



**LAKES OIL N.L.**

(A.C.N. 004 247 214)

as operator for

**PETRO TECH PTY. LTD**

(A.C.N. 009 116 429)

Permit Holder

**TRIFON-2**

**STAGE 1:**

**DRILLING**

**STAGE 2:**

**RE-ENTRY, DEEPENING**

**in**

**PEP 157**

# **WELL COMPLETION REPORT**

**BASIC GEOTECHNICAL DATA**

**CONFIDENTIAL**

**By**

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Schlumberger: Run 1 1260-2500m: HAL-Sonic-PEX-GR

## **1. SUMMARY**

Trifon-2 well was located in PEP 157 in the onshore Gippsland Basin and was designed to appraise the extent of the Strzelecki Group gas accumulation discovered by the adjacent Trifon-1 discovery well. The site is located approximately 25 km south east of Sale. Access is by means of Fields Road, off Hawkins Road, (which runs eastward from the Sale-Seaspray Road), thence by the pre-existing Burong-1 access track alongside the pipeline easement, then by upgraded fire access tracks within Ballas Plantation (refer location map, Figure 1).

Trifon-1 and Trifon-2 wells are located on the Trifon prospect, a ENE trending fault- bounded structural high, seismically defined at Top Strzelecki level. The structure extends for about 8 km northeastwards of Crossroads -1 well and includes Gangell-1, Trifon-1 Burong -1 and the three North Seaspray wells. Gas flows within the Strzelecki Group were recorded in North Seaspray- 1 and 3 wells, Trifon-1 and Gangell-1. The overlying Latrobe Group was water-saturated in all these wells. Poor hole conditions at Trifon-1, located some 40 metres from Trifon-2, made interpretations of the wireline logs difficult, and therefore Trifon-2 was drilled to provide a better data base for assessment of the Strzelecki reservoirs.

Trifon-2 Stage 1 was spudded on 4<sup>th</sup> May 2004 with 311mm hole and was drilled to 315m, and then 216 mm hole drilled to a depth of 1267m. The hole was logged, cemented and 244mm casing set to the top of the Strzelecki Group (1265m).

Upon arrival of specialized Halliburton fracturing equipment, Trifon -2 Stage 2 was drilled by re-entering the upper cased hole with 156 mm hole on 21st July 2004 and reached a total depth of 2500m. Stage 2 was drilled with an underbalanced mud system to minimize potential formation damage during later fracture testing. Two cores were cut in the Strzelecki Group: Core #1: 1933-1935m; Core #2: 2357-2366m.

Schlumberger logs were run at total depth. After logging Stage 2, 113 mm casing was cemented from T.D. to the casing shoe at 1265m. The BOP was then removed and a 101mm production frac tree was installed and tested to 5000 psi.

The rig was released on 8th August 2004.

## 2. WELL HISTORY

### 2.2 General Data

Well Name and Number	Trifon-2
Location	
AMG co-ordinates (Zone 66)	515 891.97 E 5 760 414.03 N Latitude: 38° 18' 15'' S Longitude 147° 11' 36' E
Elevations	G.L. 25.05 m A.S.L. R.T. 28.45 m A.S.L.
Petroleum Tenement	PEP 157
Name of Operator	LAKES OIL N.L. A.C.N. 004 247 214 11 <sup>th</sup> Level 500 Collins Street Melbourne.
Other Participants	None
Date Drilling Commenced	Stage 1 : 4th May 2004 Stage 2: 21st July 2004
Date Drilling Completed	Stage 1: 13th May 2004 Stage 2 : 4th August 2004
Date Rig Released	Stage 1: 15th May 2004 Stage 2: 8th August 2004
Drilling Time to T.D.	Stage 1: 9 days Stage 2: 15 days
Total Depth	2500 m
Status	Completed for future fracture stimulation or production.

## 2.2 Rig Data

Drilling Contractor	Hunt Energy and Mineral Co. Australia Pty. Ltd.
Rig	Al Hicks Model AH-100
Substructure	Box type
Weight Indicator	Hydraulic Pressure
Power	2 engine compound
Rotary	Oilwell Mdl-175
Blocks	Sowa Model S-150-4, 150 ton
Pumps	Tri Service Machine TSM-500 7.5X16" Duplex 1X Continental Emsco DB-550 (7.5X16") Duplex
Mud mixing	Demco Style Hopper with 6X8 centrifugal pump
Sump pump	Cellar Jet
Transfer Pump	2 X 3" portable
Tubulars	5.5" X 13.30lbs/ft Grade "E" D.P.
Fishing Tools	1X Bowen C-5342 Overshot 1XBowen C-5171 Overshot
Handling Tools	Elevators/Slips/Safety Clamp/Rotary Tongs/Chain Tongs
Stablizers	17.5", 12.25", 8.5" , 6"
Spare Parts	As reasonably required to conduct operations for programmed well
Personnel	13 Rig plus camp staff.
Drilling Hours	24 hours with 12 hour shifts

## **2.3 Drilling Data**

### **Summary of Drilling Operations**

The following is the daily operations summary for Trifon-2. Further details are provided in the time/depth curve.

Trifon No. 2 was spudded at 2000 hrs on the 4<sup>th</sup> May, 2004. A 508mm conductor was preset at 12m prior to spud. The well was spudded with 311mm hole. 311mm hole was drilled from surface to 315m without hole problems. The hole was conditioned prior to running casing. 244mm casing was cemented at 313m. BOP's were then installed and pressured tested before continuing to drill with 216mm bit. Drilled 216mm hole to 317m before changing the mud system and drilling on to 683m before tripping out for a bit change.

Tight hole was encountered on the trip out from 600m to 410m, 216mm hole was drilled to 711m before mud losses were cured in the Latrobe Group Coals and continued drilling to 900m. A wiper trip was conducted to 650m with no problems before drilling to 956m and curing mud losses with LCM materials. Drilling with 216mm hole continued to 1267m before the hole was wiper tripped back to the shoe at 313m with only slight resistance in the Latrobe Group coals. 178mm casing was run in and set at 1265m with a few holdups caused by ledging in the Gippsland Limestone. The BOP was removed prior to the rig being released at 1800hrs on 15<sup>th</sup> May, 2004.

Trifon 2 was re-entered with the rig on day-rate from 21<sup>st</sup> July at 0000hrs. The BOP was installed and pressure tested to 2000psi prior to drilling out of the shoe with 156mm hole to 1269m before running formation integrity test. Continued drilling 156mm hole to 1554m before tripping back to shoe at 1265m, in good hole. Continued drilling 156mm hole to 1819m before wiper tripping to 1570m in good hole and drilled on to 1933m before tripping out for coring. Cut core#1 from 1933-1935m before tripping out with core due to slow coring rate. Tripped in hole with 156mm bit and continued drilling to 2128m.

Pumped LCM pill to 2240m before drilling on with 156mm hole to 2256 and tripping out to change the bit. Tripped back in hole and continued to drill to 2357m and treating mud losses with LCM material before tripping out for core# 2. Cut core# 2 from 2357m to 2366m before tripping back in hole with 156mm bit. Continued drilling with 156mm bit to TD at 2500m before wiper tripping to 2213m with no problems and tripping out for logging. Schlumberger ran Log# 1 PEX-SONIC-HALLS and Log# 2 HRLA before tripping in hole with 156mm bit to 2487m.

114mm casing was run to 2488m and cemented. Schlumberger cement bond log tool could not pass 2242m, however showed good bond from 2242m-1950m, whilst above 1950m showed poor quality bond. The cement bond log was run again and could not pass 2242m due probably to a cement blockage and running in the smaller Expertest tool confirmed the blockage, tagging the top at 2242m. The BOP was removed and a 101mm production frac tree was installed and tested to 5000 psi. The rig was released at 1200hrs on 8<sup>th</sup> August 2004.

**Hole sizes and depths:****TABLE 1**

HOLE SIZE	INTERVAL
12.5" (311mm)	15 to 315m.
8.5" (216mm)	315m to 1267m.
6.14" (156mm)	1267 to 2500m.

**Casing and cementing:****TABLE 2**

TYPE		CONDUCTOR	CASING	CASING	CASING
Size	mm	508	244	178	114
Weight	kg/m		53.6		73.7
Grade		Line pipe	K-55	L-80	P-110
Connection			BTC	BTC	BTC
Joints		1	26	106	200
Length	m	12	313		2488.33
Shoe	m	15m from RKB	313	1265	2488.00
Sacks			266 sx		
Class			Bulk		
Av. Wt.	ppg				

**Deviation Surveys:****TABLE 3**

DEPTH	DEVIATION
50	0.25 degrees
150	0.25 degrees
315	0.25 degrees
493	0.25 degrees
683	1.00 degrees
888	1.00 degrees
1260	0.25 degrees
1400	0.75 degrees
1798	2.00 degrees
2044	3.00 degrees

**Drilling Fluid:**

- a. Spud - 315m.      Type: Freshwater Gel /Starch spud mud
- b. 352 - 1267m      KCl/PHPA mud system.
- c. 1267 - 2500m      FLC 2000



## Physical Mud Properties:

**TABLE 4**

DEPTH	M	315	420	627	730	931	1095	1231	1267
Density	S.G.	9.6	1.129	1.153 (9.6)	1.153 (9.6)	1.16 (9.8)	1.16 (9.8)	1.16 (9.8)	1.16 (9.8)
Viscosity	Sec	47-68	62	52	43	48	52	48	47
Water Loss	Cc	8.2	7.4	5.4	4.8	4.8	5.4	4.8	4.8
pH	Strip	9.00	9.5	9.0	8.5	8.5	9.0	9.0	9.0
Filter Cake	32 nd	2	1	2	2	2	2	2	2
PV / YP	cp/lb/100	18 / 34	11 / 19	15 / 32	13 / 17	14 / 24	14 / 24	14 / 25	14 / 23
Gels	Lbs/100ft2	19 / 25 / 0	7 / 10 / 11	12 / 17 / 19	6 / 8 / 8	9 / 13 / 15	10 / 14 / 15	10 / 14 / 15	9 / 13 / 15
Sand	% Vol	1.25		0.50	0.50	0.25	0.25	0.25	0.25
Solids	% Vol	9.3	3.4	5.1	4.7	6.4	6.9	6.9	8.0
ASG				3.397	3.467	3.12	3.074	3.079	3.112
Hardness	CaMg/l		160						
Chlorides	mg/l	900	26000	23000	28000	33000	26000	27000	26000
PHPA	PPB			0.80	0.50	0.50	0.40	0.40	0.40
KCl	% by wt			4.5	5.5	6.0	5.00	5.50	5.00

DEPTH		1267	1431	1639	1838	1935	1971
Density	S.G.	1.092	1.128	1.128	1.152	1.164	1.152
Viscosity	Sec	43	39	38	38	39	37
Water Loss	Cc		8.8	10.0	8.0	8.0	9.2
pH	Strip	8.8	9.5	9.8	9.8	9.8	9.0
Filter Cake	32 nd		1	1	1	1	1
PV / YP	cp/lb/100		39 / 10	9 / 15	11 / 15	12 / 15	9 / 13
Gels	Lbs/100ft2		6 / 9	5 / 8	5 / 9	5 / 9	4 / 8
Sand	% Vol		0.25	0.25	0.25	0.25	0.25
Solids	% Vol		4.7	4.9		5.7	5.7
Oil/Water	% Vol	0/98.9			6.2	10	
M.B.L	Ppb/equiv						10
Hardness	CaMg/l		320	180	260	280	280
Chlorides	mg/l	25000	24000	21000	25000	25000	25000
K +	Mg/L			24318			
Sulphite	Mg/L		120				
KCl	% by wt	5.0	4.8	4.5	4.9	4.9	4.9

<b>DEPTH</b>		2128	2270	2357	2366	2451	2500
<b>Density</b>	S.G.	1.164	1.128	1.116	1.128	1.104	1.104
<b>Viscosity</b>	Sec/qt	37	35	35	37	35	37
<b>Plastic Viscosity</b>	Cp@ oC	9	5	4	5	7	7
<b>Yield Point</b>	Lb/100ftsq	12	10	7	9	9	9
<b>Gel Strengths</b>	Lb/100ftsq	4 / 8	3 / 8	2 / 6	2 / 8	2 / 8	2 / 8
<b>Filtrate API</b>	Cc/30min	10.5	11.5	11.2	9.5	8.5	8.0
<b>Cake thickness</b>	32nds	1	2	1	1	1	1
<b>Solids content</b>	% Vol	5.9	4.5	4.4	5.3	4.3	4.4
<b>Liquid cont O/W</b>	% Vol	0 / 94.1	0 / 95.5	0 / 95.6	0 / 94.7	0 / 95.7	0 / 95.6
<b>Sand content</b>	% Vol	0.25	0.25	0.25	0.25	0.50	
<b>M.B.C.</b>	Ppb/equiv	12.5	5.0	2.5	2.5	5.0	5.0
<b>pH</b>		9.0	8.5	8.5	9.0	8.5	8.5
<b>Sulphite</b>	Mg/l	120	60	80	120	120	120
<b>KCL</b>	% by wt	4.9	5.1	4.5	4.5	3.2	3.2

## Water Supply:

Water was obtained from a bore on site.

## Bit Data

**TABLE 5**

<b>BIT NUMBER</b>	<b>1RR</b>	<b>2RR</b>	<b>3</b>
<b>Size (mm)</b>	311	216	216
<b>Make</b>	Security	Varel	Varel
<b>Type</b>	EBX-SC1	CHI-GMS	CHI-GMS
<b>IADC Code</b>	1-1-7	1-1-7	1-1-7
<b>Serial Number</b>	10523506	197685	197696
<b>Nozzles (32)</b>	16-16-16-16	13-13-13	13-13-13
<b>Depth in (m)</b>	15	315	683
<b>Depth out (m)</b>	315	683	1267
<b>Total Metres</b>	300	368 (547)	584
<b>Hours</b>	25	35.5 (60.0)	67.9 on bottom
<b>WOB (kg)</b>	5000	7500	7500
<b>RPM</b>	100	110	110
<b>Condition</b>	3-3-RG-A-E-NO-TD	3-3-RG-G-3-2-NO-HR	7-8-WT-A-3-RG-TD
<b>Impact Force</b>		374.8 lb/ft	382 lbs/ft
<b>Jet Velocity</b>		249 ft/sec	249 ft/sec

BIT NUMBER	1RR	CORE BIT #1	3RR-2	5 RR	CORE BIT#2
Size (mm)	156	156	156	156	156
Make	Varel	Security	Varel	Varel	Security DBS
Type	L-127	FC 264 LI	MKS 56 G-1	ETD	FC 264 LI
IADC Code	1-2-7		M-322	4-3-7	
Serial Number	197456	7971453		159891	7971453
Nozzles (32)	16-16-16			12-14-14	
Depth in (m)		1933	1267	2256	2357
Depth out (m)		1935	2256	2500	2366
Total Metres		2	989	236	92% Recovery
Hours		1.50	121.5	47.5	3.5
WOB (kg)		4000	5-7000	10000	5-8000
RPM		100	100	100	90
Condition		Good	30% Worn		Bit excellent
Impact Force			154	186	
Jet Velocity			157	174	

## 2.4 Logging and Testing

### Wellsite Geologist:

David Horner, Tim O'Brien

### Mudlogging:

F.I.D. total gas, chromatograph. 24 hour Mudlogging unit supplied by Geoservices.

### Ditch Cutting Samples:

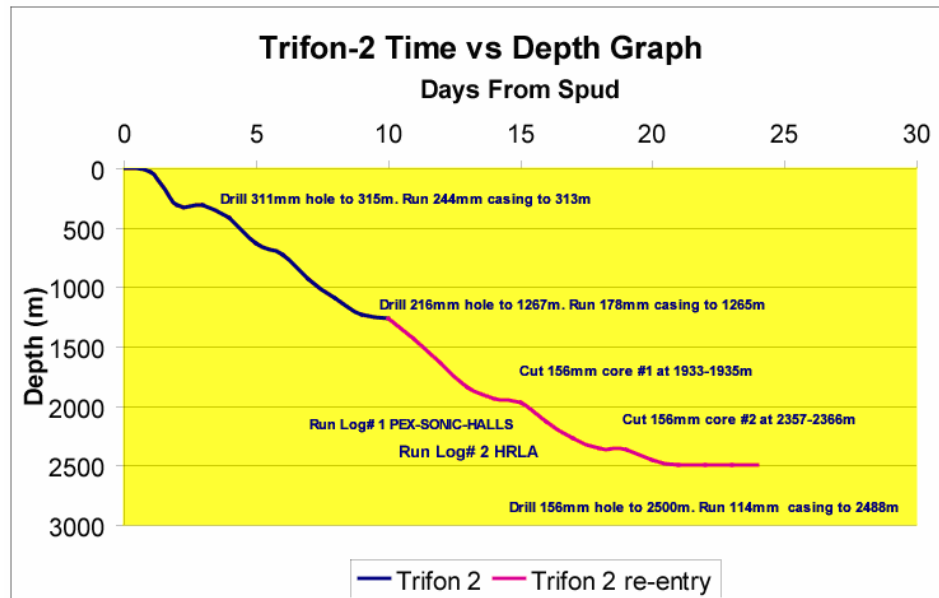
Cuttings were collected at 10 meter intervals from spud to 352m, then at 3m intervals to 2178m (T.D.) These being 1 set 500gm unwashed calico bag, 2 sets 100 gm washed and dried and 1 set washed samplex trays.

### Coring:

Two cores were cut in Trifon-2.

Core 1: 1933-1935 m  
Core 2: 2357-2366 m

See Appendix 2 for full description.



#### **Sidewall Cores:**

No sidewall cores were taken.

#### **Wireling Logs:**

Schlumberger: Run 1 1260-2501 m:HAL-Sonic-PEX-GR CCL

**Bottom Hole Temperature: 88 °C**

#### **Velocity Survey:**

No velocity survey was conducted.

### **3. GEOLOGY**

#### **3.1 Regional Geology**

The Gippsland Basin is an early Cretaceous to Cainozoic basin occupying approximately 46,000 square kilometres 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 beneath Bass Strait and 30% onshore (Figure 4).

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 after successful drilling offshore, at the top of the Latrobe Group "coarse clastics", but a lack of understanding of the stratigraphy and the mechanism of hydrocarbon generation, migration and timing of structures, along with the poor quality of the seismic and well log data, resulted in a downgrading of the hydrocarbon potential of the onshore area.

#### **3.2 Permit PEP 157**

Lakes Oil N.L. acquired the PEP 137 (now PEP 157) permit in April 1999, following the drilling by Roma Petroleum N.L. of the McCreesh-1 well, an unsuccessful test of the top Latrobe Group sands. PEP 157 covers an area of 1,680 square kilometres within the onshore Gippsland Basin. The permit extends over the northern part of the Seaspray Depression, the southern portion of the Lake Wellington Depression and part of the Baragwanath Anticline. Fourteen exploration wells have been drilled from 1962 - 2003, with Lakes Oil N.L. having tested gas at the North Seaspray-3, Trifon-1 and Gangell-1 (Figure 5). North Seaspray-3 was a follow up to Woodside/Lakes Oil North Seaspray-1 well, which also flowed gas from the top of the Strzelecki Group.

#### **3.3 Exploration History**

Hydrocarbon exploration commenced in the onshore region of the basin in 1924 when the Lake Bunga No.1 well encountered traces of oil and gas, leading to the discovery and development of the Lakes Entrance oil field. The oil accumulation is found within a glauconitic sand member of the Oligocene Lakes Entrance Formation which appears to have acted as a 'thief zone' for oil migrating along the pre-Tertiary unconformity. The field produced a total of 10,000 bbls of 15.7 API gravity oil before production ceased in 1956. Aside from the Lakes Entrance oil accumulation, wet gas flowed to the surface during testing from the Strzelecki sandstones at North Seaspray 1 and 3, Gangell-1 and Trifon-1.

Petroleum exploration in the permit commenced in the early 1960s and continued into the early 1970s, conducted mainly by Woodside and Arco, with eight wells being drilled within the permit. This exploration originally had as its main objective the Strzelecki Group, with emphasis moving to the Latrobe Group later in this period. Few of these wells, except for North Seaspray-1, are thought to be located within closure at the Top Latrobe Group level.

Several shallow bores have been drilled in the vicinity of PEP 157 by Victorian Electricity, Coal and Water Resources authorities. However, none of these bores encountered Latrobe Group reservoirs at a significant depth or within closure.

During 1985, Hartogen Energy Ltd drilled Burong-1 to test the Top LaTrobe at the crest of a northeast trending asymmetrical anticline which is fault controlled to the northwest. While the Latrobe Group contained excellent reservoir rock, no significant shows were recorded within this section.

Recently, Lakes Oil has drilled nine wells within their onshore Gippsland permits. PetroTech-1 targeted greensands of the Lakes Entrance Formation but was not tested; Hunters Lane-1 produced oil from the same formation but at a non-economic rate; Baudin-1 and Investigator-1, which both targeted Lower Latrobe Group sands, were unsuccessful, probably due to lack of seal. North Seaspray-3, Trifon-1 and Gangell-1 drilled between 2000 and 2001, all targeted Strzelecki Group sands. Boundary Creek-1 corehole was drilled in 2001 to obtain information on reservoir quality within the Strzelecki Group. York-1 was drilled in March 2002 as a Latrobe Group test of a robust four way dip closure located 7 km south of the town of Woodside in PEP 158. Later in 2002 Deadman Hill-1 and Protea-1 stratigraphic holes were drilled in PEP 157. They were designed to locate the pinchout of Golden Beach Group sediments between Colliers Hill-1 and Boundary Creek-1.

### **3.4 Tectonic History**

The Gippsland Basin is a rift basin, which originated in the Late Jurassic to Early Cretaceous and consists of alternating half graben structures along its east-west trend (Figure 4). It is characterised by a deep central basin, flanked by northern and southern terraces. In the onshore area, the Late Cretaceous movements were accompanied with volcanism in the western margin of the basin. Several phases of positive structural inversion occurred in the Gippsland Basin from Mid-Oligocene to the present time, creating the major hydrocarbon bearing structures seen in the offshore region. The main phase occurred during the Late Miocene, which resulted in inversion of existing features and the creation of anticlinal structures.

### 3.5 Structural Elements

The onshore area can be tectonically sub-divided into six major areas (Figure 4):

**a. Northern Platform (Lakes Entrance Platform):**

This lies immediately south of the Eastern Highlands, where the Palaeozoic Basement gently slopes southwards and is unconformably overlapped by Oligocene - Miocene marine sediments and thin Pliocene - Quaternary continental deposits.

**b. Latrobe Valley Depression:**

This lies between the Palaeozoic Eastern Highlands to the north and the Early Cretaceous Balook Block to the south. Over 700 metres of continental Latrobe Valley sediments are present in this area.

**c. Lake Wellington Depression:**

This lies to the south of the Northern Platform, where over 1200 metres of Eocene to Pliocene sediments unconformably overlie the Early Cretaceous rocks. This trough is offset from the Latrobe Valley Depression to the west, by left lateral displacement on the Yinnar Transfer Fault Zone which occurred during the Tertiary. The boundary also closely coincides with the western limit of marine Tertiary sediments. To the east, the Lake Wellington depression merges with the Strzelecki Terrace.

**d. Baragwanath Anticline:**

This is the eastern extension of the outcropping Balook High. It is an Early Cretaceous block, which was elevated during the Late Miocene time as a result of the renewed lateral strike slip wrenching along the Boundary Fault Systems. It separates the Lake Wellington Depression to the north from the Seaspray Depression to the south. On the crest of the structure, thin Miocene strata are succeeded unconformably by a veneer of Pliocene-Pleistocene sediments. On the flanks of the structure, however, the Miocene sediments wedge out towards the crest by onlap at the base and erosion at the top of the sequence.

**e. Seaspray Depression:**

This is the onshore extension of the Central Deep. It occupies the southern onshore part of the basin, where the most complete stratigraphic section is present. The permit occupies the northeastern end of the Seaspray Depression.

**f. Southern Terrace:**

Wilson's Promontory is an erosional remnant of a broad shallow basement platform bounding the Gippsland Basin on its southern side. The Southern Terrace represents the edge of this platform. The Chitts Creek Conglomerate onlaps the South Terrace as a mirror image to the Tyers Conglomerate on the Northern Terrace.

### **3.6 Reasons for Drilling**

Trifon-2 was drilled to more fully evaluate the section drilled in Trifon-1, located some 50 metres to the southwest. Poor hole conditions at Trifon-1 made interpretations of the electric logs difficult, and therefore Trifon-2 was drilled to provide a better data base for assessment of the zones to be fractured.

### **3.7 Geological Summary**

A summary of the lithology penetrated in Trifon-2 well appears below. Refer to Appendix 1 for detailed cuttings descriptions.

#### **Spud – 33m**

Sandstone (90%) in part grading to Claystone (10%).

SANDSTONE: medium red brown, very fine to very coarse, dominantly coarse, angular to subrounded, very poorly sorted, no visible cement, abundant red brown argillaceous and silt matrix, quartzose with common strong orange brown staining, unconsolidated, good inferred porosity, no oil fluorescence at top grading with depth to:

SANDSTONE: medium green grey, very fine to very coarse, dominantly coarse, angular to subrounded, very poorly sorted, no visible cement, abundant medium green grey argillaceous matrix, quartzose, unconsolidated, good inferred porosity, no oil fluorescence.

CLAYSTONE: red brown, very silty, abundant dispersed very fine to very coarse quartz sand grains, very soft, sticky.

#### **33-91m**

Massive Sandstone (100%).

SANDSTONE: medium grey, very fine to grit, dominantly medium, subangular to rounded, very poorly sorted, no visible cement, common medium grey argillaceous and silt matrix, quartzose, common dark grey to black cherty lithics, trace black coal detritus, unconsolidated, very good inferred porosity, no oil fluorescence.

#### **91-165m**

Massive argillaceous shelly Marl (100%).

MARL: medium green grey to medium grey, very argillaceous, abundant shell fragments, common forams, trace black coal detritus, very soft, sticky, non fissile.

#### **165-232m**

Massive fossiliferous Calcarenite (100%).

CALCARENITE: light to medium green grey, light to medium grey, light to medium yellow brown, very fine to coarse grained, abundant shell fragments and bryozoa, trace to common dispersed very fine to coarse quartz sand grains, slightly to moderately argillaceous, trace light brown chert, trace black coal detritus, friable, poor to fair inferred porosity.



**232-316m**

Massive Calcarenite (100%).

**CALCARENITE:** light grey to medium brown grey, very fine to coarse, dominantly fine, moderate calcareous cement, becoming calcilutitic and marl in part with depth, abundant bryozoa, common shell fragments echinoid spines and forams, slightly to moderately argillaceous, common glauconite, trace fine black coal detritus, friable, poor inferred porosity.

**316-420m**

Calcarenite (70%) grading to Calcilutite (30%).

**CALCARENITE:** light grey to light brown grey, very fine to fine, very calcilutitic in part, abundant bryozoa, common shell fragments echinoid spines and forams, moderately to very argillaceous, trace glauconite, trace fine black carbonaceous detritus, friable, very poor inferred porosity.

**CALCILUTITE:** light grey to light brown grey, moderately to very argillaceous, finely calcarenitic and calcisiltitic in part, trace bryozoa and forams, trace glauconite, soft to firm, non fissile.

**420-563m**

Calcilutite (60%) grading to Marl (40%) with minor Calcarenite (trace).

**CALCARENITE:** light grey to light brown grey, very fine to fine, very calcilutitic in part, common bryozoa, trace shell fragments echinoid spines and forams, moderately to very argillaceous - grades to marl in part, trace glauconite, friable, very poor inferred porosity.

**CALCILUTITE:** off white to light grey to light brown grey, slightly to very argillaceous - grades to marl, calcisiltitic and calcarenitic in part, trace bryozoa and forams, trace glauconite, soft to firm, non fissile.

**MARL:** medium grey to medium brown grey, rarely medium green grey, calcisiltitic in part, occasionally very argillaceous, trace bryozoa and forams, rare glauconite, soft, non fissile.

**563-627m**

Massive Marl (100%).

**MARL:** light to medium green grey to medium grey, occasionally medium brown grey, very calcareous, trace to common bryozoa and forams, rare glauconite, rare pyrite, soft, non fissile.

**627-688m**

Massive Marl (100%) with minor Dolomite (trace) at base only.

**MARL:** off white to medium brown grey, light to medium green grey, trace bryozoa and forams, trace glauconite becoming abundant at base, soft, non fissile.

**DOLOMITE:** medium brown, cryptocrystalline, trace glauconite, moderately argillaceous and calcareous in part, hard.

**688-731m**

Sandstone (30%) interbedded with Claystone (40%) and Coal (30%) with minor Dolomite (trace) at top only.

**SANDSTONE:** light grey brown, very fine to medium, dominantly fine, trace coarse to very coarse grains, subangular to subrounded, moderately sorted, weak calcareous cement, abundant medium brown grey argillaceous and silt matrix, clear to opaque quartz grains often with brown argillaceous stain, abundant glauconite grains at top, trace black coaly detritus, friable, poor to fair inferred porosity, no oil fluorescence.

**CLAYSTONE:** medium brown to medium brown grey, very silty, very finely to finely arenaceous in part, slightly to very carbonaceous, trace pyrite, soft, very dispersive, non fissile.

**COAL:** dark brown to black, earthy texture, blocky fracture, very argillaceous, firm to moderately hard.

**DOLOMITE:** medium brown, cryptocrystalline, trace glauconite, moderately argillaceous and calcareous in part, hard.

**731-837m**

Sandstone (90%) interbedded with Claystone (10%) and Coal (trace).

**SANDSTONE:** light brown grey, very fine to very coarse, dominantly medium, subangular to rounded, very poorly sorted, weak silica cement, common medium brown argillaceous and silt matrix, clear to opaque quartz grains with minor brown argillaceous stain, trace grey green lithics, trace black coaly detritus, friable, very good inferred porosity, no oil fluorescence.

**CLAYSTONE:** dark brown grey, very silty, very carbonaceous, abundant dispersed very fine to coarse quartz sand grains in part, soft, very dispersive, non fissile.

**COAL:** dark brown to black, moderately to very argillaceous, earthy texture, blocky fracture, moderately hard.

**837-931m**

Sandstone (30%) interbedded with Claystone (60%) and Coal (10%).

**SANDSTONE:** light grey to light brown grey, very fine to very coarse, dominantly coarse, subangular to rounded, very poorly sorted, weak silica cement, abundant medium brown argillaceous and silt matrix, clear to opaque quartz grains occasionally with brown argillaceous stain, trace grey green lithics, trace coarse clear mica flakes, common black coaly detritus, friable, poor to good inferred porosity, no oil fluorescence.

**CLAYSTONE:** medium brown to brown black, occasionally off white, very silty, very carbonaceous, abundant dispersed very fine to coarse quartz sand grains in part, soft, very dispersive, non fissile.

**COAL:** dark brown to black, slightly to dominantly very argillaceous, earthy to occasionally subvitreous texture, blocky to occasionally subconchoidal fracture, moderately hard, brittle where clean.

### **931-965m**

Sandstone (30%) interbedded with Claystone (50%) and Coal (20%).

**SANDSTONE:** light brown grey, very fine to very coarse, dominantly coarse, angular to subrounded, very poorly sorted, weak silica cement, abundant medium brown argillaceous and silt matrix, clear to opaque quartz grains occasionally with brown argillaceous stain, trace grey green lithics, common black coaly detritus, friable, poor to good inferred porosity, no oil fluorescence.

**CLAYSTONE:** medium to very dark brown, very silty, very carbonaceous - grading to argillaceous coal, abundant dispersed very fine to coarse quartz sand grains in part, soft, very dispersive, non fissile.

**COAL:** dark brown to black, moderately to very argillaceous, earthy texture, platy to blocky fracture, moderately hard, brittle where clean.

### **965-1095m**

Sandstone (70%) with minor interbedded Claystone (30%) and Coal (Trace).

**SANDSTONE:** light grey to light brown grey, very fine to pebble, dominantly coarse to very coarse, angular to subrounded, very poorly sorted, weak silica cement, trace to common off white argillaceous matrix, clear to opaque quartz grains, occasional yellow orange quartz grains in part, trace grey green lithics, common black coaly detritus, trace coarse mica flakes, trace pyrite, friable, very good inferred porosity, no oil fluorescence.

**CLAYSTONE:** off white to medium grey to brown grey, non to occasionally very silty, abundant dispersed very fine to coarse quartz sand grains in part, trace pyrite, soft, very dispersive, non fissile.

**COAL:** dark brown to black, slightly to moderately argillaceous, earthy texture, platy to blocky fracture, moderately hard, brittle where clean.

### **1095-1183m**

Sandstone (60%) with minor interbedded Claystone (40%) and Coal (Trace).

**SANDSTONE:** light grey to light brown grey, very fine to grit, dominantly medium to coarse, angular to subrounded, very poorly sorted, weak silica cement, common to abundant off white argillaceous matrix, clear to opaque quartz grains, trace grey green lithics, trace mica flakes, common black coal detritus, trace pyrite, friable, fair to very good inferred porosity, no oil fluorescence.

**CLAYSTONE:** off white medium brown, occasionally medium grey, non to moderately silty, abundant dispersed very fine to coarse quartz sand grains in part, trace pyrite, common black coal detritus, soft, very dispersive, non fissile.

**COAL:** dark brown to black, slightly to moderately argillaceous, earthy texture, platy to blocky fracture, moderately hard, brittle where clean.

### **1183-1231m**

Sandstone (60%) with minor interbedded Claystone (40%) and Coal (Trace).

**SANDSTONE:** light grey to light brown grey, very fine to occasionally grit, dominantly medium to coarse, angular to subrounded, very poorly sorted, weak silica and calcareous cements, common to abundant off white argillaceous matrix, clear to opaque quartz grains, trace green black lithics, common black coal detritus, trace pyrite, friable, good inferred porosity, no oil fluorescence.

**CLAYSTONE:** off white to light brown to occasionally medium grey, non to moderately silty, abundant dispersed very fine to coarse quartz sand grains in part, common black coal detritus, trace pyrite, soft, very dispersive, non fissile.

**COAL:** dark brown to black, slightly to moderately argillaceous, earthy to slightly subvitreous texture, blocky fracture, moderately hard, brittle where clean.

### **1231-1236m**

Massive Sandstone (100%).

**SANDSTONE:** light to medium greenish grey, very fine to occasionally medium, dominantly fine, subangular to subrounded, moderately sorted, weak silica and calcareous cements, common white argillaceous matrix, clear to opaque quartz grains, abundant off white altered feldspars and grey green lithic grains, common orange brown lithics, trace black carbonaceous detritus, friable, poor to fair visual porosity, no oil fluorescence.

### **1236-1267m TD Stage 1**

Massive Claystone (100%).

**CLAYSTONE:** light to medium grey to medium green grey to medium brown grey, slightly silty, trace off white very kaolinitic very fine sandstone laminae, slightly calcareous, trace micromica, trace pyrite, trace brown to black carbonaceous matter, soft to firm, non fissile.

### **1267-1397m**

Sandstone (60%) interbedded and laminated with Claystone (40%).

**SANDSTONE:** light to medium green grey, very fine to medium, rare coarse grains in part, dominantly fine, subangular to subrounded, moderately sorted, weak to occasionally moderate silica and calcareous cements, common to abundant white argillaceous matrix, abundant off white altered feldspars and grey green lithic grains, trace brown to red lithics, trace to occasionally common quartz grains, trace coarse brown mica flakes, trace fine black carbonaceous detritus, trace pyrite, friable, nil to poor visual porosity, no oil fluorescence.

**CLAYSTONE:** light to medium green grey to medium grey to medium brown grey, slightly to very silty, trace very fine black carbonaceous specks, trace very fine altered feldspar grains in part, trace micromica, soft to firm, non fissile.

### **1397-1431m**

Sandstone (60%) interbedded and laminated with Claystone (40%).

**SANDSTONE:** light to medium green grey, very fine to occasionally coarse, dominantly medium, subangular to subrounded, moderately sorted, weak silica and

calcareous cements, common white argillaceous matrix, abundant off white altered feldspars and grey green lithic grains, trace brown to red lithics, common quartz grains, trace coarse brown mica flakes, trace fine black carbonaceous detritus, trace pyrite, friable, poor to fair visual porosity, no oil fluorescence.

CLAYSTONE: light to medium green grey to medium grey to occasionally medium brown grey, very silty, trace very fine black carbonaceous specks, trace very fine altered feldspar grains in part, trace micromica, soft to firm, non fissile.

#### **1431-1501m**

Sandstone (50%) interbedded and laminated with Claystone (50%).

SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, subangular to subrounded, moderately sorted, moderate silica and calcareous cement, abundant white argillaceous matrix - matrix supported in part, abundant feldspars and grey green lithic grains, common brown to red lithics, trace quartz grains, trace coarse brown mica flakes, trace black coal detritus, moderately hard, nil to poor visual porosity, no oil fluorescence.

CLAYSTONE: light to dark grey to medium green grey to occasionally medium brown grey, moderately to very silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1501-1639m**

Sandstone (90%) interbedded and laminated with Claystone (10%).

SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, subangular to subrounded, moderately sorted, moderate silica and calcareous cement, abundant white argillaceous matrix - matrix supported in part, abundant feldspars and grey green lithic grains, common brown to red lithics, trace quartz grains, trace coarse brown mica flakes, trace black coal detritus, moderately hard, very poor to poor visual porosity, no oil fluorescence.

CLAYSTONE: light to dark grey to medium green grey to occasionally medium brown grey, moderately to very silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1639-1702m**

Sandstone (50%) interbedded and laminated with Claystone (50%)

SANDSTONE: light to medium green grey, very fine to medium, dominantly fine, subangular to subrounded, moderately sorted, moderate silica and weak calcareous cement, common to abundant white argillaceous matrix, abundant off white altered feldspars and grey green lithic grains, trace brown to red lithics, trace to common quartz grains, trace coarse brown mica flakes, trace black coaly detritus, rare pyrite, friable to moderately hard, nil to occasionally fair dominantly very poor to poor visual porosity, no oil fluorescence.

CLAYSTONE: light to medium green grey to medium grey to medium brown grey, moderately silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1702-1838m**

Sandstone (70%) interbedded with Claystone (30%)

SANDSTONE: light to medium green grey, very fine to medium, dominantly fine to medium, subangular to subrounded, moderately sorted, moderate silica and calcareous cement, common to abundant white argillaceous matrix, abundant feldspars and grey green lithic grains, trace to common brown to red lithics, trace quartz grains, trace coarse brown mica flakes, trace black coaly detritus, rare pyrite, friable to moderately hard, nil to rarely fair visual porosity, no oil fluorescence.

CLAYSTONE: off white to dark green grey to medium grey to medium brown grey, slightly to very silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1838-1904m**

Sandstone (50%) interbedded and laminated with Claystone (50%).

SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, subangular to subrounded, moderately sorted, moderate silica and calcareous cement, abundant white argillaceous matrix - matrix supported in part, abundant feldspars and grey green lithic grains, common brown to red lithics, trace quartz grains, trace coarse brown mica flakes, trace black coal detritus, moderately hard, nil to poor visual porosity, no oil fluorescence.

CLAYSTONE: light to dark grey to medium green grey to occasionally medium brown grey, moderately to very silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1904-1933m**

Sandstone (90%) interbedded and laminated with Claystone (10%).

SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, subangular to subrounded, moderately sorted, moderate silica and calcareous cement, abundant white argillaceous matrix - matrix supported in part, abundant feldspars and grey green lithic grains, common brown to red lithics, trace quartz grains, trace coarse brown mica flakes, trace black coal detritus, moderately hard, very poor to poor visual porosity, no oil fluorescence.

CLAYSTONE: light to dark grey to medium green grey to occasionally medium brown grey, moderately to very silty, trace very fine black carbonaceous specks and coal detritus, trace very fine altered feldspar grains in part, trace micromica, firm, non fissile.

#### **1933-1971m**

Core No 1 : Cut 1933.0 -1935.25m :100% recovery

See Appendix 2 for full description

**1971-2128 m**

Sandstone (70%) interbedded and laminated with Claystone (30%).

**SANDSTONE:** light to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and weak calcareous cements, common white argillaceous matrix, abundant green grey lithics, common red brown lithics, common quartz grains, common black carbonaceous detritus, trace coarse brown mica flakes, moderately hard, nil to poor visual porosity, no oil fluorescence.

**CLAYSTONE:** medium to dark grey to medium brown grey to medium green grey, moderately to very silty, trace to common black coal detritus, common very fine altered feldspar grains in part, trace micromica, firm, slightly subfissile.

**2128-2240m**

Sandstone (70%) interbedded and laminated with Claystone (30%).

**SANDSTONE:** off white to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and calcareous cements, common white argillaceous matrix, abundant green grey lithics, common red brown lithics, common quartz grains, common black carbonaceous detritus, trace coarse brown mica flakes, common crystalline calcite vein infill in part, moderately hard, very poor visual intergranular porosity, probable good fracture porosity 2125-2140m, 2170-2180m, 2205-2220m, 2235-2245m, no oil fluorescence.

**CLAYSTONE:** medium to dark grey, occasionally medium brown grey to medium green grey, moderately to very silty, trace black coal detritus, common very fine altered feldspar grains in part, trace crystalline calcite vein infill in part, trace micromica, firm, subfissile.

**2240-2270m**

Sandstone (70%) interbedded and laminated with Claystone (30%).

**SANDSTONE:** off white to medium green grey, very fine to medium, dominantly fine to medium, angular to subrounded, moderately sorted, moderate silica and calcareous cements, common to abundant white argillaceous matrix, abundant green grey lithics, common red brown lithics, common quartz grains, common black carbonaceous detritus, trace coarse brown mica flakes, trace to common crystalline calcite vein infill in part, moderately hard, nil to poor visual intergranular porosity, no oil fluorescence.

**CLAYSTONE:** medium to dark grey to medium brown grey to medium green grey, moderately to very silty, common black coaly flecks and detritus, common very fine altered feldspar grains in part, trace micromica, firm, subfissile.

**2270-2357m**

Sandstone (60%) interbedded and laminated with Claystone (40%).

**SANDSTONE:** off white to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and calcareous cements, common to abundant white argillaceous matrix, abundant green grey lithics,

common red brown lithics, trace to common quartz grains, trace black carbonaceous detritus, trace coarse brown mica flakes, moderately hard, nil to poor visual intergranular porosity, probable good fracture porosity at 2275-2285m as evidenced by mud losses and crystalline calcite vein infill, no oil fluorescence.

CLAYSTONE: medium to dark grey to medium brown grey to medium green grey, moderately to very silty, common black coaly flecks and detritus, common very fine lithic sand grains in part, trace micromica, firm, subfissile.

### **2357-2366m**

CORE No.2 Cut 2357.0m to 2366.0m (9.0m), Recovered 2357.0 to 2365.28m (8.28m, 92%)

See Appendix 2 for description

### **2366-2451m**

Sandstone (70%) interbedded and laminated with Claystone (30%).

SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and weak calcareous cements, common to abundant white argillaceous matrix, abundant off white to green grey lithics, trace red brown lithics, common quartz grains, trace black carbonaceous detritus, trace coarse brown mica flakes, common crystalline calcite vein infill in part, moderately hard, very poor visual porosity, no oil fluorescence.

CLAYSTONE: medium to dark grey to occasionally medium brown grey to medium green grey, moderately to very silty, trace to common black coaly flecks and detritus, trace micromica, common crystalline calcite vein infill in part, firm to moderately hard, subfissile.

### **2451-2500m**

Sandstone (70%) interbedded and laminated with Claystone (30%) with thin Coal interbed at 2474m.

SANDSTONE: light to medium green grey, very fine to medium, dominantly fine to medium, angular to subrounded, moderately sorted, moderate silica and calcareous cements, common to abundant white argillaceous matrix, abundant off white to green grey lithics, trace to common red brown lithics, trace to common quartz grains, common black coaly detritus, trace coarse brown mica flakes, common crystalline calcite vein infill in part, moderately hard to hard, nil to very poor visual porosity, no oil fluorescence.

CLAYSTONE: off white to dark grey to medium brown to medium green grey, moderately to very silty, common to abundant black coaly flecks and detritus, trace micromica, trace crystalline calcite vein infill in part, moderately hard, subfissile.

COAL: dark brown to black, moderately to very argillaceous, earthy texture, platy to blocky fracture, hard, brittle in part.



### 3.8 Hydrocarbon Shows

No gas readings were recorded from the surface to 563 m.

Gas readings were recorded from the following intervals:

#### **Lakes Entrance Formation**

563- 688m, Background gas reading: 1-3 units (C1 100%)

#### **Latrobe Group**

688—731m Total gas readings ranging from 2-87 units (C1 99.6%, C2 0.1%, C3 0.1%, C4 tr);

731-1095m Total gas readings ranging from 4 to 21units, gradually peaking at 931m (C1 99.2%, C2 0.8%, C3 tr, C4 tr);

#### **Strzelecki Group**

1230-1236m Gas show, total gas readings range from 7-8 units background with peak of 318 units upon entering sandstone unit at 1230m. Gas analysis for the show interval was C1 97.3%, C2 2.5%, C3 0.2%, C4 tr, C5 0); no oil fluorescence in this interval.

1236-1267m Total gas reading ranging form 30-12 units (C1 98%, C2 1.9%, C3 0.1%, C4+ 0)

1267-1639m Total gas readings ranging from 10-100 units (C1-C3) from sandstone intervals, peaks at 1463m (46 units), 1503m (100 units),1507m (58 units),1513m (84 units), 1532m (75 units), 1613m (59 units).

1639-1702m Total gas readings ranging from 17-42 units, with minor peaks in the sand units (C1 95.5%, C2 2.9%, C3 1.6%, C4 0).

1702-1933m Total gas readings ranging from 4-22 units, decreasing towards base of interval.

1933- 1971m Total gas readings ranging from 4-10 units, with no significant gas peaks were present in this interval.

1971-2128m Total gas readings ranging from 8-18 units, with minor peaks in the sand units (C1 97.4%, C2 1.7%, C3 0.9%, C4+ 0).

2128-2240m	Total gas readings ranging from 6-32 units, with minor peaks in the sand units (C1 97.8%, C2 1.6%, C3 0.6%, C4+ 0).
2240-2357m	Total gas readings ranging from 8-20 units with no significant peaks present in this interval.
2357-2366m	Total gas reading increased from 20 units at the top to 55 units (C1 97.2%, C2 1.9%, C3 0.9%, C4+ 0).
2366-2451m	Total gas readings ranging from 10-38 units with the more carbonaceous and coaly bands represented by the gas peaks (C1 97.2%, C2 1.9%, C3 0.9%, C4+ 0).
2451-2500m	Total gas readings ranging from 30-130 units with a coaly interbed peak at 2474m (130 units) (C1 97.6%, C2 1.7%, C3 0.7%, C4+ 0).

#### **4 DISCUSSION AND CONCLUSIONS**

Trifon-2 was a significant well for the following reasons:

- The well confirmed that gas (C4 +) is trapped in the Strzelecki Group reservoirs.
- Log interpretation of the drilled lithological section identified several gas sand units in the Strzelecki Group section that have the potential for future gas production.

#### **5. COMPLETION**

Trifon-2 was completed, cased and suspended for future production and fracture stimulation.

# **APPENDIX 1**

## **Cuttings Descriptions**

## **APPENDIX 2**

### **Core Descriptions**

## Core Descriptions

### Core No 1: Cut 1933.0 -1935.25m:100% recovery

#### MASSIVE SANDSTONE:

Light to medium greenish grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica cement, weak to moderate calcareous cement, common white argillaceous matrix, abundant green grey lithics, common red brown lithics, common quartz grains, common black carbonaceous detritus, often diffusely laminated within the sandstone, trace coarse brown mica flakes, moderately hard, very poor to poor intergranular porosity, no oil fluorescence observed, no visible sedimentary structure evident-formless and massive apart from minor diffuse carbonaceous laminae with an apparent dip of plus or minus 5 degrees.

### 2357 - 2366m Core No 2 Recovered 2357.0 to 2365.28m (8.28m, 92%)

2357 - 2365m. SANDSTONE: Medium greenish grey, predominantly very fine to medium, minor very fine, part grading to Siltstone, sub rounded, moderately well sorted, common greenish grey, trace red brown lithic grains, abundant black carbonaceous detritus, trace coarse brown mica flakes, common to abundant white argillaceous matrix, moderate silica & weak calcareous cement, calcite veining as horizontal fracture fill, moderately hard, no visible porosity and no hydrocarbon fluorescence.

2366m CLAYSTONE:-Dark grey, predominantly silty, carbonaceous, common black detrital coal, trace micromica, moderately hard, sub fissile.

#### Core No 2 CHIP SAMPLE DESCRIPTIONS:-

2357.00m SANDSTONE: Light to medium green grey, very fine to medium, dominantly fine to medium, angular to subrounded, moderately sorted, moderate silica and weak calcareous cements, common to abundant white argillaceous matrix, abundant off white to green grey lithics, trace red brown lithics, common quartz grains, trace black carbonaceous detritus, trace coarse brown mica flakes, moderately hard, very poor visual porosity, no oil fluorescence.

2357.28m SANDSTONE: as for 2357.00m.

2358.08m SANDSTONE: as for 2357.00m.

2359.11m SANDSTONE: as for 2357.00m.

2360.14m SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and weak calcareous cements, common to abundant white argillaceous matrix, abundant off white to green grey lithics, trace red brown lithics, common quartz grains, common black carbonaceous detritus, trace coarse brown mica flakes, moderately hard, very poor visual porosity, no oil fluorescence.

2361.03m SANDSTONE: as for 2360.14m.

2362.16m SANDSTONE: light to medium green grey, very fine to medium, dominantly medium, angular to subrounded, moderately sorted, moderate silica and weak calcareous cements, common to abundant white argillaceous matrix, abundant off white to green grey lithics, trace red brown lithics, common quartz grains, abundant black carbonaceous detritus, trace coarse brown mica flakes, 3mm wide horizontal calcite infilled fracture, moderately hard, very poor visual porosity, no oil fluorescence.

2363.16m SANDSTONE: as for 2360.14m.

2364.28m SANDSTONE: as for 2360.14m

2365.28m CLAYSTONE: dark grey, moderately silty, moderately carbonaceous, common black coal detritus, trace micromica, moderately hard, subfissile.

**APPENDIX 3**

**Daily Geological Reports**



## **APPENDIX 4**

### **Daily Drilling Reports**

## **APPENDIX 5**

### **Water and Gas Analyses (AMDEL)**

**APPENDIX 6**

**Well Site Survey**