSS CONTROL.

REMARKS

REAM TO 1823M (PIPE STUCK @ 17K+ WORK JARS). CIRC 15 MIN + DRG AHEAD TO 1869M - CIRC 5 MIN, FLOW ✓ PULL 25T. OVER CIRC BTMS UP
DRILL TO 1884, CIRC 5 MIN, PULL 3 STDS CIRC BTMS UP ✓ FLOW ✓
DRILL TO 1918M.

RESILTER UF 10.3 OF 9.3 GPM 2.7
RESANDER UF 14 OF 9.3 GPM 0.2

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	BS1
STARTING INVENTORY	320	44	23	19	26
RECEIVED					
USED LAST 24 hr	40	15	9	3	2
CLOSING INVENTORY	280	29	14	16	24
COST LAST 24 hr	458.40	1976.10	551.07	67.05	101.90
USED (from IADC)					

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh
SHAKER #2 ____ / ____ mesh
MUD CLEANER ____ mesh
CENTRIFUGE ____ hours
DESANDER 20 hours
DESILTER 20 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	325 4822		$ 3154.52	$ 21,667.64

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)	
Rig Up/Service	1
Drilling	12
Reaming/Coring	8.5
Circulating	2.5
Tripping	
Survey	
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING	
Water Added (bbl)	50
Mud Built (bbl)	400
Mud Received (bbl)	500
Mud Disposed (bbl)	323
SCE	83
HOLE	100
DUMP	140
Starting Depth	1823
Ending Depth	1918
New Hole Vol. (bbl)	22

SOLIDS ANALYSIS	
Low Gravity %	6.3
Low Gravity, ppb	56.9
Bentonite %	1.1
Bentonite, ppb	10.1
Drill Solids %	4.8
Drill Solids, ppb	43.8
Shale CEC, ppb	—
D/B Ratio	2.6
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS							
Zero Gel	1	Avg ROP	8	ECD @ 1F: 34-8			
n Factor	.71	% Cutting		Leak Off @ 21-9			
k Factor	.25	psi	%	hhp	HSI	Jet Vel	
Bit Hydraulics		694	65	101	1.78	288	
Annular Section		1	2	3	4	5	
Hole Size		8.681	8.5	8.5			
Pipe OD		4.5	4.5	6.25			
Critical Velocity		167	170	223			
Annular Velocity		111	113	185			
Viscosity		40	39	27			
Annular Pressure		54	280	10.5			

WATER BASE MUD REPORT - Day : 15

M-I Drilling Fluids Company — Date : 28/02/95 — Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : WIPER TRIP

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1854 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 421
Pits Volume : 498
Circulating Volume : 919
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From		FL 04:15
Flow Line Temp		39 ^F
Depth/TVD	-m	2030.0/2030.0
Mud Wt	-lb/gal	9.4
Funnel Vis	-s/qt	37 @ 90 ^F
Plastic Visc	-cps	12 @ 85 ^F
YP/R3	-lb/100ft2 /deg	7 / 1
10s/10m Gel	-lb/100ft2	1 / 3
API F Loss	-cc/30 min	6.2
HTHP F Loss	-cc/30 min	@ ^F
Cake API/HT	-1/32"	1
Solids	-%vol	5.7
Oil/Water	-%vol	0 /94.3
Sand	-%vol	TR
MBT	-lb/bbl	15.0
pH		9.5 @ 80 ^F
Alkal Mud (Pm)		
Pf/Mf		.15 / .8
Chlorides	-mg/l	18500
Hardness Ca		120
KCL %		3.2
K+		17300
SULPHITE		150
np Value		0.706
Kp	-lb-sec^n/100ft2	0.24848
na Value		0.639
Ka	-lb-sec^n/100ft2	0.37603

CIRCULATION DATA

Flow Rate	-gal/min	250
DP Annular Vel	-m/min	35.9
DC Annular Vel	-m/min	56.3
DP Critical Vel	-m/min	51.8
DC Critical Vel	-m/min	67.9
Circ. Pressure	-psi	1090
Bottoms Up	-min	55.4
Total Circ Time	-min	154.4

PRODUCTS USED LAST 24 HOURS

M-I Gel	25	KG S	45
Caustic Soda	25	KG S	3
Polypac R	25	KG S	9
OS-1	25	KG S	3

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1	1
KCl	1.2	12
Low Gravity Solids	6.6	60
Bentonite	1.1	10
Drill Solids	5.2	47
Weight Material	N/A	N/A
Chemical Conc	-	3.5

Inert/React : 2.78 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	21
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	16
Desilter	4X12	16
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	34
Water Added	40	Solids	72
Mud Built	170	Surface	15
Mud Received	210		
Mud Disposed	121		

Remarks :
Drill to TD of 2030m, circ samples at 1939 + 2001M. Wiper trip encountered tight hole.
The total depth of 2030m was reached with samples having been circulated at;
1939m - the mud was circulated for 10 mins before pulling 2 stands and
circulating bottoms up. The well was flow checked before drilling ahead.
2001m - the mud was circulated for 5 mins and the well flow checked before
pulling 2 stands and circulating bottoms up.
At TD, bottoms up was circulated before doing a 33 stand wiper trip, which
encountered tight hole at; 1641 - 1670, 1699 - 1718, 1880 - 1842m. With
back-reaming necessary 1766 - 1785m. While drilling to TD, the mud was
treated with a premix of PHG, to improve the properties for logging.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1830 Cumul Cost : 23498

WATER BASE MUD REPORT SUPPLEMENT - Day : 15

M-I Drilling Fluids Company - - Date : 28/02/95 Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : WIPER TRIP

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From		FL 04:15	FL 12:30
Flow Line Temp		39 ^F	37 ^F
Depth/TVD	-m	2030.0/2030.0	1984.0
Mud Wt	-lb/gal	9.4	9.4
Funnel Vis	-s/qt	37 @ 90 ^F	39 @ 95 ^F
Plastic Visc	-cps	12 @ 85 ^F	13 @ 90 ^F
YP/R3	-lb/100ft2 /deg	7 / 1	8 / 1
10s/10m Gel	-lb/100ft2	1 / 3	2 / 4
API F Loss	-cc/30 min	6.2	5.8
HTHP F Loss	-cc/30 min	@ ^F	@ ^F
Cake API/HT	-1/32"	1	1
Solids	-%vol	5.7	6
Oil/Water	-%vol	0 /94.3	0 /94
Sand	-%vol	TR	TR
MBT	-lb/bbl	15.0	15.0
pH		9.5 @ 80 ^F	9 @ 90 ^F
Alkal Mud (Pm)			
Pf/Mf		.15 / .8	.1 / .8
Chlorides	-mg/l	18500	18000
Hardness Ca		120	120
KCL %		3.2	3
K+		17300	16040
SULPHITE		150	150
np Value		0.706	0.695
Kp	-lb-sec^n/100ft2	0.24848	0.29435
na Value		0.639	0.661
Ka	-lb-sec^n/100ft2	0.37603	0.36294

Remarks :
Drill to TD of 2030m, circ samples at 1939 + 2001M. Wiper trip encountered tight hole.

M-I Sales Engineer : RIDLER.D. FDC4

Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 28.2 19 95 | DEPTH 2030M (TD)

SPUD DATE 14.2 | PRESENT ACTIVITY WIPER TRIP

OPERATOR	GFE RESOURCES	CONTRACTOR	CENTURY RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR	ROGER BINDON SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO.	OTWAY BASIN COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

BIT SIZE	TYPE	JET SIZE
8½	HTC ATJ05	11×3

DRILL PIPE SIZE	TYPE	LENGTH
4½	16.6#	1799
4½	H.W.	55

DRILL COLLAR SIZE: 6¼ | LENGTH: 176

CASING

SURFACE: 9⅝ in. @ 329M

INTERMEDIATE: in. @ ft.

INTERMEDIATE: in. @ ft.

PRODUCTION OR LINER: in. @ ft.

MUD VOLUME (BBL)

HOLE	PIPE	PITS
343	91	485

TOTAL CIRCULATING VOLUME: 919

IN STORAGE: | WEIGHT:

MUD TYPE: KCL POLYMER

CIRCULATION DATA

PUMP SIZE: 5.5 X 7.75 IN. / 6 × 8.5

ANNULAR VEL (ft/min): DP 118 DC 185

PUMP MAKE, MODEL: NAT 7 P 50 / 8 P 80

ASSUMED EFF: 95 %

CIRCULATION PRESSURE (psi): 1090

bbl/stk: 0.054 / 0.0702 × 110 stk/min

BOTTOMS UP (min) (strk): 58

5.94 bbl/min 250 gal/min

TOTAL CIRC TIME (min) (strk): 155

MUD PROPERTIES

Sample From	☒ F.L. ☐ PIT	☒ F.L. ☐ PIT
Time Sample Taken	12:30	02:40
Flowline Temperature (°C)	37.2	34.4
Depth (M) (TVD / ft)	9.4	9.3+
Weight ☒ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	1984	2030
Funnel Viscosity (sec/qt) API @ °F	39	40
Plastic Viscosity cp @ °F	13	12
Yield Point (lb/100 ft²)	8	11
Gel Strength (lb/100 ft²) 10 sec/10 min	2 14	2 14
Filtrate API (cm³/30 min)	5.8	5.8
API HTHP Filtrate (cm³/30 min) @ °F	—	—
Cake Thickness (32nd in. API/HTHP)	1 / —	1 / —
Solids Content (% by Vol) ☒ calculated ☐ retort	5%	5%
Liquid Content (% by Vol) Oil/Water	0 / 94	0 / 94.2
Sand Content (% by Vol)	Tr	Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud	15	17.5
pH ☒ Strip ☐ Meter @ °F	9	9
Alkalinity Mud (P_m)	—	—
Alkalinity Filtrate (P_f/M_f)	.1 / 1.8	.1 / 1.8
Chloride (mg/L)	18000	18500
Total Hardness as Calcium (mg/L)	120	80
KCL % by Wt	3.0	3.2
K^+ PPM	16040	17300
SULPHITE PPM	150	150

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.3-9.3+	38-42	5-7

RECOMMENDED TOUR TREATMENT

- MIXED 70 BBL OF PRE HYDRATED GEL (~3 LB/BBL IN SYSTEM) TO GIVE THE MUD BETTER RHEOLOGY FOR LOGGING.

REMARKS

DRILL TO 1939M, CIRC 10 MIN, PULL 7 ST. + CIRC UP SAMPLE. RIH, FLOW V, DRILL AHEAD.

DRILL TO 2001M, CIRC 5 MIN, FLOW V, PULL 2 ST. CIRC UP SAMPLE

DRILL AHEAD TO TD OF 2030M

CIRC BTMS UP DO 33 ST. WIPER TRIP, BACK REAM 1766-1785, TIGHT HOLE 1699-1718 & 1641-1670 + 1880-1847. PULL BACK TO 1369M (20-25,000 LBS OVER PULL).

DESILTER UP 10.5 OF 9.7 GPM 2.7

DESANDER UP 13.5 OF 9.3 GPM 0.5

PRODUCT INVENTORY

	KCL	PAC	CMC L.V.	CAUSTIC	SOD. BI	GEL
STARTING INVENTORY	280	29	14	16	24	93
RECEIVED						
USED LAST 24 hr		9		3	4	45
CLOSING INVENTORY		20		13	20	48
COST LAST 24 hr		1185.66		67.05	152.85	434.80
USED (from IADC)						

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER 16 hours

DESILTER 16 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$1830.36	$23,498.00

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)

Rig Up/Service	0.5
Drilling	16
Reaming/Coring	
Circulating	4.5
Tripping	3
Survey	
Logging	
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)	40
Mud Built (bbl)	170
Mud Received (bbl)	210
Mud Disposed (bbl)	121
SCE	72
DUMP	15
HOLE	34
Starting Depth	1918
Ending Depth	2030
New Hole Vol. (bbl)	26

SOLIDS ANALYSIS

Low Gravity %	6.3
Low Gravity, ppb	56.9
Bentonite %	1.4
Bentonite, ppb	12.9
Drill Solids %	4.5
Drill Solids, ppb	41
Shale CEC, ppb	—
D/B Ratio	2.1
High Gravity %	0
High Gravity, ppb	0

MUD RHEOLOGY and HYDRAULICS

Zero Gel 2 | Avg ROP 7 | ECD @ 1F: 348

n Factor .6 | % Cutting | Leak Off @ 21.9

k Factor .56

	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics	694	64	101	1.78	288

Annular Section	1	2	3	4	5
Hole Size	8.681	8.5	8.5		
Pipe OD	4.5	4.5	6.25		
Critical Velocity	178	182	245		
Annular Velocity	111	118	185		
Viscosity	45	43.2	31		
Annular Pressure	6	29.4	17.1		

WATER BASE MUD REPORT - Day : 16

M-I Drilling Fluids Company — Date : 01/03/95 — Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : POOH

Operator : GAS & FUEL EXPLOR
Contractor : CENTURY RIG 11
Description : WILDCAT
Well Name : VAUGHAN 1
Field/Area : PPL-1
Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1854 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 421
Pits Volume : 462
Circulating Volume : 883
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 02:40
Flow Line Temp	37 ^F
Depth/TVD -m	2030.0
Mud Wt -lb/gal	9.4
Funnel Vis -s/qt	39 @ 90 ^F
Plastic Visc -cps	12 @ 85 ^F
YP/R3 -lb/100ft2 /deg	11 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	5.8
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	5.8
Oil/Water -%vol	0 /94.2
Sand -%vol	TR
MBT -lb/bbl	17.5
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .8
Chlorides -mg/l	18500
Hardness Ca	80
KCL %	3.2
K+	17300
SULPHITE	150
np Value	0.605
Kp -lb-sec^n/100ft2	0.56288
na Value	0.530
Ka -lb-sec^n/100ft2	0.89845

CIRCULATION DATA

Flow Rate -gal/min	236
DP Annular Vel -m/min	33.9
DC Annular Vel -m/min	53.1
DP Critical Vel -m/min	70.4
DC Critical Vel -m/min	86.6
Circ. Pressure -psi	1070
Bottoms Up -min	58.7
Total Circ Time -min	157.1

PRODUCTS USED LAST 24 HOURS

M-I Gel	25	KG S	5
Caustic Soda	25	KG S	1
Potassm Chloride	25	KG S	38
Polypac R	25	KG S	3
M-I Bar	25	KG S	70

SOLIDS ANALYSIS

	(% / lb/bbl)
NaCl	0.1 / 1
KCl	1.2 / 11
Low Gravity Solids	6.6 / 60
Bentonite	1.4 / 13
Drill Solids	4.9 / 44
Weight Material	N/A / N/A
Chemical Conc	- / 3.5

Inert/React : 2.25 Average SG : 2.60

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	61
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	84
Water Added		Solids	
Mud Built	80	Surface	32
Mud Received	80		
Mud Disposed	116		

Remarks :
RIH, circ hole, POOH. Logs unable to pass 1540m. RIH for wiper trip. POOH. On the trip back in, the hole had to be reamed from 1877 to 1890m, 12m of fill was on bottom. The hole was circulated clean, checked for flow, then a slug was pumped and the string pulled out. The logging tools were rigged up and run in to the hole, but were unable to pass 1540m. A wiper trip was made, with the hole being reamed from 1547 to 1614 and 1710 to 1743m (8m of fill was found on bottom). The hole was circulated clean prior to pulling to 1590m and spotting a 40 bbl high viscosity pill, 10 stands were then pulled and a slug pumped to continue the trip out.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1287 Cumul Cost : 24785

WATER BASE MUD REPORT SUPPLEMENT - Day : 16

M-I Drilling Fluids Company - - Date : 01/03/95 Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM Well No. : 00002 Spud Date : 14/02/95 Activity : POOH

Operator : GAS & FUEL EXPLOR Contractor : CENTURY RIG 11 Description : WILDCAT
Well Name : VAUGHAN 1 Field/Area : PPL-1 Location : OTWAY BASIN
Report For: SMITH.K.

MUD PROPERTIES		PRIMARY	
Sample From	:	FL 02:40	FL 20:45
Flow Line Temp	:	37 ^F	34 ^F
Depth/TVD -m	:	2030.0	2030.0
Mud Wt -lb/gal	:	9.4	9.4
Funnel Vis -s/qt	:	39 @ 90 ^F	40 @ 90 ^F
Plastic Visc -cps	:	12 @ 85 ^F	14 @ 85 ^F
YP/R3 -lb/100ft2 /deg	:	11 / 2	11 / 2
10s/10m Gel -lb/100ft2	:	2 / 4	2 / 4
API F Loss -cc/30 min	:	5.8	6.2
HTHP F Loss -cc/30 min	:	@ ^F	@ ^F
Cake API/HT -1/32"	:	1	1
Solids -%vol	:	5.8	6
Oil/Water -%vol	:	0 /94.2	0 /94
Sand -%vol	:	TR	TR
MBT -lb/bbl	:	17.5	17.5
pH	:	9 @ 80 ^F	9 @ 80 ^F
Alkal Mud (Pm)	:		
Pf/Mf	:	.1 / .8	.1 / .7
Chlorides -mg/l	:	18500	17500
Hardness Ca	:	80	80
KCL %	:	3.2	3.2
K+	:	17300	17300
SULPHITE	:	150	130
	:		
np Value	:	0.605	0.641
Kp -lb-sec^n/100ft2	:	0.56288	0.48940
na Value	:	0.530	0.548
Ka -lb-sec^n/100ft2	:	0.89845	0.87230

Remarks :
RIH, circ hole, POOH. Logs unable to pass 1540m. RIH for wiper trip. POOH.

M-I Sales Engineer : RIDLER.D. FDC4

M-I Drilling Fluids Co.
Magcobar/IMCO A Dresser/Halliburton Company
P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE	1.3.1995
DEPTH	2030M (TD)
SPUD DATE	14.2
PRESENT ACTIVITY	POOH
OPERATOR	GFE RESOURCES
CONTRACTOR	CENTURY
RIG NO.	11
REPORT FOR	KEN SMITH
REPORT FOR	ROGER BINDON
SECTION, TOWNSHIP, RANGE	
WELL NAME AND NO.	VAUGHAN #1
FIELD OR BLOCK NO.	OTWAY BASIN
COUNTY, PARISH OR OFFSHORE AREA	
STATE/PROVINCE	VICTORIA

DRILLING ASSEMBLY / CASING / MUD VOLUME (BBL) / CIRCULATION DATA

BIT SIZE	8½
TYPE	HTC ATJ05
JET SIZE	11x3
CASING SURFACE	9⅝ in. @ 329 M ft.
DRILL PIPE SIZE	4½
TYPE	16.6#
LENGTH	1800
INTERMEDIATE	in. @ ft.
DRILL PIPE SIZE	4½
TYPE	HW
LENGTH	55
INTERMEDIATE	in. @ ft.
DRILL COLLAR SIZE	6¼
LENGTH	175
PRODUCTION OR LINER	in. @ ft.
MUD VOLUME HOLE	343
PIPE	91
PITS	449
TOTAL CIRCULATING VOLUME	883
IN STORAGE	
WEIGHT	
MUD TYPE	KCL POLYMER
PUMP SIZE	5.5 x 7.75 IN.; 6 x 8.5
PUMP MAKE, MODEL	NAT 7P50, 8P80
ASSUMED EFF	95 %
bbl/stk	0.054; 0.0702
stk/min	x 80
bbl/min	5.6
gal/min	236
ANNULAR VEL (ft/min)	DP 111 DC 174
CIRCULATION PRESSURE (psi)	1070
BOTTOMS UP (min) (strk)	61
TOTAL CIRC TIME (min) (strk)	158

MUD PROPERTIES

	☑ F.L. ☐ PIT	☐ F.L. ☐ PIT
Sample From		
Time Sample Taken	20:45	
Flowline Temperature (°C)	33.9	
Depth (M) (TVD / ft)	2030	
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)	9.4	
Funnel Viscosity (sec/qt) API @ °F	40	
Plastic Viscosity cp @ °F	14	
Yield Point (lb/100 ft²)	11	
Gel Strength (lb/100 ft²) 10 sec/10 min	2/4	/
Filtrate API (cm³/30 min)	6.2	
API HTHP Filtrate (cm³/30 min) @ °F	–	
Cake Thickness (32nd in. API/HTHP)	1/–	/
Solids Content (% by Vol) ☑ calculated ☐ retort	6	
Liquid Content (% by Vol) Oil/Water	0/94	/
Sand Content (% by Vol)	Tr	
Methylene Blue Capacity ☑ lb/bbl equiv ☐ cm³/cm³ mud	17.5	
pH ☑ Strip ☐ Meter @ °F	9	
Alkalinity Mud (P_m)	–	
Alkalinity Filtrate (P_f/M_f)	.1/1.7	/
Chloride (mg/L)	17500	
Total Hardness as Calcium (mg/L)	80	
KCL % by Wt	3.2	
K+ PPM	17300	
SULPHITE PPM.	130	

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.3-9.3+	38-42	5-7

RECOMMENDED TOUR TREATMENT

- LOST TO HOLE 86 Bbls (3.5 Bbl/Hr)
- MADE UP 80 Bbl PREMIX, TREATED MUD ON WIPER TRIP.
- MADE UP 40 Bbl HiVis @ 85 Sec/qt.

REMARKS

RIH, REAM ~~1877 - 18??~~ 1890, RIH, TAG @ 2018M (12 M FILL). CIRC HOLE CLEAN, FLOW ✓, PUMP SLUG + POOH.
RIG UP TO LOG HOLE, UNABLE TO PASS 1540M.
MAKE UP BIT + RIH TO 1547, REAM TO 1614M RIH TO 1710 REAM TO 1743M RIH TO 2022 M (8M FILL). CIRC HOLE CLEAN, POOH TO 1590M SPOT 40 Bbl HiVis. POOH 10 ST. PUMP SLUG - POOH.

PRODUCT INVENTORY

	KCL	PAC	CMC LV	CAUSTIC	OS-1	BARITE	GEL
STARTING INVENTORY	280	29	14	13	20	330	48
RECEIVED							
USED LAST 24 hr	38	3		1		70	5
CLOSING INVENTORY	242	26		12		260	43
COST LAST 24 hr	435.48	395.22		22.35		387.10	47.20
USED (from IADC)							

SOLIDS EQUIPMENT

SHAKER #1	110 S84 S84 mesh
SHAKER #2	/ mesh
MUD CLEANER	mesh
CENTRIFUGE	hours
DESANDER	0 hours
DESILTER	0 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$1287.35	$24,785.35

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	1	Water Added (bbl)		Low Gravity %	6.7
Drilling		Mud Built (bbl)	80	Low Gravity, ppb	61
Reaming/Coring	2.5	Mud Received (bbl)	80	Bentonite %	1.4
Circulating	3.5	Mud Disposed (bbl)	116	Bentonite, ppb	12.4
Tripping	13	D. HOLE	84	Drill Solids %	5
Survey		DUMP	32	Drill Solids, ppb	45.5
Logging	4			Shale CEC, ppb	—
Running Casing				D/B Ratio	2.3
Testing		Starting Depth	2030	High Gravity %	0
Fishing		Ending Depth		High Gravity, ppb	0
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS

Zero Gel	2	Avg ROP	/	ECD @	1E 3?1
n Factor	.64	% Cutting		Leak Off @	21.9
k Factor	.49				

	psi	%	hhp	HSI	Jet Vel
Bit Hydraulics	619	57	85	1.5	272

Annular Section	1	2	3	4	5
Hole Size	8.681	8.5	8.5		
Pipe OD	4.5	4.5	6.25		
Critical Velocity	184	188	256		
Annular Velocity	105	111	174		
Viscosity	48	46	34		

WATER BASE MUD REPORT - Day : 17

M-I Drilling Fluids Company — Date : 02/03/95 — Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : LOGGING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1854 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 421
Pits Volume : 414
Circulating Volume : 835
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 14:00
Flow Line Temp	32 ^F
Depth/TVD -m	2030.0
Mud Wt -lb/gal	9.8
Funnel Vis -s/qt	37 @ 90 ^F
Plastic Visc -cps	12 @ 85 ^F
YP/R3 -lb/100ft2 /deg	8 / 2
10s/10m Gel -lb/100ft2	2 / 4
API F Loss -cc/30 min	6.2
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	9
Oil/Water -%vol	0 /91
Sand -%vol	TR
MBT -lb/bbl	17.5
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .7
Chlorides -mg/l	18500
Hardness Ca	120
KCL %	3.2
K+	17300
SULPHITE	120
np Value	0.678
Kp -lb-sec^n/100ft2	0.31181
na Value	0.500
Ka -lb-sec^n/100ft2	0.94405

CIRCULATION DATA

Flow Rate -gal/min	250
DP Annular Vel -m/min	35.9
DC Annular Vel -m/min	56.3
DP Critical Vel -m/min	64.7
DC Critical Vel -m/min	78.4
Circ. Pressure -psi	1100
Bottoms Up -min	55.4
Total Circ Time -min	140.3

PRODUCTS USED LAST 24 HOURS

M-I Gel	25 KG S	6
Polypac R	25 KG S	2
M-I Bar	25 KG S	239

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 1
KCl	1.1 / 11
Low Gravity Solids	5.8 / 53
Bentonite	1.5 / 13
Drill Solids	4.0 / 36
Weight Material	2 / 28
Chemical Conc	- / 3.5

Inert/React : 1.83 Average SG : 3.00

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	4
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added :	Hole :	57
Water Added :	Solids :	
Mud Built :	Surface :	
Mud Received:	9	
Mud Disposed:	57	

Remarks :
Logging bridge at 1593m. RIH with bit, raise weight to 9.8 ppg. POOH and log OK. The logging tools were prepared and, on running into the hole, a bridge was encountered at 1593m. The bit and BHA were run in and tagged the bridge at 1595m, the hole was reamed to 1608m. One stand was run in before tagging a bridge at 1614m, the hole was then reamed to 1626m. The trip in continued to 2016m and the hole reamed to bottom, there was 14m of fill. While circulating the mud, the mud weight was raised to 9.8 ppg, using Barite. On the trip out, a tight spot was experienced at 1900 - 1902m, and at 1442m the bit was run back down to 1634m, then pulled back to 1607m and a 40 bbl high viscosity pill spotted. The logs were then successfully run to bottom.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1642 Cumul Cost : 26427

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 2.3.19 95 | DEPTH 2030M (TD)

SPUD DATE 14.2 | PRESENT ACTIVITY LOGGING

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY

BIT SIZE	TYPE	JET SIZE
8 1/2	HTC ATJ05	11 x 3

DRILL PIPE SIZE	TYPE	LENGTH
4 1/2	16.6#	1801
4 1/2	HW	55

DRILL COLLAR SIZE	LENGTH
6 1/4	174

CASING

SURFACE	INTERMEDIATE	INTERMEDIATE	PRODUCTION OR LINER
9 5/8 in. @ 329M	in. @ ft.	in. @ ft.	in. @ ft.

MUD VOLUME (BBL)

HOLE	PITS	TOTAL CIRCULATING VOLUME	IN STORAGE	WEIGHT
490	345	835		

MUD TYPE: KCL POLYMER

CIRCULATION DATA

PUMP SIZE	PUMP MAKE, MODEL	ASSUMED EFF	ANNULAR VEL (ft/min)	CIRCULATION PRESSURE (psi)
5.5 x 7.75 IN. / 6 x 8.5	NAT 8 P 80	95 %	DP 118 DC 185	1100

bbl/stk	stk/min	BOTTOMS UP (min) (strk)	TOTAL CIRC TIME (min) (strk)
0.054 / 0.0702	110	58	141

5.94 bbl/min | 250 gal/min

MUD PROPERTIES

	☐ F.L. ☐ PIT	☑ F.L. ☐ PIT
Sample From		
Time Sample Taken		14:00
Flowline Temperature (°F)		32.2
Depth (MD) (TVD / ft)		2030
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)		9.8
Funnel Viscosity (sec/qt) API @ °F		37
Plastic Viscosity cp @ °F		12
Yield Point (lb/100 ft²)		8
Gel Strength (lb/100 ft²) 10 sec/10 min	/	2 / 4
Filtrate API (cm³/30 min)		6.2
API HTHP Filtrate (cm³/30 min) @ °F		—
Cake Thickness (32nd in. API/HTHP)	/	1 / —
Solids Content (% by Vol) ☑ Calculated ☐ retort		9
Liquid Content (% by Vol) Oil/Water	/	0 / 91
Sand Content (% by Vol)		Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud		17.5
pH ☑ Strip ☐ Meter @ °F		9
Alkalinity Mud (P_m)		—
Alkalinity Filtrate (P_f/M_f)	/	.1 / 1.7
Chloride (mg/L)		18500
Total Hardness as Calcium (mg/L)		120
KCL % by Wt		3.2
K+ PPM		17300
SULPHITE PPM		120

MUD PROPERTY SPECIFICATIONS

WEIGHT	VISCOSITY	FILTRATE
9.8 PPG.	38 - 42	5-7

RECOMMENDED TOUR TREATMENT

- RAISE WT TO 9.8 PPG WHILST CIRC. HOLE
- SPOTTED 40 BBL HIGH VIS PILL (PAC 1.1 PPB + GEL 6.6 PPB IN ACTIVE MUD) VIS 92.
- ONCE BARITE ADDED TO MUD LOSSES TO HOLE STOPPED.

REMARKS

POOH + LAY OUT BIT. RIG UP TO LOG + RIH - UNABLE TO PASS BRIDGE @ 1593 M. RIH WITH BIT TO 1595 + TAG BRIDGE, REAM TO 1608 M, RIH 1 STAND + TAG BRIDGE @ 1614 M, REAM TO 1626 M. RIH TO 2016 M (11 M FILL) REAM TO BTM. RAISE WT TO 9.8 WHILST CIRC. POOH TO 1442 RIH TO 1634 (HOLE TIGHT 1900 - 1902 M. POOH TO 1607 + SPOT 40 BBL HI VIS. POOH RIG UP + RUN LOGS TO BTM OK.

⊗ RECIEVED 240 SX ON 25/2ND NOT 320 SX.

* STOCK SHEET CORRECTION FOR YEST. USAGE

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	O.S.1	BARITE	GEL
STARTING INVENTORY	242	17 26	14	12	20	260	43
RECEIVED	⊗80	*					
USED LAST 24 hr		2				239	6
CLOSING INVENTORY	162	15				21	37
COST LAST 24 hr		263.48				1321.67	56.64
USED (from IADC)							

SOLIDS EQUIPMENT

SHAKER #1	S110 S84 S84 mesh
SHAKER #2	/ mesh
MUD CLEANER	mesh
CENTRIFUGE	hours
DESANDER	0 hours
DESILTER	0 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	09 325 4822		$1641.79	$26,427.14

TIME DISTRIBUTION (hrs)

Rig Up/Service	0.5
Drilling	
Reaming/Coring	2.0
Circulating	2.5
Tripping	10.5
Survey	
Logging	8.5
Running Casing	
Testing	
Fishing	

MUD VOLUME ACCOUNTING

Water Added (bbl)		
Mud Built (bbl) BAR	9	
Mud Received (bbl)		
Mud Disposed (bbl)	57	
HOLE	57	
Starting Depth	2030	
Ending Depth		
New Hole Vol. (bbl)		

SOLIDS ANALYSIS

Low Gravity %	5.8
Low Gravity, ppb	53.1
Bentonite %	1.5
Bentonite, ppb	13.4
Drill Solids %	4
Drill Solids, ppb	36.6
Shale CEC, ppb	—
D/B Ratio	1.8
High Gravity %	1.9
High Gravity, ppb	28.1

MUD RHEOLOGY and HYDRAULICS

Zero Gel	2	Avg ROP		ECD @			
n Factor	.68	% Cutting		Leak Off @	21.9		
k Factor	.31	psi	%	hhp	HSI	Jet Vel	
Bit Hydraulics							
Annular Section	1	2	3	4	5		
Hole Size	8.681	8.5	8.5				
Pipe OD	4.5	4.5	6.25				
Critical Velocity							
Annular Velocity							
Viscosity							
Annular Pressure							

WATER BASE MUD REPORT - Day : 18

M-I Drilling Fluids Company — - - — Date : 03/03/95 — Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : LOGGING

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1854 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 421
Pits Volume : 400
Circulating Volume : 821
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	FL 19:10
Flow Line Temp	29 ^F
Depth/TVD -m	2030.0
Mud Wt -lb/gal	9.9
Funnel Vis -s/qt	42 @ 85 ^F
Plastic Visc -cps	12 @ 85 ^F
YP/R3 -lb/100ft2 /deg	18 / 2
10s/10m Gel -lb/100ft2	3 / 8
API F Loss -cc/30 min	6
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	10.1
Oil/Water -%vol	0 /89.9
Sand -%vol	TR
MBT -lb/bbl	17.5
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .7
Chlorides -mg/l	18000
Hardness Ca	120
KCL %	3.2
K+	17300
SULPHITE	40
np Value	0.485
Kp -lb-sec^n/100ft2	1.55383
na Value	0.588
Ka -lb-sec^n/100ft2	0.81775

CIRCULATION DATA

Flow Rate	-gal/min	
DP Annular Vel	-m/min	
DC Annular Vel	-m/min	
DP Critical Vel	-m/min	74.8
DC Critical Vel	-m/min	95.0
Circ. Pressure	-psi	
Bottoms Up	-min	
Total Circ Time	-min	

PRODUCTS USED LAST 24 HOURS

M-I Gel	25	KG S	15
Caustic Soda	25	KG S	1
CMC TG LV	25	KG S	3
Polypac R	25	KG S	3
M-I Bar	25	KG S	47

SOLIDS ANALYSIS (% / lb/bbl)

NaCl	0.1 / 1
KCl	1.1 / 11
Low Gravity Solids	7.3 / 66
Bentonite	1.3 / 12
Drill Solids	5.6 / 51
Weight Material	2 / 23
Chemical Conc	- / 3.5

Inert/React : 2.60 Average SG : 2.88

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	2
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	89
Water Added		Solids	
Mud Built	75	Surface	
Mud Received	75		
Mud Disposed	89		

Remarks :
Logging, wiper trip, logging.
A 75 bbl premix was made up and added to the mud while on bottom during the wiper trip, 14m of fill was on bottom. On the third logging run, the tool was unable to pass 385m, while pulling out of the hole, high viscosity pills were spotted at 1607 - 40 bbls and 393 - 20 bbls. The pills were made up of 1.5 ppb Polypac R and 3.7 ppb M-I Gel. The logging tools were prepared to be run.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 1003 Cumul Cost : 27430

Drilling Fluids Co.

Magcobar/IMCO — A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 3.3 19 95 | DEPTH 2030M (TD)

SPUD DATE 14.2 | PRESENT ACTIVITY LOGGING

OPERATOR	GFE RESOURCES	CONTRACTOR CENTURY	RIG NO. 11
REPORT FOR	KEN SMITH	REPORT FOR ROGER BINDON	SECTION, TOWNSHIP, RANGE
WELL NAME AND NO.	VAUGHAN #1	FIELD OR BLOCK NO. OTWAY BASIN	COUNTY, PARISH OR OFFSHORE AREA
			STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE / TYPE / JET SIZE	8½ HTC ATJ05 11x3		SURFACE 9⅝ in. @ 329M ft.	HOLE 490	PITS 331	PUMP SIZE 5.5 X 7.75 IN. / 6 X 8.5	ANNULAR VEL (ft/min) DP ____ DC ____
DRILL PIPE SIZE / TYPE / LENGTH	4½ 16.6# 1081		INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 821		PUMP MAKE, MODEL NAT 8 P 80	ASSUMED EFF 95 % / CIRCULATION PRESSURE (psi)
DRILL PIPE SIZE / TYPE / LENGTH	4½ HW 55		INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 / 0.0702 stk/min	BOTTOMS UP (min) (strk)
DRILL COLLAR SIZE / LENGTH	6¼ 174		PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		bbl/min gal/min	TOTAL CIRC TIME (min) (strk)

MUD PROPERTIES			MUD PROPERTY SPECIFICATIONS		
Sample From	☐ F.L. ☐ PIT	☑ F.L. ☐ PIT	WEIGHT 9.8	VISCOSITY 38-42	FILTRATE 5-7
Time Sample Taken		19:10			
Flowline Temperature (°C)		29.4	RECOMMENDED TOUR TREATMENT		
Depth (M) (TVD / ft)		2030	• PRE MIXED 375 BBLS MUD + WEIGHED IT		
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)		9.9+	UP TO 9.8ppg - BLENDED INTO MUD WHILE		
Funnel Viscosity (sec/qt) API @ °F		42	CIRC ON BTM.		
Plastic Viscosity cp @ °F		12	• HI VIS PILLS MADE OF PAC @ 1.5 PPB + GEL		
Yield Point (lb/100 ft²)		18	@ 3.7 PPB = VIS 95 SEC/qt.		
Gel Strength (lb/100 ft²) 10 sec/10 min	/	3/8	• HOLE STILL TAKING MUD @ 3.7 BPH.		
Filtrate API (cm³/30 min)		6.0	REMARKS		
API HTHP Filtrate (cm³/30 min) @ °F		—	LOGGING		
Cake Thickness (32nd in. API/HTHP)	/	1/—	RUN 1: DLL, MLL, SB, GR, LSS.		
Solids Content (% by Vol) ☑ calculated ☐ retort		10.1	" 2: LSS		
Liquid Content (% by Vol) Oil/Water	/	0/89.9	" 3. PDS. UNABLE TO PASS 385M.		
Sand Content (% by Vol)		Tr	TEST BOP'S		
Methylene Blue Capacity ☑ lb/bbl equiv ☐ cm³/cm³ mud		17.5	MAKE UP BIT + RIH (14M FILL). CIRC		
pH ☑ Strip ☐ Meter @ °F		9	HOLE CLEAN WHILE ADDING PREMIX.		
Alkalinity Mud (P_m)		—	POOH TO 1607 RIH TO 1595, SPOT		
Alkalinity Filtrate (P_f/M_f)	/	1.1/7	40 BBL HI VIS @ 1607M. POOH TO 393		
Chloride (mg/L)		18000	AND SPOT 20 BBL HI VIS. POOH.		
Total Hardness as Calcium (mg/L)		180	RIG UP TO LOG HOLE.		
KCL % by Wt		3.2			
K PPM		17300			
SULPHITE PPM		40			

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	OS.1	BARITE	GEL
STARTING INVENTORY	162	15	14	12	20	21	437
RECEIVED						960	
USED LAST 24 hr		3	3	1		47	15
CLOSING INVENTORY		12	11	11		934	22
COST LAST 24 hr		395.22	183.69	22.35		259.91	141.60
USED (from IADC)							

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 ____ / ____ mesh

MUD CLEANER ____ mesh

CENTRIFUGE ____ hours

DESANDER 0 hours

DESILTER 0 hours

M-I REPRESENTATIVE	PHONE	WAREHOUSE PHONE	DAILY COST	CUMULATIVE COST
DAVE RIDLER	03 325 4822		$1002.77	$27429.91

NOTICE: THIS REPORT IS SUBJECT TO THE TERMS AND CONDITIONS SET FORTH ON REVERSE SIDE HEREOF.

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service	1.5	Water Added (bbl)		Low Gravity %	6.9
Drilling		Mud Built (bbl)	75	Low Gravity, ppb	63
Reaming/Coring		Mud Received (bbl)	75	Bentonite %	1.3
Circulating	2	Mud Disposed (bbl)	89	Bentonite, ppb	12
Tripping	6.5	HOLE	89	Drill Solids %	5.2
Survey				Drill Solids, ppb	47
Logging	14			Shale CEC, ppb	—
Running Casing				D/B Ratio	2.4
Testing		Starting Depth	2030	High Gravity %	7
Fishing		Ending Depth		High Gravity, ppb	29
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS						
Zero Gel		Avg ROP		ECD @ ____		
n Factor		% Cutting		Leak Off @ 21.9		
k Factor		psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size	8.681	8.5	8.5			
Pipe OD	4.5	4.5	6.25			
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

WATER BASE MUD REPORT - Day : 19

M-I Drilling Fluids Company — Date : 04/03/95 — Depth : 2030.0 m
DRILLING FLUIDS DATA MANAGEMENT SYSTEM — Well No. : 00002 — Spud Date : 14/02/95 — Activity : RIH

Operator : GAS & FUEL EXPLOR — Contractor : CENTURY RIG 11 — Description : WILDCAT
Well Name : VAUGHAN 1 — Field/Area : PPL-1 — Location : OTWAY BASIN
Report For: SMITH.K.

Bit : 8.500 in
Nozzles:11/11/11/ / / 1/32"
Drill Pipe 1 OD : 4.500 in 1854 m
Drill Pipe 2 OD : in m
Drill Collar OD : 6.250 in 176.0 m

CASING
Casing OD : 9.625 in Liner OD : in
Casing ID : 8.681 in Liner ID : in
Casing TD : 329.0 m Liner TD : m
Casing TVD : 329.0 m Liner TVD : m

MUD VOLUME (bbl)
Hole Volume : 421
Pits Volume : 431
Circulating Volume : 852
Mud : N-DISP KCL MUD

MUD PROPERTIES

Sample From	PIT 23:00
Flow Line Temp	^F
Depth/TVD -m	2030.0
Mud Wt -lb/gal	9.9
Funnel Vis -s/qt	42 @ 85 ^F
Plastic Visc -cps	12 @ 85 ^F
YP/R3 -lb/100ft2 /deg	18 / 2
10s/10m Gel -lb/100ft2	4 / 10
API F Loss -cc/30 min	6
HTHP F Loss -cc/30 min	@ ^F
Cake API/HT -1/32"	1
Solids -%vol	10.1
Oil/Water -%vol	0 /89.9
Sand -%vol	TR
MBT -lb/bbl	17.5
pH	9 @ 80 ^F
Alkal Mud (Pm)	
Pf/Mf	.1 / .7
Chlorides -mg/l	18000
Hardness Ca	120
KCL %	3.2
K+	17300
SULPHITE	40
np Value	0.485
Kp -lb-sec^n/100ft2	1.55383
na Value	0.588
Ka -lb-sec^n/100ft2	0.81775

CIRCULATION DATA

Flow Rate -gal/min	
DP Annular Vel -m/min	
DC Annular Vel -m/min	
DP Critical Vel -m/min	74.8
DC Critical Vel -m/min	95.0
Circ. Pressure -psi	
Bottoms Up -min	
Total Circ Time -min	

PRODUCTS USED LAST 24 HOURS

M-I Gel	25	KG S	10
Caustic Soda	25	KG S	1
Potassm Chloride	25	KG S	13
CMC TG LV	25	KG S	3
Polypac R	25	KG S	2
M-I Bar	25	KG S	27

SOLIDS ANALYSIS

	(% / lb/bbl)
NaCl	0.1 / 1
KCl	1.1 / 11
Low Gravity Solids	7.3 / 66
Bentonite	1.3 / 12
Drill Solids	5.6 / 51
Weight Material	2 / 23
Chemical Conc	- / 3.5

Inert/React : 2.60 Average SG : 2.88

SOLIDS EQUIPMENT

	Size	Hours
Shaker #1	S110 S84	
Shaker #2		
Shaker #3		
Shaker #4		
Mud Cleaner		
Centrifuge		
Desander	12X2	
Desilter	4X12	
Degasser		

MUD VOLUME ACCOUNTING bbl

Oil Added		Hole	44
Water Added		Solids	
Mud Built	75	Surface	
Mud Received	75		
Mud Disposed	44		

Remarks :
Logging.
The logs were completed with runs of : #3 PDS, #4 RFT, #5 UDS, #6 SWC. The BHA was then run into the hole in preparation to be laid out sideways.

M-I Sales Engineer: RIDLER.D. Warehouse: Daily Cost : 862 Cumul Cost : 28292

M-I Drilling Fluids Co.

Magcobar/IMCO A Dresser/Halliburton Company

P.O. BOX 42842 ■ HOUSTON, TEXAS 77242 USA

DATE 4.3.95 DEPTH 2030 TD

SPUD DATE 14.2 PRESENT ACTIVITY RIH BHA

OPERATOR GFE RESOURCES CONTRACTOR CENTURY RIG NO. 11

REPORT FOR KEN SMITH REPORT FOR ROGER BINDON SECTION, TOWNSHIP, RANGE

WELL NAME AND NO. VAUGHAN #1 FIELD OR BLOCK NO. OTWAY BASIN COUNTY, PARISH OR OFFSHORE AREA STATE/PROVINCE VICTORIA

DRILLING ASSEMBLY			CASING	MUD VOLUME (BBL)		CIRCULATION DATA	
BIT SIZE	TYPE	JET SIZE	SURFACE 9 5/8 in. @ 329M ft.	HOLE 490	PITS 362	PUMP SIZE 5.5 X 7.75 IN. 6 85	ANNULAR VEL (ft/min) DP DC
DRILL PIPE SIZE	TYPE	LENGTH	INTERMEDIATE in. @ ft.	TOTAL CIRCULATING VOLUME 852		PUMP MAKE, MODEL NAT 8P80 ASSUMED EFF 95 %	CIRCULATION PRESSURE (psi)
DRILL PIPE SIZE	TYPE	LENGTH	INTERMEDIATE in. @ ft.	IN STORAGE	WEIGHT	bbl/stk 0.054 0.0702 stk/min	BOTTOMS UP (min) (strk)
DRILL COLLAR SIZE		LENGTH	PRODUCTION OR LINER in. @ ft.	MUD TYPE KCL POLYMER		bbl/min gal/min	TOTAL CIRC TIME (min) (strk)

MUD PROPERTIES	☐ F.L. ☐ PIT	☐ F.L. ☑ PIT
Sample From		
Time Sample Taken		23:00
Flowline Temperature (°F)		-
Depth (ft) M (TVD / ft)		2030
Weight ☑ (ppg) ☐ (lb/cu ft) ☐ (sp gr)		9.9+
Funnel Viscosity (sec/qt) API @ °F		42
Plastic Viscosity cp @ °F		12
Yield Point (lb/100 ft²)		18
Gel Strength (lb/100 ft²) 10 sec/10 min	1	4/10
Filtrate API (cm³/30 min)		6
API HTHP Filtrate (cm³/30 min) @ °F		-
Cake Thickness (32nd in. API/HTHP)	1	1/-
Solids Content (% by Vol) ☐ calculated ☐ retort		10.1
Liquid Content (% by Vol) Oil/Water	1	0 / 89.9
Sand Content (% by Vol)		Tr
Methylene Blue Capacity ☐ lb/bbl equiv ☐ cm³/cm³ mud		17.5
pH ☑ strip ☐ Meter @ °F		9
Alkalinity Mud (P_m)		-
Alkalinity Filtrate (P_f/M_f)	1	.1/1.7
Chloride (mg/L)		18000
Total Hardness as Calcium (mg/L)		120
KCL % by Wt		3.2
K+ PPM		17300
SULPHITE PPM		40

MUD PROPERTY SPECIFICATIONS		
WEIGHT	VISCOSITY	FILTRATE
9.8	38 - 42	5 - 7

RECOMMENDED TOUR TREATMENT

- NB 9 5/8 SET @ 341 M.
- HOLE TOOK 44 Bbls WHILST LOGGING.
- PRE MIXED 75 Bbls OF 9.8ppg MUD.

REMARKS

LOGGING: RUN 3 PDS
4 RFT
5 UDS
6 SWC

RIG UP TO RUN BHA TO LAYOUT SIDEWAYS

PRODUCT INVENTORY	KCL	PAC	CMC LV	CAUSTIC	OSI	BARITE	GEL
STARTING INVENTORY	162	12	11	11	20	934	22
RECEIVED							
USED LAST 24 hr	13	2	3	1		27	10
CLOSING INVENTORY	149	10	8	10		907	12
COST LAST 24 hr	148.98	263.48	183.69	22.35		149.31	94.40
USED (from IADC)							

SOLIDS EQUIPMENT

SHAKER #1 S110 S84 S84 mesh

SHAKER #2 / mesh

MUD CLEANER mesh

CENTRIFUGE hours

DESANDER hours

DESILTER hours

M-I REPRESENTATIVE DAVE RIDLER PHONE 09 325 4822 WAREHOUSE PHONE DAILY COST $862.21 CUMULATIVE COST $28292.12

TIME DISTRIBUTION (hrs)		MUD VOLUME ACCOUNTING		SOLIDS ANALYSIS	
Rig Up/Service		Water Added (bbl)		Low Gravity %	6.9
Drilling		Mud Built (bbl)	75	Low Gravity, ppb	63
Reaming/Coring		Mud Received (bbl)	75	Bentonite %	1.3
Circulating		Mud Disposed (bbl)	44	Bentonite, ppb	12
Tripping	0.5	HOLE	44	Drill Solids %	5.7
Survey				Drill Solids, ppb	47
Logging	23.5			Shale CEC, ppb	-
Running Casing				D/B Ratio	2.4
Testing		Starting Depth	2030	High Gravity %	2
Fishing		Ending Depth		High Gravity, ppb	29
		New Hole Vol. (bbl)			

MUD RHEOLOGY and HYDRAULICS						
Zero Gel		Avg ROP		ECD @		
n Factor		% Cutting		Leak Off @ 21.9		
k Factor		psi	%	hhp	HSI	Jet Vel
Bit Hydraulics						
Annular Section	1	2	3	4	5	
Hole Size						
Pipe OD						
Critical Velocity						
Annular Velocity						
Viscosity						
Annular Pressure						

Appendix 3

APPENDIX 3

DRILLING OPERATIONS SUMMARY

GFE Resources Ltd

DRILLING OPERATIONS SUMMARY

VAUGHAN-1

Permit:	PPL 1	**Spud Date:**	14 / 02 / 1995	**Rig:**	Century Rig 11
GFE Rep:	K. Smith	**Geologist:**	D.Horner		

TIME	HOURS	OPERATIONS	Page: 1 of 7

14 / 02 / 95

0600 - 1200	6	- Finalise rig up, make up 12¼" bit, rig inspection by company man and tool pusher.
1200 - 1300	1	- Pre spud and safety meeting with GFE management, service company personnel and all rig crew.
1300 - 1500	2	- Spud in and drill 12¼" hole from 0 to 43m.
1500 - 1530	½	- Circulate and survey at 30m.
1530 - 1700	1½	- Drill 12¼" hole from 43 to 60m.
1700 - 1730	½	- Circulate and survey at 47m.
1730 - 2000	2½	- Drill 12¼" hole from 60 to 96m.
2000 - 2030	½	- Circulate and survey at 83m.
2030 - 2130	1	- Drill 12¼" hole from 96 to 123m. Cellar filling from mud flow up rat hole.
2130 - 2200	½	- Jet cellar and check flow rate of washout.
2200 - 2230	½	- Drill 12¼" hole from 123 to 133m.
2230 - 2300	½	- Circulate and survey at 120m.
2300 - 2400	1	- Drill 12¼" hole from 133 to 159m.

15 / 02 / 95

0000 - 0100	1	- Drill 12¼" hole from 159 to 187m.
0100 - 0130	½	- Circulate and survey at 174m.
0130 - 0330	2	- Drill 12¼" hole from 187 to 242m.
0330 - 0400	½	- Circulate and survey at 229m.
0400 - 0600	2	- Drill 12¼" hole from 242 to 309m.
0600 - 0630	½	- Circulate and survey at 296m.
0630 - 0830	2	- Drill 12¼" hole from 309 to 345m.
0830 - 0900	½	- Circulate and survey at 335m.
0900 - 1100	2	- Wiper trip to surface, strap out of hole. Driller's depth 345m. Strap depth 345.16m.
1100 - 1230	1½	- Run in hole. Two and a half metres of fill.
1230 - 1430	2	- Break circulation, circulate out mud ring, unblock cellar jet and clear mud ring from cellar.
1430 - 1530	1	- Drill one extra metre of rathole and circulate hole clean.
1530 - 1800	2½	- Pull out of hole to 12¼" stabiliser, lay out stabiliser and 2x8" DC's, bit sub and bit.
1800 - 2400	6	- Rig up to run and run $9^{5}/_{8}$" casing. Thread lock all crossover and float collar threads and also tack weld old crossover joints.

TIME	HOURS	OPERATIONS
16 / 02 / 95		
0000 - 0130	1½	- Head up Dowell swage and break circulation. Casing hanging up by collar on bottom of conductor one foot below landing depth. Try to hold to one side and pass conductor while circulating 130 bbls.
0130 - 0200	½	- Head up with cementing head.
0200 - 0500	3	- Set string in slips and weld pad eyes to conductor. Try to lift conductor 35cm - pad eyes broke weld at 50,000 lb. Re-weld eyes and tore conductor at 65,000 lb pull.
0500 - 0530	½	- Tong string to rotate at hang-up point and work.
0530 - 0600	½	- Hook up Dowell, chain casing and hold safety meeting prior to cementing.
0600 - 0730	1½	- Mix and run cement and displace same.
0730 - 1430	7	- Wait on cement.
1430 - 1530	1	- Lay out landing joint and conductor barrel.
1530 - 2400	8½	- Nipple up BOP, top up annulus with six sacks of class "A" cement.
17 / 02 / 95		
0000 - 0030	½	- Nipple up and function test.
0030 - 0330	3	- Pressure test blind rams to 300 psi and 1,000 psi, pipe rams to 300 psi and 2,500 psi and manifold valves, HCR, manual choke valve and kill line valves to 2,500 psi with cup tester. Test flare line to 1,500 psi.
0330 - 0630	3	- Lay out cup tester, make up 8½" BHA and run in hole. Tag top of cement at 322m.
0630 - 0700	½	- Pick up kelly and pressure test upper and lower kelly cocks to 1,000 psi.
0700 - 0830	1½	- Drill out cement, float and shoe track.
0830 - 0900	½	- Drill 8½" hole from 346 to 351m.
0900 - 0930	½	- Run FIT with Dowell to 790 psi - 21.9 ppg equivalent mud weight.
0930 - 1000	½	- Place crown over centre of rotary table.
1000 - 1230	2½	- Drill 8½" hole from 351 to 455m.
1230 - 1300	½	- Circulate and survey at 439m.
1300 - 2000	7	- Drill 8½" hole from 455 to 665m.
2000 - 2030	½	- Circulate and survey at 650m.
2030 - 2400	3½	- Drill 8½" hole from 665 to 723m.
18 / 02 / 95		
0000 - 0630	6½	- Drill 8½" hole from 723 to 867m.
0630 - 0700	½	- Circulate and survey at 854m.
0700 - 1330	6½	- Drill 8½" hole from 867 to 1001m.
1330 - 1400	½	- Service rig.
1400 - 1930	5½	- Drill 8½" hole from 1001 to 1086m.
1930 - 2000	½	- Circulate and survey at 1070m.
2000 - 2400	4	- Drill 8½" hole from 1086 to 1144m.
19 / 02 / 95		
0000 - 0300	3	- Drill 8½" hole from 1144 to 1181m.
0300 - 0330	½	- Circulate and survey at 1168m.
0330 - 1200	8½	- Drill 8½" hole from 1181 to 1267m.
1200 - 1230	½	- Circulate and survey at 1254m.
1230 - 1430	2	- Drill 8½" hole from 1267 to 1290m.
1430 - 1600	1½	- Circulate 5 minutes, pull 2 stands and circulate geological sample at 1290m and run in hole.
1600 - 1830	2½	- Drill 8½" hole from 1290 to 1319m.
1830 - 2000	1½	- Circulate 5 minutes, pull 2 stands and circulate geological sample at 1319m and run in hole.

2000 - 2200	2	- Drill 8½" hole from 1319 to 1363m.
2200 - 2230	½	- Circulate and survey at 1350m.
2230 - 2400	1½	- Drill 8½" hole from 1363 to 1392m.
20 / 02 / 95		
0000 - 0700	7	- Drill 8½" hole from 1392 to 1468m.
0700 - 0730	½	- Circulate and survey at 1455m.
0730 - 1030	3	- Drill 8½" hole from 1468 to 1507m.
1030 - 1130	1	- Circulate bottoms up prior to trip for bit.
1130 - 1630	5	- Pull out of hole. Work tight hole from 1438 to 1435m, 1398 to 1379m, 1302 to 1245m, 1112 to 1093m, 902 to 883m.
1630 - 1700	½	- Gauge stabiliser - ¼" under gauge at bottom and $^1/_8$" under gauge at top, change bit
1700 - 1900	2	- Run in hole to shoe.
1900 - 1930	½	- Slip 12.2m of drilling line.
1930 - 2000	½	- Run in hole to 614m.
2000 - 2030	½	- Pick up kelly and ream from 614 to 624m. Run in hole 4 stands and ream 691 to 700m.
2030 - 2100	½	- Run in hole to 883m.
2100 - 2400	3	- Pick up kelly and ream 883 to 1035m - running in stands where possible without forcing bit.
21 / 02 / 95		
0000 - 0430	4½	- Ream from 1306 to 1325m, 1372 to 1385m and 1440 to 1507m. Two metres of fill.
0430 - 1500	10½	- Drill 8½" hole from 1507 to 1603m.
1500 - 1730	2½	- Circulate 5 minutes, pull 2 stands and circulate geological sample. Run in hole, pick up kelly, work to bottom - 4m suspected stabiliser hang-up.
1730 - 1800	½	- Drill 8½" hole from 1603 to 1607m.
1800 - 1930	1½	- Circulate 5 minutes, pull 2 stands and circulate geological sample at 1607m.
1930 - 2200	2½	- Pull out of hole, wiper trip to 1074m. Work tight hole from 1427 to 1313m and 1245 to 1206m.
2200 - 2300	1	- Run in hole.
2300 - 2330	½	- Ream and work through tight hole at 1584 to 1594m - behaving like stabiliser hanging up.
2330 - 2400	½	- Tag bottom, no fill, circulate 5 minutes, pull 2 stands and circulate bottoms up.
22 / 02 / 95		
0000 - 0100	1	- Circulate hole clean.
0100 - 0130	½	- Run in hole 2 stands. Two and a half metres of fill. Circulate at 1607m for 10 minutes.
0130 - 0630	5	- Pull out of hole - strap out. Lay out drilling jars, shock sub and stabiliser.
0630 - 0800	1½	- Pick up and make up test tools. Pump out sub not compatible with drill string - check for alternative sub or crossovers.
0800 - 0830	½	- Service rig.
0830 - 0930	1	- Break and lay out test tool.
0930 - 1300	3½	- Make up 8½" drilling BHA and run in hole to 1594m, suspected stabiliser hang-up.
1300 - 1400	1	- Ream stabiliser from 1594 to 1600m and clean to bottom at 1607m. One and a half metres of fill. Circulate for 15 minutes to put a fresh mud spacer in hole before drilling new hole.
1400 - 1900	5	- Drill 8½" hole from 1607 to 1624m. Circulate 5 minutes and drill ahead from 1624 to 1655m.

1900 - 2000	1	- Circulate geological sample at 1632m.
2000 - 2100	1	- Drill ahead from 1655 to 1657m, circulate 5 minutes, drill ahead from 1657 to 1664m - flow check and pull 2 stands.
2100 - 2230	1½	- Circulate geological sample at 1664m.
2230 - 2400	1½	- Drill 8½" hole from 1664 to 1679m.
23 / 02 / 95		
0000 - 0530	5½	- Drill 8½" hole from 1679 to 1729m.
0530 - 0730	2	- Circulate geological sample at 1729m.
0730 - 0930	2	- Drill 8½" hole from 1729 to 1756m.
0930 - 1030	1	- Circulate and survey at 1743m - survey twice, first survey a miss-run.
1030 - 1330	3	- Drill 8½" hole from 1756 to 1794m.
1330 - 1530	2	- Wiper trip to 1379m. Work tight hole at 1657m, 1647m and 1678m.
1530 - 1730	2	- Drill 8½" hole from 1794 to 1812m.
1730 - 2000	2½	- Circulate 5 minutes, flow check, pull 2 stands and circulate geological sample at 1812m.
2000 - 2030	½	- Drill 8½" hole from 1812 to 1818.5m.
2030 - 2300	2½	- Circulate 5 minutes, pull 2 stands and circulate geological sample at 1818.5m.
2300 - 2330	½	- Drill 8½" hole from 1818.5 to 1823m.
2330 - 2400	½	- Flow check, pull back 2 stands and circulate geological sample at 1823m.
24 / 02 / 95		
0000 - 0100	1	- Circulate geological sample at 1823m.
0100 - 0200	1	- Flow check 12 stand wiper trip from 1823 to 1580m. Work tight hole at 1695 to 1676m and at 1657m. Run in hole, tag bottom at 1820m - 2.7m of fill.
0200 - 0400	2	- Clean to bottom, circulate 5 minutes, pull 2 stands and circulate bottoms up. Run in hole 2 stands.
0400 - 0430	½	- Spot 20 bbl Hi-vis pill on bottom, pull 6 stands and slug pipe with baryte pill.
0430 - 0730	3	- Pull out of hole for DST - strap pipe.
0730 - 0800	½	- Slip 10.7m of drilling line.
0800 - 0930	1½	- Continue pulling out of hole. Lay out jars, stabiliser and shock sub.
0930 - 1200	2½	- Make up test tool.
1200 - 1600	4	- Run in hole with test tool.
1600 - 1630	½	- Head up, hold safety meeting.
1630 - 2330	7	- Tag bottom, inflate packer, open tool and run DST-1 at 1798 to 1823m.
2330 - 2400	½	- Deflate packer and unseat same.
25 / 02 / 95		
0000 - 0030	½	- Unseat packer and layout test head.
0030 - 0500	4½	- Pull out of hole with test tool. Recover 19.8m of mud.
0500 - 0730	2½	- Lay out test tool.
0730 - 0830	1	- Make up cup tester and pressure test BOP stack to 2,500 psi. Lay out cup tester.
0830 - 1030	2	- Make up stiff 8½" BHA and run in hole to casing shoe.
1030 - 1130	1	- Slip 5.5m of drilling line and cut 36.9m.
1130 - 1230	1	- Run in hole to 646m, string starting to hold up.
1230 - 2400	11½	- Lay out work singles, pick up kelly and start reaming. Run stands where possible. Rotary table stalling with low weight. Ream from 646 to 1163m - able to run 2 stands without reaming. Very high rotary torque at 1070 to 1076m.

TIME	HOURS	OPERATIONS
26 / 02 / 95		
0000 - 0030	½	- Lay out singles and run in hole 4 stands.
0030 - 0230	2	- Ream ledges from 1163 to 1239m.
0230 - 0300	½	- Lay out 8 singles and run in hole 4 stands.
0300 - 0430	1½	- Ream ledges from 1239 to 1315m.
0430 - 0500	½	- Lay out 8 singles and run in hole 4 stands.
0500 - 0630	1½	- Ream ledges from 1315 to 1392m, unable to run any stands without reaming since 2400hrs.
0630 - 0700	½	- Lay out 8 singles and run in 4 stands.
0700 - 0930	2½	- Ream ledges from 1392 to 1478m.
0930 - 1300	3½	- Pull out of hole, lay out stabiliser and shock sub.
1300 - 1430	1½	- Make up 8½" pendulum BHA and run in hole to casing shoe.
1430 - 1500	½	- Slip 6.1m of drilling line.
1500 - 1700	2	- Run in hole to 1516m.
1700 - 1730	½	- Clean and ream from 1516 to 1535m - behaved more like a bridged hole than tight hole.
1730 - 1800	½	- Run in hole to 1574m.
1800 - 2400	6	- Ream ledges from 1574 to 1641m.
27 / 02 / 95		
0000 - 0830	8½	- Ream ledges from 1641 to 1823m - unable to run any stands or drill with any weight. Stuck at 1714m - work jars. Circulate 15 minutes to put fresh mud spacer on bottom before drilling ahead.
0830 - 1400	5½	- Drill 8½" hole from 1823 to 1869m.
1400 - 1530	1½	- Circulate 5 minutes, flow check, pull 2 stands and circulate geological sample at 1869m.
1530 - 1700	1½	- Run in hole 2 stands and drill 8½" hole from 1869 to 1884m.
1700 - 1830	1½	- Circulate 5 minutes, flow check, pull 3 stands and circulate geological sample at 1884m.
1830 - 2400	5½	- Drill 8½" hole from 1884 to 1918m.
28 / 02 / 95		
0000 - 0230	2½	- Drill 8½" hole from 1918 to 1939m.
0230 - 0430	2	- Circulate 10 minutes, pull 2 stands and circulate geological sample at 1939m.
0430 - 0500	½	- Run in hole 2 stands and survey at 1934m.
0500 - 1500	10	- Drill 8½" hole from 1939 to 2001m.
1500 - 1630	1½	- Circulate 5 minutes, flow check, pull 2 stands and circulate geological sample at 2001m. Run in hole 2 stands.
1630 - 2000	3½	- Drill 8½" hole from 2001 to 2030m - Total Depth.
2000 - 2100	1	- Circulate bottoms up - flow check.
2100 - 2400	3	- Thirty-three stand wiper trip. Pull out of hole. Back ream from 1766 to 1785m, tight hole at 1766 to 1785m, 1699 to 1718m, 1641 to 1670m, and 1880 to 1842m - up to 25,000 lbs overpull.
1 / 03 / 95		
0000 - 0200	2	- Run in hole to 1877m, pick up kelly and ream to 1890m. Run in hole, tag fill at 2018m.
0200 - 0330	1½	- Wash to 2030m and circulate hole clean. Flow check and slug pipe with baryte slug.
0330 - 0830	5	- Pull out of hole to log with BPB - strap out.
0830 - 0900	½	- Lay out stabiliser and shock sub.
0900 - 1300	4	- Hold safety meeting prior to logging. Run logs with BPB - unable to get past 1546m. Rig down BPB.

1300 - 1400	1	-	Make up slick 8½" BHA and run in hole to casing shoe.
1400 - 1430	½	-	Slip 6.1m of drilling line.
1430 - 1600	1½	-	Run in hole to bridge at 1547m.
1600 - 1800	2	-	Clean out bridge at 1547 to 1558m, break through and chase bridge with rotary to 1614m.
1800 - 1830	½	-	Run in hole to 1710m.
1830 - 1900	½	-	Clean out bridge at 1710 to 1743m.
1900 - 1930	½	-	Run in hole to 2030m. Eight metres of fill.
1930 - 2100	1½	-	Circulate hole clean.
2100 - 2200	1	-	Pull back to 1590m.
2200 - 2230	½	-	Spot 40 bbls of high viscosity pill at 1590 to 1407m.
2230 - 2400	1½	-	Pull 10 stands, slug pipe with baryte pill and pull out of hole.
2 / 03 / 95			
0000 - 0200	2	-	Pull out of hole, break bit and bit sub, flow check.
0200 - 0600	4	-	Rig up BPB and run logging tools - holding up at 1593m. Pull tools out of hole and rig down BPB.
0600 - 0930	3½	-	Make up slick 8½" BHA and run in hole to bridge at 1595m.
0930 - 1130	2	-	Clean out recurring bridge from 1595 to 1608m. Run in hole 1 stand and clean out from 1614 to 1626m.
1130 - 1200	½	-	Run in hole to 2016m.
1200 - 1230	½	-	Clean out fourteen metres of fill from 2016 to 2030m.
1230 - 1430	2	-	Circulate hole clean and raise mud weight to 9.8 ppg.
1430 - 1600	1½	-	Pull out of hole to 1442m. Work tight spot from 1900 to 1902m. Run in hole to 1634m - no bridges. Pull up to 1607m with kelly down.
1600 - 1630	½	-	Spot 40 bbl high viscosity pill from 1606 to 1437m.
1630 - 1930	3	-	Pull out of hole to log.
1930 - 2400	4½	-	Flow check, rig up BPB and run in hole with logging tools to 2019m. Start logging. Run #1 DLL-MSFL-SP-GR-Sonic.
3 / 03 / 95			
0000 - 1330	13½	-	Run logs with BPB. Run #2 LSS-GR, unable to get past 385m on run #3 with and without centralisers. Rig down BPB.
1330 - 1430	1	-	Pressure test BOP stack, choke manifold valves, HCR, manual valve and kill-line valves to 2,500 psi and Hydril to 1,000 psi with cup tester.
1430 - 1500	½	-	Make up slick 8½" BHA and run in hole to casing shoe.
1500 - 1530	½	-	Slip 10.7m of drilling line.
1530 - 1800	2½	-	Run in hole. Wash to bottom. Fourteen metres of fill.
1800 - 1900	1	-	Circulate hole clean at 275 gpm.
1900 - 2000	1	-	Pull out of hole to 1607m.
2000 - 2030	½	-	Spot a 90 viscosity pill at 1607 to 1437m.
2030 - 2200	1½	-	Pull out of hole to 393m.
2200 - 2230	½	-	Spot a 90 viscosity pill at 393 to 296m.
2230 - 2330	1	-	Pull out of hole.
2330 - 2400	½	-	Rig up BPB to resume logging.
4 / 03 / 95			
0000 - 2330	23½	-	Run logs with BPB. Run #3 PDS, Run #4 RFT, Run #5 VDS, Run #6 SWC. Rig down BPB.
2330 - 2400	½	-	Run in hole with BHA.
5 / 03 / 95			
0000 - 0030	½	-	Continue run in hole with BHA.
0030 - 0130	1	-	Slip 4.6m and cut 27.1m of drilling line.
0130 - 0430	3	-	Lay out BHA.

0430 - 0730	3	-	Run in hole open ended drill pipe. Pick up 5 singles, 191 joints total in hole.
0730 - 0900	1½	-	Circulate hole at 1850m prior to running cement plugs.
0900 - 1100	2	-	Pressure test lines to 2,500 psi. Run cement plug #1 from 1830 to 1770m with 75 sacks class 'A' cement, 7 gallons D80 and 3 gallons D81. Pull 5 stands and run cement plug #2 from 1730 to 1670m with 78 sacks class 'A' cement, 7 gallons D80 and 3 gallons D81.
1100 - 1200	1	-	Pull 5 stands and run cement plug #3 from 1630 to 1570m with 98 sacks class 'A' cement.
1200 - 1330	1½	-	Pull 4 stands, break circulation and lay out 26 singles of drill pipe.
1330 - 1530	2	-	Circulate while waiting on cement plug #3 to set.
1530 - 1630	1	-	Run in hole, tag cement plug #3 at 1570m with 15,000 lbs weight, pull back to 1340m, break circulation.
1630 - 1700	½	-	Run plug #4 at 1340 to 1280m with 72 sacks class 'A' cement.
1700 - 2000	3	-	Pull 4 stands, break circulation and lay out 67 singles of drill pipe. Run in hole to 930m.
2000 - 2030	½	-	Run plug #5 from 930 to 870m with 66 sacks class 'A' cement.
2030 - 2300	2½	-	Pull 19 stands, break circulation, lay out 59 singles and run in hole to 370m.
2300 - 2330	½	-	Run plug #6 from 370 to 310m with 66 sacks class 'A' cement at 1% $CaCl_2$.
2330 - 2400	½	-	Pull 6 stands.
6 / 03 / 95			
0000 - 0700	7	-	Circulate and wait on cement plug #6 (tagged at 0500hrs at 338m).
0700 - 0800	1	-	Pressure test plug #6 to 500 psi and run supplementary plug from 338 to 310m with 37 sacks class 'A' cement.
0800 - 0900	1	-	Pull back to 310m and circulate hole clean, then displace to inhibited mud.
0900 - 0930	½	-	Lay out 2 joints of drill pipe, pick up kelly and break threads and remove kelly spinner.
0930 - 1030	1	-	Lay out 36 joints of drill pipe.
1030 - 1100	½	-	Flush KCl mud from kelly, mud pumps and BOP's.
1100 - 1700	6	-	Nipple down BOP's, riser and flow line. Recover casing bowl. Run surface plug by hand. Lay out kelly and swivel. Finish cleaning mud tanks. Release rig.

Release Rig at 1700 hrs, 6 March 1995.

Appendix 4

APPENDIX 4

A

CUTTINGS DESCRIPTIONS

GFE Resources Ltd

CUTTINGS DESCRIPTION

WELL NAME:	VAUGHAN-1	**DATE:**	11 January, 1996
GEOLOGIST:	D. Horner	**PAGE:**	1

Interval (m)	%	Description
Spud-60		No samples.
60-70	100	**Calcarenite**: light grey to light brown grey, very fine to fine to occasionally medium grained, common fossil fragments, trace black to green lithics, rare very fine to fine quartz sand grains, trace medium grey **Marly** fragments, very strong calcareous cement in part, moderately hard to hard, poor visual porosity.
70-80	100	**Calcarenite**: as for 60-70m, but with rare coarse rounded glauconite grains.
80-90	90	**Calcarenite**: as for 60-70m, but in general becoming more argillaceous.
	10	**Marl**: medium grey to medium brown grey to medium green grey, common dispersed very fine to dominantly fine calcarenitic grains, firm, non-fissile.
90-100	100	**Calcarenite**: as for 60-70m, but with trace large echinoid spines, bryozoa and shell fragments occasionally replaced in part by glauconite.
	trace	**Marl**: as for 80-90m.
100-110	80	**Calcarenite**: as for 60-70m.
	20	**Marl**: as for 80-90m.
110-120	90	**Marl**: light grey to light brown grey to light green grey, common fossil fragments including bryozoa, forams, bivalves, gastropods, echinoid spines and sponge spicules, trace glauconite infilled fossil fragments, trace black coaly detritus, soft, sticky, non-fissile.
	10	**Calcarenite:** as for 90-100m.
120-160	100	**Marl**: as for 110-120m.
160-180	100	**Marl**: as for 110-120m, but becoming medium brown grey, rare very fine to fine quartz sand grains, trace pyrite, rare black coaly detritus, very soft.
180-190	100	**Marl**: as for 160-180m, but with 10% medium green grey, common black earthy textured coal detritus.
190-200	100	**Marl**: medium green grey to medium brown grey, common to abundant fossil fragments including bryozoa, forams, bivalves, gastropods, echinoid spines and sponge spicules, rare very fine to fine quartz sand grains, trace pyrite, trace black coaly fragments, very soft, sticky, non-fissile.
200-220	100	**Marl**: as for 190-200m, but trace medium to dark grey.
220-240	100	**Marl**: medium to dark grey, medium green grey to medium brown grey, trace fossil fragments including bryozoa, forams, bivalves, gastropods, sponge spicules and echinoid spines, rare very fine quartz sand grains, very soft, sticky, non-fissile.
240-260	100	**Marl**: as for 220-240m, but with abundant fossil fragments.

Interval (m)	%	Description
260-290	100	**Marl**: medium green grey to medium brown grey, medium to dark grey, common to abundant fossil fragments including forams, bryozoa, bivalves, gastropods, echinoid spines and sponge spicules, rare pyrite, rare black coaly detritus, trace very fine to fine quartz sand grains, rare glauconite, very soft, sticky, non-fissile.
290-310	100	**Marl**: as for 260-290m, but with abundant fossil fragments.
310-320	100	**Marl:** as for 260-290m.
320-346	100	**Marl**: medium green grey, occasionally medium to dark grey, medium brown grey, common to abundant bryozoa, common forams, bivalves, gastropods, trace echinoid spines and sponge spicules, rare very fine quartz sand grains, very soft to soft, sticky, non-fissile.
346-350		Cement contaminated.
350-370	100	**Marl**: medium grey to medium green grey, common bryozoa, trace to common shell fragments & forams, trace echinoid spines and sponge spicules, rare glauconite, soft, sticky, non-fissile.
370-380	100	**Marl**: light to medium green grey, trace light to dark grey, common fossil fragments as for 350-370m, trace glauconite, trace white crystalline limestone, soft, sticky, non-fissile.
380-390	100	**Marl**: medium green grey to medium brown grey, common to abundant fossil fragments as for 350-370m, common glauconite, trace very fine to granular brown stained quartz grains, trace medium brown iron oxide rich claystone, common very fine to fine clear subangular to rounded quartz grains, soft, sticky, non-fissile.
390-400	60	**Marl**: as for 380-390m.
	40	**Calcarenite**: off white to medium brown, dominantly very light brown, very fine to very coarse, abundant fossil fragments, common dark brown iron oxide pellets, common very dark green glauconite, trace pyrite, trace to common very fine to fine light brown quartz grains, trace very coarse to granular brown stained subrounded to rounded frosted quartz grains, trace brown iron oxide replaced fossil fragments, friable to moderately hard, occasionally slightly microcrystalline.
400-410	50	**Marl**: medium to dark brown, trace forams, bryozoa and shell fragments, trace glauconite, trace to common pyrite, soft, sticky, non-fissile.
	50	**Calcarenite**: as for 390-400m.
410-420	70	**Marl**: as for 400-410m, but medium green grey in part.
	30	**Calcarenite**: as for 390-400m.
420-440	100	**Marl**: medium to dark brown, common medium green grey, common to abundant bryozoa, forams and shell fragments, trace echinoid spines and sponge spicules, common pyrite, trace glauconite, trace very fine to fine quartz sand grains.
	trace	**Calcarenite**: as for 390-400m.
440-460	100	**Marl**: dark grey to medium brown grey, trace medium green grey, trace glauconite, abundant fossil fragments, rare light brown grey chert, rare very fine quartz sand grains, soft, sticky, non-fissile.
460-470	100	**Marl**: medium brown grey to occasionally dark grey, common glauconite, abundant fossil fragments, trace disseminated pyrite, soft, sticky, non-fissile.
470-480	100	**Marl**: as for 440-460m, but medium brown grey to dominantly dark grey.

480-490	90	**Marl**: as for 470-480m.
	10	**Sandstone**: light brown, very fine to fine, trace medium to granular, subangular to rounded, poorly sorted, weak to occasionally strong calcareous and silica cements, occasionally abundant **Marl** matrix, common light orange stained quartz grains, friable to hard, no visual porosity, no oil fluorescence.
490-500	100	**Sandstone**: light to medium brown, very fine to granular, dominantly coarse, subrounded, poorly sorted, very weak calcareous and silica cements, occasionally very strong calcareous cement grading to arenitic limestone, trace to common medium brown argillaceous matrix, brown to orange brown stained quartz grains, trace brown iron oxide nodules, trace pink rhyolitic lithics, trace brown clay lithics, unconsolidated to occasionally hard, poor to very good but dominantly fair to good inferred porosity, no oil fluorescence.
500-510	100	**Sandstone**: as for 490-500m, but with decreasing calcareous cement.
510-520	60	**Sandstone**: as for 500-510m.
	40	**Claystone**: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to granular brown stained quartz grains, trace very fine black carbonaceous detritus, soft, moderately dispersive, non-fissile.
520-530	80	**Sandstone**: medium brown, very fine to granular, dominantly coarse to very coarse, subrounded to occasionally rounded, poorly sorted, weak silica cement, trace to dominantly abundant dark brown clay matrix grading to claystone, clear to orange to dominantly brown stained quartz grains, friable, poor inferred porosity, no oil fluorescence.
	20	**Claystone**: as for 510-520m.
530-540	70	**Sandstone**: as for 520-530m.
	30	**Claystone**: as for 510-520m.
540-550	100	**Sandstone**: light brown, very fine to coarse, occasionally very coarse to granular grains, dominantly medium, subangular to rounded, poor to moderately sorted, very weak silica cement, trace dark brown argillaceous matrix, common yellow to orange stained quartz grains, trace brown mica flakes, trace pyrite, trace fine black carbonaceous detritus, unconsolidated to friable, very good inferred porosity, no oil fluorescence.
550-560	100	**Sandstone**: as for 540-550m, with decreasing orange stained quartz grains.
560-570	100	**Sandstone**: light grey to light brown grey, very fine to medium, occasionally coarse to granular, dominantly medium, subangular to subrounded, moderately sorted, very weak silica cement, trace dark brown argillaceous matrix in general decreasing with depth, common weak yellow stained quartz grains, trace black carbonaceous detritus, unconsolidated to friable, very good inferred porosity, no oil fluorescence.
570-580	100	**Sandstone**: as for 560-570m, but dominantly medium to coarse grained.
580-590	100	**Sandstone**: as for 560-570m.
590-600	60	**Claystone**: dark brown grey, moderately silty, common dispersed very fine to fine quartz sand grains in part, trace fossil fragments, trace marcasite, trace glauconite, moderately dispersive, soft, non-fissile.
	40	**Sandstone**: as for 560-570m.
600-610	80	**Sandstone**: light grey to light brown grey, very fine to medium, occasionally coarse to very coarse grains, subangular to subrounded, moderately sorted, weak silica cement, common to abundant dark brown grey argillaceous matrix, common weak yellow to orange stained quartz grains, trace marcasite, friable, poor to fair inferred porosity, no oil fluorescence.
	20	**Claystone**: as for 590-600m.

610-620	90	Claystone: as for 590-600m.
	10	Sandstone: as for 600-610m.
620-630	60	Sandstone: light green brown, very fine to granular, dominantly fine, very poorly sorted, subangular, weak silica cement, abundant dark brown argillaceous matrix, common green to orange stained quartz grains, trace brown and green lithics, friable, poor to very poor inferred porosity, no oil fluorescence.
	40	Claystone: as for 590-600m.
630-640	90	Sandstone: light green brown, very fine to medium, occasionally coarse grains, subangular, poor to moderately sorted, weak silica cement, common dark brown grey argillaceous matrix, common green to orange stained quartz, trace brown and green lithics, friable, poor inferred porosity.
	10	Claystone: as for 590-600m, but very dispersive.
640-650	80	Sandstone: as for 630-640m.
	20	Claystone: as for 590-600m.
650-660	90	Sandstone: light brown grey, very fine to very coarse, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, common to abundant dark brown grey argillaceous matrix, weak yellow to orange stained quartz grains, trace brown and grey green lithics, trace black carbonaceous detritus, friable, poor to fair visual porosity.
	10	Claystone: as for 590-600m.
660-670	100	Sandstone: as for 650-660m, but with trace coarse muscovite flakes.
670-680	100	Sandstone: as for 650-660m, but dominantly medium grained.
680-690	90	Sandstone: as for 650-660m.
	10	Claystone: medium to dark brown, very silty, often abundant very fine to coarse dispersed quartz sand grains, slightly calcareous in part, trace pyrite, rare brown sandy dolomite nodules, soft, very dispersive, non-fissile.
690-700	80	Sandstone: light brown, very fine to granular, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, rare strong dolomite cement, common to abundant dark brown argillaceous matrix, trace green and grey lithics, trace black carbonaceous detritus, friable, fair inferred porosity.
	20	Claystone: as for 680-690m.
700-710	90	Sandstone: as for 690-700m.
	10	Claystone: as for 680-690m.
710-720	60	Sandstone: as for 690-700m.
	40	Claystone: as for 680-690m.
720-730	80	Sandstone: light brown, very fine to granular, dominantly coarse, poorly sorted, weak silica cement, rare strong dolomite cement, common to abundant dark brown argillaceous matrix, trace brown and grey green lithics, trace muscovite flakes, trace black carbonaceous detritus, friable, fair inferred porosity.
	20	Claystone: as for 680-690m.
730-740	60	Sandstone: as for 720-730m.

Interval (m)	%	Description
	40	Claystone: as for 680-690m.
740-750	90	Claystone: dark brown grey, moderately to very silty, often common dispersed very fine to granular quartz sand grains, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace glauconite, trace light to medium brown argillaceous cryptocrystalline dolomite nodules, very dispersive, soft, non-fissile.
	10	Sandstone: as for 720-730m, with probable cavings.
750-765	100	Claystone: as for 740-750m.
	trace	Sandstone: as for 740-750m.
765-770	100	Claystone: as for 740-750m, but with glauconite increasing to common.
	trace	Sandstone: as for 740-750m.
770-800	100	Claystone: dark brown grey, moderately silty, trace dispersed very fine to granular quartz sand grains in part, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace to occasionally common glauconite, trace light to medium brown argillaceous cryptocrystalline dolomite, very dispersive, soft, non-fissile.
800-810	100	Claystone: grading from 770-700m, becoming dark brown grey to dark green grey, moderately silty, common glauconite, trace dispersed very fine to granular green to orange stained quartz grains, slightly calcareous, trace pyrite, soft, very dispersive, non-fissile.
810-820	100	Claystone: as for 800-810m, but dominantly dark green grey.
820-830	100	Sandstone: medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, poorly sorted, weak silica cement, common brown argillaceous matrix, rare dark brown iron oxide pellets, common light orange brown stained quartz grains, friable, fair to good inferred porosity, no oil fluorescence.
830-840	90	Sandstone: as for 820-830m. Poor samples due to shaker screen blinding.
	10	Claystone: medium to dark brown, moderately iron oxide rich, common dispersed quartz grains, soft, very dispersive, non-fissile. Poor sample due to shaker screen blinding.
840-850	90	Sandstone: as for 820-830m, but becoming dominantly medium to coarse grained.
	10	Claystone: as for 830-840m.
850-860	70	Sandstone: medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, dominantly subrounded, weak silica and iron oxide cements, very weak calcareous cement in part, common to abundant dark brown argillaceous matrix, strong brown stained quartz grains, trace green grey and brown lithics, trace brown clay casts, trace pyrite, trace black carbonaceous detritus, friable, poor inferred porosity.
	30	Claystone: medium to dark brown, moderately to very iron oxide rich, common dispersed brown stained quartz grains, rare pyrite, soft, very dispersive, non-fissile.
860-870	60	Sandstone: as for 850-860m, but with abundant dark brown argillaceous matrix, very poor inferred porosity.
	40	Claystone: as for 850-860m.
870-880	50	Sandstone: medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, very poorly sorted, weak silica and calcareous cements, abundant dark brown argillaceous matrix - probably matrix supported, strong brown stained quartz grains, trace to common brown, grey, black and green volcanic lithics, trace brown rounded clay lithics, trace black carbonaceous detritus, friable, very poor inferred porosity.
	50	Claystone: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to granular quartz grains, trace micromica and fine mica flakes, soft, very dispersive, non-fissile.

880-890	80	**Claystone**: as for 870-880m.
	20	**Sandstone**: as for 870-880m.
890-900	90	**Claystone**: as for 870-880m, but becoming dark grey in part.
	10	**Sandstone**: as for 870-880m.
900-915	90	**Sandstone**: light brown, very fine to granular, dominantly granular, angular to subangular, abundant grains fractured by drill bit, poor to moderately sorted, moderate silica cement, trace medium brown grey argillaceous matrix, common yellow stained quartz grains, trace to common yellow to orange to pink volcanic lithics, friable, fair inferred porosity, no oil fluorescence.
	10	**Claystone**: as for 870-880m.
915-925	100	**Sandstone**: as for 900-915m.
925-935	90	**Sandstone**: very light brown, very fine to granular, dominantly very coarse, angular to subrounded, common grains fractured by drill bit, poorly sorted, weak silica cement, trace medium brown argillaceous matrix, common yellow to orange stained quartz grains, trace yellow to orange lithics, trace black pyritic coaly detritus, friable, fair to good visual porosity.
	10	**Claystone**: medium to dark brown grey, moderately to very silty, trace dispersed very fine to granular quartz sand grains, trace micromica, trace black coal detritus, soft, very dispersive, non-fissile.
935-945	100	**Sandstone**: as for 925-935m.
945-950	90	**Sandstone**: light grey, very fine to granular, dominantly coarse, angular to subrounded, abundant grains fractured by drill bit, poorly sorted, weak silica cement, trace to common dark grey argillaceous and silt matrix, trace yellow to orange stained quartz grains, trace clear and brown mica flakes, trace pyrite, trace red cherty lithics, friable, fair to good inferred porosity.
	10	**Claystone**: as for 925-935m.
950-960	80	**Sandstone**: as for 945-950m.
	20	**Claystone**: as for 925-935m.
960-970	50	**Sandstone**: as for 945-950m.
	50	**Claystone**: medium to dark grey, very silty, very arenaceous in part, trace coal detritus often with pyritization, trace micromica, firm, very dispersive and washing from samples, slightly subfissile.
970-990	70	**Sandstone**: as for 945-950m.
	30	**Claystone**: as for 960-970m.
990-1000	90	**Claystone**: medium to dark grey, very silty in part with dispersed very fine to granular quartz sand grains, trace black coal detritus, trace pyrite, trace micromica, firm, very dispersive, slightly subfissile.
	10	**Sandstone**: as for 945-950m.
1000-1010	80	**Claystone**: as for 990-1000m.

Interval (m)	%	Description
	20	Sandstone: as for 945-950m.
1010-1020	90	Sandstone: very light grey, very fine to granular, dominantly coarse to very coarse, angular to subrounded, abundant angular fragments fractured by drill bit, trace to common medium to dark grey argillaceous and silt matrix, trace yellow stained quartz grains, trace grey cherty lithics, trace black carbonaceous detritus, trace pyrite, friable, fair to good visual porosity.
	10	Claystone: as for 990-1000m.
1020-1030	80	Sandstone: as for 1010-1020m.
	20	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty in part with dispersed very fine to granular quartz sand grains, trace black coal detritus, trace pyrite, trace micromica, firm, very dispersive, slightly subfissile.
1030-1040	60	Sandstone: as for 1010-1020m.
	40	Claystone: as for 1020-1030m.
1040-1045	70	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty, occasionally very finely arenaceous, common black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, soft to firm, very dispersive and washing from sample, slightly subfissile.
	30	Sandstone: very light grey, very fine to granular, dominantly coarse, angular to subrounded, abundant angular fragments fractured by drill bit, trace to common medium to dark grey argillaceous and silt matrix, trace yellow stained quartz grains, trace grey cherty lithics, trace black carbonaceous detritus, trace pyrite, friable, fair to good visual porosity.
1045-1050	80	Claystone: medium grey, very silty, common black carbonaceous flecks, slightly calcareous, common micromica, trace pyrite, firm, very dispersive, subfissile.
	10	Sandstone: light grey, very fine to fine, subangular to subrounded, moderately sorted, moderate to strong calcareous cement, abundant medium grey argillaceous and silt matrix in part, common black carbonaceous flecks, rare pyrite, moderately hard, very poor to poor visual porosity.
	10	Sandstone: as for 1040-1045m.
1050-1055	80	Claystone: as for 1040-1045m.
	20	Sandstone: as for 1040-1045m.
1055-1060	90	Claystone: as for 1040-1045m.
	10	Sandstone: as for 1040-1045m.
1060-1065	70	Claystone: as for 1040-1045m.
	30	Sandstone: as for 1040-1045m, but with common black coal detritus.
1065-1070	70	Sandstone: light brown, very fine to granular, dominantly fine to medium, subangular to subrounded, moderately sorted, weak to moderate silica and calcareous cements, common medium grey to medium brown argillaceous and silt matrix, trace black coal detritus, trace pyrite, friable, fair inferred porosity.
	30	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty, occasionally very finely arenaceous, common black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, soft to firm, very dispersive and washing from sample, slightly subfissile.
1070-1080	60	Sandstone: as for 1065-1070m.

Interval (m)	%	Description
	40	Claystone: as for 1065-1070m.
1080-1085	80	Sandstone: as for 1065-1070m.
	20	Claystone: as for 1065-1070m.
1085-1090	70	Sandstone: light brown, very fine to granular, dominantly medium, subangular to subrounded, moderately sorted, weak to moderate silica and calcareous cements, common medium grey to medium brown argillaceous and silt matrix, trace black coal detritus, trace pyrite, friable, fair inferred porosity.
	30	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty, occasionally very finely arenaceous, common black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, soft to firm, very dispersive and washing from sample, slightly subfissile.
1090-1095	50	Sandstone: light brown, very fine to granular, dominantly medium, subangular to subrounded, moderately sorted, weak to moderate silica and calcareous cements, common medium grey to medium brown argillaceous and silt matrix, trace black coal detritus, trace pyrite, friable, fair inferred porosity.
	50	Claystone: as for 1085-1090m.
1095-1100	100	Sandstone: light brown, very fine to very coarse, dominantly fine to medium, subangular, moderately to well sorted, weak silica cement, trace medium brown grey argillaceous and silt matrix, trace black carbonaceous detritus, trace pyrite, trace muscovite flakes, trace grey green lithics, friable, fair to good visual porosity.
1100-1105	90	Sandstone: as for 1095-1100m, but with common black coal detritus.
	10	Claystone: as for 1085-1090m.
1105-1110	60	Sandstone: as for 1095-1100m.
	40	Claystone: as for 1085-1090m.
1110-1120	70	Sandstone: light brown, very fine to very coarse, dominantly medium to coarse, subangular, moderatelyto well sorted, weak silica cement, trace medium brown grey argillaceous and silt matrix, trace black carbonaceous detritus, trace pyrite, trace muscovite flakes, trace grey green lithics, friable, fair to good visual porosity.
	30	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty, occasionally very finely arenaceous, common black carbonaceous flecks, common black coal detritus often partly pyritized, trace nodular pyrite, trace micromica, soft to firm, very dispersive and washing from sample, slightly subfissile.
1120-1130	70	Sandstone: as for 1110-1120m.
	30	Claystone: medium to dark grey, occasionally medium to dark brown grey, very silty, occasionally very finely arenaceous, common black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, soft to firm, very dispersive and washing from sample, slightly subfissile.
1130-1140	60	Sandstone: as for 1110-1120m, but very fine to granular, dominantly coarse to very coarse grained.
	40	Claystone: as for 1110-1120m.
1140-1145	60	Sandstone: as for 1110-1120m.
	40	Claystone: as for 1110-1120m.

Interval (m)	%	Description
1145-1150	70	**Sandstone**: as for 1110-1120m, but dominantly fine to medium grained.
	30	**Claystone**: as for 1110-1120m.
1150-1160	70	**Sandstone**: light grey, very fine to granular, dominantly very fine, subangular to subrounded, moderately sorted, moderate calcareous cement, trace to common off white to medium grey argillaceous matrix, abundant off white silt matrix in part, trace fine partially altered feldspar, trace black carbonaceous flecks, trace green grey cherty lithics, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.
	30	**Claystone**: light to dark grey, light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz and partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, soft to firm, very dispersive, subfissile.
1160-1165	60	**Sandstone**: as for 1150-1160m.
	40	**Claystone**: as for 1150-1160m.
1165-1170	70	**Claystone**: light to dark grey, light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz and partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, common medium brown cryptocrystalline dolomite, soft to firm, very dispersive, subfissile.
	30	**Sandstone:** as for 1150-1160m.
1170-1175	90	**Claystone:** light to dark grey, light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz and partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, soft to firm, very dispersive, subfissile.
	10	**Sandstone**: light brown, very fine to very coarse, dominantly medium to coarse, subangular, moderatelyto well sorted, weak silica cement, trace medium brown grey argillaceous and silt matrix, trace black carbonaceous detritus, trace pyrite, trace muscovite flakes, trace grey green lithics, friable, fair to good visual porosity.
1175-1185	90	**Claystone**: as for 1170-1175m.
	10	**Sandstone**: as for 1170-1175m.
1185-1190	95	**Claystone**: as for 1170-1175m, but with rare glauconite.
	5	**Sandstone:** as for 1170-1175m.
1190-1195	80	**Claystone:** light to dark grey, light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz and partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, trace glauconite, soft to firm, very dispersive, subfissile.
	20	**Sandstone**: light grey, very fine to granular, dominantly very fine, subangular to subrounded, moderately sorted, moderate calcareous cement, trace to common off white to medium grey argillaceous matrix, abundant off white silt matrix in part, trace fine partially altered feldspar, trace black carbonaceous flecks, trace green grey cherty lithics, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.
1195-1200	95	**Claystone**: light to dark grey, occasionally light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz and partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, trace glauconite, soft to firm, very dispersive, subfissile.

Interval (m)	%	Description
	5	Sandstone: as for 1190-1195m.
1200-1210	100	Claystone: as for 1195-1200m.
1210-1215	100	Claystone: medium to dark grey, occasionally medium to dark brown grey, occasionally very finely arenaceous, trace very fine partially altered feldspar grains, trace black coal detritus and flecks, trace micromica, trace pyrite, moderately calcareous, trace medium brown cryptocrystalline dolomite, firm, very dispersive, subfissile.
1215-1220	100	Claystone: as for 1210-1215m.
	trace	Sandstone: off white to very light brown grey, very fine to fine, dominantly very fine, subangular to subrounded, moderately to well sorted, moderate calcareous cement, common white argillaceous matrix, trace partially altered feldspars, trace black carbonaceous detritus, moderately hard, very poor visual porosity.
1220-1225	80	Claystone: as for 1210-1215m.
	20	Sandstone: off white to very light brown grey, very fine to medium, dominantly fine, subangular to subrounded, moderately to well sorted, moderate calcareous cement, common white argillaceous matrix, trace partially altered feldspars, trace black carbonaceous detritus, moderately hard, poor visual porosity.
1225-1230	90	Claystone: as for 1210-1215m.
	10	Sandstone: as for 1220-1225m.
1230-1235	80	Claystone: as for 1210-1215m.
	20	Sandstone: as for 1220-1225m.
1235-1240	90	Claystone: medium to dark grey, minor medium to dark brown grey, occasionally very finely arenaceous, trace very fine partially altered feldspar grains, trace black coal detritus and flecks, trace micromica, trace pyrite, moderately calcareous, trace medium brown cryptocrystalline dolomite, firm, very dispersive, subfissile.
	10	Sandstone: off white to very light brown grey, very fine to fine, dominantly very fine, subangular to subrounded, moderately to well sorted, moderate calcareous cement, common white argillaceous matrix, trace partially altered feldspars, trace black carbonaceous detritus, moderately hard, very poor visual porosity.
1240-1250	100	Claystone: as for 1235-1240m.
	trace	Sandstone: as for 1235-1240m.
1250-1255	100	Claystone: medium to dark grey, trace medium to dark brown grey, occasionally very finely arenaceous, trace very fine partially altered feldspar grains, trace black coal detritus and flecks, trace micromica, trace pyrite, moderately calcareous, common medium brown cryptocrystalline dolomite, firm, very dispersive, subfissile.
	trace	Sandstone: as for 1235-1240m.
1255-1265	95	Claystone: as for 1250-1255m.
	5	Sandstone: off white to very light brown grey, very fine to fine, occasionally medium and rare coarse grains, dominantly very fine, subangular to subrounded, moderately to well sorted, moderate calcareous cement, common white argillaceous matrix, trace partially altered feldspars, trace black carbonaceous detritus, moderately hard, very poor visual porosity.
1265-1270	100	Claystone: medium to dark grey, trace medium to dark brown grey, dominantly medium grey, occasionally very finely arenaceous, trace very fine partially altered feldspar grains, trace black coal detritus and flecks, trace micromica, trace pyrite, moderately calcareous, common medium brown cryptocrystalline dolomite, firm, very dispersive, subfissile.
	trace	Sandstone: as for 1255-1265m.

1270-1280	100	**Claystone**: medium to dark grey, trace medium dark brown grey, very silty, occasionally very finely arenaceous, trace very fine off white partially altered feldspars, trace to common black carbonaceous flecks and detritus, trace amber in part, trace medium brown cryptocrystalline dolomite often with common glauconite grains, trace micromica, soft, very dispersive, subfissile.
	trace	**Sandstone**: as for 1255-1265m.
1280-1285	100	**Claystone**: as for 1270-1280m, but with increasing dolomite and glauconite.
	trace	**Sandstone**: as for 1255-1265m.
1285-1290	70	**Claystone:** as for 1270-1280m.
	30	**Sandstone**: very light green grey, very fine to fine, subangular, moderately to well sorted, weak silica cement, very strong dolomite cement in part, common light green grey silt matrix, common to abundant medium green grey argillaceous matrix, trace green to yellow stained quartz grains, common brown dolomite with abundant medium green lithics, trace coarse green mica flakes, friable, poor inferred porosity, no oil fluorescence.
1290-1295	90	**Claystone**: medium to dark grey to medium dark brown grey, very silty, occasionally very finely arenaceous, trace very fine off white partially altered feldspars, trace to common black carbonaceous flecks and detritus, trace amber in part, trace medium brown cryptocrystalline dolomite often with common glauconite grains, trace micromica, soft, very dispersive, subfissile.
	10	**Sandstone**: as for 1285-1290m.
1295-1300	100	**Claystone**: as for 1290-1295m.
	trace	**Sandstone**: as for 1285-1290m.
1300-1305	100	**Claystone**: as for 1290-1295m.
	trace	**Sandstone**: as for 1285-1290m, but with increasing coarse to very coarse grains - possibly cavings.
1305-1310	100	**Claystone**: as for 1290-1295m.
	trace	**Sandstone**: as for 1285-1290m.
1310-1315	100	**Claystone**: as for 1290-1295m, but becoming very calcareous in part with common increasing medium brown cryptocrystalline dolomite.
	trace	**Sandstone**: as for 1285-1290m.
1315-1319	50	**Sandstone**: light to medium green, very fine to coarse, dominantly medium, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common light green argillaceous and silt matrix, common to abundant yellow to green stained quartz grains, friable, fair to good visual porosity, no oil fluorescence.
	50	**Claystone**: as for 1290-1295m.
1319-1330	80	**Sandstone**: as for 1315-1319m.
	20	**Claystone**: medium to dark green grey, very silty, abundant dispersed very fine to medium quartz sand grains grading to sandstone, common green and black lithics, soft, very dispersive, non-fissile.

1330-1340	90	**Sandstone**: as for 1315-1319m, but with common coarse quartz grains.
	10	**Claystone**: as for 1319-1330m.
1340-1350	100	**Sandstone**: light to medium green, very fine to medium, dominantly fine, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common light green argillaceous and silt matrix, common to abundant yellow to green stained quartz grains, friable, fair to good visual porosity, no oil fluorescence.
1350-1360	70	**Sandstone**: as for 1340-1350m, but dominantly medium grained.
	30	**Claystone**: as for 1319-1330m.
1360-1370	70	**Sandstone**: light to medium green, very fine to medium, dominantly medium, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common dark green argillaceous and silt matrix, common to abundant yellow to orange stained quartz grains, friable, fair visual porosity, no oil fluorescence.
	30	**Claystone**: medium to dark green grey, very silty, abundant dispersed very fine to occasionally coarse quartz sand grains grading to matrix supported sandstone, common green and black lithics, soft, very dispersive, subfissile.
1370-1380	70	**Sandstone**: as for 1360-1370m, but with abundant yellow to orange stained quartz grains.
	30	**Claystone**: as for 1360-1370m.
1380-1390	70	**Sandstone**: as for 1360-1370m.
	30	**Claystone**: as for 1360-1370m.
1390-1400	70	**Sandstone**: light orange green, very fine to coarse, dominantly medium, subangular, moderately sorted, weak silica cement, abundant medium green grey argillaceous and silt matrix - grains often matrix supported, abundant yellow to orange quartz grains, trace orange to red cherty lithics, friable, very poor to occasionally fair, dominantly poor visual porosity.
	30	**Claystone**: as for 1360-1370m.
1400-1410	70	**Sandstone**: as for 1390-1400m.
	30	**Claystone**: very light brown to medium green to medium grey, very silty, often abundant dispersed very fine to coarse quartz grains grading to argillaceous sandstone, common micromica, firm, very dispersive washing from samples, subfissile.
1410-1415	50	**Sandstone**: as for 1390-1400m.
	50	**Claystone**: as for 1400-1410m.
1415-1420	70	**Claystone**: dark grey, occasionally medium brown, very silty, trace medium to dark brown cryptocrystalline dolomite, trace glauconite, trace dispersed coarse to very coarse quartz sand grains, trace black carbonaceous flecks and detritus, trace pyrite, common micromica, firm, very dispersive, subfissile.
	30	**Sandstone**: as for 1390-1400m, but with common very coarse clear quartz grains.
1420-1430	90	**Claystone**: as for 1415-1420m.
	10	**Sandstone**: as for 1415-1420m.
1430-1435	100	**Claystone**: as for 1415-1420m, but with increasing dispersed quartz grains.

Interval (m)	%	Description
	trace	**Sandstone**: light grey, very fine to very coarse, dominantly very coarse, subangular, moderately sorted, in general dispersed through the claystone, abundant dark grey to dark brown grey argillaceous matrix, trace glauconite, friable, no visual porosity.
1435-1440	100	**Claystone**: as for 1415-1420m.
	trace	**Sandstone**: as for 1430-1435m.
1440-1445	100	**Claystone**: dark grey to dark brown grey, very silty, common dispersed very coarse quartz sand grains, common glauconite, trace dolomite, trace black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, firm, very dispersive, subfissile.
	trace	**Sandstone**: as for 1430-1435m.
1445-1455	100	**Claystone**: as for 1440-1445m, but with abundant glauconite.
	trace	**Sandstone**: as for 1430-1435m.
1455-1460	100	**Claystone**: as for 1445-1455m.
	trace	**Sandstone**: as for 1430-1435m.
1460-1475	100	**Claystone**: dark grey to dark brown grey, very silty, common glauconite, trace medium brown cryptocrystalline dolomite, trace dispersed quartz grains, moderately carbonaceous, trace black carbonaceous flecks and detritus, trace micromica, firm, moderately dispersive, subfissile.
1475-1480	100	**Claystone**: as for 1460-1475m, but with common to abundant glauconite.
1480-1485	100	**Claystone**: as for 1460-1475m, but with trace calcite veins.
1485-1495	100	**Claystone**: dark grey to dark brown grey, very silty, trace glauconite, trace medium brown cryptocrystalline dolomite, moderately carbonaceous, trace black carbonaceous flecks and detritus, trace micromica, firm, moderately dispersive, subfissile.
1495-1500	100	**Claystone**: as for 1485-1495m, but with common glauconite.
1500-1505	100	**Claystone**: as for 1485-1495m.
1505-1520	100	**Claystone**: dark grey to dark brown grey, very silty, common glauconite, trace medium brown cryptocrystalline dolomite often with glauconite inclusions, trace dispersed coarse quartz grains, moderately carbonaceous, trace black carbonaceous flecks and detritus, trace micromica, firm, moderately dispersive, subfissile.
1520-1525	100	**Claystone**: as for 1505-1520m, but with glauconite becoming common to abundant.
1525-1540	100	**Claystone**: dark grey, occasionally dark brown grey, very silty, moderately carbonaceous, rare black coal detritus, common glauconite, common micromica, very slightly calcareous, trace crystalline calcite, trace *Inoceramus*, rare to trace coarse to very coarse dispersed quartz sand grains, firm, subfissile.
1540-1550	100	**Claystone**: dark grey, occasionally dark brown grey, very silty, moderately carbonaceous, rare black coal detritus, abundant glauconite, common micromica, very slightly calcareous, trace crystalline calcite, common *Inoceramus*, rare to trace coarse to very coarse dispersed quartz sand grains, firm, subfissile.
1550-1555	100	**Claystone**: as for 1540-1550m, but with trace pyrite and medium brown cryptocrystalline dolomite.

1555-1570	100	**Claystone**: dark green grey, very silty, abundant glauconite, trace very coarse dispersed quartz sand grains, trace pyrite, trace medium brown cryptocrystalline dolomite, moderately carbonaceous, common micromica, trace medium grained clear brown and green mica flakes, trace *Inoceramus*, slightly calcareous, firm to moderately hard, moderately dispersive, subfissile.
1570-1575	100	**Claystone**: as for 1555-1570m, but with increasing dispersed very fine to coarse quartz sand grains.

1575-1580	95	**Claystone**: dark green grey, medium grey in part, very silty, abundant glauconite, trace to abundant very fine to very coarse dispersed quartz sand grains, trace pyrite, trace medium brown cryptocrystalline dolomite, moderately carbonaceous, common micromica, trace medium grained clear brown and green mica flakes, trace *Inoceramus*, slightly calcareous, firm to moderately hard, moderately dispersive, subfissile.
	5	**Sandstone**: light to medium grey, very fine to very coarse, dominantly fine to medium, subangular, very poorly sorted, weak silica cement, moderate calcareous cement, common medium green grey argillaceous and silt matrix in part, abundant off white argillaceous matrix in part, trace very fine red volcanic lithics, friable to moderately hard, no visual porosity, no oil fluorescence.
1580-1590	100	**Claystone**: as for 1575-1580m.
	trace	**Sandstone**: as for 1575-1580m.
1590-1597	98	**Claystone**: as for 1575-1580m.
	2	**Dolomite:** light brown, cryptocrystalline, trace glauconite, trace black flecks, occasionally very finely arenaceous, occasionally very argillaceous, hard, no visual porosity.
1597-1600	70	**Sandstone**: off white to light grey, very fine to very coarse, dominantly very fine to fine, subangular, poorly sorted, moderate to strong calcareous and dolomitic cements, abundant off white to medium brown argillaceous and silt matrix, trace black coal detritus, trace amber, trace pyrite, hard, nil to poor dominantly very poor visual porosity, no oil fluorescence.
	30	**Claystone**: medium brown to medium grey, moderately to very silty, abundant black coal detritus, trace to common amber, very finely arenaceous in part, trace micromica, firm, very dispersive, subfissile.
1600-1601.5	100	**Claystone**: medium to dark brown to medium to dark brown grey, common black coal detritus, trace amber, trace very fine sandstone laminae, trace pyrite, common dolomite as for 1590-1597m, common micromica, very silty, firm, very dispersive, subfissile.
1601.5-1603	100	**Sandstone**: light grey, medium to dominantly very coarse, angular to dominantly subangular, moderately to well sorted, weak calcareous and silica cements, trace white argillaceous matrix in part, minor pyrite, trace black coal detritus, trace amber, friable, very good inferred porosity, no oil fluorescence but trace bright white amber fluorescence.
1603-1607	70	**Sandstone**: light grey, medium to very coarse, dominantly medium to coarse, angular to subangular, moderately sorted, weak silica cement, trace white argillaceous matrix, possibly abundant medium grey argillaceous and silt matrix in part, trace pyrite, common black coal detritus and amber, friable, poor to good inferred porosity, no oil fluorescence but 1% bright white mineral fluorescence from amber.
	30	**Claystone**: medium to dark grey, medium to dark brown grey, very contaminated with cavings.

Interval (m)	%	Description
1607-1610	80	**Sandstone**: light grey, very fine to granular, dominantly medium to coarse, very poorly sorted, moderate silica cement, trace white argillaceous matrix in part, common black coal detritus with associated amber and pyrite, friable, fair to good visual porosity.
	20	**Claystone**: medium to dominantly dark grey, very silty, very carbonaceous with common black coal detritus, trace amber, trace pyrite, common micromica, firm, very dispersive, subfissile.
1610-1612.5	60	**Claystone**: as for 1607-1610m.
	40	**Sandstone:** as for 1607-1610m.
1612.5-1613	70	**Sandstone**: light grey, very fine to granular, dominantly very coarse, angular to subangular, poorly sorted, strong silica cement, trace white argillaceous matrix, trace black coal detritus, trace amber, trace pyrite, trace brown mica flakes, hard, very poor visual porosity. **Fluorescence:** the sandstone has 30% patchy bright yellow fluorescence with weak instant followed by crush light yellow cut fluorescence, no cut colour, odour or oil stain. NOTE: the oil seems to be present only in a thin band of tight sandstone immediately below a 1 meter thick claystone cap but does not extend into the more permeable sandstone below.
	30	**Claystone**: as for 1607-1610m.
1613-1615	80	**Sandstone**: as for 1612.5-1613m, but with 10% fluorescence.
	20	**Claystone**: as for 1607-1610m.
1615-1620	100	**Sandstone**: light grey, very fine to granular, dominantly very coarse, angular to subrounded, poorly sorted, moderate silica cement, trace white argillaceous matrix, trace black coal detritus, friable to occasionally moderately hard, fair to good visual porosity. **Fluorescence:** 10% patchy moderately bright yellow fluorescence with weak pale yellow crush cut coming only from very tight sandstone aggregates - probably memory from 1612.5-1613m.
	trace	**Claystone**: as for 1607-1610m.
1620-1625	60	**Claystone**: light to dark grey, dominantly medium grey, very silty, trace black carbonaceous detritus, trace pyrite, common micromica, firm, very dispersive and washing from sample, subfissile.
	40	**Sandstone**: light grey, very fine to granular, dominantly medium to coarse, angular to subangular, very poorly sorted, strong silica cement, weak to moderate calcareous cement in part, trace white argillaceous matrix, trace black coal detritus, trace pyrite, moderately hard to hard, very poor to poor visual porosity. **Fluorescence:** The sandstone has 5% patchy to moderately bright yellow fluorescence with very weak pale yellow crush cut.
1625-1630	80	**Claystone**: medium brown, very silty, trace black carbonaceous flecks, common micromica, trace amber, trace pyrite, occasionally very coarse quartz grains, firm, very dispersive, subfissile.
	20	**Sandstone**: light grey to light brown grey, very fine to granular, dominantly fine, moderate to strong silica and occasionally calcareous cements, common to abundant white argillaceous matrix, trace black carbonaceous detritus, trace to common pyrite, moderately hard, very poor visual porosity. **Fluorescence:** the sandstone has trace fluorescence as for 1620-1625m.
1630-1635	60	**Claystone**: as for 1625-1630m.

Interval (m)	%	Description
	40	**Sandstone**: light grey to light brown grey, very fine to granular, dominantly fine to coarse, angular to subangular, poorly sorted, moderate silica and weak calcareous cements, common white to light brown argillaceous matrix, trace black coal detritus, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.
1635-1640	90	**Sandstone**: light grey, very fine to coarse, dominantly medium, subangular, moderately sorted, weak to moderate silica cement, trace off white argillaceous matrix, trace black coal detritus, trace amber, trace coal, trace medium brown cryptocrystalline dolomite, trace mica flakes, friable, fair to good visual porosity, no oil fluorescence.
	10	**Claystone**: as for 1625-1630m.
1640-1645	60	**Claystone**: medium grey to occasionally medium brown to medium green, moderately to very silty, very calcareous in part, trace black coal detritus, trace amber, trace pyrite, trace quartz and green lithics, trace micromica, firm, very dispersive, subfissile.
	40	**Sandstone**: off white to light green to light brown, very fine, subangular, well sorted, strong calcareous cement, common white to light grey argillaceous matrix, trace to common very fine green, red, white and black lithics, moderately hard, very poor visual porosity, no oil fluorescence.
1645-1650	70	**Claystone**: as for 1640-1645m.
	30	**Sandstone**: light grey, very fine to very coarse, dominantly medium, subangular, moderately sorted, moderate silica cement, very weak calcareous cement, trace white argillaceous and silt matrix, trace brown lithics, trace black carbonaceous detritus, trace medium brown cryptocrystalline dolomite, friable to moderately hard, fair visual porosity, no oil fluorescence.
1650-1655	100	**Sandstone**: as for 1645-1650m, but with abundant white argillaceous matrix and very poor visual porosity.
1655-1657	100	**Sandstone**: light grey, very fine to granular, dominantly coarse, subangular, moderately sorted, weak to moderate silica cement, trace white argillaceous matrix, common black carbonaceous detritus, trace amber, friable, good visual porosity, no oil fluorescence.
1657-1660	100	**Sandstone**: light grey, very fine to granular, dominantly medium, subangular, poorly sorted, weak silica cement, trace strong dolomite cement, trace white argillaceous matrix, trace black carbonaceous detritus, trace amber, trace pyrite, trace brown and clear mica flakes, friable to moderately hard, fair to good visual porosity, no oil fluorescence.
1660-1664	100	**Sandstone**: light grey, very fine to coarse, dominantly fine, subangular, moderately sorted, weak silica cement, trace white argillaceous matrix, trace black carbonaceous detritus, trace amber, trace pyrite, trace to common brown and clear mica flakes, friable, fair to good visual porosity, no oil fluorescence.
1664-1670	70	**Claystone**: dark brown grey, moderately silty, trace black carbonaceous flecks, trace amber, trace pyrite, common micromica, firm, very dispersive, subfissile.
	30	**Sandstone**: as for 1660-1664m.
1670-1675	100	**Sandstone**: light brown grey, very fine to coarse, dominantly medium to coarse, subangular, poorly sorted, weak silica cement, trace strong dolomite cement, trace white argillaceous matrix, trace black carbonaceous detritus, trace amber, trace pyrite, trace brown and clear mica flakes, friable to moderately hard, fair to good visual porosity, no oil fluorescence.
	trace	**Claystone**: as for 1664-1670m.

1675-1680	100	**Claystone**: medium to dark grey, very silty, common very fine sandstone laminae, abundant black coal detritus, trace pyrite, trace amber, common micromica, firm, moderately dispersive, subfissile.
1680-1685	100	**Claystone**: light to medium brown grey to dark grey, very silty, common very fine sandstone laminae, abundant black coal detritus, trace pyrite, trace amber, common micromica, firm, moderately dispersive, subfissile.
1685-1690	80	**Sandstone**: off white, very fine to coarse, dominantly fine, subangular to subrounded, moderately sorted, moderate calcareous and silica cement, common to abundant white argillaceous matrix, trace green, grey and red lithics, trace brown and clear mica flakes, trace coal detritus, trace amber, trace pyrite, moderately hard, very poor visual porosity.
	20	**Claystone**: as for 1680-1685m.
1690-1695	60	**Claystone**: as for 1680-1685m.
	40	**Sandstone**: as for 1685-1690m.
1695-1700	60	**Sandstone**: off white to light green grey, very fine to medium, dominantly fine, subangular to rounded, moderately to well sorted, weak to moderate calcareous cement, abundant white to very light green argillaceous matrix, abundant off white, light brown, green, grey and occasional red lithics, trace black coal detritus, friable, very poor visual porosity.
	40	**Claystone**: off white to light green grey, slightly silty in part, trace dispersed lithic sand grains, trace black coal detritus, trace pyrite, firm, slightly subfissile.
1700-1705	90	**Claystone**: light to medium brown grey to dark grey, very silty, common very fine sandstone laminae, abundant black coal detritus, trace pyrite, trace amber, common micromica, firm, moderately dispersive, subfissile.
	10	**Sandstone:** as for 1695-1700m.
1705-1710	100	**Sandstone**: as for 1695-1700m, but dominantly coarse.
1710-1715	80	**Sandstone**: as for 1705-1710m.
	20	**Claystone**: as for 1695-1700m.
1715-1725	80	**Sandstone**: light to medium green grey, very fine to coarse, dominantly medium, subangular to rounded, moderately to well sorted, weak to moderate calcareous cement, common to abundant white to light green argillaceous matrix, abundant off white to green grey to light brown lithics, trace to common red lithics, trace black coal detritus, friable, poor visual porosity, no oil fluorescence.
	20	**Claystone**: off white to light green grey, light to medium brown grey in part, slightly silty in part, trace dispersed lithic sand grains, trace black coal detritus, trace pyrite, firm, slightly subfissile.
1725-1735	70	**Sandstone**: medium green grey, very fine to coarse, dominantly medium, subangular to rounded, moderately sorted, weak calcareous and silica cements, abundant white argillaceous matrix, abundant green to grey to black lithics, common red lithics and off white partially altered feldspars, trace black coal detritus, friable, very poor visual porosity.
	30	**Claystone**: light green grey to medium brown, slightly silty, occasionally abundant dispersed lithic grains especially where light green grey, trace micromica, trace black carbonaceous detritus, trace pyrite, firm, very dispersive, slightly subfissile.
1735-1740	100	**Sandstone**: medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, abundant white argillaceous matrix, abundant green to grey to black lithics, common red lithics and off white partially altered feldspars, trace black coal detritus, friable, poor visual porosity, no oil fluorescence.
1740-1745	80	**Sandstone**: as for 1725-1735m.

Interval (m)	%	Description
	20	Claystone: as for 1725-1735m.
1745-1750	90	Sandstone: as for 1735-1740m.
	10	Claystone: light green grey to medium brown, dominantly light green grey, slightly silty, occasionally abundant dispersed lithic grains especially where light green grey, trace micromica, trace black carbonaceous detritus, trace pyrite, firm, very dispersive, slightly subfissile.
1750-1755	100	Sandstone: medium grey to medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, common to abundant white argillaceous matrix, abundant green to grey to black lithics, common white to light brown partially altered feldspars, trace red lithics, trace black coal detritus, trace coarse brown and green mica flakes, friable to moderately hard, poor inferred porosity, no oil fluorescence.
1755-1760	90	Sandstone: as for 1750-1755m.
	10	Claystone: as for 1745-1750m, but often off white in colour.
1760-1775	100	Sandstone: as for 1750-1755m.
1775-1780	100	Sandstone: medium grey to medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, abundant white argillaceous matrix, abundant green to grey to black lithics, common white to light brown partially altered feldspars, trace red lithics, trace black coal detritus, trace coarse brown and green mica flakes, friable to moderately hard, poor inferred porosity, no oil fluorescence.
1780-1785	80	Claystone: off white to light green to light brown to light grey, trace dark brown and very carbonaceous, trace brown and green mica flakes, slightly silty in part, trace black carbonaceous flecks in part, trace black coal detritus, rare micromica, firm, very dispersive, subfissile.
	20	Sandstone: as for 1775-1780m.
1785-1790	70	Claystone: as for 1780-1785m.
	30	Sandstone: as for 1775-1780m.
1790-1795	90	Sandstone: medium grey to medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, abundant white argillaceous matrix, abundant green to grey to black lithics, common white to light brown partially altered feldspars, trace red lithics, trace black coal detritus, trace coarse brown and green mica flakes, friable to moderately hard, poor inferred porosity, no oil fluorescence.
	10	Claystone: as for 1780-1785m.
1795-1800	60	Sandstone: as for 1790-1795m.
	40	Claystone: off white to light green to light brown to light grey, often brown and very carbonaceous, trace brown and green mica flakes, slightly silty in part, trace black carbonaceous flecks in part, trace black coal detritus, rare micromica, firm, very dispersive, subfissile.
1800-1805	70	Claystone: as for 1795-1800m.
	30	Sandstone: light to medium grey, very fine to medium, dominantly fine, angular to subrounded, moderately to well sorted, moderate silica cement, trace weak calcareous cement, abundant white argillaceous matrix grading to arenaceous claystone, abundant lithics, trace coal, moderately hard, very poor visual porosity.
1805-1810	50	Claystone: as for 1795-1800m.

Interval (m)	%	Description
	50	**Sandstone**: as for 1800-1805m.
1810-1813	60	**Sandstone**: medium grey, very fine to medium, dominantly fine, angular to subrounded, moderately to well sorted, moderate silica cement, trace weak calcareous cement, abundant white argillaceous matrix grading to arenaceous claystone, abundant grey to green to black lithics, common brown and red lithics, trace coal, moderately hard, very poor visual porosity.
	40	**Claystone**: as for 1795-1800m.
1813-1818.5	100	**Sandstone**: light green grey, very fine to medium, angular to subrounded, moderately to well sorted, weak silica cement, common to abundant white argillaceous matrix, abundant green to grey to black lithics, common brown and red lithics, trace medium to coarse green and brown mica flakes, trace black coal detritus, friable, poor visual porosity, no oil fluorescence.
	trace	**Claystone**: as for 1795-1800m.
1818.5-1823	100	**Sandstone**: light to medium green grey, very fine to coarse, dominantly medium, angular to subrounded, moderately to well sorted, weak silica cement, very weak calcareous cement in part, trace to common white argillaceous matrix, common to abundant grey to green to brown lithics, trace red lithics, common white partially altered felspars, common coarse brown and green mica flakes, friable, poor to fair visual porosity, no oil fluorescence. The lithics in this sample appear to be less weathered than in the earlier Eumeralla sandstone samples suggesting the possibility of better than normal porosity.
1823-1825	100	**Sandstone**: medium grey to medium green grey, very fine to coarse, dominantly medium, angular to subangular, moderately to well sorted, moderate silica cement, common white argillaceous matrix, abundant green to grey and trace red to brown lithics, common white altered feldspars, common coarse brown mica flakes, trace black coal detritus, trace pyrite, friable, poor visual porosity, no oil fluorescence.
1825-1830	100	**Sandstone**: as for 1823-1825m.
1830-1840	80	**Claystone**: light green grey, light to medium grey, light to medium brown grey, slightly silty in part, trace micromica, trace black carbonaceous flecks, trace very fine off white partially altered feldspars in part, firm, very dispersive, subfissile.
	20	**Sandstone**: light green grey, very fine to medium, dominantly fine to medium, angular to subrounded, moderately sorted, moderate silica cement, abundant green grey argillaceous matrix, abundant green to grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace mica flakes, friable, nil to very poor visual porosity, no oil fluorescence.
1840-1845	80	**Claystone**: off white to light grey to light green to light brown, very silty in part, abundant very fine partially altered feldspars, abundant very fine multicoloured lithic grains in part, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
	20	**Sandstone**: light green grey, very fine to medium, dominantly very fine to fine, angular to subrounded, moderately sorted, moderate silica cement, abundant green grey argillaceous matrix grading to claystone, abundant green to grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace mica flakes, friable, nil to very poor visual porosity, no oil fluorescence.
1845-1850	70	**Claystone:** as for 1840-1845m.
	30	**Sandstone**: light green grey, very fine to medium, dominantly fine to medium, angular to subrounded, moderately sorted, moderate silica cement, abundant green grey argillaceous matrix, abundant green to grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace mica flakes, friable, nil to very poor visual porosity, no oil fluorescence.
1850-1855	90	**Claystone**: as for 1840-1845m, but dominantly very silty.

Interval (m)	%	Description
	10	**Sandstone**: as for 1840-1845m.
1855-1860	70	**Claystone**: off white to light grey to light green to light brown, often very silty, abundant very fine partially altered feldspars, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
	30	**Sandstone**: off white to light grey, very fine to coarse, dominantly medium to coarse, angular to subangular, moderately sorted, moderate silica cement, common to abundant white argillaceous matrix, common to abundant green to grey lithics, trace red to brown lithics, trace coarse brown mica flakes, common partially altered feldspars, trace black carbonaceous detritus, moderately hard, very poor visual porosity, no oil fluorescence.
1860-1869	100	**Sandstone**: off white to light grey, very fine to coarse, dominantly coarse, moderately to well sorted, weak silica cement, common white argillaceous matrix, abundant green to grey lithics, common red to brown lithics, trace coarse brown mica flakes, common off white partially altered feldspars, trace black carbonaceous detritus, friable, very poor to poor with some possibly fair visual porosity, no oil fluorescence. Note: lithic grains have a fresh unweathered appearance.
1869-1880	100	**Sandstone**: medium grey, very fine to coarse, dominantly medium, angular to subangular, moderately to well sorted, weak to moderate silica cement, common to abundant white argillaceous matrix, abundant grey to green grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace green and brown mica flakes, friable to moderately hard, very poor to poor with some possibly fair visual porosity, no oil fluorescence.
	trace	**Claystone**: off white to light grey, occasionally light green to light brown, very silty in part, abundant very fine partially altered feldspars in part, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
1880-1884	90	**Sandstone**: as for 1869-1880m, but in part dominantly fine with very poor visual porosity.
	10	**Claystone**: as for 1869-1880m.
1884-1890	70	**Sandstone**: medium grey, very fine to coarse, dominantly medium, angular to subangular, moderately to well sorted, weak to moderate silica cement, strong calcareous cement in part, common to abundant white argillaceous matrix, abundant grey and green grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace green and brown mica flakes, friable to moderately hard, very poor to poor visual porosity, no oil fluorescence.
	30	**Claystone**: as for 1869-1880m.
1890-1895	60	**Sandstone**: as for 1884-1890, but with abundant white argillaceous matrix.
	40	**Claystone**: off white to light grey, light green to light brown, very silty in part, abundant very fine partially altered feldspars in part, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
1895-1900	90	**Claystone**: as for 1890-1895m.
	10	**Sandstone**: as for 1890-1895m.
1900-1905	100	**Claystone**: off white to light grey, light green to light brown, very silty in part, abundant very fine partially altered feldspars in part, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
	trace	**Sandstone**: as for 1890 to 1895m.
1905-1910	70	**Claystone**: as for 1900 to 1905m.

	30	Sandstone: medium grey, very fine to coarse, dominantly fine to medium, angular to subangular, poorly sorted, weak to moderate silica cement, trace strong calcareous cement in part, abundant white argillaceous matrix grading to arenaceous claystone, abundant grey to green grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace green and brown mica flakes, friable to moderately hard, very poor to poor visual porosity, no oil fluorescence.
1910-1920	100	Claystone: light to medium grey, occasionally light to medium green grey, light to medium brown grey, dominantly medium grey, occasionally very silty, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
1920-1925	90	Claystone: as for 1910-1920m.
	10	Sandstone: light to medium green grey, very fine to coarse, dominantly fine to medium, angular to occasionally subangular, poor to moderately sorted, moderate silica cement, weak calcareous cement in part, abundant white argillaceous matrix - often matrix supported, abundant grey to green lithics, abundant white partially altered feldspars, trace red to brown lithics, trace brown and green mica flakes, trace pyrite, rare black carbonaceous detritus, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1925-1930	90	Claystone: as for 1910-1920m.
	10	Sandstone: as for 1920-1925m.
1930-1935	90	Sandstone: light to medium green grey, very fine to coarse, dominantly medium, angular to occasionally subangular, poor to moderately sorted, moderate silica cement, weak calcareous cement in part, abundant white argillaceous matrix - often matrix supported, abundant grey to green lithics, abundant white partially altered feldspars, trace red to brown lithics, trace brown and green mica flakes, trace pyrite, rare black carbonaceous detritus, moderately hard, nil to very poor visual porosity, no oil fluorescence.
	10	Claystone: light to medium grey, occasionally light to medium green grey, light to medium brown grey, dominantly medium grey, occasionally very silty, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
1935-1939	80	Sandstone: as for 1930-1935m.
	20	Claystone: as for 1930-1935m.
1939-1945	50	Sandstone: as for 1930-1935m.
	50	Claystone: as for 1930-1935m.
1945-1950	60	Sandstone: as for 1930-1935m, but consisting 10% of common to abundant white argillaceous matrix and poor visual porosity.
	40	Claystone: as for 1930-1935m.
1950-1955	60	Sandstone: light to medium green grey, very fine to coarse, dominantly medium, angular to occasionally subangular, poor to moderately sorted, moderate silica cement, weak calcareous cement in part, abundant white argillaceous matrix - often matrix supported, abundant grey to green lithics, abundant white partially altered feldspars, trace red to brown lithics, trace brown and green mica flakes, trace pyrite, rare black carbonaceous detritus, moderately hard, nil to very poor visual porosity, no oil fluorescence.

Interval (m)	%	Description
	40	**Claystone**: light to medium grey, occasionally light to medium green grey, light to medium brown grey, dominantly medium grey, occasionally very silty, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
1955-1965	70	**Sandstone**: as for 1950-1955m.
	30	**Claystone**: as for 1950-1955m.
1965-1970	50	**Sandstone**: as for 1950-1955m.
	50	**Claystone**: light to dominantly medium grey, occasionally light to medium green grey, occasionally light to medium brown grey, very silty in part, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
1970-1975	90	**Claystone**: as for 1965-1970m.
	10	**Sandstone**: as for 1950-1955m.
1975-1980	100	**Claystone**: as for 1965-1970m.
	trace	**Sandstone**: as for 1950-1955m.
1980-1990	100	**Claystone**: as for 1965-1970m, but with minor dark grey and very carbonaceous fragments.
1990-2000	80	**Sandstone**: medium grey to medium green grey, very fine to medium, dominantly fine, angular to subrounded, moderately to well sorted, moderate silica cement, common to abundant white argillaceous matrix, abundant green to grey lithics, abundant partially altered feldspars, common red to brown lithics, trace brown and green mica flakes, trace black carbonaceous detritus, moderately hard, very poor visual porosity, no oil fluorescence.
	20	**Claystone:** as for 1965-1970m.
2000-2005	80	**Sandstone**: as for 1990-2000m.
	20	**Claystone**: light to dominantly medium grey, occasionally light to medium green grey, occasionally light to medium brown grey, very silty in part, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
2005-2010	60	**Claystone**: as for 2000-2005m.
	40	**Sandstone**: as for 1990-2000m.
2010-2015	70	**Sandstone**: as for 1990-2000m.
	30	**Claystone**: as for 2000-2005m.
2015-2020	80	**Claystone**: as for 2000-2005m.
	20	**Sandstone**: as for 1990-2000m.

Interval (m)	%	Description
2020-2025	60	**Sandstone**: medium grey to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately to well sorted, moderate silica cement, abundant white argillaceous matrix, abundant green to grey lithics, abundant partially altered feldspars, common red to brown lithics, trace brown and green mica flakes, trace black carbonaceous detritus, moderately hard, very poor visual porosity, no oil fluorescence.
	40	**Claystone**: light to dominantly medium grey, minor light to medium green grey, trace light to medium brown grey, often very silty, mainly non to moderately silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
2025-2030	70	**Sandstone**: as for 2020-2025m.
	30	**Claystone**: as for 2020-2025m.

APPENDIX 4

B

GEOLOGICAL SUMMARY

GFE Resources Ltd

GEOLOGICAL SUMMARY

VAUGHAN-1

Permit:	PPL 1	**Spud Date:**	14 / 02 / 1995	**Rig:**	Century Rig 11
GFE Rep:	K. Smith	**Geologist:**	D. Horner	**Page:**	1

Interval (m)	ROP (Av.) (m/hr)	Lithological and Fluorescence Description
300-346	25-70 *(45)*	**Marl**: medium green grey to medium brown grey, occasionally medium to dark grey, common to occasionally abundant fossil fragments including bryozoa, forams, bivalves, gastropods, sponge spicules and echinoid spines, rare very fine to fine quartz sand grains, rare pyrite, rare glauconite, rare to occasionally common black coaly detritus, very soft, sticky, non-fissile.
346-399	30-120 *(60)*	**Marl**: medium grey to medium green grey, common bryozoa, trace to common shell fragments and forams, trace echinoid spines and sponge spicules, rare glauconite, soft, sticky, non-fissile, becoming more brownish with depth and with minor brown quartz grains and off white **Calcarenite** at base.
399-412	80-140 *(120)*	**Calcarenite:** off white to medium brown, dominantly very light brown, very fine to very coarse, abundant fossil fragments, common dark brown iron oxide pellets, common very dark green glauconite, trace pyrite, trace to common very fine to fine light brown quartz grains, trace very coarse to granular brown stained subrounded to rounded frosted quartz grains, trace brown iron oxide replaced fossil fragments, friable to moderately hard, occasionally slightly microcrystalline. With 40-50% **Marl:** medium to dark brown, trace forams, bryozoa and shell fragments, trace glauconite, trace to common pyrite, soft, sticky, non-fissile.
412-479	20-110 *(55)*	**Marl**: medium brown grey to occasionally dark grey, common medium green grey in part possibly caving, common glauconite, abundant fossil fragments, trace disseminated pyrite, rare very fine to fine quartz sand grains, minor calcarenitic bands at top, soft, sticky, non-fissile.
479-536	10-240 *(60)*	**Sandstone**: light to medium brown, very fine to granular, dominantly coarse, subrounded, poorly sorted, very weak calcareous and silica cements, occasionally very strong calcareous cement grading to arenitic limestone, trace to common medium brown argillaceous matrix, brown to orange brown stained quartz grains, trace brown iron oxide nodules, trace pink rhyolitic lithics, trace brown clay lithics, unconsolidated to occasionally hard, poor to very good, dominantly fair to good inferred porosity, no oil fluorescence. Interbedded with and grading to **Claystone:** dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to granular brown stained quartz grains, trace very fine black carbonaceous detritus, soft, moderately dispersive, non-fissile.

536-643	10-300 *(100)*	**Sandstone**: light grey to light brown grey, very fine to medium, occasional medium to very coarse grains, subangular to subrounded, moderately sorted, weak silica cement, common to abundant dark brown grey argillaceous matrix, common weak yellow to orange stained quartz grains, trace marcasite, friable, poor to fair inferred porosity, no oil fluorescence. With minor interbedded and grading to **Claystone**: dark brown grey, common dispersed very fine to fine quartz sand grains in part, trace fossil fragments, moderately silty, trace marcasite, trace glauconite, moderately dispersive, soft, non-fissile.
643-742	5-180 *(30)*	**Sandstone**: light brown, very fine to granular, dominantly coarse, subangular to subrounded, poorly sorted, weak silica cement, rare strong dolomite cement, common to abundant dark brown argillaceous matrix, trace green grey lithics, trace black carbonaceous detritus, friable, fair inferred porosity. Interbedded with **Claystone**: dark brown grey, moderately to very silty, often common dispersed very fine to granular quartz sand grains, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace glauconite, trace light to medium brown argillaceous cryptocrystalline dolomite nodules, very dispersive, soft, non-fissile.
742-820	9-63 *(25)*	**Claystone:** dark brown grey, moderately to very silty, often common dispersed very fine to granular quartz sand grains, trace pyrite, trace fossil fragments, trace black carbonaceous detritus, trace glauconite, trace light to medium brown argillaceous cryptocrystalline dolomite nodules, very dispersive, soft, non-fissile. Becoming dominantly dark green grey with depth and with glauconite increasing to common.
820-848	27-200 *(65)*	**Sandstone:** medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, poorly sorted, weak silica cement, common brown argillaceous matrix, rare dark brown iron oxide pellets, common light orange brown stained quartz grains, friable, fair to good inferred porosity, no oil fluorescence. With minor **Claystone**: medium to dark brown, moderately iron oxide rich, common dispersed quartz grains, soft, very dispersive, non-fissile.
848-870	40-105 *(60)*	**Sandstone**: medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, dominantly subrounded, weak silica and iron oxide cements, very weak calcareous cement in part, common to abundant dark brown argillaceous matrix, strong brown stained quartz grains, trace green grey and brown lithics, trace brown clay casts, trace pyrite, trace black carbonaceous detritus, friable, poor inferred porosity. With minor and grading to **Claystone:** medium to dark brown, moderately to very iron oxide rich, common dispersed brown stained quartz grains, rare pyrite, soft, very dispersive, non-fissile.
870-897	9-63 *(25)*	**Claystone**: dark brown to dark brown grey, slightly silty, trace to abundant dispersed very fine to granular quartz grains, trace micromica and fine mica flakes, soft, very dispersive, non-fissile. With minor **Sandstone:** medium orange brown, very fine to granular, dominantly very coarse, subangular to subrounded, very poorly sorted, weak silica and calcareous cements, abundant dark brown argillaceous matrix - probably matrix supported, strong brown stained quartz grains, trace to common brown, grey, black and green volcanic lithics, trace brown rounded clay lithics, trace black carbonaceous detritus, friable, very poor inferred porosity.

897-1131	5-120 *(45)*	**Sandstone**: light grey, very fine to granular, dominantly coarse, angular to subrounded with abundant grains fractured by drill bit, poorly sorted, weak silica cement, trace to common dark grey argillaceous and silt matrix, trace yellow to orange quartz grains, trace clear and brown mica flakes, trace pyrite, trace red cherty lithics, friable, fair to good inferred porosity. Interbedded with **Claystone:** medium to dark grey, very silty, very arenaceous in part, trace coal detritus often with pyritization, trace micromica, firm, very dispersive and washing from samples, slightly subfissile.
1131-1181	5-55 *(15)*	**Claystone**: light to dark grey, light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz, partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, trace glauconite, soft to firm, very dispersive, subfissile. Interlaminated and interbedded with **Sandstone:** light grey, very fine to granular, dominantly very fine, subangular to subrounded, moderately sorted, moderate calcareous cement, trace to common off white to medium grey argillaceous matrix, abundant off white silt matrix in part, trace fine partially altered feldspar, trace black carbonaceous flecks, trace green grey cherty lithics, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.
1181-1208	10-65 *(15)*	**Claystone**: light to dark grey, occasionally light to dark brown grey, dominantly medium grey, very silty in part, occasionally abundant very fine quartz, partially altered feldspar grains, trace black carbonaceous detritus, common black carbonaceous flecks, rare amber, trace pyrite, trace micromica, trace medium brown cryptocrystalline dolomite, trace glauconite, soft to firm, very dispersive, subfissile. With minor **Sandstone:** light grey, very fine to granular, dominantly very fine, subangular to subrounded, moderately sorted, moderate calcareous cement, trace to common off white to medium grey argillaceous matrix, abundant off white silt matrix in part, trace fine partially altered feldspar, trace black carbonaceous flecks, trace green grey cherty lithics, trace pyrite, moderately hard, very poor to poor visual porosity, no oil fluorescence.
1208-1287.5	6-55 *(17)*	**Claystone**: medium to dark grey, trace medium dark brown grey, very silty, occasionally very finely arenaceous, trace very fine off white partially altered feldspars, trace to common black carbonaceous flecks and detritus, trace amber in part, trace medium brown cryptocrystalline dolomite often with common glauconite grains, trace micromica, soft, very dispersive, subfissile. With minor interlaminated and occasionally interbedded **Sandstone:** off white to very light brown grey, very fine to fine, dominantly very fine, occasionally medium and rare coarse grains, subangular to subrounded, moderately to well sorted, moderate calcareous cement, common white argillaceous matrix, trace partially altered feldspars, trace black carbonaceous detritus, moderately hard, very poor visual porosity.
1287.5- 1290.5	60-90 *(75)*	**Sandstone**: very light green grey, very fine to fine, subangular, moderately to well sorted, weak silica cement, very strong dolomite cement in part, common light green grey silt matrix, common to abundant medium green grey argillaceous matrix, trace green to yellow stained quartz grains, common brown dolomite with abundant medium green lithics, trace coarse green mica flakes, friable, poor inferred porosity, no oil fluorescence.

1290.5-1316.5	10-20 *(12)*	**Claystone**: medium to dark grey to medium dark brown grey, very silty, occasionally very finely arenaceous, trace very fine off white partially altered feldspars, trace to common black carbonaceous flecks and detritus, trace amber in part, trace medium brown cryptocrystalline dolomite often with common glauconite grains, trace micromica, soft, very dispersive, subfissile. With minor interlaminated **Sandstone:** very light green grey, very fine to fine, subangular, moderately to well sorted, weak silica cement, very strong dolomite cement in part, common light green grey silt matrix, common to abundant medium green grey argillaceous matrix, trace green to yellow stained quartz grains, common brown dolomite with abundant medium green lithics, trace coarse green mica flakes, friable, poor inferred porosity, no oil fluorescence.
1316.5-1319	38-60 *(55)*	**Sandstone**: light to medium green, very fine to coarse, dominantly medium, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common light green argillaceous and silt matrix, common to abundant yellow to green stained quartz grains, friable, fair to good visual porosity, no oil fluorescence.
1319-1417	10-100 *(45)*	**Sandstone**: light to medium green, very fine to medium, dominantly fine, subangular to rounded, dominantly subangular, moderately to well sorted, weak silica cement, common light green argillaceous and silt matrix, common to abundant yellow to green stained quartz grains, friable, fair to good visual porosity, no oil fluorescence. Grading in part to **Claystone:** medium to dark green grey, very silty, abundant dispersed very fine to medium quartz sand grains grading to sandstone, common green and black lithics, soft, very dispersive, non-fissile.
1417-1461	7.5-15 *(12)*	**Claystone**: dark grey to dark brown grey, very silty, common dispersed very coarse quartz sand grains, common glauconite, trace dolomite, trace black carbonaceous flecks, trace black coal detritus, trace pyrite, trace micromica, firm, very dispersive, subfissile. With trace matrix supported **Sandstone:** light grey, very fine to very coarse, dominantly very coarse, subangular, moderately sorted, abundant dark grey to dark brown grey argillaceous matrix, trace glauconite, friable, no visual porosity, in general dispersed through the claystone.
1461-1526	8.6-20 *(13)*	**Claystone**: dark grey to dark brown grey, very silty, common glauconite, trace medium brown cryptocrystalline dolomite - often with glauconite inclusions, trace dispersed coarse quartz grains, moderately carbonaceous, trace black carbonaceous flecks and detritus, trace micromica, firm, moderately dispersive, subfissile.

1526-1597	4-20 *(13)*	**Claystone**: dark grey, occasionally dark brown grey, very silty, moderately carbonaceous, rare black coal detritus, abundant glauconite, common micromica, very slightly calcareous, trace crystalline calcite, common *Inoceramus*, trace pyrite, trace medium brown cryptocrystalline dolomite, rare to trace coarse to very coarse dispersed quartz sand grains, firm, subfissile. With minor interbedded **Sandstone:** light to medium grey, very fine to very coarse, dominantly fine to medium, subangular, very poorly sorted, weak silica cement, moderate calcareous cement, common medium green grey argillaceous and silt matrix in part, abundant off white argillaceous matrix in part, trace very fine red volcanic lithics, friable to moderately hard, no visual porosity, no oil fluorescence. Towards base bands with abundant dolomite cement occur - light brown, cryptocrystalline, trace glauconite, trace black carbonaceous flecks, occasionally very finely arenaceous, occasionally very argillaceous, hard, no visual porosity.
1597-1600	9-21 *(18)*	**Sandstone**: off white to light grey, very fine to very coarse, dominantly very fine to fine, subangular, poorly sorted, moderate to strong calcareous and dolomitic cements, abundant off white to medium brown argillaceous and silt matrix, trace black coal detritus, trace amber, trace pyrite, hard, nil to poor dominantly very poor visual porosity, no oil fluorescence
1600-1601.5	9-15 *(12)*	**Claystone**: medium to dark brown to medium to dark brown grey, common black coal detritus, trace amber, trace very fine sandstone laminae, trace pyrite, common dolomite cement as for 1526-1597m, common micromica, very silty, firm, very dispersive, subfissile.
1601.5-1607	20-60 *(40)*	**Sandstone**: light grey, medium to dominantly very coarse, angular to dominantly subangular, moderate to well sorted, weak calcareous and silica cements, trace white argillaceous matrix in part, possibly abundant medium grey argillaceous matrix between 1603-1606m, minor pyrite, trace black coal detritus, trace amber, friable, very good inferred porosity, no oil fluorescence but trace bright white amber fluorescence.
1607-1612.5	5-44 *(28)*	**Sandstone:** light grey, very fine to granular, dominantly medium to coarse, very poorly sorted, moderate silica cement, trace white argillaceous matrix in part, common black coal detritus with associated amber and pyrite, friable, fair to good visual porosity. With minor interbedded **Claystone:** medium to dominantly dark grey, very silty, very carbonaceous with common black coal detritus, trace amber, trace pyrite, common micromica, firm, very dispersive, subfissile.
1612.5-1613	4-50 *(27)*	**Sandstone:** light grey, very fine to granular, dominantly very coarse, angular to subangular, poorly sorted, strong silica cement, trace white argillaceous matrix, trace black coal detritus, trace amber, trace pyrite, trace brown mica flakes, hard, very poor visual porosity. **Fluorescence:** the sandstone has 30% patchy bright yellow fluorescence with weak instant followed by crush light yellow cut fluorescence, no cut colour, odour or oil stain. NOTE: the oil seems to be present only in a thin band of tight sandstone immediately below a 1 metre thick claystone cap, and does not extend into the more permeable sandstone below.

1613-1621	28-86 *(36)*	**Sandstone:** light grey, very fine to granular, dominantly very coarse, angular to subrounded, poorly sorted, moderate silica cement, trace white argillaceous matrix, trace black coal detritus, friable to occasionally moderately hard, fair to good visual fluorescence. **Fluorescence:** 10% patchy moderately bright yellow fluorescence with weak pale yellow crush cut coming only from very tight sandstone aggregates - probably cavings from 1612.5-1613m.
1621-1652	4-29 *(17)*	**Sandstone:** light grey, very fine to granular, dominantly medium to coarse, angular to subangular, very poorly sorted, strong silica cement, weak to moderate calcareous cement in part, trace white argillaceous matrix, trace black coal detritus, trace pyrite, moderately hard to hard, very poor to poor visual porosity. **Fluorescence:** The sandstone has nil to 5% patchy to moderately bright yellow fluorescence with very weak pale yellow crush cut. From 1640 to 1645m interbedded and interlaminated with **Claystone:** light to dark grey to occasionally medium brown to medium green, dominantly medium grey becoming dominantly medium brown grey with depth, moderately to very silty, very calcareous in part, trace black coal detritus, trace amber, trace pyrite, trace quartz and green lithics, trace micromica, firm, very dispersive, subfissile.
1652-1658	7.5-41 *(25)*	**Sandstone:** light grey, very fine to very coarse, dominantly medium, subangular, moderately sorted, moderate silica cement, very weak calcareous cement, trace white argillaceous and silt matrix, trace brown lithics, trace black carbonaceous detritus, trace medium brown cryptocrystalline dolomite, friable to moderately hard, fair visual porosity, no oil fluorescence.
1658-1674	10-45 *(22)*	**Sandstone:** light grey, very fine to granular, dominantly medium becoming dominantly fine with depth, subangular, poor to moderately sorted, weak silica cement, trace strong dolomite cement, trace white argillaceous matrix, trace black carbonaceous detritus, trace amber, trace pyrite, trace brown and clear mica flakes, friable to moderately hard, fair to good visual porosity, no oil fluorescence.
1674-1695	6-28 *(10)*	**Claystone:** light to medium brown grey to dark grey, very silty, common very fine sandstone laminae, abundant black coal detritus, trace pyrite, trace amber, common micromica, firm, moderately dispersive, subfissile. Interbedded and interlaminated with **Claystone:** light to medium brown grey to dark grey, very silty, common very fine sandstone laminae, abundant black coal detritus, trace pyrite, trace amber, common micromica, firm, moderately dispersive, subfissile.
1695-1718	3.5-40 *(20)*	**Sandstone:** off white to light green grey, very fine to coarse, dominantly medium to coarse, subangular to rounded, moderately to well sorted, weak to moderate calcareous cement, abundant white to very light green argillaceous matrix, abundant off white, light brown, green grey and occasional red lithics, trace black coal detritus, friable, very poor visual porosity. Interbedded with **Claystone:** off white to light green grey, occasionally light to dark brown grey, slightly silty in part, trace dispersed lithic sand grains, trace black coal detritus, trace pyrite, firm, slightly subfissile.

1718-1729	5-40 *(20)*	**Sandstone:** off white to light green grey, very fine to coarse, dominantly medium to coarse, subangular to rounded, moderately to well sorted, weak to moderate calcareous cement, abundant white to very light green argillaceous matrix, abundant off white, light brown, green grey and occasional red lithics, trace black coal detritus, friable, very poor visual porosity. Interbedded with **Claystone:** off white to light green grey, occasionally light to dark brown grey, slightly silty in part, trace dispersed lithic sand grains, trace black coal detritus, trace pyrite, firm, slightly subfissile.
1729-1780	6-40 *(22)*	**Sandstone**: medium grey to medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, common to abundant white argillaceous matrix, abundant green to grey to black lithics, common white to light brown partially altered feldspars, trace red lithics, trace black coal detritus, trace coarse brown and green mica flakes, friable to moderately hard, poor inferred porosity, no oil fluorescence. With minor interbedded **Claystone**: light green grey to medium brown, dominantly light green grey, slightly silty, occasionally abundant dispersed lithic grains especially where light green grey, trace micromica, trace black carbonaceous detritus, trace pyrite, firm, very dispersive, slightly subfissile.
1780-1793	5-31 *(12)*	**Claystone**: off white to light green to light brown to light grey, trace dark brown and very carbonaceous, trace brown and green mica flakes, slightly silty in part, trace black carbonaceous flecks in part, trace black coal detritus, rare micromica, firm, very dispersive, subfissile. Interbedded with and grading to **Sandstone:** medium grey to medium green grey, very fine to coarse, dominantly coarse, subangular to rounded, moderately sorted, weak calcareous and silica cements, abundant white argillaceous matrix, abundant green to grey to black lithics, common white to light brown partially altered feldspars, trace red lithics, trace black coal detritus, trace coarse brown and green mica flakes, friable to moderately hard, poor inferred porosity, no oil fluorescence.
1793-1808	4-55 *(15)*	**Sandstone**: medium grey, very fine to medium, dominantly fine, angular to subrounded, moderately to well sorted, moderate silica cement, trace weak calcareous cement, abundant white argillaceous matrix grading to arenaceous claystone, abundant grey to green to black lithics, common brown and red lithics, trace coal, moderately hard, very poor visual porosity. Grading to and with minor interbedded and interlaminated **Claystone:** off white to light green to light brown to light grey, often brown and very carbonaceous, trace brown and green mica flakes, slightly silty in part, trace black carbonaceous flecks in part, trace black coal detritus, rare micromica, firm, very dispersive, subfissile.

1808-1823	15-50 *(30)*	**Sandstone**: light green grey, very fine to medium, angular to subrounded, moderately to well sorted, weak silica cement, common to abundant white argillaceous matrix, abundant green to grey to black lithics, common brown and red lithics, trace medium to coarse green and brown mica flakes, trace black coal detritus, friable, poor visual porosity, no oil fluorescence. With depth grading to **Sandstone:** light to medium green grey, very fine to coarse, dominantly medium, angular to subrounded, moderately to well sorted, weak silica cement, very weak calcareous cement in part, trace to common white argillaceous matrix, common to abundant grey to green to brown lithics trace red lithics, common white partially altered feldspars, common coarse brown and green mica flakes, friable, poor to fair visual porosity, no oil fluorescence. NOTE: The lithics in the basal portion of this interval appear to be less weathered than in the earlier Eumeralla Formation sandstone samples suggesting the possibility of better than normal porosity.
1823-1830	30-43 *(35)*	**Sandstone**: medium grey to medium green grey, very fine to coarse, dominantly medium, angular to subangular, moderately to well sorted, moderate silica cement, common white argillaceous matrix, abundant green to grey and trace red to brown lithics, common white altered feldspars, common coarse brown mica flakes, trace black coal detritus, trace pyrite, friable, poor visual porosity, no oil fluorescence.
1830-1858.5	5-25 *(8)*	**Claystone**: off white to light grey to light green to light brown, very silty in part, abundant very fine partially altered feldspars, abundant very fine multicoloured lithic grains in part, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile. With minor interbedded **Sandstone:** light green grey, very fine to medium, dominantly very fine to fine, angular to subrounded, moderately sorted, moderate silica cement, abundant green grey argillaceous matrix grading to claystone, abundant green grey lithics, common red to brown lithics, trace black carbonaceous detritus, trace mica flakes, friable, very poor to nil visual porosity, no oil fluorescence.
1858.5-1874	8-50 *(30)*	**Sandstone**: off white to light grey, very fine to coarse, dominantly coarse, moderately to well sorted, weak silica cement, common white argillaceous matrix, abundant green to grey lithics, common red to brown lithics, trace coarse brown mica flakes, common off white partially altered feldspars, trace black carbonaceous detritus, friable, very poor to poor with some possibly fair visual porosity, no oil fluorescence. Note: lithic grains have a fresh unweathered appearance. With minor interbedded **Claystone:** off white to light grey to light green to light brown, often very silty, abundant very fine partially altered feldspars, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile.
1874-1883.5	14-50 *(25)*	**Sandstone**: off white to light grey, very fine to coarse, dominantly coarse, moderately to well sorted, weak silica cement, common white argillaceous matrix, abundant green grey lithics, common red to brown lithics, trace coarse brown mica flakes, common off white partially altered feldspars, trace black carbonaceous detritus, friable, very poor to poor with some possibly fair visual porosity, no oil fluorescence.

1883.5-1928	3-35 *(9)*	**Claystone**: off white to light grey, light green to light brown, very silty in part, abundant very fine partially altered feldspars in part, occasionally abundant very fine multicoloured lithic grains, trace black carbonaceous flecks, trace micromica, firm, very dispersive, subfissile. With minor interbedded **Sandstone:** medium grey, very fine to coarse, dominantly fine to medium, angular to subangular, poorly sorted, weak to moderate silica cement, trace strong calcareous cement in part, abundant white argillaceous matrix grading to arenaceous claystone, abundant grey and green grey lithics, common red and brown lithics, trace black carbonaceous detritus, trace green and brown mica flakes, friable to moderately hard, very poor to poor visual porosity, no oil fluorescence.
1928-1947	4-27 *(18)*	**Sandstone**: light to medium green grey, very fine to coarse, dominantly medium, angular to occasionally subangular, poor to moderately sorted, moderate silica cement, weak calcareous cement in part, abundant white argillaceous matrix - often matrix supported, abundant grey to green lithics, abundant white partially altered feldspars, trace red to brown lithics, trace brown and green mica flakes, trace pyrite, rare black carbonaceous detritus, moderately hard, nil to very poor visual porosity, no oil fluorescence. With interlaminated, thinly interbedded and in part grading to **Claystone:** light to medium grey, occasionally light to medium green grey, light to medium brown grey, dominantly medium grey, occasionally very silty, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile.
1947-1991.5	3-32 *(7)*	**Claystone**: light to dominantly medium grey, occasionally light to medium green grey, occasionally light to medium brown grey, very silty in part, dominantly non to slightly silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspars, trace pyrite, firm, very dispersive, slightly subfissile. Interbedded and interlaminated with **Sandstone:** light to medium green grey, very fine to coarse, dominantly medium, angular to occasionally subangular, poor to moderately sorted, moderate silica cement, weak calcareous cement in part, abundant white argillaceous matrix - often matrix supported, abundant grey to green lithics, abundant white partially altered feldspars, trace red to brown lithics, trace brown and green mica flakes, trace pyrite, rare black carbonaceous detritus, moderately hard, nil to very poor visual porosity, no oil fluorescence.
1991.5-2016	5-28 *(24)*	**Sandstone**: medium grey to medium green grey, very fine to medium, dominantly fine, angular to subrounded, moderately to well sorted, moderate silica cement, common to abundant white argillaceous matrix, abundant green grey lithics, abundant partially altered feldspars, common red to brown lithics, trace brown and green mica flakes, trace black carbonaceous detritus, moderately hard, very poor visual porosity, no oil fluorescence.

2016-2030 (T.D.)	3-18 *(8)*	**Claystone**: light to dominantly medium grey, minor light to medium green grey, trace light to medium brown grey, often very silty in part, mainly non to moderately silty, trace very fine black carbonaceous flecks, rare black coal detritus, trace micromica, occasionally abundant dispersed very fine to silt sized off white partially altered feldspar, trace pyrite, firm, very dispersive, slightly subfissile. Interbedded with minor **Sandstone:** medium grey to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately to well sorted, moderate silica cement, abundant white argillaceous matrix, abundant green grey lithics, abundant partially altered feldspar, common red to brown lithics, trace brown and green mica flakes, trace black carbonaceous detritus, moderately hard, very poor visual porosity, no oil fluorescence.
Total Depth:		**2030m (driller) reached at 2000 hrs on 28th February, 1995.**

Appendix 5

APPENDIX 5

SIDEWALL CORE DESCRIPTIONS

GFE Resources Ltd

APPENDIX 5

SIDEWALL CORE DESCRIPTION

WELL NAME:	VAUGHAN-1	**DATE:**	15 January, 1996
GEOLOGIST:	Dave Horner	**PAGE:**	1

SWC No.	DEPTH (m)	REC'D (mm)	DESCRIPTION
ATTEMPTED 24 - RECOVERED 21			
1	1930	11	Sandstone: light green grey, very fine to medium, dominantly fine, angular to subangular, poorly sorted, weak silica cement, abundant white to light grey argillaceous and silt matrix, abundant green grey lithics, friable, no visual porosity, no oil fluorescence.
2	1899	18	Claystone: medium green grey, slightly to moderately silty, trace micromica, rare black carbonaceous flecks, firm, slightly subfissile.
3	1864	21	Sandstone: light green grey, very fine to medium, dominantly medium, angular to subangular, moderately sorted, weak silica cement, abundant off white to light grey argillaceous and silt matrix, abundant green grey lithics, trace muscovite flakes, trace black carbonaceous lamina, friable, no visual porosity, no oil fluorescence.
4	1797	30	Siltstone: light to medium grey, very argillaceous, trace black carbonaceous flecks, trace micromica, trace very fine partially altered feldspar grains, firm, slightly subfissile.
5	1700	22	Sandstone: light to medium green grey, very fine to medium, dominantly fine, angular to subrounded, poor to moderately sorted, weak silica cement, common to abundant white to light grey argillaceous calcareous and silt matrix, abundant green grey lithics, common off white partially altered feldspar grains, trace red lithics, friable, very poor visual porosity, no oil fluorescence.
6	1692.5	27	Sandstone: light grey, very fine to medium, dominantly fine, angular to subangular, very poorly sorted, weak silica cement, abundant white argillaceous calcareous and silt matrix, abundant grey green lithics, common off white partially altered feldspar grains, friable, very poor visual porosity, no oil fluorescence.
7	1689	22	Siltstone: laminated medium brown grey with light brown grey, very argillaceous, moderately carbonaceous, common micromica, non calcareous, firm, slightly subfissile.
8	1682	0	No recovery
9	1674	15	Claystone: dark brown, very carbonaceous, slightly silty, firm, subfissile.
10	1656	0	No recovery
11	1650	30	Silty Claystone: medium to dark brown grey, common mottling with medium green glauconitic clay, trace micromica, trace black carbonaceous detritus, firm, subfissile.
12	1631	25	Claystone: medium brown, very silty, trace to common black carbonaceous flecks, trace micromica, trace light grey silt lamina, firm, slightly subfissile.
13	1622	24	Claystone: medium brown to medium dark brown clay bands laminated with light brown grey very silty and occasionally very finely arenaceous bands, moderately carbonaceous, common off white partially altered feldspar grains, trace micromica, firm, slightly subfissile.
14	1612.5	0	No recovery

(AJ/GFE:F5)

SWC No.	DEPTH (m)	REC'D (mm)	DESCRIPTION	PAGE: 2
15	1609	20	Claystone: dark brown, slightly silty, very carbonaceous, trace micromica, firm, subfissile.	
16	1605.5	19	Sandstone: off white with dark brown clay lamina, very fine, angular to subangular, well sorted, weak silica cement, abundant white argillaceous matrix, common grey green and red lithics, friable, no visual porosity, no oil fluorescence.	
17	1599.5	12	Claystone: dark brown grey, slightly silty, moderately carbonaceous, trace micromica, firm, slightly subfissile.	
18	1595.5	29	Siltstone: medium brown grey, very argillaceous, common very fine green glauconite grains, trace micromica, non to slightly subfissile.	
19	1164	34	Claystone: medium to dark brown, very silty in part, trace micromica, soft, non fissile.	
20	895	40	Claystone: medium dark brown, moderately silty, trace dispersed coarse quartz sand grains, trace black carbonaceous detritus, firm, non fissile.	
21	889	40	Claystone: dark green brown, moderately silty, trace very coarse dispersed quartz sand grains, trace black coal detritus, trace red/brown iron oxide rich clay, trace micromica, soft to firm, non fissile.	
22	883	42	Sandstone: medium to dark green brown, very fine to grit, dominantly very coarse, subangular to rounded, very poorly sorted, weak iron oxide cement, abundant red/brown and green grey argillaceous and silt matrix, strong brown stain on quartz grains, slightly calcareous in part, friable, no visual porosity, no oil fluorescence.	
23	874	41	Claystone: very dark brown to black, moderately silty, very carbonaceous, trace micromica, firm, non fissile.	
24	803	47	Claystone: very dark grey, slightly silty, moderately to very carbonaceous, trace dispersed very fine to coarse quartz sand grains, rare very fine glauconite, trace micromica, firm, non fissile.	

(AJ/GFE:F5)

APPENDIX 6

Appendix 6

APPENDIX 6

DRILL STEM TEST DATA

(DST-1 & DST GAS ANALYSIS)

GFE Resources Ltd

DST REPORT

Well: VAUGHAN 1	Permit: PPL1	DST No.: **One**	Date: 24 / 2 / 95
Formation: **Eumeralla**	Total Depth: **1823M**	Interval: **1798-1823mKB**	
TEST Co.: Australian D.S.T.	Test Type: **Conventional Bottom Hole Inflate**		

FLUID PROPERTIES		TIMES		NUMBER OF SAMPLES TAKEN	
SOURCE	RESISTIVITY	FIRST FLOW	**6 mins**	GAS	**2**
MAKE-UP WATER		FIRST SHUT-IN	**1hr 2 mins**	OIL	
MUD		SECOND FLOW	**1hr 38 mins**	WATER	**3**
RECOVERY	**19.8 metres**	SECOND SHUT-IN	**3hr 16 mins**	MUD	
		TOTAL FLOW		GAS SPECIFIC GRAVITY	
				OIL GRAVITY (°API)	
		FORM. TEMP.		MUD WEIGHT	**9.3**
		FORM. DEPTH	**1823mKB**	MUD VISCOSITY (Sec./qt.)	**60**

DOWNHOLE PRESSURE DATA (psig)		
GAUGE POSITION	**Outside**	**Inside**
TYPE & SERIAL No.		
DEPTH (mKB)	**1801.26**	**1792.08**
INITIAL HYDROSTATIC	**2936**	**2905**
START FIRST FLOW	**282**	**75**
END FIRST FLOW	**282**	**75**
FIRST SHUT-IN	**2478**	**2429**
START SECOND FLOW	**331**	**225**
END SECOND FLOW	**282**	**113**
SECOND SHUT-IN	**2428**	**2392**
FINAL HYDROSTATIC	**2923**	**2863**

FIRST OPENING BLOW DESCRIPTION: The first opening had no pressure or air flow for 5 minutes. The tool was shut in for 30 minutes. On the second opening there was no pressure measured on guage, however the guage was subsequently found to be not work. After 4 minutes opened the valve to the bubble hose and got a Good Air Blow. This was then considered to be the first opening.

SECOND OPENING BLOW DESCRIPTION: Good Air Blow. After 5 minutes opened to flare through ½" choke Gas to Surface after 6 minutes of second opening.

SURFACE FLOW DATA | **FINAL FLOW:** 4.7 MMCFD ± PREDOMINATELY CO_2

BOTTOM CHOKE SIZE (inches): ¾	MANIFOLD CHOKE SIZE & PRESSURE	ORIFICE PLATE SIZE & PRESSURE	FLOWING TIME (minutes)	FINAL FLOW PERIOD DATA	
				TIME (mins.)	PRESSURE(psig)
END FIRST FLOW	**Closed Chamber**	**N / A**	**6**	**5**	34 (Bubble Hole)
FINAL FLOW-START	**Bubble Hose**	**N / A**	**5**	**10**	20 (½" choke)
				15	14 (½" choke)
FINAL FLOW-MIDDLE	½"	**N / A**	**17**	**20**	12 (½" choke)
FINAL FLOW-END	¼"	**N / A**	**76**	**30**	23 (¼" choke)
				40	35 (¼" choke)
				60	51 (¼" choke)
				80	63 (¼" choke)

RECOVERY: 19.8 metres of rat hole mud.

REMARKS: Throughout test hole was taking 1.8 - 2.0 BBLS / HR

AJ:F60

GFE Resources Ltd

DST OPERATIONS SHEET

Well: VAUGHAN	Permit:	DST No.: One	Date: 24 / 2 / 94
Formation: Eumeralla	Total Depth: 1823mKM	Interval: 1798-1823mKB	
TEST Co.: Australian D.S.T.	Test Type: Conventional Bottom Hole		

TIME	EVENT	FLOOR MANIFOLD			PROVER		
		CHOKE (inches)	PRESSURE (psig)	TEMPERATURE (°C)	PLATE (inches)	PRESSURE (psig)	TEMPERATURE (°C)
16.57	Open tool	0	0 PSIG (no bubbles)				
17.03	Close tool	0	0 PSIG (no bubbles)				
17.33	Open tool	0	(guage not working)				
17.37	Open to bubble hose	0	GAB (guage not working)				
17.39	Close tool	0					
18.41	Open tool	0	GAB				
18.46	Open through ½" choke	½"	35 PSIG				
18.47	GTS	½"	23 PSIG				
18.55		½"	15 PSIG				
19.00		½"	12 PSIG				
19.04	Change choke ¼"	¼"	10 PSIG				
19.05		¼"	15 PSIG				
19.10		¼"	22 PSIG				
19.15		¼"	29 PSIG				
19.20		¼"	33 PSIG				
19.25		¼"	39 PSIG				
19.30		¼"	45 PSIG				
19.35		¼"	50 PSIG				
19.40		¼"	51 PSIG				
19.45		¼"	57 PSIG				
19.50		¼"	60 PSIG				

AJ:F60

GFE Resources Ltd

DST OPERATIONS SHEET

Well: Vaughan 1	Permit:	DST No.: One	Date: 24 / 2 / 94
Formation: Eumeralla	Total Depth: 1823mKB	Interval: 1798 - 1823mKB	
TEST Co.: Australian D.S.T.	Test Type: Conventional Bottom Hole		

TIME	EVENT	FLOOR MANIFOLD			PROVER		
		CHOKE (inches)	PRESSURE (psig)	TEMPERATURE (°C)	PLATE (inches)	PRESSURE (psig)	TEMPERATURE (°C)
19.58	Take Sample 1						
20.00		¼"	63 PSIG				
20.10		¼"	68 PSIG				
20.16	Take Sample 2						
20.19	Close tool	¼"	70 PSIG				

AJ:F60

GAS AND FUEL

SCIENTIFIC SERVICES - LABORATORY REPORT

1136 Nepean Highway, Highett, Victoria 3190
Tel. 556 6222 Fax 555 7616

Subject: Analysis of Exploration Sample Vaughan No.1 DST No.1 1798-1823 m @ 1958 Hr.

Requested by: Kevin Lanigan, GFE Resources Ltd

Report Reference: 95/0345

Component	Mole Percent Concentration
Methane	79.0
Ethane	4 51
Propane	2 14
Iso-Butane	0 568
Normal-Butane	0 623
Neo-Pentane	0 011
Iso-Pentane	0 234
Normal-Pentane	0 185
Hexanes	0 307
Heptanes+	0 316
Carbon Dioxide	0.07
Oxygen+Argon	2.50
Nitrogen	9 57
Helium	0 010

Calculated Characteristics for the dry gas at MSC

Gross Heating Value	38.2 MJ/m^3
Wobbe Index	45.8 MJ/m3
Relative Density	0.695

Method References: SSS-11-006
ISO 6974

Analyst: I. Strudwick

Date: 06/03/1995

Approved Signatory: I Strudwick

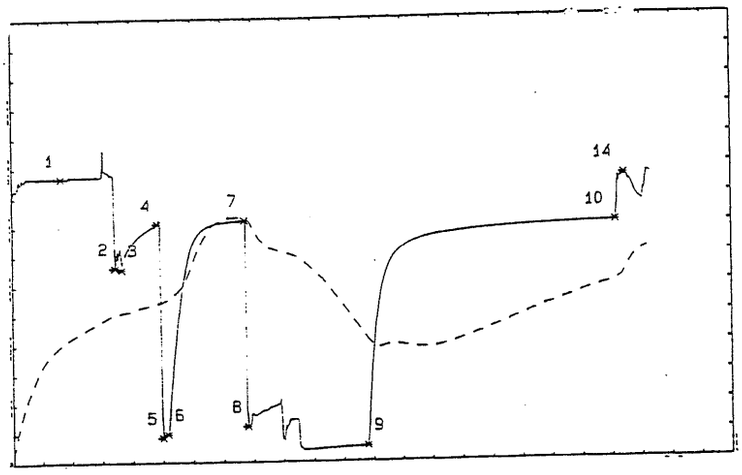
GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Test Date: 24/02/95

Recorder Number: 1731
Recorder Depth: 5910 ft



	PRESSURE psia
1)Initial Hydrostatic:	2898.7
2)Start of 1st Flow :	1978.7
3)End of 1st Flow :	1960.0
4)End of 1st Shut-in :	2425.0
5)Start of 2nd Flow :	248.7
6)End of 2nd Flow :	283.7
7)End of 2nd Shut-in :	2456.2
8)Start of 3rd Flow :	358.7
9)End of 3rd Flow :	150.0
10)End of 3rd Shut-in :	2407.5
14)Final Hydrostatic :	2883.7

TEST TIMES (MIN)	
1st FLOW :	5.48
SHUTIN:	28.50
2nd FLOW :	4.00
SHUTIN:	61.02
3rd FLOW :	95.98
SHUTIN:	200.00

BLOW DESCRIPTION:

PRE-FLOW: INTITIAL FLOW & SHUT IN DEEMED INVALID (DUE TO POSSIBLE PLUGGING).
SECOND FLOW: THE TOOL WAS OPENED AT 17:33 HRS WITH BOTH THE MANIFOLD AND THE BUBBLE HOSE CLOSED. THE BUBBLE HOSE WAS OPENED AFTER FOUR MINS WITH A STRONG AIR BLOW AT BOTTOM OF BUCKET. THE TOOL WAS CLOSED AT 17:37 HRS.
FINAL FLOW: THE TOOL WAS RE-OPENED AT 18:38 HRS WITH A CLOSED MANIFOLD AND A STRONG AIR BLOW AT THE BUBBLE HOSE. AFTER 5 MINS A 0.5 INCH CHOKE WAS OPENED (35 PSIG), GAS TO SURFACE AT 18:47 (23 PSIG). CHANGED TO A 0.25 INCH CHOKE (10 PSIG). AT 19:53 SAMPLE # 1 WAS TAKEN (62 PSIG), ANOTHER SAMPLE TAKEN AT 20:11 (70 PSIG). THE TOOL WAS CLOSED AT 20:14 HOURS.

LIQUID RECOVERY:

THE TOTAL LIQUID RECOVERY WAS 19.8 MTR OF MUD.
THE DOWNHOLE SAMPLER CONTAINED GAS ONLY.

REMARKS AND TEST SUMMARY:

A MECHANICALLY SUCCESSFUL TEST WAS CONDUCTED.
ALL THE PRESSURES REPORTED FROM THE DOWNHOLE RECORDERS ARE PSIA (ie PLUS 14.7)
THE FLOW AND SHUT IN TIMES REPORTED ARE TAKEN FROM THE DOWNHOLE ELECTRONIC MEMORY RECORDER (DMR 1731).
A MAXIMUM GAS FLOW RATE OF 0.125 MMCF/DAY WAS REPORTED DURING FLOW THROUGH A 0.25 INCH CHOKE WITH A MAXIMUM SURFACE FLOWING PRESSURE OF 70 PSIG.
PACKER SETTING DEPTHS WERE CALCULATED WITH DRILLER'S TALLY.

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

GAS MEASUREMENTS
****

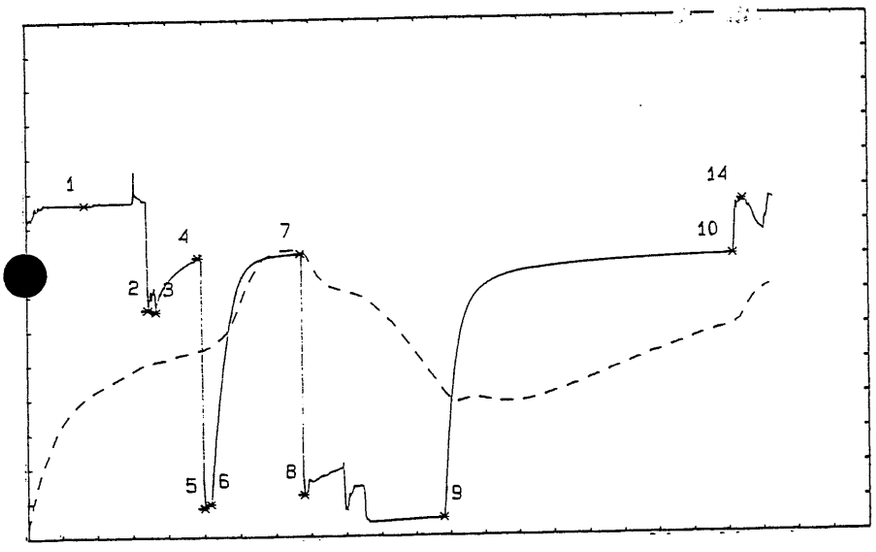
Device: FLOOR CHOKE MANIFOLD

FLOW #	TIME (min)	CHOKE (in.)	READING(psia)
2	0.00	0.500	0.00
3	0.00	0.500	0.00
3	7.00	0.500	35.00
3	9.00	0.500	23.00
3	14.00	0.500	15.00
3	23.00	0.500	10.00
3	49.00	0.500	45.00
3	77.00	0.500	62.00
3	94.00	0.500	70.00
3	96.00	0.500	70.00

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

PRESSURE RECORDER NUMBER: 1731

DEPTH : 5909.90 ft LOCATION : OUTSIDE
TYPE : DMR CAPACITY : 5000.00 psia
***** TEMPERATURE AT RECORDER DEPTH = 152.0 F

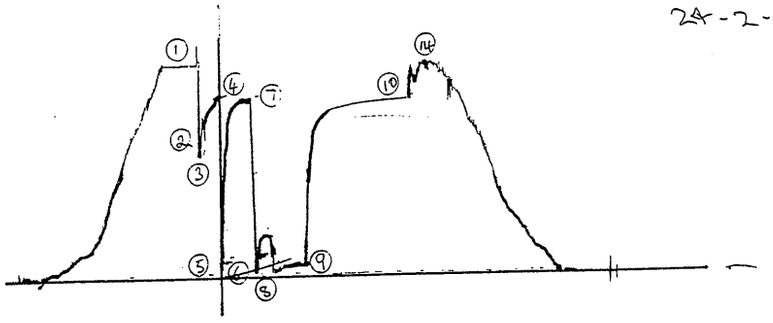


	PRESSURE psia
1)Initial Hydrostatic:	2898.7
2)Start of 1st Flow :	1978.7
3)End of 1st Flow :	1960.0
4)End of 1st Shut-in :	2425.0
5)Start of 2nd Flow :	248.7
6)End of 2nd Flow :	283.7
7)End of 2nd Shut-in :	2456.2
8)Start of 3rd Flow :	358.7
9)End of 3rd Flow :	150.0
10)End of 3rd Shut-in :	2407.5
14)Final Hydrostatic :	2883.7

TEST TIMES (MIN)	
1st FLOW :	5.48
SHUTIN:	28.50
2nd FLOW :	4.00
SHUTIN:	61.02
3rd FLOW :	95.98
SHUTIN:	200.00

PRESSURE RECORDER NUMBER: 12396

DEPTH : 5879.80 ft LOCATION : INSIDE
TYPE : K-3 CAPACITY : 5850.00 psig

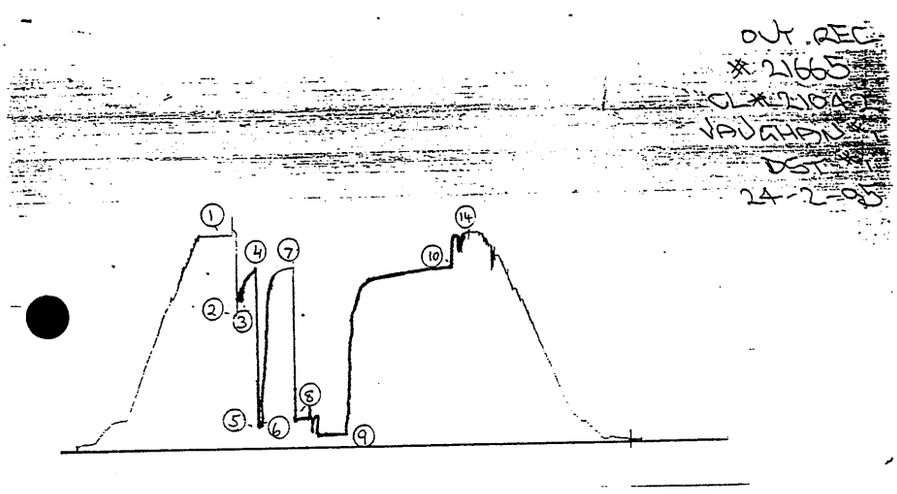


	PRESSURE psia
1)Initial Hydrostatic:	2901.5
2)Start of 1st Flow :	1688.7
3)End of 1st Flow :	1902.3
4)End of 1st Shut-in :	2400.9
5)Start of 2nd Flow :	181.2
6)End of 2nd Flow :	210.4
7)End of 2nd Shut-in :	2450.9
8)Start of 3rd Flow :	274.7
9)End of 3rd Flow :	124.2
10)End of 3rd Shut-in :	2411.0
14)Final Hydrostatic :	2890.8

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

PRESSURE RECORDER NUMBER: 21665

DEPTH : 5909.90 ft LOCATION : OUTSIDE
TYPE : K-3 CAPACITY : 5900.00 psig



	PRESSURE psia
1)Initial Hydrostatic:	2947.1
2)Start of 1st Flow :	1901.7
3)End of 1st Flow :	2027.6
4)End of 1st Shut-in :	2448.4
5)Start of 2nd Flow :	299.7
6)End of 2nd Flow :	308.0
7)End of 2nd Shut-in :	2488.9
8)Start of 3rd Flow :	356.9
9)End of 3rd Flow :	172.3
10)End of 3rd Shut-in :	2437.5
14)Final Hydrostatic :	2935.2

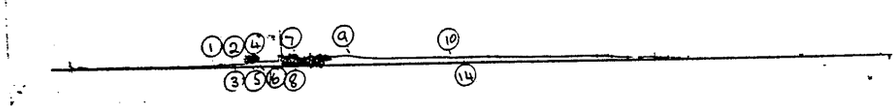
TEST TIMES (MIN)	
1st FLOW :	5.48
SHUTIN:	28.50
2nd FLOW :	4.00
SHUTIN:	61.02
3rd FLOW :	95.98
SHUTIN:	200.00

PRESSURE RECORDER NUMBER: 9017.

DEPTH : 5867.00 ft LOCATION : INSIDE
TYPE : K-3 CAPACITY : 5900.00 psig

REC REC
9017
CL # 13112
VAUGHAN #1
DST #1
24-2-95

	PRESSURE psia
1)Initial Hydrostatic:	14.7
2)Start of 1st Flow :	14.7
3)End of 1st Flow :	14.7
4)End of 1st Shut-in :	58.1
5)Start of 2nd Flow :	58.1
6)End of 2nd Flow :	58.1
7)End of 2nd Shut-in :	132.6
8)Start of 3rd Flow :	132.6
9)End of 3rd Flow :	106.2
10)End of 3rd Shut-in :	38.1
14)Final Hydrostatic :	38.1



GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
1	Initial Hydrostatic:	0.000		2898.7		
2	Start of 1st Flow :	0.000		1978.7		
	FLOW PERIOD 1	0.500	38.8	2017.5		
		1.483	130.0	2108.7		
		1.983	161.3	2140.0		
		2.483	87.5	2066.2		
		3.000	131.3	2110.0		
		3.500	158.8	2137.5		
		4.000	180.0	2158.7		
		4.500	198.8	2177.5		
3	End of 1st Flow :	5.483	-18.7	1960.0		
	Flow time used for SHUT-IN PERIOD 1 = 5.483 minutes					
	SHUT-IN PERIOD 1	0.000	0.0	1960.0	0.0000	0.0000
		0.500	60.0	2020.0	11.9667	4.0804
		1.000	91.2	2051.2	6.4833	4.2074
		1.517	113.7	2073.7	4.6154	4.3002
		2.017	133.7	2093.7	3.7190	4.3836
		2.517	151.2	2111.2	3.1788	4.4572
		3.017	166.2	2126.2	2.8177	4.5207
		4.000	193.7	2153.7	2.3708	4.6384
		4.500	205.0	2165.0	2.2185	4.6872
		5.000	216.2	2176.2	2.0967	4.7358
		5.517	226.2	2186.2	1.9940	4.7795
		6.017	237.5	2197.5	1.9114	4.8290
		6.517	246.2	2206.2	1.8414	4.8673
		7.017	255.0	2215.0	1.7815	4.9062
		8.017	272.5	2232.5	1.6840	4.9841
		8.517	280.0	2240.0	1.6438	5.0176
		9.017	287.5	2247.5	1.6081	5.0513
		9.533	295.0	2255.0	1.5752	5.0850
		10.033	302.5	2262.5	1.5465	5.1189
		10.533	308.7	2268.7	1.5206	5.1470
		11.033	316.2	2276.2	1.4970	5.1811
		12.000	327.5	2287.5	1.4569	5.2327
		12.500	333.7	2293.7	1.4387	5.2611
		13.000	340.0	2300.0	1.4218	5.2900
		13.517	346.2	2306.2	1.4057	5.3186
		14.017	351.2	2311.2	1.3912	5.3416
		14.517	356.2	2316.2	1.3777	5.3648

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		15.017	361.2	2321.2	1.3651	5.3880
		16.000	371.2	2331.2	1.3427	5.4345
		16.500	376.2	2336.2	1.3323	5.4578
		17.000	381.2	2341.2	1.3225	5.4812
		17.517	385.0	2345.0	1.3130*	5.4990
		18.017	390.0	2350.0	1.3043*	5.5225
		18.517	393.7	2353.7	1.2961*	5.5399
		19.017	398.7	2358.7	1.2883*	5.5635
		20.000	406.2	2366.2	1.2742*	5.5989
		20.500	411.2	2371.2	1.2675*	5.6226
		21.000	415.0	2375.0	1.2611*	5.6406
		21.517	418.7	2378.7	1.2548*	5.6582
		22.017	422.5	2382.5	1.2491*	5.6763
		22.517	426.2	2386.2	1.2435*	5.6940
		23.017	430.0	2390.0	1.2382*	5.7121
		24.017	436.2	2396.2	1.2283*	5.7418
		24.517	438.7	2398.7	1.2237*	5.7538
		25.017	442.5	2402.5	1.2192*	5.7720
		25.533	446.2	2406.2	1.2148*	5.7898
		26.033	448.7	2408.7	1.2106*	5.8018
		26.533	452.5	2412.5	1.2067*	5.8202
		27.033	455.0	2415.0	1.2028*	5.8322
		28.000	462.5	2422.5	1.1958*	5.8685
4	End of 1st Shut-in :	28.500	465.0	2425.0	1.1924*	5.8806
5	Start of 2nd Flow :	0.000		248.7		
	FLOW PERIOD 2	0.500	10.0	258.7		
		1.000	16.3	265.0		
		1.517	17.5	266.2		
		2.017	20.0	268.7		
		2.517	23.8	272.5		
		3.017	27.5	276.2		
6	End of 2nd Flow :	4.000	35.0	283.7		
	Flow time used for SHUT-IN PERIOD 2 = 9.483 minutes					
	SHUT-IN PERIOD 2	0.000	0.0	283.7	0.0000	0.0000
		0.500	67.5	351.2	19.9667	0.1233
		1.000	161.3	445.0	10.4833	0.1980
		1.517	246.3	530.0	7.2527	0.2809
		2.017	323.8	607.5	5.7025	0.3691
		2.517	401.3	685.0	4.7682	0.4692

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		3.017	475.0	758.7	4.1436	0.5756
		4.000	618.8	902.5	3.3708	0.8145
		4.500	687.5	971.2	3.1074	0.9432
		5.000	755.0	1038.7	2.8967	1.0789
		5.517	818.8	1102.5	2.7190	1.2155
		6.017	882.5	1166.2	2.5762	1.3600
		6.517	943.8	1227.5	2.4552	1.5068
		7.017	1002.5	1286.2	2.3515	1.6543
		8.017	1117.5	1401.2	2.1830	1.9634
		8.517	1172.5	1456.2	2.1135	2.1205
		9.017	1222.5	1506.2	2.0518	2.2686
		9.533	1273.8	1557.5	1.9948	2.4258
		10.033	1323.8	1607.5	1.9452	2.5841
		10.533	1371.3	1655.0	1.9003	2.7390
		11.033	1417.5	1701.2	1.8595	2.8941
		12.000	1503.8	1787.5	1.7903	3.1952
		12.500	1543.8	1827.5	1.7587	3.3398
		13.000	1582.5	1866.2	1.7295	3.4827
		13.517	1618.8	1902.5	1.7016	3.6195
		14.017	1652.5	1936.2	1.6766	3.7489
		14.517	1685.0	1968.7	1.6533	3.8758
		15.017	1716.3	2000.0	1.6315	4.0000
		16.000	1773.8	2057.5	1.5927*	4.2333
		16.500	1800.0	2083.7	1.5747*	4.3418
		17.000	1825.0	2108.7	1.5578*	4.4466
		17.517	1847.5	2131.2	1.5414*	4.5420
		18.017	1870.0	2153.7	1.5264*	4.6384
		18.517	1890.0	2173.7	1.5122*	4.7250
		19.017	1908.8	2192.5	1.4987*	4.8071
		20.000	1942.5	2226.2	1.4742*	4.9560
		20.500	1957.5	2241.2	1.4626*	5.0230
		21.000	1972.5	2256.2	1.4516*	5.0904
		21.517	1983.8	2267.5	1.4407*	5.1416
		22.017	1996.3	2280.0	1.4307*	5.1984
		22.517	2007.5	2291.2	1.4212*	5.2496
		23.017	2017.5	2301.2	1.4120*	5.2955
		24.017	2035.0	2318.7	1.3949*	5.3764
		24.517	2043.8	2327.5	1.3868*	5.4173
		25.017	2051.3	2335.0	1.3791*	5.4522
		25.533	2057.5	2341.2	1.3714*	5.4812
		26.033	2063.8	2347.5	1.3643*	5.5108
		26.533	2070.0	2353.7	1.3574*	5.5399
		27.033	2075.0	2358.7	1.3508*	5.5635

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		28.000	2085.0	2368.7	1.3387*	5.6107
		28.500	2090.0	2373.7	1.3327*	5.6345
		29.000	2093.8	2377.5	1.3270*	5.6525
		29.517	2097.5	2381.2	1.3213*	5.6701
		30.017	2101.3	2385.0	1.3159*	5.6882
		30.517	2103.8	2387.5	1.3108*	5.7002
		31.017	2107.5	2391.2	1.3057*	5.7178
		32.000	2113.8	2397.5	1.2964*	5.7480
		32.500	2116.3	2400.0	1.2918*	5.7600
		33.000	2118.8	2402.5	1.2874*	5.7720
		33.517	2121.3	2405.0	1.2829*	5.7840
		34.017	2122.5	2406.2	1.2788*	5.7898
		34.517	2126.3	2410.0	1.2747*	5.8081
		35.017	2127.5	2411.2	1.2708*	5.8139
		36.000	2132.5	2416.2	1.2634*	5.8380
		36.500	2133.8	2417.5	1.2598*	5.8443
		37.000	2135.0	2418.7	1.2563*	5.8501
		37.517	2136.3	2420.0	1.2528*	5.8564
		38.017	2138.8	2422.5	1.2495*	5.8685
		38.517	2138.8	2422.5	1.2462*	5.8685
		39.017	2140.0	2423.7	1.2431*	5.8743
		40.000	2142.5	2426.2	1.2371*	5.8864
		40.500	2143.8	2427.5	1.2342*	5.8928
		41.000	2146.3	2430.0	1.2313*	5.9049
		41.517	2147.5	2431.2	1.2284*	5.9107
		42.017	2148.8	2432.5	1.2257*	5.9171
		42.517	2148.8	2432.5	1.2230*	5.9171
		43.017	2150.0	2433.7	1.2205*	5.9229
		44.017	2152.5	2436.2	1.2154*	5.9351
		44.517	2152.5	2436.2	1.2130*	5.9351
		45.017	2153.8	2437.5	1.2107*	5.9414
		45.533	2155.0	2438.7	1.2083*	5.9473
		46.033	2155.0	2438.7	1.2060*	5.9473
		46.533	2156.3	2440.0	1.2038*	5.9536
		47.033	2157.5	2441.2	1.2016*	5.9595
		48.000	2158.8	2442.5	1.1976*	5.9658
		48.500	2158.8	2442.5	1.1955*	5.9658
		49.000	2160.0	2443.7	1.1935*	5.9717
		49.517	2160.0	2443.7	1.1915*	5.9717
		50.017	2161.3	2445.0	1.1896*	5.9780
		50.517	2161.3	2445.0	1.1877*	5.9780
		51.017	2161.3	2445.0	1.1859*	5.9780
		52.000	2162.5	2446.2	1.1824*	5.9839

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		52.500	2162.5	2446.2	1.1806*	5.9839
		53.000	2163.8	2447.5	1.1789*	5.9903
		53.517	2163.8	2447.5	1.1772*	5.9903
		54.017	2163.8	2447.5	1.1756*	5.9903
		54.517	2165.0	2448.7	1.1740*	5.9961
		55.017	2165.0	2448.7	1.1724*	5.9961
		56.000	2166.3	2450.0	1.1693*	6.0025
		56.500	2167.5	2451.2	1.1678*	6.0084
		57.000	2167.5	2451.2	1.1664*	6.0084
		57.517	2167.5	2451.2	1.1649*	6.0084
		58.017	2167.5	2451.2	1.1635*	6.0084
		58.517	2167.5	2451.2	1.1621*	6.0084
		59.017	2168.8	2452.5	1.1607*	6.0148
		60.017	2175.0	2458.7	1.1580*	6.0452
		60.517	2172.5	2456.2	1.1567*	6.0329
7	End of 2nd Shut-in :	61.017	2172.5	2456.2	1.1554*	6.0329
8	Start of 3rd Flow :	0.000		358.7		
	FLOW PERIOD 3	0.967	20.0	378.7		
		1.467	-10.0	348.7		
		1.967	25.0	383.7		
		2.483	67.5	426.2		
		2.983	132.5	491.2		
		3.483	130.0	488.7		
		3.983	137.5	496.2		
		4.967	115.0	473.7		
		5.467	112.5	471.2		
		5.967	111.3	470.0		
		6.483	113.8	472.5		
		6.983	118.8	477.5		
		7.483	125.0	483.7		
		7.983	131.3	490.0		
		8.967	136.3	495.0		
		9.467	140.0	498.7		
		9.967	145.0	503.7		
		10.483	150.0	508.7		
		10.983	155.0	513.7		
		11.483	158.8	517.5		
		11.983	161.3	520.0		
		12.967	166.3	525.0		
		13.467	163.8	522.5		
		13.967	165.0	523.7		

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		14.483	167.5	526.2		
		14.983	167.5	526.2		
		15.483	170.0	528.7		
		15.983	171.3	530.0		
		16.983	185.0	543.7		
		17.483	191.3	550.0		
		17.983	193.8	552.5		
		18.500	195.0	553.7		
		19.000	197.5	556.2		
		19.500	198.8	557.5		
		20.000	201.3	560.0		
		20.967	207.5	566.2		
		21.467	208.8	567.5		
		21.967	207.5	566.2		
		22.483	212.5	571.2		
		22.983	216.3	575.0		
		23.483	220.0	578.7		
		23.983	225.0	583.7		
		24.967	230.0	588.7		
		25.467	231.3	590.0		
		25.967	230.0	588.7		
		26.483	280.0	638.7		
		26.983	188.8	547.5		
		27.483	-78.7	280.0		
		27.983	-125.0	233.7		
		28.967	-111.2	247.5		
		29.467	-142.5	216.2		
		29.967	-35.0	323.7		
		30.483	6.3	365.0		
		30.983	-27.5	331.2		
		31.483	-12.5	346.2		
		31.983	8.8	367.5		
		32.983	48.8	407.5		
		33.483	63.8	422.5		
		33.983	71.3	430.0		
		34.500	71.3	430.0		
		35.000	67.5	426.2		
		35.500	66.3	425.0		
		36.000	72.5	431.2		
		36.967	70.0	428.7		
		37.467	68.8	427.5		
		37.967	76.3	435.0		
		38.483	78.8	437.5		

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		38.983	77.5	436.2		
		39.483	78.8	437.5		
		39.983	77.5	436.2		
		40.967	-26.2	332.5		
		41.467	-187.5	171.2		
		41.967	-208.7	150.0		
		42.483	-220.0	138.7		
		42.983	-217.5	141.2		
		43.483	-216.2	142.5		
		43.983	-231.2	127.5		
		44.967	-238.7	120.0		
		45.467	-240.0	118.7		
		45.967	-241.2	117.5		
		46.483	-241.2	117.5		
		46.983	-240.0	118.7		
		47.483	-240.0	118.7		
		47.983	-238.7	120.0		
		48.967	-240.0	118.7		
		49.467	-238.7	120.0		
		49.967	-236.2	122.5		
		50.483	-237.5	121.2		
		50.983	-237.5	121.2		
		51.483	-237.5	121.2		
		51.983	-236.2	122.5		
		52.983	-236.2	122.5		
		53.483	-235.0	123.7		
		53.983	-235.0	123.7		
		54.500	-233.7	125.0		
		55.000	-232.5	126.2		
		55.500	-233.7	125.0		
		56.000	-232.5	126.2		
		56.967	-231.2	127.5		
		57.467	-231.2	127.5		
		57.967	-231.2	127.5		
		58.483	-230.0	128.7		
		58.983	-230.0	128.7		
		59.483	-230.0	128.7		
		59.983	-230.0	128.7		
		60.967	-227.5	131.2		
		61.467	-227.5	131.2		
		61.967	-226.2	132.5		
		62.483	-226.2	132.5		
		62.983	-226.2	132.5		

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		63.483	-226.2	132.5		
		63.983	-226.2	132.5		
		64.967	-225.0	133.7		
		65.467	-225.0	133.7		
		65.967	-225.0	133.7		
		66.483	-223.7	135.0		
		66.983	-222.5	136.2		
		67.483	-222.5	136.2		
		67.983	-222.5	136.2		
		68.983	-222.5	136.2		
		69.483	-222.5	136.2		
		69.983	-221.2	137.5		
		70.500	-221.2	137.5		
		71.000	-221.2	137.5		
		71.500	-221.2	137.5		
		72.000	-220.0	138.7		
		72.967	-220.0	138.7		
		73.467	-220.0	138.7		
		73.967	-217.5	141.2		
		74.483	-217.5	141.2		
		74.983	-217.5	141.2		
		75.483	-218.7	140.0		
		75.983	-217.5	141.2		
		76.967	-217.5	141.2		
		77.467	-217.5	141.2		
		77.967	-217.5	141.2		
		78.483	-216.2	142.5		
		78.983	-216.2	142.5		
		79.483	-215.0	143.7		
		79.983	-215.0	143.7		
		80.967	-215.0	143.7		
		81.467	-215.0	143.7		
		81.967	-215.0	143.7		
		82.483	-213.7	145.0		
		82.983	-213.7	145.0		
		83.483	-213.7	145.0		
		83.983	-213.7	145.0		
		84.967	-213.7	145.0		
		85.467	-212.5	146.2		
		85.967	-212.5	146.2		
		86.483	-212.5	146.2		
		86.983	-211.2	147.5		
		87.483	-211.2	147.5		

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		87.983	-211.2	147.5		
		88.983	-211.2	147.5		
		89.483	-211.2	147.5		
		89.983	-211.2	147.5		
		90.500	-210.0	148.7		
		91.000	-210.0	148.7		
		91.500	-210.0	148.7		
		92.000	-210.0	148.7		
		92.967	-210.0	148.7		
		93.467	-210.0	148.7		
		93.967	-210.0	148.7		
		94.483	-210.0	148.7		
		94.983	-208.7	150.0		
		95.483	-208.7	150.0		
9	End of 3rd Flow :	95.983	-208.7	150.0		
	Flow time used for SHUT-IN PERIOD 3 = 105.467 minutes					
	SHUT-IN PERIOD 3	0.000	0.0	150.0	0.0000	0.0000
		0.983	171.2	321.2	108.2542	0.1032
		1.483	312.5	462.5	72.1011	0.2139
		1.983	417.5	567.5	54.1765	0.3221
		2.500	526.2	676.2	43.1867	0.4572
		3.000	627.5	777.5	36.1556	0.6045
		3.500	721.2	871.2	31.1333	0.7590
		4.000	807.5	957.5	27.3667	0.9168
		4.983	965.0	1115.0	22.1639	1.2432
		5.483	1036.2	1186.2	20.2340	1.4071
		5.983	1101.2	1251.2	18.6267	1.5655
		6.500	1161.2	1311.2	17.2256	1.7192
		7.000	1218.7	1368.7	16.0667	1.8733
		7.500	1273.7	1423.7	15.0622	2.0269
		8.000	1325.0	1475.0	14.1833	2.1756
		9.000	1412.5	1562.5	12.7185	2.4414
		9.500	1452.5	1602.5	12.1018	2.5680
		10.000	1491.2	1641.2	11.5467	2.6935
		10.517	1526.2	1676.2	11.0285	2.8096
		11.017	1560.0	1710.0	10.5734	2.9241
		11.517	1591.2	1741.2	10.1577	3.0318
		12.017	1621.2	1771.2	9.7767	3.1371
		12.983	1672.5	1822.5	9.1232	3.3215
		13.483	1696.2	1846.2	8.8220	3.4085
		13.983	1717.5	1867.5	8.5423	3.4876

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		14.500	1737.5	1887.5	8.2736	3.5627
		15.000	1757.5	1907.5	8.0311	3.6386
		15.500	1775.0	1925.0	7.8043	3.7056
		16.000	1791.2	1941.2	7.5917	3.7683
		16.983	1823.7	1973.7	7.2100	3.8955
		17.483	1837.5	1987.5	7.0324	3.9502
		17.983	1850.0	2000.0	6.8647	4.0000
		18.500	1862.5	2012.5	6.7009	4.0502
		19.000	1873.7	2023.7	6.5509	4.0954
		19.500	1885.0	2035.0	6.4085	4.1412
		20.000	1895.0	2045.0	6.2733	4.1820
		20.983	1915.0	2065.0	6.0262	4.2642
		21.483	1923.7	2073.7	5.9092	4.3002
		21.983	1932.5	2082.5	5.7976	4.3368
		22.500	1941.2	2091.2	5.6874	4.3731
		23.000	1948.7	2098.7	5.5855	4.4045
		23.500	1956.2	2106.2	5.4879	4.4361
		24.000	1962.5	2112.5	5.3944	4.4627
		24.983	1975.0	2125.0	5.2215	4.5156
		25.483	1982.5	2132.5	5.1387	4.5476
		25.983	1987.5	2137.5	5.0590	4.5689
		26.500	1992.5	2142.5	4.9799	4.5903
		27.000	1997.5	2147.5	4.9062	4.6118
		27.500	2002.5	2152.5	4.8352	4.6333
		28.000	2008.7	2158.7	4.7667	4.6600
		29.000	2018.7	2168.7	4.6368	4.7033
		29.500	2022.5	2172.5	4.5751	4.7198
		30.000	2026.2	2176.2	4.5156	4.7358
		30.517	2031.2	2181.2	4.4560	4.7576
		31.017	2036.2	2186.2	4.4003	4.7795
		31.517	2038.7	2188.7	4.3464	4.7904
		32.017	2042.5	2192.5	4.2941	4.8071
		32.983	2051.2	2201.2	4.1976	4.8453
		33.483	2053.7	2203.7	4.1498	4.8563
		33.983	2057.5	2207.5	4.1035	4.8731
		34.500	2061.2	2211.2	4.0570	4.8894
		35.000	2063.7	2213.7	4.0133	4.9005
		35.500	2066.2	2216.2	3.9709	4.9115
		36.000	2070.0	2220.0	3.9296	4.9284
		36.983	2076.2	2226.2	3.8517	4.9560
		37.483	2078.7	2228.7	3.8137	4.9671
		37.983	2081.2	2231.2	3.7767	4.9783
		38.500	2083.7	2233.7	3.7394	4.9894

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		39.000	2086.2	2236.2	3.7043	5.0006
		39.500	2088.7	2238.7	3.6700	5.0118
		40.000	2091.2	2241.2	3.6367	5.0230
		40.983	2093.7	2243.7	3.5734	5.0342
		41.483	2096.2	2246.2	3.5424	5.0454
		41.983	2100.0	2250.0	3.5121	5.0625
		42.500	2102.5	2252.5	3.4816	5.0738
		43.000	2102.5	2252.5	3.4527	5.0738
		43.500	2105.0	2255.0	3.4245	5.0850
		44.000	2106.2	2256.2	3.3970	5.0904
		45.000	2112.5	2262.5	3.3437	5.1189
		45.500	2112.5	2262.5	3.3179	5.1189
		46.000	2113.7	2263.7	3.2928	5.1243
		46.517	2116.2	2266.2	3.2673	5.1357
		47.017	2117.5	2267.5	3.2432	5.1416
		47.517	2118.7	2268.7	3.2196	5.1470
		48.017	2121.2	2271.2	3.1965	5.1583
		48.983	2123.7	2273.7	3.1531	5.1697
		49.483	2125.0	2275.0	3.1314	5.1756
		49.983	2127.5	2277.5	3.1100	5.1870
		50.500	2128.7	2278.7	3.0884	5.1925
		51.000	2130.0	2280.0	3.0680	5.1984
		51.500	2131.2	2281.2	3.0479	5.2039
		52.000	2132.5	2282.5	3.0282	5.2098
		52.983	2135.0	2285.0	2.9906	5.2212
		53.483	2136.2	2286.2	2.9720	5.2267
		53.983	2137.5	2287.5	2.9537	5.2327
		54.500	2138.7	2288.7	2.9352	5.2381
		55.000	2140.0	2290.0	2.9176	5.2441
		55.500	2142.5	2292.5	2.9003	5.2556
		56.000	2142.5	2292.5	2.8833	5.2556
		56.983	2145.0	2295.0	2.8508	5.2670
		57.483	2146.2	2296.2	2.8347	5.2725
		57.983	2147.5	2297.5	2.8189	5.2785
		58.500	2148.7	2298.7	2.8028	5.2840
		59.000	2150.0	2300.0	2.7876	5.2900
		59.500	2150.0	2300.0	2.7725	5.2900
		60.000	2151.2	2301.2	2.7578	5.2955
		60.983	2152.5	2302.5	2.7294	5.3015
		61.483	2153.7	2303.7	2.7154	5.3070
		61.983	2155.0	2305.0	2.7015	5.3130
		62.500	2156.2	2306.2	2.6875	5.3186
		63.000	2156.2	2306.2	2.6741	5.3186

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		63.500	2157.5	2307.5	2.6609	5.3246
		64.000	2157.5	2307.5	2.6479	5.3246
		65.000	2158.7	2308.7	2.6226	5.3301
		65.500	2158.7	2308.7	2.6102	5.3301
		66.000	2160.0	2310.0	2.5980	5.3361
		66.517	2160.0	2310.0	2.5856	5.3361
		67.017	2161.2	2311.2	2.5737	5.3416
		67.517	2162.5	2312.5	2.5621	5.3477
		68.017	2162.5	2312.5	2.5506	5.3477
		68.983	2165.0	2315.0	2.5289	5.3592
		69.483	2166.2	2316.2	2.5179	5.3648
		69.983	2166.2	2316.2	2.5070	5.3648
		70.500	2167.5	2317.5	2.4960	5.3708
		71.000	2168.7	2318.7	2.4854	5.3764
		71.500	2168.7	2318.7	2.4751	5.3764
		72.000	2170.0	2320.0	2.4648	5.3824
		72.983	2171.2	2321.2	2.4451	5.3880
		73.483	2172.5	2322.5	2.4352	5.3940
		73.983	2172.5	2322.5	2.4255	5.3940
		74.500	2173.7	2323.7	2.4157	5.3996
		75.000	2175.0	2325.0	2.4062	5.4056
		75.500	2175.0	2325.0	2.3969	5.4056
		76.000	2175.0	2325.0	2.3877	5.4056
		76.983	2177.5	2327.5	2.3700	5.4173
		77.483	2177.5	2327.5	2.3612	5.4173
		77.983	2178.7	2328.7	2.3524	5.4228
		78.500	2178.7	2328.7	2.3435	5.4228
		79.000	2180.0	2330.0	2.3350	5.4289
		79.500	2181.2	2331.2	2.3266	5.4345
		80.000	2181.2	2331.2	2.3183	5.4345
		81.000	2183.7	2333.7	2.3021	5.4462
		81.500	2183.7	2333.7	2.2941	5.4462
		82.000	2185.0	2335.0	2.2862	5.4522
		82.517	2185.0	2335.0	2.2781	5.4522
		83.017	2186.2	2336.2	2.2704	5.4578
		83.517	2187.5	2337.5	2.2628	5.4639
		84.017	2187.5	2337.5	2.2553	5.4639
		84.983	2188.7	2338.7	2.2410	5.4695
		85.483	2188.7	2338.7	2.2338	5.4695
		85.983	2190.0	2340.0	2.2266	5.4756
		86.500	2190.0	2340.0	2.2193	5.4756
		87.000	2191.2	2341.2	2.2123	5.4812
		87.500	2191.2	2341.2	2.2053	5.4812

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		88.000	2192.5	2342.5	2.1985	5.4873
		88.983	2193.8	2343.8	2.1852	5.4934
		89.483	2193.8	2343.8	2.1786	5.4934
		89.983	2195.0	2345.0	2.1721	5.4990
		90.500	2195.0	2345.0	2.1654	5.4990
		91.000	2196.2	2346.2	2.1590	5.5047
		91.500	2196.2	2346.2	2.1526	5.5047
		92.000	2196.2	2346.2	2.1464	5.5047
		92.983	2197.5	2347.5	2.1343	5.5108
		93.483	2198.7	2348.7	2.1282	5.5164
		93.983	2198.7	2348.7	2.1222	5.5164
		94.500	2198.7	2348.7	2.1160	5.5164
		95.000	2200.0	2350.0	2.1102	5.5225
		95.500	2200.0	2350.0	2.1044	5.5225
		96.000	2201.2	2351.2	2.0986	5.5281
		96.983	2201.2	2351.2	2.0875	5.5281
		97.483	2202.5	2352.5	2.0819	5.5343
		97.983	2202.5	2352.5	2.0764	5.5343
		98.500	2202.5	2352.5	2.0707	5.5343
		99.000	2203.7	2353.7	2.0653	5.5399
		99.500	2203.7	2353.7	2.0600	5.5399
		100.000	2205.0	2355.0	2.0547	5.5460
		101.000	2205.0	2355.0	2.0442	5.5460
		101.500	2206.2	2356.2	2.0391	5.5517
		102.000	2206.2	2356.2	2.0340	5.5517
		102.517	2206.2	2356.2	2.0288	5.5517
		103.017	2207.5	2357.5	2.0238	5.5578
		103.517	2207.5	2357.5	2.0188	5.5578
		104.017	2208.7	2358.7	2.0139	5.5635
		104.983	2208.7	2358.7	2.0046	5.5635
		105.483	2208.7	2358.7	1.9998	5.5635
		105.983	2210.0	2360.0	1.9951	5.5696
		106.500	2211.2	2361.2	1.9903	5.5753
		107.000	2211.2	2361.2	1.9857	5.5753
		107.500	2211.2	2361.2	1.9811	5.5753
		108.000	2211.2	2361.2	1.9765	5.5753
		108.983	2212.5	2362.5	1.9677	5.5814
		109.483	2212.5	2362.5	1.9633	5.5814
		109.983	2213.7	2363.7	1.9589	5.5871
		110.500	2213.7	2363.7	1.9544	5.5871
		111.000	2213.7	2363.7	1.9502	5.5871
		111.500	2215.0	2365.0	1.9459	5.5932
		112.000	2215.0	2365.0	1.9417	5.5932

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		112.983	2216.2	2366.2	1.9335	5.5989
		113.483	2216.2	2366.2	1.9294	5.5989
		113.983	2216.2	2366.2	1.9253	5.5989
		114.500	2216.2	2366.2	1.9211	5.5989
		115.000	2217.5	2367.5	1.9171	5.6051
		115.500	2217.5	2367.5	1.9131	5.6051
		116.000	2217.5	2367.5	1.9092	5.6051
		117.000	2218.7	2368.7	1.9014	5.6107
		117.500	2218.7	2368.7	1.8976	5.6107
		118.000	2218.7	2368.7	1.8938	5.6107
		118.517	2220.0	2370.0	1.8899	5.6169
		119.017	2220.0	2370.0	1.8862	5.6169
		119.517	2220.0	2370.0	1.8824	5.6169
		120.017	2221.2	2371.2	1.8788	5.6226
		120.983	2221.2	2371.2	1.8717	5.6226
		121.483	2222.5	2372.5	1.8682	5.6288
		121.983	2222.5	2372.5	1.8646	5.6288
		122.500	2222.5	2372.5	1.8610	5.6288
		123.000	2222.5	2372.5	1.8575	5.6288
		123.500	2222.5	2372.5	1.8540	5.6288
		124.000	2223.7	2373.7	1.8505	5.6345
		124.983	2223.7	2373.7	1.8438	5.6345
		125.483	2223.7	2373.7	1.8405	5.6345
		125.983	2225.0	2375.0	1.8371	5.6406
		126.500	2225.0	2375.0	1.8337	5.6406
		127.000	2225.0	2375.0	1.8304	5.6406
		127.500	2225.0	2375.0	1.8272	5.6406
		128.000	2226.2	2376.2	1.8240	5.6463
		128.983	2226.2	2376.2	1.8177	5.6463
		129.483	2227.5	2377.5	1.8145	5.6525
		129.983	2227.5	2377.5	1.8114	5.6525
		130.500	2227.5	2377.5	1.8082	5.6525
		131.000	2227.5	2377.5	1.8051	5.6525
		131.500	2228.7	2378.7	1.8020	5.6582
		132.000	2228.7	2378.7	1.7990	5.6582
		132.983	2228.7	2378.7	1.7931	5.6582
		133.483	2230.0	2380.0	1.7901	5.6644
		133.983	2230.0	2380.0	1.7872	5.6644
		134.500	2230.0	2380.0	1.7841	5.6644
		135.000	2230.0	2380.0	1.7812	5.6644
		135.500	2231.2	2381.2	1.7784	5.6701
		136.000	2231.2	2381.2	1.7755	5.6701
		137.000	2232.5	2382.5	1.7698	5.6763

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		137.500	2232.5	2382.5	1.7670	5.6763
		138.000	2232.5	2382.5	1.7643	5.6763
		138.517	2232.5	2382.5	1.7614	5.6763
		139.017	2232.5	2382.5	1.7587	5.6763
		139.517	2232.5	2382.5	1.7559	5.6763
		140.017	2233.7	2383.7	1.7532	5.6820
		140.983	2233.7	2383.7	1.7481	5.6820
		141.483	2233.7	2383.7	1.7454	5.6820
		141.983	2233.7	2383.7	1.7428	5.6820
		142.500	2235.0	2385.0	1.7401	5.6882
		143.000	2235.0	2385.0	1.7375	5.6882
		143.500	2235.0	2385.0	1.7350	5.6882
		144.000	2235.0	2385.0	1.7324	5.6882
		144.983	2236.2	2386.2	1.7274	5.6940
		145.483	2236.2	2386.2	1.7249	5.6940
		145.983	2236.2	2386.2	1.7225	5.6940
		146.500	2236.2	2386.2	1.7199	5.6940
		147.000	2236.2	2386.2	1.7175	5.6940
		147.500	2237.5	2387.5	1.7150	5.7002
		148.000	2237.5	2387.5	1.7126	5.7002
		148.983	2237.5	2387.5	1.7079	5.7002
		149.483	2238.7	2388.7	1.7055	5.7059
		149.983	2238.7	2388.7	1.7032	5.7059
		150.500	2238.7	2388.7	1.7008	5.7059
		151.000	2238.7	2388.7	1.6985	5.7059
		151.500	2240.0	2390.0	1.6961	5.7121
		152.000	2240.0	2390.0	1.6939	5.7121
		153.000	2240.0	2390.0	1.6893	5.7121
		153.500	2240.0	2390.0	1.6871	5.7121
		154.000	2241.2	2391.2	1.6848	5.7178
		154.517	2241.2	2391.2	1.6826	5.7178
		155.017	2241.2	2391.2	1.6804*	5.7178
		155.517	2241.2	2391.2	1.6782*	5.7178
		156.017	2241.2	2391.2	1.6760*	5.7178
		156.983	2241.2	2391.2	1.6718*	5.7178
		157.483	2242.5	2392.5	1.6697*	5.7241
		157.983	2242.5	2392.5	1.6676*	5.7241
		158.500	2242.5	2392.5	1.6654*	5.7241
		159.000	2242.5	2392.5	1.6633*	5.7241
		159.500	2242.5	2392.5	1.6612*	5.7241
		160.000	2243.7	2393.7	1.6592*	5.7298
		160.983	2243.7	2393.7	1.6551*	5.7298
		161.483	2243.7	2393.7	1.6531*	5.7298

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		161.983	2243.7	2393.7	1.6511*	5.7298
		162.500	2243.7	2393.7	1.6490*	5.7298
		163.000	2245.0	2395.0	1.6470*	5.7360
		163.500	2245.0	2395.0	1.6451*	5.7360
		164.000	2245.0	2395.0	1.6431*	5.7360
		164.983	2246.2	2396.2	1.6393*	5.7418
		165.483	2246.2	2396.2	1.6373*	5.7418
		165.983	2246.2	2396.2	1.6354*	5.7418
		166.500	2246.2	2396.2	1.6334*	5.7418
		167.000	2246.2	2396.2	1.6315*	5.7418
		167.500	2246.2	2396.2	1.6297*	5.7418
		168.000	2246.2	2396.2	1.6278*	5.7418
		168.983	2246.2	2396.2	1.6241*	5.7418
		169.483	2247.5	2397.5	1.6223*	5.7480
		169.983	2247.5	2397.5	1.6205*	5.7480
		170.500	2247.5	2397.5	1.6186*	5.7480
		171.000	2247.5	2397.5	1.6168*	5.7480
		171.500	2247.5	2397.5	1.6150*	5.7480
		172.000	2248.7	2398.7	1.6132*	5.7538
		173.000	2247.5	2397.5	1.6096*	5.7480
		173.500	2248.7	2398.7	1.6079*	5.7538
		174.000	2248.7	2398.7	1.6061*	5.7538
		174.517	2248.7	2398.7	1.6043*	5.7538
		175.017	2248.7	2398.7	1.6026*	5.7538
		175.517	2248.7	2398.7	1.6009*	5.7538
		176.017	2250.0	2400.0	1.5992*	5.7600
		176.983	2250.0	2400.0	1.5959*	5.7600
		177.483	2250.0	2400.0	1.5942*	5.7600
		177.983	2250.0	2400.0	1.5926*	5.7600
		178.500	2251.2	2401.2	1.5908*	5.7658
		179.000	2251.2	2401.2	1.5892*	5.7658
		179.500	2251.2	2401.2	1.5876*	5.7658
		180.000	2251.2	2401.2	1.5859*	5.7658
		180.983	2251.2	2401.2	1.5827*	5.7658
		181.483	2251.2	2401.2	1.5811*	5.7658
		181.983	2252.5	2402.5	1.5795*	5.7720
		182.500	2252.5	2402.5	1.5779*	5.7720
		183.000	2252.5	2402.5	1.5763*	5.7720
		183.500	2252.5	2402.5	1.5748*	5.7720
		184.000	2252.5	2402.5	1.5732*	5.7720
		184.983	2252.5	2402.5	1.5701*	5.7720
		185.483	2252.5	2402.5	1.5686*	5.7720
		185.983	2253.7	2403.7	1.5671*	5.7778

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 1731
Recorder Depth: 5910 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		186.500	2253.7	2403.7	1.5655*	5.7778
		187.000	2253.7	2403.7	1.5640*	5.7778
		187.500	2253.7	2403.7	1.5625*	5.7778
		188.000	2253.7	2403.7	1.5610*	5.7778
		189.000	2255.0	2405.0	1.5580*	5.7840
		189.500	2255.0	2405.0	1.5566*	5.7840
		190.000	2255.0	2405.0	1.5551*	5.7840
		190.517	2255.0	2405.0	1.5536*	5.7840
		191.017	2255.0	2405.0	1.5521*	5.7840
		191.517	2255.0	2405.0	1.5507*	5.7840
		192.017	2255.0	2405.0	1.5493*	5.7840
		192.983	2256.2	2406.2	1.5465*	5.7898
		193.483	2256.2	2406.2	1.5451*	5.7898
		193.983	2256.2	2406.2	1.5437*	5.7898
		194.500	2256.2	2406.2	1.5422*	5.7898
		195.000	2256.2	2406.2	1.5409*	5.7898
		195.500	2256.2	2406.2	1.5395*	5.7898
		196.000	2256.2	2406.2	1.5381*	5.7898
		196.983	2256.2	2406.2	1.5354*	5.7898
		197.483	2257.5	2407.5	1.5341*	5.7961
		197.983	2257.5	2407.5	1.5327*	5.7961
		198.500	2257.5	2407.5	1.5313*	5.7961
		199.000	2257.5	2407.5	1.5300*	5.7961
		199.500	2257.5	2407.5	1.5287*	5.7961
10	End of 3rd Shut-in :	200.000	2257.5	2407.5	1.5273*	5.7961
14	Final Hydrostatic :	0.000		2883.7		

* DENOTES VALUES USED FOR EXTRAPOLATION CALCULATIONS

SHUT-IN 1:
Horner Extrapolation: 2559.97 psia
Horner Slope : 9.02 (psia^2/10^6)/cycle

SHUT-IN 2:
Horner Extrapolation: 2622.04 psia
Horner Slope : 11.20 (psia^2/10^6)/cycle

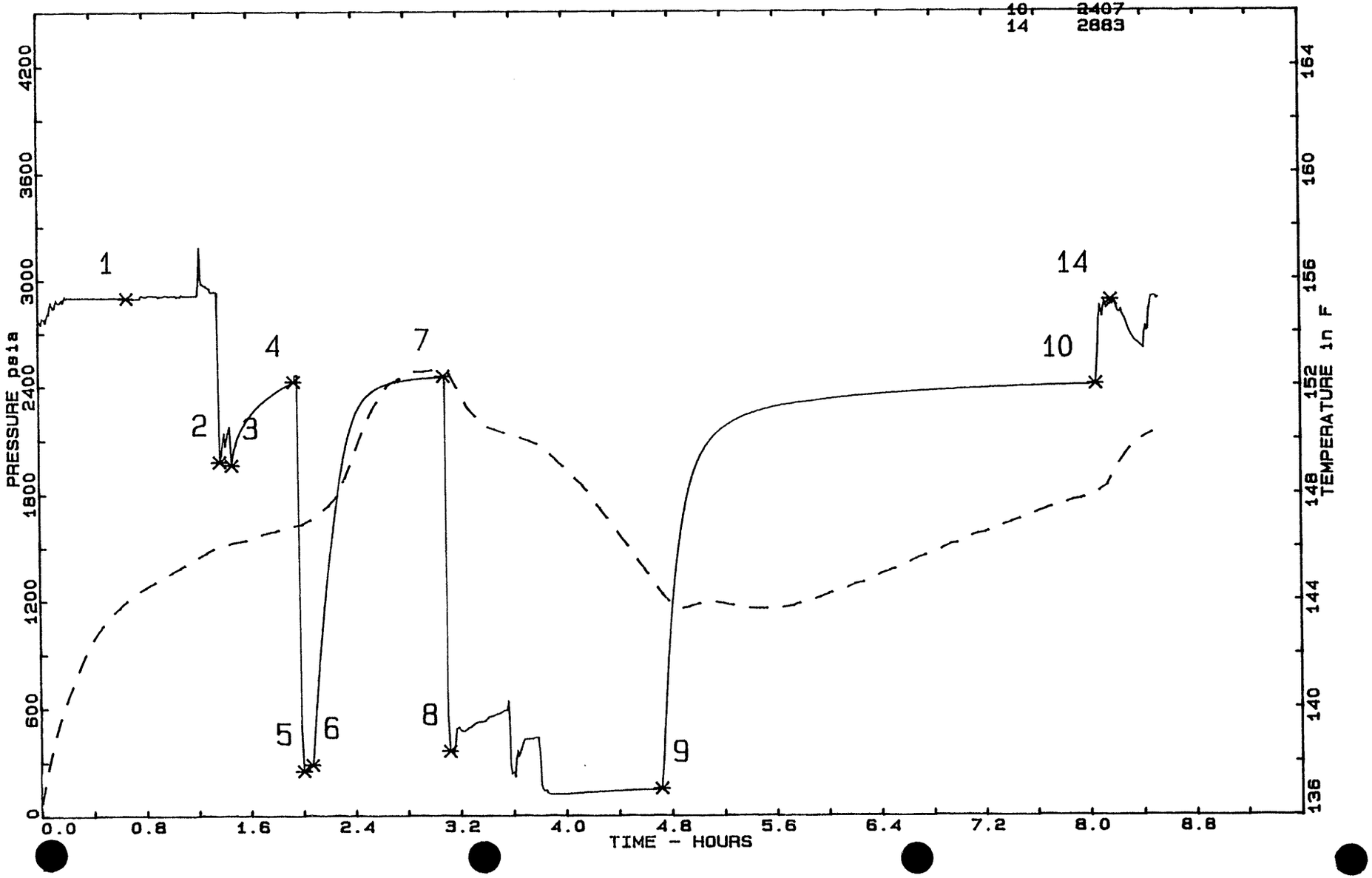
SHUT-IN 3:
Horner Extrapolation: 2481.50 psia
Horner Slope : 1.96 (psia^2/10^6)/cycle

GFE RESOURCES LTD

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

PRESSURE : ————————
TEMPERATURE: — — — — —

LEGEND: * 1 = 2898 psia
RECORDER: 1731 2 1978
3 1960
4 2425
5 248
6 283
7 2456
8 358
9 150
10 2407
14 2883

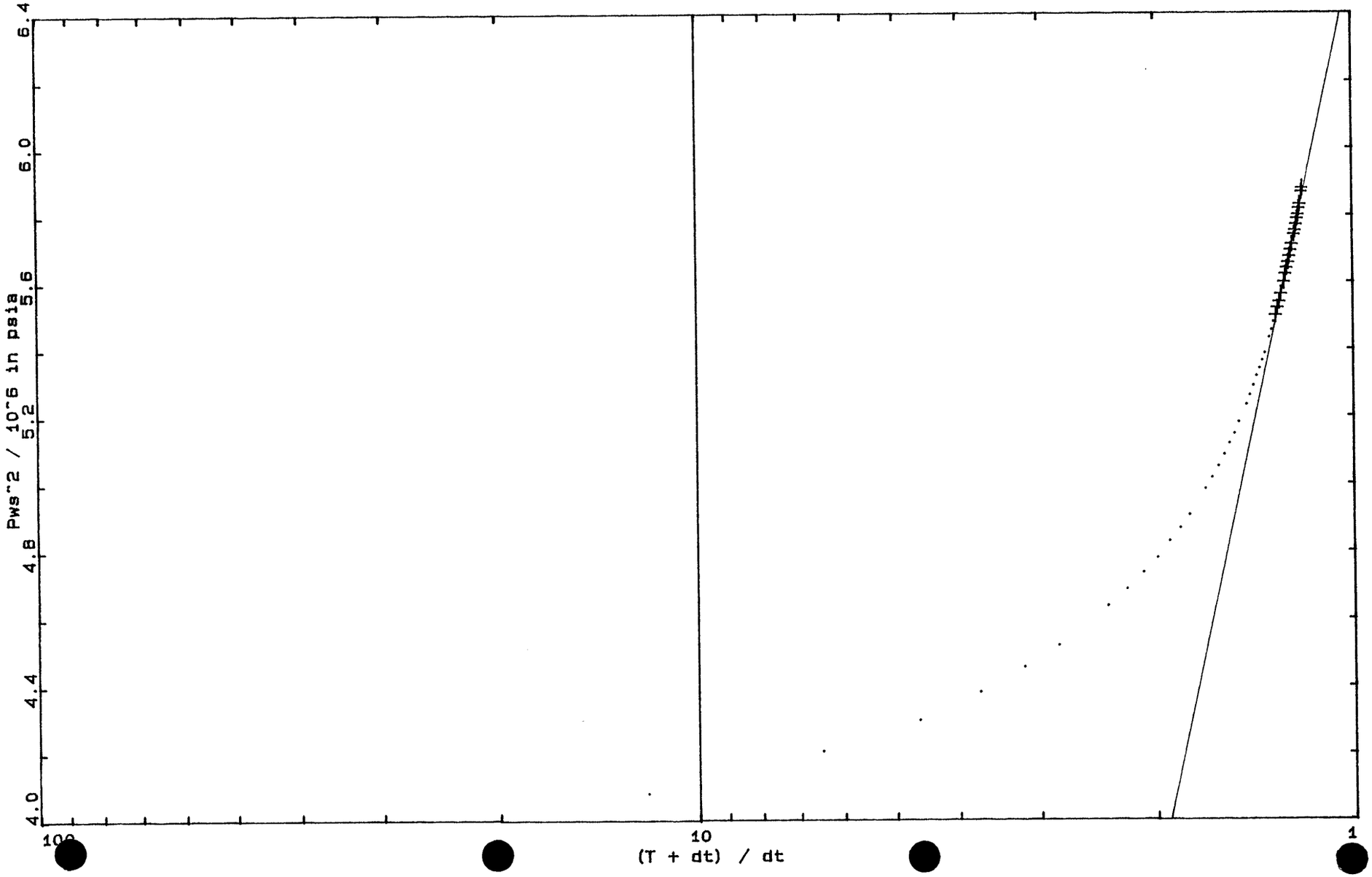


GFE RESOURCES LTD

SHUT-IN #1

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 9.01 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2559.96 psia

RECORDER: 1731



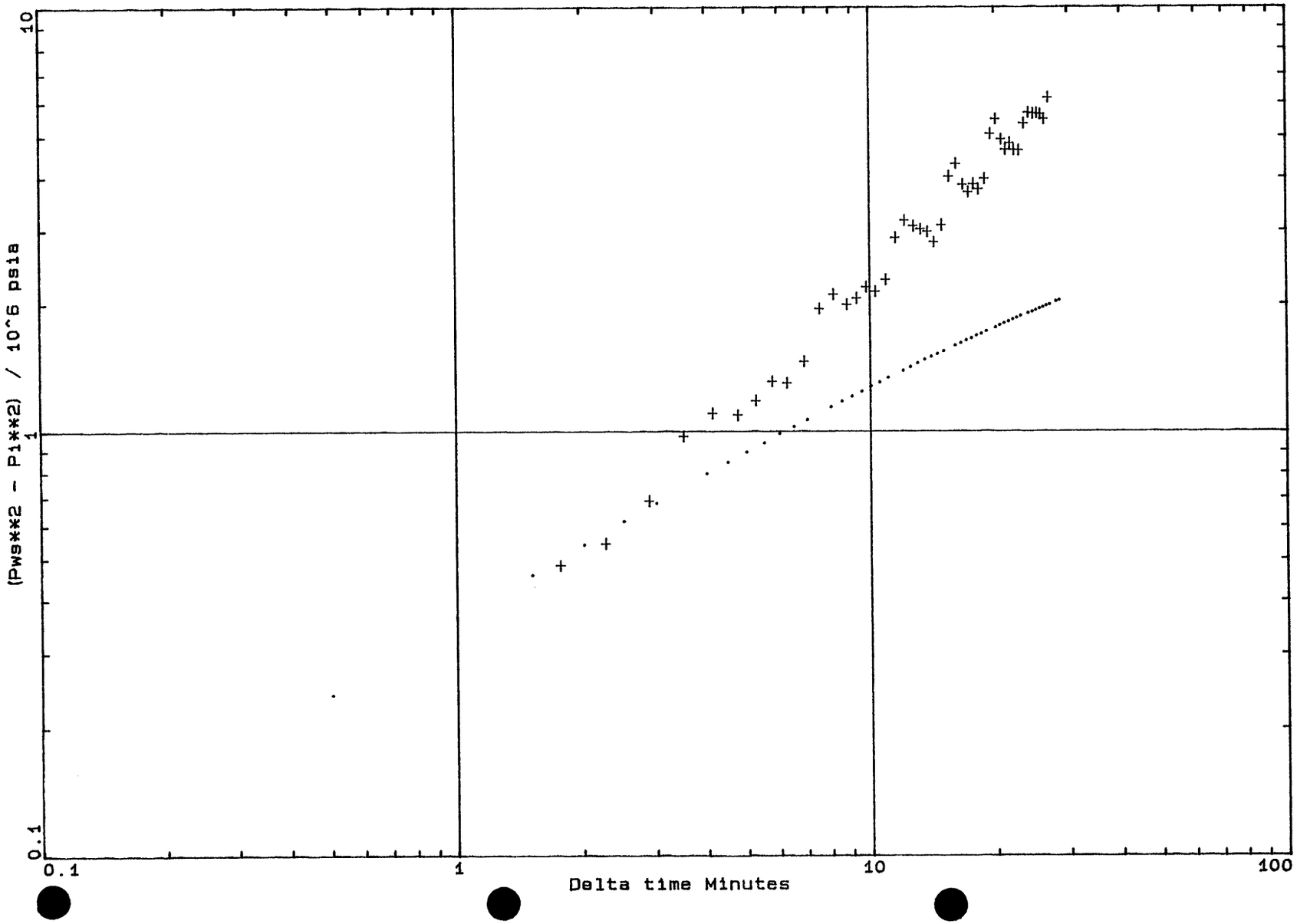
GFE RESOURCES LTD

SHUT-IN #1 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 1731

TYPE CURVE AND PRESSURE DERIVATIVE PLOT

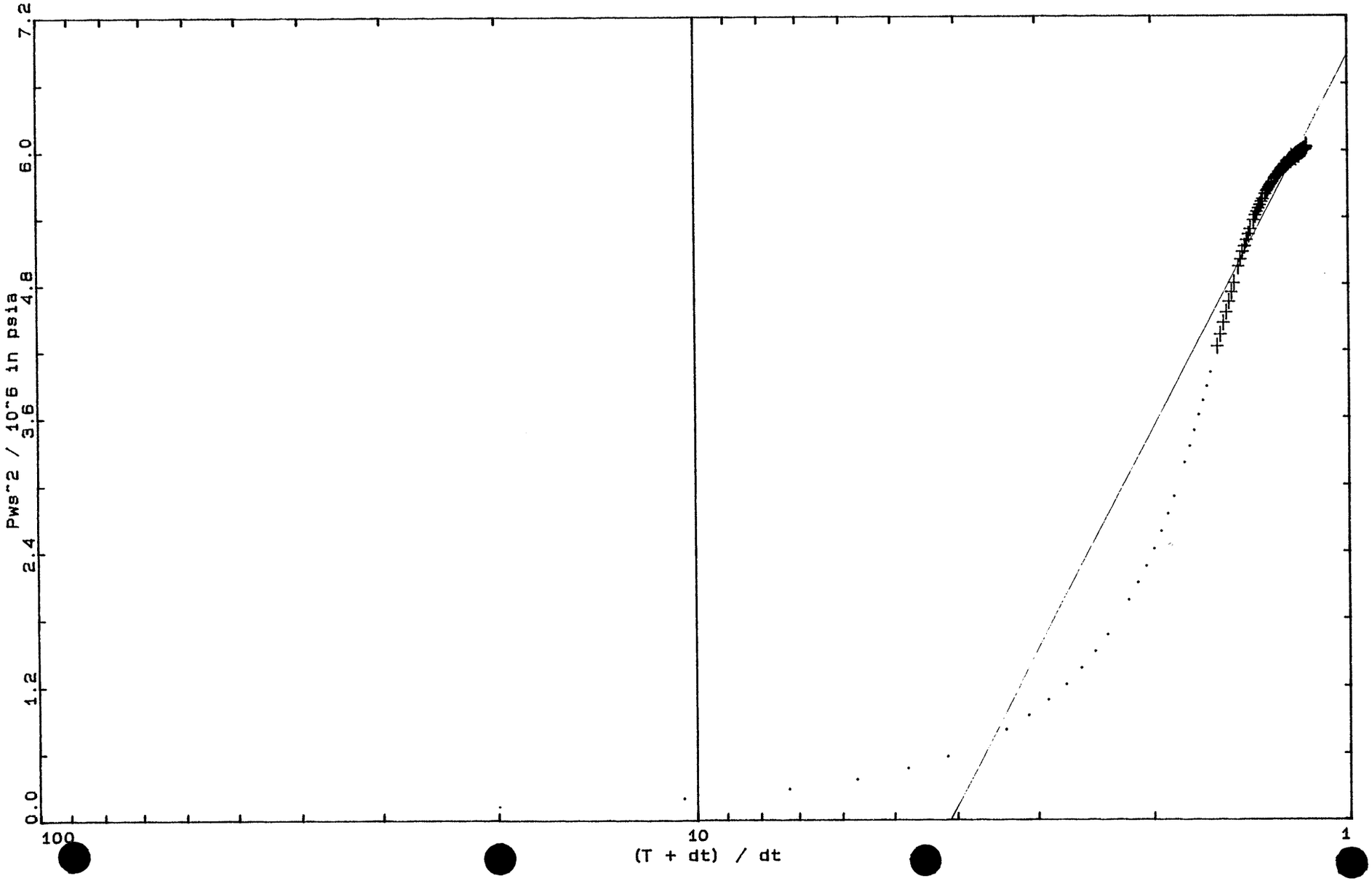


GFE RESOURCES LTD

SHUT-IN #2

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 11.19 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2622.04 psia

RECORDER: 1731



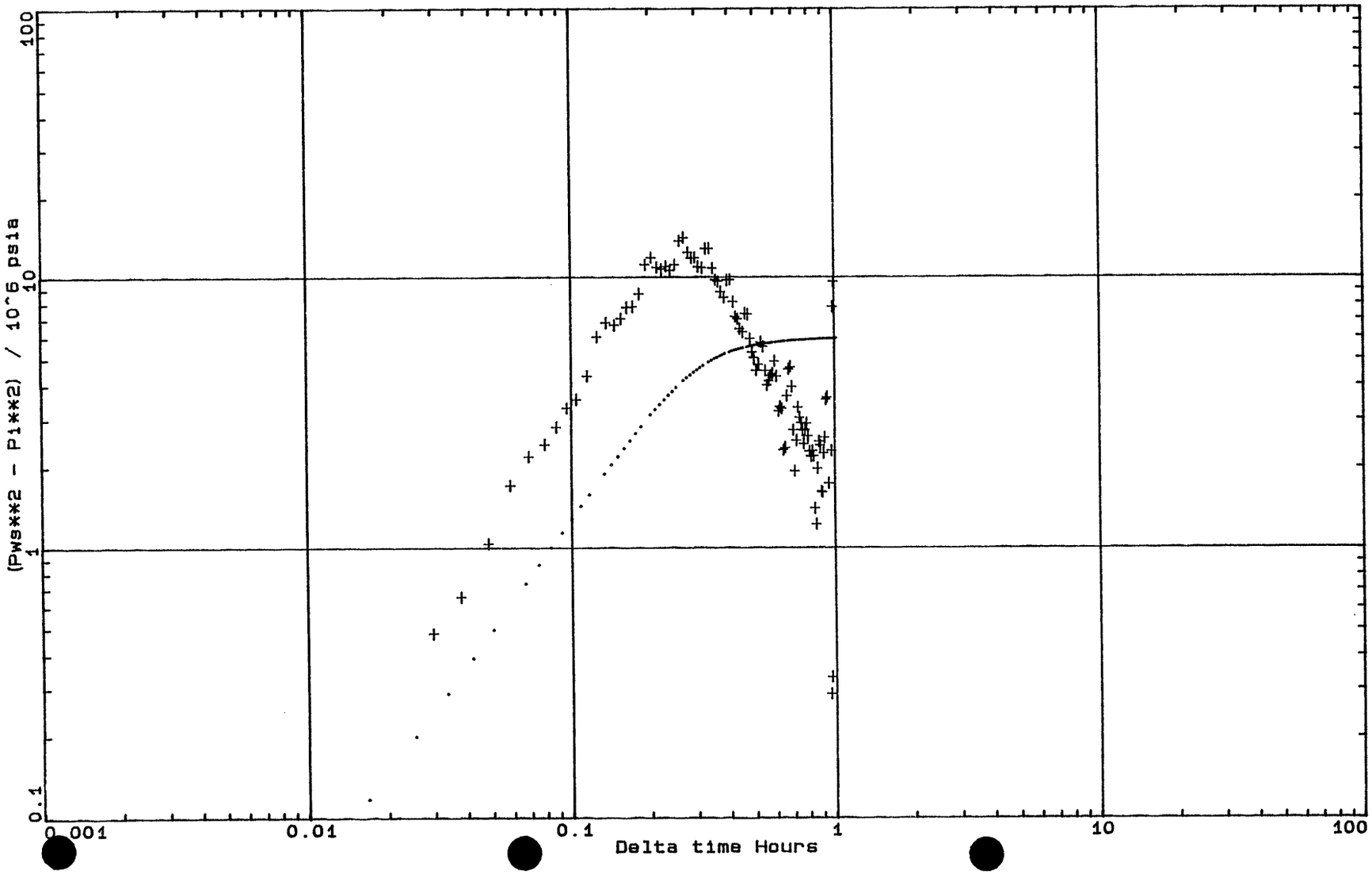
GFE RESOURCES LTD

SHUT-IN #2 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 1731

TYPE CURVE AND PRESSURE DERIVATIVE PLOT

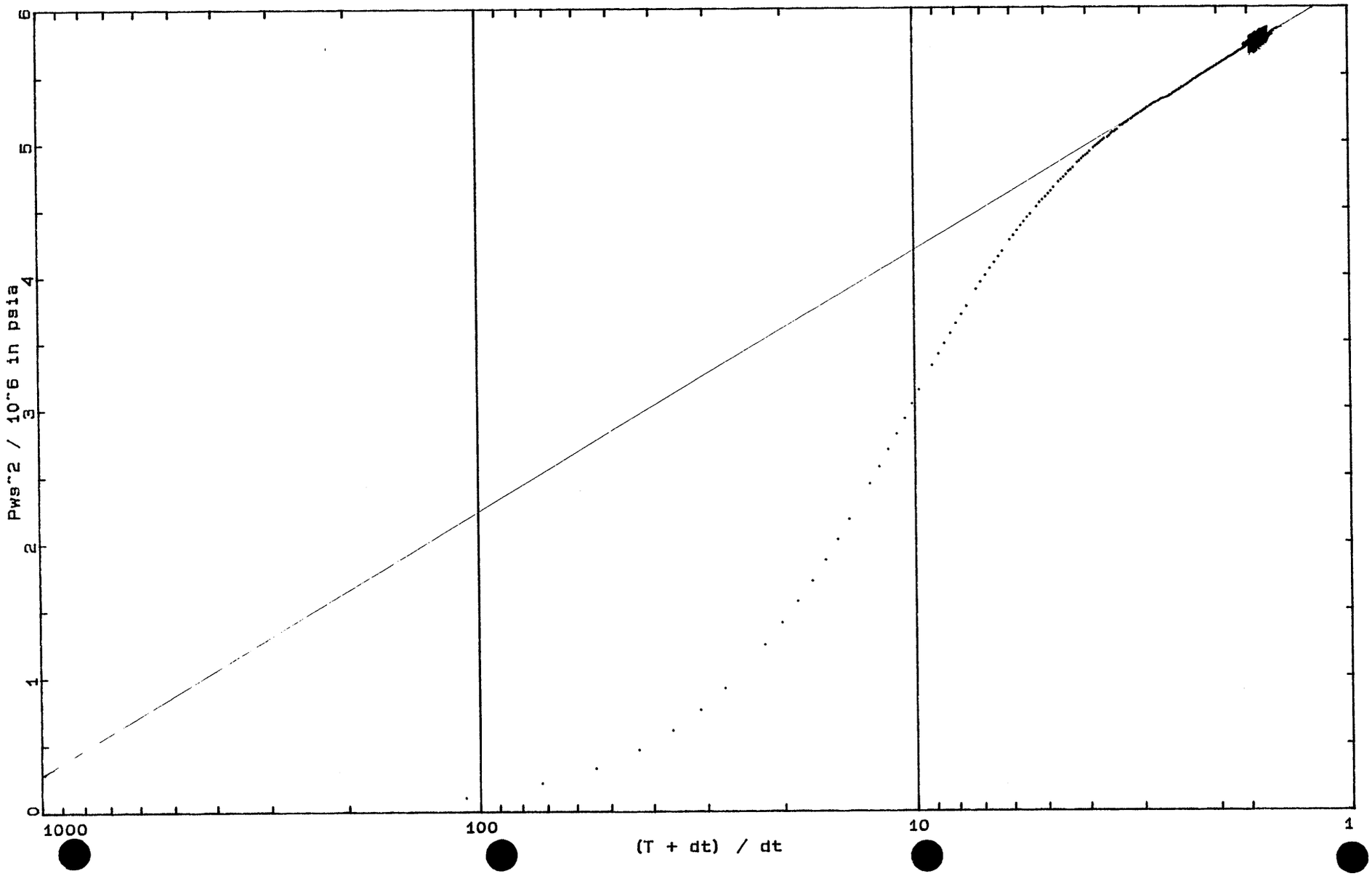


GFE RESOURCES LTD

SHUT-IN #3

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 1.95 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2481.50 psia

RECORDER: 1731



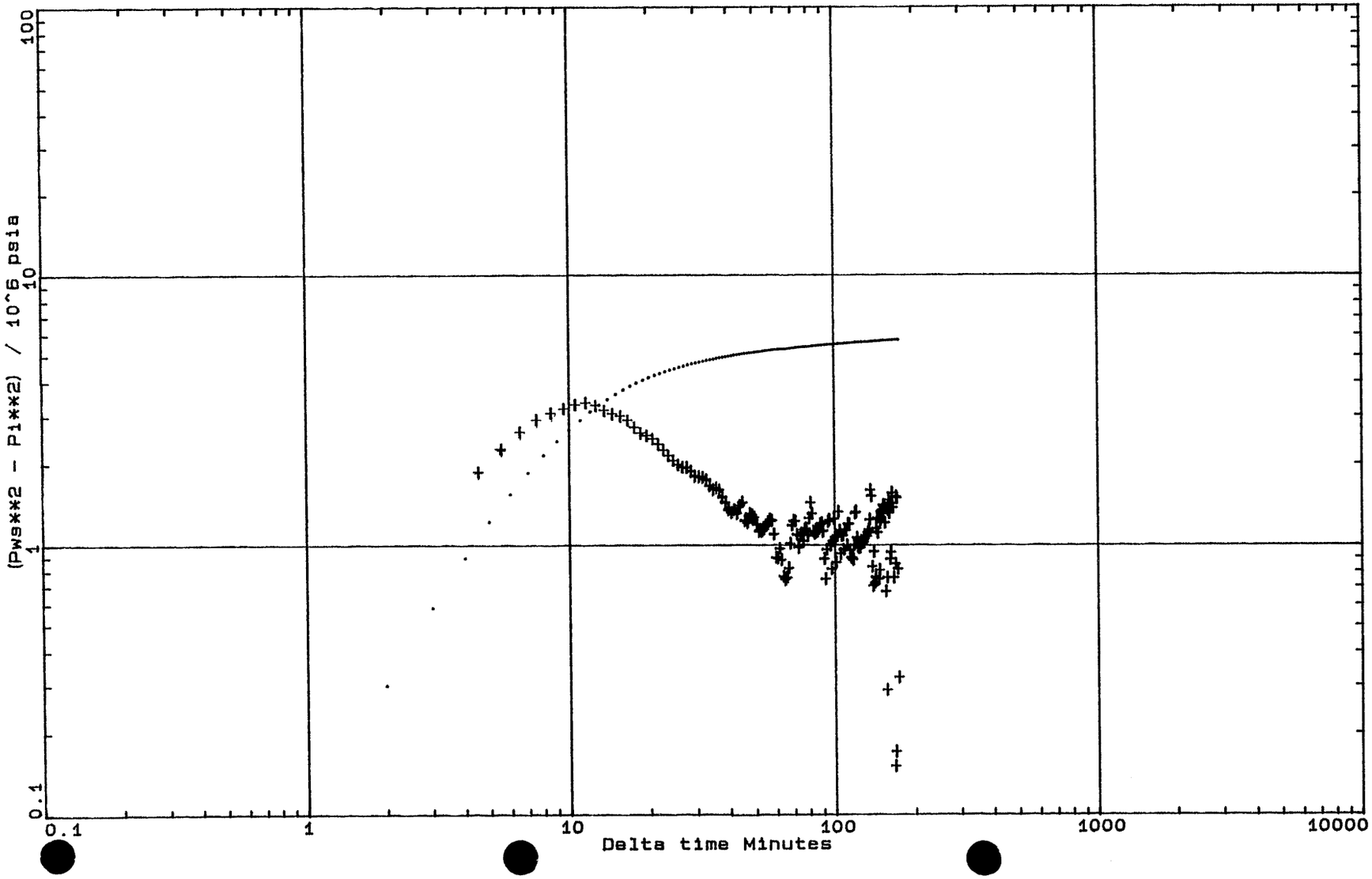
GFE RESOURCES LTD

SHUT-IN #3 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 1731

TYPE CURVE AND PRESSURE DERIVATIVE PLOT



DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320 Recorder Number: 12396
Test Type: INFLATE BOTTOM HOLE Recorder Depth: 5880 ft
Formation: EUMERALLA

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
1	Initial Hydrostatic:	0.000		2901.5		
2	Start of 1st Flow :	0.000		1688.7		
	FLOW PERIOD 1	0.517	221.5	1910.2		
		1.007	280.7	1969.4		
		1.525	359.8	2048.5		
		2.042	407.4	2096.1		
		2.505	450.7	2139.4		
		3.022	416.7	2105.4		
		3.540	405.9	2094.6		
		4.057	397.3	2086.0		
		4.574	387.0	2075.7		
		5.010	315.4	2004.1		
3	End of 1st Flow :	5.500	213.6	1902.3		
	Flow time used for SHUT-IN PERIOD 1 = 5.500 minutes					
	SHUT-IN PERIOD 1	0.000	0.0	1902.3	0.0000	
		0.514	135.7	2038.0	11.7004	
		1.130	249.9	2152.2	5.8673	
		1.541	311.2	2213.5	4.5691	
		2.157	321.7	2224.0	3.5498	
		2.516	327.1	2229.4	3.1860	
		3.081	334.0	2236.3	2.7851	
		3.595	340.1	2242.4	2.5299	
		4.005	342.5	2244.9	2.3733	
		4.570	348.7	2251.0	2.2035	
		5.084	354.5	2256.9	2.0818	
		5.546	358.0	2260.3	1.9917	
		6.162	362.6	2264.9	1.8926	
		6.522	366.1	2268.4	1.8433	
		7.138	369.7	2272.1	1.7705	
		7.549	372.9	2275.2	1.7286	
		8.011	376.3	2278.7	1.6866	
		8.524	378.6	2280.9	1.6452	
		8.986	383.5	2285.8	1.6121	
		9.500	388.8	2291.2	1.5789	
		10.014	391.6	2293.9	1.5492	
		10.527	396.5	2298.8	1.5225*	
		11.092	400.4	2302.7	1.4959*	
		12.119	407.0	2309.3	1.4538*	
		13.146	415.3	2317.6	1.4184*	

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		14.173	421.2	2323.5	1.3881*	
		15.046	426.8	2329.2	1.3655*	
		16.073	432.5	2334.8	1.3422*	
		17.049	438.6	2340.9	1.3226*	
		18.024	444.2	2346.6	1.3051*	
		19.000	449.6	2351.9	1.2895*	
		20.078	456.3	2358.6	1.2739*	
		21.003	461.9	2364.2	1.2619*	
		22.030	467.0	2369.4	1.2497*	
		23.057	471.9	2374.3	1.2385*	
		24.084	475.9	2378.2	1.2284*	
		25.059	480.5	2382.8	1.2195*	
		26.035	485.9	2388.2	1.2113*	
		26.959	490.3	2392.6	1.2040*	
		27.986	495.2	2397.5	1.1965*	
4	End of 1st Shut-in :	28.500	498.7	2401.0	1.1930*	
5	Start of 2nd Flow :	0.000		181.2		
	FLOW PERIOD 2	0.548	10.7	191.9		
		1.032	15.5	196.7		
		1.516	15.5	196.7		
		2.000	13.2	194.4		
		2.581	13.2	194.4		
		3.000	21.2	202.4		
		3.516	25.5	206.7		
6	End of 2nd Flow :	4.000	29.2	210.4		
	Flow time used for SHUT-IN PERIOD 2 = 9.500 minutes					
	SHUT-IN PERIOD 2	0.000	0.0	210.4	0.0000	
		0.531	367.0	577.5	18.8908	
		1.102	1088.8	1299.3	9.6207	
		1.592	1149.1	1359.6	6.9673	
		2.001	1183.9	1394.4	5.7476	
		2.531	1228.8	1439.2	4.7535	
		3.021	1274.1	1484.6	4.1447	
		3.511	1323.6	1534.0	3.7058	
		4.001	1359.7	1570.2	3.3744	
		4.491	1395.6	1606.0	3.1153	
		5.022	1434.9	1645.4	2.8917	
		5.512	1484.9	1695.4	2.7235	
		6.002	1515.6	1726.1	2.5828	

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		6.533	1551.0	1761.5	2.4542	
		7.023	1593.9	1804.3	2.3527	
		7.513	1612.2	1822.6	2.2645	
		8.044	1648.3	1858.8	2.1810	
		8.533	1682.7	1893.2	2.1133	
		9.187	1723.1	1933.5	2.0341	
		9.473	1757.2	1967.7	2.0029	
		10.044	1775.8	1986.2	1.9458	
		10.534	1800.0	2010.5	1.9018	
		11.024	1823.6	2034.1	1.8618*	
		11.555	1847.4	2057.8	1.8222*	
		12.045	1868.0	2078.4	1.7887*	
		12.576	1882.9	2093.4	1.7554*	
		13.025	1903.8	2114.2	1.7294*	
		13.556	1923.1	2133.6	1.7008*	
		14.086	1945.7	2156.1	1.6744*	
		14.535	1960.4	2170.8	1.6536*	
		15.025	1975.8	2186.3	1.6323*	
		15.515	1989.3	2199.7	1.6123*	
		16.005	2002.0	2212.5	1.5936*	
		16.536	2017.2	2227.7	1.5745*	
		17.026	2030.5	2240.9	1.5580*	
		17.516	2043.0	2253.4	1.5424*	
		18.088	2059.2	2269.6	1.5252*	
		18.578	2067.7	2278.2	1.5114*	
		19.068	2077.0	2287.5	1.4982*	
		19.517	2086.1	2296.6	1.4868*	
		20.007	2095.2	2305.6	1.4748*	
		21.068	2109.2	2319.6	1.4509*	
		22.089	2121.9	2332.4	1.4301*	
		23.110	2131.7	2342.1	1.4111*	
		24.090	2142.0	2352.4	1.3944*	
		25.029	2149.4	2359.8	1.3796*	
		26.131	2156.7	2367.1	1.3636*	
		27.029	2161.6	2372.1	1.3515*	
		28.214	2169.4	2379.9	1.3367*	
		29.071	2174.4	2384.8	1.3268*	
		30.051	2179.2	2389.7	1.3161*	
		31.031	2183.9	2394.4	1.3061*	
		32.052	2188.1	2398.5	1.2964*	
		33.031	2191.7	2402.2	1.2876*	
		34.011	2196.2	2406.6	1.2793*	
		35.195	2198.4	2408.8	1.2699*	

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		36.175	2200.1	2410.5	1.2626*	
		37.033	2203.3	2413.7	1.2565*	
		38.013	2204.7	2415.2	1.2499*	
		39.074	2207.7	2418.1	1.2431*	
		40.095	2210.1	2420.6	1.2369*	
		41.034	2211.6	2422.1	1.2315*	
		42.137	2213.3	2423.8	1.2255*	
		43.076	2215.5	2426.0	1.2205*	
		44.056	2216.5	2426.9	1.2156*	
		45.035	2218.0	2428.4	1.2109*	
		46.138	2220.7	2431.1	1.2059*	
		47.118	2222.4	2432.8	1.2016*	
		48.098	2223.6	2434.1	1.1975*	
		49.159	2224.6	2435.0	1.1933*	
		50.180	2225.1	2435.5	1.1893*	
		51.119	2225.6	2436.0	1.1858*	
		52.058	2227.5	2438.0	1.1825*	
		53.161	2228.3	2438.7	1.1787*	
		54.222	2229.2	2439.7	1.1752*	
		55.161	2230.2	2440.7	1.1722*	
		56.100	2230.7	2441.2	1.1693*	
		57.080	2231.5	2441.9	1.1664*	
		58.060	2232.7	2443.1	1.1636*	
		59.040	2235.4	2445.8	1.1609*	
		60.061	2239.5	2450.0	1.1582*	
7	End of 2nd Shut-in :	61.000	2240.5	2451.0	1.1557*	
8	Start of 3rd Flow :	0.000		274.7		
	FLOW PERIOD 3	0.551	0.8	275.5		
		1.065	-2.0	272.7		
		1.542	-3.2	271.5		
		2.056	-4.7	270.0		
		2.533	-7.0	267.7		
		3.010	-7.7	267.0		
		3.524	-8.5	266.2		
		4.002	-3.5	271.2		
		4.515	1.3	276.0		
		5.066	29.7	304.5		
		5.507	89.0	363.7		
		6.057	129.0	403.7		
		6.535	148.2	423.0		
		7.012	168.5	443.2		

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		7.526	195.2	470.0		
		8.150	207.0	481.7		
		9.031	213.2	488.0		
		10.022	218.0	492.7		
		11.013	219.7	494.5		
		12.005	222.5	497.2		
		13.179	227.0	501.7		
		14.097	239.5	514.2		
		15.052	246.1	520.8		
		16.043	250.8	525.5		
		17.107	257.2	531.9		
		18.025	259.4	534.1		
		19.090	264.5	539.2		
		20.118	271.1	545.8		
		21.146	277.5	552.2		
		22.063	284.6	559.3		
		23.091	287.1	561.8		
		24.009	392.5	667.2		
		25.184	386.6	661.3		
		26.102	378.5	653.2		
		27.056	361.8	636.5		
		28.047	342.7	617.4		
		29.002	316.5	591.2		
		30.103	237.2	512.0		
		31.058	79.7	354.5		
		32.233	76.0	350.7		
		33.003	62.7	337.5		
		34.068	50.7	325.5		
		35.023	74.0	348.7		
		36.050	109.7	384.5		
		37.042	130.2	405.0		
		38.180	129.7	404.5		
		39.134	105.5	380.2		
		40.015	93.2	368.0		
		41.080	77.0	351.7		
		42.034	60.2	335.0		
		43.062	30.2	305.0		
		44.274	-80.3	194.4		
		45.302	-90.5	184.2		
		46.146	-103.5	171.2		
		47.064	-185.5	89.2		
		48.018	-185.5	89.2		
		49.046	-185.0	89.7		

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		50.001	-183.8	90.9		
		51.065	-182.8	91.9		
		52.093	-181.3	93.4		
		53.085	-181.3	93.4		
		54.076	-179.3	95.4		
		55.067	-178.5	96.2		
		56.058	-176.8	97.9		
		57.123	-175.8	98.9		
		58.041	-174.5	100.2		
		59.068	-173.3	101.4		
		60.060	-172.8	101.9		
		61.051	-171.3	103.4		
		62.226	-170.8	103.9		
		63.070	-170.8	103.9		
		64.024	-169.0	105.7		
		65.089	-168.0	106.7		
		66.080	-167.5	107.2		
		67.145	-167.0	107.7		
		68.099	-167.0	107.7		
		69.054	-166.8	107.9		
		70.008	-165.3	109.4		
		71.073	-165.3	109.4		
		72.101	-164.8	109.9		
		73.092	-164.0	110.7		
		74.267	-163.0	111.7		
		75.332	-162.0	112.7		
		76.213	-161.3	113.4		
		77.020	-160.8	113.9		
		78.048	-160.3	114.4		
		79.076	-160.3	114.4		
		80.141	-159.3	115.4		
		81.132	-159.0	115.7		
		82.013	-158.5	116.2		
		83.041	-158.0	116.7		
		84.142	-157.5	117.2		
		85.133	-156.5	118.2		
		86.161	-155.3	119.4		
		87.079	-155.0	119.7		
		88.107	-154.3	120.4		
		89.062	-153.8	120.9		
		90.053	-153.3	121.4		
		91.044	-152.8	121.9		
		92.035	-152.8	121.9		

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		93.026	-152.3	122.4		
		94.018	-151.5	123.2		
		95.009	-151.3	123.4		
9	End of 3rd Flow :	96.000	-150.5	124.2		
	Flow time used for SHUT-IN PERIOD 3 = 105.500 minutes					
	SHUT-IN PERIOD 3	0.000	0.0	124.2	0.0000	
		0.558	178.0	302.2	190.0682	
		1.117	334.8	459.0	95.4494	
		1.536	365.5	489.7	69.6848	
		2.025	451.8	576.0	53.0988	
		2.548	609.9	734.1	42.4051	
		3.107	709.6	833.8	34.9556	
		3.560	786.3	910.5	30.6348	
		4.119	846.4	970.6	26.6130	
		4.573	926.0	1050.2	24.0702	
		5.096	1025.1	1149.3	21.7025	
		5.585	1076.0	1200.2	19.8899	
		6.283	1182.4	1306.6	17.7913	
		7.086	1258.9	1383.1	15.8885	
		7.575	1314.5	1438.7	14.9274	
		8.133	1381.9	1506.1	13.9718	
		8.552	1411.8	1536.0	13.3363	
		9.076	1452.9	1577.1	12.6241	
		9.564	1496.7	1620.9	12.0310	
		10.053	1532.1	1656.3	11.4944	
		10.577	1569.0	1693.2	10.9745	
		11.065	1607.1	1731.3	10.5346	
		11.554	1634.3	1758.5	10.1310	
		12.008	1654.6	1778.8	9.7858	
		12.531	1671.9	1796.1	9.4191	
		13.194	1703.4	1827.6	8.9961	
		13.578	1720.5	1844.7	8.7699	
		14.102	1741.0	1865.2	8.4812	
		14.591	1759.3	1883.5	8.2305	
		15.079	1778.1	1902.3	7.9965	
		16.022	1806.8	1931.0	7.5847	
		17.069	1841.2	1965.4	7.1808	
		18.081	1874.9	1999.1	6.8349	
		19.024	1896.4	2020.6	6.5456	
		20.001	1918.2	2042.4	6.2747	
		21.083	1940.5	2064.7	6.0040	

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		22.340	1961.8	2086.0	5.7225	
		23.212	1973.3	2097.5	5.5451	
		24.015	1983.2	2107.4	5.3931	
		25.132	1998.8	2123.0	5.1978	
		26.005	2006.9	2131.1	5.0569	
		27.122	2018.7	2142.9	4.8898	
		28.099	2029.2	2153.4	4.7546	
		29.112	2040.7	2164.9	4.6239	
		30.019	2048.3	2172.5	4.5144	
		31.066	2057.4	2181.6	4.3960	
		32.044	2065.5	2189.7	4.2923	
		33.056	2071.4	2195.6	4.1916	
		34.068	2079.2	2203.4	4.0967	
		35.046	2083.4	2207.6	4.0103	
		36.198	2091.2	2215.4	3.9145	
		37.140	2095.9	2220.1	3.8406	
		38.013	2101.0	2225.2	3.7754	
		39.095	2106.7	2230.9	3.6986	
		40.037	2109.9	2234.1	3.6351	
		41.049	2114.3	2238.5	3.5701	
		42.166	2118.7	2242.9	3.5020	
		43.179	2123.1	2247.3	3.4433	
		44.016	2126.8	2251.0	3.3969	
		45.099	2130.4	2254.6	3.3393	
		46.181	2133.6	2257.8	3.2845	
		47.018	2134.9	2259.1	3.2438	
		48.100	2138.3	2262.5	3.1933	
		49.043	2141.7	2265.9	3.1512	
		50.195	2144.7	2268.9	3.1018	
		51.033	2146.6	2270.8	3.0673	
		52.010	2149.6	2273.8	3.0285	
		53.127	2152.3	2276.5	2.9858	
		54.244	2156.2	2280.4	2.9449	
		55.047	2157.7	2281.9	2.9165	
		56.024	2160.1	2284.3	2.8831	
		57.141	2162.3	2286.5	2.8463	
		58.014	2165.0	2289.2	2.8185	
		59.235	2166.2	2290.4	2.7810	
		60.178	2167.7	2291.9	2.7531	
		61.016	2168.2	2292.4	2.7291	
		62.063	2171.6	2295.8	2.6999	
		63.075	2173.1	2297.3	2.6726	
		64.018	2174.8	2299.0	2.6480	

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		65.030	2175.8	2300.0	2.6223	
		66.077	2177.3	2301.5	2.5966	
		67.054	2178.7	2302.9	2.5734	
		68.032	2180.2	2304.4	2.5507	
		69.009	2182.4	2306.6	2.5288	
		70.056	2184.4	2308.6	2.5059	
		71.173	2186.6	2310.8	2.4823	
		72.081	2187.8	2312.0	2.4636	
		73.023	2189.3	2313.5	2.4448	
		74.001	2190.7	2314.9	2.4257	
		75.048	2193.2	2317.4	2.4058	
		76.025	2194.9	2319.1	2.3877	
		77.072	2195.9	2320.1	2.3688	
		78.085	2197.9	2322.1	2.3511	
		79.167	2199.3	2323.5	2.3326	
		80.005	2200.6	2324.7	2.3187	
		81.087	2201.8	2326.0	2.3011	
		82.064	2203.7	2327.9	2.2856	
		83.076	2205.2	2329.4	2.2699	
		84.089	2207.4	2331.6	2.2546	
		85.031	2208.6	2332.8	2.2407	
		86.008	2210.4	2334.6	2.2266	
		87.056	2211.6	2335.8	2.2119	
		88.033	2211.8	2336.0	2.1984	
		89.010	2214.5	2338.7	2.1853	
		90.162	2217.2	2341.4	2.1701	
		91.174	2218.7	2342.9	2.1571	
		92.047	2219.9	2344.1	2.1462	
		93.024	2222.6	2346.8	2.1341	
		94.107	2223.1	2347.3	2.1211	
		95.049	2223.8	2348.0	2.1100	
		96.061	2224.1	2348.3	2.0983	
		97.004	2224.1	2348.3	2.0876	
		98.051	2226.3	2350.5	2.0760	
		99.028	2226.5	2350.7	2.0654	
		100.041	2227.5	2351.7	2.0546	
		101.053	2229.2	2353.4	2.0440	
		102.030	2230.0	2354.2	2.0340	
		103.147	2230.7	2354.9	2.0228	
		104.229	2231.9	2356.1	2.0122	
		105.067	2233.2	2357.4	2.0041	
		106.009	2234.1	2358.3	1.9952	
		107.161	2235.1	2359.3	1.9845	

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		108.313	2235.8	2360.0	1.9740	
		109.151	2236.8	2361.0	1.9666	
		110.059	2237.6	2361.8	1.9586	
		111.106	2238.3	2362.5	1.9495	
		112.153	2238.3	2362.5	1.9407	
		113.060	2238.5	2362.7	1.9331	
		114.108	2240.0	2364.2	1.9246	
		115.120	2240.5	2364.7	1.9164	
		116.307	2241.0	2365.2	1.9071	
		117.249	2241.5	2365.7	1.8998	
		118.052	2242.0	2366.2	1.8937	
		119.239	2243.7	2367.9	1.8848	
		120.077	2244.4	2368.6	1.8786	
		121.054	2245.2	2369.4	1.8715*	
		122.101	2245.2	2369.4	1.8640*	
		123.253	2245.7	2369.9	1.8560*	
		124.091	2246.1	2370.3	1.8502*	
		125.103	2246.6	2370.8	1.8433*	
		126.255	2249.1	2373.3	1.8356*	
		127.302	2250.1	2374.3	1.8287*	
		128.280	2250.3	2374.5	1.8224*	
		129.047	2250.6	2374.7	1.8175*	
		130.164	2250.8	2375.0	1.8105*	
		131.072	2250.8	2375.0	1.8049*	
		132.084	2252.3	2376.5	1.7987*	
		133.097	2253.0	2377.2	1.7927*	
		134.179	2253.5	2377.7	1.7863*	
		135.086	2254.0	2378.2	1.7810*	
		136.098	2254.5	2378.7	1.7752*	
		137.006	2255.2	2379.4	1.7700*	
		138.088	2255.4	2379.6	1.7640*	
		139.065	2255.4	2379.6	1.7586*	
		140.008	2257.2	2381.4	1.7535*	
		141.020	2257.4	2381.6	1.7481*	
		142.207	2258.2	2382.4	1.7419*	
		143.045	2258.2	2382.4	1.7375*	
		144.057	2258.9	2383.1	1.7323*	
		145.279	2259.4	2383.6	1.7262*	
		146.116	2260.8	2385.0	1.7220*	
		147.024	2261.6	2385.8	1.7176*	
		148.176	2262.1	2386.3	1.7120*	
		149.118	2263.1	2387.2	1.7075*	
		150.061	2263.5	2387.7	1.7030*	

GFE RESOURCES LTD

DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		151.108	2264.0	2388.2	1.6982*	
		152.085	2264.3	2388.5	1.6937*	
		153.133	2264.3	2388.5	1.6889*	
		154.075	2264.5	2388.7	1.6847*	
		155.122	2264.5	2388.7	1.6801*	
		156.134	2265.0	2389.2	1.6757*	
		157.112	2267.2	2391.4	1.6715*	
		158.054	2267.2	2391.4	1.6675*	
		159.101	2267.2	2391.4	1.6631*	
		160.253	2267.2	2391.4	1.6583*	
		161.056	2267.2	2391.4	1.6551*	
		162.069	2268.4	2392.6	1.6510*	
		163.081	2268.4	2392.6	1.6469*	
		164.093	2268.4	2392.6	1.6429*	
		165.070	2268.4	2392.6	1.6391*	
		166.048	2269.7	2393.9	1.6354*	
		167.060	2269.7	2393.9	1.6315*	
		168.072	2270.4	2394.6	1.6277*	
		169.050	2270.9	2395.1	1.6241*	
		170.167	2271.9	2396.1	1.6200*	
		171.039	2272.4	2396.6	1.6168*	
		172.052	2272.9	2397.1	1.6132*	
		173.064	2272.9	2397.1	1.6096*	
		174.041	2272.9	2397.1	1.6062*	
		175.158	2272.9	2397.1	1.6023*	
		176.031	2273.6	2397.8	1.5993*	
		177.078	2275.1	2399.3	1.5958*	
		178.021	2275.1	2399.3	1.5926*	
		179.033	2275.1	2399.3	1.5893*	
		180.080	2276.5	2400.7	1.5859*	
		181.197	2276.5	2400.7	1.5822*	
		182.070	2276.5	2400.7	1.5794*	
		183.047	2276.5	2400.7	1.5764*	
		184.024	2277.0	2401.2	1.5733*	
		185.072	2278.0	2402.2	1.5700*	
		186.189	2279.2	2403.4	1.5666*	
		187.096	2280.4	2404.6	1.5639*	
		188.073	2281.4	2405.6	1.5610*	
		189.086	2282.9	2407.1	1.5579*	
		190.063	2284.1	2408.3	1.5551*	
		191.075	2284.1	2408.3	1.5521*	
		192.123	2286.1	2410.3	1.5491*	
		193.065	2286.1	2410.3	1.5464*	

GFE RESOURCES LTD
DST #: 1
VAUGHAN # 1
5899.2 ft - 5981.2 ft

Location: INLINE 6950 XLINE 2320
Test Type: INFLATE BOTTOM HOLE
Formation: EUMERALLA

Recorder Number: 12396
Recorder Depth: 5880 ft

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P psia	PRESSURE psia	(T+dt)/dt ABSCISSA	PRESSURE SQUARED psia^2/10^6
		194.042	2286.1	2410.3	1.5437*	
		195.090	2287.6	2411.8	1.5408*	
		196.032	2287.6	2411.8	1.5382*	
		197.044	2287.6	2411.8	1.5354*	
		198.057	2286.8	2411.0	1.5327*	
		199.069	2286.8	2411.0	1.5300*	
10	End of 3rd Shut-in :	200.500	2286.8	2411.0	1.5262*	
14	Final Hydrostatic :	0.000		2890.8		

* DENOTES VALUES USED FOR EXTRAPOLATION CALCULATIONS

SHUT-IN 1:
Horner Extrapolation: 2462.57 psia
Horner Slope : 4.55 psia/cycle

SHUT-IN 2:
Horner Extrapolation: 2578.88 psia
Horner Slope : 8.67 psia/cycle

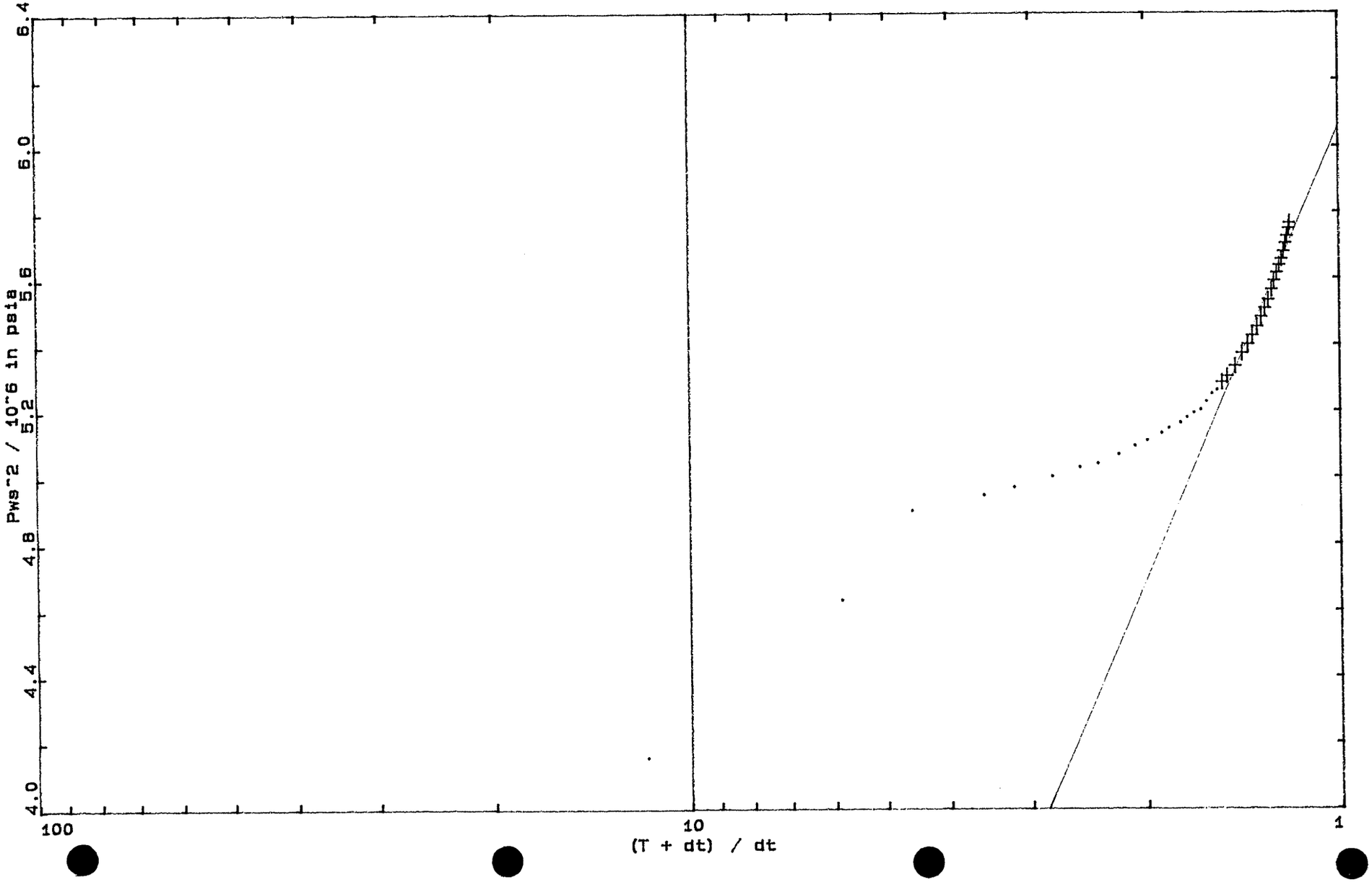
SHUT-IN 3:
Horner Extrapolation: 2494.39 psia
Horner Slope : 2.27 psia/cycle

GFE RESOURCES LTD

SHUT-IN #1

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 4.54 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2462.56 psia

RECORDER: 12396



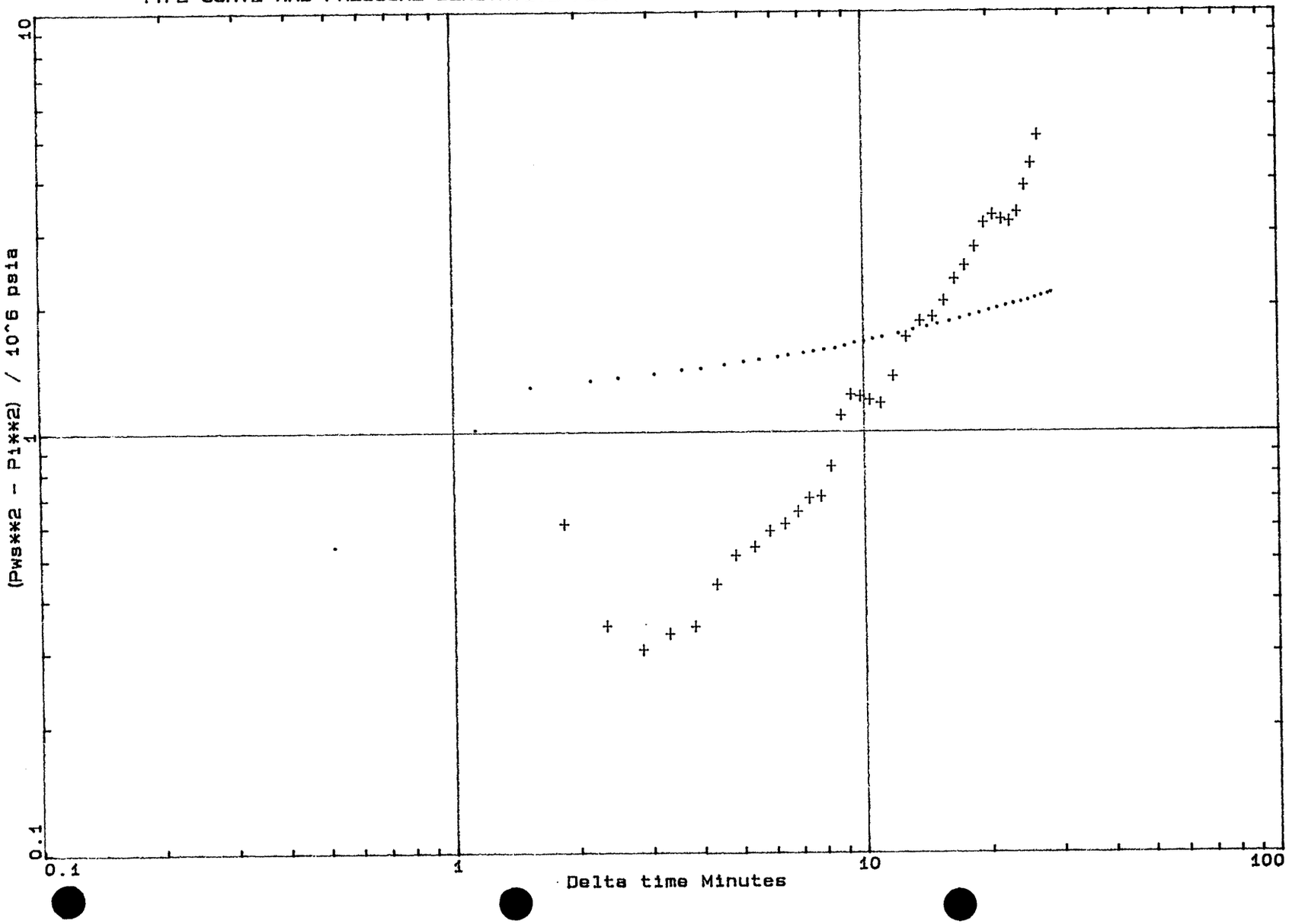
GFE RESOURCES LTD

SHUT-IN #1 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 12396

TYPE CURVE AND PRESSURE DERIVATIVE PLOT

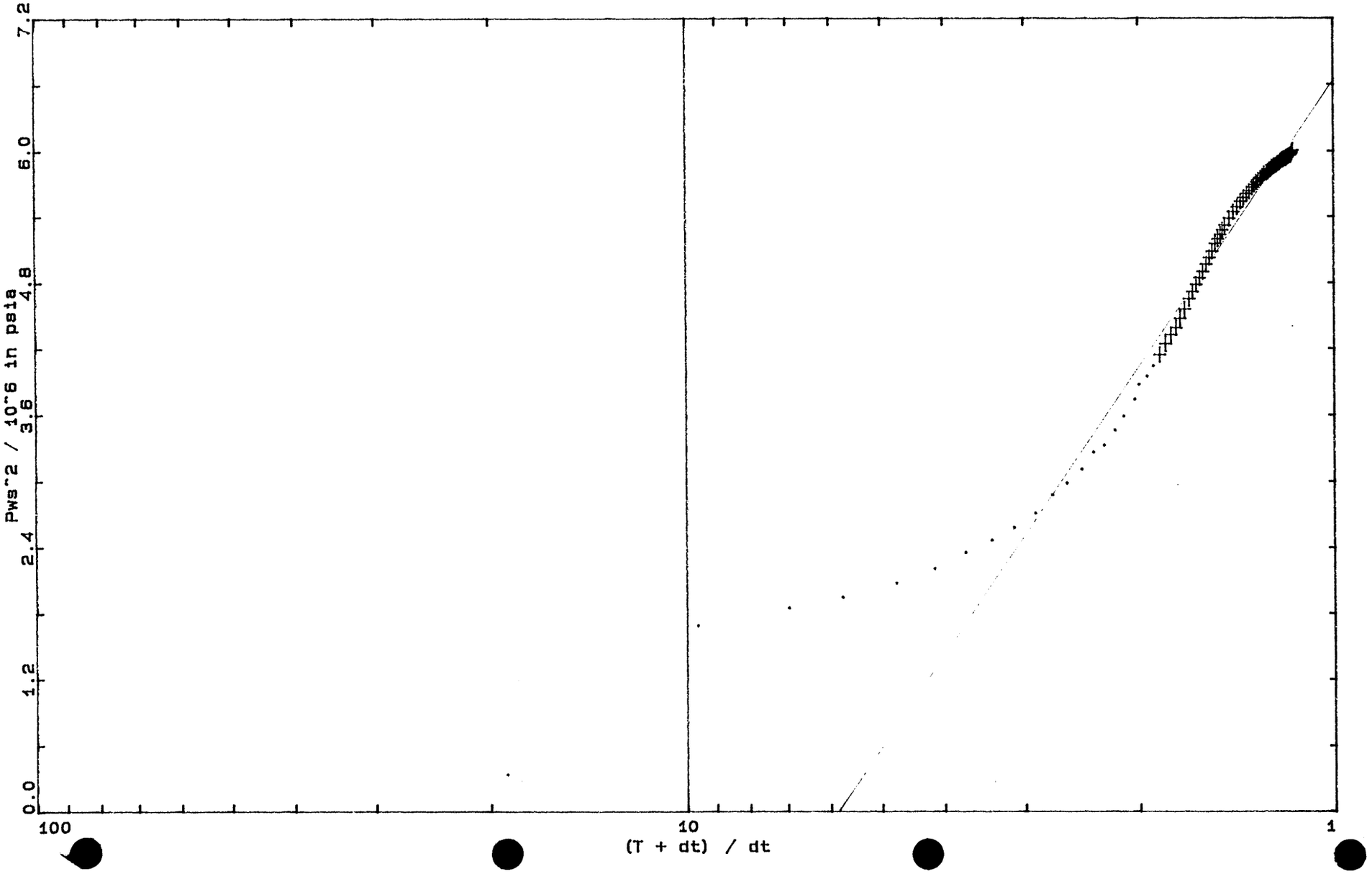


GFE RESOURCES LTD

SHUT-IN #2

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 8.67 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2578.88 psia

RECORDER: 12396



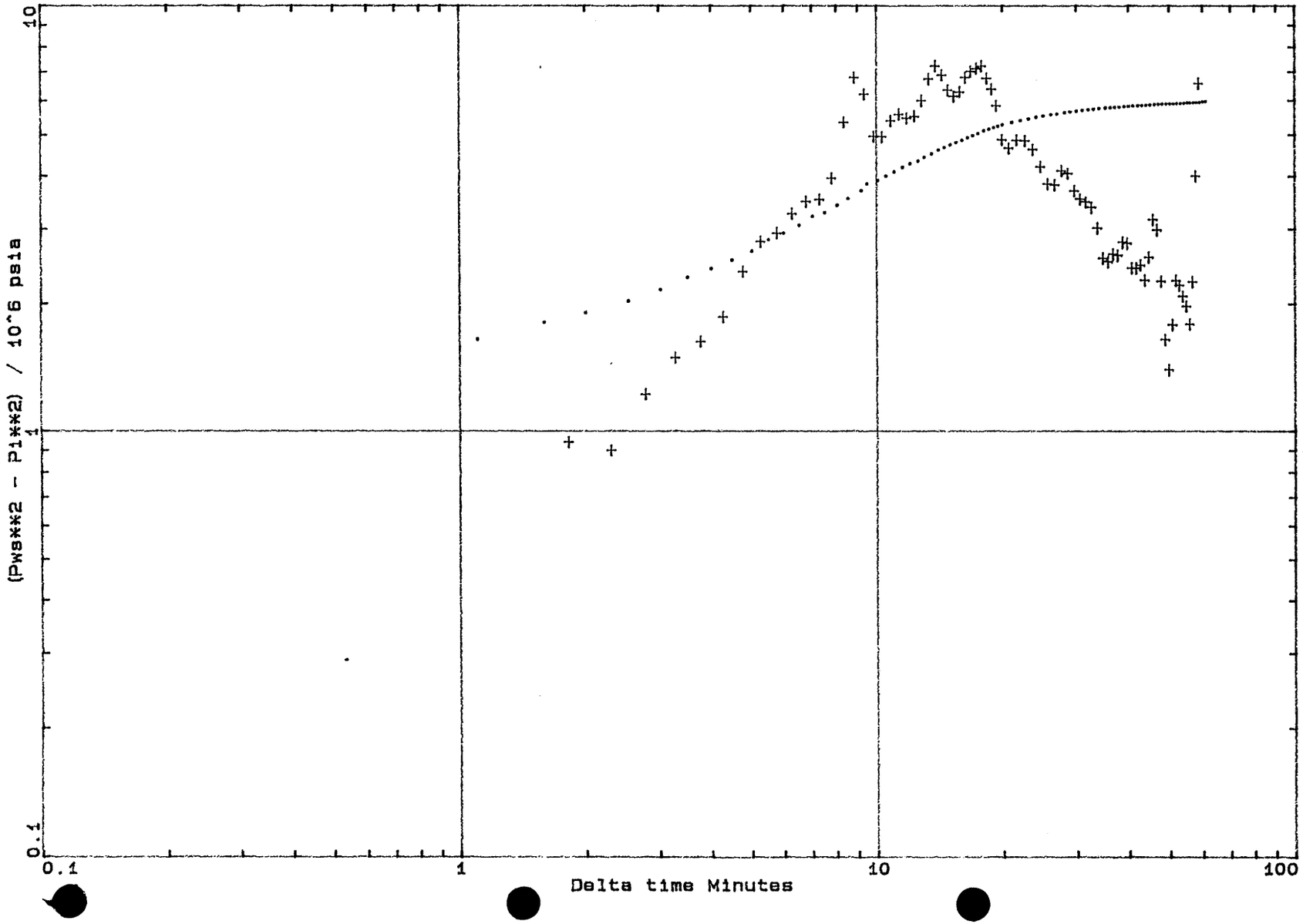
GFE RESOURCES LTD

SHUT-IN #2 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 12396

TYPE CURVE AND PRESSURE DERIVATIVE PLOT

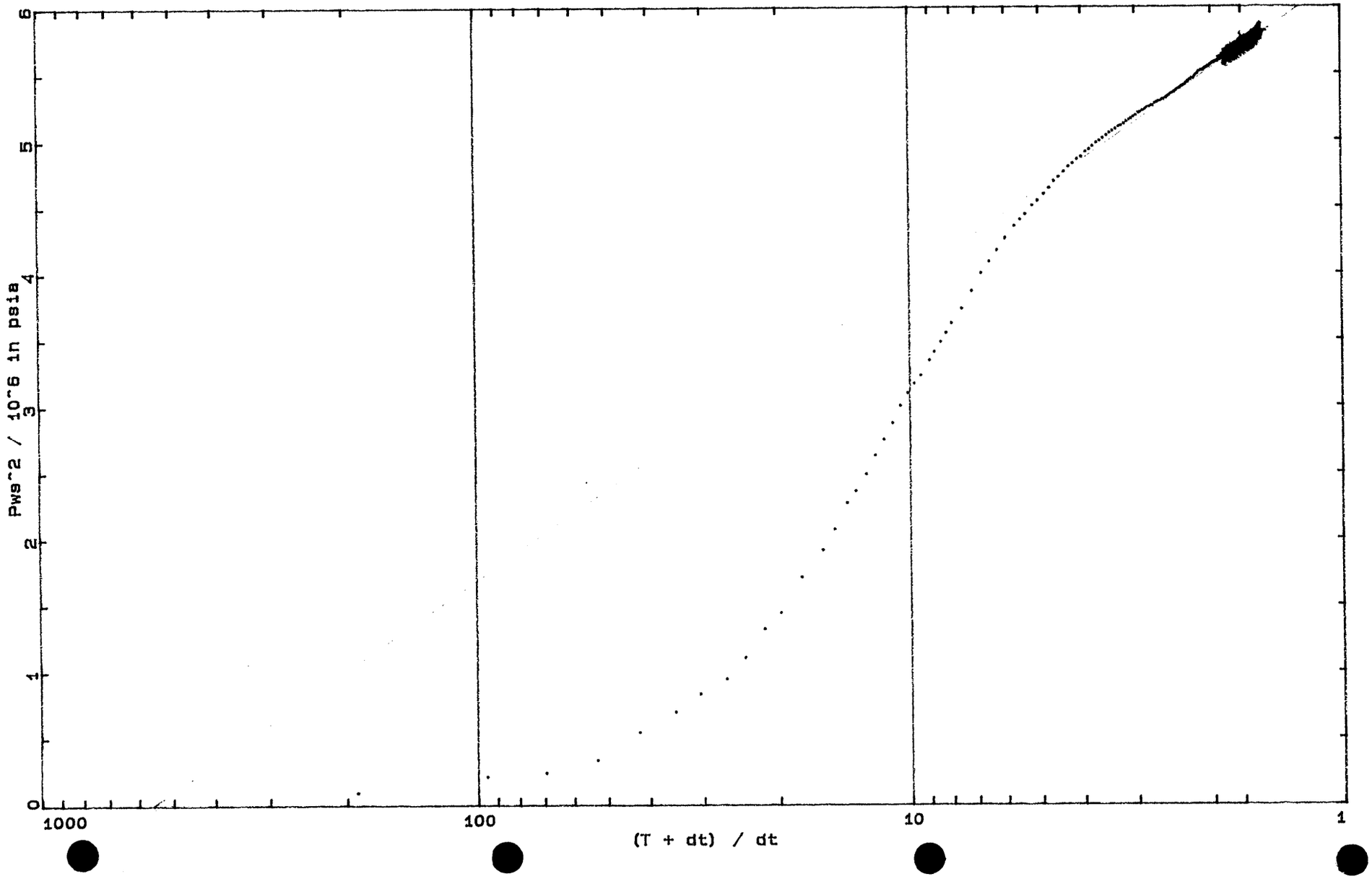


GFE RESOURCES LTD

SHUT-IN #3

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1
Slope = 2.26 psia (^2 / 10^6) / cycle
Extrapolated Pressure = 2494.39 psia

RECORDER: 12396



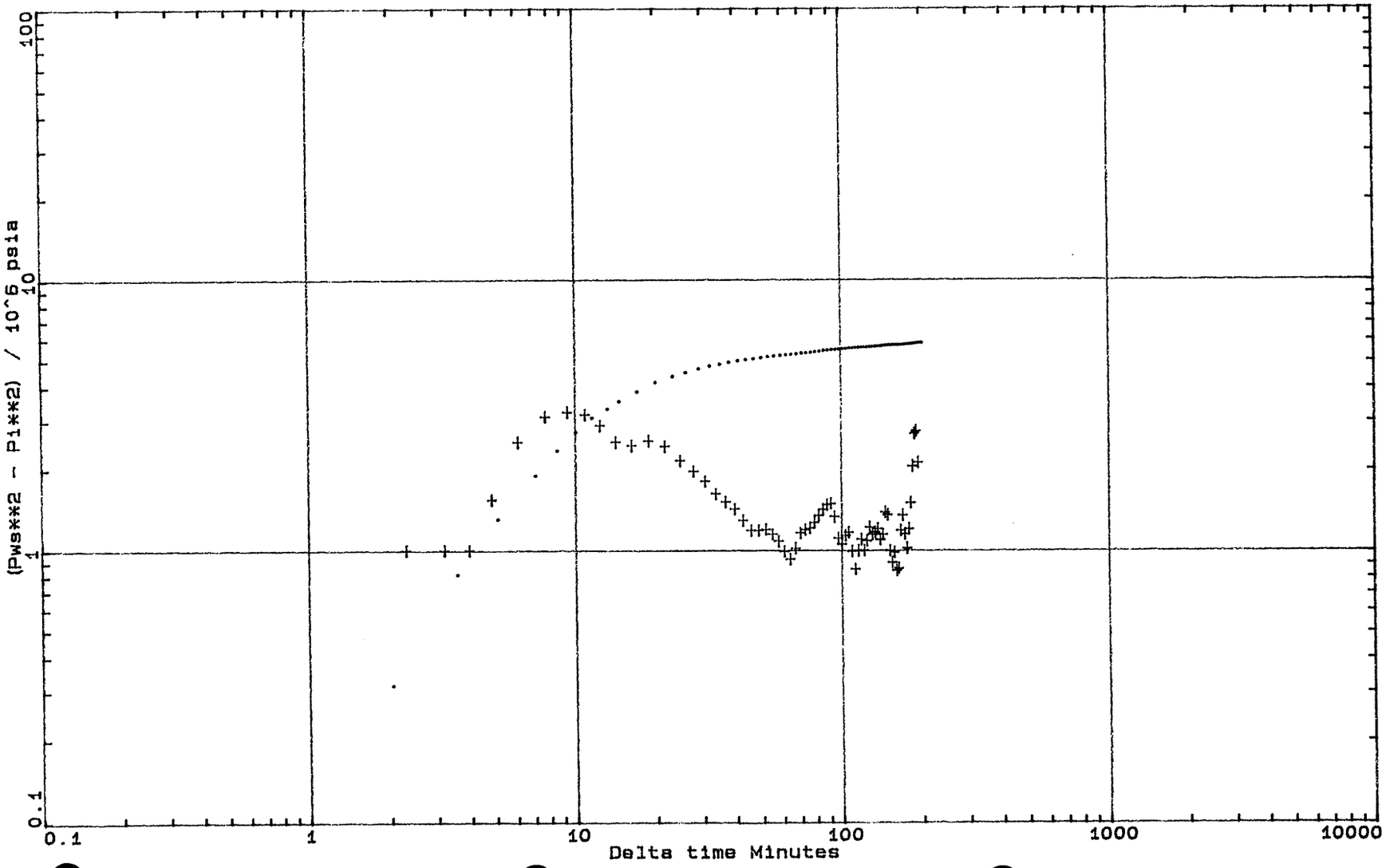
GFE RESOURCES LTD

SHUT-IN #3 (Gas)

WELL NAME: VAUGHAN # 1
LOCATION: INLINE 6950 XLINE 2320
DST #: 1

RECORDER: 12396

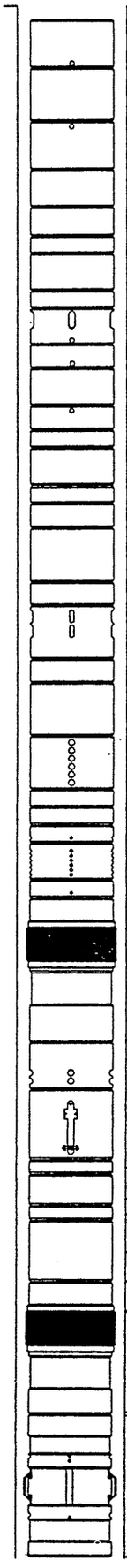
TYPE CURVE AND PRESSURE DERIVATIVE PLOT



VAUGHAN # 1 DST # 1

BOT INFLATE STRADDLE DST

DWG NO : 869-056-3



DESCRIPTION	LENGTH	O.D.	I.D.	DEPTH
PUMP OUT TYPE REVERSE CIRCULATING SUB	0.42	6.25	3.00	1768.48
DRILL COLLARS	8.93	6.25	2.8125	
IMPACT TYPE REVERSE CIRCULATING SUB	0.42	6.25	3.00	1777.83
DRILL COLLARS	8.66	6.25	2.8125	
CROSS OVER SUB	0.30	6.25	2.25	
INSIDE RECORDER CARRIER	1.37	4.875	1.00	1788.16
HYDRAULIC MULTIPLE SHUT IN VALVE	1.49	5.00	1.00	1789.65
POSITIVE CONTROL SAMPLER	1.04	5.00	1.00	
INSIDE RECORDER CARRIER	1.37	4.875	1.00	1792.06
HYDRAULIC JARS	-	-	-	
SAFETY JOINT	0.69	5.00	2.25	
DOWNHOLE INFLATION PUMP	2.38	5.125	1.00	
SCREEN SUB ASSEMBLY	1.16	5.00	1.00	
TOP PACKER STICK UP AND ELEMENT	1.71	7.00	1.00	1798.00
TOP PACKER STICK DOWN	0.90	7.00	1.00	
PORTED COMBINATION SUB	0.30	5.00	1.00	
OUTSIDE RECORDER CARRIER	2.06	5.00	1.00	1801.26
CROSS OVER SUB	1.00	6.25	2.25	
DRILL COLLARS	17.61	6.25	2.8125	
SPACING SECTIONS	0.91	4.75	2.25	
BOTTOM PACKER STICK UP	-	-	-	
BOTTOM PACKER ELEMENT AND STICK DOWN	-	-	-	
BELLY SPRING DEVICE	2.20	5.125	2.00	1822.98

VAUGHAN # 1 DST # 1

TEST TOOL AND PIPE RECORD (CONVENTIONAL).

DESCRIPTION.	LENGTH	OD	ID
TOTAL STRING BELOW PACKER SEAL	24.98	-	-
TOTAL TOOLS BETWEEN PACKER SEALS	2.93	-	-
TOTAL TOOLS ABOVE PACKER SEAL	12.35	-	-
TOTAL DRILL COLLARS ABOVE INTERVAL	143.87	6.25	2.8125
TOTAL HEVI-WATE ABOVE INTERVAL	55.23	4.50	2.8750
TOTAL DRILL PIPE ABOVE INTERVAL	1588.05	4.50	3.8260
TOTAL STRING	1827.41	-	-
TOTAL DEPTH	1823.00	-	-
TOP SINGLE ABOVE TABLE	4.41	-	-

GAS AND FUEL

SCIENTIFIC SERVICES - LABORATORY REPORT

1136 Nepean Highway, Highett, Victoria 3190
Tel. 556 6222 Fax 555 7616

Subject: Analysis of Exploration Sample Vaughan No.1 DST No.1 1798-1823 m @ 1958 Hr.

Requested by: Kevin Lanigan, GFE Resources Ltd

Report Reference: 95/0345

Date: March 6, 1995

Received: February 27, 1995

Author: I. Strudwick

Approved by: P. Roga

Distribution: Kevin Lanigan
Explorationist
GFE Resources Limited
Level 6, 6 Riverside Quay
South Melbourne 3205

Gas Quality and Environment (2)

Master File

Keywords: Exploration, Natural, Gas, Analysis

Disc Reference: A1:\95\GFE0345.DOC

Job Order Number: 10031140

Master Report Number: 95/0345/C

43:ILS:ils

GAS AND FUEL

SCIENTIFIC SERVICES - LABORATORY REPORT

1136 Nepean Highway, Highett, Victoria 3190
Tel. 556 6222 Fax 555 7616

Subject: Analysis of Exploration Sample Vaughan No.1 DST No.1 1798-1823 m @ 2016 Hr.

Requested by: Kevin Lanigan, GFE Resources Ltd

Report Reference: 95/0344

Date: March 6, 1995

Received: February 27, 1995

Author: I. Strudwick

Approved by: P. Roga

Distribution: Kevin Lanigan
Explorationist
GFE Resources Limited
Level 6, 6 Riverside Quay
South Melbourne 3205

Gas Quality and Environment (2)

Master File

Keywords: Exploration, Natural, Gas, Analysis

Disc Reference: A1:\95\GFE0344.DOC

Job Order Number: 10031140

Master Report Number: 95/0344/C

43:ILS:ils

GAS AND FUEL

SCIENTIFIC SERVICES - LABORATORY REPORT

1136 Nepean Highway, Highett, Victoria 3190
Tel. 556 6222 Fax 555 7616

Subject: Analysis of Exploration Sample Vaughan No.1 DST No.1
1798-1823 m @ 2016 Hr.

Requested by: Kevin Lanigan, GFE Resources Ltd

Report Reference: 95/0344

Component	Mole Percent Concentration
Methane	87.2
Ethane	5.13
Propane	2.44
Iso-Butane	0.645
Normal-Butane	0.706
Neo-Pentane	0.013
Iso-Pentane	0.265
Normal-Pentane	0.209
Hexanes	0.342
Heptanes+	0.346
Carbon Dioxide	0.02
Oxygen+Argon	0.254
Nitrogen	2.37
Helium	0.011

Calculated Characteristics for the dry gas at MSC

Gross Heating Value	42.4 MJ/m^3
Wobbe Index	52.1 MJ/m3
Relative Density	0.663

Method References: SSS-11-006
ISO 6974

Analyst: I. Strudwick **Date:** 06/03/1995

Approved Signatory: I Strudwick

Appendix 7

APPENDIX 7

RFT - PRESSURE TEST REPORT SHEET

GFE RESOURCES LTD

RFT - PRESSURE TEST REPORT SHEET

Recorded by T. Power BPB

WELL NAME: Vaughan-1	PERMIT: PPL1	OBSERVER: Dean Grant	DATE: 4 / 3 / 95

TEST NO	FILE NO	DEPTH (mKB)	SEAT Y	SEAT N	HYDROSTATIC PRESSURE INITIAL	HYDROSTATIC PRESSURE FINAL	FORMATION PRESSURE (PSIA) QUARTZ GAUGE	FORMATION PRESSURE (PSIA) STRAIN GAUGE	TIME TO STABILISATION (secs)	SAMPLE Y	SAMPLE N	FORMATION/REMARKS
1		1601.0		✓	2727.4	2727.4	-	-	0			
2		1601.0		✓	2727.4	2727.4	-	-	0			
3		1601.0		✓	2727.4	2727.4	-	-	0			
4		1635.2	✓		2784.1	2785.9	2216.05	-	200			
5		1601.3		✓	2728.7	2728.4	-	-	0			
6		1602.5	✓		2739.9	2760.8	2169.62	-	40			
7		1601.2		✓	2723.4	2728.4	-	-	0			
8		1601.5		✓	2723.7	2728.6	-	-	0			
9		1606.0	✓		2735.0	2736.8	6.53	-	-			
10		1607.0	✓		2738.8	2738.5	2176.21	-	120			
11		1612.0	✓		2743.3	2746.5	2183.01	-	90			
12		1615.0	✓		2751.4	2751.7	2187.44	-	50			
13		1657.0	✓		2821.5	2822.5	2247.22	-	90			
14		1661.0	✓		2829.4	2829.7	6.17	-	-			
15		1890.0	✓		3217.8	3219.0	5.63	-	-			
16		1886.0	✓			3212.8	6.67	-	-			
17		1874.0	✓			3192.3	6.32	-	-			

techstaf/vb:b3688

APPENDIX 7

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WELL NAME: Vaughan-1	PERMIT: PPL1	OBSERVER: Dean Grant	DATE: 4 / 3 / 95

TEST NO	FILE NO	DEPTH (mKB)	SEAT Y	SEAT N	HYDROSTATIC PRESSURE INITIAL	HYDROSTATIC PRESSURE FINAL	FORMATION PRESSURE (PSIA) QUARTZ GAUGE	FORMATION PRESSURE (PSIA) STRAIN GAUGE	TIME TO STABILISATION (secs)	SAMPLE Y	SAMPLE N	FORMATION/REMARKS
18		1864.0			3174.6	3174.4	-	-	-			No seal
19		1861.0	✓		3169.5	3169.5	2912.5	-	780			Supercharged?
20		1826.5	✓		3112.1	3172.2	8.02	-	-			Tight test
21		1864.0	✓		3173.6	3174.4	8.50	-	-			Tight test
22		1802.5			3071.9	3071.0	-	-	-			No seal

techstaf/vb:b3688

APPENDIX 7

Appendix 8

APPENDIX 8

VELOCITY SURVEY

Velocity Data

VELOCITY SURVEY

VAUGHAN No. 1

VICTORIA

AUSTRALIA

for

GFE RESOURCES

recorded by

VELOCITY DATA PTY. LTD.

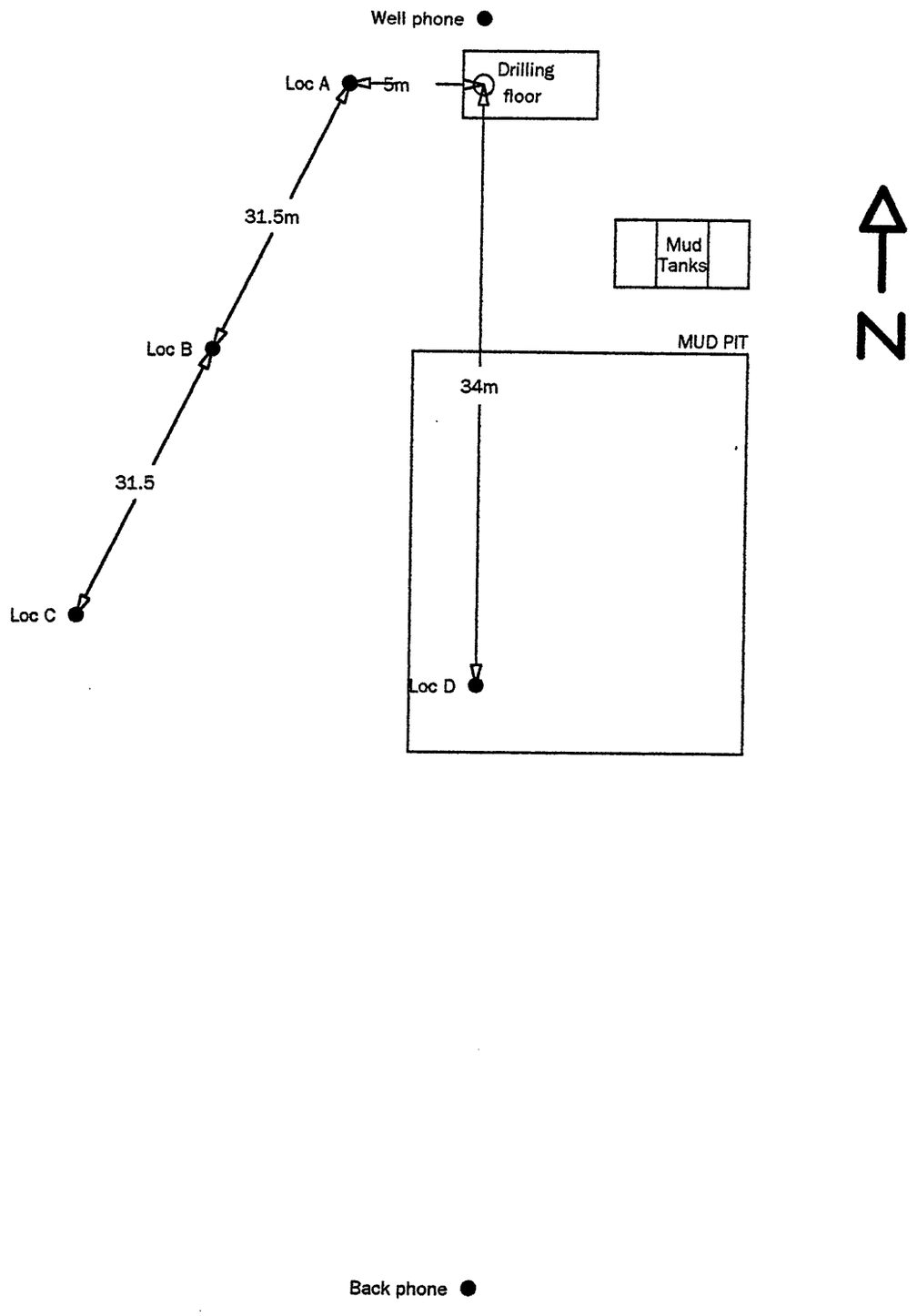
processed by

VELSEIS PTY LTD

Integrated Seismic Technologies

Brisbane, Australia
19 July, 1995

CONTENTS



VAUGHAN No. 1

SHOT POINT LOCATION SKETCH

GFE

Figure 1

SUMMARY

Velocity Data Pty Ltd conducted a velocity survey for GFE Resources in the Vaughan No. 1 well, Victoria, Australia. The date of the survey was the 4th March 1995.

Explosives were used as an energy source with shots being fired in the mud pit in the majority of instances.

GENERAL INFORMATION

Name of Well	: Vaughan No. 1
Location	: Victoria - PPL 1
Coordinates	: Latitude 38 32 31.9 S : Longitude 142 55 13.7E
Date of Survey	: 4 March 1995
Weather	: Fine
Operational Base	: Brisbane
Operator	: H. Hunt
Shooter	: D. Blick
Client Representative	: Unknown

EQUIPMENT

Downhole Tool

Veldata Camlock 100 (90 mm)

Sensors:

6 HSI 4.5 Hz 215 ohm, high temperature (300 degrees F) detectors connected in series parallel. Frequency response 8-300 Hz within 3 dB.

Preamplifier:

48 dB fixed gain.
Frequency response 5-200 Hz within 3 dB.

Reference Geophone

Mark Products L1 4.5 Hz

Recording Instruments

System VDL 16

Windows based high resolution seismic acquisition instruments

Computer :	386 Portable computer
Resolution :	A/D conversion 16 bits
Dynamic Range :	96dB
Total Gain :	136dB
Data channels :	8
Display :	A4 Bubble Jet Printer 300 D.P.I.

RECORDING

Energy Source	: Explosive, Powergel
Shot Location	: Mud pit
Charge Size	: .25/3.0 sticks
Average Shot Depth	: 1.0 metres
Mud Pit Shot Offset	: 34.0 metres
Recording Geometry	: Figure 1

Acquisition of the survey was carried out using the VDLS 16 recording system.

Shots were recorded on $3^1/_2$" floppy disc. The sample rate was 0.5 msec for the entire survey.

The scale of the graphic display varies with signal strength and is noted on each playout.
The times were picked from a sample by sample screen plot, a full set of these trace displays can be seen at the rear of the report.

PROCESSING

Elevation Data

Elevation of KB	: 95.7m above sea level
Elevation of Ground	: 90.0m above sea level
Elevation of Seismic Datum	: 0.0m above sea level
Depth Surveyed	: 2017.0m below KB
Depth of Casing	: 341.0m below KB

PROCESSING

Recorded Data

Number of Shots Used : 26

Number of Levels Recorded : 20

Data Quality : Excellent

Noise Level : Low

Corrections to Obtain Vertically Corrected Time

The 'corrected' times shown on the calculation sheet have been obtained by:

(1) Subtraction of the instrument delay (2msec) from the recorded arrival times.

(2) Geometric correction for non-verticality of ray paths resulting from shot offset.

(3) Addition of an Uphole correction time which corrects for the depth of shot below ground level for shots external to the pit using an uphole time (2.0msec) determined from surface channel information.

(4) Replacement velocity to correct for variation in elevation between the ground level of the shot and ground level of the well head.

(5) re-addition of the instrument delay (2msec).

Mud Pit Calibration

Due to a variation in shooting conditions between shots discharged within the pit to those external to the pit, It is necessary to tie the mud pit shots to the external shots. Thus a bulk shift of 2.7msec has been applied which has been calculated from the difference in corrected vertical time for pit and external shots at the 95.7m below KB level.

Correction to Datum

The datum chosen was 0.0 metres ASL that is 95.7 metres below KB. This level was shot five times during the survey, all of which have been used to calculate an effective datum correction time of 54.7msec. Please note this time includes a 2msec instrument delay which must be subtracted to obtain the raw pick time.

Calibration of Sonic Log - Method

A sonic log was not provided by GFE Resources. As a result all values appearing on the calculation sheet are un-calibrated.

PROCESSING

Trace Playouts (Figure 3)

Figure 3A is a plot of all raw data traces used.

Figure 3B is a plot to scale in depth and time of selected traces.

Figure 3C is a plot of selected surface traces. .

Troy Peters
Geophysicist.

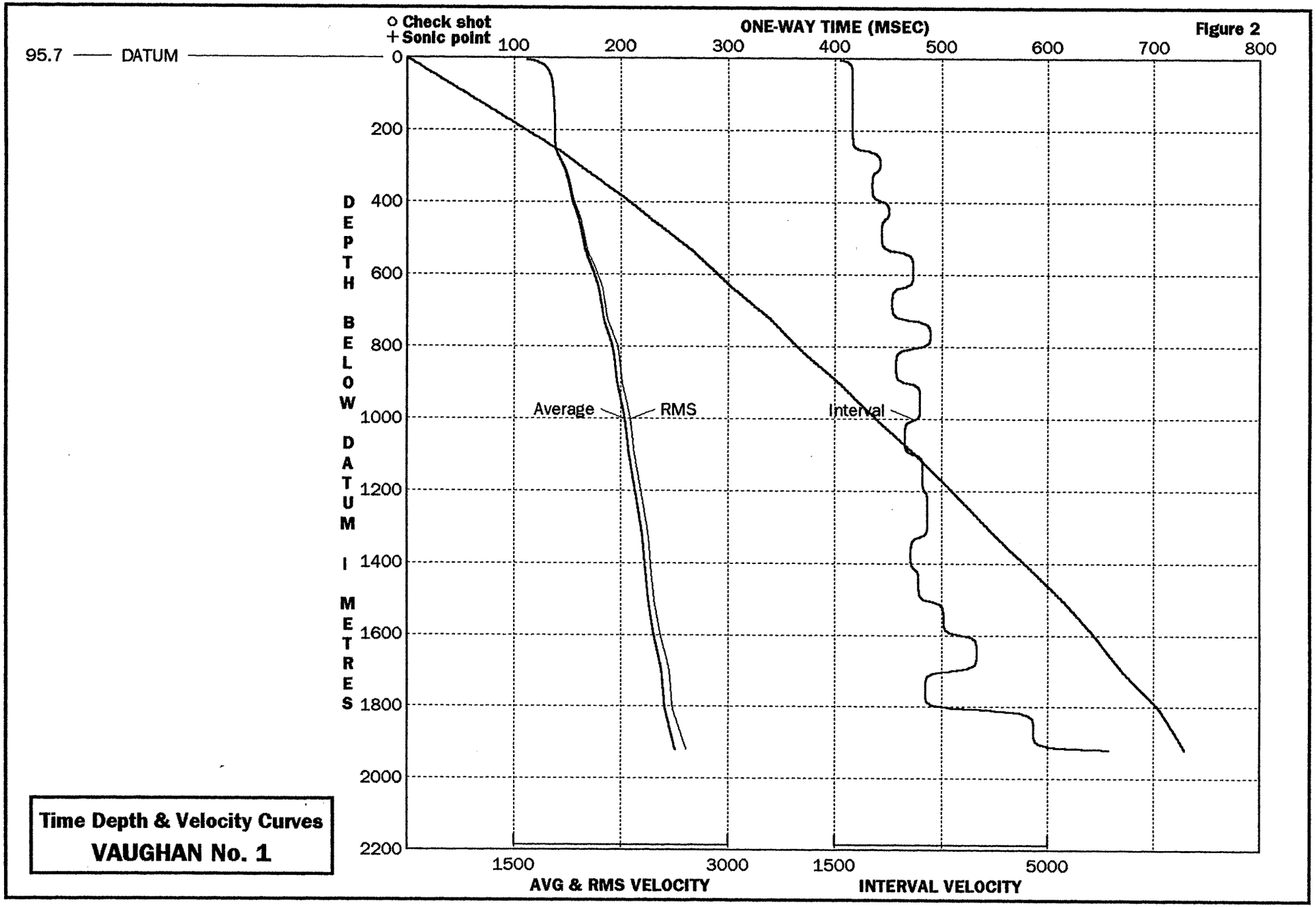
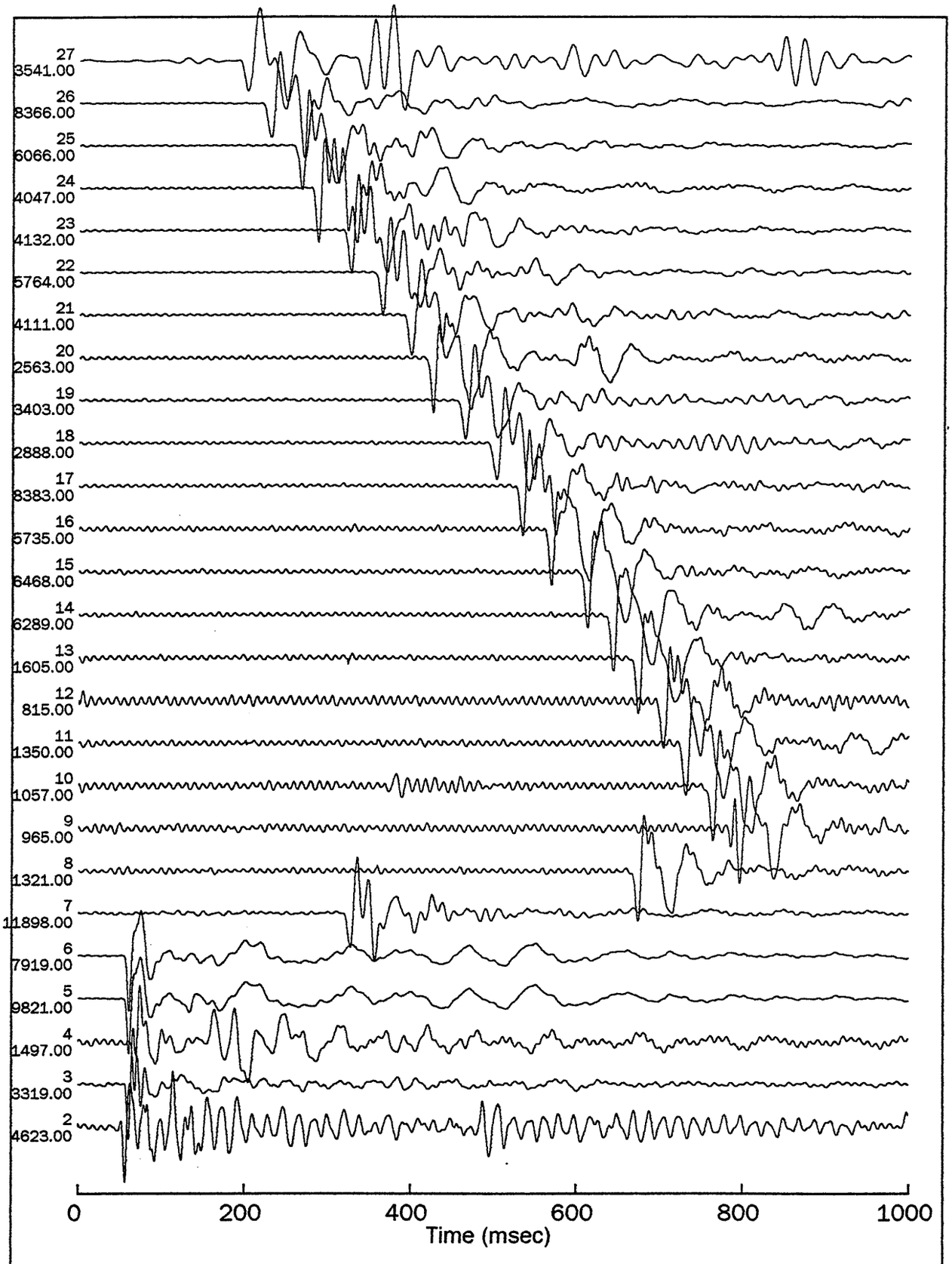


Figure 2

Time Depth & Velocity Curves

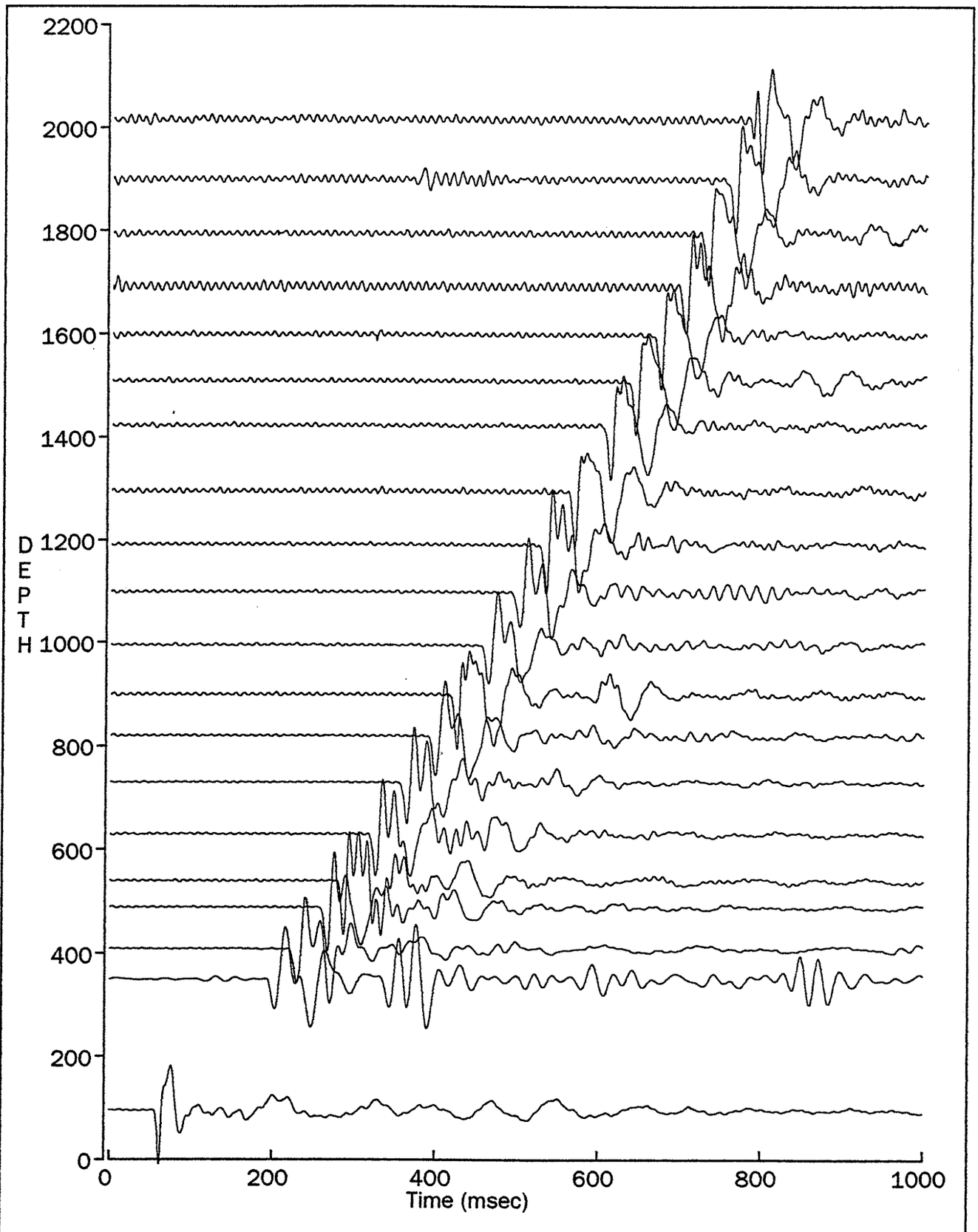
VAUGHAN No. 1



VAUGHAN No. 1

VELOCITY SURVEY TRACE DISPLAY

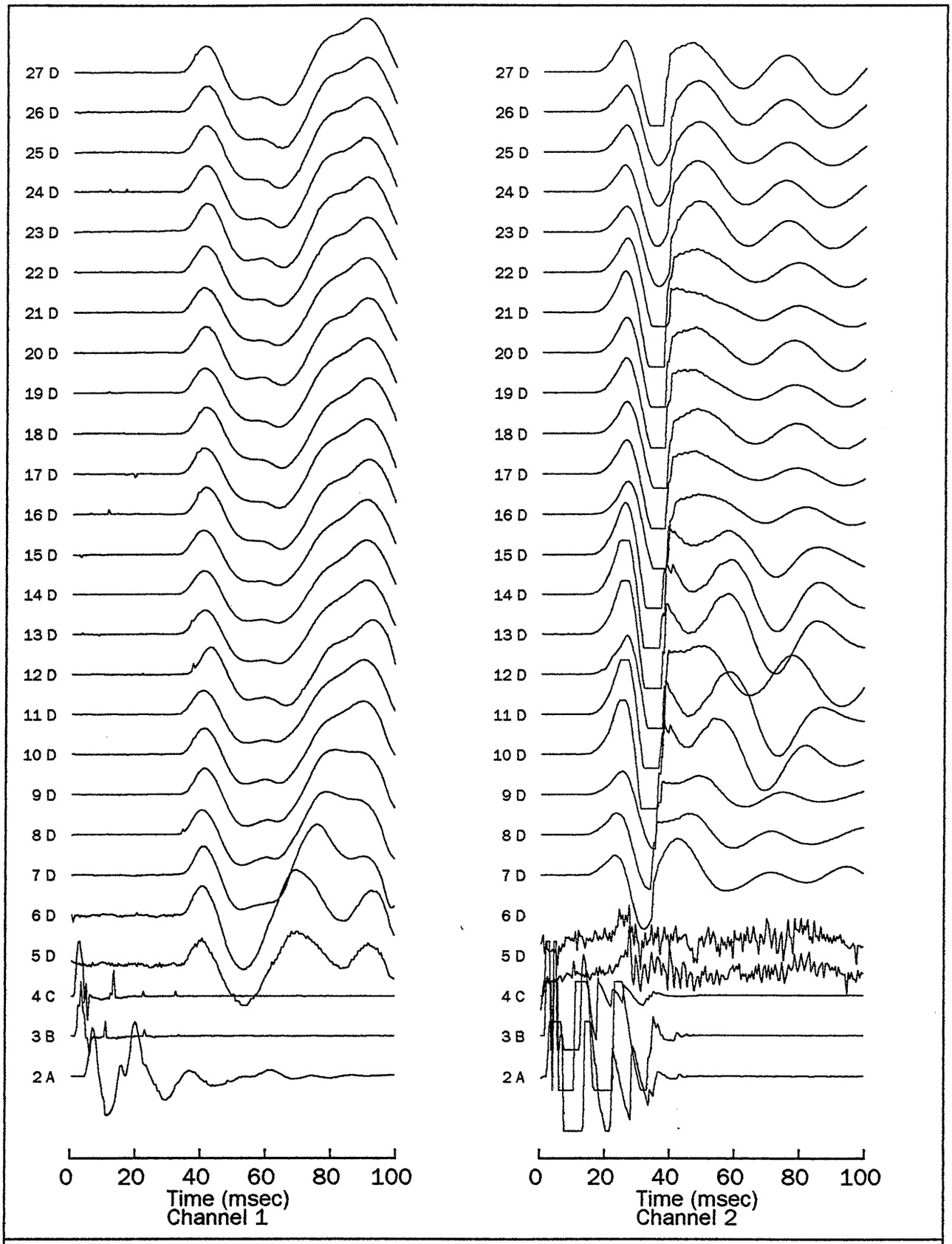
Figure 3A



VAUGHAN No. 1

VELOCITY SURVEY TRACE DISPLAY

Figure 3B



VAUGHAN No. 1

VELOCITY SURVEY TRACE DISPLAY
AUXILIARY CHANNELS

Figure 3C

COMPANY : GFE
WELL : VAUGHAN No. 1

Latitude : 38-32-31.9S Longitude : 142-55-13.7E Survey date : 04-Mar-95
Elevations : Datum : 0 Ground : 90 Kelly : 95.7

Survey units : METRES
Times : MILLISECONDS

Shot data : Location Elevation Offset

Location	Elevation	Offset
A	90.0	5.0
B	88.3	32.0
C	86.7	63.0
D	88.2	34.0

Rig identification : CENTURY 11
Energy source : POWERGEL
Logger : BPB SKID
Elevation velocity for shot statics : 1700
Instrument delay : 2.0 msec

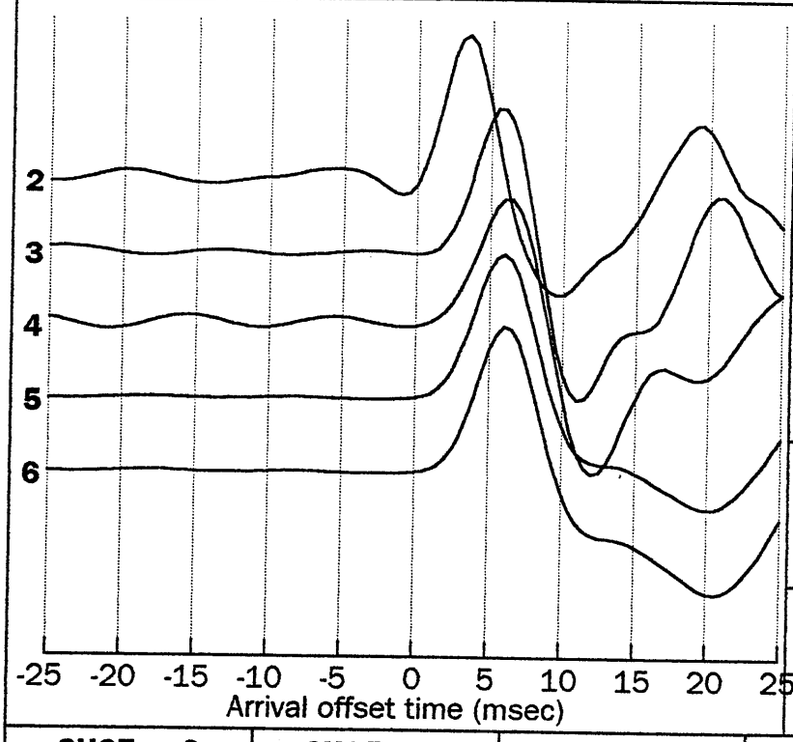
SHOT CALCULATIONS :

Shot no.	Geophone depth Kelly – Datum		Shot Locn	Shot Depth	TIMES Record	Corr.	Avg.	Datum	Check shot interval distance	time	Velocities Average	RMS	Interval
DATUM													
2	95.7	0.0	A	0.6	52.5	54.4							
3	95.7	0.0	B	0.5	55.5	55.3							
4	95.7	0.0	C	0.5	62.0	54.4							
5	95.7	0.0	D	0.5	54.5	54.7							
6	95.7	0.0	D	0.5	54.5	54.7	54.7	0.0					
									254.3	141.6			1795.9
27	350.0	254.3	D	1.0	193.5	196.3	196.3	141.6			1795.9	1795.9	
									59.0	26.7			2209.7
26	409.0	313.3	D	1.0	220.0	223.0	223.0	168.3			1861.6	1867.7	
									80.0	37.6			2127.7
25	489.0	393.3	D	1.0	257.5	260.6	260.6	205.9			1910.2	1917.8	
									51.0	21.6			2361.1
24	540.0	444.3	D	1.0	279.0	282.2	282.2	227.5			1953.0	1964.2	
7	630.0	534.3	D	0.8	318.5	321.8			90.0	39.3			2290.1
23	630.0	534.3	D	1.0	318.0	321.3	321.5	266.8			2002.6	2015.5	
									100.0	36.4			2747.3
22	730.0	634.3	D	1.0	354.5	357.9	357.9	303.2			2092.0	2116.8	

SHOT CALCULATIONS : (cont)

Shot no.	Geophone depth Kelly	Geophone depth Datum	Shot Locn	Shot Depth	TIMES Record	TIMES Corr.	TIMES Avg.	TIMES Datum	Check shot interval distance	Check shot interval time	Velocities Average	Velocities RMS	Velocities Interval
									90.0	36.5			2465.8
21	820.0	724.3	D	1.0	391.0	394.4	394.4	339.7			2132.2	2157.0	
									80.0	26.6			3007.5
20	900.0	804.3	D	1.0	417.5	421.0	421.0	366.3			2195.7	2229.7	
									95.0	37.5			2533.3
19	995.0	899.3	D	1.0	455.0	458.5	458.5	403.8			2227.1	2259.6	
									105.0	36.5			2876.7
18	1100.0	1004.3	D	1.0	491.5	495.0	495.0	440.3			2280.9	2317.0	
									92.0	34.5			2666.7
17	1192.0	1096.3	D	1.0	526.0	529.5	529.5	474.8			2309.0	2344.2	
									103.0	35.1			2934.5
16	1295.0	1199.3	D	1.0	561.0	564.6	564.6	509.9			2352.0	2389.5	
									128.0	42.5			3011.8
15	1423.0	1327.3	D	1.0	603.5	607.1	607.1	552.4			2402.8	2443.0	
									87.0	31.5			2761.9
14	1510.0	1414.3	D	1.0	635.0	638.6	638.6	583.9			2422.2	2461.3	
8	1600.0	1504.3	D	0.8	666.5	670.1			90.0	31.2			2884.6
13	1600.0	1504.3	D	1.0	666.0	669.6	669.8	615.1			2445.6	2484.5	
									93.0	28.3			3286.2
12	1693.0	1597.3	D	1.0	694.5	698.1	698.1	643.4			2482.6	2525.1	
									102.0	27.0			3777.8
11	1795.0	1699.3	D	1.0	721.5	725.1	725.1	670.4			2534.8	2587.3	
									105.0	34.5			3043.5
10	1900.0	1804.3	D	1.0	756.0	759.6	759.6	704.9			2559.7	2611.5	
									117.0	24.5			4775.5
9	2017.0	1921.3	D	0.8	780.5	784.1	784.1	729.4			2634.1	2712.3	

First arrivals plot : VAUGHAN No. 1



Shot 2 Location : A
Charge depth .6 Size .25
Phone depth : 95.7
Arrival time : 52.5 msec

Shot 3 Location : B
Charge depth .5 Size .25
Phone depth : 95.7
Arrival time : 55.5 msec

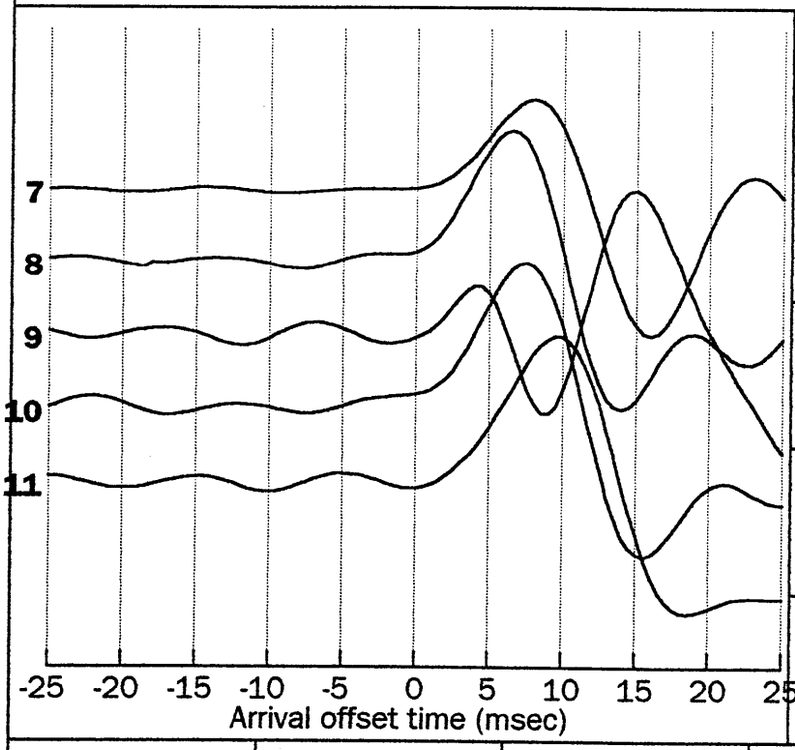
Shot 4 Location : C
Charge depth .5 Size .25
Phone depth : 95.7
Arrival time : 62.0 msec

Shot 5 Location : D
Charge depth .5 Size .25
Phone depth : 95.7
Arrival time : 54.5 msec

Shot 6 Location : D
Charge depth .5 Size .25
Phone depth : 95.7
Arrival time : 54.5 msec

SHOT 2		SHOT 3		SHOT 4		SHOT 5		SHOT 6	
Time	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**
42.0	-35.00	44.0	4.00	51.0	21.00	44.0	-71.00	44.0	-19.00
42.5	-56.00	44.5	21.00	51.5	22.00	44.5	-91.00	44.5	-34.00
43.0	-71.00	45.0	36.00	52.0	18.00	45.0	-108.00	45.0	-52.00
43.5	-88.00	45.5	46.00	52.5	8.00	45.5	-123.00	45.5	-64.00
44.0	-110.00	46.0	54.00	53.0	-3.00	46.0	-135.00	46.0	-71.00
44.5	-145.00	46.5	57.00	53.5	-17.00	46.5	-141.00	46.5	-75.00
45.0	-191.00	47.0	53.00	54.0	-37.00	47.0	-141.00	47.0	-74.00
45.5	-254.00	47.5	44.00	54.5	-55.00	47.5	-134.00	47.5	-67.00
46.0	-298.00	48.0	32.00	55.0	-68.00	48.0	-122.00	48.0	-53.00
46.5	-330.00	48.5	22.00	55.5	-82.00	48.5	-101.00	48.5	-39.00
47.0	-344.00	49.0	10.00	56.0	-87.00	49.0	-80.00	49.0	-23.00
47.5	-346.00	49.5	-6.00	56.5	-93.00	49.5	-59.00	49.5	-5.00
48.0	-338.00	50.0	-17.00	57.0	-88.00	50.0	-39.00	50.0	10.00
48.5	-319.00	50.5	-30.00	57.5	-80.00	50.5	-24.00	50.5	22.00
49.0	-280.00	51.0	-41.00	58.0	-65.00	51.0	-13.00	51.0	34.00
49.5	-193.00	51.5	-45.00	58.5	-52.00	51.5	-7.00	51.5	39.00
50.0	-75.00	52.0	-43.00	59.0	-36.00	52.0	-9.00	52.0	41.00
50.5	77.00	52.5	-38.00	59.5	-20.00	52.5	-15.00	52.5	37.00
51.0	240.00	53.0	-28.00	60.0	-5.00	53.0	-22.00	53.0	32.00
51.5	399.00	53.5	-14.00	60.5	3.00	53.5	-38.00	53.5	24.00
52.0	457.00	54.0	-5.00	61.0	8.00	54.0	-57.00	54.0	8.00
52.5	**386.00**	54.5	4.00	61.5	6.00	**54.5**	**-87.00**	**54.5**	**-15.00**
53.0	135.00	55.0	10.00	**62.0**	**1.00**	55.0	-145.00	55.0	-48.00
53.5	-430.00	**55.5**	**3.00**	62.5	-17.00	55.5	-233.00	55.5	-116.00
54.0	-1147.00	56.0	-35.00	63.0	-42.00	56.0	-396.00	56.0	-228.00
54.5	-2026.00	56.5	-114.00	63.5	-88.00	56.5	-735.00	56.5	-415.00
55.0	-2962.00	57.0	-295.00	64.0	-150.00	57.0	-1219.00	57.0	-789.00
55.5	-3929.00	57.5	-554.00	64.5	-238.00	57.5	-1939.00	57.5	-1292.00
56.0	-4472.00	58.0	-924.00	65.0	-373.00	58.0	-3113.00	58.0	-2020.00
56.5	-4623.00	58.5	-1395.00	65.5	-527.00	58.5	-4383.00	58.5	-3102.00
57.0	-4332.00	59.0	-2031.00	66.0	-703.00	59.0	-5810.00	59.0	-4222.00
57.5	-3483.00	59.5	-2572.00	66.5	-886.00	59.5	-7485.00	59.5	-5494.00
58.0	-2448.00	60.0	-3021.00	67.0	-1092.00	60.0	-8709.00	60.0	-6679.00
58.5	-1287.00	60.5	-3319.00	67.5	-1232.00	60.5	-9540.00	60.5	-7492.00
59.0	-153.00	61.0	-3313.00	68.0	-1311.00	61.0	-9821.00	61.0	-7919.00
59.5	1001.00	61.5	-3037.00	68.5	-1312.00	61.5	-9397.00	61.5	-7769.00
60.0	1785.00	62.0	-2499.00	69.0	-1205.00	62.0	-8401.00	62.0	-7125.00
60.5	2391.00	62.5	-1609.00	69.5	-1014.00	62.5	-6671.00	62.5	-5903.00
61.0	2853.00	63.0	-701.00	70.0	-748.00	63.0	-4898.00	63.0	-4500.00
61.5	3253.00	63.5	253.00	70.5	-361.00	63.5	-3055.00	63.5	-3024.00
62.0	3491.00	64.0	1174.00	71.0	1.00	64.0	-1024.00	64.0	-1369.00
62.5	3613.00	64.5	2106.00	71.5	370.00	64.5	492.00	64.5	-51.00
63.0	3605.00	65.0	2718.00	72.0	713.00	65.0	1738.00	65.0	1038.00
63.5	3439.00	65.5	3123.00	72.5	1057.00	65.5	2834.00	65.5	2019.00
64.0	3197.00	66.0	3304.00	73.0	1281.00	66.0	3486.00	66.0	2633.00

First arrivals plot : VAUGHAN 1



Shot 7 Location : D
Charge depth .75 Size 1
Phone depth : 630.0
Arrival time : 318.5 msec

Shot 8 Location : D
Charge depth .75 Size 2
Phone depth : 1600.0
Arrival time : 666.5 msec

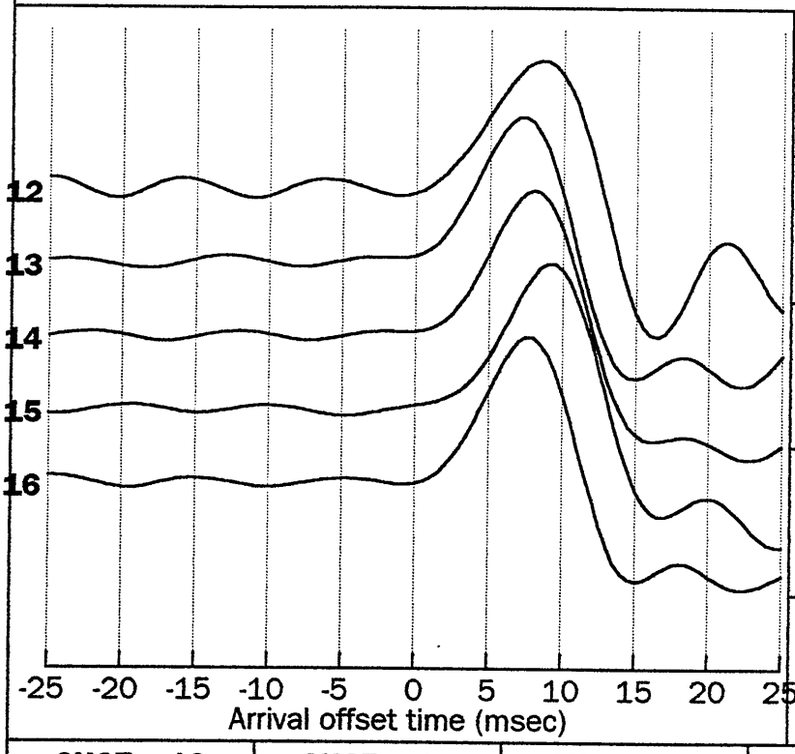
Shot 9 Location : D
Charge depth .75 Size 2
Phone depth : 2017.0
Arrival time : 780.5 msec

Shot 10 Location : D
Charge depth 1 Size 3
Phone depth : 1900.0
Arrival time : 756.0 msec

Shot 11 Location : D
Charge depth 1 Size 3
Phone depth : 1795.0
Arrival time : 721.5 msec

SHOT 7		SHOT 8		SHOT 9		SHOT 10		SHOT 11	
Time	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**
308.0	145.00	656.0	-7.00	770.0	55.00	745.0	-27.00	710.0	68.00
308.5	206.00	656.5	8.00	770.5	39.00	745.5	-20.00	710.5	78.00
309.0	255.00	657.0	20.00	771.0	19.00	746.0	-11.00	711.0	79.00
309.5	293.00	657.5	35.00	771.5	-7.00	746.5	2.00	711.5	73.00
310.0	306.00	658.0	46.00	772.0	-28.00	747.0	12.00	712.0	58.00
310.5	299.00	658.5	55.00	772.5	-50.00	747.5	22.00	712.5	43.00
311.0	272.00	659.0	60.00	773.0	-66.00	748.0	29.00	713.0	16.00
311.5	234.00	659.5	60.00	773.5	-78.00	748.5	33.00	713.5	-6.00
312.0	180.00	660.0	52.00	774.0	-82.00	749.0	31.00	714.0	-32.00
312.5	129.00	660.5	39.00	774.5	-82.00	749.5	23.00	714.5	-51.00
313.0	81.00	661.0	22.00	775.0	-74.00	750.0	10.00	715.0	-67.00
313.5	32.00	661.5	0.00	775.5	-61.00	750.5	-5.00	715.5	-78.00
314.0	-3.00	662.0	-20.00	776.0	-43.00	751.0	-20.00	716.0	-82.00
314.5	-31.00	662.5	-41.00	776.5	-24.00	751.5	-39.00	716.5	-77.00
315.0	-45.00	663.0	-55.00	777.0	-4.00	752.0	-53.00	717.0	-70.00
315.5	-55.00	663.5	-68.00	777.5	18.00	752.5	-66.00	717.5	-57.00
316.0	-60.00	664.0	-75.00	778.0	35.00	753.0	-75.00	718.0	-37.00
316.5	-59.00	664.5	-78.00	778.5	47.00	753.5	-83.00	718.5	-17.00
317.0	-55.00	665.0	-75.00	779.0	52.00	754.0	-88.00	719.0	9.00
317.5	-49.00	665.5	-72.00	779.5	51.00	754.5	-92.00	719.5	26.00
318.0	-48.00	666.0	-71.00	780.0	43.00	755.0	-97.00	720.0	39.00
318.5	**-61.00**	**666.5**	**-77.00**	**780.5**	**33.00**	755.5	-101.00	720.5	47.00
319.0	-99.00	667.0	-93.00	781.0	12.00	**756.0**	**-107.00**	721.0	45.00
319.5	-187.00	667.5	-125.00	781.5	-8.00	756.5	-119.00	**721.5**	**33.00**
320.0	-316.00	668.0	-168.00	782.0	-36.00	757.0	-139.00	722.0	14.00
320.5	-507.00	668.5	-232.00	782.5	-77.00	757.5	-174.00	722.5	-16.00
321.0	-821.00	669.0	-321.00	783.0	-125.00	758.0	-218.00	723.0	-60.00
321.5	-1180.00	669.5	-413.00	783.5	-190.00	758.5	-274.00	723.5	-106.00
322.0	-1708.00	670.0	-540.00	784.0	-246.00	759.0	-355.00	724.0	-169.00
322.5	-2249.00	670.5	-658.00	784.5	-296.00	759.5	-438.00	724.5	-229.00
323.0	-2857.00	671.0	-798.00	785.0	-329.00	760.0	-547.00	725.0	-297.00
323.5	-3639.00	671.5	-915.00	785.5	-326.00	760.5	-646.00	725.5	-387.00
324.0	-4340.00	672.0	-1019.00	786.0	-281.00	761.0	-745.00	726.0	-474.00
324.5	-5158.00	672.5	-1118.00	786.5	-199.00	761.5	-852.00	726.5	-587.00
325.0	-5820.00	673.0	-1176.00	787.0	-70.00	762.0	-933.00	727.0	-688.00
325.5	-6413.00	673.5	-1201.00	787.5	66.00	762.5	-1007.00	727.5	-792.00
326.0	-6968.00	674.0	-1183.00	788.0	204.00	763.0	-1045.00	728.0	-913.00
326.5	-7280.00	674.5	-1121.00	788.5	348.00	763.5	-1056.00	728.5	-1014.00
327.0	-7405.00	675.0	-992.00	789.0	443.00	764.0	-1034.00	729.0	-1117.00
327.5	-7265.00	675.5	-835.00	789.5	505.00	764.5	-979.00	729.5	-1190.00
328.0	-6874.00	676.0	-604.00	790.0	509.00	765.0	-876.00	730.0	-1245.00
328.5	-6079.00	676.5	-369.00	790.5	463.00	765.5	-754.00	730.5	-1274.00
329.0	-5112.00	677.0	-115.00	791.0	354.00	766.0	-603.00	731.0	-1268.00
329.5	-3671.00	677.5	192.00	791.5	219.00	766.5	-397.00	731.5	-1221.00
330.0	-2201.00	678.0	449.00	792.0	28.00	767.0	-203.00	732.0	-1144.00

First arrivals plot : VAUGHAN 1



Shot 12 Location : D
Charge depth 1 Size 3
Phone depth : 1693.0
Arrival time : 694.5 msec

Shot 13 Location : D
Charge depth 1 Size 3
Phone depth : 1600.0
Arrival time : 666.0 msec

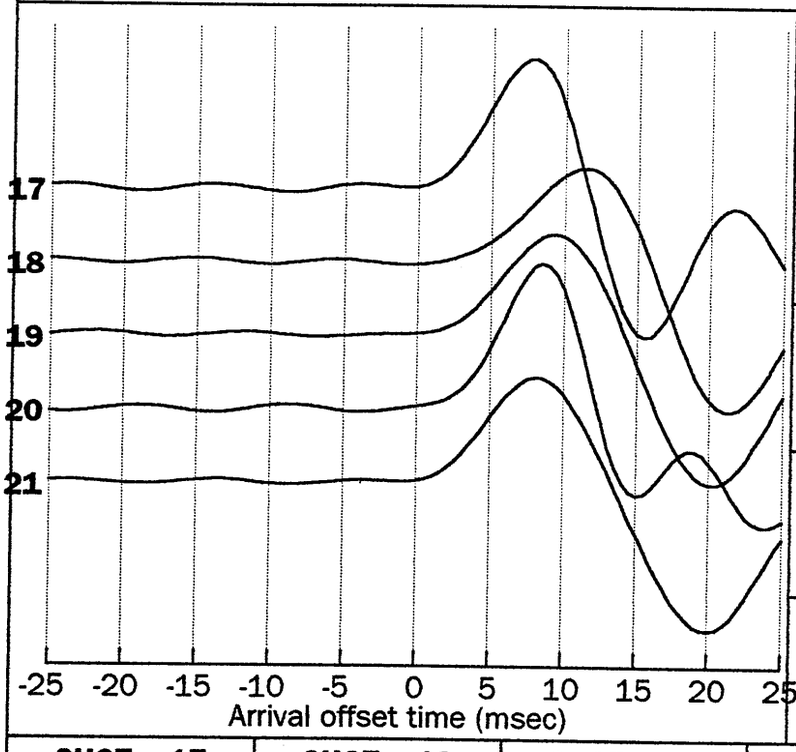
Shot 14 Location : D
Charge depth 1 Size 3
Phone depth : 1510.0
Arrival time : 635.0 msec

Shot 15 Location : D
Charge depth 1 Size 3
Phone depth : 1423.0
Arrival time : 603.5 msec

Shot 16 Location : D
Charge depth 1 Size 3
Phone depth : 1295.0
Arrival time : 561.0 msec

SHOT 12		SHOT 13		SHOT 14		SHOT 15		SHOT 16	
Time	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**
684.0	47.00	655.0	-46.00	624.0	-188.00	592.0	-165.00	550.0	136.00
684.5	45.00	655.5	-29.00	624.5	-145.00	592.5	-182.00	550.5	158.00
685.0	36.00	656.0	-11.00	625.0	-82.00	593.0	-186.00	551.0	164.00
685.5	22.00	656.5	8.00	625.5	-23.00	593.5	-171.00	551.5	152.00
686.0	6.00	657.0	23.00	626.0	45.00	594.0	-145.00	552.0	125.00
686.5	-13.00	657.5	34.00	626.5	98.00	594.5	-98.00	552.5	77.00
687.0	-27.00	658.0	42.00	627.0	141.00	595.0	-45.00	553.0	31.00
687.5	-42.00	658.5	42.00	627.5	171.00	595.5	14.00	553.5	-17.00
688.0	-49.00	659.0	34.00	628.0	175.00	596.0	89.00	554.0	-66.00
688.5	-54.00	659.5	25.00	628.5	152.00	596.5	152.00	554.5	-104.00
689.0	-56.00	660.0	10.00	629.0	110.00	597.0	206.00	555.0	-134.00
689.5	-53.00	660.5	-7.00	629.5	57.00	597.5	253.00	555.5	-162.00
690.0	-46.00	661.0	-23.00	630.0	-15.00	598.0	272.00	556.0	-176.00
690.5	-38.00	661.5	-40.00	630.5	-75.00	598.5	267.00	556.5	-177.00
691.0	-26.00	662.0	-52.00	631.0	-127.00	599.0	245.00	557.0	-166.00
691.5	-13.00	662.5	-58.00	631.5	-177.00	599.5	204.00	557.5	-147.00
692.0	-1.00	663.0	-62.00	632.0	-205.00	600.0	140.00	558.0	-113.00
692.5	13.00	663.5	-63.00	632.5	-222.00	600.5	79.00	558.5	-76.00
693.0	23.00	664.0	-63.00	633.0	-226.00	601.0	5.00	559.0	-25.00
693.5	31.00	664.5	-59.00	633.5	-224.00	601.5	-52.00	559.5	16.00
694.0	33.00	665.0	-61.00	634.0	-218.00	602.0	-102.00	560.0	44.00
694.5	**29.00**	665.5	-65.00	634.5	-217.00	602.5	-155.00	560.5	45.00
695.0	17.00	**666.0**	**-80.00**	**635.0**	**-237.00**	603.0	-200.00	**561.0**	**11.00**
695.5	2.00	666.5	-110.00	635.5	-282.00	**603.5**	**-249.00**	561.5	-83.00
696.0	-21.00	667.0	-154.00	636.0	-364.00	604.0	-318.00	562.0	-218.00
696.5	-53.00	667.5	-214.00	636.5	-521.00	604.5	-395.00	562.5	-406.00
697.0	-86.00	668.0	-311.00	637.0	-718.00	605.0	-519.00	563.0	-702.00
697.5	-129.00	668.5	-415.00	637.5	-981.00	605.5	-664.00	563.5	-1021.00
698.0	-172.00	669.0	-560.00	638.0	-1383.00	606.0	-853.00	564.0	-1401.00
698.5	-219.00	669.5	-700.00	638.5	-1809.00	606.5	-1141.00	564.5	-1922.00
699.0	-278.00	670.0	-849.00	639.0	-2393.00	607.0	-1454.00	565.0	-2425.00
699.5	-335.00	670.5	-1030.00	639.5	-2958.00	607.5	-1903.00	565.5	-3059.00
700.0	-403.00	671.0	-1182.00	640.0	-3555.00	608.0	-2365.00	566.0	-3621.00
700.5	-463.00	671.5	-1322.00	640.5	-4265.00	608.5	-2893.00	566.5	-4173.00
701.0	-520.00	672.0	-1461.00	641.0	-4848.00	609.0	-3569.00	567.0	-4772.00
701.5	-580.00	672.5	-1550.00	641.5	-5455.00	609.5	-4178.00	567.5	-5207.00
702.0	-625.00	673.0	-1605.00	642.0	-5870.00	610.0	-4861.00	568.0	-5576.00
702.5	-667.00	673.5	-1605.00	642.5	-6157.00	610.5	-5428.00	568.5	-5735.00
703.0	-691.00	674.0	-1555.00	643.0	-6289.00	611.0	-5897.00	569.0	-5719.00
703.5	-702.00	674.5	-1431.00	643.5	-6202.00	611.5	-6297.00	569.5	-5458.00
704.0	-695.00	675.0	-1270.00	644.0	-5856.00	612.0	-6468.00	570.0	-5023.00
704.5	-672.00	675.5	-1021.00	644.5	-5344.00	612.5	-6458.00	570.5	-4369.00
705.0	-623.00	676.0	-766.00	645.0	-4654.00	613.0	-6191.00	571.0	-3489.00
705.5	-559.00	676.5	-485.00	645.5	-3655.00	613.5	-5737.00	571.5	-2576.00
706.0	-473.00	677.0	-144.00	646.0	-2672.00	614.0	-4958.00	572.0	-1421.00

First arrivals plot : VAUGHAN 1



Shot 17 Location : D
Charge depth 1 Size 2
Phone depth : 1192.0
Arrival time : 526.0 msec

Shot 18 Location : D
Charge depth 1 Size 2
Phone depth : 1100.0
Arrival time : 491.5 msec

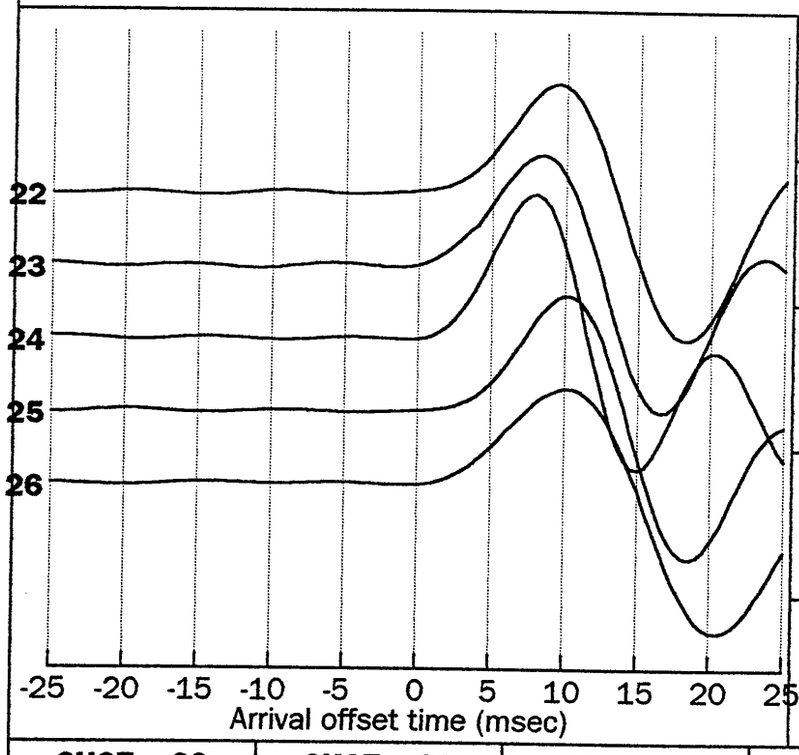
Shot 19 Location : D
Charge depth 1 Size 2
Phone depth : 995.0
Arrival time : 455.0 msec

Shot 20 Location : D
Charge depth 1 Size 2
Phone depth : 900.0
Arrival time : 417.5 msec

Shot 21 Location : D
Charge depth 1 Size 2
Phone depth : 820.0
Arrival time : 391.0 msec

SHOT 17		SHOT 18		SHOT 19		SHOT 20		SHOT 21	
Time	Ampl	Time	Ampl	Time	Ampl	Time	Ampl	Time	Ampl
515.0	45.00	480.0	42.00	444.0	-71.00	406.0	-25.00	380.0	-5.00
515.5	111.00	480.5	49.00	444.5	-62.00	406.5	-44.00	380.5	16.00
516.0	163.00	481.0	50.00	445.0	-50.00	407.0	-61.00	381.0	33.00
516.5	213.00	481.5	45.00	445.5	-34.00	407.5	-70.00	381.5	46.00
517.0	240.00	482.0	33.00	446.0	-18.00	408.0	-77.00	382.0	54.00
517.5	245.00	482.5	18.00	446.5	-2.00	408.5	-77.00	382.5	53.00
518.0	224.00	483.0	-1.00	447.0	11.00	409.0	-72.00	383.0	48.00
518.5	184.00	483.5	-17.00	447.5	20.00	409.5	-63.00	383.5	37.00
519.0	115.00	484.0	-30.00	448.0	26.00	410.0	-44.00	384.0	23.00
519.5	45.00	484.5	-43.00	448.5	27.00	410.5	-26.00	384.5	4.00
520.0	-30.00	485.0	-49.00	449.0	19.00	411.0	-6.00	385.0	-14.00
520.5	-112.00	485.5	-53.00	449.5	11.00	411.5	15.00	385.5	-33.00
521.0	-171.00	486.0	-49.00	450.0	2.00	412.0	31.00	386.0	-52.00
521.5	-214.00	486.5	-43.00	450.5	-10.00	412.5	42.00	386.5	-64.00
522.0	-232.00	487.0	-32.00	451.0	-18.00	413.0	46.00	387.0	-72.00
522.5	-230.00	487.5	-19.00	451.5	-27.00	413.5	44.00	387.5	-73.00
523.0	-206.00	488.0	-5.00	452.0	-33.00	414.0	35.00	388.0	-68.00
523.5	-170.00	488.5	13.00	452.5	-38.00	414.5	23.00	388.5	-60.00
524.0	-126.00	489.0	25.00	453.0	-40.00	415.0	9.00	389.0	-50.00
524.5	-74.00	489.5	35.00	453.5	-41.00	415.5	-11.00	389.5	-42.00
525.0	-46.00	490.0	40.00	454.0	-44.00	416.0	-28.00	390.0	-39.00
525.5	-45.00	490.5	43.00	454.5	-50.00	416.5	-48.00	390.5	-45.00
526.0	**-85.00**	491.0	39.00	**455.0**	**-59.00**	417.0	-63.00	**391.0**	**-66.00**
526.5	-176.00	**491.5**	**27.00**	455.5	-73.00	**417.5**	**-81.00**	391.5	-117.00
527.0	-356.00	492.0	7.00	456.0	-101.00	418.0	-109.00	392.0	-187.00
527.5	-587.00	492.5	-18.00	456.5	-139.00	418.5	-141.00	392.5	-286.00
528.0	-956.00	493.0	-47.00	457.0	-205.00	419.0	-186.00	393.0	-441.00
528.5	-1361.00	493.5	-91.00	457.5	-281.00	419.5	-261.00	393.5	-607.00
529.0	-1853.00	494.0	-135.00	458.0	-379.00	420.0	-352.00	394.0	-803.00
529.5	-2527.00	494.5	-190.00	458.5	-522.00	420.5	-490.00	394.5	-1065.00
530.0	-3177.00	495.0	-261.00	459.0	-669.00	421.0	-646.00	395.0	-1312.00
530.5	-3874.00	495.5	-333.00	459.5	-866.00	421.5	-833.00	395.5	-1573.00
531.0	-4712.00	496.0	-429.00	460.0	-1052.00	422.0	-1091.00	396.0	-1881.00
531.5	-5416.00	496.5	-523.00	460.5	-1249.00	422.5	-1337.00	396.5	-2139.00
532.0	-6173.00	497.0	-630.00	461.0	-1485.00	423.0	-1598.00	397.0	-2419.00
532.5	-6724.00	497.5	-769.00	461.5	-1681.00	423.5	-1906.00	397.5	-2627.00
533.0	-7147.00	498.0	-898.00	462.0	-1866.00	424.0	-2146.00	398.0	-2793.00
533.5	-7429.00	498.5	-1058.00	462.5	-2058.00	424.5	-2347.00	398.5	-2925.00
534.0	-7450.00	499.0	-1199.00	463.0	-2193.00	425.0	-2508.00	399.0	-2977.00
534.5	-7177.00	499.5	-1337.00	463.5	-2310.00	425.5	-2563.00	399.5	-2965.00
535.0	-6670.00	500.0	-1490.00	464.0	-2366.00	426.0	-2517.00	400.0	-2872.00
535.5	-5911.00	500.5	-1611.00	464.5	-2375.00	426.5	-2371.00	400.5	-2725.00
536.0	-4733.00	501.0	-1731.00	465.0	-2325.00	427.0	-2130.00	401.0	-2522.00
536.5	-3505.00	501.5	-1809.00	465.5	-2227.00	427.5	-1739.00	401.5	-2221.00
537.0	-1888.00	502.0	-1858.00	466.0	-2069.00	428.0	-1330.00	402.0	-1917.00

First arrivals plot : VAUGHAN 1



Shot 22 Location : D
Charge depth 1 Size 2
Phone depth : 730.0
Arrival time : 354.5 msec

Shot 23 Location : D
Charge depth 1 Size 1
Phone depth : 630.0
Arrival time : 318.0 msec

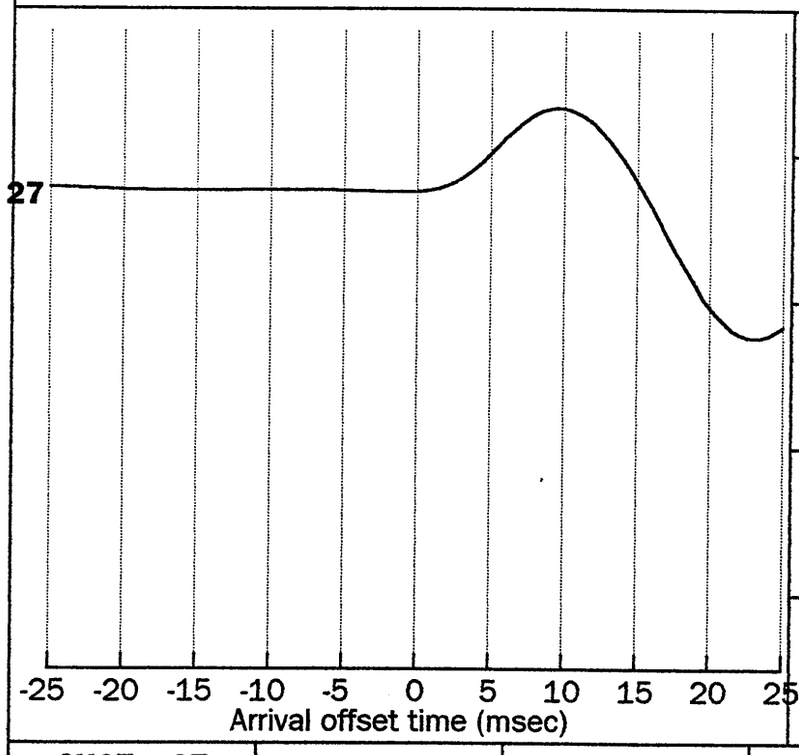
Shot 24 Location : D
Charge depth 1 Size 1
Phone depth : 540.0
Arrival time : 279.0 msec

Shot 25 Location : D
Charge depth 1 Size 1
Phone depth : 489.0
Arrival time : 257.5 msec

Shot 26 Location : D
Charge depth 1 Size 1
Phone depth : 409.0
Arrival time : 220.0 msec

SHOT 22		SHOT 23		SHOT 24		SHOT 25		SHOT 26	
Time	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**	**Time**	**Ampl**
344.0	-49.00	307.0	73.00	268.0	8.00	246.0	-21.00	209.0	-42.00
344.5	-73.00	307.5	69.00	268.5	19.00	246.5	-35.00	209.5	-32.00
345.0	-88.00	308.0	59.00	269.0	28.00	247.0	-43.00	210.0	-28.00
345.5	-98.00	308.5	44.00	269.5	33.00	247.5	-49.00	210.5	-29.00
346.0	-101.00	309.0	24.00	270.0	34.00	248.0	-52.00	211.0	-35.00
346.5	-97.00	309.5	-3.00	270.5	27.00	248.5	-50.00	211.5	-47.00
347.0	-88.00	310.0	-25.00	271.0	17.00	249.0	-45.00	212.0	-59.00
347.5	-70.00	310.5	-45.00	271.5	6.00	249.5	-37.00	212.5	-71.00
348.0	-51.00	311.0	-64.00	272.0	-7.00	250.0	-24.00	213.0	-88.00
348.5	-31.00	311.5	-74.00	272.5	-21.00	250.5	-10.00	213.5	-97.00
349.0	-6.00	312.0	-81.00	273.0	-32.00	251.0	3.00	214.0	-104.00
349.5	12.00	312.5	-81.00	273.5	-39.00	251.5	19.00	214.5	-107.00
350.0	25.00	313.0	-75.00	274.0	-46.00	252.0	30.00	215.0	-104.00
350.5	33.00	313.5	-65.00	274.5	-48.00	252.5	36.00	215.5	-96.00
351.0	35.00	314.0	-48.00	275.0	-46.00	253.0	38.00	216.0	-82.00
351.5	30.00	314.5	-25.00	275.5	-40.00	253.5	35.00	216.5	-64.00
352.0	22.00	315.0	-4.00	276.0	-33.00	254.0	29.00	217.0	-44.00
352.5	9.00	315.5	18.00	276.5	-24.00	254.5	20.00	217.5	-26.00
353.0	-7.00	316.0	34.00	277.0	-11.00	255.0	5.00	218.0	-9.00
353.5	-29.00	316.5	39.00	277.5	0.00	255.5	-8.00	218.5	8.00
354.0	-48.00	317.0	33.00	278.0	7.00	256.0	-22.00	219.0	16.00
354.5	**-67.00**	317.5	9.00	278.5	7.00	256.5	-37.00	219.5	13.00
355.0	-93.00	**318.0**	**-30.00**	**279.0**	**-7.00**	257.0	-51.00	**220.0**	**-3.00**
355.5	-120.00	318.5	-90.00	279.5	-40.00	**257.5**	**-67.00**	220.5	-49.00
356.0	-164.00	319.0	-186.00	280.0	-100.00	258.0	-92.00	221.0	-116.00
356.5	-219.00	319.5	-294.00	280.5	-212.00	258.5	-125.00	221.5	-212.00
357.0	-293.00	320.0	-427.00	281.0	-350.00	259.0	-173.00	222.0	-340.00
357.5	-413.00	320.5	-611.00	281.5	-534.00	259.5	-242.00	222.5	-539.00
358.0	-551.00	321.0	-798.00	282.0	-809.00	260.0	-357.00	223.0	-750.00
358.5	-725.00	321.5	-1009.00	282.5	-1097.00	260.5	-494.00	223.5	-998.00
359.0	-982.00	322.0	-1155.00	283.0	-1431.00	261.0	-673.00	224.0	-1335.00
359.5	-1247.00	322.5	-1455.00	283.5	-1840.00	261.5	-945.00	224.5	-1668.00
360.0	-1554.00	323.0	-1753.00	284.0	-2270.00	262.0	-1231.00	225.0	-2029.00
360.5	-1958.00	323.5	-2092.00	284.5	-2678.00	262.5	-1567.00	225.5	-2411.00
361.0	-2332.00	324.0	-2368.00	285.0	-3072.00	263.0	-1947.00	226.0	-2873.00
361.5	-2721.00	324.5	-2622.00	285.5	-3484.00	263.5	-2434.00	226.5	-3268.00
362.0	-3169.00	325.0	-2875.00	286.0	-3761.00	264.0	-2874.00	227.0	-3654.00
362.5	-3529.00	325.5	-3040.00	286.5	-3939.00	264.5	-3317.00	227.5	-4020.00
363.0	-3847.00	326.0	-3143.00	287.0	-3992.00	265.0	-3814.00	228.0	-4408.00
363.5	-4136.00	326.5	-3167.00	287.5	-3885.00	265.5	-4194.00	228.5	-4692.00
364.0	-4290.00	327.0	-3090.00	288.0	-3623.00	266.0	-4511.00	229.0	-4921.00
364.5	-4340.00	327.5	-2919.00	288.5	-3127.00	266.5	-4771.00	229.5	-5084.00
365.0	-4246.00	328.0	-2594.00	289.0	-2549.00	267.0	-4872.00	230.0	-5174.00
365.5	-4025.00	328.5	-2207.00	289.5	-1858.00	267.5	-4843.00	230.5	-5152.00
366.0	-3674.00	329.0	-1729.00	290.0	-1075.00	268.0	-4669.00	231.0	-5027.00

First arrivals plot : VAUGHAN 1



Shot 27 Location : D
Charge depth 1 Size 1
Phone depth : 350.0
Arrival time : 193.5 msec

SHOT	27
Time	**Ampl**
182.0	-9.00
182.5	-10.00
183.0	-13.00
183.5	-14.00
184.0	-14.00
184.5	-13.00
185.0	-15.00
185.5	-13.00
186.0	-11.00
186.5	-9.00
187.0	-7.00
187.5	-5.00
188.0	0.00
188.5	3.00
189.0	7.00
189.5	10.00
190.0	15.00
190.5	19.00
191.0	23.00
191.5	25.00
192.0	27.00
192.5	26.00
193.0	19.00
193.5	**5.00**
194.0	-17.00
194.5	-61.00
195.0	-118.00
195.5	-193.00
196.0	-291.00
196.5	-426.00
197.0	-563.00
197.5	-715.00
198.0	-877.00
198.5	-1042.00
199.0	-1236.00
199.5	-1393.00
200.0	-1539.00
200.5	-1665.00
201.0	-1784.00
201.5	-1860.00
202.0	-1909.00
202.5	-1929.00
203.0	-1920.00
203.5	-1874.00
204.0	-1806.00

Appendix 9

APPENDIX 9

GEOCHEMISTRY REPORT

GEOTECH GEOTECHNICAL SERVICES PTY LTD
41-45 Furnace Road, Welshpool, Western Australia. 6106
Locked Bag 27, Cannington, Western Australia. 6107

Telephone: (09) 458 8877
Facsimile: (09) 458 8857

3 March, 1995

Kevin Lanigan
GFE Resources Ltd
Box 629
Market Street Post Office
Melbourne
VIC 3000

Dear Kevin,

Please find enclosed GHM – Thermal extraction results for the Vaughan–1 cuttings sample, as well as an invoice for this work.

If you have further queries or if we can be of any assistance to you, please do not hesitate to contact us.

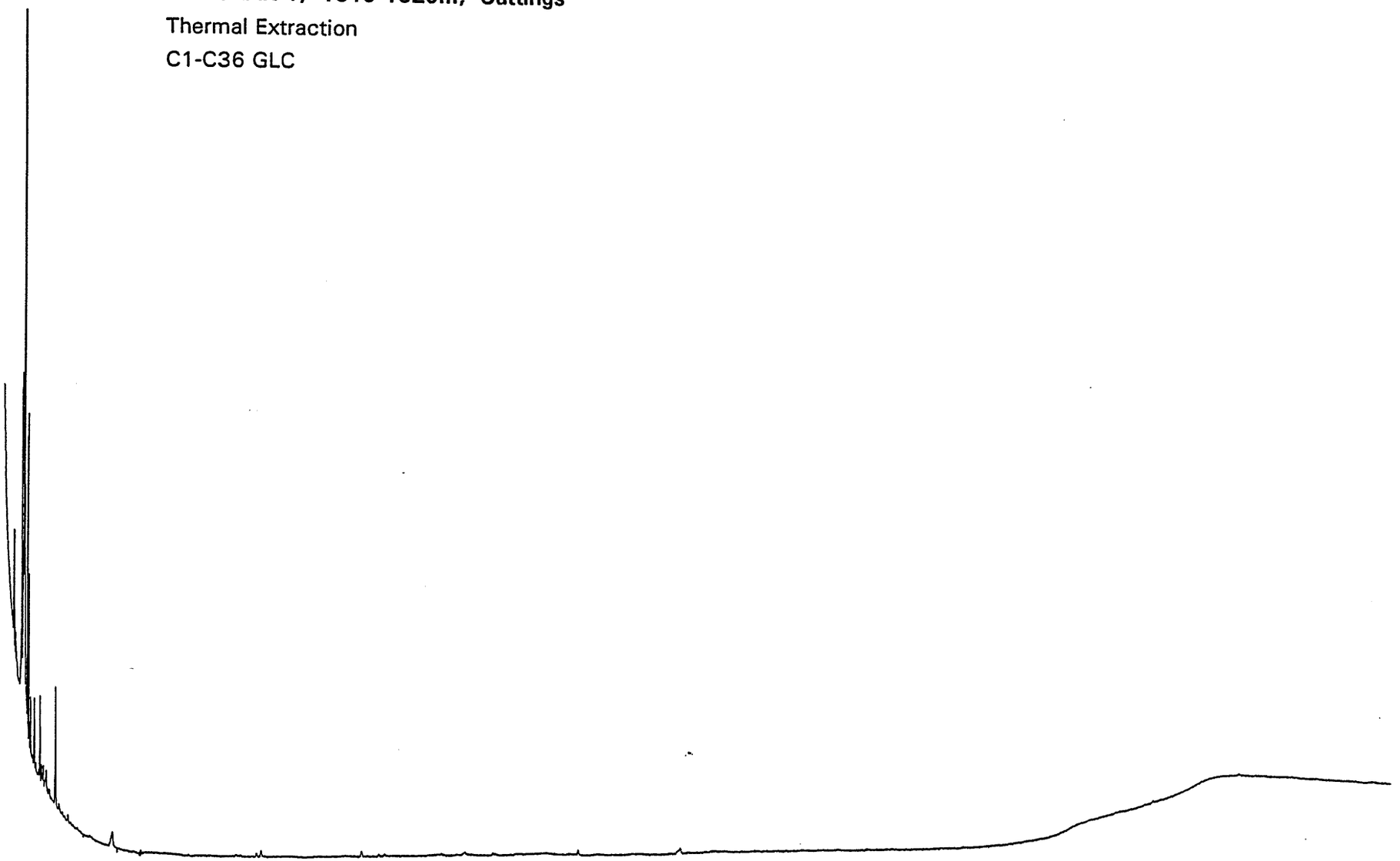
Yours sincerely,

Dr. Birgitta Hartung–Kagi
Managing Director

VAUGHAN 1, 1610-1620m, Cuttings

Thermal Extraction

C1-C36 GLC

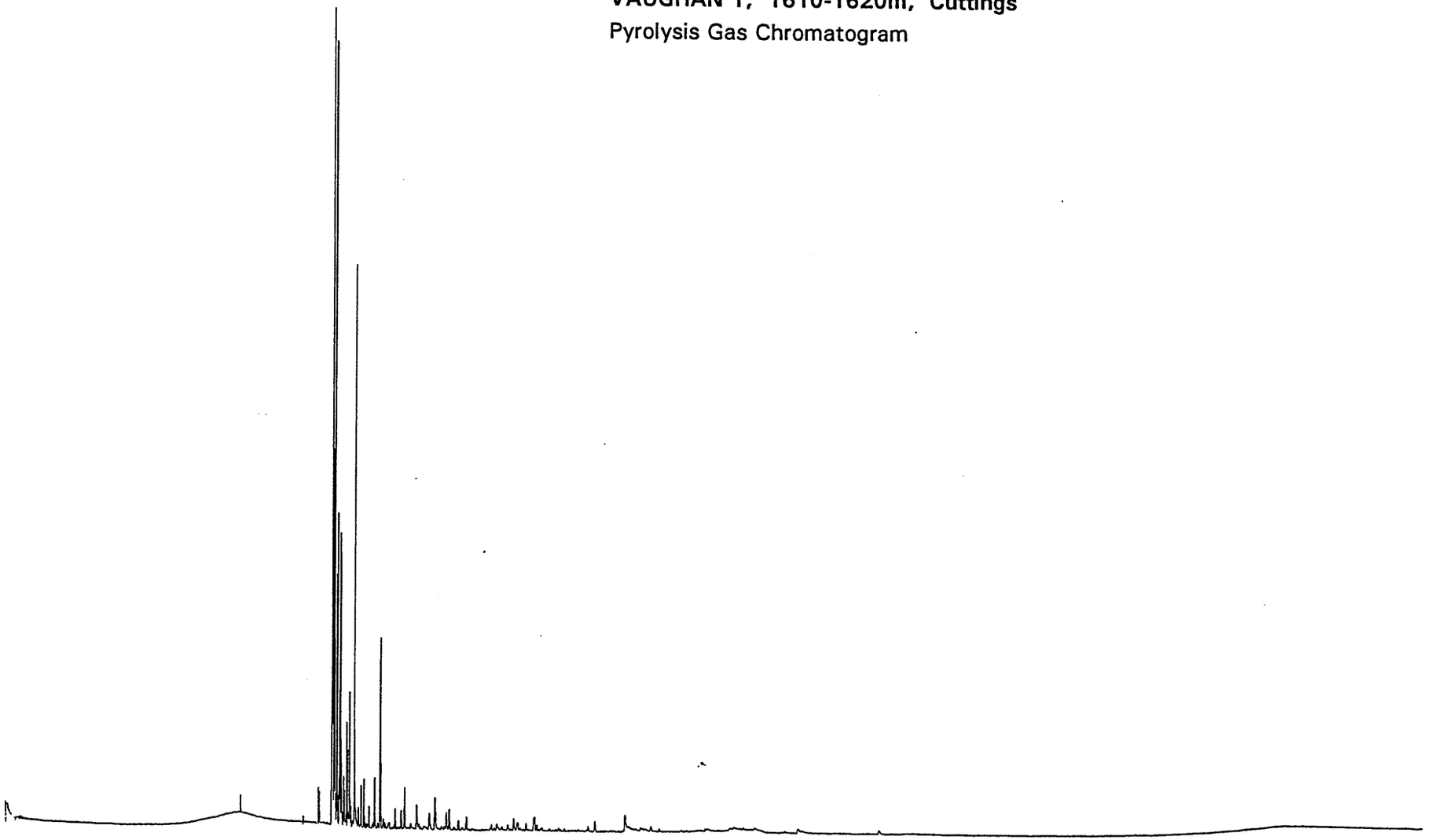


C238

GEOTECHNICAL SERVICES PTY LTD

VAUGHAN 1, 1610-1620m, Cuttings

Pyrolysis Gas Chromatogram



D238

GEOTECHNICAL SERVICES PTY LTD

Cathy has invoice)

GEOTECH GEOTECHNICAL SERVICES PTY LTD
41-45 Furnace Road, Welshpool, Western Australia. 6106
Locked Bag 27, Cannington, Western Australia. 6107

Telephone: (09) 458 8877
Facsimile: (09) 458 8857

16 March, 1995

Kevin Lanigan
GFE Resources Ltd
Box 629
Market Street Post Office
Melbourne
VIC 3000

Dear Kevin,

Please find enclosed saturate GC results for the Vaughan–1 1610–1620m cuttings sample, as well as an invoice for this work.

If you have further queries or if we can be of any assistance to you, please do not hesitate to contact us.

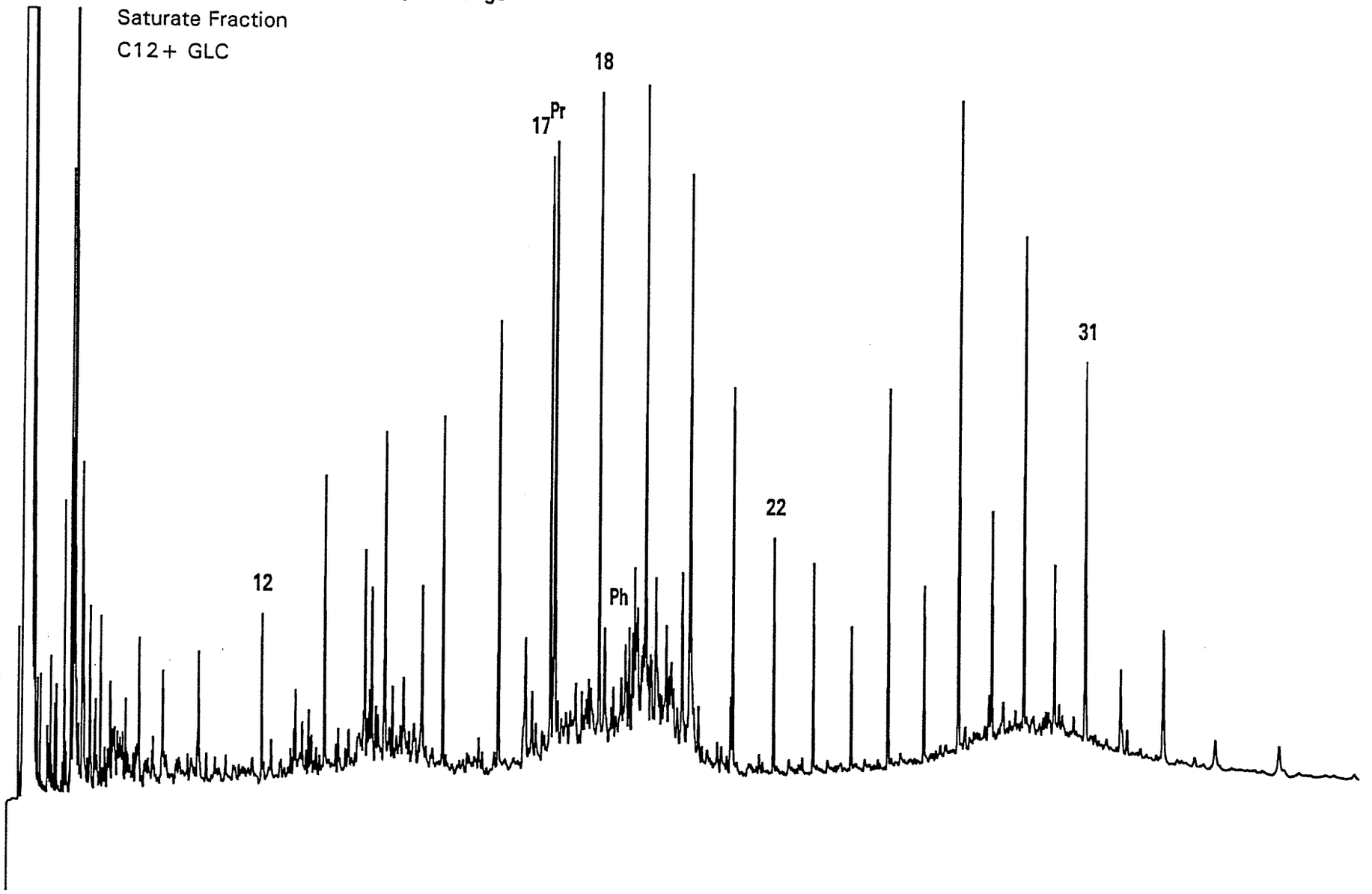
Yours sincerely,

Dr. Birgitta Hartung–Kagi
Managing Director

VAUGHAN 1, 1610-1620m, Cuttings

Saturate Fraction

C12+ GLC



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GEOTECHNICAL SERVICES PTY LTD

TABLE 1

Summary of Extraction and Liquid Chromatography

VAUGHAN 1 Mar-95

A. Concentrations of Extracted Material

				-------Hydrocarbons-------			----Nonhydrocarbons----		
	Weight of	Total	Loss on			HC			NonHC
	Rock Extd	Extract	Column	Saturates	Aromatics	Total	NSO's	Asphalt	Total
DEPTH(m)	(grams)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
1610-1620	102.2	324.8	32.3	67.5	93.9	161.4	131.1	nd	131.1

TABLE 1

Summary of Extraction and Liquid Chromatography

VAUGHAN 1 Mar-95

B. Compositional Data

	---Hydrocarbons----			---Nonhydrocarbons-----			EOM(mg)	SAT(mg)	SAT	ASPH	HC
							-------	-------	-------	-------	-------
DEPTH(m)	%SAT	%AROM	%HC's	%NSO	%ASPH	%Non HC's	TOC(g)	TOC(g)	AROM	NSO	Non HC
1610-1620	23.1	32.1	55.2	44.8	nd	44.8	nd	nd	0.7	nd	1.2

nd = no data

TABLE 2

VAUGHAN 1 Summary of Gas Chromatography Data

A. Alkane Compositional Data SATURATE FRACTION

DEPTH(m)	Prist./Phyt.	Prist./n-C17	Phyt./n-C18	CPI(1)	CPI(2)	(C21+C22)/(C28+C29)
1610-1620	4.60	1.24	0.25	2.51	2.41	0.76

TABLE 2

VAUGHAN 1 Summary of Gas Chromatography Data

B. n-Alkane Distributions SATURATE FRACTION

DEPTH(m)	nC12	nC13	nC14	nC15	nC16	nC17	iC19	nC18	iC20	nC19	nC20	nC21	nC22	nC23	nC24	nC25	nC26	nC27	nC28	nC29	nC30	nC31
1610-1620	1.8	3.4	4.1	3.7	4.8	7.5	9.3	8.0	2.0	7.1	8.9	4.1	2.5	2.3	1.6	4.0	1.9	7.3	2.9	5.8	1.9	5.1

nd = no data

Appendix 10

APPENDIX 10

PALYNOLOGY

Palynological Analysis of Vaughan-1, Port Campbell Embayment, Otway Basin

by

Alan D. Partridge

Biostrata Pty Ltd
A.C.N. 053 800 945

Biostrata Report 1995/5

31 May 1995

CONTENTS

INTERPRETATIVE DATA

BASIC DATA

INTERPRETATIVE DATA

Introduction

Seventeen sidewall cores samples between 803.0m to 1899.0m were analysed in Vaughan-1. The author cleaned and split the samples then forwarded them to Laola Pty Ltd in Perth for processing to prepare the palynological slides.

Between 2.7 to 12 grams (average 7.7 g) of the sidewall cores were processed for palynological analysis. Moderated to high residue yields were extracted from most samples. Kerogen slides were prepared with filtered and unfiltered fractions, and where sufficient residue was recovered, separate oxidised slides were prepared from fractions concentrated from the residues using 8 and 15 micron filters. Palynomorph concentrations on the palynological slides were mostly low to moderate, while palynomorph preservation was poor to fair and only very occasionally good.

Overall spore-pollen diversity was high, averaging 26+ species per sample. Recorded microplankton diversity was usually low to very low in most samples with only two samples showing a moderate diversity. The microplankton abundance data presented in Table 2 was obtained from counts made on slides prepared using 8 microns filter cloth.

Geological ages, formations and palynological zones for the interval sampled in Vaughan 1 are given in Table 1. Additional interpretative data with zone identification and Confidence Ratings are recorded in Table 3, whilst basic data on sidewall core lithologies, residue yields, preservation and diversity are recorded on Tables 4 and 5. All species which have been identified with binomial names are tabulated on separate range charts for spore-pollen and microplankton, which present the recorded assemblages in order of lowest appearances.

Table-1: Palynological Summary Vaughan-1

AGE	UNIT	SPORE-POLLEN ZONES	MICROPLANKTON ZONES (SUBZONES)
EOCENE	PEMBER MUDSTONE 742-813m	NOT SAMPLED	NOT SAMPLED
PALEOCENE		Upper *L. balmei* 803.0m	Indeterminate
	PEBBLE POINT FORMATION 813-870m	NOT SAMPLED	NOT SAMPLED
	K/T BOUNDARY SHALE 870-898m	Lower *L. balmei* 874.0-883.0m Upper *T. longus* 889.0-895.0m	Indeterminate *M. druggii* 895.0m
MAASTRICHTIAN			
	PAARATTE FORMATION 898-1157m	NOT SAMPLED	NOT SAMPLED
CAMPANIAN			
	SKULL CREEK MUDSTONE 1157-1316m	*N. senectus* 1164.0m	*N. aceras* 1558m 1164.0
SANTONIAN	NULLAWARRE 1316-1407m	NOT SAMPLED	NOT SAMPLED
CONIACIAN	BELFAST MUDSTONE 1407-1588m		
TURONIAN	WAARRE FORMATION 1588-1692m	*P. mawsonii* 1595.5-1692.5m	*P. infusorioides* 1595.5-1674.0m *(C. edwardsii)* 1650.0m
LATE ALBIAN	EUMERALLA FORMATION 1692-2014m (T.D.)	*P. pannosus* 1797.0-1899.0m	NO ZONES PRESENT

Geological Comments

1. The sequence sampled in Vaughan-1 spans the time interval of Late Albian to Late Paleocene. With some minor modifications most samples can be readily assigned to the Mesozoic spore-pollen and microplankton zones defined by Helby, Morgan & Partridge (1987) or the Tertiary spore-pollen zones of Stover & Partridge (1973).

2. A number of the spore-pollen zones used or discussed herein represent modifications or name changes by Helby *et al.* (1987) of zones originally erected by Dettmann & Playford (1969) upon wells from the Port Campbell Embayment. As these zones are is still widely used in reports and publications on the Otway Basin it is appropriate to provide a summary of the equivalence between the two zonation schemes. Explanations of the reasons for the zone name changes can be found in Helby *et al.* (1987). The zones referred to in this report are:

Dettmann & Playford (1969)		**Helby *et al.* (1987)**
Nothofagidites Microflora (in part only)	=	*N. senectus* Zone
T. pachyexinus Zone	=	*T. apoxyexinus* Zone
C. triplex Zone	=	*P. mawsonii* Zone
A. distocarinatus Zone	=	*A. distocarinatus* Zone
P. pannosus Zone	=	*P. pannosus* Zone

3. The spore-pollen succession commences with the *P. pannosus* Zone identified in the Eumeralla Formation. In the overlying Waarre Formation the *P. mawsonii* Zone was found to extend to the base of the unit and the Cenomanian *A. distocarinatus* Zone as redefined by Helby *et al.* (1987) is considered to be absent at the unconformity between the Waarre and Eumeralla Formations. This relationship confirms results previously obtained from Iona-2, Langley-1 and Howmains-1 (Partridge 1994a, b, c). The *P. mawsonii* Zone includes all samples from Waarre Formation up to 1595.5m, after which there is a 431-metre gap to the next Late Cretaceous sample from the Skull Creek Mudstone, followed by a further sampling gap of 269 metres to a suite of samples from the K/T boundary shale, which approximates the boundary between the Sherbrook Group and overlying Pebble Point Formation. These four samples were disappointing, for although displaying high diversity they contained few key species. The shallowest sample was from near the base of the Pember Mudstone.

4. Marine microplankton were recorded from seven of the nine samples in the Waarre Formation (Table 2). Except in those samples containing abundant cysts of *Amosopollis cruciformis*, the microplankton abundances were notably less than found in either Langley-1 or Howmains-1, suggesting that Vaughan 1 was located closer to the palaeoshoreline. In the deeper of the two samples lacking microplankton (SWC 7 at 1689m) the spore-pollen assemblage is similar to adjacent samples and the microplankton were probably not recorded due to the overall low palynomorph concentration. In the shallower sample at 1599.5m the assemblage has a distinct spore-pollen composition which needs extended discussion.

Table-2: Microplankton Abundances in Selected Samples in Vaughan-1

Sample Type	Depth (m)	Microplankton Zone and (Subzone)	Microplankton Abundance as % Relative to total Spore-pollen and microplankton count	Most abundant microplankton species as % of total microplankton count
SWC 24	803.0	Indeterminate	6%	No species dominant in low count.
SWC 23	874.0	Indeterminate	3%	*Paralecaniella indentata* 50%.
SWC 21	889.0	Indeterminate	<2%	No species dominant in low count.
SWC 20	895.0	*M. druggii*	6%	*Micrhystridium* spp. >50%.
SWC 19	1164.0	*N. aceras*	9%	*Heterosphaeridium* spp. >50%.
SWC 18	1595.5	*P. infusorioides*	26%	*Amosopollis cruciformis* >25% *Heterosphaeridium* spp. >20%.
SWC 17	1599.5	No zone possible.	<<1%	Only single specimen recorded
SWC 15	1609.0	*P. infusorioides*	19%	*Amosopollis cruciformis* >90%.
SWC 13	1622.0	*P. infusorioides*	3%	No species dominant in low count.
SWC 11	1650.0	(*C. edwardsii*)	10%	*Amosopollis cruciformis* 50%.
SWC 9	1674.0	*P. infusorioides*	<3%	No species dominant in low count.
SWC 4	1797.0	Indeterminate	0.7%	*Micrhystridium* sp. 100%.

5. The sidewall core at 1599.5m from a high gamma ray spike above the highest sand in the Waarre Formation contained an unusual and very distinctive spore-pollen assemblage dominated by *Gleicheniidites* spp. (45%), *Podosporites microsaccatus* (18%), *Podocarpidites* spp. (14%) and *Cyathidites minor* (sensus lato) with an abundance of 9%. The rest of the assemblage was of low diversity and, except for a single acritarch, the sample lacked microplankton. Because the four most abundant species represent 86% of the assemblage the sample is considered to be providing a snapshot of the local vegetation. The exceptional abundance of *Gleicheniidites* spp. which is mostly the species *Gleicheniidites circinidites* suggests the components of the

assemblage cannot have been transported far to the depositional site or otherwise the assemblage would have displayed spore-pollen abundances more similar to the other samples. The environment of deposition is envisaged to be essentially non-marine, perhaps representing an overbank deposit. Relative to the Waarre Formation in the Langley-1 well, where all the analysed samples contained marine microplankton (Partridge, 1994b), this sample in Vaughan-1 would represent a proximal non-marine equivalent, perhaps representing part of a highstand system tract. This latter interpretation is reinforced by the overlying sample at 1595.5m in Vaughan-1, which is interpreted as relatively deep or open marine, as it contains a microplankton abundance of 26% and a diversity of >12 microplankton species. The abrupt change from a non-marine assemblage to an open marine assemblage is typical of a "downward shift" in facies, which is diagnostic of a sequence boundary. It is therefore proposed that in Vaughan 1 a major sequence boundary occurs at the top of Unit C of the Waarre Formation which is picked from the gamma and sonic logs to lie at 1597.5m.

6. The sample at 1692.5m was comprised of two lithologies, a light grey feldspathic sandstone and a medium grey claystone, of which only the latter was submitted for processing. The presence of mixed lithologies makes the reliability of this sample questionable, particularly as the character of the extracted assemblage is similar to the sample recovered at 1904m in Howmains-1. This latter sample was below the log break for top of the Eumeralla Formation and was interpreted as possibly from a clastic dyke. A similar interpretation is possible for the sample in Vaughan-1. Such clastic dykes are a typical features of the better exposures of the unconformity between the Eumeralla and Pebble Point Formations which outcrop at Point Margaret and Buckleys Point (see Keating 1993).

7. Subdivision of the Waarre Formation into the units proposed by Buffin (1989) is provisionally suggested as follows:

Waarre Unit D:	1588-1597.5m
Waarre Unit C:	1597.5-1642m
Waarre Unit B:	1642-1656m
Waarre Unit A:	1656-1692m

These picks are consistent with palynomorph ranges recorded and units picked in Langley-1. The assemblages in Vaughan-1 suggest that the SWC at 1650m can be no younger than Waarre B whilst the SWC at 1622m is no younger than the sample from core-1 at 1750m in Langley-1. The shallowest sample from the Waarre in Vaughan-1 at 1595.5m is interpreted

to lie within Unit D based on current understanding of microplankton ranges.

8. The oldest unit penetrated in Vaughan-1 is the Eumeralla Formation between 1692-2014m (T.D.). The lithology of the five sidewall cores over this interval comprised blue-grey feldspathic sandstone and medium grey claystone or siltstone (Table 4). The sandstone lithologies were considered unlikely to yield diagnostic assemblages so only the two sidewall cores with finer grained lithologies were analysed to give a Late Albian *P. pannosus* Zone age. The spore-pollen composition and abundance show most similarity to assemblages from the *P. pannosus* Zone sections in Langley-1 and are significantly different from assemblages in Howmains-1.

9. The Cretaceous/Tertiary (K/T) boundary shale Vaughan 1 between 870-898m was sampled with four sidewall cores. Although the recorded assemblages contained moderate to diverse spore-pollen they lacked key index species, and unfortunately the associated microplankton were rare and/or of low diversity. Consequently the resulting age assignments are given only low confidence ratings and the observations whilst consistent with results from the K/T boundary shale in other wells do not provide any new insights to understanding the age and correlation potential of this unit.

Biostratigraphy

The zone and age determinations for the Cretaceous samples are based on the Australia wide Mesozoic spore-pollen and microplankton zonation schemes described by Helby, Morgan & Partridge (1987). For the Tertiary zone and age determinations are based on the spore-pollen zonation scheme of Stover & Partridge (1973) with subsequent unpublished modifications.

Author citations for most spore-pollen species can be sourced from Helby, Morgan & Partridge (1987), Dettmann (1963) Stover & Partridge (1973) or other references cited herein. Author citations for dinoflagellates can be found in the indexes of Lentin & Williams (1993) or other references cited herein. Species names followed by "ms" are unpublished manuscript names.

***Lygistepollenites balmei* Zone.**
Interval: 803.0 - 883.0 metres.
Age: Paleocene.

The three samples assigned to the *L. balmei* Zone contain high diversity assemblages of spore-pollen but comparatively few index species. The total

diversity was 53+ species, but of this 15% were distinctive reworked species mainly derived from the Early Cretaceous or Permian.

The shallowest sample at 803m can be no older than Upper *L. balmei* Zone on presence of *Proteacidites grandis* and *Banksieaidites elongatus* and no younger on presence of eponymous species and *Australopollis obscurus*.

The samples at 874m and 883m are no older than the Lower *L. balmei* Zone on presence of *Haloragacidites harrisii* and no younger on presence of *Proteacidites angulatus* at 874m. The presence of *Beaupreaidites orbiculatus* Dettmann & Jarzen 1988 suggests a position low in the zone.

The associated microplankton in the three samples are of low diversity and whilst supporting a Paleocene age do not allow finer age dating.

Upper *Tricolporites longus* Zone.
Interval: 889.0 - 895.0 metres.
Age: Late Maastrichtian.
The two samples assigned to the zone although of moderate to high diversity contain very few index species. The shallowest sample is assigned to the zone primarily on several specimens of *Proteacidites otwayensis* ms. The lack of other restricted species means the zone assignment has low confidence. The deeper sample contains the extra index species *Proteacidites wahooensis* ms and *Tricolporites lilliei* neither of which range above this zone. An age no older than the Upper subzone is firmly constrained by the consistent presence of *Stereisporites* (*Tripunctisporis*) spp. Both samples are dominated by small nondescript *Proteacidites* pollen.

***Manumiella druggii* Zone.**
Interval: 895.0 metres.
Age: Late Maastrichtian.
Although both samples assigned to Upper *T. longus* Zone contain rare microplankton only the deeper sample can be assigned to *M. druggii* Zone on presence of *Manumiella conorata* and a possible apical fragment of *M. seelandica*.

***Nothofagidites senectus* Spore-pollen Zone**
and *Nelsoniella aceras* Microplankton Zone.
Interval: 1164.0 metres.
Age: Early Campanian.
The sample is assigned to the *N. senectus* Zone on the occurrence of a single recorded specimen of the eponymous species. The rest of the spore-pollen

assemblage is dominated by *Proteacidites* spp. (20%) and *Podocarpidites* spp. (17%) and whilst consistent with this assignment contains no other diagnostic taxa.

The microplankton assemblage is much more diagnostic with the present of *Nelsoniella aceras, N. tuberculata* and *Amphidiadema nucula* (represented by transitional morphology to *Xenikoon australis*) all supporting the zone assignment.

***Phyllocladidites mawsonii* Zone** (formerly the *Clavifera triplex* Zone).
Interval: 1828.0-1887.5 metres (60+ metres). 1595.5 - 1692.5 ✱
Age: Turonian-Coniacian.
The nine samples assigned to the *P. mawsonii* Zone can be subdivided into two subzones based mainly on the range of *Hoegisporis trinalis* ms.

The lower subzone represented by the six samples between 1622-1692.5m is characterised by the consistent and often frequent occurrence of *H. trinalis* ms, *Appendicisporites distocarinatus*, *Rugulatisporites admirabilis* ms and *Laevigatosporites musa* ms with only the very rare occurrence of the eponymous species *P. mawsonii* (at 1674m and 1631m). Other rare species from this lower interval include angiosperms *Striatopollis paraneus* and *Australopollis obscurus*. These samples correlate well with assemblages documented from the Waarre Units A and B in Langley 1 and Howmains 1 (Partridge 1994b, c).

The upper subzone represented by the three samples between 1595.5-1609m is characterised by higher abundances of *Gleicheniidites circinidites* but otherwise is rather non descript. The overall character of the assemblages does however change with the incoming of abundances of the enigmatic algal cyst *Amosopollis cruciformis*. Important LADs (Last Appearance Datums) include *Rugulatisporites admirabilis* ms and *Laevigatosporites musa* both at 1599.5m.

***Palaeohystrichophora infusorioides* Zone.**
Interval: 1595.5-1692.5 metres (97+ metres).
Age: Turonian.
As with other wells recently analysed from the Otway Basin the *P. infusorioides* Zone is identified on the absence of index species *Pseudoceratium ludbrookiae* and the significant accessory species *Litosphaeridium siphoniphorum* and *Canninginopsis denticulata* diagnostic of the underlying *D. multispinum* Zone and absence of *Conosphaeridium striatoconus* whose FAD defines the base of the overlying zone. The zone is therefore recognised on negative evidence as originally defined by Helby *et al.* (1987, p.62). In Vaughan-1 the zone has an average microplankton diversity of 7+ species/sample and a total diversity of 25+ species

in the seven marine samples. Only the oldest of three subzones established in Langley-1 could be recognised in Vaughan-1.

***Cribroperidinium edwardsii* Subzone.**
Interval: 1650.0 metres
Age: Turonian.
This zone was originally defined in Iona-2 and Langley-1 palynological reports (Partridge 1994a, b). In Vaughan-1 it was only confidently recorded in the sample with the highest microplankton abundance in the lower part of the Waarre Formation based on the presence of rare and fragmented specimens of *Cribroperidinium edwardsii*. The other species recorded in the sample are all long ranging forms previously recorded from the zone. The possible record of the species on the range chart at 1674m is based on opercula only and must be treated with caution.

***Phimopollenites pannosus* Zone.**
Interval: 1797.0-1899.0 metres.
Age: Late Albian.
The two samples analysed from the Eumeralla Formation are assigned to the zone on the presence of the eponymous species *P. pannosus* at 1797m and other tricolpate pollen at 1899m. The assemblages are dominated by *Podocarpidites* spp. *Cyathidites* spp. and *Baculatisporites* spp. which together with frequent to common *Corollina torosa* makes them compositionally distinct from the over lying Waarre Formation assemblages. Although the deep sidewall core sample was apparently well cleaned it did contained some obvious down-hole contaminants.

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Table-3: Interpretative Palynological Data for Vaughan-1, Otway Basin

Sample Type	Depth (m)	Spore-pollen Zone	*CR	Microplankton Zones and (Subzones)	*CR	Comments and Key Species
SWC 24	803.0	Upper *L. balmei*	B3			FAD *Proteacidites grandis*.
SWC 23	874.0	Lower *L. balmei*	B3			LAD *Proteacidites angulatus*. Microplankton rare only *Deflandrea speciosus* significant.
SWC 22	883.0	Lower *L. balmei*	B5			Age dating weak as key index species were not recorded. Microplankton extremely rare and not diagnostic.
SWC 21	889.0	Upper *T. longus*	B5			Concentration of palynomorphs very low with high diversity of reworked species. Zone pick of low confidence based on multiple specimens of *Proteacidites otwayensis* ms.
SWC 20	895.0	Upper *T. longus*	B3	*M. druggii*	B3	*Proteacidites* spp. dominant at >40%. *Manumiella conorata* present. FAD *Stereisporites (Tripunctisporis)* spp.
SWC 19	1164.0	*N. senectus*	B3	*N. aceras*	B3	*Nelsoniella aceras* and *N. tuberculata* present.
SWC 18	1595.5	*P. mawsonii*	B5	*P. infusorioides*	B3	LAD *Kiokansium polypes*.
SWC 17	1599.5	*P. mawsonii*	B3			LAD *Rugulatisporites admirabilis* ms. Deltaic or coastal plain environment dominated by *Gleicheniidites* spp. <45%.
SWC 15	1609.0	*P. mawsonii*	B4	*P. infusorioides*	B5	*Amosopollis cruciformis* >18%.
SWC 13	1622.0	*P. mawsonii*	B2	*P. infusoroides*	B5	LAD *Hoegisporis trinalis* ms. and *Appendicisporites distocarinatus*.
SWC 12	1631.0	*P. mawsonii*	B1	*P. infusorioides*	B5	FADs for good *Phyllocladidites mawsonii, Clavifera triplex* and *Laevigatosporites musa* ms.
SWC 11	1650.0	*P. mawsonii*	B2	*P. infusorioides (C. edwardsii)*	B3	*Cribroperidinium edwardsii* Acme.
SWC 9	1674.0	*P. mawsonii*	B2	*P. infusorioides*	B5	FAD of poor *P. mawsonii*.
SWC 7	1689.0	*P. mawsonii*	B3			Moderate diversity assemblage with *H. trinalis* ms and *Appendicisporites distocarinatus*. No microplankton recorded from this sample.
SWC 6	1692.5	*P. mawsonii*	B2	*P. infusorioides*	B5	Reliable Waarre assemblage from claystone fraction of SWC.
SWC 4	1797.0	*P. pannosus*	B2			*Phimopollenites pannosus* present in spore dominated assemblage with *Classopollis* spp. common at 9%.
SWC 2	1899.0	*P. pannosus*	B4			*Tricolpites* sp. and *Perotrilites majus* present. Some downhole contamination present.

*CR = Confidence Ratings
LAD = Last Appearance Datum
FAD = First Appearance Datum

Confidence Ratings

The Confidence Ratings assigned to the zone identifications on Table-4 are quality codes used in the STRATDAT relational database being developed by the Australian Geological Survey Organisation (AGSO) as a National Database for interpretive biostratigraphic data. Their purpose is to provide a simple relative comparison of the quality of the zone assignments. The alpha and numeric components of the codes have been assigned the following meanings:

Alpha codes: Linked to sample type

- **A** Core
- **B** Sidewall core
- **C** Coal cuttings
- **D** Ditch cuttings
- **E** Junk basket
- **F** Miscellaneous/unknown
- **G** Outcrop

Numeric codes: Linked to fossil assemblage

1	**Excellent confidence:**	High diversity assemblage recorded with key zone species.
2	**Good confidence:**	Moderately diverse assemblage recorded with key zone species.
3	**Fair confidence:**	Low diversity assemblage recorded with key zone species.
4	**Poor confidence:**	Moderate to high diversity assemblage recorded without key zone species.
5	**Very low confidence:**	Low diversity assemblage recorded without key zone species.

BASIC DATA

Table 4: Basic Sample Data - Vaughan-1, Otway Basin.

SAMPLE TYPE	DEPTH (Metres)	REC (cm)	LITHOLOGY	SAMPLE WT (g)	RESIDUE YIELD
SWC 24	803.0	4.5	Blk glauconitic? claystone. Firm sample well cleaned.	12.0	Moderate
SWC 23	874.0	4.3	Blk pyritic very fine sandstone. Minor burrowing possibly glauconitic. Firm sample well cleaned.	9.3	Moderate
SWC 22	883.0	4.3	Brown-dk grey coarse grained sandstone with dk grey clay matrix. Sample firm but may be mud penetrated. Poorly cleaned.	9.7	Moderate
SWC 21	889.0	4.0	Dk gry-blk homogeneous siltstone. No structure or obvious accessories. Firm sample well cleaned. With floating sand grains of quartz up to 2mm - sample more a sandstone.	9.4	High
SWC 20	895.0	4.0	Dk gry-bk homogeneous sandstone. No obvious structure. Well cleaned firm. Floating quartz grains up to 1.5mm.	10.1	High
SWC 19	1164.0	3.5	Mixed lithologies, Lt grey fine grained sst and dk-med grey claystone. Contact irregular. Sample soft but well cleaned.	6.7	Moderate
SWC 18	1595.5	3.0	Medium grey mottled sandstone with patchy clay matrix. Firm sample well cleaned.	10.5	Moderate
SWC 17	1599.5	<1.0	Med grey-dk grey claystone with carbonaceous lenses. Firm, well cleaned.	2.7	High
SWC 15	1609.0	1.8	Dk grey fillile (irregular) claystone. Well cleaned/firm.	5.4	High
SWC 13	1622.0	2.5	Dk brown grey claystone with thin <1mm light grey siltstone laminae. Firm, well cleaned.	7.8	High
SWC 12	1631.0	2.5	Med grey claystone with thin <1mm light grey silstone laminae. Firm, well cleaned.	7.9	High
SWC 11	1650.0	3.0	Med grey mottled sandstone, possibly glauconitic.	8.2	High
SWC 9	1674.0	<1.5	Dark grey soft claystone. Not cleaned.	3.7	High
SWC 7	1689.0	2.5	Med grey claystone with light grey fine grained sandstone laminae up to 1.5mm. Firm sample well cleaned.	7.3	High
SWC 6	1692.5	2.7	Mostly 60% light grey feldspathic sandstone with med grey claystone. Only latter processed - well cleaned.	5.3	Moderate
SWC 4	1797.0	3.0	Medium grey clayey siltstone. Well cleaned/firm.	8.6	Moderate
SWC 2	1899.0	1.8	Med grey - blue grey homogeneous claystone. Firm, well cleaned.	6.4	Moderate

Table-5: Basic Palynomorph Data for Vaughan-1, Otway Basin.

SAMPLE TYPE	DEPTH (metres)	Palynomorph Concentration	Palynomorph Preservation	No. S-P spp*	Microplankton Abundance	No MP Species*
SWC 24	803.0	Moderate	Good	39+	Frequent	6+
SWC 23	874.0	Moderate	Good	42+	Rare	5+
SWC 22	883.0	Low	Good	30+	Rare	2+
SWC 21	889.0	Very low	Fair-good	21+	Rare	3+
SWC 20	895.0	Low	Poor-good	31+	Frequent	7+
SWC 19	1164.0	Moderate	Low	33+	Common	8+
SWC 18	1595.5	Moderate	Poor-fair	21+	Abundant	12+
SWC 17	1599.5	Moderate	Poor-fair	16+	Very rare	1
SWC 15	1609.0	Moderate	Fair-good	17+	Common	5+
SWC 13	1622.0	Moderate	Poor-fair	33+	Rare	4+
SWC 12	1631.0	Moderate	Poor-fair	21+	Frequent	6+
SWC 11	1650.0	Low	Poor-fair	23+	Frequent	11+
SWC 9	1674.0	Low	Fair	27+	Rare	6+
SWC 7	1689.0	Low	Fair	25+	NR	
SWC 6	1692.5	Moderate	Poor	25+	Frequent	5+
SWC 4	1797.0	Moderate	Fair	22+	Very rare	1
SWC 2	1899.0	High	High	21+	Rare	3+

***Diversity:**

Very low	=	1-5 species
Low	=	6-10 species
Moderate	=	11-25 species
High	=	26-74 species
Very high	=	75+ species
NR	=	Not recorded in sample

PE900753

This is an enclosure indicator page.
The enclosure PE900753 is enclosed within the container PE900876 at this location in this document.

The enclosure PE900753 has the following characteristics:

ITEM_BARCODE	= PE900753
CONTAINER_BARCODE	= PE900876
NAME	= Microplankton Range Chart
BASIN	= OTWAY
PERMIT	= PPL 1
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Microplankton Range Chart (enclosure from WCR) for Vaughan-1
REMARKS	=
DATE_CREATED	= 23/05/95
DATE_RECEIVED	=
W_NO	= W1124
WELL_NAME	= Vaughan-1
CONTRACTOR	=
CLIENT_OP_CO	= GFE Resources Ltd

(Inserted by DNRE - Vic Govt Mines Dept)

PE900754

This is an enclosure indicator page.
The enclosure PE900754 is enclosed within the container PE900876 at this location in this document.

The enclosure PE900754 has the following characteristics:

ITEM_BARCODE	= PE900754
CONTAINER_BARCODE	= PE900876
NAME	= Spore-Pollen Range Chart
BASIN	= OTWAY
PERMIT	= PPL 1
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Spore-Pollen Range Chart (enclosure from WCR) for Vaughan-1
REMARKS	=
DATE_CREATED	= 23/05/95
DATE_RECEIVED	=
W_NO	= W1124
WELL_NAME	= Vaughan-1
CONTRACTOR	=
CLIENT_OP_CO	= GFE Resources Ltd

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURES

Enclosures . . . . .

ENCLOSURE 1

COMPOSITE LOG

PE600678

This is an enclosure indicator page.
The enclosure PE600678 is enclosed within the container PE900876 at this location in this document.

The enclosure PE600678 has the following characteristics:

ITEM_BARCODE	= PE600678
CONTAINER_BARCODE	= PE900876
NAME	= Composite Well Log
BASIN	= OTWAY
PERMIT	= PPL/1
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Composite Well Log (enclosure 1 from WCR) for Vaughan-1
REMARKS	=
DATE_CREATED	= 6/03/95
DATE_RECEIVED	= 17/01/96
W_NO	= W1124
WELL_NAME	= Vaughan-1
CONTRACTOR	= GFE Resources Ltd
CLIENT_OP_CO	= GFE Resources Ltd

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 2

FORMATION EVALUATION LOG

(MUD LOG)

& GAS RATIO ANALYSIS PLOT

PE600679

This is an enclosure indicator page.
The enclosure PE600679 is enclosed within the container PE900876 at this location in this document.

The enclosure PE600679 has the following characteristics:

ITEM_BARCODE	= PE600679
CONTAINER_BARCODE	= PE900876
NAME	= XLBase Gas Ratio Analysis Log
BASIN	= OTWAY
PERMIT	= PPL/1
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= XLBase Gas Ratio Analysis Log (enclosure 2 from WCR) for Vaughan-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 17/01/96
W_NO	= W1124
WELL_NAME	= Vaughan-1
CONTRACTOR	= Baker Hughes Inteq
CLIENT_OP_CO	= GFE Resources Ltd

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 3

LOG ANALYSIS RESULTS

PE600680

This is an enclosure indicator page.
The enclosure PE600680 is enclosed within the container PE900876 at this location in this document.

The enclosure PE600680 has the following characteristics:

ITEM_BARCODE	= PE600680
CONTAINER_BARCODE	= PE900876
NAME	= Complex Lithology Model
BASIN	= OTWAY
PERMIT	= PPL/1
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Complex Lithology Model, CPI, (enclosure 3 from WCR) for Vaughan-1
REMARKS	=
DATE_CREATED	= 16/01/96
DATE_RECEIVED	= 17/01/96
W_NO	= W1124
WELL_NAME	= Vaughan-1
CONTRACTOR	= GFE Resources Ltd
CLIENT_OP_CO	= GFE Resources Ltd

(Inserted by DNRE - Vic Govt Mines Dept)