SANTOS – BEACH PETROLEUM

COMPILED FOR

SANTOS LIMITED

(A.B.N. 80 007 550 923)

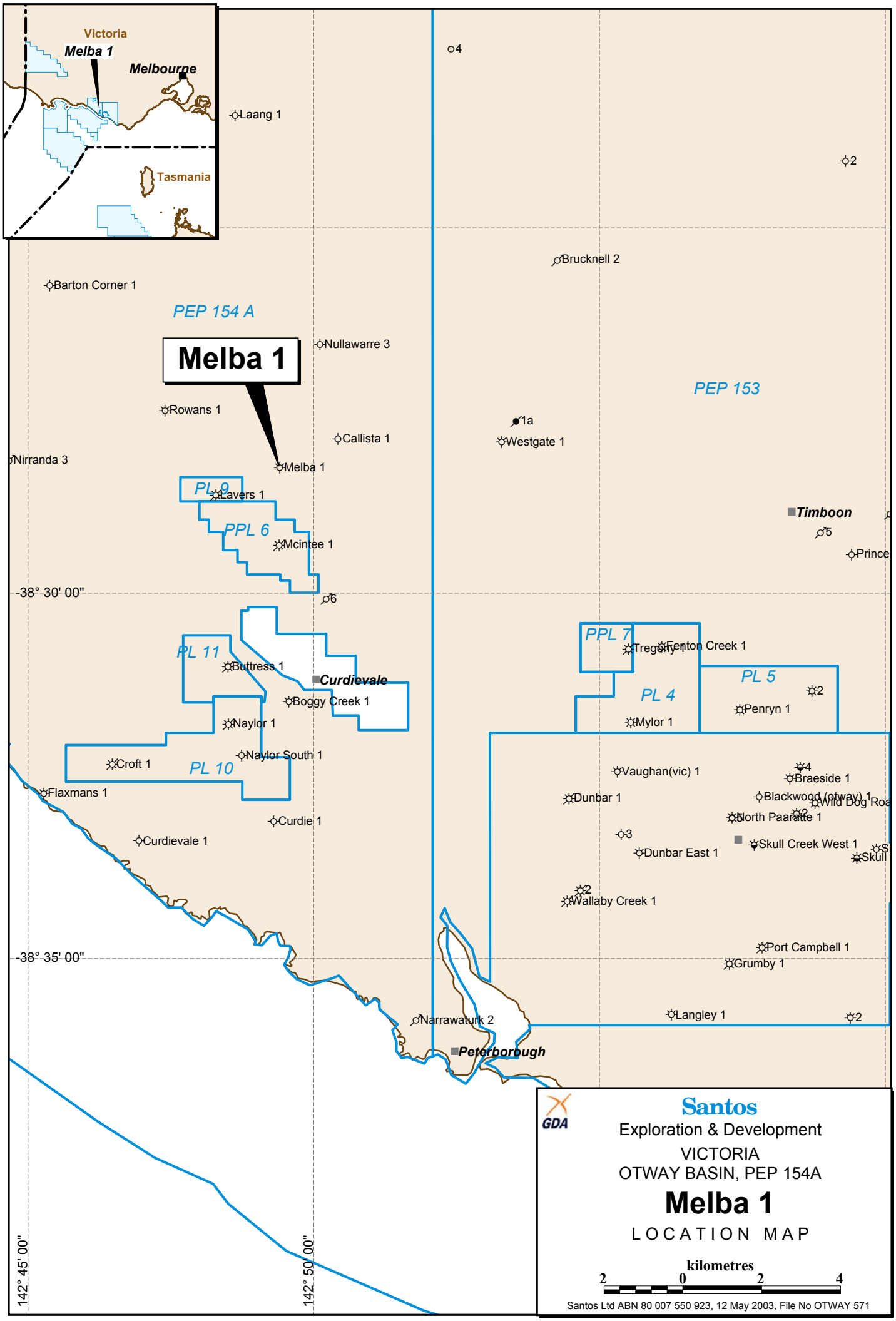
MELBA 1

WELL COMPLETION REPORT

Prepared By:
J.PITMAN
(Consultant)
JULY, 2003

MELBA 1
TABLE OF CONTENTS

LOCATION MAP


Victoria
Melba 1
Melbourne
Tasmania
Laang 1
4
2
Brucknell 2
Barton Corner 1
PEP 154 A
Melba 1
Nullawarre 3
PEP 153
Rowans 1
1a
Westgate 1
Callista 1
Nirranda 3
Melba 1
PL 9
Lavers 1
Timboon
PPL 6
Mcintee 1
5
Prince
-38° 30' 00"
6
PPL 7
Tregony 1
Fenton Creek 1
PL 11
Buttress 1
Curdievale
PL 5
PL 4
2
Boggy Creek 1
Penryn 1
Naylor 1
Mylor 1
Naylor South 1
Croft 1
PL 10
Vaughan(vic) 1
4
Braeside 1
Flaxmans 1
Dunbar 1
Blackwood (otway) 1
Wild Dog Roa
North Paaratte 1
Curdie 1
3
Curdievale 1
Skull Creek West 1
Dunbar East 1
Skull
2
Wallaby Creek 1
Port Campbell 1
-38° 35' 00"
Grumby 1
Langley 1
2
Narrawaturk 2
Peterborough
142° 45' 00"
142° 50' 00"
GDA
Santos
Exploration & Development
VICTORIA
OTWAY BASIN, PEP 154A
Melba 1
LOCATION MAP
kilometres
2 0 2 4
Santos Ltd ABN 80 007 550 923, 12 May 2003, File No OTWAY 571

WELL DATA CARD

WELL HISTORY

1. GENERAL DATA

Well Name:	MELBA 1	
Well Classification:	Gas Exploration	
Block Voting Factor:	SANTOS Group. Beach Petroleum.	90.0% 10.0%
Investment Factor:	SANTOS Group. Beach Petroleum.	90.0% 10.0%
Block:	Former PSW Block South Australia	
License:	PEP 154 Victoria	
Operator:	SANTOS Limited	
Surveyed Location: (GDA94)	Latitude: 38° 28' 16.58" South Longitude: 142° 49' 24.36" East	
Surveyed Elevation: (AHD)	Ground Level: 71.2m Rotary Table: 76.2m	
Seismic Location:	2m SW of line OCV00-2537 SP: 10238	
Seismic Survey:	Curdievale 3D seismic	
Total Depth	Driller: 1668m Logger (Extrapolated): 1668m	
Status:	Plugged and Abandoned Dry Hole	

2. DRILLING DATA

Date Drilling Commenced:	14:30 Hours, 22nd March 2003.
Date Drilling Completed:	21:30 Hours, 28th March 2003.
Date Rig Released:	02:00 Hours, 31st March 2003.
Contractor:	Century Resources
Rig:	CDL 11
Rig Specifications:	Refer to Appendix XII

3. DRILLING SUMMARY

(a) Drilling Summary (All Depths Driller's KB)

Melba 1 was drilled as an Otway Basin near field exploration wildcat well in the PEP 154 licence. Melba 1 was drilled as a directional well due to surface constraints on the well location.

Melba 1 was spudded on the 22nd March 2003 utilising the drilling rig Century 11. The 9-7/8" hole section was drilled in one bit run to 457m utilising a Hughes GT-C1. 37 joints of 7 5/8" 26.4 lb/ft casing were run with the shoe set at 456m. The Blow Out Preventer was installed and pressure tested prior to drilling ahead.

The 6¾" drilling assembly was made up with a mud motor and a Hughes STR09 bit. The shoe track and 3m of new formation were drilled to 460m. The hole was displaced to KCl/PHPA/Polymer mud and a Leak Off Test conducted yielding an equivalent mud weight of 16.1 ppg.

Drilling 6¾" hole continued to kick-off point at 816m. The well was kicked-off utilising a combination of slide and rotary drilling with MWD directional surveys taken as required building the kick-off angle to 15 degrees.

Drilling continued to 1184m where the bit was pulled from the hole due to increased rotational hours. The 6¾" hole section was completed in two bit runs with total depth reached at 1668m on 28th March 2003 at 21:30 hours.

After reaching total depth Suite 1 wireline logs were conducted and consisted of Run 1 Pex-DSI-NGT and Run 3 CST (18 sidewalls attempted, 15 recovered, 2 empty and 1 lost bullet). Run 2 MDT was cancelled based on the results of Run 1 which indicated no gas pay for the well.

Abandonment plugs were set and the rig released at 02:00 hrs on 31st March 2003.

Tables 1 and 2 below, summarise the major drilling operations in this hole. More comprehensive summaries are appended to this report (Appendix VIII: Drilling and Casing Report).

TABLE 1: CASING, HOLE AND CEMENT DETAILS

BIT SIZE	*DEPTH*	*CASING SIZE*	*CASING DEPTH*	*JOINTS*	*CASING TYPE/*	*CEMENT*
9-7/8"	457m	7-5/8"	456m	37	26.4 lb/ft L80	Lead: 297 sacks class "G" cement with 1.5% bentonite and 63 bbls of mix water , mixed to a slurry weight of 13.5 ppg.
7-5/8"	1668m					Plugged and abandoned.

TABLE 2: SUMMARY OF MUD SYSTEMS

MUD TYPE	*INTERVAL*
Spud Mud	Surface to 457m (7-5/8" casing point)
KCl / PHPA	457m to 1668m (Total Depth)

(b) Lost Time

A time breakdown is included in Appendix VIII.

(c) Water Supply

The water supply was from the rig bore with a resistivity of 7.5 ohm.m @ 75°F.

(d) **Mudlogging Services**

Mudlogging services were provided by Geoservices (Unit 71). Samples were collected, washed and described at 10m intervals from spud to 987m and 3 and 6m intervals from 987m to TD at 1668m. All samples were checked for oil shows using ultraviolet fluorescence. Gas levels and compositions were monitored from surface to TD using F.I.D. total gas and chromatograph detectors. Other parameters monitored included rate of penetration, mud pit levels and pump strokes.

(e) Testing

No drill stem tests were conducted at the MELBA 1 location.

(f) Coring

No cores were cut on MELBA 1.

(g) Electric Logging

One suite of electric logs were run as detailed below:

LOG	*RUN*	*INTERVAL*	*BHT/TIME*	*OTHER*
PEX	1 / 1		60ºC / 9.5 HOURS	
HGNS				
GR		1641-surface		
NGT		1641 - 1360		
TNPH		1647 - 456		
HRMS				
RXOZ		1646 - 456		
RHOZ		1647 - 456		
HCAL		1646 - 456		
HALS				
HLLD		1666 - 456		
HLLS		1666 - 456		
DSI		1660 - 456		
SP		1628 - 456		
MDT	1 / 2			Cancelled
CST	1 / 3	1592 - 1495		18 bullets shot, 15 recovered, 1 lost bullet, 2 empty

(h) Geothermal Gradient

A bottom hole temperature of 166°Fht was extrapolated from the logging run temperature data which enabled a geothermal gradient of 1.72°F / 100' to be calculated. A surface temperature of 70°F was assumed. Temperature data used is listed in Appendix IV. The results are displayed graphically in Appendix IV.

(i) Hole Deviation

MELBA 1 was drilled as a deviated well due to surface constraints. Deviation was monitored during the 9-7/8" section utilising single shot directional surveys. Through the 6¾" hole section the well was drilled vertically to kick-off point at 816m. The well was kicked – off at 16º to the north-east with LWD surveys taken as instructed by the directional driller. At total depth the well was located at 212m to 45.13º. Deviation results are summarised in Appendix V and the Composite Log (Enclosure I).

(j) Velocity Survey

No velocity survey was conducted at MELBA 1.

(k) Casing and Completion Summary

A surface string of 7-5/8" casing was run to 456m. The well was drilled to a total depth of 1668m(D) and after logging the well was plugged and abandoned. Further details are appended to this report (Appendix VIII:- Drilling and Casing Report).

GEOLOGY

APPENDIX I(a): LITHOLOGICAL DESCRIPTIONS

APPENDIX I(b): HYDROCARBON SHOW REPORTS

No hydrocarbon fluorescence was observed at the Melba 1 location.

APPENDIX II: PALYNOLOGY REPORT

SANTOS STRATIGRAPHIC SERVICES
EXPLORATION SERVICES DEPARTMENT

Palynology Report No. 2003/15

Authors: R. HELBY
G.R. WOOD
Date: 03/09/2003

PALYNOLOGICAL REPORT NO. 2003/15
PALYNOSTRATIGRAPHICAL ANALYSIS
MELBA NO. 1

Santos Ltd
A.C.N. 007 550 923

APPENDIX III: LOG INTERPRETATION

APPENDIX III(a): LOG ANALYSIS

MELBA 1

LOG ANALYSIS

MELBA 1 - LOG ANALYSIS

Melba 1 wireline logs were analysed over the Nullawaarre Greensand to Waarre Sandstone (1320m-1642m) interval. No conventional gas pay was identified in the Nullawaarre and Waarre Formations. Melba 1 was plugged and abandoned.

A 9 7/8" surface hole was drilled to 457 metres and 7 5/8" casing set at 455.75 metres. A 6 3/4" hole was then drilled with KCl/PHPA mud to 1668 metres (D). Wireline logging was carried out by Schlumberger (as described below).

Unless otherwise specified, all depths mentioned below are loggers depths referenced to the drill floor.

Logs Acquired

Run 1	NGT	1642m-Surface
	TNPH	1647m-Surface
	RXOZ	1647m-Surface
	RHOZ	1647m-Surface
	HCAL	1645m-Surface
	HALS	1666m-Surface
	DSI	1655m-Surface
	SP	1628m-Surface
Run 2	GR-MDT (cancelled by Ops Geology)	
Run 3	GR-CST (Recovered 14 of 18 cut)	

Mud Parameters

Mud Type	KCl/PHPA
Mud Density	9.05LB/G
KCl	3.9%
Rm	0.1931 ohmm @ 18.9^{o}C
Rmf	0.1665 ohmm @ 18.9^{o}C
Rmc	0.2330 ohmm @ 18.9^{o}C
MRT	60^{o}C from Run 1 at 1668.4m

Remarks

- Dt shear gained from dipole as monopole data intermittent.
- DSI run in Upper Diploe, Lower Dipole and P&S modes.
- 0.0% Barite in mud.

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*                                  *
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*    User id : exptxd              *
*    Date    : 17-Apr-2003 10:46:23 *
*                                  *
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************************************
*                                  *
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*                                  *
*       *** End of Report ***      *
*                                  *
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*    User id : exptxd              *
*    Date    : 17-Apr-2003 10:46:24 *
*    Pages   :  10                 *
*                                  *
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APPENDIX III(b): MDT DATA

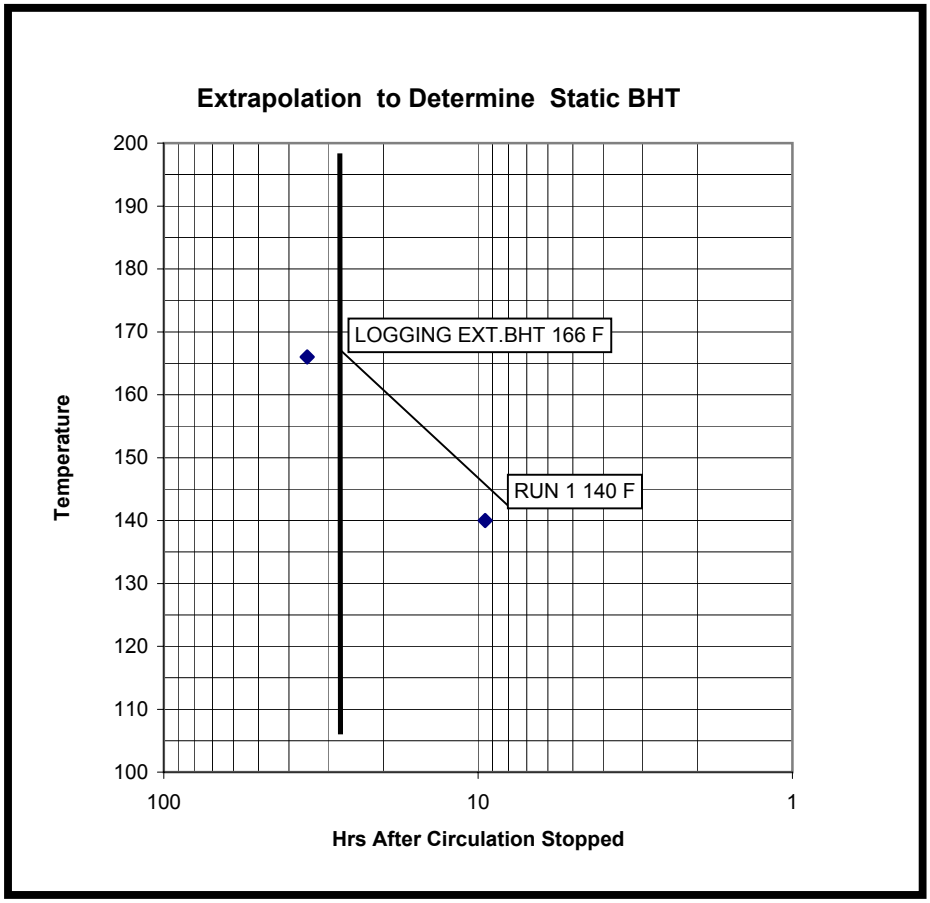
No MDT survey was conducted at the Melba 1 location..

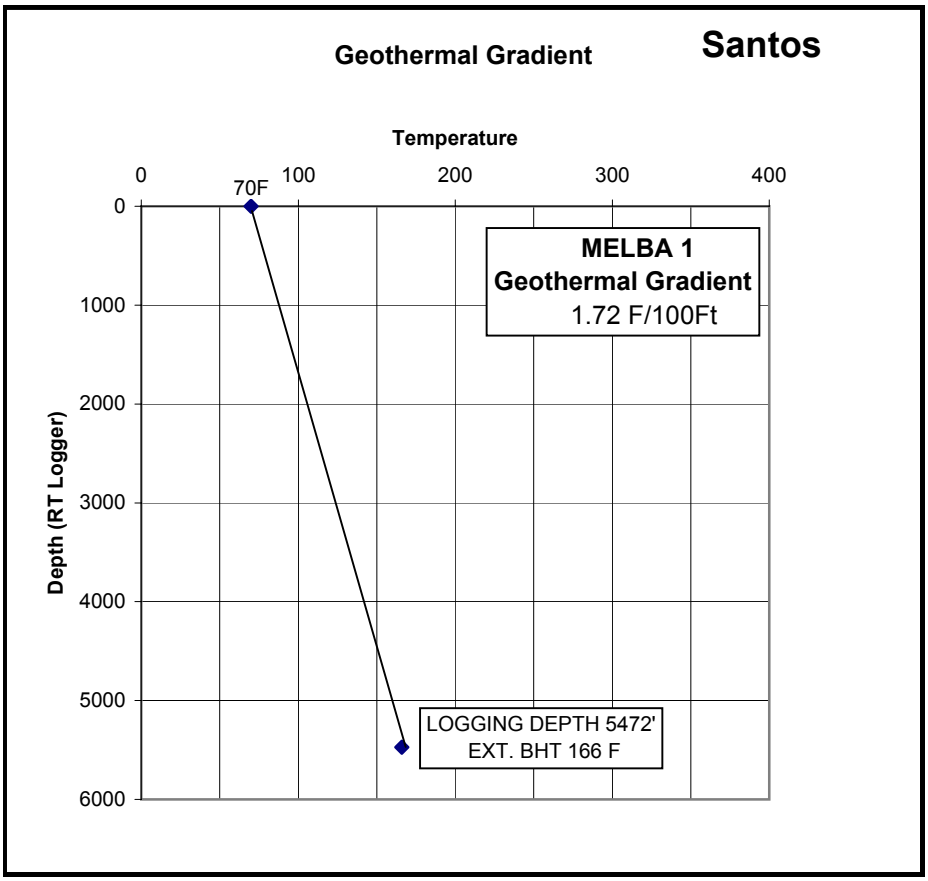
APPENDIX IV: GEOTHERMAL GRADIENT

GEOTHERMAL GRADIENT

A bottom hole temperature of 166°Fht was prognosed for the well based on off-set well information. Temperature readings from wireline logging results were only obtained for Run 1 Pex-DSI where a temperature of 60ºC (140ºFht). Extrapolating this information enabled a geothermal gradient of 1.72°Fht/100' to be calculated. A surface temperature of 70°F was assumed. Temperature data used is listed below. The results are displayed graphically overleaf.

Logging Run	Temperature	Time since Circulation	Depth
Suite 1 Run 1	60ºC	9 hours 30 minutes	1668m
Suite 1 Run 2		Cancelled	
Suite 1 Run 3		No thermometers run.	


Extrapolation to Determine Static BHT
200
190
180
170
160
150
140
130
120
110
100
Temperature
LOGGING EXT.BHT 166 F
RUN 1 140 F
100
10
1
Hrs After Circulation Stopped


Geothermal Gradient
Santos
Temperature
0
70F
100
200
300
400
0
1000
2000
3000
4000
5000
6000
Depth (RT Logger)
MELBA 1
Geothermal Gradient
1.72 F/100Ft
LOGGING DEPTH 5472'
EXT. BHT 166 F

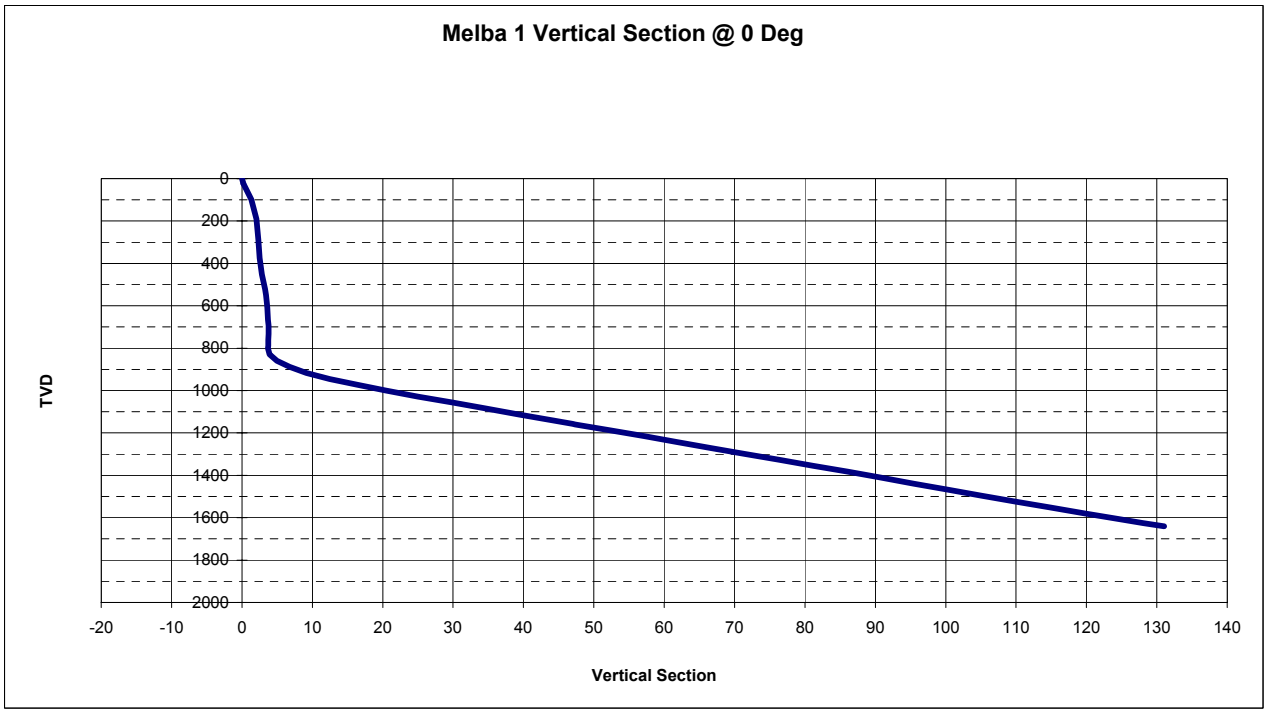
APPENDIX V: DEVIATION REPORT

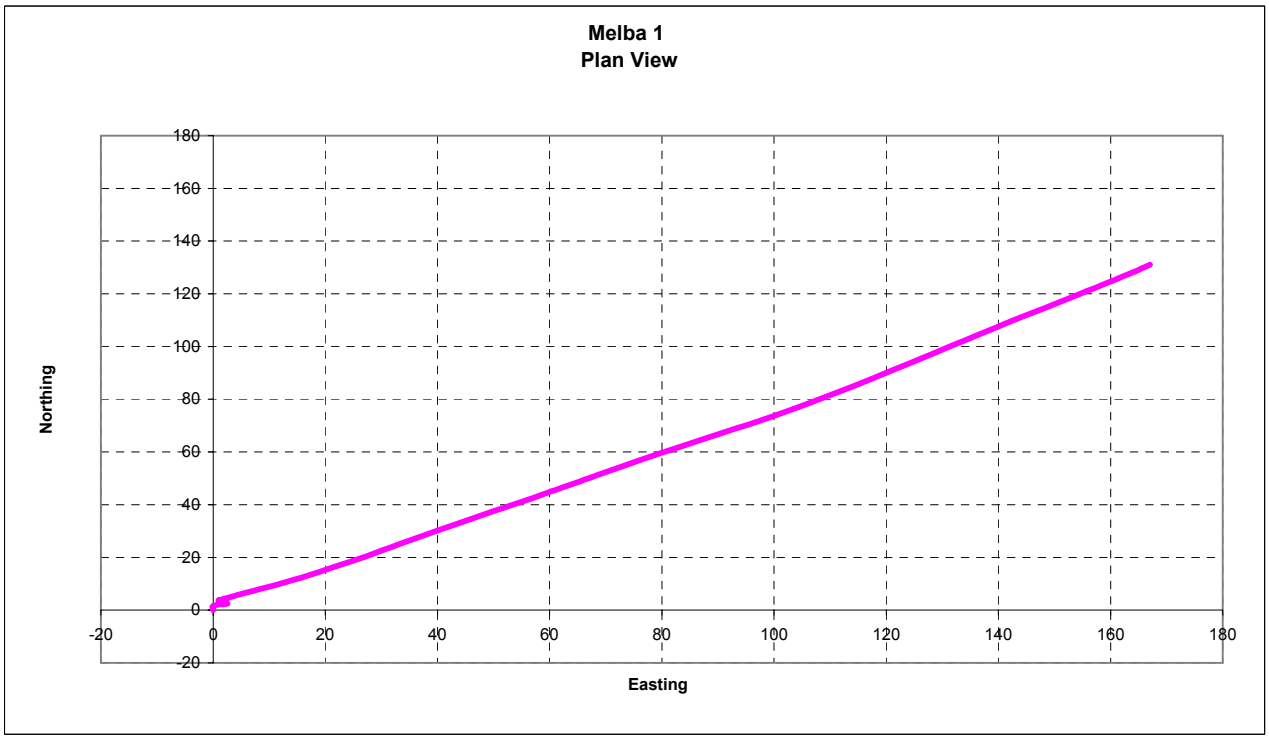
Due to surface constraints Melba 1 was drilled as a directional well. Deviation was monitored during the 9-7/8" section utilising single shot directional surveys. Through the 6¾" hole section the well was drilled vertically to kick-off point at 816m. The well was kicked – off at 16º to the north-east with LWD surveys taken as instructed by the directional driller. At total depth the well was located at 212m to 45.13º.

DEPTH	INCLIN	Azimuth	TVD	TVD	Northing	Easting	Q	Vert	Vert	Displ	Direction
m	DEG	DEG	m	S/S m	north	east	DEG	Sect	Plane		True
0	0.00	0.00	0.00	-76.20	0.00	0.00	0.00000	0.00	0	0.00	0.00
23	1	352.80	23.00	-53.20	0.20	-0.03	0.01744	0.20	0.1991	0.20	352.80
98	0.75	5.80	97.99	21.79	1.34	-0.06	0.00556	1.34	-1.337	1.34	357.53
191	0.75	80.80	190.98	114.78	2.04	0.60	0.01593	2.04	-2.04	2.13	16.52
288	1	77.80	287.97	211.77	2.32	2.06	0.00442	2.32	-2.32	3.10	41.59
375	0.25	280.80	374.97	298.77	2.52	2.61	0.02152	2.52	2.516	3.63	46.10
452	0.5	326.80	451.97	375.77	2.83	2.27	0.00649	2.83	2.8286	3.62	38.69
521.03	0.38	20.47	521.00	444.80	3.30	2.18	0.00718	3.30	-3.295	3.95	33.49
549.78	0.25	59.80	549.75	473.55	3.42	2.27	0.00428	3.42	-3.416	4.10	33.58
578.81	0.37	32.26	578.77	502.57	3.53	2.37	0.00327	3.53	-3.527	4.25	33.93
608.17	0.37	277.41	608.13	531.93	3.62	2.33	0.01087	3.62	3.6195	4.30	32.76
637.53	0.24	285.50	637.49	561.29	3.65	2.18	0.00240	3.65	3.6482	4.25	30.82
665.84	0.52	285.05	665.80	589.60	3.70	2.00	0.00487	3.70	3.6974	4.20	28.35
693.05	0.46	292.35	693.01	616.81	3.77	1.77	0.00152	3.77	3.771	4.17	25.20
732.88	0.43	250.57	732.84	656.64	3.78	1.49	0.00556	3.78	-3.782	4.06	21.45
762.07	0.59	271.42	762.03	685.83	3.75	1.23	0.00422	3.75	3.7493	3.95	18.20
788.21	0.37	261.8	788.17	711.97	3.74	1.01	0.00409	3.74	3.7406	3.88	15.17
800.92	0.52	239.6	800.88	724.68	3.71	0.92	0.00393	3.71	-3.706	3.82	14.00
829.8	2.45	61.26	829.75	753.55	3.94	1.35	0.05182	3.94	-3.936	4.16	18.96
858.93	5.79	60.09	858.80	782.60	4.97	3.17	0.05829	4.97	-4.968	5.89	32.56
888.24	8.19	58.43	887.89	811.69	6.80	6.23	0.04201	6.80	-6.799	9.22	42.51
917.41	11.01	62.7	916.65	840.45	9.16	10.48	0.05071	9.16	-9.165	13.92	48.83
947.12	13.58	55.19	945.68	869.48	12.46	15.87	0.05273	12.46	-12.46	20.17	51.86
975.75	14.7	55.64	973.44	897.24	16.43	21.62	0.01962	16.43	-16.43	27.16	52.78
1003.94	14.02	53.87	1000.75	924.55	20.46	27.33	0.01414	20.46	-20.46	34.14	53.19
1032.77	15.86	50.80	1028.61	952.41	25.01	33.21	0.03493	25.01	-25.01	41.57	53.02
1061.66	15.95	54.11	1056.39	980.19	29.83	39.48	0.01591	29.83	-29.83	49.49	52.93
1091.41	15.87	53.18	1085.00	1008.80	34.66	46.05	0.00467	34.66	-34.66	57.64	53.03
1120.70	16.15	54.69	1113.15	1036.95	39.42	52.58	0.00875	39.42	-39.42	65.72	53.14

DEPTH	INCLIN	Azimuth	TVD	TVD	Northing	Easting	Q	Vert	Vert	Displ	Direction
m	DEG	DEG	m	S/S m	north	east	DEG	Sect	Plane		True
1149.56	16.21	53.69	1140.87	1064.67	44.12	59.10	0.00497	44.12	-44.12	73.76	53.26
1166.59	16.22	52.45	1157.22	1081.02	46.98	62.90	0.00605	46.98	-46.98	78.51	53.24
1168.86	16.27	52.80	1159.40	1083.20	47.37	63.41	0.00191	47.37	-47.37	79.15	53.24
1197.98	16.13	53.04	1187.37	1111.17	52.27	69.89	0.00272	52.27	-52.27	87.27	53.21
1226.99	16.23	53.85	1215.23	1139.03	57.08	76.38	0.00430	57.08	-57.08	95.36	53.23
1256.12	16.68	54.90	1243.16	1166.96	61.89	83.09	0.00940	61.89	-61.89	103.60	53.32
1285.43	16.74	55.16	1271.24	1195.04	66.72	90.00	0.00166	66.72	-66.72	112.03	53.45
1314.41	17.01	55.95	1298.97	1222.77	71.47	96.93	0.00617	71.47	-71.47	120.44	53.60
1343.41	15.29	50.9	1326.83	1250.63	76.26	103.42	0.03875	76.26	-76.26	128.49	53.59
1372.49	15.7	51.41	1354.85	1278.65	81.13	109.47	0.00752	81.13	-81.13	136.26	53.46
1401.12	15.47	49.44	1382.43	1306.23	86.03	115.40	0.01008	86.03	-86.03	143.94	53.29
1430.12	13.85	48.76	1410.48	1334.28	90.83	120.95	0.02845	90.83	-90.83	151.26	53.09
1459.33	14.07	48.58	1438.83	1362.63	95.49	126.24	0.00390	95.49	-95.49	158.28	52.90
1488.39	14.15	48.82	1467.01	1390.81	100.16	131.56	0.00172	100.16	-100.2	165.35	52.72
1517.49	14.58	47.96	1495.20	1419.00	104.96	136.96	0.00836	104.96	-105	172.55	52.53
1546.83	15.25	49.88	1523.55	1447.35	109.92	142.65	0.01451	109.92	-109.9	180.09	52.38
1575.87	15.13	50.23	1551.58	1475.38	114.80	148.48	0.00265	114.80	-114.8	187.69	52.29
1605.25	15.22	48.95	1579.93	1503.73	119.79	154.34	0.00605	119.79	-119.8	195.37	52.18
1633.85	15.79	50.05	1607.49	1531.29	124.75	160.15	0.01118	124.75	-124.8	203.01	52.08
1652.03	15.86	47.3	1624.98	1548.78	128.03	163.88	0.01314	128.03	-128	207.96	52.00
1668	15.91	45.13	1640.34	1564.14	131.05	167.03	0.01040	131.05	-131.1	212.31	51.88

Melba 1 Deviation plots





APPENDIX VI: DRILL STEM TEST DATA

No drill stem tests were conducted at the Melba 1 location.

APPENDIX VII: WELL LOCATION SURVEY

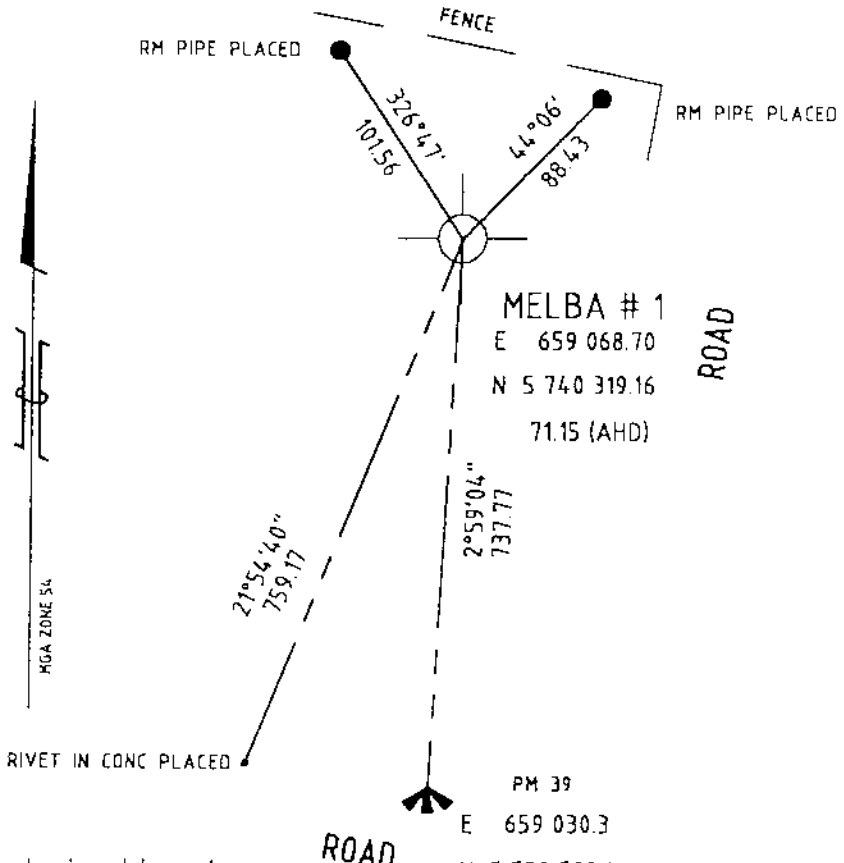
VICTORIA

PROPOSED GAS WELL LOCATION

REFERENCE MARKS SKETCH PLAN

EXPLORATION LICENCE PEP 154

Well Name	MELBA # 1		
Map			
Spheroid	GDA94	MGA 94	ZONE 54
Latitude	S 38°28'16.58"	Measurement units	(metres)
Longitude	E 142°49'24.36"	Easting	659 068.70
Convergence	1°08'02"	Northing	5 740 319.16
Scale Factor	0.99991114	Elevation	71.15 (AHD)



NOTES : This sketch plan is not to scale.
Distances shown are PLANE distances.
Bearings shown are computed grid bearings.

DATUM : The origin of coordinates was Land Victoria's Survey Mark Enquiry Service (SMES) AG066 (AMG Zone 54) then transformed to GDA94 (MGA Zone 54) using GDAit software.
Height datum is to AHD originating from SMES.

Estimated Horizontal error is less than +/- 0.15 metre.
Estimated Vertical error is less than +/- 0.2 metre.
Date of Survey : 25 / 2 / 2003

Paul Crowe Surveyor
ABN 58521601183
"Ambleside" 192 Koroit Street
Warrnambool 3280
Ph. (03) 5561 1500

REF 1181

Date 26 / 2 / 2003

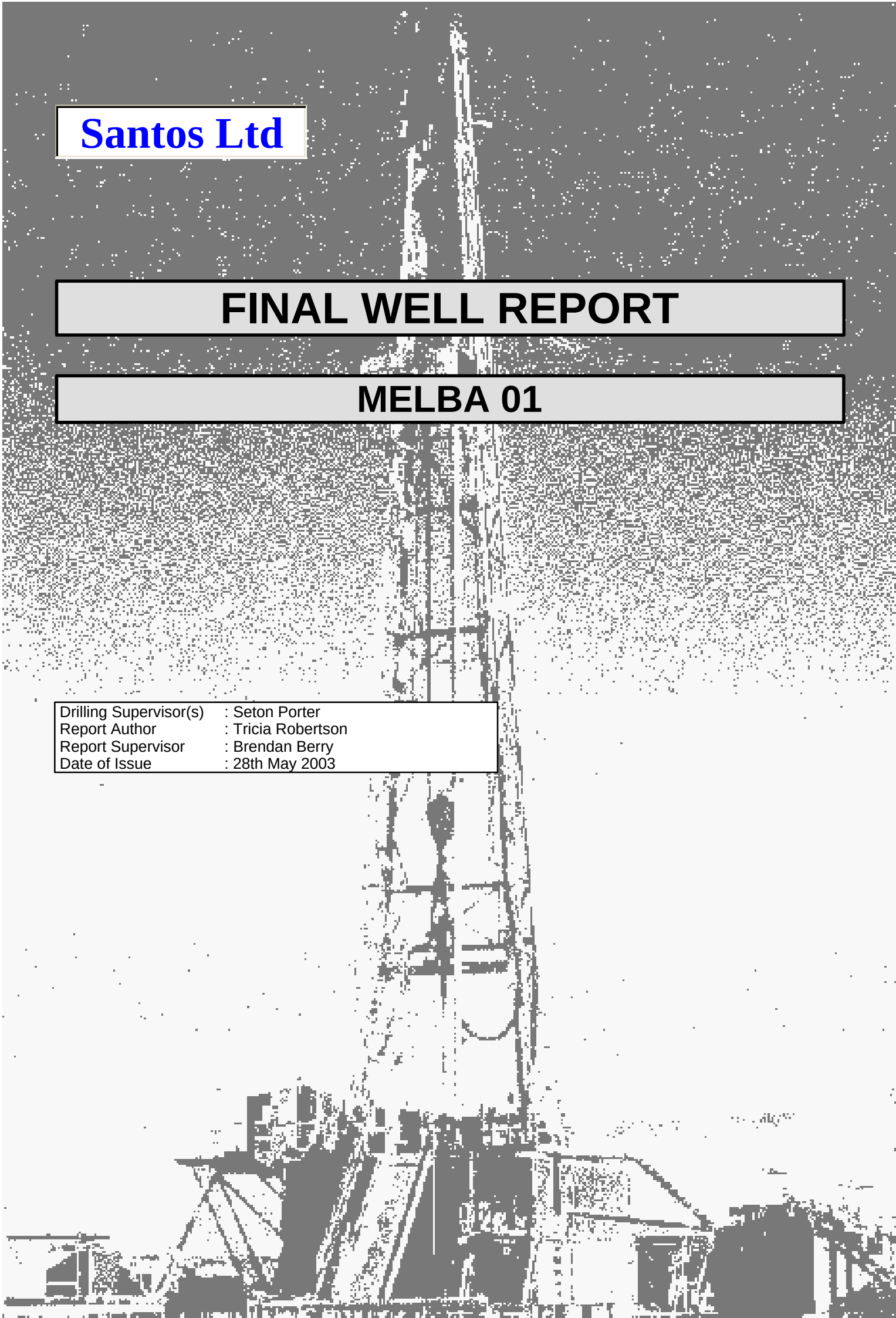
LICENSED SURVEYOR

APPENDIX VIII: DRILLING AND CASING REPORT

Santos Ltd

FINAL WELL REPORT

MELBA 01



Drilling Supervisor(s)	: Seton Porter
Report Author	: Tricia Robertson
Report Supervisor	: Brendan Berry
Date of Issue	: 28th May 2003

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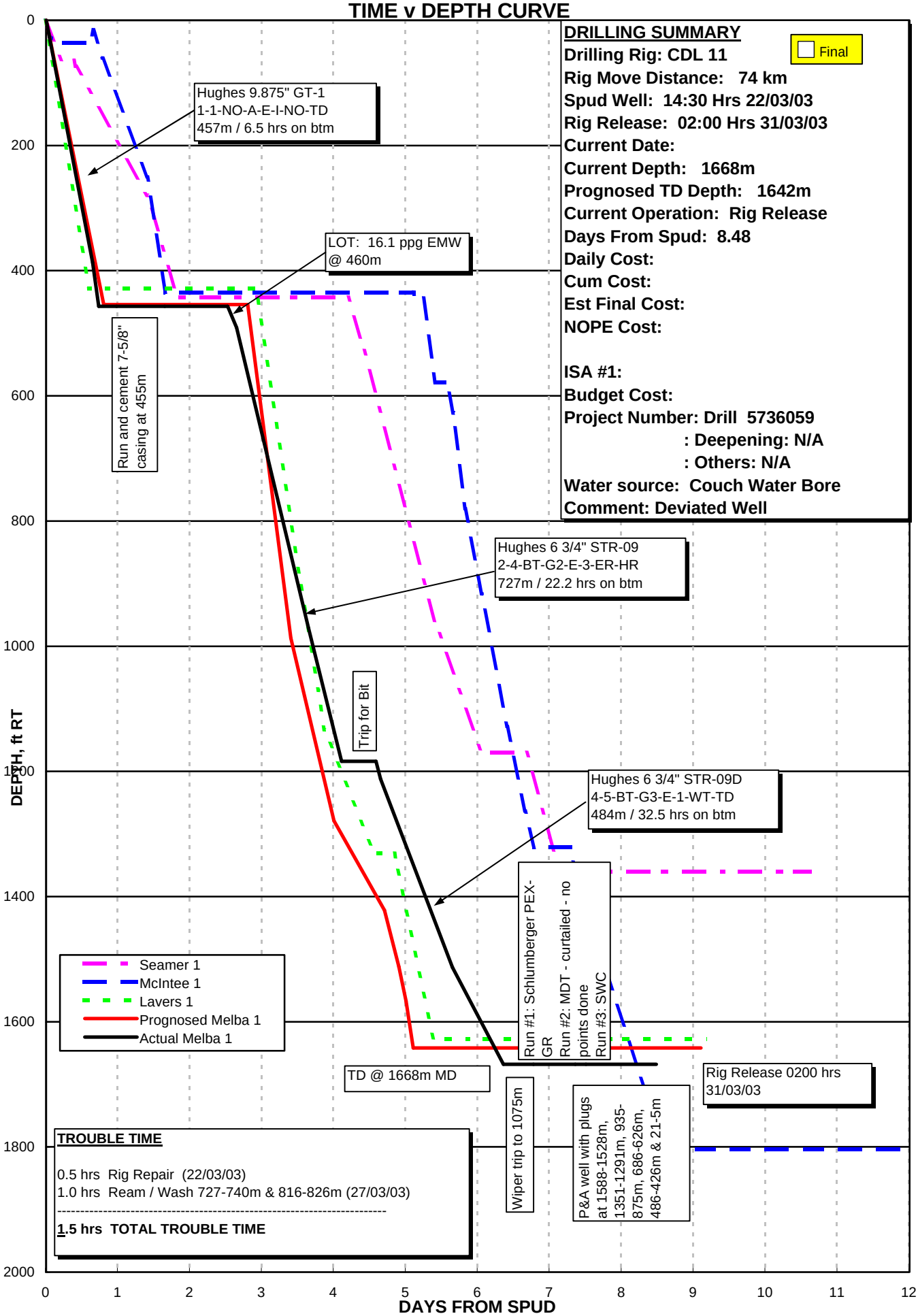
Section 1 – Well Summary

Time vs Depth Curve

MELBA 1
TIME v DEPTH CURVE



Section 2 – Well History

Well History Report

MELBA 01

Drilling Co.: Century **Rig:** Century #11

RT above GL: 5 m	Lat : 38 deg 28 min 16.58 sec	Spud Date: 22/03/2003	Release Date: 31/03/2003
GL above MSL : 71 m	Long : 142 deg 49 min 24.36 sec	Spud Time: 14:30:00	Release Time: 2:00:00

Well History

#	DATE	DEPTH	WELL HISTORY (24 Hr Summary)
1	17/03/2003		Hold Ice-Breaker safety meeting in Brisbane with all crew & service hands
2	18/03/2003		Crew travelled from Brisbane to Warrnambool
3	19/03/2003		Move & set up camp. Move part of the rig from Warrnambool to Melba 1. Full crew on site. DSV travelled from Brisbane to site
4	20/03/2003		Moved balance of rig on site. Rigging up. Raised lower section of mast. Camp & rig 100% moved. Camp 100% rigged up. Rig 40% rigged up
5	21/03/2003		Rigging up. Crew worked till 2100 hrs, other crew finished at 1400 hrs to come back at midnight. Geoservices crew & Mud Engineer arrived. Halliburton brought in the cement unit.
6	22/03/2003	232	Rig up, drill & set Rat & Mouse holes. Spud in at 14:30 hrs & drill ahead with MSS surveys
7	23/03/2003	232	Drilled 9-7/8" hole to 457m. Condition hole, hoist laying out 6.5" DC's & 4.5" HWDP. Run casing & cement at 455m. Wait on cement
8	24/03/2003	232	Wait on cement. Slack off & install Bradenhead. NU & test BOPE. Make up Directional Drilling Assembly & run in hole
9	25/03/2003	865	Run in hole picking up HWDP. Drill out shoe track & 3m of new hole. Run L.O.T to 16.1ppg EMW & drill ahead to kick-off point at 816m. Slide drill to commence kick-off
10	26/03/2003	1,184	Drilled 6-3/4" hole from 865 to 1184m. KOP at 816m, built angle & continued drilling to 1184m. Total K-Revs on bit, 376. Trip for bit.
11	27/03/2003	1,450	Run in hole, reaming 2 tight spots. Drill from 1184 to 1450 m with DH motor & MWD
12	28/03/2003	1,668	Drill 6-3/4" hole from 1450 to 1668m with DH motor & MWD. Circulate hole clean & begin wiper trip
13	29/03/2003	1,668	Hoist, run PEX & SWC logs with Schlumberger. Run in to lay out BHA
14	30/03/2003	1,668	Lay out BHA. Run in open-ended & run 5 abandonment plugs. Lay out pipe. Tag cement at 411m up inside casing. Lay out pipe. Nipple up BOP's
15	31/03/2003	1,668	Remove Bradenhead & release rig at 02:00 hrs, 31-3-03. Run 16m surface cement plug & attach well sign to casing

Section 3 – Drilling Data

Bit Record

FIT/LOT Report

MELBA 01

Drilling Co.: Century

Rig : Century #11

RT above GL : 5 mtrs
GL above MSL : 71 mtrs

Lat : 38 deg 28 min 16.58 sec
Long : 142 deg 49 min 24.36 sec

Spud Date: 22/03/2003
Spud Time: 14:30:00

Release Date: 31/03/2003
Release Time: 2:00:00

BIT RECORD

DATE	BIT#	SIZE "	IADC	SER	MFR	TYPE	JETS	D.IN mtrs	D.OUT mtrs	MTRG	HRS o/b	SPP psi	FLW gpm	WOB k-lbs	RPM	MW ppg	TFA sq.in	VEL mps	HHP /sq"	ROP m/hr	I	O1	D	L	B	G	O2	R
23/03/2003	1	9.88	116	A28JW	HUGHES	GTC1	3x16	0	457	457	6.5	1198	502	10.0	110	9.0	0.589	83	2.27	70.3	1	1	NO	A	E	I	NO	TD
26/03/2003	2	6.75	437	5020202	HUGHES	STR 09	3x13	457	1,184	727	22.2	1200	252	10.0	120	8.8	0.389	63	1.35	32.7	2	4	BT	G2	E	3	ER	HR
29/03/2003	3	6.75	437	5020057	HUGHES	STR 09D	3x13	1,184	1,668	484	32.2	1571	253	10.7	120	9.0	0.389	63	1.40	15.0	4	5	BT	G3	E	1	WT	TD

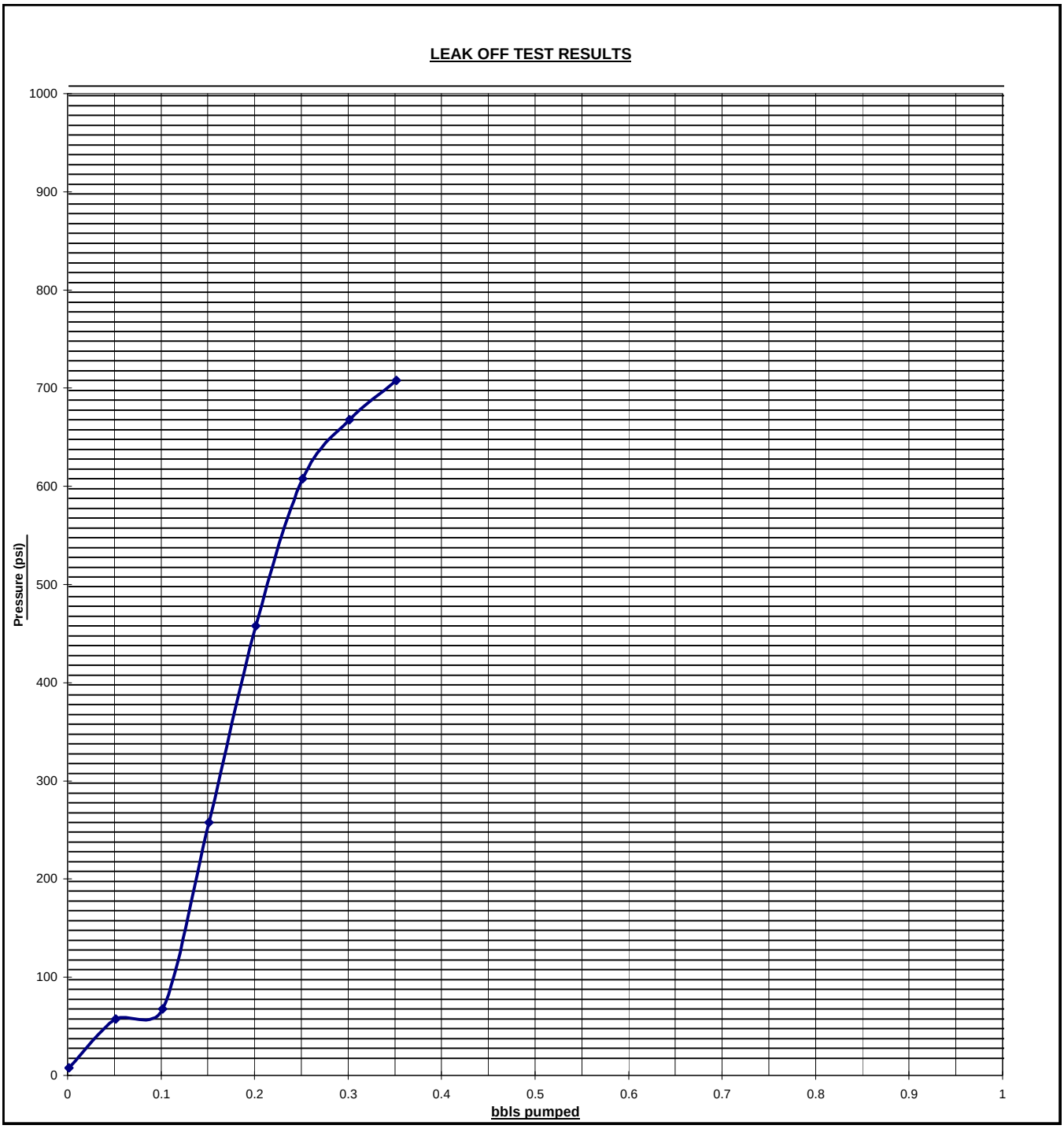
Santos	DRILLING SERVICES LEAK OFF TEST RESULTS	DQMS F- 214

WELL: **Melba 01** **RIG:** **Century Resources - 11** **25-Mar-03**

CASING SIZE: **9-5/8"** SANTOS SUPERVISOR: **Seton Porter**

A. MUD DENSITY IN USE:	**8.40**	ppg
B. HOLE DEPTH:	**460**	m
C. SHOE DEPTH:	**456**	m
D. LEAK-OFF PRESSURE (GRAPH):	**600**	Psi
E. EQUIVALENT DENSITY: LEAK-OFF PRES. (D) (psi) / SHOE DEPTH (C) (m) x 0.1706 + MUD DENSITY IN USE (A) (ppg)	**16.1**	**(ppg) (EMW)**
F. MAXIMUM PRESSURE RECORDED:	**700**	psi
G. VOLUME PUMPED:	**0.5**	bbls
H. VOLUME REGAINED:	**0.45**	bbls

bbls	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60					
Psi	0	50	60	250	450	600	660	700										



Section 4 – Casing and Cementing

Casing and Cementing Report/s

Wellhead Installation Report/Plug and Abandonment Report

Santos — SANTOS CASING AND CEMENTING REPORT — DQMS F-220

WELL:	**Melba 01**	**DATE:**	23-Mar-03
ELEVATIONS:	**RT:** 63.71 m	**T.D:**	457 m
	GL: 58.51.0 m	**PBTD:**	443 m
CASING BOWL SIZE:	11" 5K x 7-5/8" API BTC WG-22-L	**SERIES:**	5000
STRING TYPE:	Surface		

CASING AND EQUIPMENT RECORD AS RUN FROM BOTTOM TO TOP

SIZE OD.	WEIGHT lb/ft	GRADE	No. of JOINTS	THREAD	LENGTH	FROM	TO	REMARKS
7-5/8"	---	L-80	---	BTC	0.37	455.63	456.00	Float Shoe
7-5/8"	26.4	L-80	1	BTC	12.25	443.38	455.63	
7-5/8"	---	L-80	---	BTC	0.31	443.07	443.38	Float Collar
7-5/8"	26.4	L-80	36	BTC	438.01	5.06	443.07	
7-5/8"	26.4	L-80	---	BTC	7.04	-1.98	5.06	Landing Joint
							-1.98	Stick up
		TOTAL JOINTS	37					
				TALLY TOTAL	457.98			

CASING LANDED AT : **456.00 m**

RT TO TOP OF BRADEN HEAD : **4.70 m**

CENTRALIZERS LOCATED AT - RT.

453	394	296
430	369	17
418	333	

PREFLUSH Dam Water

Volume: 20 **Density:** 8.4 **Additives:** Water only

LEAD CEMENT

				Additives	%	Amount Used
Brand:	**Class:**	**No. sx:**				
Mixwater:	**Slurry Vol:**	**Density:**				
Gals/Sack	**Yield:**					

TAIL CEMENT

						Additives	%	Amount Used
Brand:	ABC	**Class:**	G	**No. sx:**	297	Bentonite	1.5	327 lbs
Mixwater:	63 bbls	**Slurry Vol:**	89.6 bbls	**Density:**	13.5 ppg			
Gals/Sack	8.87	**Yield:**	1.66 cu.ft/sack	Cement volume calculated at 50% on hole volume, no caliper available.				

DISPLACEMENT

Fluid:	Water	**Calc. Displacement:**	68.4 bbls	**Plug Bump:**	Yes
Density:	8.4	**Actual Displacement:**	69.5 bbls	**Bleed Back:**	0.5 bbls

TIME:-

STARTED IN HOLE:	15:50 Hr.
FINISHED RUNNING CASING:	16:00 Hr.
START CIRCULATING:	18:30 Hr.
STOP CIRCULATING:	20:45 Hr.
START CEMENTING:	21:10 Hr.
FINISH CEMENTING:	21:35 Hr.
START DISPLACEMENT:	21:37 Hr.
FINISH DISPLACEMENT:	21:55 Hr.

CASING RECIPROCATED DURING

CIRCULATING:	Yes
CEMENTING:	Yes
DISPLACING:	Yes

WIPER PLUGS

TOP:	Yes
BOTTOM:	Yes

CEMENT JOB DETAILS / REMARKS:-

Drilling Supervisor: Seton Porter

Casing ran to 446m OK. Circulated casing down to 456m. Pumped idcide treated mud, water pre-flush & pressure tested lines to 2500 psi. Mixed & pumped cement, displaced with Halliburton. Did not get any cement returns, nor water pre-flush. Bumped plug to 2000 psi, floats held. With cement stinger at 25m RT, topped up with 129 sacks of cement, 29.8 bbls. Left cement in conductor for over an hour, but it slumped back to 3 metres below the cellar.

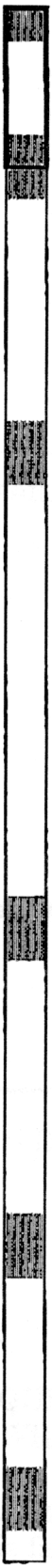
.

Topped up conductor annulus with 2 cu.m of ready-mix concrete.

RT - top of Bradenhead = 4.70m

Melba 01

Plug & Abandon Programme



7-5/8" Casing
set at 456m

Surface Plug No 6, 21 - 5m
12 sacks 'G' cement

Plug No 5, 486 - 426m
55 sacks of 'G' cement

Formation Tops, metres:

Clifton	509
Narrawaturk	530
Mepunga	569
Dilwyn	656

Plug No 4, 686 - 626m
55 sacks of 'G' cement

Pember	860
Pebble Point	905
Paaratte	929

Plug No 3, 935 - 875m
52 sacks of 'G' cement

Skull Creek	1222
Nullawaare	1321

Plug No 2, 1351 - 1291m
45 sacks of 'G' cement

Belfast	1485
Flaxman	1538
Waare	1558
Eumeralla	1601

Plug No 1, 1588 - 1528m
39 sacks of 'G' cement
Total Depth, 1668m

APPENDIX IX: RIG SPECIFICATIONS

RIG SPECIFICATIONS

CENTURY RIG 11

RIG INVENTORY FOR RIG # 11

CARRIER:	Cooper LTO 750 Carrier with triple front and rear axles 54,000lb front and 70,000lb rear. All necessary highway equipment. Unit levelled with hydraulic jacks when stationary
SUBSTRUCTURE:	17' floor height – 14' below table beams with plates in base
DRAWWORKS:	Cooper 750 HP Double Drum Drawworks 3000 metres $^{9}/_{16}$" sandline
ENGINES:	Driven by 2 each Caterpillar 3406 TA Diesel Engines
BRAKE:	Parmac V80 Hydromatic
ROTARY TABLE:	National Rotary Table Model C-175
DERRICK:	Cooper Derrick Model 118-365. Ground height 118' Maximum rated static hook load 35,0000 lbs with 10 lines Mast raised, lowered and telescoped hydraulically
CROWN BLOCK:	Cooper Crown Block with 4 working sheaves. Fast line sheave and dead line sheave. All grooved for $1^{1}/_{8}$" line. Sandline sheave grooved for $^{9}/_{16}$" line. National Hook Block Model 435 G-175. 175 ton capacity 4 - 35" sheaves grooved for $1^{1}/_{8}$" line.
SWIVEL:	P-200 National
SLUSH PUMPS:	2 Gardner Denver PZ-7 Triplex Pumps driven by Cat 379TA Diesel Engines Rated 550 HP each. Liner sizes 5 $^{1}/_{2}$" and 6".
MUD SYSTEM:	2 × 300 bbl tanks incorporating 80 bbl pill tank and 54 bbl trip tank.
SHAKERS:	2x Triton NNF Screening Machine (Linear Motion).
DEGASSER:	Drilco Atmospheric Degasser Standard Pit. $7^{1}/_{2}$ HP 60 Hz, 230v.
MUD / GAS SEPARATOR	Minimum 36" separator with 10ft. maximum mud seal.
VENT LINE:	Minimum 6" vent line from Separator to flare pit, 200 ft. length.
DESANDER:	Demco Model 122. Two, 12" cone with Warman 6" × 4" Centrifugal pump driven by 50 HP Electric Motor.
DESILTER:	Pioneer Economaster Model T12-E4. 12 × 4" cones with Warman 6" × 4" Centrifugal pump, driven by a 50 HP Electric Motor.
MUD MIXING PUMP:	Warman 6" × 4" Centrifugal pump driven by a 50 HP Electric Motor
MUD AGITATORS:	4 only Brandt Mud Agitator Model MA 7.5
BOP's & ACCUMULATOR:	Annular: 11" 5,000psi Shaffer Spherical 11" 5,000psi Shaffer Double Gate Model 'LWS' Complete with $2^{3}/_{8}$", $2^{7}/_{8}$", $3^{1}/_{2}$", $4^{1}/_{2}$", $5^{1}/_{2}$", 7" and Blind Rams Accumulator: Koomey Model 100-11S

CHOKE MANIFOLD:	Cameron 5,000 psi, as per attached drawing but with hydraulic choke fitted and pressure tested with remote control panel
KELLY COCK: (Upper)	Packard 5000 PSI upper kelly cock with 6 $^{5}/_{8}$" reg. LH connections.
KELLY COCK: (Lower)	Packard 5000 PSI upper kelly cock with 4" IH connections
DRILL PIPE SAFETY VALVE:	1 x 4" IF Inside BOP (Gray) 1 x 4" IF full Operating Stab Valve
SPOOL:	1-11" 5,000psi Flanged Drilling Spool with 3$^{1}/_{8}$" 5,000psi Flanged Choke Line out and 2$^{1}/_{16}$" 5,000 psi Kill Line Outlet 1-11" 5,000 psi to 11" 3,000psi Kill Line Double Studded Adaptor 1-11" 5,000 psi to 7$^{1}/_{16}$" 5,000 psi Double Studded Adaptor
KILL LINE VALVES:	2-2$^{1}/_{16}$" 5,000psi Manual Flanged Valves
CHOKE LINE VALVES:	1-3$^{1}/_{8}$" 5,000psi Manual Flanged Valve 1-3$^{1}/_{8}$" 5,000 psi HCR Flanged Valve
INSTRUMENTATION:	Martin–Decker 6 pen Record-O-Graph Martin–Decker Weight Indicator Type FS Martin–Decker Mud Pressure Gauge Martin–Decker Rotary RPM Indicator Martin–Decker Pump Stroke Indicator (2 off) Martin–Decker Rota Torque Indicator Martin–Decker Tong Torque Indicator Martin–Decker Mud Flow Sensor Martin–Decker Mud Flow Fill System Martin–Decker Mud Volume Totaliser (MVT)
AUTOMATIC DRILLER:	Satellite Automatic Driller Model SA100-50-1500
KELLY SPINNER:	Foster Model K-77
KELLY:	1-5$^{1}/_{4}$"Hex Kelly. 2$^{13}/_{16}$" ID × 40' long with 6$^{5}/_{8}$" API Reg LH Box up 4" IF Pin Down
UPPER KELLY VALVE:	Upper Kelly Cock. 10,000 test 6$^{5}/_{8}$" API Reg LH Connections.
LOWER KELLY VALVE:	1 – Hydril Kelly Guard 6$^{1}/_{4}$" OD 10,000 psi, 4" IF (NC46) Pin and Box Connection
KELLY DRIVE BUSHING:	Varco Type 4 KRS Kelly Drive Bushing
DRILL PIPE AND TOOLS:	6 joints 4$^{1}/_{2}$" Range II Hevi Wate Drill Pipe with 18^{0} Taper 4" IF (NC46) Connections. 10,000ft. 3 ½" 13.3lbs/ft Grade 'G" Drill Pipe 30 x 4 ¾" slick Drill collars 3 ½ " IF 1 x 4 ¾" pony collar, 3 ½" IF, 10 ft. long 9 x 3 ½" HWDP, 3 ½" IF 4 ¼" Hexagonal Kelly, 6 $^{5}/_{8}$" Reg LH Box up, 3 ½" IF Pin Down 4 ¾" Lower Kelly Valve, 3 ½" IF 4 ¾" Inside BOP / Stabbing Valve, 3 ½" IF 4 ¾" Bit Sub, 3 ½" IF Box Up, 3 ½" Reg Box Down 3 ½" rotary slips 3 ½" elevators

All cross-over, lifting and saver subs to match above tools
4 ¾" drill collar slips

DRILL COLLARS:

4 - 8" Drill Collars, Range II, with $6^{5}/_{8}$" Reg. Connections.
24 – $6^{1}/_{4}$" Drill Collars, Range II, with 4" IF (NC46) Connections.
1 x 6 1/4" Monel Drill collar

FISHING TOOLS:

1 only Bowen $6^{1}/_{4}$" OD Type Z Fishing Jar
1 only Bowen $8^{1}/_{8}$" Series 150 FS Overshot
1 only Bowen $7^{7}/_{8}$" Reverse Circulating Junk Basket
1 only Junk Sub – $8^{1}/_{2}$" Hole
1 only Flat Bottom Mill – $8^{1}/_{2}$" Hole

HANDLING TOOLS:

Elevators:
1 Set $9^{5}/_{8}$" Casing
1 Set 7" Casing
1 Set $5^{1}/_{2}$" Casing
1 Set $9^{5}/_{8}$" Single Jt
1 Set 7" Single Jt
1 Set $5^{1}/_{2}$" Single Jt
2 Sets $4^{1}/_{2}$" DP 18 Degree
1 Set $3^{1}/_{2}$" Tubing Elevators
1 Set $2^{7}/_{8}$" Tubing Elevators
1 Set $2^{3}/_{8}$" Tubing Elevators

Safety clamp
1 Safety clamp for 8" and 6 1/4" Drill Collars.

Slips:
1 set $9^{5}/_{8}$" Casing
1 Set 7" Casing
1 Set $5^{1}/_{2}$" Casing
2 Sets $4^{1}/_{2}$" Drill Pipe
1 Set $3^{1}/_{2}$" Tubing Slips
1 Set 8" DC Slips
1 Set 6 1/4 DC Slips
1 Set 2 7/8 tubing slips

Tongs:
1 set BJ Type 'B' Rotary Tongs
1 set Farr Hydraulic Power Tongs
Jaws to suit $5^{1}/_{2}$", 7", $9^{5}/_{8}$" and $13^{3}/_{8}$"

PIPE SPINNER:

Varco SSW-10 Spinning Wrench

SUBS:

1 - $6^{5}/_{8}$" Reg. X $6^{5}/_{8}$" Reg. Bit Sub (Double Box)
2 – $4^{1}/_{2}$" Reg. X 4" IF (NC46) Bit Subs
1 – $6^{5}/_{8}$" Reg. X 4" IF (NC46) Crossover Sub (Pin x Box)
2 – 4" IF (NC46) Saver Subs (Pin x Box)
3 – $6^{5}/_{8}$" Reg. Lift Nubbins
11 – 4" IF (NC46) Lift Nubbins

CASING / TUBING DRIFTS:

1 – $9^{5}/_{8}$"	36 lb/ft
1 - 7"	26 lb/ft
1 - 7"	23 lb/ft
1 – $5^{1}/_{2}$"	17 lb/ft
1 – $5^{1}/_{2}$"	15.5 lb/ft

THREAD PROTECTORS:

3 – $9^{5}/_{8}$" Klampon Style
3 - 7" Klampon Style
3 – $5^{1}/_{2}$" Klampon Style

WELDING EQUIPMENT:	Lincoln Electric Welder Model 400AS
AIR COMPRESSORS:	Sullair compressor Package Model 10-30L - 100 cfm @ 125 psi Gardner Denver - 20 HP 80 cfm @ 110 psi.
AC GENERATOR:	2 each Caterpillar 3408TA AC Generator Model SR-4. 1,800 rpm 60 hz 275 kw.
FUEL TANKS:	2 each 10,000 litre - Skid Mounted
WATER TANK:	400 BBL tank with two Warman 3×2 pumps driven by 24 HP electric motors
PIPE RACKS:	5 sets 30ft in length
CATWALKS:	2 piece Catwalk drill pipe construction 42" height
COMMUNICATION:	Westinghouse Satellite Phone and Fax
SURVEY UNIT:	Totco 8^0 Deg. Recorder
MUD LAB:	Baroid Rig Laboratory Model 821
RATHOLE DRILLER:	Manufactured Rat Hole Driller for $5^1/_4$" Kelly
MUD SAVER:	Harrisburg Unit with $4^1/_2$" Sealing Rubbers
CELLAR PUMP:	1 only 3" Pacific Diaphragm Unit
WATER PUMP:	1 only Centrifugal Pump Unit
FIRE EXTINGUISHER:	1 lot as per State Mining Regulations for Rig and Camp
PIPE BINS:	3 only 36' L × 10' W × 42" H
CUP TESTER:	Cameron Type 'F' Cup Tester Mandrel with 4" IF Connections. $9\ ^5/_8$" 47- 36 lbs rubber for cup tester.
PRESSURE TEST PUMP	1 "Nearwhich" 3000 psi test pump with chart recorder.
HAMMER UNIONS:	Replace all 2" hammer unions with 1502 Welded Hammer Unions.
TRANSPORTATION:	International 530 Payloader or equivalent Toyota 4 × 4 Pickup Toyota 4 × 4 Crew Vehicle
RIG ACCOMMODATION:	2 Skid-Mounted Rig Manager/Companyman Units 1 Communication Hut 40ft. X 10ft. which will accommodate Anadrill office requirements.
FORKLIFT:	One (1)
INTERCOM:	4 stations unit, borrowed from CDL 27 if possible.
CAMP:	1–Camp Generator House 31' long × 10' wide skid-mounted complete with 2 – 3304 T 80 Kw, 50 Hz, 200 – 400 volt generators, camp distribution panel. 6,794 litres fuel storage, 12,000 litres fresh water storage and 24,000 litres shower water storage.

1-Kitchen/Dining Room	40' × 10' × 10'
1-Recreation Room	40' × 10' × 10'
1-Ablution/Laundry	40' × 10' × 10'
4-12 Man Bunkhouses	40' × 10' × 10'
1-Cooler/Freezer	20' × 8' × 8’
1-Female Ablution Block	20’ x 8’ x 8’

ENCLOSURE I: 5" = 100' COMPOSITE LOG

ENCLOSURE II: 5" = 100' MUDLOG

ENCLOSURE III: DEPTH STRUCTURE MAP

ENCLOSURE IV: LOG ANALYSIS PLOT