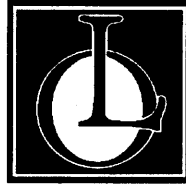




# Protea-1 Well Completion Report

PAGE 1 OF 82



**LAKES OIL N.L.**  
(A.B.N. 62 004 247 214)

**PROTEA No.1**

**STRATIGRAPHIC WELL**

**WELL COMPLETION REPORT**

BY

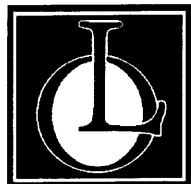
D.R. HORNER & J.N. MULREADY

(W1358)

LAKES OIL N.L.  
LEVEL 11,  
500 COLLINS STREET,  
MELBOURNE 3000

May 2003

913672 002



**LAKES OIL N.L.**

(A.B.N. 62 004 247 214)

**PROTEA No.1**

**STRATIGRAPHIC WELL**

**WELL COMPLETION REPORT**

**30 JUN 2003**

**BY**

**D.R. HORNER & J.N. MULREADY**

LAKES OIL N.L.  
LEVEL 11,  
500 COLLINS STREET,  
MELBOURNE 3000  
MAY 2003

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- 3. Composite Well Log

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fold-out (or A4 colour) with page number:

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and is enclosed within the document **PE913672** at  
this page.

# Protea No.1 Location Map

913672 005Y

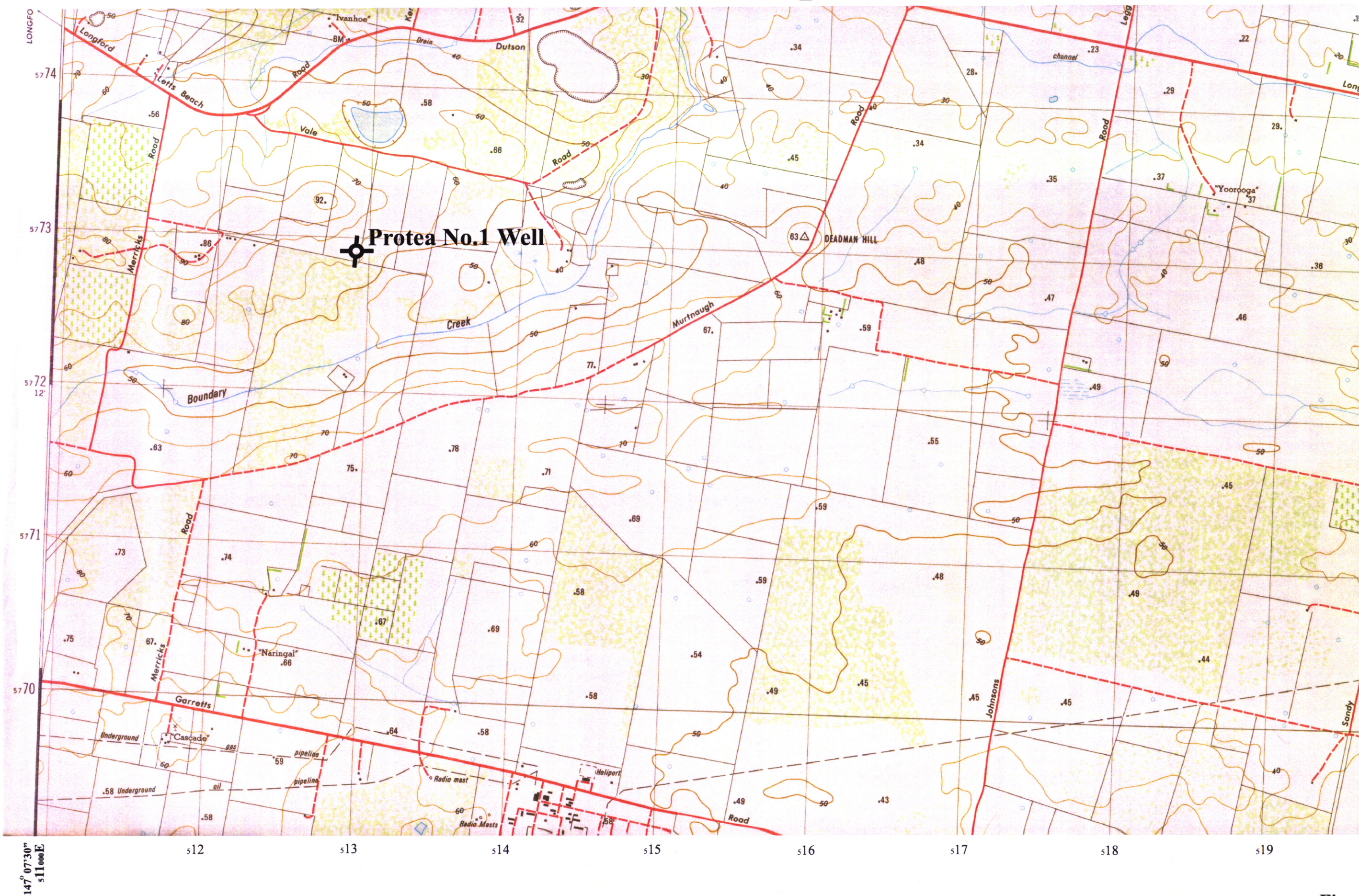


Figure 1

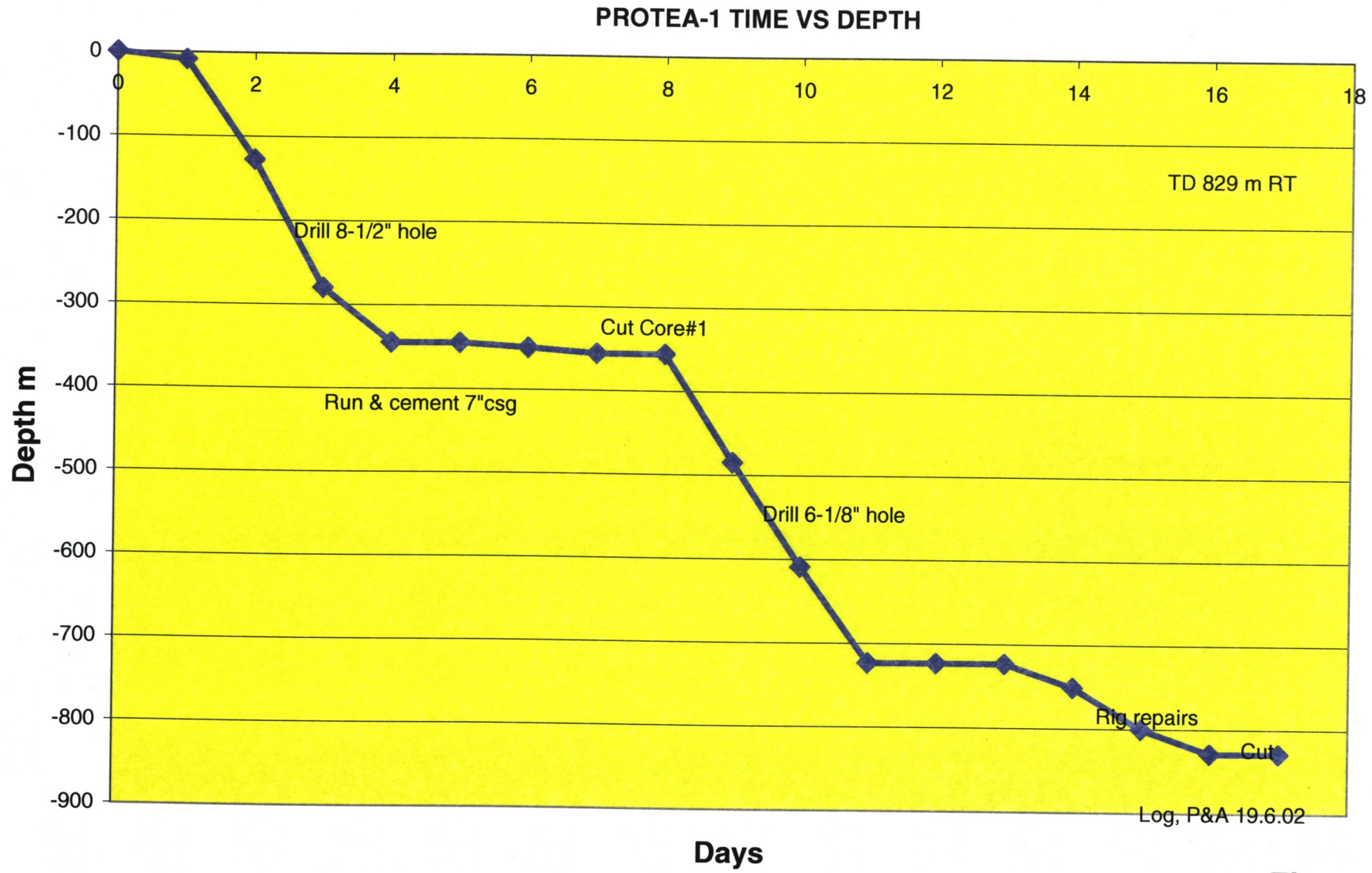
**2.0 WELL HISTORY****2.1 GENERAL DATA**

2.1.1 Well Name and Number	Protea No.1
2.1.2 Location	512877 E 5772884 S
2.1.3 Elevations	G.L. 50.0 m A.S.L. R.T. 51.0 m A.S.L.
2.1.4 Petroleum Tenement	PEP 157
2.1.5 Name of Operator	LAKES OIL N.L. A.C.N. 004 247 214 Level 11 500 Collins Street, Melbourne.
2.1.6 Other Participants	None
2.1.7 Date Drilling Commenced	3 June, 2002
2.1.8 Date Drilling Completed	18 <sup>th</sup> June, 2002
2.1.9 Date Rig Released	19 <sup>th</sup> June, 2002
2.1.10 Drilling Time to T.D.	16 days
2.1.11 Total Depth	825 m.
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	Bourne 2000THD
2.2.3 Rig Carrier	Twin Steer Tri-axle
2.2.4 Weight Indicator	Hydraulic Pressure
2.2.5 Power	Cummins - Truck Engine
2.2.6 Rotary	Top Drive
2.2.7 Blocks	Not applicable
2.2.8 Pumps	Clarke 5.5X10 3 Cylinder Duplex
2.2.9 Mud mixing	Gardner Denver Duplex
2.2.10 Sump pump	Not applicable
2.2.11 Transfer Pump	Wreckair - Worm Drive
2.2.12 Tubulars	3.5" X 13.30 D.P.
2.2.13 Fishing Tools	None on Site
2.2.14 Handling Tools	Rented Tasman
2.2.15 Stabilizer	12.25", 8.5" , 6"
2.2.16 Spare Parts	As reasonably required to conduct operations for programmed well
2.2.17 Personnel	Driller plus 4 crew
2.2.18 Drilling Hours	Rig Operated Daylight Hours Only.





**Figure 4**

913672 012

**2.3 DRILLING DATA**

**913672 013**

2.3.1 The following is the daily operations summary for Protea No.1. It has been compiled from the daily drilling reports. Onsite drilling supervision for Lakes Oil N.L. was provided by W. Westman. Further details are provided in the time/depth curve (Figure 4).

DATE	HOURS	OPERATION
03-06-02	0.5	Move in and rig up.
	1.0	Spud Protea No.1 at 0730 hrs 3 <sup>rd</sup> June, 2002.
	7.0	Drill 12.25" (311 mm) hole to 8.5m RT.
	3.0	Cement 9.625" (244 mm) conductor at 8.4m.
	1.0	Nipple up BOP's and function test. Shut down for night.
04-06-02	0.5	Travel from town. Start up. Function test BOP.
	5.0	Repair hydraulics in mast.
	5.0	Drill 8.5" (216 mm) hole from 8.5 to 128m.
	1.0	Circulate clean. POOH to DC's.
	0.5	Shut down for night.
05-06-02	0.5	Travel from town. Service rig. Start up.
	1.0	RIH to bottom. No fill. Break circulation.
	8.5	Drill to 280m.
	1.5	Circulate clean. POOH to DC's.
	0.5	Shut down for night.
06-06-02	0.5	Travel from town. Service rig. Start up.
	1.0	RIH to bottom. 6m. fill. Break circulation.
	5.5	Drill 8.5" (216 mm) hole from 280 to 345m.
	0.5	Circulate clean.
	3.5	POOH. Prepare to run casing.
	0.5	Shut down for night.
07-06-02	0.5	Travel from town. Service rig. Start up.
	4.0	R/u and run 7" (178 mm) casing. Held up at 334m.
	1.5	R/u to circulate. Unable to circulate or move pipe. R/d 20 ton crane.
	1.0	Attempt to circulate. R/u 30 ton crane.
	1.5	Reciprocate casing. Unable to circulate.
	0.5	Land csg. Lift BOP. Cut casing. N/u BOP.
	2.0	RIH w/ drilling assembly to clean out casingg. Drill out float & clean out sand. No obvious obstruction.
	1.0	Establish circulation.
	0.5	Shut down for night.

<p>08-06-02</p> <p>0.5 0.5 2.5 0.5 1.0 2.0 2.0 0.5 0.5 1.0 0.5</p>	<p>Travel from town. Service rig. Start up. Check for circulation around casing annulus - OK. POOH. R/u to cement. Pump cement. Pressure increase after 5 bbls pumped. Continue with job. Insert top plug and begin disp. Found valve passing fluid. Cement locked up before displacement complete. P/test BOP while repairing pull down shaft. Pipe rams / choke manifold 200 PSI low 1000PSI high 10 mins OK. RIH. Drill out plug and cement. Drill 345 to 349.5m. Circulate bottoms/up 10 mins. Conduct LOT. Equivalent mud wt 9.9 lb/gal. POOH. Prepare to cut core #1. Shut down for night.</p>
<p>09-06-02</p> <p>0.5 1.0 2.0 1.0 1.5 1.0 1.0 1.0 1.0 1.5 0.5</p>	<p>Travel from town. Service rig. Start up. POOH to core. P/u core barrel &amp; RIH. Circulate. Wash to bottom. Core from 349.5 to 356m. POOH to csg shoe. Well seemed to be filling w/ fine running sand &amp; flowing water. Circulate. Observe well. Losing returns. POOH. Core barrel plugged w/ sand. Attempt to recover core. Inner barrel wedged w/ sand. Lay down barrel. RIH w/ drilling assembly. Secure well. Shut down for night.</p>
<p>10-06-02</p> <p>0.5 1.5 0.5 0.5 1.5 4.0 2.0 0.5 0.5 0.5</p>	<p>Travel from town. Service rig. Start up. RIH. Tagged sand at 241m. Circ/wash down to 283m - sheets of sand across shakers. POOH 6 jts. Float stuck open, string sanded up. Recover core. POOH. 1.5 DC's full of sand. RIH w/ open ended pipe. Tag at 263m. Wash down to 343m. Circulate and wait on cement truck. Pump cement. Pull 20 jts. Circulate pipe clean. Shut down for night.</p>
<p>11-06-02</p> <p>0.5 1.0 1.0 8.0 0.5 0.5 0.5</p>	<p>Travel from town. Service rig. Start up. POOH. RIH. 6.125" (156 mm) bit, 6XDC, 3.5" DP. Tag cement at 333m. Drill ahead to 485m. Circulate bottoms up. POOH to 321m. Shut down for night.</p>
<p>12-06-02</p> <p>0.5 0.5 0.5 0.5 7.3 1.3 0.5 0.5</p>	<p>Travel from town. Service rig. Start up. RIH. Change hydraulic filters. Low hydraulic power. RIH. Drill ahead 485 to 609m. POOH. Maintenance. Shut down for night.</p>

13-06-02	0.5 1.5 0.5 1.0 0.5 4.0 1.5 0.5 01.0	Travel from town. Service rig. Start up. POOH. Change BHA/bit – old bit undergauge. RIH. Safety meeting. RIH to shoe, condition mud. RIH. Fill from 450m to hard bridge at 475m. Ream from 450 to 609m. (Due to undergauge bit?). Circulate bottoms up. POOH. Shut down for night.
14-06-02	0.5 4.5 ***	Travel from town. Service rig. Start up. Repair crown. Empty sump. Refuel. Wait on rig spares
15-06-02	0.5 ***	Travel from town. Repair crown.
16-06-02	0.5 3.0 1.0 5.5 0.5 0.5 1.0 0.5	Travel from town. Service rig. Start up. Repair rig. Stand rig up. Break circulation. RIH. Hole bridged at 475 and 579m. Wash down to bottom. Drill ahead 609 to 751m. POOH. Circulate hole whilst repairing hydraulics. POOH Shut down for night.
17-06-02	12	Repair rig crown
18-06-02	0.6 2.0 1.3 0.3 3.0 4.0 0.3	Travel from town. Service Rig RIH Wash to bottom Drill to 825 m Circulate hole clean POOH to log Run Schlumberger logs Secure well for the night
19-06-02	0.6 1.3 0.3 2.0 0.3 0.3 4.3 2.0	Travel from town. Service Rig RIH to 495 m. Set 50 m balanced cement plug from 495-445 m. POOH to 360 m. Wait on cement truck Set balanced cement plug 360 to 310 m. POOH to 200 m. Circulate clean. Wait on cement. POOH. Release rig. Commence rigging down

## 2.3.2 Hole sizes and depths:

12.25" (311mm) Spud to 8.5m.

8.5" (216mm) 8.5 to 345m.

6.125" (156mm) 345 to 825m.

Casing and cementing:

SURFACE:

SIZE:	9.625" / 244 mm
Weight:	64.9 kg/m
Grade:	K55
Shoe setting depth:	8.4m

INTERMEDIATE:

SIZE:	7" / 178 mm
Weight:	34.2 kg/m
Grade:	K55
Shoe setting depth:	338m

## 2.3.3 Deviation Surveys:

None taken.

## 2.3.3 Drilling Fluid:

(A) Spud - 8.5 meters: Type: Freshwater/Gel spud mud.

(B) 8.5 - 825m. KCl/Polymer/PHPA.

**Physical Mud Properties:**

DEPTH	PPG	VIS	KCL %	PHPA LB/GAL
250	8.7	32	4	0.5
340	9	34	4	0.5
723	9.1	37		
751	9.2	35		
609	9.1	32		

## 2.3.5 Water Supply:

Water was trucked to site from Sale.

## 2.3.6 Perforation:

None.

2.3.7 Plugging and Cementing:

- Plug 1. 495-445 m
- Plug 2. 360 to 310 m.
- Plug 3. Surface -10 m.

2.3.8 Bit Data

BIT RUN	1	2	3	4	5
Diameter	12.25"	8.5"	6.125"	6"	6.125"
Type & Manufacture	Security S33	Varel L127	Varel 117	Core Head	Varel ETD14
IADC code	114	127	117		437
Serial number	209393	537086			176346
Nozzles	Open	Open	11,11,11		11,11,11
Depth in (m)	0	9	345	350	
Depth out (m)	8.5	345	350	356	
Drilled (cum/daily)	8.5	337	5	7	
Hours (cum/daily)	1	14	0.5	1.5	
Dull grade		7.7.WT.A.O.I.TD			
Av. ROP m/hr		24		6	
WOB Klbs		5	1	2	
RPM		100	100	100	
Jet Velocity					
HHP@Bit					
BHA		Bit/2DC/4DC			

2.4 LOGGING AND TESTING

2.4.1 Wellsite Geologist:

J. Mulready (Spud to 128m) David Horner (128 to 825m T.D.)

2.4.2 Mudlogging:

Hot wire hydrocarbon detection, depth and drill rate monitoring was provided by Denis Sisely.

2.4.3 Ditch Cutting Samples:

Cuttings were collected at 5 meter intervals from spud to 345m, then at 3m intervals to 825m (T.D.)

These being 1 set 500gm unwashed calico bag, and 1 set washed samplex tray.

2.4.4 Coring:

1 X 9 m core was cut from 349.5 to 356m (0.8m recovery (12%)).  
See core analysis report.

2.4.5 Sidewall Cores:

No sidewall cores were taken.

2.4.6 Testing:

No tests were conducted.

2.4.7 Wireline Logs:

DT-GR-FMI (778m to shoe at 338m) GR to surface.

2.4.8 Bottom Hole Temperature :

32° Centigrade

2.4.9 Velocity Survey:

No velocity survey was conducted.

**5.0 COMPLETION**

**913672 028**

Protea No.1 was plugged and abandoned.

913672 029

Appendix 1

# Appendix 1

**MANILLA  
WHITE DIVIDERS**  
5 TAB A4



Ref No: 37300  
Made in China  
[www.accobrand.com.au](http://www.accobrand.com.au)



913672 030

**APPENDIX 1**

**DAILY GEOLOGICAL REPORTS**

# Appendix 2

913672 058

**APPENDIX 2**

**PALYNOLOGY REPORT**

By  
Dr Alan D. Partidge

Biostrata Pty Ltd

## References

- BERNECKER, T., & PARTRIDGE, A.D., 2001. Emperor and Golden Beach Subgroups: The onset of Late Cretaceous sedimentation in the Gippsland Basin, SE Australia. In *Eastern Australian Basins Symposium. A Refocused Energy Perspective for the Future*, K.C. Hill & T. Bernecker, editors, *Petroleum Exploration of Australia, Special Publication*, p.391-402.
- DETTMANN, M.E., 1963. Upper Mesozoic microfloras from southeastern Australia. *Proceedings Royal Society Victoria* 77, p.1-148.
- DETTMANN, M.E., 1986. Early Cretaceous palynofora of subsurface strata correlative with the Koonwarra Fossil Bed, Victoria. *Association of Australasian Palaeontologists Memoir* 3, p.79-110.
- FENSOME, R.A., WILLIAMS, G.L., BARSS, M.S., FREEMAN, J.M. & HILL, J.M., 1990. Acritarchs and fossil Prasinophytes: An index to genera, species and infraspecific taxa. *AASP Contribution Series No. 25*, p.1-771.
- HELBY, R., MORGAN, R. & PARTRIDGE, A.D., 1987. A palynological zonation of the Australian Mesozoic. In *Studies in Australian Mesozoic Palynology*, P.A. Jell, editor, *Memoir Association Australasian Palaeontologists* 4, p.1-94.
- LOWRY, D.C. & LONGLEY, I.M., 1991. A new model for Mid-Cretaceous structural history of the northern Gippsland Basin. *The APEA Journal*, vol.31, pt.1, p.143-153.
- MARSHALL, N.G., 1989. An unusual assemblage of algal cysts from the late Cretaceous, Gippsland Basin, Southeastern Australia. *Palynology* 13, p.21-56.
- PARTRIDGE, A.D., 1990. Palynological analysis of Admiral-1, Gippsland Basin. *Esso Aust. Ltd. Palaeontological Report 1990/14*, p.1-31 (unpubl.).
- PARTRIDGE, A.D., 1993. Review of palynology from Golden Beach and Strzelecki Groups in Emperor-1 and Sweetlips-1, Gippsland Basin. *Biostrata Report 1993/22*, p.1-17, 2 range charts (unpubl.).
- PARTRIDGE, A.D., 1995. Palynological analysis of Longtom-1 and Sidetrack Gippsland Basin. *Biostrata Report 1995 13*, p.1-28, 3 charts (unpubl.).
- PARTRIDGE, A.D., 1999. Late Cretaceous to Tertiary geological evolution of the Gippsland Basin, Victoria. PhD thesis, La Trobe University, Bundoora, Victoria. p.i-xxix, p.1-439, 165 figs, 9 pls (unpubl.).
- PARTRIDGE, A.D., 2001. Revised stratigraphy of the Sherbrook Group, Otway Basin. In *Eastern Australian Basins Symposium. A Refocused Energy Perspective for the Future*, K.C. Hill & T. Bernecker, editors, *Petroleum Exploration of Australia, Special Publication*, p.455-464.
- PARTRIDGE, A.D., 2002. Palynological analysis of Upper Cretaceous in Deadman Hill-1, onshore Gippsland Basin. *Biostrata Report 2002 16*, p.1-11 (unpubl.).
- STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Proceedings Royal Society of Victoria*, vol.85, pt.2, p.237-286.
- STOVER, L.E. & PARTRIDGE, A.D., 1982. Eocene spore-pollen from the Werillup Formation, Western Australia. *Palynology* 6, p.69-95.
- TRAVERSE, A., 1988. *Paleopalynology*. Unwin Hyman Ltd, Boston, p.1-600.
- WILLIAMS, G.L., LENTIN, J.K. & FENSOME, R.A., 1998. The Lentin and Williams index of fossil dinoflagellates 1998 edition. *American Association of Stratigraphic Palynologists, Contributions Series, no. 34*, p.1-817.

## BASIC DATA

Table 2: Basic assemblage data for Protea -1, onshore Gippsland Basin.

Sample Type	Depth	Visual Yield	Palynomorph Concentration	Preservation	No. SP Species	No. MP Species
Cuttings	342m	Moderate	Moderate	Poor-Good	13+ (34+)	(1+)
Core-1	350.3m	High	High	Poor-Good	28+	8+
Cuttings	402m	High	Moderate	Poor-Fair	35+ (4+)	5+
Cuttings	471m	High	Moderate	Fair	34+ (21+)	5+ (1+)
Cuttings	519m	Low-Moderate	Low	Poor-Fair	25+ (5+)	2+
Cuttings	606m	Moderate	High	Poor-Good	44+ (5+)	5+ (1+)

Averages: 41+ 4+

\* Number of caved Tertiary species given in brackets.

Table 3: Caved Tertiary species abundances and occurrences in Protea-1.

Sample Type:	Cutts	Cutts	Cutts	Cutts	Cutts
Depth:	342m	402m	471m	519m	606m
<b>Spore-Pollen Species</b>					
<i>Anacolosidites acutullus</i>		X			
<i>Baculatisporites</i> spp.	2.0%				
<i>Beaupreaidites trigonalis</i> †	X				
<i>Cyathidites paleospora</i>	2.0%		X		X
<i>Cyathidites splendens</i>	X				
<i>Dacrycarpites australiensis</i>	0.7%				
<i>Dicotetradites clavatus</i>	X		X	X	
<i>Dilwynites granulatus</i>	1.4%		X		
<i>Ericipites crassieximus</i>			X		
<i>Gleicheniidites circinidites</i>	3.4%		X		
<i>Haloragacidites harrisii</i>	13.5%	X	X	X	X
<i>Ilexpollenites</i> sp.	2.0%				
<i>Latrobosporites ovatus</i>			X		
<i>Lygistepollenites balmei</i>	X				X
<i>Lygistepollenites florinii</i>	3.4%	X			
<i>Malvacipollis subtilis</i>	1.4%		X		
<i>Microcachryidites antarcticus</i>	0.7%				X
<i>Nothofagidites brachyspinulosus</i>	0.7%				
<i>Nothofagidites deminutus</i>	5.4%		X	X	

Table 3: Caved Tertiary species abundances and occurrences in Protea-1 (continued).

Sample Type:	Cutts	Cutts	Cutts	Cutts	Cutts
Depth:	342m	402m	471m	519m	606m
<i>Nothofagidites emarcidus/heterus</i>	16.9%	X	X	X	X
<i>Nothofagidites falcatus</i>	X		X		
<i>Nothofagidites flemingii</i>	1.4%		X		
<i>Nothofagidites vansteenisii</i>	X		X		
<i>Phyllocladidites mawsonii</i>	21.6%		X		
<i>Podocarpidites</i> spp.	4.1%		X		
<i>Proteacidites adenanthoides</i>	X		X		
<i>Proteacidites</i> spp.	10.1%		X		
<i>Proteacidites annularis</i>	X		X		
<i>Proteacidites latrobensis</i>			X		
<i>Proteacidites obscurus</i>	3.4%				
<i>Proteacidites pachypolus</i>	X				
<i>Proteacidites reflexus</i>	X				
<i>Retitriletes</i> spp.	0.7%				
<i>Santalumidites cainozoicus</i>			X		
<i>Trichotomosulcites subgranulatus</i>	X				
<i>Tricolp(or)ates</i> spp.	3.4%			X	
<i>Tricolporites adelaidensis</i>			X		
<i>Tricolporites leuros</i>	X				
<i>Triporopollenites ambiguus</i>	0.7%				
<i>Verrucosisporites kopukuënsis</i>	X				
Total Spores:	8%		17%	9%	50%
Total Gymnosperms:	32%	17%	35%	9%	33%
Total Angiosperms:	60%	83%	48%	82%	17%
Total Spore-Pollen:	148	6	23	11	6
<b>Microplankton</b>					
Microplankton undiff.	X				
<i>Gippslandica extensa</i>					X
<i>Spiniferites</i> spp.			X		
Total Microplankton:	1		1		
Combined SP + MP count:	149	6	24	11	6
MP% of MP + SP:	0.7%		4.2%		
<b>Other Palynomorphs Count</b>					
Fungal spores & hyphae	5.1%		X		
Total Others:	8				
<b>TOTAL COUNT:</b>	<b>157</b>	<b>6</b>	<b>24</b>	<b>11</b>	<b>6</b>

Abbreviations:

X= Present:

RW = Reworked:

† = Manuscript species

Table 4: Cretaceous species abundances and occurrences in Protea-1.

Sample Type:	Cutts	Core 1	Cutts	Cutts	Cutts	Cutts
Depth:	342m	350.3m	402m	471m	519m	606m
<b>Spore-Pollen Species</b>						
<i>Aequitriradites spinulosus</i>					1.8%	X
<i>Aequitriradites verrucosus</i>						X
<i>Annulispora microannulata</i>				RW		
<i>Appendicisporites distocarinatus</i>			X			
<i>Aratrisporites</i> spp.			RW			RW
<i>Araucariacites australis</i>	2.5%	2.3%	6.4%	9.3%	0.9%	2.6%
<i>Baculatisporites</i> spp.	X		3.6%	1.1%	3.5%	3.4%
<i>Callialasporites segmentatus</i>		X	X			X
<i>Ceratosporites equalis</i>			X	X	0.9%	X
<i>Cicatricosisporites hughesii</i>						X
<i>Cicatricosisporites</i> spp.			X			X
<i>Contignisporites cooksoniae</i>					X	X
<i>Coptospora pileolus</i> †		X	X			
<i>Corollina</i> spp.		0.9%	1.8%	1.6%		0.9%
<i>Crybelosporites striatus</i>		X	X		X	0.9%
<i>Cupressacites</i> sp.	15.0%	45.2%	11.8%	4.9%	0.9%	X
<i>Cyathidites asper</i>						X
<i>Cyathidites australis</i>	5.0%	0.5%	1.8%	0.5%	5.3%	7.7%
<i>Cyathidites minor</i>		4.1%	9.1%	6.6%	26.5%	27.4%
<i>Dictyophyllidites</i> spp.		0.5%	X	0.5%		1.7%
<i>Dictyotosporites complex</i>						X
<i>Dictyotosporites speciosus</i>						X
<i>Dilwynites echinatus</i> †		X	X	X		
<i>Dilwynites granulatus</i>	52.5%	15.8%	21.8%	22.0%	2.7%	6.8%
<i>Dilwynites pusillus</i> †	X	9.5%	11.8%	15.4%	3.5%	5.1%
<i>Dilwynites tuberculatus</i>			X	X		X
<i>Foraminisporis asymmetricus</i>						X
<i>Foraminisporis dailyi</i>						X
<i>Foraminisporis wonthaggiensis</i>						X
<i>Gleicheniidites circinidites</i>		0.9%	1.8%	0.5%	1.8%	2.6%
<i>Herkosporites elliottii</i>	X		1.8%	1.6%		
<i>Herkosporites proxistriatus</i>				X		X
<i>Hoegisporis trinalis</i> †		0.5%	X	0.5%	X	X
<i>Klukisporites scaberis</i>		X				
<i>Laevigatosporites musa</i> †		X	X	X		X
<i>Laevigatosporites ovatus</i>		0.5%	2.7%	1.6%		1.7%
<i>Leptolepidites verrucosus</i>			RW		X	X
<i>Matonisporites cooksoniae</i>					X	X
<i>Marattisporites scabratus</i>		0.5%		X		
<i>Microcachryidites antarcticus</i>	7.5%	5.4%	4.5%	8.8%	4.4%	4.3%
<i>Neoraistrickia truncata</i>	X	0.5%				
<i>Osmundacidites wellmanii</i>		1.8%	X	0.5%	8.0%	0.9%

Table 4: Cretaceous species abundances and occurrences in Protea-1 (continued).

Sample Type:	Cutts	Core 1	Cutts	Cutts	Cutts	Cutts
Depth:	342m	350.3m	402m	471m	519m	606m
<i>Perotrilites jubatus</i>			X	0.5%		
<i>Perotrilites majus</i>				X		0.9%
<i>Pilosporites grandis</i>						X
<i>Podocarpidites</i> spp.	15.0%	8.1%	11.8%	19.2%	21.2%	17.9%
<i>Retitriletes austroclavitudites</i>						X
<i>Retitriletes nodosus</i>	X					X
<i>Retitriletes</i> spp.		0.9%	2.7%	X	0.9%	1.7%
<i>Ruffordiaspora australiensis</i>				X	4.4%	4.3%
<i>Stereisporites antiquisporites</i>	2.5%	X		0.5%	3.5%	0.9%
<i>Stoverisporites microverrucatus</i>			X	X		
<i>Trichotomosulcites subgranulatus</i>		0.5%	X	1.6%	3.5%	5.1%
<i>Tricolp(or)ates</i> spp.			1.8%	0.5%	0.9%	
<i>Tricolporites variverrucatus</i> †			X			
Trilete spores undiff.		1.4%	2.7%	0.5%	4.4%	2.6%
<i>Triporetetes reticulatus</i>	X		X		0.9%	0.9%
<i>Tuberculatisporites</i> sp. A			0.9%			
<i>Verrucosporites admirabilis</i> †		X	0.9%	X		
<i>Vitreisporites signatus</i>		0.5%		1.1%		
Total Spores:	8%	11%	28%	15%	62%	57%
Total Gymnosperms:	93%	89%	70%	85%	37%	43%
Total Angiosperms:			1.8%	0.5%	0.9%	
Total Spore-Pollen count:	40	221	110	182	113	117
<b>Microplankton</b>						
Microplankton undiff.		18%				25%
<i>Amosopollis cruciformis</i>		29%	60%	29%	50%	
<i>Botryococcus braunii</i>		12%				25%
<i>Luxadinium</i> sp.		X	20%	24%		38%
<i>Micrhystridium</i> sp. A		12%	20%	6%		13%
<i>Rimosicysta</i> spp.		29%	X	29%		
<i>Rimosicysta kipperii</i>		X	X			
<i>Schizosporis reticulatus</i>						X
<i>Sigmopollis carbonis</i>					50%	
<i>Wuroia corrugata</i>		X				
<i>Wuroia tubiformis</i>				12%		
Total Microplankton:		17	5	17	2	8
Combined MP + SP Count:	40	238	115	199	115	125
MP% in SP + MP counts		7.1%	4.3%	8.5%	1.7%	6.4%
Total Cretaceous Count:	40	247	116	208	115	126
Total Tertiary Count:	157		6	24	11	6
% Caved Palynomorphs:	80%		5%	10%	9%	5%

Abbreviations: X = Present; RW = Reworked; † = Manuscript species



# Appendix 3

913672 070

## **APPENDIX 3**

### **CORE DESCRIPTIONS**

913672 071

**CORE NO. 1**

349.5 – 356.0 Metres

Core # 1 349.5 to 356.0 meters (cut 6.5m, Rec 349.5 – 350.3m (0.8m) 12%).

Well began flowing fresh water and sand whilst coring.

349.5 – 350.3m

CLAYSTONE: very dark grey to black, very carbonaceous, moderately silty, non calcareous, trace micromica, firm, non fissile.

350.3 – 356.0m

No recovery (lost section assumed to be from bottom of core – not necessarily correct).

No visible sedimentary structure, tectonic structure or bedding.

Drill rates: 349.5 – 350 = 8min/m. 350.5 – 351.5 = 12min/m. 351.5 – 352.5 = 12min/m.  
352.5-353.5 = 13.5 min/m. 353.5-354.5 = 16 min/m. 354.5-355.5 = 12.5 min/m. 355.5-356.0  
= 11 min/m.

Gas whilst coring; 3-5 units, peak at 354-355m = 9 units.

913672 072

# Appendix 4

913672 073

**APPENDIX 4**  
**WELL SITE SURVEY**

Kluge Jackson Pty Ltd

**KLUGE JACKSON CONSULTANTS PTY. LTD.**

A.C.N. 004 778 947

SURVEYORS, ENGINEERS AND ESTATE PLANNERS

Office: Sale  
Our Ref: 02191-01

DIRECTORS:  
H. Peter Kluge  
John Jackson

September 10<sup>th</sup>, 2002

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

Dear Sir,

RE: AMG and AHD Survey of Wells at Boundary Creek-1,  
Deadman Hill-1 and Protea-1.

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

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

The levels are as indicated on sketch attached – Levels to the top of cap could not be taken at Boundary Creek and Protea as they were covered at time of survey.

Our AMG co-ordinates have been obtained from co-ordinated marks PM 18, PM 27 (Longford) and 3GI Radio Mast. The AMG co-ordinates are unadjusted using Topcon Total Station and should be of an accuracy of  $\pm 10\text{cm}$ . Latitude and Longitude have been obtained by converting AMG co-ordinates to latitude and longitude.

The AHD levels were obtained from PM 33 and are correct to  $\pm 0.05\text{ cm}$ .

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

Office: Sale  
Our Ref: 02191-02

- 2 -

DIRECTORS:  
H. Peter Kluge  
John Jackson

September 10<sup>th</sup>, 2002

**TABLE OF SURVEY RESULTS**

**Boundary Creek - 1**

<b>AHD Level of Top of Sign</b>	77.02
<b>AMG Co-ordinate of Centre of sign.</b>	Easting 511 422.91 Northing 5 772 873.47
<b>Latitude</b>	S 38°11'30.73"
<b>Longitude</b>	E 147°07'49.60"
<b>Approximate AHD surface Level at Bore</b>	75.02

The AMG coordinates shown above are for Zone 55.

Coordinates are in AGD 66.

.../3

**KLUGE JACKSON CONSULTANTS PTY. LTD.**

A.C.N. 004 778 947

SURVEYORS, ENGINEERS AND ESTATE PLANNERS

Office: **Sale**  
Our Ref: **02191-02**

- 3 -

DIRECTORS:  
H. Peter Kluge  
John JacksonSeptember 10<sup>th</sup>, 2002**TABLE OF SURVEY RESULTS****Deadman Hill - 1**

<b>AHD Level of Top of Cap</b>	57.45
<b>AHD Level of Top of Sign</b>	59.96
<b>AMG Co-ordinate of Centre of sign.</b>	Easting 515 827.27 Northing 5 772 244.60
<b>Latitude</b>	S 38°11'50.90"
<b>Longitude</b>	E 147°10'50.72"
<b>Approximate AHD surface Level at Bore</b>	58.57

The AMG coordinates shown above are for Zone 55.

Coordinates are in AGD 66.

.../4

SALE  
45 Macalister Street,  
SALE, Vic 3850  
(P.O. Box 47)  
Telephone (03) 5144 3877  
Facsimile (03) 5144 6591MAFFRA  
119 Johnson Street,  
MAFFRA Vic 3860  
  
Telephone (03) 5147 2126TRARALGON  
Suite 3/29 Breed Street,  
TRARALGON Vic 3844  
(P.O. Box 412)  
Telephone (03) 5174 4808  
Facsimile (03) 5174 6969



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SURVEYORS, ENGINEERS AND ESTATE PLANNERS

Office: **Sale**  
Our Ref: **02191-02**DIRECTORS:  
H. Peter Kluge  
John JacksonSeptember 10<sup>th</sup>, 2002**TABLE OF SURVEY RESULTS****Protea - 1**

<b>AHD Level of Top of Sign</b>	63.32
<b>AMG Co-ordinate of Centre of sign.</b>	Easting 512 876.67 Northing 5 772 884.02
<b>Latitude</b>	S 38°11'30.32"
<b>Longitude</b>	E 147°08'49.36"
<b>Approximate AHD surface Level at Bore</b>	61.98

The AMG coordinates shown above are for Zone 55.

Coordinates are in AGD 66.

.../2

SALE  
45 Macalister Street,  
SALE Vic 3850  
(P.O. Box 47)  
Telephone (03) 5144 3877  
Facsimile (03) 5144 6591MAFFRA  
119 Johnson Street,  
MAFFRA Vic 3860  
  
Telephone (03) 5147 2126TRARALGON  
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.

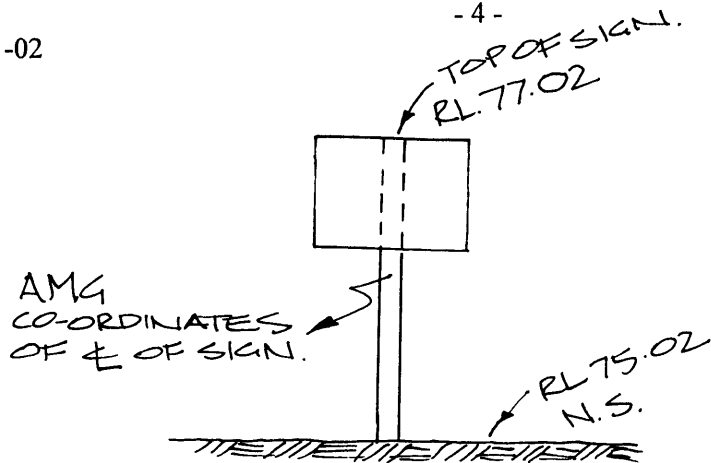
A.C.N. 004 778 947

SURVEYORS, ENGINEERS AND ESTATE PLANNERS

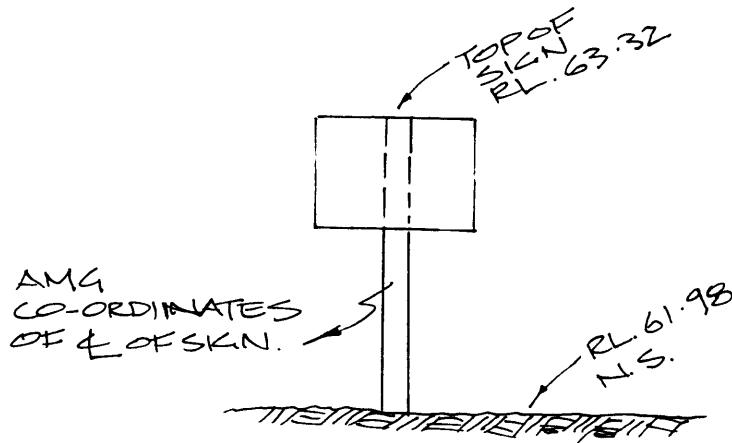
Office: **Sale**  
Our Ref: **02191-02**

DIRECTORS:  
H. Peter Kluge  
John Jackson

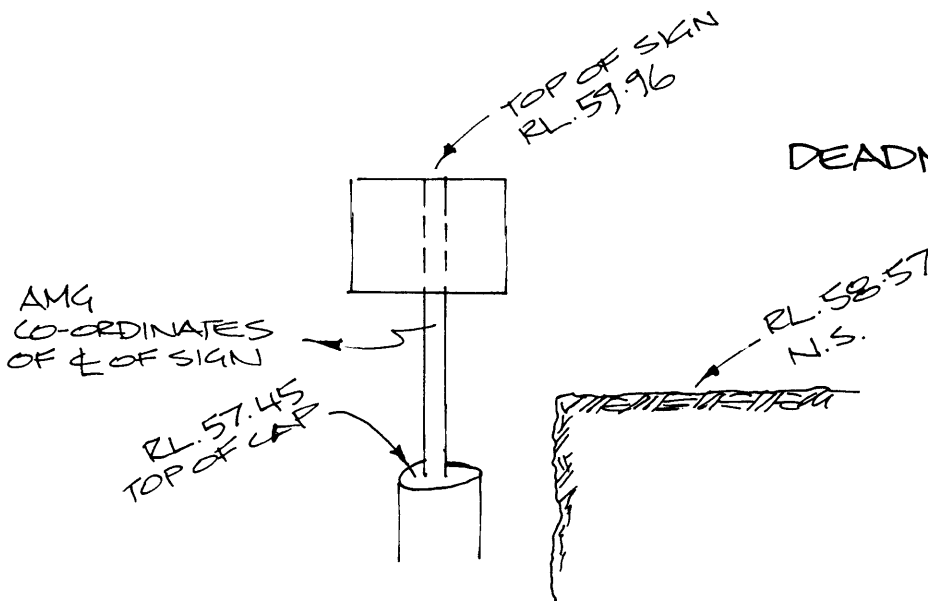
- 4 -



BOUNDARY CREEK 1-A



PROTEA-1



DEADMAN'S HILL

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

913672 079

PE651020

This is an enclosure indicator page.  
The enclosure PE651020 is enclosed within the  
container PE913672 at this location in this  
document.

The enclosure PE651020 has the following characteristics:

- ITEM\_BARCODE = PE651020
- CONTAINER\_BARCODE = PE913672
  - NAME = Protea-1 Lithology Strip Log, 1:500
  - BASIN =
  - OFFSHORE? =
  - DATA\_TYPE = WELL
  - DATA\_SUB\_TYPE = WELL\_LOG
  - DESCRIPTION = Protea-1 Lithology Strip Log, Scale  
1:500, Well Site Systems, PEP 157, June  
2002.
  - REMARKS =
  - DATE\_WRITTEN = 03-JUN-2002
- DATE\_PROCESSED =
- DATE\_RECEIVED =
- RECEIVED\_FROM = Lakes Oil N.L.
  - WELL\_NAME = Protea-1
  - CONTRACTOR =
  - AUTHOR =
  - ORIGINATOR = Lakes Oil N.L.
  - TOP\_DEPTH = 0
  - BOTTOM\_DEPTH = 825
  - ROW\_CREATED\_BY = FH11\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

913672 080

PE651022

This is an enclosure indicator page.  
The enclosure PE651022 is enclosed within the  
container PE913672 at this location in this  
document.

The enclosure PE651022 has the following characteristics:

ITEM\_BARCODE = PE651022  
CONTAINER\_BARCODE = PE913672  
NAME = Protea-1 FMI-BHC-GR Log, FMI MS Dip  
BASIN =  
OFFSHORE? =  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = WELL\_LOG  
DESCRIPTION = Protea-1 FMI-BHC-GR Log, FMI MS  
Dip1:500 & 1:200, Run 1, By  
Schlumberger for Lakes Oil N.L., June  
2002.  
REMARKS =  
DATE\_WRITTEN = 18-JUN-2002  
DATE\_PROCESSED =  
DATE\_RECEIVED =  
RECEIVED\_FROM = Lakes Oil N.L.  
WELL\_NAME = Protea-1  
CONTRACTOR = Schlumberger  
AUTHOR =  
ORIGINATOR = Lakes Oil N.L.  
TOP\_DEPTH = 25  
BOTTOM\_DEPTH = 760  
ROW\_CREATED\_BY = FH11\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

913672 081

PE651021

This is an enclosure indicator page.  
The enclosure PE651021 is enclosed within the  
container PE913672 at this location in this  
document.

The enclosure PE651021 has the following characteristics:

ITEM\_BARCODE = PE651021  
CONTAINER\_BARCODE = PE913672  
NAME = Protea-1 FMI-BHC-GR Log, Sonic DT  
BASIN =  
OFFSHORE? =  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = WELL\_LOG  
DESCRIPTION = Protea-1 FMI-BHC-GR Log, Sonic DT,  
1:500 & 1:200, Run 1, By Schlumberger  
for Lakes Oil N.L., June 2002.  
REMARKS =  
DATE\_WRITTEN = 18-JUN-2002  
DATE\_PROCESSED =  
DATE\_RECEIVED =  
RECEIVED\_FROM = Lakes Oil N.L.  
WELL\_NAME = Protea-1  
CONTRACTOR = Schlumberger  
AUTHOR =  
ORIGINATOR = Lakes Oil N.L.  
TOP\_DEPTH = 25  
BOTTOM\_DEPTH = 760  
ROW\_CREATED\_BY = FH11\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE651023

This is an enclosure indicator page.  
The enclosure PE651023 is enclosed within the  
container PE913672 at this location in this  
document.

The enclosure PE651023 has the following characteristics:

ITEM\_BARCODE = PE651023  
CONTAINER\_BARCODE = PE913672  
NAME = Protea-1 Composite Well Log  
BASIN =  
OFFSHORE? =  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = COMPOSITE\_LOG  
DESCRIPTION = Protea-1 Composite Well Log (scale  
unknown), for Lakes Oil N.L., June  
2002.  
REMARKS =  
DATE\_WRITTEN = 03-JUN-2002  
DATE\_PROCESSED =  
DATE\_RECEIVED =  
RECEIVED\_FROM = Lakes Oil N.L.  
WELL\_NAME = Protea-1  
CONTRACTOR =  
AUTHOR =  
ORIGINATOR = Lakes Oil N.L.  
TOP\_DEPTH = 25  
BOTTOM\_DEPTH = 760  
ROW\_CREATED\_BY = FH11\_SW

(Inserted by DNRE - Vic Govt Mines Dept)