DEPT. NAT. RES & ENV
PE908259

LAKES OIL N.L.

(A.C.N. 004 247 214)

YORK NO. 1
WELL COMPLETION REPORT
GIPPSLAND BASIN, VICTOIRA
PEP 158

By
J.A. Mitchell & J.N. Mulready

908259 002

LAKES OIL N.L.

A.C.N. 004 247 214

YORK No. 1

WELL COMPLETION REPORT

PEP 158 - VICTORIA

by

J.A. MITCHELL & J.N. MULREADY

Lakes Oil N.L.
Level 11,
500 Collins Street
MELBOURNE 3000

December, 2002

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

TABLE OF ATTACHMENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ENCLOSURES (Pocket)

This is Page Number **908259 006X**

This is an enclosure indicator page.

The page that follows this page is an uncatalogued fold-out (or A4 colour) with page number:

908259 006Y

and is enclosed within the document **PE908259** at this page.

[redacted]

908259 006Y

908259 006Y

REFER TO THIS MAP AS: SHEET 8220 (EDITION 1)

NATIONAL TOPOGRAPHIC MAP SERIES

DT ET

YARRAM

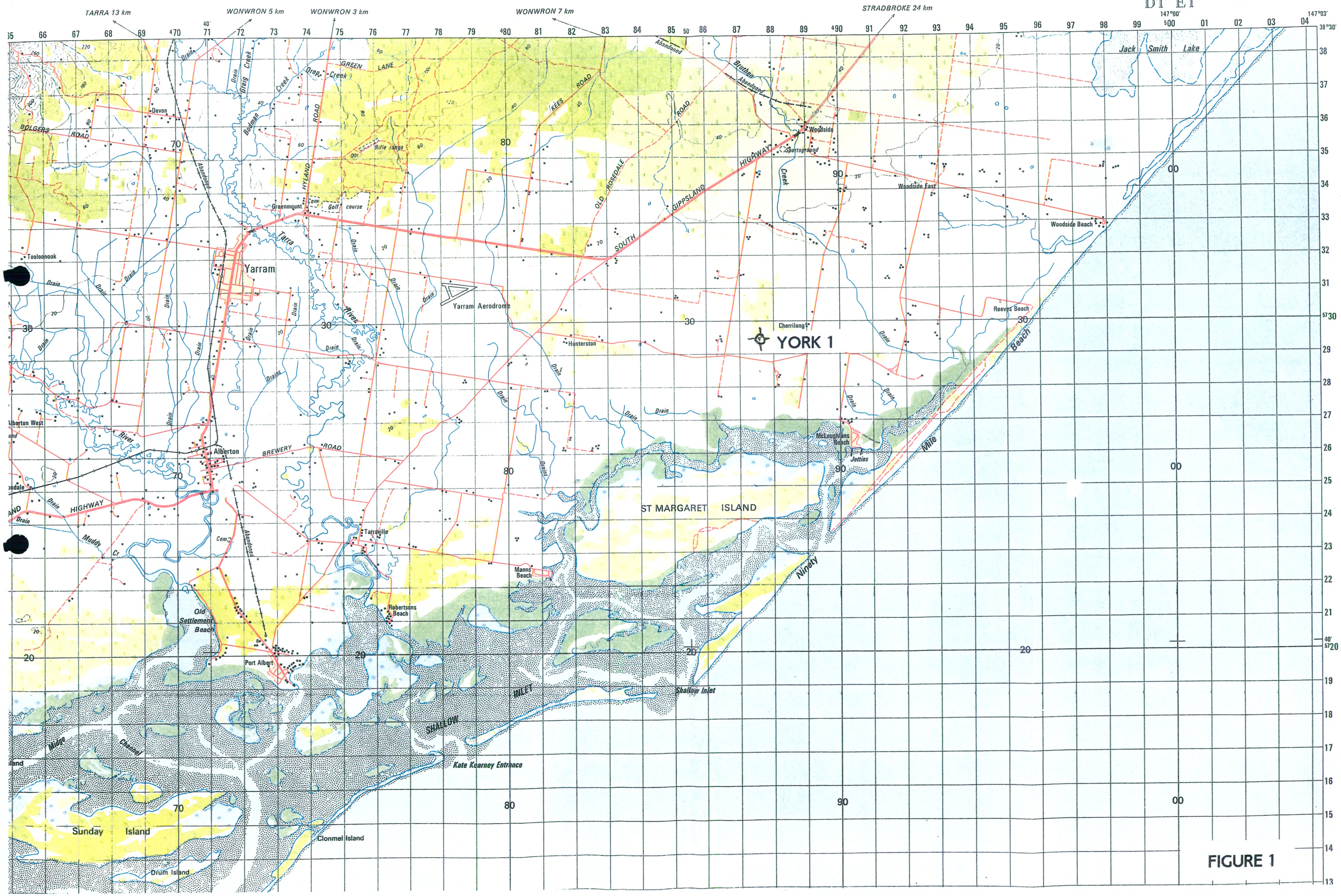


FIGURE 1

908259 007

1.0 SUMMARY

York-1 was was the first well to be drille by Lakes Oil in PEP 158 of the Gippsland Basin, and was located approximately 16 kilometres east of Yarram and 7 km south of the township of Woodside. The closest wells were Woodside South-1(1965), approximately 5 kilometres to the east and Gippsland Frome Lake-3 (1956), 2 kilometres to the south west.

York-1 was drilled to assess the hydrocarbon potential of a robust four-way dip closure with Latrobe Group sands as the primary target, with the underlying non-conformable Strzelecki Formation sands as a secondary target. A glauconitic sand at the base of the Lakes entrance Formation provided another secondary target.

York-1 spudded on March 01st , 2001 and surface hole (311 mm./12.25") was drilled to 441m. Surface casing (244 mm./9.625") was set at 433.0m and 216 mm. (8.5") hole was drilled to 522.7m. Core-1 was then cut over the basal glauconitic sand in the Lakes Entrance Formation and the top of the Latrobe Group. After coring, 216 mm. (8.5") hole was drilled to 883.0m and intermediate logs were run. A decision was then made to deepen the well to 907.0m, and intermediate casing was set at 903.0m. Following this, 156mm hole was drilled to 1117.9m, where core-2 was cut over a Strzelecki Formation sand. Drilling then continued to a total depth of 1200 m, which was reached on the 14th March 2002.

At York-1 a typical western on-shore Gippsland Basin sedimentary section was encountered, with a highly weathered basalt intersected between the Latrobe and Strzelecki Groups. The first secondary target, the glauconitic sand at the base of the Lakes Entrance Formation, was present as predicted, but the sand had no hydrocarbon shows and very poor reservoir quality.

The primary target, the Latrobe Group sands, were intersected 5.0m high to prognosis and approximately 40.0m high to the nearby Frome Lake Gippsland-3 well. This confirmed the structure at the York-1 location. No significant hydrocarbon shows were encountered within the Latrobe Group.

The secondary target, Strzelecki Group sands were intersected 56.5m low to prognosis. The sands were approximately 22.5m high to the nearby Woodside South-1 well, but they also had no significant hydrocarbon shows. Reservoir quality was poor to fair.

908259 008

After logging, as no economic hydrocarbon shows were observed, abandonment plugs were run and the rig was released on the 16th March 2002.

908259 009

2.0 WELL HISTORY

2.1 General Data

2.1.1	Well Name and Number	:	YORK No.1
2.1.2	Location	:	Latitude : 38°34'57.40"S Longitude : 146°51'36.96"E Easting : 487 829.35 Northing : 5 729 515.75 Seismic : VP 318 Line LGY00-04
2.1.3	Elevations	:	G.L. : 11.21m. A.S.L. K.B. : 13.21m. A.S.L.
2.1.4	Petroleum Tenement	:	PEP 158
2.1.5	Name of Operator	:	LAKES OIL N.L. A.C.N. 004 247 214 11th Level, 500 Collins Street, MELBOURNE 3000
2.1.6	Other Participants	:	Amity Oil NL (5% Royalty)
2.1.7	Date Drilling Commenced:		0000 hours 01st March, 2002
2.1.8	Date Drilling Completed	:	2030 hours 14th March, 2002
2.1.9	Date Rig Released	:	0900 hours 16th March, 2002
2.1.10	Drilling Time to T.D.	:	4.6 days
2.1.11	Total Depth	:	Driller : 1200.0m. Logger : 1196.0m.
2.1.12	Status	:	Plugged and Abandoned.

2.2 Rig Data

2.2.1	Drilling Contractor	:	Sides Engineering Pty Ltd 25 Garden Road, Clayton, VIC, 3168
2.2.2	Rig	:	No.16 Cardwell HL
2.2.3	Draw Works:		Cardwell Double Drum with water-cooled double brakes total area 1832 sq inch. Mechanical clutches band type self energising. 1 ½" ASA duplex drive chain 68,000 lbs rated. Main Drum is Lebus lagged.
2.2.4	Draw Works Engines:		Two General Motors 6/71N total 440 hp diesel engines with 5 speed synchromesh Mack transmission. 1 1/4" ASA triplex compound.
2.2.5	Substructure:		Raised earthen pad. Rig weight bears directly on ground. Concrete lined cellar and surrounding 1.2 metres raised above ground level concrete pad for stable load bearing. 8'3" minimum clearance below rotary table and ground. Rear steel substructure 8'5" high above ground level with floor area 14' 5" wide and 5'3" deep behind table 3' wide walkways on either side of rig, one has a doghouse on the driller's side. Total loading 250,000 Lbs.
2.2.6	Cellar Size:		2m X 1.3m X 1.5m Deep (below ground level)
2.2.7	Rotary Table:		Brewster OB18. torque tube driven Rated capacity 167 tons static

		Rated capacity 83.5 tons dynamic Baasch Ross Roller drive bushing Speed 25 to 250 rpm, torque 25,000 ft/lb
2.2.8	Catwalk:	Two each 3' wide full length of rig each with guide rails and steps.
2.2.9	Mast:	Telescoping lattice mast fabricated using 114mm tubular main members and 73mm cross braces. Hydraulic raised and then telescoped with block and bridle designed for 150,000 lbs without guys and 250,000 lbs with guys. Has been inspected and was certificated for 160,000 lbs to AS 1418 in 2000. Monkey board will rack 8,000' drill string and collars in 60' stands. Crown saver installed.
2.2.10	Crown Block:	Four main steel roller bearing sheaves grooved 1 1/8" line 30 inch diameter steel, 5" shaft. One rear carry over sheave. 1 x Sandline Sheave grooved for 9/16" line
2.2.11	Swivel:	National N-35 Rating 184 tons static, 112 tons dynamic. 4000 psi working 8,000 psi test 2 ¼" opening.
2.2.12	Kelly:	3 ½" square drive, 40' long.
2.2.13	Catheads:	Two manual Catheads.
2.2.14	Travelling Block:	One National Ideal 42" triple sheaves 160,000 lb dynamic rating with 6' long links. Ropes 1" 6x37 I.W.R.C 37.5 ton tensile 6 falls.
2.2.15	BOP's:	Cameron 7 1/16" twin gate space saver with blind and 3 ½" pipe rams 3000 psi

rated. One (1) Hydril 7 1/16" 3000 psi annular.

2.2.16 Accumulator: Hydril 4 station 90 gallon.

2.2.17 Mud Tanks: Two skid mounted steel mud tanks each 8' X 4' X 40'.

Sand trap section	20 bbls
Desilter section	60 bbls
Suction Tank	120 bbls
Settling Tank	50 bbls.
Total capacity	250 bbls.
Mud Mixing tank c/w pump	25 bbls

2.2.18 Mud Pumps: Two Ideco Model T-440 double-acting triplex pumps, belt driven by two GM 6/71 440 BHP diesels. Each fitted with 3" Cameron type B safety valves. Rating each pump: 7 ¼" liners 805 gpm @ 800 psi. 6 1/2" Liners 640 gall/min @ 1000 psi. 5" Liners 306 gall/min @ 1783 psi.

2.2.19 Mixing/Cement Pump: Gardner Denver 5 X 6 duplex powered by 90 hp Diesel motor.

2.2.20 Shale Shaker: Dual screen Linear motion Shaker.

2.2.21 Instruments: Two Cameron 5000 psi mud gauges. Pump speed. Martin-Decker type FS weight indicator 160 load cell. Make-up torque indicator.

2.2.22 Drill String: 240 joints 3-1/2" drill pipe c/w 3.1/2" IF connections 13.5 lbs/ft grades G and E premium.
Two 3-1/2" IF pup joints 6 ft & 10 ft.
12 x 6" slick collars 64 lbs/ft, 4 ½" FH connections.
12 x 4 ¾" collars spiral 45 lbs/ft 3-1/2" IF connections.

2.2.23 Handling Equipment:

Elevators
Two set of 3½" 150 ton 18 degree elevators.
One set of 3½" 100 ton square neck tubing elevators.
One set 9-5/8" side door casing elevators.
One set 7" single joint casing elevator
One set 7" 100 ton side door casing elevators.
One set 5-1/2" single joint casing elevators.
One set 4-1/2" 100 ton side door casing elevators

Slips
Two set 3½" drill pipe slips.
One set 4¾" drill collar slips.
One set 6" drill collar slips.
One Baasch Ross Dog Collar 3-1/2" – 9-5/8"

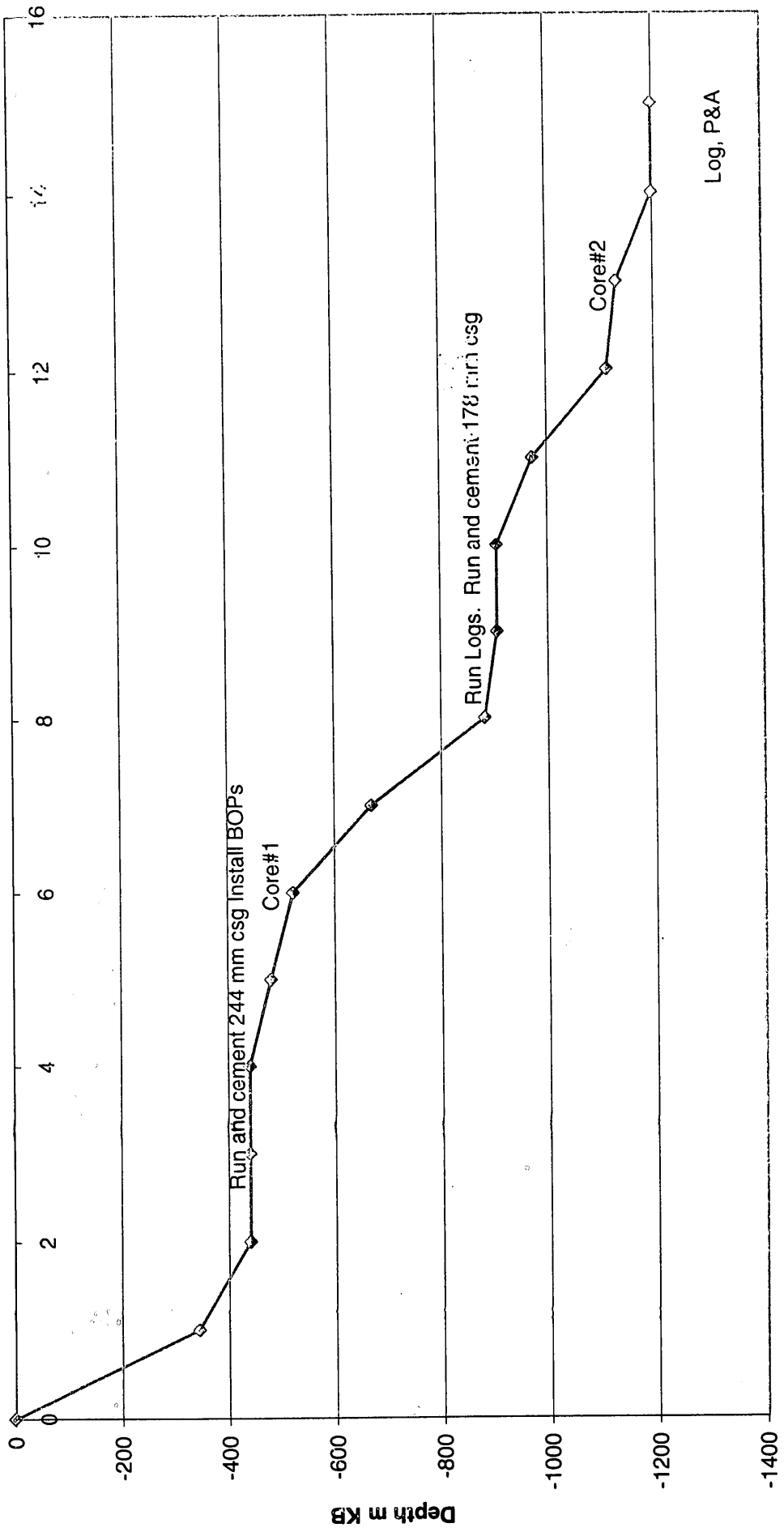
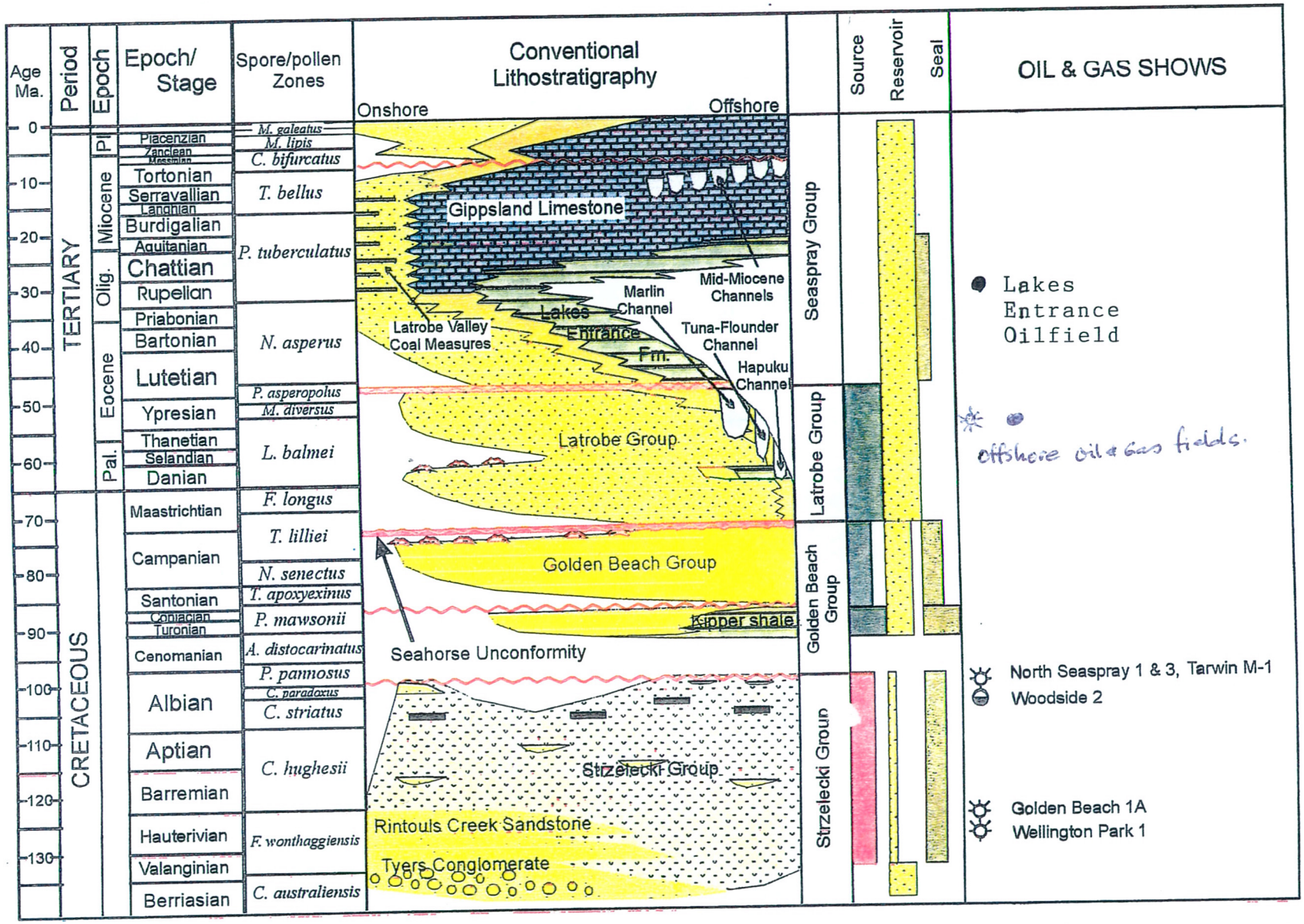

Time vs Depth York-1
Depth m KB
Days
0
-200
-400
-600
-800
-1000
-1200
-1400
2
4
6
8
10
12
16
Run and cement 244 mm csg Install BOPs
Core#1
Run Logs. Run and cement 178 mm csg
Core#2
Log, P&A

Figure 2



LITHOSTRATIGRAPHY
GIPPSLAND BASIN

FIGURE 3

9008259 015

908259 016

2.3 Drilling Data

2.3.1 The following is the daily operations summary for York-1. It has been compiled from the tour sheets and daily drilling reports. Onsite drilling supervision for Lakes Oil N.L. was provided by P. Dwyer. Further details are provided in the time/depth curve (Figure 2) and the time analysis chart (Figure 3).

The depths in the following summary are those reached at 2400 hours on each day with the operations given for the previous 24 hour period.

Date	Depth	Operation
01.03.02	344.0m.	Held pre-spud meeting with night crew and service - personnel (2200hs to 2400hrs – 28 Feb) - Spud York-1. Drilled 311mm hole from surface to 90m. Held pre-spud meeting with day crew and service personnel. Drilled to 98m. Rig repair to #1 pump rod packing Drilled to 125m. Light mud losses +/- 10 bph. Rig repair to DP slips. Drilled to 344m. Intermittent mud losses to 30 bph through bottom of Jenny's Point Fm.
02.03.02	441.0m.	Drill 311mm hole from 344m to 412m. Rig repair to pump #1 liner seal. Drill to 441m. Wiper trip to 68m. Hole condition good. Rig line. Break circulation through bit. RIH to bottom. No fill. Circulate hole clean. POH to run casing. Rig to run casing. Run 37 jts 244mm 36# K55 R3 casing.
03.03.02	441.0m.	Pick up landing joint. Land 244mm casing at 433m. Circulate casing. Cement 244mm casing with 10 cu.m 15.6ppg cement. Displace cement. Bump plug with 4500 kPa. Wait on cement. Rig out conductor. Laid out landing joint. Top annulus with 20sx cement. Remove rotary table and rotary beam. Install casing head and BOP's.
04.03.02	441.0m.	Install BOP's. Function test. Rig repair. Wait on kelly hose. Laid out 311mm bit and bit sub. RIH with 216mm BHA
05.03.02	481.0m.	RIH. Tag cement wiper plug at 422m. Test BOP's. Drill cement, shoe track and 311mm

rathole to 441m. Drill 216mm hole to 446m. Circulate hole clean. FIT = 11.1 ppge. Dump and clean mud tanks. Displace hole to KCl/PHPA mud. Rig repair to liner swabs on pump #1. Drill to 460m. Rig repair to rotary drive. Drill to 465m. Circulate sample. Drill to 480m. Rig repair to pump clutches/throttles. Drill to 481m. POH. Cleaned out bit nozzles and float. RIH.

06.03.02 522.7m. RIH with bit #2RR. Drill 216mm hole from 481m to 517m. Circulate sample. Drill to 520m. Circulate sample. Drill to 522.7m. Circulate and raise mud weight to 1.13 SG. POH. Make up core bbl. RIH. Ream tight hole from 450m to 519m.

07.03.02 670.0m. Ream tight hole from 519m to 522.7m. Cut core #1 from 522.7m to 533m. Circulate sample Core to 535m and circulate sample. Core to 537m and circulate sample. Core to 539.2m. Circulate sample. POOH. Chain out. Recover core. 11.2m = 70% Lay down core bbl. RIH with bit. Drill 216mm hole from 539.2m to 670m.

08.03.02 883.0m. Drill 216mm hole from 670m to 862m. Circulate sample. Drill to 883m. Circulate hole clean. Wiper trip to 509m. Minor overpull 650m to 540m. RIH to bottom. No fill. Circulate and condition mud. POH.

09.03.02 907.0m. POH. Rig up Schlumberger. Log to TD Pick up new bit. RIH. Ream under-gauge hole from 875m to 883m. Drill 216mm hole from 883m to 907m. Circulated hole clean. POH. Rig to run casing. Run 178mm casing.

10.03.02 907.0m. Run 178mm casing to 903m. Circulate and condition hole. Pump 7 cu.m cement. Displace with mud. Plug not Bumped. WOC. Set slips with 50klbs tension. Dump mud tanks and clean same. Cut 178mm casing and dress stub. Nipple up BOP's. Lay down 6" drill collars

11.03.02	974.0m.	Test BOP's to 10,000kPa. Rig repair. Clean out 4-3/4" DC's. Pick up 156mm BHA. Circulate DC's at high rate to clean. RIH. Tag bridge at 814m. Lay down 8 singles. RIH with 4 stands. Wash from 814m to 860m. Drill cement, float equipment and rathole to 907m. Drill 156mm hole from 907m to 911m. Circulate and FIT. 11.2 ppge. Dump mud tanks and clean same. Drill to 916m. Displace to KCl/polymer/Glycol mud. Circulate sample. Drill to 931m. Circulate sample. Drill to 965m. Circulate sample. Drill to 974m.
12.03.02	1117.0m.	Circulate sample at 974m. Drill 156mm hole from 974m to 1000m. Circulate sample. Drill to 1096m. Raised mud weight to 1.07 due to minor cavings. Circulate sample. Drill to 1099m. Circulate sample. Drill to 1104m. Circulate sample. Drill to 1108m. Circulate sample. Drill to 1117m.
13.03.02	1132.2m.	Drill 156mm hole to 1117.9m. Circulate sample. Make 11 stand wiper trip to 907m. Wash 6m fill. Circulate hole clean. POH. Make-up core bbl. RIH. Wash core bbl to bottom. Cut core #2 from 1117.9m to 1132.2m Rig repair to rotary. POH to shoe. Shut-in well and repair. RIH. Bridge at 978m. Wash through bridge to 990m. Mix pill. POH.
14.03.02	1200.0m.	Lay down core. Recover 4.9m = 34%. Lay down bbl. RIH with drilling BHA to 800m. Break circulation. RIH to 1117m. Wash through bridge at 990m. Ream core track from 1117.9m to 1132.2m. Drill 156mm hole from 1132.2m to 1200m. Circulate sample. Wiper trip to 1115m Circulate and condition hole. Pump weight pill. POH.
15.03.02	1200.0m.	POH with bit 4RR.Rig up Schlumberger. Run log 1: HALS-BHC-MCFL-DLD-BNL-GR. Log #2: CMR. Tool would not pass 917m. Rig down Schlumberger. RIH with open-ended drill pipe to

		927m. Circulate hole clean. Mix and pump 54sx cement plug over interval 927m to 860m. POH 5 stands to 831m. Circulate pipe clean. Lay down excess DP and DC's. Lay down kelly. Tag cement at 863m with 5,000kg. Test to 7000kpa.. Lay down DP. Rig down BOP's.
16.03.02	1200.0m.	Standby. Rig down BOP's. Set 20sx cement plug #2 from 40m to 5m. Release rig 0900 Hrs.

2.3.2 Hole Sizes and Depths :

12.25" / 311 mm. to 441.0m.
8.5" / 216 mm. to 907.0m.
6.125" / 156 mm. to Total Depth

2.3.3 Casing and Cementing :

Surface

Size -	9.625" / 244 mm.
Weight -	64.9kg/m.
Grade -	K55
Shoe Setting Depth -	433.0m.
Quantity of Cement -	10 cubic metres "A" 15.6 ppg Top up with 20 sx "A"

Intermediate

Size -	7" / 178mm.
Weight -	34.2kg/m.
Grade -	K55
Shoe Setting Depth -	903.0m.
Quantity of Cement -	7 cubic metres "A".

2.3.4 Deviation Surveys :

Depth (metres)	Deviation (degrees)	Depth (metres)	Deviation (degrees)	Depth (metres)	Deviation (degrees)
63	0.25	481	1.25	1118	0.75
189	0.50	523	1.75	1200	0.25
322	0.00	883	1.00		
441	1.00	907	MR		

2.3.5 Drilling Fluid :

(a) Spud - 441m. Type - Gel Spud Mud
Additives - Ausgel, Ausben, Caustic, Enerseal-F.

(b) 441 – 907m. Type - KCl – PHPA-Polymer
Additives - KCl Tech, PHPA, Auspac-R, Caustic, Soda Ash, Xantemp SD, Barytes, Biocide 25% Glute.

(c) 907 – 1200m. Type - KCl – Glycol-Polymer
Additives - KCl Tech, Glycol CP, Soda Ash, Auspac-R, Caustic, Xantemp SD, Barytes, Ausdex, Biocide 25% Glute.

908259 021

2.3.6 Physical Mud Properties :

Date	Wt.	Vis.	WL	FC	pH	PV/YP	Gels	K+	Solids	Cl-	Glycol
01/03	1.12	38	24	3	9	9/15	11/14	0	6.7	2000	
02/03	1.13	43	26	3	8.5	10/24	15/21	0	7.7	2200	
03/03											
04/03											
05/03	1.04	37	8.5	1	9.5	11/11	1/1	16750	1.2	17500	
06/03	1.15	43	7	1	8.5	18/24	5/6	13131	7.6	17000	
07/03	1.16	38	6.5	1	9	14/19	3/4	17293	5.5	20.5	
08/03	1.16	47	6.8	1	9	20/30	4/5	17293	6.3	20	
09/03	1.16	43	7.2	1	9.5	18/23	4/5	16212	6.5	19	
10/03											
11/03	1.05	37	7.5	1	8.5	10/10	1/1	38368	0.7	37000	6.3
12/03	1.12	34	5	1	8.5	7/6	1/1	51338	4	53000	6.3
13/03	1.13	32	7.4	1	8.5	6/5	1/1	55121	4.2	57000	5.3
14/03	1.17	42	7	1	8.5	17/20	2/3	59444	6.1	62000	5.3
15/03	1.17	42	7	1	8.5	17/20	2/3	59444	6.1	62000	5.3

Chemicals Used :

Product	Units	Amount
Aus Pac-R* (25 kg)	26 sacks	650 kg
Ausben (USA) (25 kg)	34 sacks	850 kg
Aus-Dex (25 kg)	15 sacks	375 kg
Ausgel (25 kg)	210 sacks	5250 kg
Barite (25 kg)	576 sacks	14400 kg
Biocide 25% Glut (25 kg)	4 sacks	100 kg
Caustic Soda (20 kg)	14 sacks	280 kg
Enerseal Fine (25 kg)	30 sacks	750 kg
Glycol CP (1500 kg)	2 sacks	3000 kg
KCl Tech (25 kg)	420 sacks	10500 kg
PHPA (25 kg)	4 sacks	100 kg
Soda Ash (25 kg)	4 sacks	100 kg
Xantemp SD (25 kg)	3 sacks	75 kg

2.3.7 Water Supply :

Water was obtained from a bore on site.
Pf / Mf 0/0.15, Cl 1950 mg/l, Hardness 360 mg/l

2.3.8 Perforation Record :

None

2.3.9 Plugging and Cementing :

Plug 1. 927 - 860m	54 sx 'A' Tagged at 863.0m.
Plug 2. 40.0 - 5.0m	20 sx 'A'

908259 022

2.4 Logging and Testing

2.4.1 Wellsite Geologist :

J.A. Mitchell

2.4.2 Mudlogging :

Mudlogging services were provided by Geoservices. Cuttings gas was monitored from surface casing shoe to total depth using a hot-wire gas detector and a gas chromatograph.

A mudlog recording lithology, penetration rate, mud gas and other data was prepared and is an enclosure to this report.

2.4.3 Ditch Cutting Samples :

Cuttings were collected at 10m. intervals from surface to 450m. and then at 3m. intervals to 1200.0m. (T.D). The cuttings samples and sets were:

Sample Type	No. Sets
Unwashed	1
Washed	2
Samplex Trays	1

2.4.4 Coring :

2 cores were cut.
Core#1. 522.7 – 539.2m, Cut 16.5m, Recovered 10.77m,(65.3 %).
Latrobe Group coal packed off inner barrel and no Latrobe Group sands were recovered.
Core #2. 1117.9 – 1132.2m, Cut 14.3m, Recovered 4.92m (34.4%).
Highly fractured Sandstone.

2.4.5 Sidewall Cores :

None

2.4.6 Testing :

None

908259 023

2.4.7 Wireline Logs :

Two suites of logs were run by Schlumberger.

Suite 1. (883.5m L)

Type Log	Interval (m)
HALS-MCFL-BHC-GR-SP (GR to Surface)	883.5-434.0m

Suite 2. (1196.0m L)

Type Log	Interval (m)
HALS-MCFL-BHC-TLD-CNL-GR-SP (GR-CNL 904.0 – 883.5m)	1191.0-904.0m

2.4.8 Temperature Surveys :

Wireline logging recorded the following bottom hole temperatures :-

1. 39°C / 5.5 hours after circulation ceased at 883.5m.
2. 66°C / 6.0 hours after circulation ceased at TD (1196.0m L).

2.4.9 Velocity Survey :

None

908259 024

3.0 GEOLOGY

3.1 Reasons for Drilling

The Gippsland Basin is an Early Cretaceous to Cainozoic Basin occupying approximately 46,000km^2 of the southeastern margin of the Australian continent. The basin is flanked on the north, west and south-west by Palaeozoic rocks and confined between the structural uplifts of the Victorian Highlands in the north and the Bassian Rise in the south. The eastern margin of the basin is open to the Tasman Sea. The Gippsland Basin is an east-west trending half graben feature with 70% of its area lying beneath Bass Strait and 30% onshore.

With the exception of occasional wildcat drilling in the boom of the 1980's, exploration of the onshore Gippsland Basin has been largely ignored since the 1970's.

The early exploration activities in the onshore part were aimed primarily at the Early Cretaceous Strzelecki Group and, later on, at the top of the Latrobe Group coarse clastics. However a lack of understanding of the stratigraphy and the mechanism of hydrocarbon generation, migration and timing of structures, along with poor quality of the seismic and well log data, resulted in a downgrading of the hydrocarbon potential of the onshore area.

Permit PEP158

Lakes Oil NL acquired the PEP138 permit in July 1999, from Amity Oil NL, the previous owner. Amity retains a 5% royalty. During July 2000, following changes to the onshore legislation, the permit was granted for a five year period and the permit name changed to PEP158.

PEP158 covers an area of 812 sq km within the onshore Gippsland Basin. Virtually all the permit is within the Seaspray Depression, between the coast and the Strzelecki Group rocks outcropping on the uplifted Balook Block.

Exploration History

Petroleum exploration in the permit commenced in the early 1960's and continued into the early 1970's, conducted mainly by Woodside and Arco. This exploration originally had as its main objective the Strzelecki Group, with emphasis moving to the Latrobe Group later in this period. In the 1980's Crusader undertook a major exploration effort within the Onshore Gippsland Basin, including the present area of PEP158.

York-1 was designed to test the potential of a robust four-way dip closure with Latrobe Group sands as the primary target, and the underlying non-conformable Strzelecki Formation sands as a secondary target.

908259 025

3.2 Stratigraphic Prognosis

The stratigraphic prognosis was made utilising the results of nearby wells and the available seismic coverage.

A comparison between prognosed and actual formation tops is given below.

FORMATION	Prognosed (mKB)	Actual (mKB)	Difference (m) H /L
Alluvium	2.0	2.0	0
Jemmy's Point	10.0	10.0	0
Tambo River	170.0	184.0	14 L
Gippsland Limestone	210.0	210.0	0
Lakes Entrance	465.0	468.5	3.5 L
- Greensand mbr	*Not prognosed*	529.0	
Latrobe Group	537.0	532.0	5 H
Basalt	*Not prognosed*	884.0	
Strzelecki Group	908.0	964.5	56.5 L
TD	1200.0	1200.0	0

This is Page Number **908259 026X**

This is an enclosure indicator page.

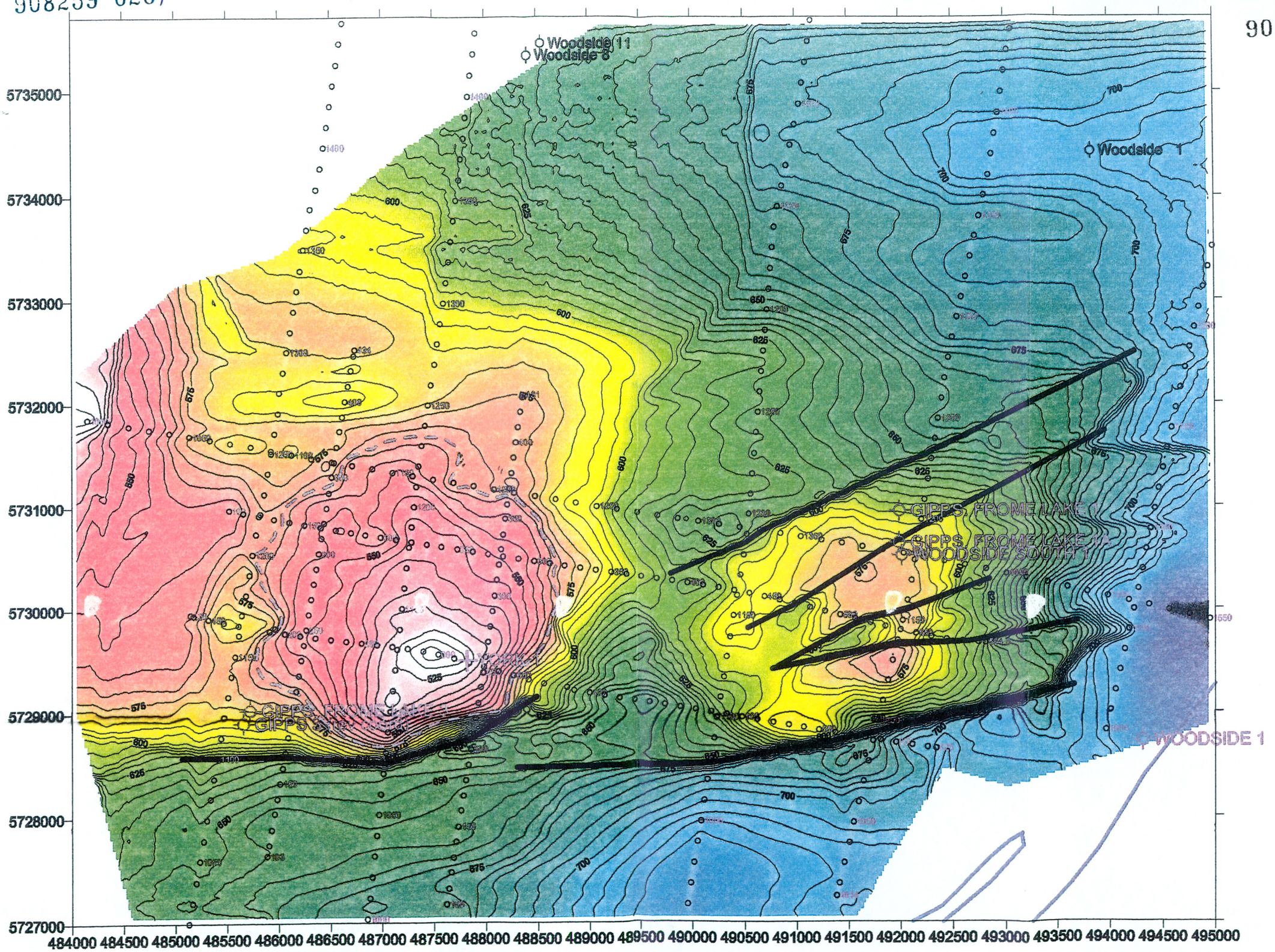
The page that follows this page is an uncatalogued fold-out (or A4 colour) with page number:

908259 026Y

and is enclosed within the document **PE908259** at this page.

908259 026Y

908259 026Y



DEPTH STRUCTURE MAP
TOP LATROBE GROUP (LAYERED INTERVAL VELOCITY)
YORK PROSPECT

FIGURE 4

This is Page Number **908259 027X**

This is an enclosure indicator page.

The page that follows this page is an uncatalogued fold-out (or A4 colour) with page number:

908259 027Y

and is enclosed within the document **PE908259** at this page.

908259 027Y

908259 027Y

YORK 1 (SP 318)

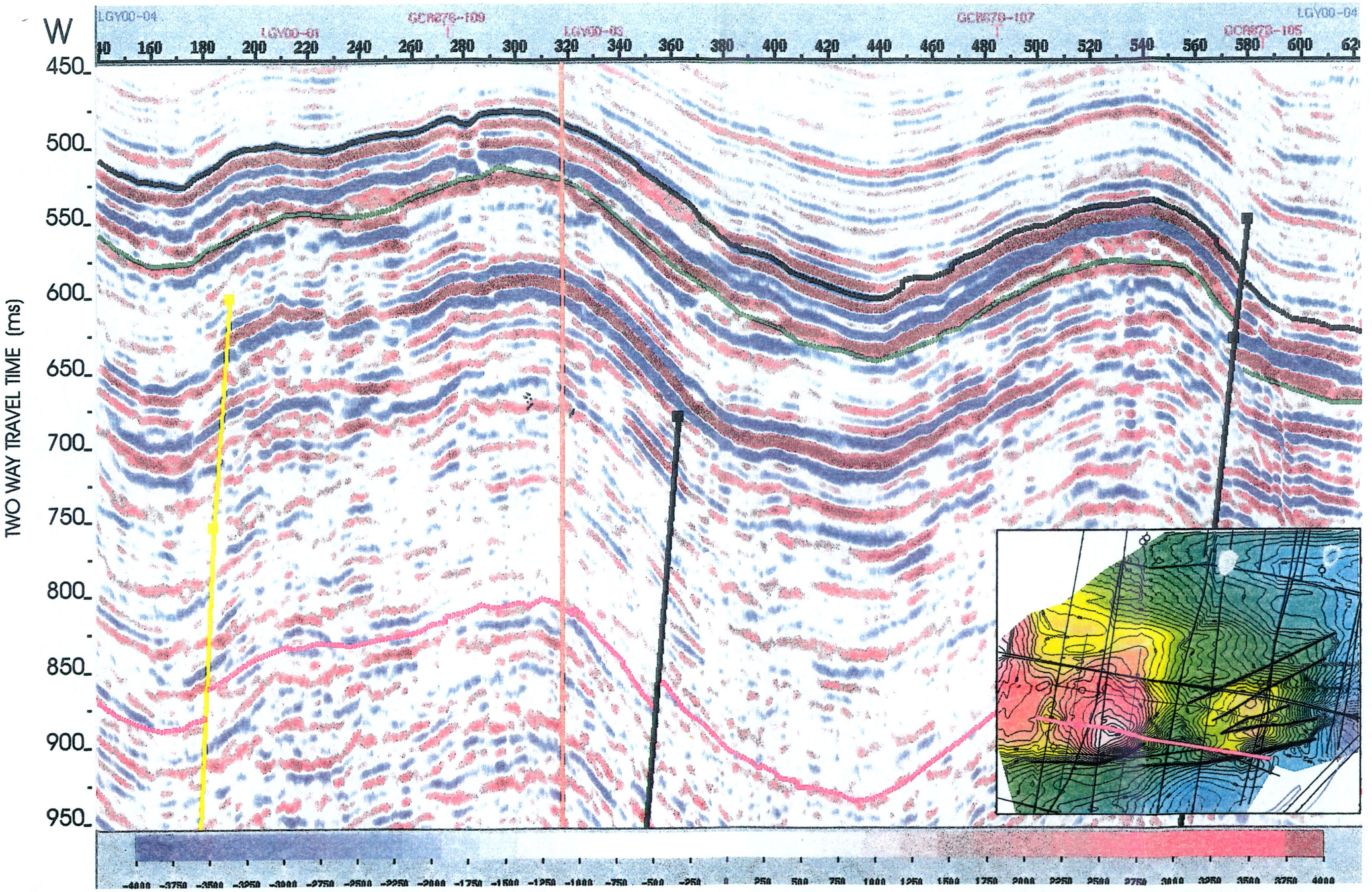


FIGURE 5

SEISMIC LINE LGY00-04

YORK PROSPECT

908259 028

3.3 Stratigraphy

The stratigraphic section encountered at York-1 is graphically illustrated in Figure 4 and discussed below.

Cuttings collected below 11.0m (Surface Conductor set at 11.0m)

JEMMY'S POINT FORMATION

10.0 - 184.0metres Thickness : 174.0 metres

11.0 - 49.0m SANDSTONE with minor interbedded CLAYSTONE.

SANDSTONE, light grey, clear, translucent, milky and yellow to orange brown FeO stained grains, fine to predominantly medium to very coarse, occasional granular grains, moderately to poorly sorted, sub angular to predominantly sub round to round, loose, trace clay matrix in part, good to very good visual porosity.

CLAYSTONE, medium to dark brown, soft to firm, amorphous, blocky in part, trace carbonaceous specks, dispersive in part.

49.0 - 70.0m SANDSTONE with minor interbedded LIMESTONE and CLAYSTONE.

SANDSTONE, clear and translucent, white, occasional FeO staining, fine to very coarse, trace granular grains, sub angular to predominantly sub round to round, moderately to poorly sorted, loose, minor with hard calcite cement, abundant fossil fragments – predominantly bivalve, occasional gastropod and foram, occasional lithics, trace mica, generally good visual porosity.

LIMESTONE, calcarenite, olive grey, common quartz inclusions, common fossil fragments, moderately hard to hard, poor visual porosity.

CLAYSTONE, as above – slightly calcareous, common quartz inclusions and Limestone fragments.

70.0 - 130.0m SANDSTONE with minor interbedded CLAYSTONE and COAL.

SANDSTONE, light grey, clear, translucent and milky quartz, fine to very coarse, occasional granular grains, moderately to poorly sorted, sub angular to predominantly sub round to round, occasional frosted and

polished grains, trace clay matrix in part, trace to rare shell fragments (bivalve, gastropod, foram), occasional to common dark grey to brown lithics, trace coaly fragments (pyritic), trace pyrite and mica, loose, good to very good visual porosity.

CLAYSTONE, medium grey brown, soft, amorphous, dispersive, slightly calcareous, occasional quartz inclusions.

COAL, dark brown to black, dull, lignitic, soft to firm, common pyrite.

130.0 - 184.0m SANDSTONE with minor interbedded CLAYSTONE and COAL.

SANDSTONE, light grey to light grey brown, clear, translucent and milky quartz, medium to very coarse, becoming coarse to very coarse with depth, poorly sorted, sub round to round, occasional frosted and polished grains, occasional clay matrix (washing out of sample), trace to rare shell fragments (bivalve, gastropod, foram), occasional to common dark grey to brown lithics, trace coaly fragments (pyritic), trace mica, loose, good to excellent visual porosity.

CLAYSTONE, medium brown, soft, amorphous, dispersive, slightly calcareous, carbonaceous in part.

COAL, dark brown to black, dull, earthy, soft to firm, sub blocky, common pyrite to abundant pyrite.

TAMBO RIVER FORMATION

184.0 - 210.0 metres Thickness : 26.0 metres

184.0 - 210.0m SANDSTONE with interbedded MARL and LIMESTONE.

SANDSTONE, light grey to light brown, clear, translucent and milky quartz, coarse to very coarse, trace granular and pebble grains, moderately sorted, sub round to round, trace coal fragments, occasional to abundant fossil fragments bryozoa, bivalve, gastropod), trace to occasional pyrite, loose, good visual porosity.

MARL, light to medium brown, soft to firm, sub blocky, common shell fragments, common coal inclusions, trace to occasional quartz.

LIMESTONE, calcarenite, light to medium grey, moderately hard, occasional shell fragments, grades to Marl in part.

908259 030

GIPPSLAND LIMESTONE

210.0 - 468.5 metres Thickness : 258.5 metres

210.0 - 267.0m LIMESTONE with minor MARL.

LIMESTONE, calcarenite, light brown to yellow brown, firm to moderately hard, occasional to locally abundant shell fragments (bryozoa, gastropod, crinoid, bivalve), medium grey, trace to occasional glauconite and carbonaceous specks, minor clay matrix in part.

MARL, light to medium brown, soft to firm, dispersive in part, common Limestone inclusions.

267.0 - 380.0m LIMESTONE occasionally grading to and interbedded with MARL.

LIMESTONE, calcarenite to calcisiltite, light to medium brown, firm to moderately hard, occasional to common shell fragments (bryozoa, foram, crinoid), occasional glauconite and carbonaceous specks, minor micro crystalline fragments, occasional clay matrix in part and grades to Marl.

MARL, light to medium brown, soft to firm, amorphous, dispersive in part, minor Limestone and shell inclusions.

380.0 - 460.0m LIMESTONE interbedded with MARL.

LIMESTONE, calcarenite to calcisiltite, light to medium brown, firm to moderately hard, trace to occasional shell fragments (bryozoa, crinoid), occasional glauconite, argillaceous in part and grades to Marl.

MARL, medium grey to grey brown, soft, sticky, dispersive and washes out of sample, common Limestone fragments.

460.0 - 468.5m LIMESTONE with minor interbedded MARL and SHALE.

LIMESTONE, calcarenite to calcisiltite, micritic in part, very light grey to off white, trace glauconite, trace to occasional shell fragments, soft to firm.

MARL, (only observed between 460.0-461.0m) medium to dark brown, moderately hard, sub blocky, common medium to very coarse multicoloured (clear, translucent, milky, orange, light green) rounded quartz inclusions, argillaceous and grades to calcareous Claystone.

908259 031

SHALE, (only observed between 460.0-461.0m) very dark brown, hard to very hard, sub blocky to sub fissile, brittle with conchoidal fracture in part. Shale has dull yellow fluorescence, no cut, no residue.

LAKES ENTRANCE FORMATION

468.5 - 532.0 metres Thickness : 63.5 metres

468.5 - 508.0m MARL with occasional interbedded LIMESTONE.

MARL, brown to grey brown, soft to firm, amorphous, grades to calcareous Claystone, trace glauconite, trace pyrite below 498m, trace shell and Limestone fragments.

LIMESTONE, light grey to light brown, micro crystalline to micritic in part, calcarenite in part, firm to moderately hard, trace glauconite, trace shell fragments (bryozoa, foram).

508.0 - 522.7m MARL with minor LIMESTONE.

MARL, green grey, soft to firm, amorphous, trace to occasional Limestone fragments, trace to rare shell fragments, trace coarse glauconite grains, trace to occasional nodular pyrite (increasing with depth).

LIMESTONE, light brown to cream, micro crystalline, micritic in part, trace glauconite, firm to moderately hard, trace shell fragments.

Core#1 522.7 – 539.2m, Cut 16.5m, Recovered 10.77m,(65.3 %). Latrobe Group coal packed off inner barrel and no Latrobe Group sands were recovered.

522.7 - 529.9m MARL, Green grey to grey, soft to firm, grades to Calcisiltite in part, trace pyrite, occasional to common glauconite (increasing with depth), occasional to locally common shell fragments (bryozoa, bivalve, foram), trace pyrite, occasional to common quartz inclusions.

529.9 - 532.0m GLAUCONITIC SANDSTONE, green, fine to medium, occasional coarse grains, sub round to round, micritic calcite cement, abundant glauconite (20%), common disseminated and nodular pyrite, firm, very

poor visual porosity. Below 531.1m, Sandstone becomes dark grey to grey black, only slightly calcareous and has common very pyritic brown clay matrix.

LATROBE GROUP

532.0 - 884.0 metres Thickness : 352.0 metres

532.0 - 638.0m COAL with occasional interbedded SANDSTONE and CLAYSTONE.
COAL, black, very dark brown, dull earthy, lignitic, firm, sub blocky to sub fissile.
SANDSTONE, light grey to pale brown, clear and translucent quartz, medium to very coarse, occasional granule, sub angular to round, poorly sorted, trace white and brown dispersive clay matrix, loose, very good visual porosity.
CLAYSTONE, medium to dark brown, soft, dispersive, amorphous, commonly carbonaceous.

638.0 – 682.5m SANDSTONE with trace interbedded COAL.
SANDSTONE, light grey to pale brown, clear and translucent quartz, fine to granule, occasional pebbles, sub angular to sub round, occasional angular grains, poorly sorted, trace light brown and white dispersive clay matrix, loose, excellent visual porosity.
COAL, as above.

682.5 - 705.0m Interbedded SANDSTONE, COAL and trace CLAYSTONE.
SANDSTONE, light grey to pale brown, clear and translucent quartz, medium to very coarse, trace granule and pebbles, angular to sub round, poorly sorted, trace light brown and white dispersive clay matrix, trace pyrite, loose, very good visual porosity.
COAL, as above.
CLAYSTONE, brown, soft, dispersive, amorphous.

705.0 - 769.0m SANDSTONE with minor interbedded CLAYSTONE.
SANDSTONE, light grey to pale brown, clear and translucent quartz, fine to very coarse, trace granule, angular to sub round, poorly sorted,

908259 033

trace light brown and white dispersive clay matrix, trace pyrite and mica, trace coal fragments, trace lithics, loose, very good visual porosity.
CLAYSTONE, brown, soft, dispersive, amorphous.

769.0 - 843.0m SANDSTONE with occasional interbedded CLAYSTONE.
SANDSTONE with minor interbedded CLAYSTONE.
SANDSTONE, light grey to pale brown, clear and translucent quartz, fine to very coarse, trace granule, angular to sub round, poorly sorted, trace light brown and white dispersive clay matrix, trace pyrite and mica, trace coal fragments, trace lithics, loose, very good visual porosity.
CLAYSTONE, brown, soft, dispersive, amorphous.

843.0 - 884.0m Interbedded SANDSTONE and CLAYSTONE.
SANDSTONE, light grey to light grey brown, clear and translucent quartz, fine to very coarse, occasional granule, angular to sub round, moderately to poorly sorted, occasional light brown and white dispersive clay matrix, occasional light to medium grey very fine to fine grained moderately hard aggregates as matrix, trace pyrite, trace lithics, occasional quartz overgrowths, loose, generally good visual porosity.
CLAYSTONE, medium to dark brown, minor white, soft, dispersive, amorphous.

BASALT

884.0 – 964.5 metres Thickness : 80.5 metres

884.0 - 907.0m. CLAYSTONE with minor interbedded SANDSTONE (caved?)
CLAYSTONE, red brown, light to medium grey, grey red, oxidised, highly weathered Basalt, soft, amorphous, sticky.
SANDSTONE, as described above – fine to very coarse.

907.0 – 964.5m. BASALT highly weathered to CLAYSTONE in parts.
BASALT, brown black, green black, dark grey green, aphanatic, common phenocrysts of green and minor yellow olivine, occasional to

locally common crystalline calcite, moderately hard. Commonly highly weathered to

CLAYSTONE, red brown to orange brown, pinkish to grey brown, soft, amorphous, dispersive.

Possible multiple flows inferred from weathering profile – tops of flows possibly at 886.0m, 924.0m, 946.0m

STRZELECKI GROUP

964.5 – 1200.0 metres Thickness : 235.5 metres

964.5 - 1004.0m. Interbedded CLAYSTONE, SANDSTONE and minor COAL.

CLAYSTONE, light to medium grey, light grey brown, soft to firm, sub blocky, trace carbonaceous specks, occasional quartz inclusions.

SANDSTONE, off white to light grey, very fine to occasionally medium, sub angular to sub round, moderately sorted, firm calcareous cement in part, common to abundant off white clay matrix, matrix supported in part and grades to Claystone, common volcanic lithics (green, grey brown), trace coaly fragments, occasional calcite fragments, firm, very poor visual porosity.

COAL, black, dull with vitreous bands, moderately hard, sub fissile, minor with sub conchoidal fracture.

1004.0 - 1095.0m. SANDSTONE with occasional interbedded CLAYSTONE and minor SILTSTONE.

SANDSTONE, light to medium grey, light green grey in part, very fine to medium, sub angular to sub round, moderately well sorted, firm calcareous cement, occasional to locally abundant light grey argillaceous matrix, matrix supported in part and grades to Claystone, common to abundant feldspar and green and grey lithics, trace calcite fragments, trace Coal specks and fragments, firm to moderately hard, poor to very poor visual porosity.

CLAYSTONE, grey to grey brown, minor brown, soft to firm, sub blocky. SILTSTONE, light grey, firm, blocky, very fine arenaceous, grades to Sandstone in part.

908259 035

1095.0 - 1109.0m. CLAYSTONE with occasional interbedded SANDSTONE and SILTSTONE.

CLAYSTONE, medium grey, soft to firm, sub blocky, occasional very fine quartz, trace carbonaceous specks.

SANDSTONE, light to medium grey, very fine to fine, occasional medium grains, moderately well sorted, firm calcareous cement, common to abundant light grey argillaceous matrix, common volcanic lithics, soft to firm, very poor to poor visual porosity.

SILTSTONE, light grey, firm, soft, amorphous, common quartz inclusions and grades to Sandstone in part.

1109.0 – 1117.9m. Interbedded CLAYSTONE and SANDSTONE.

CLAYSTONE, as described above.

SANDSTONE, light to medium grey, very fine to medium, sub angular to sub round, moderately well sorted, firm calcareous cement, trace to locally common light grey argillaceous matrix, common volcanic lithics, trace carbonaceous specks, firm, very poor to poor visual porosity.

Core #2 – 1117.9 – 1132.2m, Cut 14.3m, Recovered 4.92m (34.4%)

Recovery: 1117.9 – 1122.82m, highly fractured Sandstone with white to clear crystalline calcite infilled fractures. Fractures dominantly near vertical (80°), some near horizontal. Bedding plane defined by slightly carbonaceous micro laminations near 1118.5m, these show bed dip to be 10°. The Sandstone was medium grey to dark green grey, very fine to fine, common medium grains, sub angular to sub round, moderately well sorted, moderately strong siliceous cement, calcareous cement in part, common greenish grey matrix (chloritic), abundant altered feldspar, common to abundant green and grey brown volcanic lithic grains, trace mica, trace carbonaceous specks, moderately hard, poor to very poor visual porosity.

908259 036

1122.8 – 1132.2m. No core recovered, descriptions from samples collected while coring. Samples contaminated with caved red brown Claystone / weathered Basalt.

SANDSTONE, as above.

COAL, black, sub vitreous, moderately hard, brittle in part, sub fissile to occasionally sub blocky, minor with sub conchoidal fracture.

CLAYSTONE, medium to dark grey, grey brown, firm, sub blocky to sub fissile, carbonaceous in part.

1132.2 - 1200.0m. SANDSTONE with interbedded CLAYSTONE. Samples contaminated with caved red brown Claystone / weathered Basalt – cavings becoming less with depth.

SANDSTONE, light to medium grey, green grey, very fine to medium, predominantly very fine to fine grained, sub angular to sub round, moderately well sorted, firm calcareous cement in part, siliceous cement in part, occasional to locally abundant light grey and green grey matrix, common altered feldspar and lithics, trace carbonaceous specks, trace mica, occasional to locally common crystalline calcite fragments (fracture fill), friable to firm, poor to very poor visual porosity.

CLAYSTONE, grey brown to grey, soft to occasionally firm, amorphous to sub blocky, trace to occasional carbonaceous specks and fragments.

TOTAL DEPTH

Driller:	1200.0 metres
Logger:	1196.0 metres

908259 037

3.4 Hydrocarbon Shows

No gas shows or fluorescence were recorded in the well until 510.0m. near the base of the Lakes Entrance Formation.

The Latrobe Group primary target had low gas values (average 0.3 units) and no fluorescence in the sands. A coal at the top of the Latrobe Group had a maximum of 7.9 units of gas which was recorded at 570.0m.

The Strzelecki Group secondary target also had low gas values (average 0.4 –1.0 units) and no fluorescence in the sands. A coal was intersected at 1125.5m that had a maximum of 11.3 units of gas.

908259 038

4.0 DISCUSSION AND CONCLUSIONS

York-1 achieved it's objective of appraising the hydrocarbon potential of a robust four-way dip closure structure in the western Gippsland Basin.

At York-1 a typical western on-shore Gippsland Basin sedimentary section was encountered, with a highly weathered Basalt intersected between the Latrobe and Strzelecki Groups.

A core was programmed to be cut over the glauconitic sand at the base of the Lakes Entrance Formation and the sand at the top of the Latrobe Group. Core-1 was cut over the interval 522.7 – 539.2m and had poor recovery (65.3 %). A coal at the top of the Latrobe Group packed off the inner barrel and no Latrobe Group sands were recovered. The first secondary target, the glauconitic sand at the base of the Lakes Entrance Formation, was present as predicted. This sand was recovered in core-1 and had no hydrocarbon shows and very poor reservoir quality.

The primary target, the Latrobe Group was intersected 5.0m high to prognosis, confirming the structure at the York-1 location. This was approximately 60.0m high to the nearby Woodside-1 well, and 40.0m high to the Frome Lake Gippsland-3 well. The sands had very good reservoir quality, but no significant hydrocarbon shows were encountered.

A Basalt which occurs on the western margin of the basin, wasn't prognosed and caused the secondary target Strzelecki Group sands to be intersected 56.5m low to prognosis. The sands were still 22.5m high to the nearby Woodside South-1 well. No significant hydrocarbon shows were recorded and the sands had poor to fair reservoir quality. Core-2 was cut in the Strzelecki Group to appraise the reservoir quality of the sands and to provide data for the interpretation of a magnetic resonance log that was programmed to be run. The core was cut over the interval 1117.9 – 1132.2m, and only 4.92m (34.4%) was recovered. The sandstone was highly fractured with common calcite veining and this appears to have packed off the inner barrel.

Intermediate casing was set in the weathered basalt and a Glycol-KCl mud system was run. The Glycol mud system was run to prevent formation damage which has been observed due to the water reactive clays in the Strzelecki Group sands. Significant cavings were observed from

908259 039

the basalt which made it difficult to evaluate the Strzelecki Group. The CMR log which was programmed to be run, couldn't get past a small washout at the casing shoe and was cancelled. From 1148.0m the mud weight was brought up and Pac-R was added to the mud system. This significantly reduced the cavings from the basalt and the caliper showed the hole to be in gauge below this.

After running wireline logs, as no significant hydrocarbons had been observed, the well was plugged and abandoned.

5.0 COMPLETION

None – the well was plugged and abandoned.

908259 040

Table 1. YORK-1 STRATIGRAPHIC TABLE KB=13.21m. GL=11.21m.

AGE	FORMATION	Depth (mKB)	Depth (mSS)	Thickness (m)
	Alluvium	2.0	11.2	8.0
TERTIARY- Pliocene	Jemmy's Point	10.0	3.2	174.0
TERTIARY - Miocene	Tambo River	184.0	-170.8	26.0
TERTIARY - Miocene-Oligocene	Gippsland Limestone	210.0	-196.8	258.5
TERTIARY - Oligocene	Lakes Entrance	468.5	-455.3	63.5
	Glauconitic sand	529.0	-515.8	3.0
TERTIARY – E Oligocene-Eocene	Latrobe Group	532.0	-518.8	352.0
	Basalt	884.0	-870.8	80.5
CRETACEOUS	Strzelecki Group	964.5	-951.3	235.5
	TD	1200.0	-1186.8	

Appendix 1

Cuttings Descriptions

908259 042

APPENDIX 1

CUTTINGS DESCRIPTIONS

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
		Surface Conductor set at 11.0m. Cuttings collected below 11.0m.	
20 (3.0)	100	SANDSTONE, clear, translucent and milky quartz, common Fe stained grains, fine to predominantly medium to very coarse, occasional granular grains, occasional polished and frosted grains, angular to rounded, poorly sorted, loose, minor with brown clay matrix, good visual porosity.	Nil Gas
	Trace	CLAYSTONE, medium to dark brown, soft, amorphous, blocky in part.	
30 (2.6)	100	SANDSTONE, as above - minor yellow brown Fe staining, sub angular to predominantly sub round to round, trace dark lithics, good to very good visual porosity.	Nil Gas
	Trace	CLAYSTONE, as above – trace carbonaceous specks.	
40 (1.8)	100	SANDSTONE, as above – medium to very coarse, trace granular grains, occasional very fine to fine grained yellow brown Fe stained matrix with floating coarser grains.	Nil Gas
	Trace	CLAYSTONE, as above.	
50 (1.5)	90	SANDSTONE, as above – occasional lithics, trace mica, trace pyrite.	Nil Gas
	10	CLAYSTONE, medium to dark grey, grey brown, soft to firm, amorphous, dispersive, trace carbonaceous specks.	
60 (1.7)	80	SANDSTONE, light grey, clear, translucent, milky and light yellow quartz grains, fine to very coarse, trace granular, sub angular to predominantly sub round to round, moderately to poorly sorted, loose, minor with hard calcite cement, abundant shell fragments (bivalve, foram, gastropod), occasional lithics, fair to good inferred porosity.	Nil Gas
	20	LIMESTONE, calcarenite, olive grey, common quartz inclusions, common shell fragments, moderately hard to hard.	
70 (1.5)	70	SANDSTONE, as above – common to abundant shell fragments, occasional lithics.	Nil Gas
	10	LIMESTONE, as above.	
	10	CLAYSTONE, medium grey, soft, amorphous, dispersive, slightly calcareous, common Limestone and quartz inclusions.	
80 (2.5)	80	SANDSTONE, as above – fine to coarse, occasional very coarse grains, occasional coal fragments, trace mica, rare pyrite, trace shell fragments.	Nil Gas
	10	CLAYSTONE, as above.	
	10	COAL, dark brown to black, dull, lignitic, soft to firm, common pyrite.	
90 (2.1)	100	SANDSTONE, light grey, clear, translucent and milky white quartz, medium to very coarse, sub round, moderately sorted, occasional polished and frosted grains, weak siliceous cement in part, trace shell fragments, occasional lithics (brown and black chert), trace coal fragments (pyritic), trace mica and pyrite, loose, good to very good visual porosity.	Nil Gas
	Trace	CLAYSTONE, as above.	
100 (0.9)	100	SANDSTONE, as above – fine to very coarse, occasional granular and pebble grains, sub round to round.	Nil Gas
	Trace	CLAYSTONE, as above.	

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
110 (1.0)	100	SANDSTONE, as above – medium to granular, occasional pebbles, trace mica, rare shell fragments.	Nil Gas
120 (0.7)	100	SANDSTONE, as above – no shell fragments.	Nil Gas
130 (0.9)	100	SANDSTONE, light to medium grey, medium to very coarse, sub round to round, moderately to poorly sorted, common lithics (dark grey – brown – black chert), trace coal fragments, trace pyrite, trace shell fragments, loose, good visual porosity.	Nil Gas
140 (1.4)	70 20 10	SANDSTONE, light brown to light grey, occasional brown clay matrix, occasional yellow to orange brown Fe stained grains, occasional shell fragments. CLAYSTONE, brown to dark brown, soft, very dispersive, carbonaceous in part, washing out of sample. COAL, black to dark brown, dull, earthy, common to abundant pyrite, soft to occasionally firm, sub blocky.	Nil Gas
150 (1.5)	100	SANDSTONE, light brown to light grey, medium to very coarse, sub round to round, poorly sorted, occasional frosted and polished grains, common brown clay stained grains, trace pyrite and mica, occasional chert, rare shell fragments, trace coal fragments, loose, good visual porosity.	Nil Gas
160 (0.6)	100	SANDSTONE, as above – occasional shell fragments (bivalve, gastropod).	Nil Gas
170 (0.6)	100	SANDSTONE, as above – common lithics (volcanic), trace shell fragments.	Nil Gas
180 (0.7)	100	SANDSTONE, light grey to light brown, clear, translucent and white quartz, coarse to very coarse, trace granular grains, sub round to round, moderately sorted, trace pyrite, trace coal fragments, occasional to common lithics (volcanic, grey to brown chert), rare shell fragments, loose, good to excellent visual porosity.	Nil Gas
190 (1.0)	95 5	SANDSTONE, as above – occasional shell fragments (bryozoan, bivalve, gastropod), occasional pyrite. CLAYSTONE, medium brown, soft, amorphous, calcareous, occasional carbonaceous / coal fragments.	Nil Gas
200 (1.8)	80 20	SANDSTONE, as above – common to abundant shell fragments. MARL, light to medium brown, firm, sub blocky, common shell inclusions, common coal inclusions, trace to occasional quartz, grades to Limestone, trace glauconite.	Nil Gas
210 (1.8)	40 20 40	SANDSTONE, as above – coarse to pebble, common to abundant shell fragments, (bryozoan, crinoid, gastropod, bivalve). MARL, as above. LIMESTONE, calcarenite, light to medium grey, moderately hard, occasional shell fragments, grades to Marl in part.	Nil Gas

908259 045

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
220 (2.1)	10 10 80	SANDSTONE, as above. MARL, light to medium brown, soft to firm, common Limestone inclusions, dispersive in part. LIMESTONE, light brown to yellow brown, calcarenite, minor micro crystalline fragments, common shell fragments (bivalve, gastropod, bryozoan, crinoid), minor clay matrix, common very fine glauconite and carbonaceous specks, moderately hard.	Nil Gas
230 (1.5)	Trace Trace 100	SANDSTONE, as above. MARL, as above. LIMESTONE, as above – occasional shell fragments as above (predominantly crinoid), occasional glauconite and carbonaceous specks.	Nil Gas
240 (1.0)	100	LIMESTONE, calcarenite, light brown to yellow brown, firm to moderately hard, common to abundant shell fragments (bryozoan, crinoid, gastropod, bivalve, foram), trace glauconite and carbonaceous specks, occasional micritic matrix in part, occasional clay matrix in part.	Nil Gas
250 (0.8)	100	LIMESTONE, as above – locally common glauconite and carbonaceous specks.	Nil Gas
260 (1.2)	100	LIMESTONE, as above – very abundant shell fragments, trace glauconite and carbonaceous specks, minor with clay matrix and grading to Marl.	Nil Gas
270 (1.8)	100 Trace	LIMESTONE, as above. MARL, light to medium brown, soft to firm, occasional glauconite, minor Limestone fragments.	Nil Gas
280 (2.1)	90 10	LIMESTONE, as above. MARL, as above.	Nil Gas
290 (2.5)	90 10	LIMESTONE, calcarenite to calcisiltite, light to medium brown, common shell fragments, minor clay matrix, trace to occasional glauconite and carbonaceous specks, firm to moderately hard. MARL, as above.	Nil Gas
300 (2.1)	70 30	LIMESTONE, as above – occasional clay matrix, occasional pelletal glauconite, trace to occasional shell fragments. MARL, as above.	Nil Gas
310 (2.2)	70 30	LIMESTONE, as above – occasional shell fragments, occasional glauconite. MARL, light to medium brown, grey brown, soft to firm, minor Limestone and shell fragments, dispersive clay washing out of sample.	Nil Gas
320 (1.7)	70 30	LIMESTONE, as above – common shell fragments, predominantly bryozoa. MARL, as above.	Nil Gas
330 (2.2)	80 20	LIMESTONE, light to medium brown, light yellow brown, calcisiltite, occasional calcarenite, common shell fragments (bryozoa, foram, crinoid, gastropod), occasional quartz inclusions (caved?), occasional glauconite and carbonaceous specks, firm to moderately hard, MARL, as above – commonly grades to Limestone.	Nil Gas

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
340 (2.2)	80 20	LIMESTONE, as above. MARL, as above.	Nil Gas
350 (1.8)	80 20	LIMESTONE, as above. MARL, as above.	Nil Gas
360 (2.3)	70 30	LIMESTONE, as above. MARL, as above.	Nil Gas
370 (1.5)	80 20	LIMESTONE, as above – trace to occasional shell fragments. MARL, as above.	Nil Gas
380 (2.4)	90 10	LIMESTONE, light to medium brown, calcisiltite to calcarenite, occasional shell fragments, trace glauconite, argillaceous in part and grades to Marl. MARL, as above.	Nil Gas
390 (1.9)	90 10	LIMESTONE, as above. MARL, as above.	Nil Gas
400 (2.3)	90 10	LIMESTONE, as above. MARL, as above.	Nil Gas
410 (2.6)	90 10	LIMESTONE, as above. MARL, as above.	Nil Gas
420 (2.4)	80 20	LIMESTONE, light to medium brown, grey brown, calcarenite to calcisiltite, firm to moderately hard, argillaceous matrix in part and grades to Marl in part, occasional glauconite, trace to occasional shell fragments (bryozoa, crinoid). MARL, medium grey to grey brown, soft, sticky, very dispersive in part, common Limestone fragments.	Nil Gas
430 (3.2)	90 10	LIMESTONE, as above – trace shell fragments, occasional to locally common very fine glauconite. MARL, as above.	Nil Gas
440 (2.0)	70 30	LIMESTONE, as above. MARL, as above.	Nil Gas
450 (2.9)	 100 Trace	Set 9 5/8" casing at 433.0m LIMESTONE, very light grey, minor light green grey, calcarenite to calcisiltite, firm, micritic matrix, grades to Marl in part, rare bryozoa fragments, trace to occasional glauconite. MARL, medium brown, firm, grades to Limestone.	Nil Gas
453 (2.5)	100 Trace	LIMESTONE, as above. MARL, as above.	Nil Gas
456 (1.8)	90 10	LIMESTONE, as above. MARL, as above.	Nil Gas
459 (2.0)	100 Trace	LIMESTONE, as above. MARL, as above.	Nil Gas
462 (3.2)	80 20 Trace	LIMESTONE, as above – occasional bryozoa, trace to locally common glauconite. CLAYSTONE, medium to dark brown, moderately hard, abundant to common (20%) floating medium to very coarse rounded multicoloured quartz grains, calcareous and grades to Marl in part. SHALE, very dark brown, hard, sub fissile to sub blocky, brittle, conchoidal fracture in part. Dull yellow fluorescence, no cut, no residue.	Nil Gas

DEPTH (ROP) ave	YORK - 1 LITHOLOGICAL DESCRIPTIONS		GAS Units (% B/D)
465 (2.8)	100	LIMESTONE, very light grey to white, soft to firm, calcarenite to calcisiltite, micritic in part, grades to Marl, trace glauconite, trace to occasional fossil fragments, trace quartz grains.	Nil Gas
468 (2.3)	100 Trace	LIMESTONE, as above – rare quartz inclusions. MARL, brown to grey brown, soft to firm, grades to Limestone in part.	Nil Gas
471 (2.1)	80 20	LIMESTONE, as above – occasional fossil fragments – bryozoa, trace glauconite. MARL, as above.	Nil Gas
474 (2.5)	40 60	LIMESTONE, as above. MARL, as above – grades to Claystone in part.	Nil Gas
477 (6.1)	40 60	LIMESTONE, as above. MARL, as above.	Nil Gas
480 (0.8)	30 70	LIMESTONE, as above. MARL, as above – trace quartz inclusions.	Nil Gas
483 (7.8)	30 70	LIMESTONE, light grey to light brown, micro crystalline to calcarenite in part, firm to moderately hard, trace glauconite, trace fossil fragments. MARL, brown to grey brown, soft to firm, amorphous, trace Limestone fragments.	Nil Gas
486 (11)	20 80	LIMESTONE, as above. MARL, as above – dispersive and washing out of sample, grades to calcareous Claystone in part.	Nil Gas
489 (10.6)	10 90	LIMESTONE, as above. MARL, as above.	Nil Gas
492 (6.6)	20 80	LIMESTONE, very light grey to light brown, micro crystalline, calcarenite in part, firm to moderately hard, trace glauconite, trace to rare fossil fragments. MARL, as above.	Nil Gas
495 (10.9)	10 90	LIMESTONE, as above. MARL, as above.	Nil Gas
498 (4.8)	10 90	LIMESTONE, as above. MARL, as above.	Nil Gas
501 (3.1)	Trace 100	LIMESTONE, as above – trace fossil fragments (bryozoa, foram). MARL, grey brown to brown, soft to firm, amorphous, trace Limestone / dolomitic fragments, trace glauconite, trace nod pyrite.	Nil Gas
504 (2.7)	Trace 100	LIMESTONE, as above. MARL, as above.	Nil Gas
507 (3.2)	Trace 100	LIMESTONE, as above. MARL, as above – 10% green grey, trace fossil fragments (gastropod, bryozoa, foram).	Nil Gas
510 (3.7)	10 90	LIMESTONE, as above. MARL, green grey, soft to firm, amorphous, occasional Limestone fragments, trace fossil fragments, trace glauconite and pyrite.	0.1 (100:0:0:0:0)
513 (2.2)	Trace 100	LIMESTONE, as above. MARL, as above.	0.1 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
516 (3.1)	5 95	LIMESTONE, as above. MARL, as above – trace coarse glauconite grains, trace nodular pyrite.	0.1 (100:0:0:0:0)
519 (3.3)	Trace 100	LIMESTONE, as above. MARL, as above – trace to occasional pyrite, trace glauconite, trace fossil fragments.	0 (100:0:0:0:0)
522 (4.4)	10 90	LIMESTONE, as above. MARL, as above.	0.1 (100:0:0:0:0)
525 (24.6)		Depth correction at 522.m, add 0.7m. Core #1 522.7 – 539.2m, Cut 16.5m, Rec 10.77m (65.3%). 522.7 - 529.9m, MARL, Green grey to grey, soft to firm, grades to Calcisiltite in part, trace pyrite, occasional to common glauconite (increasing with depth), occasional to locally common shell fragments (bryozoa, bivalve, foram), trace pyrite, occasional to common quartz inclusions.	0.1 (100:0:0:0:0)
528 (41)			0.1 (100:0:0:0:0)
531 (54.7)		529.9 - 532.0m, GLAUCONITIC SANDSTONE, green, fine to medium, occasional coarse grains, sub round to round, micritic calcite cement, abundant glauconite (20%), common disseminated and nodular pyrite, firm, very poor visual porosity. Below 531.1m, Sandstone becomes dark grey to grey black, only slightly calcareous and has common very pyritic brown clay matrix.	0.1 (100:0:0:0:0)
534 (7.3)		Not recovered	0.6 (100:0:0:0:0)
537 (45.2)		Not Recovered	0.6 (100:0:0:0:0)
540 (2.2)	10 90	SANDSTONE, light grey to light brown, fine to coarse, sub round, loose, good visual porosity. COAL, black, very dark brown, earthy, lignitic, firm, sub blocky to sub fissile.	6 (100:0:0:0:0)
543 (1.2)	10 90	SANDSTONE, as above. COAL, as above.	5.9 (100:0:0:0:0)
546 (2.0)	20 80	SANDSTONE, as above. COAL, as above.	5.4 (100:0:0:0:0)
549 (3.0)	50 50 Trace	SANDSTONE, light brown to light grey, fine to coarse, trace very coarse, sub angular to round, poorly sorted, trace mica, loose, good visual porosity. CLAYSTONE, medium to dark brown, soft, dispersive, amorphous, trace coal specks. COAL, as above.	3.7 (100:0:0:0:0)
552 (0.5)	80 20	SANDSTONE, as above – minor brown clay matrix. CLAYSTONE, as above.	2.2 (100:0:0:0:0)
555 (1.0)	80 20	SANDSTONE, as above – occasional very coarse to granular grains, occasionally angular. CLAYSTONE, as above.	2.7 (100:0:0:0:0)
558 (1.6)	80 10 10	SANDSTONE, as above – medium to very coarse, occasional granular grains, slightly calcareous cement in part. CLAYSTONE, as above. COAL, as above.	1.9 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
561 (1.4)	80 10 10	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	2.8 (100:0:0:0:0)
564 (1.5)	100 Trace Trace	SANDSTONE, pale brown, medium to very coarse, occasional granular grains, sub angular to sub round, moderately to poorly sorted, occasional brown clay staining, some broken grains, loose, good visual porosity. CLAYSTONE, as above. COAL, as above.	4.2 (100:0:0:0:0)
567 (1.8)	90 Trace 10	SANDSTONE, as above – angular to sub round, good visual porosity. CLAYSTONE, as above. COAL, as above.	5.2 (100:0:0:0:0)
570 (1.5)		Double sample – as described below.	7.9 (100:0:0:0:0)
573 (2.0)	10 Trace 90	SANDSTONE, as above. CLAYSTONE, as above. COAL, dark brown to black, dull to earthy, lignite, sub blocky to sub fissile, grades to carbonaceous Claystone in part.	6.6 (100:0:0:0:0)
576 (1.8)		Double sample – as described below.	7.7 (100:0:0:0:0)
579 (1.7)	30 20 50	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	6.1 (100:0:0:0:0)
582 (1.8)		Double sample – as described below.	4.8 (100:0:0:0:0)
585 (1.5)	10 Trace 90	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	5.6 (100:0:0:0:0)
588 (1.5)		Double sample – as described below.	5.5 (100:0:0:0:0)
591 (1.2)	10 90	SANDSTONE, as above. COAL, as above.	5.5 (100:0:0:0:0)
594 (2.8)		Double sample – as described below.	4.1 (100:0:0:0:0)
597 (2.4)	Trace 100	SANDSTONE, as above. COAL, as above.	3.6 (99:1:0:0:0)
600 (2.1)		Double sample – as described below.	3.9 (100:0:0:0:0)
603 (1.9)	10 90	SANDSTONE, as above. COAL, as above.	3.7 (99:0:0:0:0)
606 (2.3)		Double sample – as described below.	3 (99:1:0:0:0)
609 (2.6)	30 20 50	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	2.5 (100:0:0:0:0)
612 (2.9)		Double sample – as described below.	1.7 (100:0:0:0:0)
615 (3.1)	Trace 20 80	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	1.7 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
618 (2.8)		Double sample – as described below.	1.5 (100:0:0:0:0)
621 (2.0)	30 40 30	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	1 (100:0:0:0:0)
624 (2.4)		Double sample – as described below.	1.1 (100:0:0:0:0)
627 (4.3)	30 10 60	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	1.1 (100:0:0:0:0)
630 (1.9)		Double sample – as described below.	0.9 (100:0:0:0:0)
633 (1.5)	40 10 50	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	1 (100:0:0:0:0)
636 (1.7)		Double sample – as described below.	1.3 (100:0:0:0:0)
639 (2.8)	50 10 40	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	0.9 (100:0:0:0:0)
642 (1.2)		Double sample – as described below.	0.5 (100:0:0:0:0)
645 (1.4)	100 Trace	SANDSTONE, pale brown, clear and translucent quartz, fine to granular, occasional pebbles, sub angular to sub round, occasional angular grains, poorly sorted, trace light brown clay matrix, loose, very good visual porosity. COAL, as above.	0.9 (100:0:0:0:0)
648 (1.6)		Double sample – as described below.	0.4 (100:0:0:0:0)
651 (1.5)	100 Trace	SANDSTONE, as above – trace pyrite. COAL, as above.	0.7 (100:0:0:0:0)
654 (1.7)		Double sample – as described below.	0.5 (100:0:0:0:0)
657 (1.8)	100 Trace	SANDSTONE, as above – occasional clay matrix. COAL, as above.	0.4 (100:0:0:0:0)
660 (1.6)		Double sample – as described below.	0.4 (100:0:0:0:0)
663 (1.6)	100 Trace	SANDSTONE, light brown, light grey, clear and translucent quartz, fine to very coarse, occasional granules, predominantly coarse to very coarse, angular to sub round, poorly sorted, occasional brown and white clay matrix, loose, very good visual porosity. COAL, as above.	2 (88:12:0:0:0)
666 (1.2)		Double sample – as described below.	0.3 (100:0:0:0:0)
669 (1.1)	100	SANDSTONE, as above.	0.4 (100:0:0:0:0)
672 (2.2)		Double sample – as described below.	0.4 (100:0:0:0:0)

908259 051

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
675 (5.6)	80 20	SANDSTONE, as above. COAL, black, brown black, soft to firm, sub blocky to sub fissile, earthy to dull texture, lignitic, soft to firm.	2.3 (100:0:0:0:0)
678 (2.1)		Double sample – as described below.	0.7 (100:0:0:0:0)
681 (2.4)	100 Trace	SANDSTONE, as above. COAL, as above.	1 (100:0:0:0:0)
684 (2.0)		Double sample – as described below.	1.2 (100:0:0:0:0)
687 (7.3)	100 Trace Trace	SANDSTONE, as above. COAL, as above. CLAYSTONE, brown, white, soft, amorphous.	1.7 (100:0:0:0:0)
690 (6.1)		Double sample – as described below.	0.5 (100:0:0:0:0)
693 (3.1)	80 10 10	SANDSTONE, as above. COAL, as above – trace pyrite. CLAYSTONE, as above.	0.4 (100:0:0:0:0)
696 (4.2)	90 10	SANDSTONE, as above. COAL, as above.	0.5 (100:0:0:0:0)
699 (6.5)	90 10	SANDSTONE, as above. COAL, as above.	0.6 (100:0:0:0:0)
702 (1.8)		Double sample – as described below.	0.4 (97:0:3:0:0)
705 (2.1)	100 Trace	SANDSTONE, as above. COAL, as above.	0.4 (100:0:0:0:0)
708 (1.5)		Double sample – as described below.	0.4 (99:1:0:0:0)
711 (1.7)	100 Trace	SANDSTONE, light grey, pale brown, clear and translucent quartz, medium to very coarse, trace granule and pebble, angular to sub round, rare clay matrix, trace pyrite, loose, very good visual porosity. COAL, as above.	0.3 (81:16:3:0:0)
714 (3.1)		Double sample – as described below.	0.4 (80:16:3:0:0)
717 (3.3)	100 Trace	SANDSTONE, as above. COAL, as above.	0.2 (87:9:4:0:0)
720 (2.3)		Double sample – as described below.	0.2 (85:9:7:0:0)
723 (1.9)	100 Trace	SANDSTONE, as above. COAL, as above.	0.2 (95:0:5:0:0)
726 (1.2)		Double sample – as described below.	0.2 (100:0:0:0:0)
729 (2.3)	100 Trace	SANDSTONE, as above. COAL, as above.	0.2 (89:3:8:0:0)
732 (4.1)		Double sample – as described below.	0.2 (89:3:8:0:0)
735 (2.9)	95 5	SANDSTONE, as above – trace mica, trace white and brown clay matrix, rare lithics. COAL, black, soft to firm, dull, earthy, lignitic, rare pyrite.	0.1 (92:3:5:0:0)
738 (2.2)		Double sample – as described below.	0.2 (94:0:6:0:0)

908259 052

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
741 (3.4)	100 Tr	SANDSTONE, as above – trace coal fragments. COAL, as above.	0.2 (90:6:4:0:0)
744 (3.5)		Double sample – as described below.	0.1 (93:0:7:0:0)
747 (1.6)	100	SANDSTONE, as above.	0.1 (94:0:6:0:0)
750 (1.5)		Double sample – as described below.	0.1 (75:14:11:0:0)
753 (1.2)	100	SANDSTONE, as above.	0.1 (75:14:11:0:0)
756 (1.0)		Double sample – as described below.	0.1 (100:0:0:0:0)
759 (1.3)	100	SANDSTONE, as above.	0.1 (90:0:10:0:0)
762 (1.2)		Double sample – as described below.	0.1 (100:0:0:0:0)
765 (1.7)	100	SANDSTONE, light grey, clear and translucent quartz, medium to very coarse, occasional granule, angular to sub round, moderately to poorly sorted, trace pyrite, trace lithics, loose, very good to excellent porosity.	0.1 (100:0:0:0:0)
768 (1.9)		Double sample – as described below.	0.1 (100:0:0:0:0)
771 (2.2)	100	SANDSTONE, as above – trace white and pale brown clay matrix, trace coal fragments.	0.1 (100:0:0:0:0)
774 (6.2)	100	SANDSTONE, light grey, fine to coarse, angular to sub round, poorly sorted, trace light brown clay matrix, trace mica, trace pyrite, trace coal fragments, occasional quartz overgrowths, loose, very good visual porosity.	0.1 (100:0:0:0:0)
777 (3.8)	50 50	SANDSTONE, as above – common brown clay matrix. CLAYSTONE, light brown, soft, amorphous, dispersive.	0.1 (100:0:0:0:0)
780 (0.9)	30 70	SANDSTONE, as above – trace to 5% pyritic coal fragments. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
783 (1.6)	100	SANDSTONE, as above – fine to very coarse, occasional granules, trace lithic grains, trace pyrite.	#DIV/0!
786 (3.2)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
789 (2.4)	100	SANDSTONE, as above.	0 (100:0:0:0:0)
792 (2.0)	100	SANDSTONE, as above.	0 (100:0:0:0:0)
795 (1.6)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
798 (2.2)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
801 (2.3)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
804 (3.9)	100	SANDSTONE, as above.	#DIV/0!

908259 053

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
807 (2.8)	100	SANDSTONE, light grey, clear and translucent quartz, fine to very coarse, angular to sub round, trace light brown clay matrix, trace mica and pyrite, trace coal fragments, occasional quartz overgrowths, trace to occasional lithics, loose, very good visual porosity.	0 (100:0:0:0:0)
810 (2.0)	100	SANDSTONE, as above – trace pyrite.	0 (100:0:0:0:0)
813 (2.2)	100	SANDSTONE, as above – occasional granules, trace chert grains.	0 (100:0:0:0:0)
816 (2.1)	100	SANDSTONE, as above.	0 (100:0:0:0:0)
819 (1.1)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
822 (1.6)	100	SANDSTONE, as above.	0 (100:0:0:0:0)
825 (1.8)	100	SANDSTONE, as above.	0 (100:0:0:0:0)
828 (1.7)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
831 (1.4)	100	SANDSTONE, as above.	0.1 (100:0:0:0:0)
834 (2.1)	100	SANDSTONE, as above – occasional lithics, minor very fine to fine aggregates.	0.1 (100:0:0:0:0)
837 (3.2)	100	SANDSTONE, as above.	0.05 (100:0:0:0:0)
840 (2.3)	100	SANDSTONE, as above.	0.05 (100:0:0:0:0)
843 (2.1)	100	SANDSTONE, as above.	0.05 (100:0:0:0:0)
846 (4.5)	70 30	SANDSTONE, as above – occasional brown and white clay matrix, trace coal fragments, fair inferred porosity. CLAYSTONE, grey brown, soft, dispersive, amorphous, trace carbonaceous specks.	0.05 (100:0:0:0:0)
849 (2.3)	70 30	SANDSTONE, as above – minor very fine to fine aggregates. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
852 (2.4)	60 40	SANDSTONE, as above - very fine to fine, occasional granule and trace pebble. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
855 (3.4)	40 60	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
858 (3.9)	50 50	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
861 (4.6)	50 50	SANDSTONE, as above – occasional brown and white clay matrix. CLAYSTONE, as above.	#DIV/0!

908259 054

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
864 (3.7)	60 40	SANDSTONE, light grey to light grey brown, fine to very coarse, occasional granule, angular to sub round, moderately to poorly sorted, occasional light to medium grey very fine to fine grained matrix, trace pyrite, trace lithics, occasional quartz overgrowths, loose, gen good visual porosity. CLAYSTONE, grey brown, soft, amorphous, dispersive, trace coal specks.	0.1 (100:0:0:0:0)
867 (4.2)	50 50	SANDSTONE, as above – occasional brown and white clay matrix. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
870 (5.1)	50 50	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
873 (7.1)	40 60	SANDSTONE, as above. CLAYSTONE, dark brown, soft, amorphous, dispersive.	0.05 (100:0:0:0:0)
876 (5.7)	30 70	SANDSTONE, as above. CLAYSTONE,	0.05 (100:0:0:0:0)
879 (6.6)	50 50	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
882 (9.2)	40 60	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
885 (12.8)	30 70	SANDSTONE, as above. CLAYSTONE, as above.	0.05 (100:0:0:0:0)
888 (12.9)	20 80	SANDSTONE, as above. CLAYSTONE, red brown, light to medium grey, grey red, oxidised, soft, amorphous, sticky.	0.05 (100:0:0:0:0)
891 (11.0)	20 80	SANDSTONE, as above. CLAYSTONE, as above – predominantly red brown.	Nil Gas
894 (11.0)	50 50	SANDSTONE, as above. CLAYSTONE, as above.	Nil Gas
897 (16.0)	10 90	SANDSTONE, as above. CLAYSTONE, as above.	Nil Gas
900 (9.2)	Trace 100	SANDSTONE, as above. CLAYSTONE, as above.	Nil Gas
903 (12.2)	100	CLAYSTONE, red brown, light to medium grey, soft, amorphous, sticky, trace pyrite.	Nil Gas
906 (9.8)	100	CLAYSTONE, as above.	Nil Gas
909 (16.7)	 100	7" casing set at 903.8m CLAYSTONE, medium grey to red brown, soft, amorphous.	Nil Gas
912 (20.9)	100	CLAYSTONE, as above.	Nil Gas
915 (3.3)	10 90	CLAYSTONE, as above. BASALT, brown black, firm, aphanatic, occasional olivine phenocrysts, rare quartz, highly weathered to Claystone in part.	Nil Gas
918 (16.1)	100	BASALT, as above – green grey, brown black, minor clear to milky crystalline calcite fragments.	Nil Gas
921 (13.9)	100	BASALT, as above.	Nil Gas
924 (15.9)	100	BASALT, as above – common crystalline calcite fragments, common olivine.	0 (0:0:100:0:0)

908259 055

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
927 (4.3)	330 70	CLAYSTONE, red brown, orange brown, minor yellow brown, pinkish, soft, amorphous, as above – highly weatehered Basalt. BASALT, as above	Nil Gas
930 (2.9)	20 80	CLAYSTONE, as above. BASALT, as above.	Nil Gas
933 (10.5)	10 90	CLAYSTONE, as above. BASALT, green black, brown black, some red brown, aphanatic, occasional olivine, minor calcite fragments.	Nil Gas
936 (1.7)	50 50	CLAYSTONE, as above. BASALT, as above.	Nil Gas
939 (4.2)	30 70	CLAYSTONE, as above. BASALT, as above – common green olivine.	Nil Gas
942 (2.3)	20 80	CLAYSTONE, as above. BASALT, as above – common crystalline calcite and common olivine phenocrysts.	Nil Gas
945 (5.3)	Trace 100	CLAYSTONE, as above. BASALT, as above.	Nil Gas
948 (3.6)	50 50	CLAYSTONE, red brown, orange brown, soft, amorphous, dispersive, highly weathered Basalt. BASALT, as above.	Nil Gas
951 (5.2)	80 20	CLAYSTONE, as above. BASALT, as above.	Nil Gas
954 (18.5)	80 20	CLAYSTONE, as above. BASALT, dark green grey, dark grey black, aphanatic, common olivine, occasional crystalline calcite fragments, moderately hard, weathered to Claystone in part.	Nil Gas
957 (19)	90 10	CLAYSTONE, as above. BASALT, as above.	0.1 (100:0:0:0:0)
960 (8.5)	90 10	CLAYSTONE, as above. BASALT, as above.	0.1 (100:0:0:0:0)
963 (6.5)	100 Trace	CLAYSTONE, as above. BASALT, as above.	0.1 (100:0:0:0:0)
966 (4.0)	70 30	CLAYSTONE, as above. BASALT, as above – common crystalline calcite fragments.	0.2 (81:8:11:0:0)
969 (3.5)	45 5 30 20	SANDSTONE, off white to light grey, fine to medium, sub angular to sub round, moderately sorted, wk siliceous cement in part, abundant volcanic lithics, common to abundant light grey argillaceous matrix, grades to Claystone in part, fri to firm, pr to very poor visual porosity. COAL, black, finely banded dull and vitreous layers, moderately hard, sub fissile, minor sub conchoidal fracture in part. CLAYSTONE, as above – some green grey. BASALT, as above.	0.2 (100:0:0:0:0)
972 (4.9)	10 70 20	SANDSTONE, as above. CLAYSTONE, light grey, soft to firm, sub blocky, trace carbonaceous specks. BASALT, as above – caved?	0.5 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
975 (6.3)	10 70 20	SANDSTONE, as above. CLAYSTONE, as above. BASALT, as above.	0.3 (100:0:0:0:0)
978 (7.2)	 30 70	All samples have 20+% cavings of red brown highly waethered Basalt / Claystone. SANDSTONE, off white, light grey, very fine to medium, moderately sorted, sub angular to sub round, firm calcareous cement, common to abundant light grey argillaceous matrix, matrix supported in part and grades to Claystone in part, common volcanic lithics, occasional calcite fragments? – probably caved from Basalt above, firm, poor visual porosity. CLAYSTONE, light grey to light grey brown, soft to firm, sub blocky, trace quartz inclusions.	0.2 (100:0:0:0:0)
981 (7.3)	70 30	SANDSTONE, as above. CLAYSTONE, as above.	0.2 (100:0:0:0:0)
984 (5.3)	10 90	SANDSTONE, as above. CLAYSTONE, as above.	0.3 (100:0:0:0:0)
987 (5.1)	Trace 100	SANDSTONE, as above. CLAYSTONE, as above - trace carbonaceous / coal fragments.	0.8 (100:0:0:0:0)
990 (8.1)	60 40	SANDSTONE, as above – common argillaceous matrix and commonly grades to Claystone. CLAYSTONE, as above.	0.2 (100:0:0:0:0)
993 (8.2)	20 80	SANDSTONE, as above. CLAYSTONE, as above.	0.3 (100:0:0:0:0)
996 (8.6)	50 50	SANDSTONE, as above. CLAYSTONE, as above.	0.4 (100:0:0:0:0)
999 (6.7)	20 80 Trace	SANDSTONE, as above. CLAYSTONE, as above. COAL, as above.	0.3 (100:0:0:0:0)
1002 (6.2)	20 80	SANDSTONE, as above. CLAYSTONE, as above.	1.2 (100:0:0:0:0)
1005 (7.1)	70 30	SANDSTONE, as above – very fine to fine, common medium grains, common calcareous cement, common matrix, abundant lithics, trace coal fragments, firm to moderately hard, poor to very poor visual porosity. CLAYSTONE, as above.	0.6 (100:0:0:0:0)
1008 (6.0)	80 20	SANDSTONE, as above. CLAYSTONE, as above.	0.3 (100:0:0:0:0)
1011 (7.3)	90 10	SANDSTONE, light to medium grey, light green grey, fine to medium, sub angular to sub round, moderately well sorted, firm calcareous cement, occasional to locally abundant light grey argillaceous matrix, matrix supported in part and grades to Claystone, common to abundant green and grey brown volcanic lithics, common to abundant altered feldspar, trace coal specks, trace calcite fragments, firm, common loose grains, poor to very poor visual porosity. CLAYSTONE, light grey to light grey brown to brown, soft to firm, sub blocky, occasional quartz inclusions.	0.3 (100:0:0:0:0)
1014 (8.2)	90 10	SANDSTONE, as above. CLAYSTONE, as above – trace micro mica.	0.3 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
1017 (6.8)	90 10	SANDSTONE, as above. CLAYSTONE, as above.	0.5 (100:0:0:0:0)
1020 (8.1)	90 10	SANDSTONE, as above – very fine to medium, trace coarse grains, trace to locally common matrix. CLAYSTONE, as above.	0.5 (100:0:0:0:0)
1023 (8.8)	90 10	SANDSTONE, as above – abundant lithics, common to abundant matrix. CLAYSTONE, as above.	0.4 (100:0:0:0:0)
1026 (9.7)	100 Trace	SANDSTONE, as above. CLAYSTONE, as above.	0.5 (100:0:0:0:0)
1029 (9.0)	90 10	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1032 (6.6)	90 10	SANDSTONE, as above. CLAYSTONE, as above.	0.5 (100:0:0:0:0)
1035 (7.8)	100 Trace	SANDSTONE, as above. CLAYSTONE, as above.	0.5 (100:0:0:0:0)
1038 (8.4)	100 Trace	SANDSTONE, light grey to light green grey, very fine to medium, sub angular to sub round, moderately well sorted, firm calcareous cement, trace to locally abundant light grey argillaceous matrix, trace calcite fragments, trace coal specks and fragments, abundant lithics, firm to moderately hard, poor to very poor visual porosity. CLAYSTONE, brown to medium grey, soft to firm, sub blocky.	0.2 (100:0:0:0:0)
1041 (7.7)*	90 10	SANDSTONE, as above – commonly matrix supported and grades to Claystone. CLAYSTONE, as above.	0.2 (100:0:0:0:0)
1044 (9.1)	90 10	SANDSTONE, as above. CLAYSTONE, as above – carbonaceous in part.	0.4 (100:0:0:0:0)
1047 (8.0)	90 10	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1050 (12.2)	20 70	SANDSTONE, as above – predominantly very fine to fine, occasional medium grains. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1053 (10.0)	20 80 Trace	SANDSTONE, as above – predominantly very fine and grades to slt. CLAYSTONE, medium dark grey to grey brown, soft to occasionally firm, sub blocky. SILTSTONE, light grey, soft to firm, blky, very finely arenaceous and grades to matrix supported Sandstone.	0.1 (100:0:0:0:0)
1056 (11.2)	50 50	SANDSTONE, as above – very fine to medium, abundant matrix, very calcareous. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1059 (10.8)	80 20	SANDSTONE, light to medium grey, very fine to medium, sub angular to sub round, moderately well sorted, firm calcareous cement in part, common to abundant ly grey argillaceous matrix, common to abundant altered feldspar and lithic grains, trace coal fragments, firm, common loose grains, poor inferred porosity. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1062 (9.1)	80 20	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)

DEPTH (ROP) ave	YORK - 1 LITHOLOGICAL DESCRIPTIONS		GAS Units (% B/D)
1065 (11.0)	80 20	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1068 (9.0)	80 20	SANDSTONE, as above – fine to medium, trace coarse, trace to locally common matrix, generally poor with minor poor to fair visible porosity. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1071 (6.7)	90 10	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1074 (5.8)	80 20	SANDSTONE, as above. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1077 (7.8)	70 30	SANDSTONE, light to medium grey, fine to medium, sub angular to sub round, moderately well sorted, calcareous cement in part, minor siliceous cement in part, trace to occasional argillaceous matrix, abundant lithics, occasional altered feldspar, trace calcite fragments (caved?), firm, common loose grains, poor visual porosity. CLAYSTONE, as above.	0.1 (100:0:0:0:0)
1080 (6.6)	40 60	SANDSTONE, as above – trace to locally common matrix, poor visual porosity. CLAYSTONE, as above.	1 (100:0:0:0:0)
1083 (5.6)	30 50 20	SANDSTONE, as above – commonly very fine to medium, grades to Siltstone in part. CLAYSTONE, medium grey to grey brown, soft to occasionally firm, dispersive, amorphous to sub blocky, carbonaceous in part. SILTSTONE, light grey, very finely arenaceous, firm, sub blocky, grades to very fine Sandstone.	7.8 (100:0:0:0:0)
1086 (6.2)	50 30 20	SANDSTONE, as above. CLAYSTONE, as above. SILTSTONE, as above.	6 (100:0:0:0:0)
1089 (11.9)	60 30 10	SANDSTONE, as above. CLAYSTONE, as above. SILTSTONE, as above.	1.3 (99:1:0:0:0)
1092 (9)	80 20	SANDSTONE, as above – fine to medium, very calcareous cement, trace to occasional argillaceous matrix, moderately hard, common loose grains, poor to occasionally fair visual porosity. CLAYSTONE, as above.	1.7 (98:2:0:0:0)
1095 (4.6)	90 10	SANDSTONE, as above – trace coaly specks and fragments. CLAYSTONE, as above.	3 (99:1:0:0:0)
1098 (5.8)	10 90	SANDSTONE, as above. CLAYSTONE, medium grey, soft to firm, sub blocky, trace carbonaceous specks.	2.5 (100:0:0:0:0)
1101 (5.6)	10 70 20	SANDSTONE, light grey, very fine to fine, occasional medium grains, grades to Siltstone in part, sub angular to sub round, moderately well sorted, calcareous cement, common to abundant light grey argillaceous matrix, common lithics, soft to firm, poor to very poor visual porosity. CLAYSTONE, as above. SILTSTONE, light grey, soft, amorphous, common quartz inclusions, grades to very fine Sandstone.	3.8 (100:0:0:0:0)

908259 059

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
1104 (4.3)	20 60 20	SANDSTONE, as above. CLAYSTONE, as above. SILTSTONE, as above.	3.1 (99:1:0:0:0)
1107 (6.3)	30 60 10	SANDSTONE, as above – light to medium grey, very fine to medium, poor visual porosity. CLAYSTONE, as above. SILTSTONE, as above.	2.7 (99:1:0:0:0)
1110 (6.1)	30 60 10	SANDSTONE, as above. CLAYSTONE, as above. SILTSTONE, as above.	2.6 (100:0:0:0:0)
1113 (5.8)	40 60	SANDSTONE, as above. CLAYSTONE, as above.	1.5 (100:0:0:0:0)
1116 (5.8)	60 40	SANDSTONE, light to medium grey, very fine to medium, sub angular to sub round, moderately well sorted, firm, calcareous cement, trace to locally common light grey argillaceous matrix, common feldspar and green and grey brown lithics, trace carbonaceous specks, firm, occasional loose grains, poor to very poor visual porosity. CLAYSTONE, as above.	1.8 (100:0:0:0:0)
1119 (11.8)		Cut Core#2 1117.9m – 1132.2m Cut 14.3m, Recovered 4.92m (34.4%) Core #2 – Cut 14.3m, Recovered 4.92m (34.4%) Recovery: 1117.9 – 1122.82m, highly fractured Sandstone with white to clear crystalline calcite infilled fractures. Fractures dominantly near vertical (80°), some near horizontal. Bedding plane defined by slightly carbonaceous micro laminations near 1118.5m, these show bed dip to be 10°. The Sandstone was medium grey to dark green grey, very fine to fine, common medium grains, sub angular to sub round, moderately well sorted, moderately strong siliceous cement, calcareous cement in part, common greenish grey matrix (chloritic), abundant altered feldspar, common to abundant green and grey brown volcanic lithic grains, trace mica, trace carbonaceous specks, moderately hard, poor to very poor visual porosity.	1.6 (98:2:0:0:0)
1122 (18.2)		SANDSTONE, as above.	1.9 (98:2:0:0:0)
1125 (31.2)		No recovery	2.2 (100:0:0:0:0)
1128 (17.4)		No recovery	1.6 (99:1:0:0:0)
1131 (13.9)		No recovery	1.6 (100:0:0:0:0)

DEPTH (ROP) ave		YORK - 1 LITHOLOGICAL DESCRIPTIONS	GAS Units (% B/D)
1134 (11.6)		Samples contain up to 50% red brown Claystone contamination.	0.5 (100:0:0:0:0)
	70	SANDSTONE, light to medium grey, very fine to fine, occasional medium, sub angular to sub round, moderately well sorted, calcareous cement in part, siliceous cement in part, occasional to locally light green grey argillaceous matrix, common to abundant altered feldspar and lithics, trace carbonaceous specks, rare mica, firm, poor to very poor visual porosity.	
	30	CLAYSTONE, grey brown to grey, firm, sub blocky to sub fissile, trace carbonaceous specks.	
1137 (6.3)	70	SANDSTONE, as above.	1.4 (100:0:0:0:0)
	30	CLAYSTONE, as above.	
1140 (8.1)	60	SANDSTONE, as above.	1.4 (98:2:0:0:0)
	40	CLAYSTONE, as above.	
1143 (12.3)	30	SANDSTONE, as above.	0.5 (98:2:0:0:0)
	70	CLAYSTONE, as above.	
1146 (10.4)	40	SANDSTONE, as above.	0.3 (97:3:0:0:0)
	60	CLAYSTONE, as above.	
1149 (14.4)	60	SANDSTONE, as above.	0.4 (100:0:0:0:0)
	40	CLAYSTONE, as above.	
1152 (12.0)	50	SANDSTONE, as above.	0.2 (100:0:0:0:0)
	50	CLAYSTONE, as above.	
1155 (11.2)	50	SANDSTONE, as above – abundant matrix and grades to Claystone in part.	0.2 (100:0:0:0:0)
	50	CLAYSTONE, as above.	
1158 (9.4)	70	SANDSTONE, as above – common calcite fragments (fracture fill).	0.2 (100:0:0:0:0)
	30	CLAYSTONE, as above.	
1161 (10.5)	80	SANDSTONE, as above.	0.1 (100:0:0:0:0)
	20	CLAYSTONE, as above.	
1164 (11.0)	80	SANDSTONE, green grey, very fine to medium, sub angular to sub round, moderately well sorted, firm calcareous; cement, siliceous cement in part, abundant light green grey argillaceous matrix (chloritic), common lithics, common altered feldspar, trace carbonaceous sp[ks, common calcite fragments, fri to firm, very poor visual porosity.	0.1 (100:0:0:0:0)
	20	CLAYSTONE, as above.	
1167 (8.8)	70	SANDSTONE, as above.	2.2 (100:0:0:0:0)
	30	CLAYSTONE, as above.	
1170 (8.4)	40	SANDSTONE, as above – common calcite fragments (fracture fill).	1.1 (100:0:0:0:0)
	60	CLAYSTONE, light brown, light to medium grey, soft to firm, sub blocky, dispersive in part, trace carbonaceous specks.	
1173 (14.2)	40	SANDSTONE, as above.	0.5 (100:0:0:0:0)
	60	CLAYSTONE, as above.	
1176 (13.5)	50	SANDSTONE, as above.	0.6 (100:0:0:0:0)
	50	CLAYSTONE, as above.	
1179 (13.1)	80	SANDSTONE, as above.	0.4 (100:0:0:0:0)
	20	CLAYSTONE, as above.	

908259 061

DEPTH (ROP) ave	YORK - 1 LITHOLOGICAL DESCRIPTIONS		GAS Units (% B/D)
1182 (14.4)	80 20	SANDSTONE, as above – trace coal fragments. CLAYSTONE, as above.	0.2 (100:0:0:0:0)
1185 (15.1)	70 30	SANDSTONE, as above – very fine to fine, common medium grains. CLAYSTONE, as above.	2.4 (99:1:0:0:0)
1188 (12.8)	70 30	SANDSTONE, as above. CLAYSTONE, as above.	1.1 (100:0:0:0:0)
1191 (16.7)	90 10	SANDSTONE, light to medium grey, green grey, very fine to fine, occasional to common medium grains, sub angular to sub round, moderately well sorted, firm calcareous cement, siliceous cement in part, common argillaceous matrix, common lithics and altered feldspar, trace pyrite and carbonaceous specks, trace mica, occasional to common calcite fragments, firm, very poor visual porosity. CLAYSTONE, as above.	0.7 (100:0:0:0:0)
1194 (13.8)	80 20	SANDSTONE, as above. CLAYSTONE, medium grey brown to grey, soft to firm, sub blocky, occasional coaly specks and fragments.	0.1 (99:1:0:0:0)
1197 (10.1)	70 30	SANDSTONE, as above – abundant matrix and grades to Claystone in part, CLAYSTONE, as above.	0.3 (99:1:0:0:0)
1200 (7.7)	60 40	SANDSTONE, as above. CLAYSTONE, as above.	0.3 (100:0:0:0:0)
		TD 1200.0m. @ 20:30 hours 14th March, 2002	

908259 062

Appendix 2

Core Analysis Results

908259 063

APPENDIX 2

CORE ANALYSIS RESULTS

908259 064

Core Lab
PETROLEUM SERVICES

CORE LABORATORIES
AUSTRALIA PTY LTD

447-449 Belmont Ave, Kewdale, Perth WA 6105
Tel : (61 8) 9353 3944 Fax : (61 8) 9353 1369
Email: corelab@corelab.com.au

A Routine Core Analysis Study Of Selected Samples From Well : YORK #1

Australia

Prepared for
LAKES OIL N.L.

July 2002

File: PRP-02017

Rock Properties
Core Laboratories Australia Pty. Ltd.
Perth
Australia

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, (all errors and omissions excepted); but Core Laboratories and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitableness of any oil gas or other mineral well or sand in connection with which such report is used or relied upon.

Core Lab
PETROLEUM SERVICES

CORE LABORATORIES
AUSTRALIA PTY LTD

20th July, 2002

Lakes Oil NL
PO Box 300
Collins St West
MELBOURNE VIC 8007

Attention : Mr. J. Mulready

Subject : Routine Core Analysis
Well : York #1
File : PRP-02017

Dear Sir,

Presented herein is the final report of a routine core analysis study conducted on the plug samples from the above well that arrived at our Perth laboratory in mid March, 2002.

We appreciate the opportunity to present this service to you. Please contact us should you require any further information or assistance.

Yours sincerely,
Core Laboratories Australia Pty Ltd

James Brown
Senior Core Analyst

INTRODUCTION

Core Laboratories Australia Pty Ltd (Core Lab) conducted a routine core analysis study on six plug samples taken from the well York #1 on behalf of Lakes Oil NL (Lakes Oil).
Services performed and presented in the report include:

- Permeability, porosity and grain density measurements

LABORATORY PROCEDURES

Sample Preparation

Six horizontal, 1.5" diameter plugs were received and logged in. The samples were trimmed, then dried in a convection oven for 24 hours at 90° C. prior to analysis.

Grain Volume and Grain Density

The weight, diameter and length of all samples were measured before they were processed through the Ultrapore™ porosimeter to determine grain volume. As a standard quality control measure, a calibration check plug was run after the samples. Grain density data was then calculated from grain volume and sample weight data.

Permeability and Porosity

Permeability and pore volume measurements were made on all samples at ambient pressure in the CMS™300 automated core measurement system. A standard check plug was run after the samples.

Klinkenberg permeability (Kinf) values are obtained directly from the CMS-300, since it operates by unsteady-state principles. Porosity data was obtained by combining pore volumes from the CMS-300 data with grain volumes from the Ultrapore porosimeter.

Plug sample porosity, permeability and grain density data are tabulated on page 2.

908259 067

POROSITY, PERMEABILITY AND GRAIN DENSITY
(Ambient)

SAMPLE NUMBER	DEPTH (m)	800psig NOB PRESSURE			GRAIN DENSITY (g/cc)	COMMENTS
		PERMEABILITY		POROSITY (%)		
		Kinf (md)	Kair (md)			
1	1118.06	0.055	0.092	11.7	2.66	
2	1118.54	0.039	0.069	12.4	2.66	
3	1119.13	0.013	0.028	12.7	2.70	
4	1120.53	0.011	0.026	13.5	2.68	
5	1121.19	0.015	0.028	13.7	2.69	
6	1121.59	0.092	0.128	12.1	2.68	

908259 068

Appendix 3

BIT Record

APPENDIX 3

BIT RECORD

BITs used at YORK-1

Bit No.	Size (mm)	Make	Serial No.	Out	Hours	Grade
1	311	Varel ETR1G	146999	441	27	2-2-I
2	216	Varel L114	78985	481	3	1-1-I
2RR	216	Varel L114	78985	522.7	5.5	2-2-I
CH1	216	Chris CD93	7970033	539.2	6.5	5% Worn
2RR2	216	Varel L114	78985	883	7.5	5-2-2
3	216	Varel L114	105479	907	7.5	2-1-I
4	216	Varel ETD14	146694	1117.9	31.5	1-2-I
CH2	216	CoreproCP83	10052	1132.2	5.5	
4RR	216	Varel ETD14	146694	1200	14	2-4-I

Appendix 4

Well Location Survey

908259 072

APPENDIX 4

WELL LOCATION SURVEY

KLUGE JACKSON CONSULTANTS PTY. LTD.
A.C.N. 004 778 947
SURVEYORS, ENGINEERS AND ESTATE PLANNERS

Office: Sale
Our Ref: 02087-02

908259 073

DIRECTORS:
H. Peter Kluge
John Jackson

May 10th, 2002

TABLE OF SURVEY RESULTS

AHD Level of Top of Plate	11.21
AMG Co-ordinate of Centre of steel rod.	Easting 487 829.35 Northing 5 729 515.75
Latitude	S 38°34'57.4"
Longitude	E 146°51'36.96"
Approximate AHD surface Level at Bore	10.76

Note: Table amended 28/07/2001 to include approximate pad level and surface level beside bore.

The AMG coordinates shown above are for Zone 55.

Coordinates are in AGD 66.

SALE
45 Macalister Street,
SALE, Vic 3850
(P.O. Box 47)
Telephone (03) 5144 3877
Facsimile (03) 5144 6591

MAFFRA
119 Johnson Street,
MAFFRA Vic 3860

Telephone (03) 5147 2126

TRARALGON
Suite 3/29 Breed Street,
TRARALGON Vic 3844
(P.O. Box 412)
Telephone (03) 5174 4808
Facsimile (03) 5174 6969

KLUGE JACKSON CONSULTANTS PTY. LTD.
A.C.N. 004 778 947
SURVEYORS, ENGINEERS AND ESTATE PLANNERS

Office: Sale
Our Ref: 02087-01

908259 074

DIRECTORS:
H. Peter Kluge
John Jackson

May 17th, 2002

Mr. J. Mulready,
Lakes Oil N.L.
Level 11, 500 Collins St,
Melbourne, Vic., 3000

Dear Sir,

RE: AMG and AHD Survey of Well near Ballong Road – Woodside.

We have now completed the above survey and enclose our results.

The table of results shows the co-ordinates to the centre of the pipe of the well head.

The levels are to the top of the well and the natural surface nearby. Levels for the top of pad was not supplied as none existed.

Our AMG co-ordinates have been obtained from co-ordinated marks PM 27 and the Omega Radio Tower. The AMG co-ordinates are unadjusted using Topcon Total Station and should be of an accuracy of ± 10cm. Latitude and Longitude have been obtained by converting AMG co-ordinates to latitude and longitude.

The AHD levels were obtained from PM 13 and are correct to ± 0.05 cm.

If you have any queries in the matter please contact the writer.

We thank you for your instructions and enclose our account.

Yours faithfully,
KLUGE JACKSON CONSULTANTS PTY., LTD.,

PETER KLUGE.
enc.

SALE
45 Macalister Street,
SALE, Vic 3850
(P.O. Box 47)
Telephone (03) 5144 3877
Facsimile (03) 5144 6591

MAFFRA
119 Johnson Street,
MAFFRA Vic 3860

Telephone (03) 5147 2126

TRARALGON
Suite 3/29 Breed Street,
TRARALGON Vic 3844
(P.O. Box 412)
Telephone (03) 5174 4808
Facsimile (03) 5174 6969

PE908260

This is an enclosure indicator page.
The enclosure PE908260 is enclosed within the container PE908259 at this location in this document.

The enclosure PE908260 has the following characteristics:

ITEM_BARCODE	= PE908260
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Composite Well Log
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= COMPOSITE_LOG
DESCRIPTION	= York-1 Composite Well Log, Scale 1:500, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	=
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	=
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 0
BOTTOM_DEPTH	= 1196
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE908261

This is an enclosure indicator page.
The enclosure PE908261 is enclosed within the container PE908259 at this location in this document.

The enclosure PE908261 has the following characteristics:

ITEM_BARCODE	= PE908261
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Formation Evaluation Log
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= MUD_LOG
DESCRIPTION	= York-1 Formation Evaluation (Mud Log) Log, Scale 1:500, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	=
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	= Lakes Oil N.L.
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 0
BOTTOM_DEPTH	= 1200
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE612365

This is an enclosure indicator page.
The enclosure PE612365 is enclosed within the container PE908259 at this location in this document.

The enclosure PE612365 has the following characteristics:

ITEM_BARCODE	= PE612365
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Wireline Log Print
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= WELL_LOG
DESCRIPTION	= York-1 HALS-MCFL-BHC-GR-SP Wireline Log Print, Suite 1, Run 1, Scale 1:500, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	= 09-MAR-2002
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	= Schlumberger
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 5
BOTTOM_DEPTH	= 876
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE612366

This is an enclosure indicator page.
The enclosure PE612366 is enclosed within the container PE908259 at this location in this document.

The enclosure PE612366 has the following characteristics:

ITEM_BARCODE	= PE612366
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Wireline Log Print
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= WELL_LOG
DESCRIPTION	= York-1 HALS-BHC-MCFL-TLD-CNL-GR Wireline Log Print, Suite 2, Run 1, Scale 1:500, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	= 15-MAR-2002
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	= Schlumberger
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 904
BOTTOM_DEPTH	= 1191
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE612367

This is an enclosure indicator page.
The enclosure PE612367 is enclosed within the container PE908259 at this location in this document.

The enclosure PE612367 has the following characteristics:

ITEM_BARCODE	= PE612367
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Wireline Log Print
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= WELL_LOG
DESCRIPTION	= York-1 HALS-BHC-MCFL-TLD-CNL-GR Wireline Log Print, Suite 2, Run 1, Scale 1:200, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	= 15-MAR-2002
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	= Schlumberger
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 904
BOTTOM_DEPTH	= 1191
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

908259 080

PE612368

This is an enclosure indicator page.
The enclosure PE612368 is enclosed within the container PE908259 at this location in this document.

The enclosure PE612368 has the following characteristics:

ITEM_BARCODE	= PE612368
CONTAINER_BARCODE	= PE908259
NAME	= York-1 Wireline Log Print
BASIN	= GIPPSLAND
OFFSHORE?	= Y
DATA_TYPE	= WELL
DATA_SUB_TYPE	= WELL_LOG
DESCRIPTION	= York-1 HALS-MCFL-BHC-GR-SP Wireline Log Print, Suite 2, Run 1, Scale 1:200, Enclosure of York-1 Well Completion Report
REMARKS	=
DATE_WRITTEN	= 09-MAR-2002
DATE_PROCESSED	=
DATE_RECEIVED	=
RECEIVED_FROM	= Lakes Oil NL
WELL_NAME	= York-1
CONTRACTOR	= Schlumberger
AUTHOR	=
ORIGINATOR	= Lakes Oil N.L.
TOP_DEPTH	= 5
BOTTOM_DEPTH	= 876
ROW_CREATED_BY	= DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)