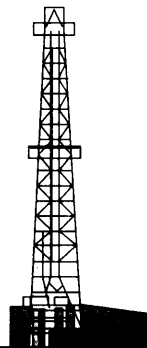




NAYLOR 1

Well Completion Report



Santos

**PEP 154, OTWAY BASIN
VICTORIA**

SANTOS – BEACH

COMPILED FOR

SANTOS LIMITED

ACN 007 550 923

30 NOV 2001

NAYLOR 1

WELL COMPLETION REPORT

Petroleum Development

**Prepared by:
D.ADDERLEY
July 2001**

NAYLOR 1 WCR

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LOCATION MAP

Santos

Exploration & Development

VICTORIA
OTWAY BASIN, PEP 154A

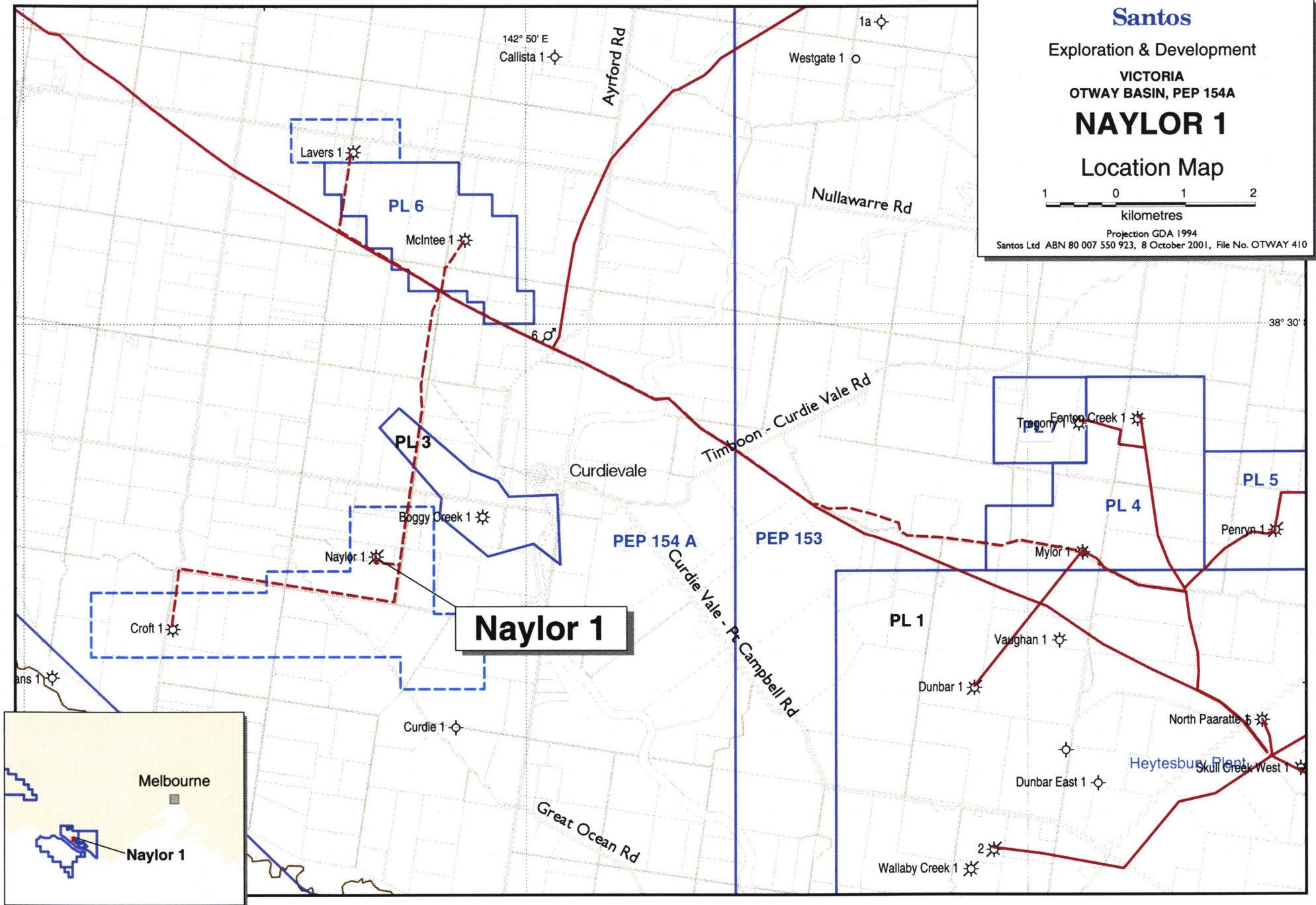
NAYLOR 1

Location Map

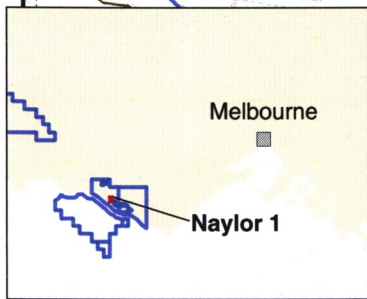


Projection GDA 1994

Santos Ltd ABN 80 007 550 923, 8 October 2001, File No. OTWAY 410



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908040 006



WELL DATA CARD

908040 009



WELL HISTORY

1. GENERAL DATA

Well Name:	Naylor 1
Well Classification:	Gas Exploration (Wildcat)
Interest Holders:	Santos Ltd (90%) Beach Petroleum (10%)
Participating Interests:	Santos Ltd (90%) Beach Petroleum (10%)
Operator	Santos
Block/Licence	PEP 154, Onshore Otway Basin, Victoria
Surface Location	Latitude: 38° 31' 47.26" South Longitude: 142° 48' 30.43" East
Surveyed Elevation	Ground Level: 46.40m Rotary Table: 51.09m
Seismic Survey	CURDIEVALE 3D
Seismic Location	CDP 10225, LINE 2200
Total Depth	Driller: 2157m Logger Ext: 2143.0m
Completion	6 joints of 3.5" 9.3 ppf L80 New NK3SB and 162 joints of 3.5" 9.3 ppf J55 New NK3SB Tubing, set at 1623m
Status	Completed Gas Well.

2. DRILLING DATA

Date Drilling Commenced	1000 hours, 10 th May 2001
Date Drilling Completed	1700 hours, 15 th May 2001
Date Rig Released	2000 hours, 19 th May 2001
Contractor	Oil Drilling & Exploration Pty Ltd (OD&E)
Rig	OD&E 30
Rig Specifications	Refer to Appendix XIII

3. DRILLING SUMMARY

(a) Drilling Summary:

Naylor 1 was spudded at 1000 hours on the 10th May 2001. Tables I and II summarise the casing, cementing and mud systems used in this well. A more comprehensive summary is appended to this report (Appendix XI: (Drilling - Final Well Report)).

TABLE I: CASING, HOLE, AND CEMENT DETAILS

BIT SIZE	DEPTH	CSG SIZE	CSG DEPTH	JNTS	CSG TYPE	CEMENT
9.875"	485m	7 5/8"	483m (D&L)	41	26.4 lb/ft L-80	Lead: 78 bbls of Slurry (153 sacks Class G cement) @ 11.5 ppg + 5% bwoc of D020 + 1.5% bwoc of S001 CaCl ₂ + 0.01 gal (sax of D047). Tail: 18 bbls of slurry (86 sacks Class G) @ 15.6 ppg + 0.5 gk/sx of D145A + 0.5 bwoc of S001 CaCl ₂ + 0.01 gal/sax of D047.
6.75"	2157 (D) 2143 (L)	3 1/2"	2152m (D)			Lead: 209 bbls of slurry (416 sacks Class G cement) @ 11.5 ppg + 5% Bentonite + 0.04% D081 retarder + 0.01 gps D047 antifoam. Tail: 25 bbls of Slurry (121 sacks Class G cement) @ 15.8 ppg + 0.03 gps of D081 + 0.01 gps D047 + 0.05 gps of D080.

TABLE II: SUMMARY OF MUD SYSTEMS

MUD TYPE	INTERVAL (m)
Spud Mud (Gel/Water) KCL/PHPA	Surface – 485m 485m – 2157m

(b) Lost Time:

Lost time at Naylor 1 – Please refer to Appendix XI (Drilling - Final Well Report, Time Breakdown Data).

(c) Water Supply:

No water analysis was done.

(d) Mudlogging:

Mudlogging services were provided by Geoservices Ltd. Samples were collected, washed, and described at 15m intervals from the surface to 990m, 3m intervals from 990m to 2157m (T.D.). All samples were checked for oil shows using ultraviolet fluorescence. Gas levels were monitored from the surface casing shoe to TD using a total gas detector and other parameters monitored include rate of penetration, weight on hook and mud pit levels.

(e) Testing:

No DST's were conducted in Naylor 1.

(f) Coring:

No cores were cut in Naylor 1.

(g) Electric Logging:

One suite of wireline logs was run in Naylor 1, as detailed below:

TABLE III: ELECTRIC LOG SUMMARY

LOG	SUITE/ RUN	INTERVAL (m)	BHT/TIME/ REMARKS	LOG	SUITE/ RUN	INTERVAL (m)	BHT/TIME/ REMARKS
GR	1/1	2139-surface	75°C/9:10hrs	PDS (RHOB)	1/2	2142-1950	81°C/13:50hrs
CSS (compensated sonic)	1/1	2131-483	75°C/9:10hrs	CNS (NPHI)	1/2	2139-1950	81°C/13:50hrs
CSS (wave-Form sonic)	1/1	2131-1950	75°C/9:10hrs	RFS (MDT)	1/3	20 points (2029m-2110m)	81.5°C/5:30hrs
DLS	1/1	2137-483	75°C/9:10hrs	SCG (SWC)	1/4	Abandoned	-
MLL	1/1	2142-483	75°C/9:10hrs				-

*Logger Contractor - REEVES

(h) Geothermal Gradient:

A measured static bottom hole temperature of 96°C at 2157m is calculated. This gives a geothermal gradient of 3.53°C/100m. An ambient temperature of 20°C was employed. Data used for calculations is as follows:

75.0°C at 2142.0m after 9.1 hours from Logging Run 1, Suite 1.

81°C at 2142.0m after 13.5 hours from Logging Run 2, Suite 1.

81.5°C at 2110.0m after 5.3 hours from Logging Run 3, Suite 1.

(i) Hole Deviation

The Lavers 1 well is a vertical hole. Directional surveys indicate a maximum deviation from vertical of 8.0° inclination 149°T at 2014m

(j) Velocity Survey:

No velocity survey was run in Naylor 1.

(k) Completion Summary:

Naylor 1 was cased and suspended.

908040 013



GEOLOGY

5. REFERENCES

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- Partridge, A., 1997 New Upper Cretaceous Palynology of the Sherbrook Group Otway Basin. Biostrata Pty. Ltd. In PESA News, April/May, p.9.
- SANTOS Ltd., 2001 Naylor 1 Raw Data Report. SANTOS Ltd. (Unpublished), prepared by Operations Geology.

908040 026



APPENDIX I: LITHOLOGICAL DESCRIPTIONS

908040 027



APPENDIX I (a): CUTTINGS



APPENDIX I (b): SIDE WALL CORES

Side Wall Coring was abandoned.

908040- 034



APPENDIX II: HYDROCARBON SHOW REPORTS

No oil shows were seen in Naylor 1

908040 035



APPENDIX III: WIRELINE LOGGING REPORTS

908040 036



APPENDIX III (a): LOGGING ORDER FORM

Santos

A.C.N. 007 550 923

908040 037REVISION 1.0
(DATE: 22/11/96)

LOGGING ORDER

COMPANY: SANTOS LTD & BEACH PETROLEUM N.L.

WELL: NAYLOR # 1 **FIELD:** WILDCAT

RIG: OD & E 30 **STATE:** VIC

LOCATION: INLINE 2200, CDP 10225 **BLOCK:** PEP 154
CURDIEVALE 3D

LATITUDE: 38 31 52.61S **LONGITUDE:** 142 48 25.57E

ELEVATIONS: **GL:** 46.41M **RT:** 51.11M **DF:** 4.7

9 7/8" HOLE: 485m **7 5/8" CSG:** 483m **WT:** 26.4LB/FT

6 3/4" HOLE: 2157m TD **3 1/2" CSG:** m **WT:** 9.3LB/FT

TD (Drlr.): 2157m TD **TD (Logr.):** 2143m

MUD SYSTEM: KCl /PHPA/Polymer **CIRCULATION STOPPED:** _____ **HRS ON** _____

WT: 9.2 **VISC:** 42 **PV/YP:** 14/12 **PH:** 9.0 **FLUID LOSS:** 5 **CHL:** 24,000

GEOLOGIST: TIM CONROY

INFORMATION GIVEN ABOVE IS TO BE USED ON LOG HEADING SHEETS.

HOLE CONDITIONS: (TIGHT SPOTS, DEVIATION, COALS, BARITE IN MUD, ETC)

NO TIGHT SPOTS NOTED.

KCl% X.X%.

NO HOLE PROBLEMS ENCOUNTERED DURING THE DRILLING OF THE WELL.

MAXIMUM HOLE DEVIATION 8.0° AT 2014M.

INTERNAL DIAMETER OF 7 5/8" CASING IS 6.969"

DRILL STEM TESTS/CORED INTERVALS:

NO DRILL STEM TESTS OR FULL HOLE CORES ARE PLANNED FOR THIS WELL

COMMENTS: (TO BE INCLUDED IN REMARKS SECTION ON HEADER SHEET)

KCl 4.8%

INTERNAL DIAMETER OF 7 5/8" CASING IS 6.969"

STATE ON LOG WHAT ENVIRONMENTAL CORRECTIONS HAVE BEEN APPLIED.

LOGS:

PROGRAM CONFIRMED WITH OPERATIONS GEOLOGIST AT 16:30HRS HOURS ON 15/05/2001

PROGRAM VARIES FROM PRE-SPUD NOTES: YES: NO:

LOG	INTERVAL	REPEAT SECTION
RUN 1 – COMBO GR-DLS-MRS-LCS	GR - TD TO SURFACE	AQUIRE RUNNING IN HOLE
	DLS / LCS – TD TO SURFACE CASING SHOE ARRAY SONIC TD TO 1950M	AQUIRE RUNNING IN HOLE
	MSFL - TD TO SURFACE CASING SHOE	
RUN 2		
PDS (RHOB)	TD TO 1950M	
CNS (NPHI)	TD TO 1950M	AQUIRE RUNNING IN HOLE
RUN 3		
20 RFS (with 1 Sample)	20 POINTS	TIE IN EVERY 50M
RUN 4 (NOT RUN) 1 SCG (24 BULLETS)	TBA POST RUNS 1 & 2	NOT RUN DUE TO HOLE CONDITIONS

REMARKS:

(ALL OPERATIONS ARE TO CONFORM TO CURRENT REEVES
AND SANTOS OPERATING PROCEDURES)

1. TENSION CURVE - TO BE DISPLAYED ON LOG FROM T.D. TO CASING SHOE.
2. ALL CALIBRATIONS IN CASING MUST BE VERSUS DEPTH. (IF HOLE CONDITIONS PERMIT).
3. SONIC WAVEFORMS TO BE RECORDED OVER ENTIRE WAARRE SANDSTONE SECTION.
4. ALL ZONES OF SONIC CYCLE SKIPPING OR POOR QUALITY DATA TO BE REPEATED AND NOTED IN REMARKS SECTION.
5. REPEAT SECTION NOT TO BE RUN IN 6 3/4" HOLES, COMPARE DOWN LOG FOR REPEAT ANALYSIS.
6. REPEAT SECTION TO BE LOGGED PRIOR TO MAIN LOG OVER INTERVAL OF INTEREST. (IF HOLE CONDITIONS ALLOW). CONFIRM REPEAT SECTION INTERVAL WITH OPERATIONS GEOLOGIST.
7. ALL THERMOMETER READINGS TO BE RECORDED ON LOG
8. ALL SCALES AND PRESENTATIONS TO CONFIRM TO STANDARDS UNLESS OTHERWISE ADVISED.
9. THE FIELD/EDIT TAPE MUST BE A MERGED COPY OF ALL LOGS RUN. SEPARATE TAPES ARE ONLY ACCEPTABLE AS AN INTERIM MEASURE.
10. ANY CHANGE FROM STANDARD PROCEDURES/SCALES TO BE NOTED IN REMARKS SECTION.
11. RM, RMF, RMC AND BHT MUST BE ANNOTATED ON FAXED LOGS. FAXED LOGS SHOULD ALSO INDICATE IF ON DEPTH OR NOT.
12. LOG DATA IS TO BE TRANSMITTED AS SOON AS POSSIBLE AFTER ACQUISITION. IF ANY DELAYS ARE LIKELY OR IF DATA TRANSMISSION WILL ADVERSELY EFFECT THE OPERATION THEN THE OPERATIONS GEOLOGIST MUST BE IMMEDIATELY INFORMED.



13. THE OPERATIONS GEOLOGIST MUST BE INFORMED IMMEDIATELY OF ANY TOOL OR HOLE PROBLEMS, LOST TIME OR ANY OTHER EVENT WHICH MAY AFFECT THE LOGGING OPERATIONS.

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APPENDIX III (b): FIELD ELECTRIC LOG REPORT

[REDACTED] [REDACTED]

SANTOS LIMITED

908040 041

FIELD ELECTRIC LOG REPORT

WELL:	NAYLOR 1	GEOLOGIST:	TIM CONROY
LOGGING ENGINEER:	J. CASALEGNO	M.BARNES	
RUN NO.:	1 TO 3	DATE LOGGED:	16-17/5/01
DRILLERS DEPTH:	2157M	LOGGERS DEPTH:	2143M
ARRIVED ON SITE:	11:30 15/5/01		
ACTUAL LOG TIME:	HRS	LOST TIME LOGGER:	-
TOTAL TIME:	HRS	LOST TIME OTHER:	-

TYPE OF LOG	GR-DLS-MRS-LCS	GR-PDS-CNS	GR-RFS	GR-SCG
TIME CIRC. STOPPED	0:30HRS 16/5/01	0:30HRS 16/5/01	3:20HRS 17/5/01	3:20 HRS 17/5/01
TIME TOOL RIG UP	0.75HR	0.5HR	1HR	0.5HR
TIME TOOL RIH	0.75HR	1HR	2.5HR	1HR
TIME TOOL RIG DOWN	0.25HR	0.75HR	2.75HR	0.5HR
TOTAL TIME	7HRS	5.25HR	16.25HRS	3HRS

TYPE OF LOG	FROM	TO	REPEAT SECTION	TIME SINCE LAST CIRCULATION	BHT
RUN 1					
GR	2142M	SURFACE	DOWNLOG	9:1HRS	75°C
LCS	2142M	483M	DOWNLOG	9:1HRS	75°C
DLS	2142M	483M	DOWNLOG	9:1HRS	75°C
MRS	2142M	483M	DOWNLOG	9:1HRS	75°C
RUN 2					
GR	2142M	1950M	DOWNLOG	13:50HRS	81°C
PDS	2142M	1950M	-	13:50HRS	81°C
CNS	2142M	1950M	DOWNLOG	13:50HRS	81°C
RUN 3					
GR-RFS	2110M	2029M	-	5:3HRS	81.5°C
RUN (ABANDONNED)	4 -	-	-	-	-
SCG-GR					

MUD SYSTEM: KCL/PHPA/POLYMER

WEIGHT: 9.2 PPG

HOLE CONDITIONS:

HOLE BRIDGED OFF TWICE AT 2000M, BELFAST/FLAXMANS BOUNDARY. DRILL PIPE USED TO BREAK BRIDGE. 10HR WIPER TRIP WAS NEEDED TO OPEN THE HOLE UP FOR THE RERUNNING OF THR RFS-GR. THE SCG-GR COULD NOT GET DEEPER THAN 2000M DUE TO ANOTHER BRIDGE. IT WAS DECIDED TO ABANDON THE SIDE WALL CORING AS IT WAS NOT CRITICAL AND ANOTHER WIPER TRIP WOULD HAVE BEEN NECESSARY.

REMARKS / RECOMMENDATIONS

GOOD LOGGING JOB. GOOD TO MODERATE PRESSURES FROM RFS AND SAMPLE. THE PRESSURES TOOK QUITE A WHILE TO BUILD UP AND DIDN'T PLOT WELL ON A STRIGHT LINE. PERHAPS THERE WAS SLIGHT BLOCKING OF THE SNORKEL.

WELLSITE LOG QUALITY CONTROL CHECKS

LOG ORDER FORM	Y	MUD SAMPLE RESISTIVITY	Y	TOO
OFFSET WELL DATA	Y	CABLE DATA CARD	Y	LOG SEI

LOG TYPE	LCS	GR	CAL	DLS	MLL	PDS	CNS	RFS
CASING CHECK	Y		Y					
SCALE CHECK	Y		Y	Y	Y	Y	Y	Y
DEPTH Casing Total	Y	Y	Y	Y		Y		
CALIBRATIONS OK	Y	Y	Y	Y	Y	Y	Y	Y
REPEATABILITY	Y	Y	Y	Y	Y	Y	Y	Y
LOGGING SPEED	Y	Y	Y	Y	Y	Y	Y	Y
OFFSET WELL Repeatability	Y	Y	Y	Y	Y	Y	Y	Y
NOISY / MISSING DATA	Y	N	N	N	N	N	N	N
CURVES/LOGS Depth Matched	Y	Y	Y	Y	Y	Y		
Rm MEASUREMENT				Y	Y			
LLS / LLD / CHECK				Y	Y			
PERF / RHOB CHECK						Y	Y	
LOG HEADER / TAIL	Y	Y	Y	Y	Y	Y	Y	Y
PRINT/FILM QUALITY	Y	Y	Y	Y	Y	Y	Y	Y

COMMENTS:

GOOD LOGGING JOB. TOOLS WORKED WELL. GOOD TO MODERATE PRESSURES RECORDED FROM THE RFS.

ENGINEERS COMMENTS (If this report has not been discussed with the Engineer state reason)

GOOD LOGGING JOB.

908040 043



APPENDIX IV: LOG EVALUATION

Log Processing

- Regional salinity data was used to derive the R_w used for this analysis.
- A BHT of 82°C was used for the analysis (Gradient of 38°C/km).

Interpretation Procedures and Parameters

An interpretation over the Waarre Sandstone intervals was conducted using a combination of gas corrected density-neutron cross-plot porosity (PHIX) and sonic porosity (SPHI) from sonic. A gamma-ray derived volume of shale was calculated with water saturations computed using a pseudo-Archie Equation (Parameters used for the interpretation are detailed in Table 1).

- The GR from Run 1 was corrected for environmental effects such as mud-weight, KCl and borehole size using measurements made from the MLL caliper.
- Borehole corrections for the Dual Laterolog SLL and DLL curves using 1.5" stand-offs were applied (Table 1). These are ratios illustrated in the Reeves charts Lat-1 and Lat-2 respectively.
- The borehole corrected deep resistivity curve (DLL_BC) was further corrected for shoulder effects (DLLc).
- The invasion corrected R_T was derived using the following tornado chart emulation relationship:

$$R_T = (1.59 * DLL_C - 0.59 * SLL_{BC})$$

where:

DLL_C = Deep resistivity response borehole and shoulder bed corrected.

SLL_{BC} = Shallow resistivity response borehole corrected.

- Density porosity was calculated over the Waarre Sandstones:

$$DPHI = (2.65 - DEN) / (1.65)$$

where:

DEN = Bulk Density in g/cc.

- Cross-plot porosity was determined:

$$\underline{PHIX = (DPHI + NPRL_{ss}) / 2}$$

where:

NPRL_{ss} = Environmentally corrected neutron porosity in sandstone units.

- A Hunt-Raymer sonic porosity curve was calculated:

$$SPHI = (DTC2 - 55.5 / DTC2) * 0.58$$

where:

DTC2 = 3-4ft Compensated Sonic (μs/ft).

- PHIT was primarily produced from the minimum value of DPHI and PHIX with some editing to SPHI and porosity interpreted from the MLL.

- A shale corrected porosity (PHIE to be used in the pseudo-Archie equation) was calculated as follows:

$$\text{if } V_{sh} < V_{shSt} \dots \dots \dots \text{PHIE} = \text{PHIT}$$

elseif $V_{shSt} < V_{sh} < V_{shCO} \dots$ PHIE = a proportional percentile correction
from PHIT to $(\text{PHIT} - (V_{sh} * \text{PHIsh}))$

$$\text{elseif } V_{sh} > V_{shCO} \dots \dots \dots \text{PHIE} = \text{PHIT} - (V_{sh} * \text{PHIsh})$$

where: V_{shSt} = The start of the sliding scale V_{sh} correction.
 V_{shCO} = Shale volume cut-off.
 V_{sh} = Shale volume.
 PHIT = Combination of density/neutron and sonic porosity.
 PHIsh = Apparent shale porosity.

- Limited SCAL data from Mylor indicate that the cementation exponent "m" for the Waarre sandstones has a range between 1.67 and 1.84 and varies with porosity. Given this range, it was appropriate to use a variable cementation exponent "m" for the use in calculating S_w . The derivation of "m" was porosity based and results in "m" decreasing as porosity increases. The variable "m" relationship is given as;

$$MEXP = (-0.2413 * \text{Log}_{10} \text{PHIE}) + 2.4657$$

- Limited SCAL data from Mylor indicate that the saturation exponent "n" for the Waarre sandstones has a range between 1.52 and 1.78 and varies with porosity and shaleness. A pseudo saturation exponent "n" has been used in the Archie equation. This is to take into account the impact of micro-porosity inherent in shaly sandstones. It is postulated that shale intergranular micro-porosity increases the surface area (conductivity) of the rock, and therefore "n" needs to be adjusted to compensate for the extra conductivity in shaly sandstones.

Clean sand "n" = 1.85 Shaly sand "n" = 1.50

Shaly sand is defined where the shale volume is greater than a cut-off of 40%. Saturation exponent is gradational between the two end-points above.

- Water saturations were calculated using a pseudo-Archie equation.

$$SW = n \sqrt[n]{\frac{aR_w}{\phi^m R_t}}$$

where: R_w = Resistivity of formation water at formation temperature.
 R_t = True resistivity, i.e. resistivity of the non-invaded reservoir (i.e. LLD corrected for borehole, invasion and resistive shoulder beds).
 PHIT = Input as shale corrected PHIE (derived above).
 a = Porosity coefficient (default = 1).
 m = Cementation factor or exponent from the variable "m" relationship.
 n = Saturation exponent from the "n" relationship derived above.

PE605297

This is an enclosure indicator page.
The enclosure PE605297 is enclosed within the
container PE908040 at this location in this
document.

The enclosure PE605297 has the following characteristics:

ITEM_BARCODE = PE605297
CONTAINER_BARCODE = PE908040
NAME = Naylor-1 Well Evaluation Summary Log
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = WELL_LOG
DESCRIPTION = Naylor-1 Well Evaluation Summary Log,
Scale 1:200, Enclosure from Appendix
IV: Log Evaluation contained within
"Naylor-1 Well Completion Report"
[PE908040].
REMARKS =
DATE_WRITTEN = 31-JUL-2001
DATE_PROCESSED =
DATE_RECEIVED = 30-NOV-2001
RECEIVED_FROM = Santos Ltd
WELL_NAME = Naylor-1
CONTRACTOR =
AUTHOR =
ORIGINATOR = Santos Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)



APPENDIX V: PRESSURE SURVEY



APPENDIX VI: DRILL STEM TEST DATA

No Drill Stem Tests were conducted in Naylor 1

908040 053



APPENDIX VII: HYDROCARBON ANALYSIS

RFS sample gas analysis



908040 054

Amdel Limited
A.C.N. 008 127 802

Petroleum Services
PO Box 338
Torrensville Plaza SA 5031

Telephone: (08) 8416 5240
Fax: (08) 8234 2933

22 June 2001

Santos Limited
GPO Box 2319
ADELAIDE SA 5001

Attention: Andy Pietsch

REPORT LQ10494

CLIENT REFERENCE: 539489-78

WELL NAME/RE: Naylor-1

MATERIAL: Pressurised Gas & Liquid

WORK REQUIRED: Compositional analysis

AUTHOR'S NAME: Diane Cass

Please direct technical enquiries regarding this work, to the signatory below, under whose supervision the work was carried out. This report relates specifically to the sample or samples submitted for testing.

Brian L Watson
Manager
Petroleum Services

bw.jh

G:\Secretary\petroleum\Docs-01\10494.doc

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908040 060

APPENDIX VIII: WATER ANALYSIS

No water Analysis was conducted on Naylor 1

~~SECRET~~
908040 061

APPENDIX IX: PALYNOLOGICAL ANALYSIS

Sidewall Core run was abandoned

~~XXXXXXXXXX~~
908040 063

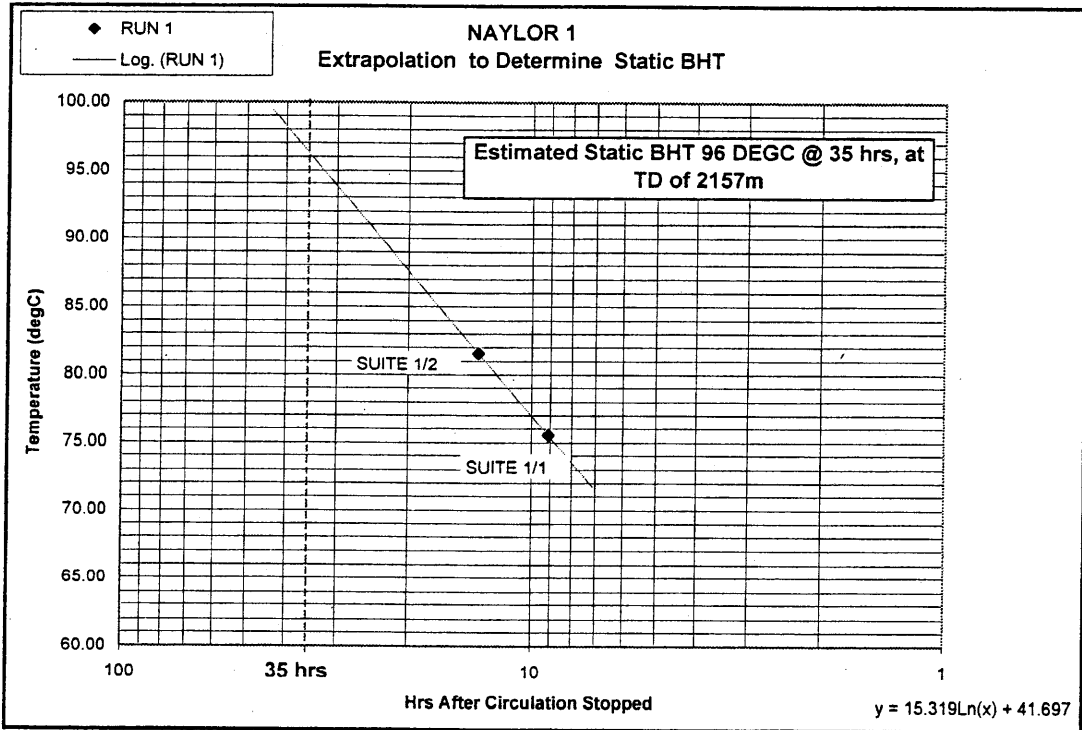
APPENDIX X: GEOTHERMAL GRADIENT

Assumed surface temperature = 20°C.

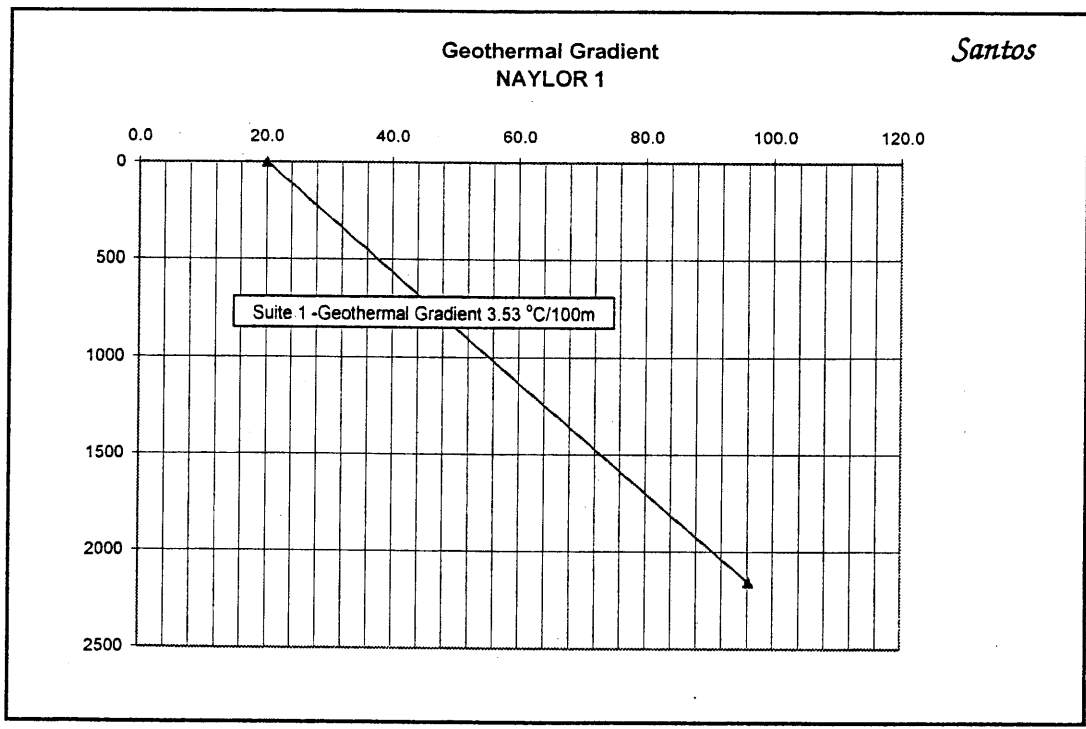
Calculated BHT @ 2157m = 96°C.

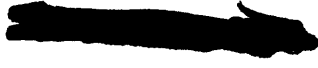
Geothermal Gradient = 3.53°C/100m.

	Max Recorded Temp (degC)	Depth Recorded (m)	Time Since Circulation (hrs)	Total Depth (m)	Estimated BHT (degC)
Run 1	75	2142	9.1	2157	75.53
Run 2	81	2142	13.5	2157	81.57
Run 3	81.5	2110	5.3	2157	83.32 (post wiper trip)



STATIC BHT @ 35 hrs	96.2 °C	@	2157 m
SURFACE TEMP.	20 °C	@	0 m
Geothermal Gradient for Suite 1	3.53 °C/100 m		





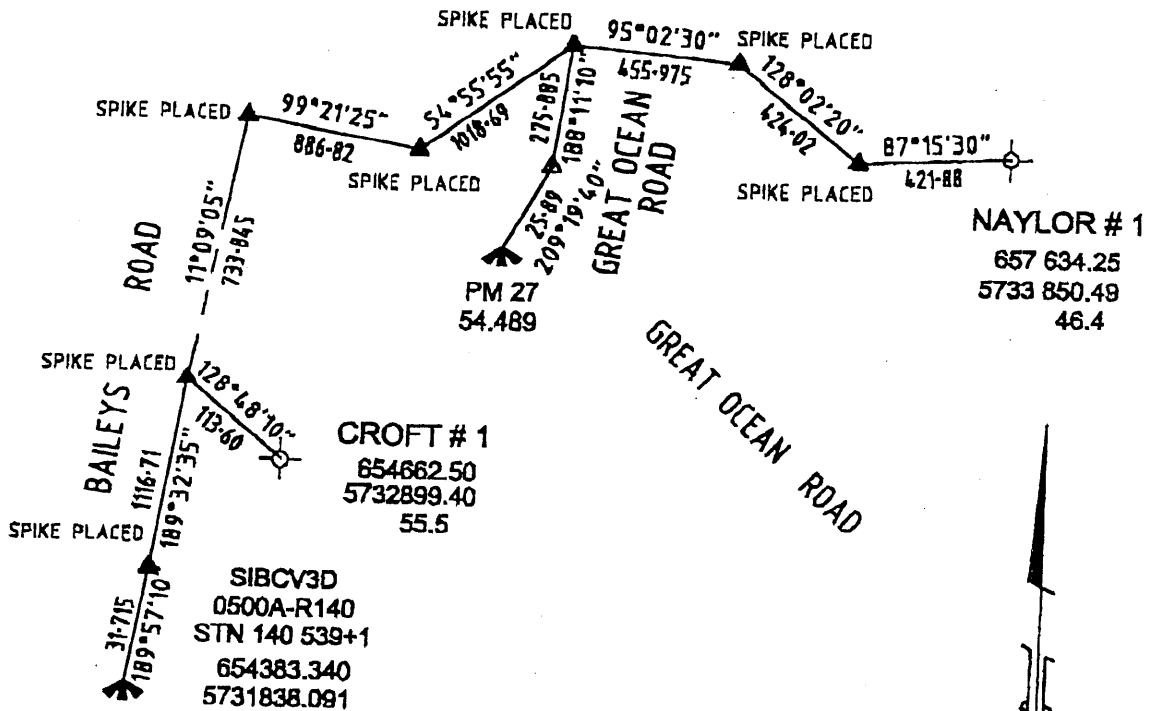
908040 065

APPENDIX XI: WELL LOCATION SURVEY

908040 066

VICTORIA GAS WELL LOCATION REFERENCE MARKS SKETCH PLAN EXPLORATION LICENCE PEP 154

Well Name	NAYLOR # 1		
Map			
Spheroid	GDA94	MGA 94	ZONE 54
Latitude	S 38°31'47.26"	Measurement units	(metres)
Longitude	E 142°48'30.43"	Easting	657 634.25
Convergence	1°07'36"	Northing	5733 850.49
Scale Factor	0.99989847	Elevation	46.4 (AHD)



NOTES : This sketch plan is not to scale.
 Distances shown are computed grid distances.
 Bearings shown are computed grid bearings.
 DATUM : The origin of coordinates was Land Victoria's Survey Mark Enquiry Service (SMES) AGD66 (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 +/- 1.0 metre.

Estimated Vertical error is less than +/- 0.2 metre.

Date of Survey : 21 / 12 / 2000

Paul Crowe Surveyor ABN 58521601183 "Ambleside" 192 Koroit Street Warrambool 3280 Ph. (03) 5561 1500	REF 998
------------------------------------------------------------------------------------------------------------------	-----------------------

Date 16/7/2001

Paul Crowe
 LICENSED SURVEYOR

[REDACTED]

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APPENDIX XII: DRILLING – FINAL WELL REPORT



SANTOS

FINAL WELL REPORT

NAYLOR #1

Drilling Supervisor(s)	: W. Westman
Drilling Engineer(s)	: G. Coker
Report Author	: G. Coker / T. Robertson <i>GR</i>
Report Supervisor	: D. New
Date of Issue	: 7th July 2001

908040 068



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 Wellhead Installation Report

Section 5 – Time Breakdown Data.....
 Overview.....
 Trouble Time Breakdown.....

Section 6 – Survey Data
 Survey Report

908040 070

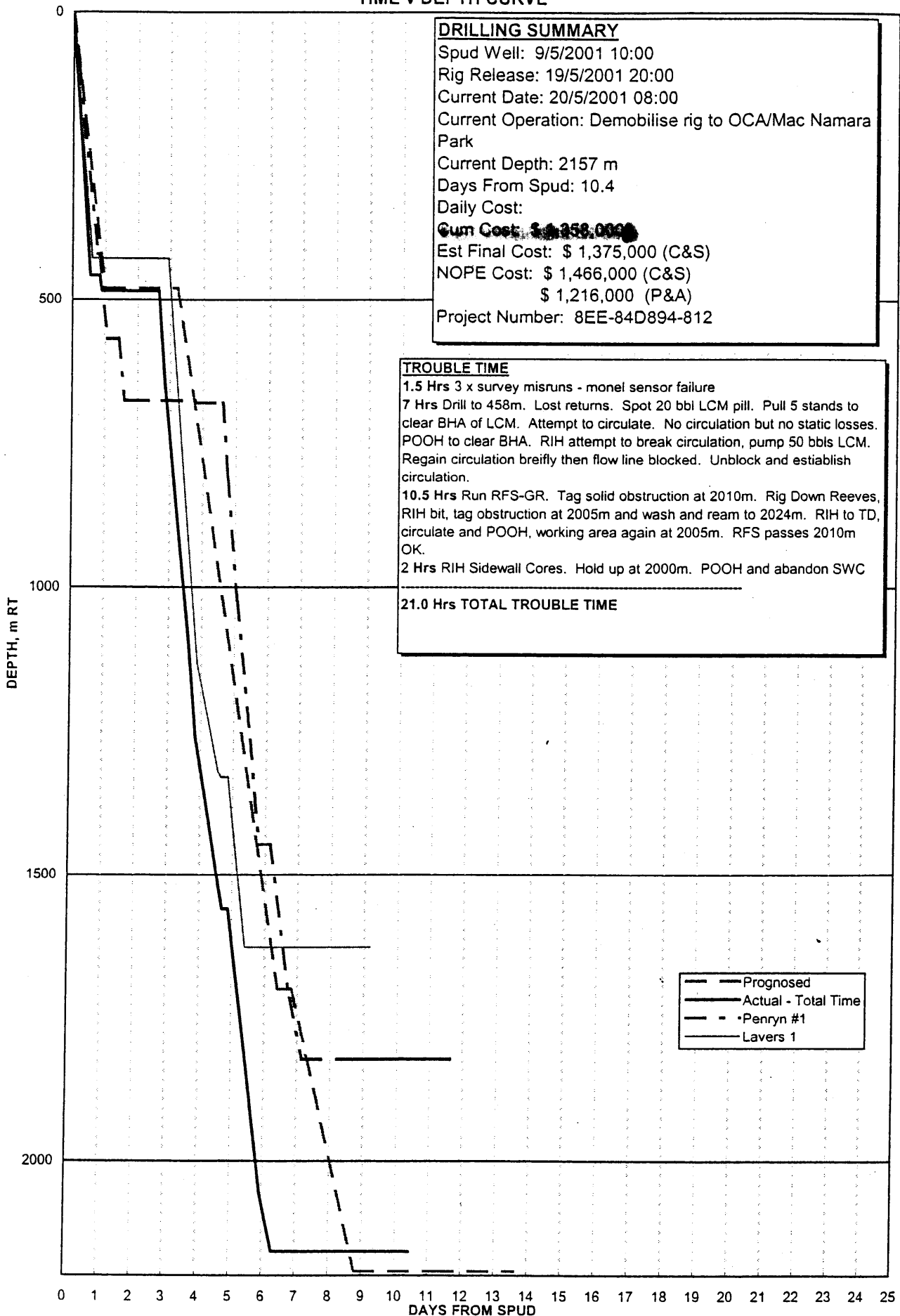
Section 1.0

Well Summary

- **Time vs Depth Curve**
- **Activity Annotations Report**

908040 071

NAYLOR #1
TIME v DEPTH CURVE



NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY ANNOTATIONS**DATE : 18 May, 2001****REPORT NUMBER :14****Comment****Solution**

A. Gledhill 1 x camp water.
Ryans 2 x semi. Backload mud, jars, and tubulars.

DATE : 19 May, 2001**REPORT NUMBER :15****Comment****Solution**

"P" seal in wellhead adaptor flange would not hold teflon grease and would not test satisfactorily. It was found to be damaged on removal but due to lack of spares it was trimmed and reinstalled. It tested satisfactorily but should not be put into service.

Change out "P" seal before perforating well.

908040 073

Section 2.0

Well History

- IDS Well History Report

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

Well History

#	DATE	DEPTH	WELL HISTORY (24 Hr Summary)
1	05/05/2001		Prepare to move rig from Lavers #1 to Naylor #1.
2	06/05/2001	0	Disassemble rig 100% and prepare to move. Rig 10% moved. No incidents or accidents.
3	07/05/2001	0	Mud transferred to Naylor 2 loads. Premium Casing equipment and Dowell 1 load. Tubulars 1 load. Accomodation 3 loads.
4	08/05/2001	0	1 load of 7-5/8" csg from Ryans transport. Alan Gledhill hauling water 2 loads to rig 1 to accomodation. Dowell on location. Baroid and Geoservices on location.
5	09/05/2001	458	1 x truck ex-Adelaide w/ 7-5/8" float equipment and xmas tree. A. Gledhill 3 x loads drill water.
6	10/05/2001	485	Run surface casing and cement.
7	11/05/2001	488	Nipple up and pressure test BOP. LOT. Drill Ahead.
8	12/05/2001	1,087	Drill ahead. Alan Gledhill 1 x camp water. 2 x drill water.
9	13/05/2001	1,560	Drill ahead.
10	14/05/2001	1,896	Wiper trip. Drill ahead.
11	15/05/2001	2,157	Drill to TD. Wiper trip.
12	16/05/2001	2,157	Log. Wiper trip.
13	17/05/2001	2,157	Wiper trip to clear obstruction at top of Flaxmans formation 2000m. Complete logging program. Abandon SWC when hole bridged again at 2000m
14	18/05/2001	2,157	L/d Pipe. Run casing.
15	19/05/2001	2,143	Run and cement casing. N/u wellhead. Test wellhead. Release rig.

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY REPORT

Date : 05/05/2001					Progress : 0	Depth @ 24:00 hrs : 0
Depth	Phase	Class	Operation	Hrs	Activity	
0	PS	P	RIG DOWN (THE RIG)	2.00	Prepare to lower derrick. Pack mud tanks and secure shakers.	
0	PS	P	RIG DOWN (THE RIG)	1.00	Lower derrick. Strip derrick for move. Pack equipment for move.	
Date : 06/05/2001					Progress : 0	Depth @ 24:00 hrs : 0
Depth	Phase	Class	Operation	Hrs	Activity	
0	PS	P	RIG DOWN (THE RIG)	6.50	Wait on daylight. Both crews on daylight tour.	
0	PS	P	RIG DOWN (THE RIG)	8.00	Strip out drilling line. Rig down pumps and tanks. Pull and pack electrical cables. Drain water tank. Split derrick for move.	
0	PS	P	RIG DOWN (THE RIG)	4.00	Rig down doghouse and water tank. Lift draw-works from sub base. Lift sub base from matting. P/u matting and move to Naylor. Rig completely broken down. 10% moved.	
0	PS	P	RIG DOWN (THE RIG)	5.50	Shut down at sunset.	
Date : 07/05/2001					Progress : 0	Depth @ 24:00 hrs : 0
Depth	Phase	Class	Operation	Hrs	Activity	
0	PS	P	RIG DOWN (THE RIG)	6.50	Wait on daylight.	
0	PS	P	RIG MOVE (THE RIG)	12.00	Load out rig. Spot sub base on matting. Spot mud tanks. Place drawworks on sub. Spot generators and SCR shack. Spot mud tanks. Spot toilet and accomodation blocks. Spot Geoservices and pipe bins.	
0	PS	P	RIG MOVE (THE RIG)	5.50	Wait on Daylight.	
Date : 08/05/2001					Progress : 0	Depth @ 24:00 hrs : 0
Depth	Phase	Class	Operation	Hrs	Activity	
0	PS	P	WAIT ON	6.50	Wait on Daylight.	
0	PS	P	RIG UP (THE RIG)	14.50	Dress mast and reeve drill line. Raise mast. Raise doghouse. R/u geoservices. Fill water tanks and mud pits. Install v-door and catwalks.	
0	PS	P	RIG UP (THE RIG)	3.00	Day tour crew go in. Graveyard tour coming on at midnight. Break tour.	
Date : 09/05/2001					Progress : 458	Depth @ 24:00 hrs : 458
Depth	Phase	Class	Operation	Hrs	Activity	
0	PS	P	RIG UP (THE RIG)	10.00	P/u kelly. Drill rathole and mousehole. String geograph and survey line. Prepare BHA. Install conductor barrel. Load racks with casing.	
43	SH	P	DRILLING AHEAD	1.00	Spud well. Drill to 43m.	
30	SH	TP	SURVEY	0.50	Run survey at 31m. Misrun. Monel sensor did not trip.	
98	SH	P	DRILLING AHEAD	1.50	Drill 9-7/8" hole 43m - 98m.	
30	SH	P	SURVEY	0.50	Survey @ 80m. ¼° at N50W.	
192	SH	P	DRILLING AHEAD	2.50	Drill 9-7/8" hole 98m - 192m.	
192	SH	P	SURVEY	0.50	Survey @ 174m. ¼° @ N80E.	
192	SH	P	DRILLING AHEAD	3.00	Drill 9-7/8" hole 192m - 346m.	
346	SH	TP	SURVEY	0.50	Survey @ 398m. Misrun.	
376	SH	P	DRILLING AHEAD	0.50	Drill 9-7/8" hole 346m - 376m.	
376	SH	TP	SURVEY	0.50	Survey @ 359m. Misrun. Change out monel sensor for timer.	
395	SH	P	DRILLING AHEAD	0.50	Drill 9-7/8" hole 376m - 395m.	
395	SH	P	SURVEY	0.50	Survey @ 377m. ¼° @ N37W.	

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NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY REPORT

Date : 09/05/2001 Progress : 458 Depth @ 24:00 hrs : 458

Depth	Phase Class	Operation	Hrs	Activity
458	SH P	DRILLING AHEAD	1.00	Drill ahead 395m - 458m. Lost returns at 458m.
458	SH TP	LOST CIRCULATION	0.50	Hole standing full at flowline. Work pipe and prepare 20bbls medium LCM at 13ppb.
458	SH TP	LOST CIRCULATION	0.50	Spot LCM across bottom of hole. Regain partial circulation. Displace LCM from drill string. Work pipe and observe well. Fluid standing at flowline.

Date : 10/05/2001 Progress : 27 Depth @ 24:00 hrs : 485

Depth	Phase Class	Operation	Hrs	Activity
458	SH TP	LOST CIRCULATION	0.50	Work pipe slowly. Observe well. Fluid static at flowline.
458	SH TP	LOST CIRCULATION	0.50	Pull 5stds wiper trip to clear BHA.
458	SH TP	LOST CIRCULATION	0.50	Work pipe and attempt to circulate. Hole standing full. No circulation.
458	SH TP	WIPER TRIP	1.00	POOH. Wiper trip to clear BHA.
458	SH TP	WIPER TRIP	0.50	Clean mud from BHA. Prepare 50 bbls LCM at 25ppb.
458	SH TP	WIPER TRIP	1.00	RIH 5 stds. Attempt to break circulation.
458	SH TP	WIPER TRIP	0.50	POOH 2 stds and attempt to break circulation.
458	SH TP	WIPER TRIP	1.50	RIH to 458m. Pump 50 bbls LCM. Regained circulation. Flowline plugged. Continue to circulate. Jet cellar. Clear flowline.
485	SH P	DRILLING AHEAD	1.00	Drill 9-7/8" hole 458m - 485m.
485	SC P	CIRCULATE & CONDITION	0.50	Circulate bottoms up.
485	SC P	SURVEY	0.50	Survey @ 473m. 0.12° N45W.
485	SC P	CIRCULATE & CONDITION	0.50	Spot 25bbls LCM on bottom.
485	SC P	TRIP-OUT	3.00	POOH. SLM pipe. L/d Drill collars.
485	SC P	RUN CASING	5.75	R/u and run 7-5/8" csg.
485	SC P	CIRCULATE CASING	0.50	Circulate clean. Csg cap x 2.
485	SC P	CEMENT CASING	0.25	Head up Dowell. Hold pre-job meeting.
485	SC P	CEMENT CASING	0.25	Pump 40 bbls water spacer.
485	SC P	CEMENT CASING	0.50	Pressure test lines 300/4kpsi. Drop bottom plug. Mix and pump 78 bbls lead "G" cmt at 11.5 ppg. Followed by 18 bbls Tail "G" cmt at 15.6ppg. Drop top plug.
485	SC P	CEMENT CASING	0.25	Drop top plug. Displace w/ 71 bbls old mud. Cement returns visible, (5 to 10bbls), at end of displacement. Bump plug w/ 1900 psi 10 mins.
485	SC P	WAIT ON CEMENT	4.00	Wait on cement.
485	SC P	N/U & TEST BOP's	1.00	R/d Dowell cement head. Back out landing jt and collar.

Date : 11/05/2001 Progress : 0 Depth @ 24:00 hrs : 488

Depth	Phase Class	Operation	Hrs	Activity
488	SC P	CIRCULATE & CONDITION	1.00	Circulate until shakers clean.
485	SC P	N/U & TEST BOP's	0.50	N/u bradenhead.
485	SC P	N/U & TEST BOP's	9.00	Nipple up BOP and choke manifold. Nipple up bell nipple and flowline. Function test BOP.
485	SC P	N/U & TEST BOP's	4.50	Pressure test casing / BOP/ Choke m'fold / FOBV / Kill line 300psi / 2500psi 10 mins. Pump through degasser and flare line OK.
485	SC P	N/U & TEST BOP's	0.50	Run Wear Bushing.
485	SC P	N/U & TEST BOP's	1.50	P/u assy and clean out 2m fill from mousehole. Re-install mousehole.
485	SC P	TRIP-IN	2.50	M/u BHA and RIH.
485	SC P	TRIP-IN	1.50	L/d excess drill pipe from mast
485	PH P	DRILL FLOAT / SHOE TRAC	2.75	Tag cement at 430m. Ream out shoe track.
488	PH P	DRILLING AHEAD	0.25	Drill 6-3/4" hole 485m - 488m.

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY REPORT

Date : 12/05/2001

Progress : 599

Depth @ 24:00 hrs :1,087

Depth	Phase	Class	Operation	Hrs	Activity
488	PH	P	CIRCULATE & CONDITION	0.50	Circulate clean.
488	PH	P	LOT / FIT	1.00	Conduct LOT. Equivalent to 18.0ppg.
646	PH	P	DRILLING AHEAD	4.50	Drill 6-3/4" hole 488m - 646m.
646	PH	P	SURVEY	0.50	Survey @ 635m, 1/4°, N85E.
799	PH	P	DRILLING AHEAD	4.00	Drill 6-3/4" hole 646m - 799m.
799	PH	P	SURVEY	0.50	Survey @ 787m, 1/4° N20E.
952	PH	P	DRILLING AHEAD	6.00	Drill 6-3/4" hole 799m - 952m.
952	PH	P	SURVEY	0.50	Survey @ 934m, 3/4° N16W.
1,087	PH	P	DRILLING AHEAD	6.50	Drill 6-3/4" hole 952m - 1087

Date : 13/05/2001

Progress : 425

Depth @ 24:00 hrs :1,531

Depth	Phase	Class	Operation	Hrs	Activity
1,106	PH	P	DRILLING AHEAD	0.50	Drill 6-3/4" hole 1087m - 1106m.
1,106	PH	P	SURVEY	0.50	Survey @ 1099m, 1/2° N85W.
1,261	PH	P	DRILLING AHEAD	4.50	Drill 6-3/4" hole 1106m - 1261m.
1,261	PH	P	SURVEY	0.50	Run survey @ 1254m, 3/4° S55W. Service rig.
1,425	PH	P	DRILLING AHEAD	7.50	Drill 6-3/4" hole 1261m - 1425m
1,425	PH	P	SURVEY	0.50	Survey @ 1406m, 1/2° S02E.
1,531	PH	P	DRILLING AHEAD	10.00	Drill 6-3/4" hole 1425m - 1531m.

Date : 14/05/2001

Progress : 365

Depth @ 24:00 hrs :1,896

Depth	Phase	Class	Operation	Hrs	Activity
1,531	PH	P	DRILLING AHEAD	2.50	Drill 6-3/4" hole 1531m - 1560m.
1,560	PH	P	CIRCULATE & CONDITION	0.50	Circulate bottoms up.
1,560	PH	P	SURVEY	0.50	Survey @ 1553m, 1/2° S23E.
1,560	PH	P	WIPER TRIP	1.50	Wiper trip to csg shoe. Overpull 10 - 40 klbs 1200m - 900m.
1,560	PH	P	SLIP/CUT DRILL LINE	0.50	Slip 33' drlg line.
1,560	PH	P	WIPER TRIP	1.00	RIH w/ drlg assy to 1538m.
1,560	PH	P	BREAK CIRCULATION	0.50	Wash to bottom 1538m - 1560m. No fill.
1,714	PH	P	DRILLING AHEAD	8.00	Drill 6-3/4" hole 1560m - 1714m.
1,714	PH	P	SURVEY	0.50	Survey @ 1695, 2° S33E.
1,867	PH	P	CIRCULATE SAMPLE	7.50	Drill 6-3/4" hole 1714m - 1867m
1,867	PH	P	SURVEY	0.50	Survey @ 1848m, 4-3/4° S43E
1,896	PH	P	DRILLING AHEAD	0.50	Drill 6-3/4" hole 1867m - 1896m.

Date : 15/05/2001

Progress : 136

Depth @ 24:00 hrs :2,157

Depth	Phase	Class	Operation	Hrs	Activity
2,021	PH	P	DRILLING AHEAD	6.50	Drill 6-3/4" hole 1896m - 2021m.
2,011	PH	P	SURVEY	0.50	Survey @ 2014m, 8° S55E.
2,089	PH	P	DRILLING AHEAD	4.50	Drill 6-3/4" hole 2021m - 2089m.
2,089	PH	P	SURVEY	0.50	Survey @ 2070m, 7° S70E.
2,157	PH	P	DRILLING AHEAD	5.00	Drill 6-3/4" hole 2089m - 2157m.
2,157	PH	P	CIRCULATE & CONDITION	1.50	Circulate clean. Flowcheck. Pump slug.
2,157	EP	P	WIPER TRIP	4.50	POOH to shoe. 10 - 30klbs overpull. RIH to 2116m.
2,157	EP	P	BREAK CIRCULATION	0.50	Wash to bottom. 2116m - 2157m.
2,157	EP	P	CIRCULATE & CONDITION	0.50	Circulate clean.

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY REPORT

Date : 16/05/2001				Progress : 0	Depth @ 24:00 hrs :2,157
Depth	Phase	Class	Operation	Hrs	Activity
2,157	EP	P	CIRCULATE & CONDITION	0.50	Circulate and condition hole.
2,157	EP	P	SURVEY	0.50	Drop survey.
2,157	EP	P	TRIP-OUT	4.50	Slug pipe. POOH. SLM pipe.
2,157	EP	P	TRIP-OUT	0.50	L/d stabilizers, pony collar, and NMDC. Recover survey, 5° @ S73E.
2,157	EP	P	LOGGING	14.00	R/u Reeves. RIH w/ Log #1 GR-DLS-MRS-LCS. Log # 2 GR-PDS-CNS. Log #3 RFS-GR. Solid obstruction at 2010m. POOH. R/d Reeves.
2,157	EP	TP	WIPER TRIP	3.00	RIH w/ drlg assy. Wiper trip.
2,157	EP	TP	SLIP/CUT DRILL LINE	1.00	Slip 33' drlg line.

Date : 17/05/2001				Progress : 0	Depth @ 24:00 hrs :2,157
Depth	Phase	Class	Operation	Hrs	Activity
2,157	EP	TP	WIPER TRIP	1.50	RIH. Tag obstruction at 2005m.
2,157	EP	TP	WIPER TRIP	0.50	Wash and ream obstruction 2005m - 2024m.
2,157	EP	TP	WIPER TRIP	0.50	RIH to 2157m.
2,157	EP	TP	CIRCULATE & CONDITION	1.00	Circulate hole clean.
2,157	EP	TP	WIPER TRIP	3.00	POOH. Work area at 2005m.
2,157	EP	P	LOGGING	11.00	R/u Reeves. Run RFS-GR.
2,157	EP	P	LOGGING	2.00	Download sample chambers and L/d RFS-GR.
2,157	EP	P	LOGGING	0.50	Hold safety meeting and secure radio silence.
2,157	EP	TP	LOGGING	2.00	Reeves RIH w/ SWC-GR. Held up at 2000m. POOH. Abandon SWC run.
2,157	EP	P	LOGGING	0.50	R/d Reeves.
2,157	EP	P	WIPER TRIP	1.50	RIH w/ drlg assy.

Date : 18/05/2001				Progress : 0	Depth @ 24:00 hrs :2,157
Depth	Phase	Class	Operation	Hrs	Activity
2,157	EP	P	WIPER TRIP	3.00	RIH w/ drlg assy. Work through obstruction at 2000m until clean.
2,157	EP	P	CIRCULATE & CONDITION	2.00	Circulate and condition mud.
2,157	PC	P	LAY DOWN PIPE	9.00	POOH L/d pipe. Work any area that shows overpull. Break kelly conns.
2,157	PC	P	RUN CASING	1.00	Pull wear bushing.
2,157	PC	P	RUN CASING	9.00	R/u Premium and run 3½' casing.

Date : 19/05/2001				Progress : 0	Depth @ 24:00 hrs :2,157
Depth	Phase	Class	Operation	Hrs	Activity
2,157	PC	P	RUN CASING	2.50	Run casing.
2,157	PC	P	BREAK CIRCULATION	0.50	Break circulation and wash to bottom. 3m fill.
2,157	PC	P	CIRCULATE CASING	1.50	Circulate and condition mud. Cool hole.
2,157	PC	P	CEMENT CASING	0.50	Head up Dowell. Pump 40 bbbs SAPP spacer. 10 bbbs water. Test lines 4Kpsi. Drop top plug.
2,157	PC	P	CEMENT CASING	1.00	Mix and pump 211bbbs lead cmt at 11.5 ppg followed by 25 bbbs tail cmt at 15.8ppg.
2,157	PC	P	CEMENT CASING	0.50	Wash out surface lines. Drop top plug and ball. Displace w/ 61.5 bbbs 2% KCl brine. Bump plug w/ 2000psi. Test csg 2500psi 10 mins. Floats OK.
2,157	PC	P	WAIT ON CEMENT	4.00	Wait on cement.
2,157	PC	P	WELL-HEAD	0.50	Set csg slips w/ 40klbs tension.
2,157	PC	P	N/U & TEST BOP's	4.00	Nipple down BOP. Rough cut csg.

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NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

ACTIVITY REPORT

Date : 19/05/2001

Progress : 0

Depth @ 24:00 hrs :2,157

Depth	Phase	Class	Operation	Hrs	Activity
2,157	PC	P	WELL-HEAD	2.00	Dress csg stump as per wood. N/u xmas tree adaptor flange. Attempt to energize packing and test cavity 5000psi. "P" seal leaking. Would not hold plastic packing pressure or test pressure. Nipple down xmas tree and flange.
2,157	PC	P	WELL-HEAD	3.00	Trim ragged edges from "P" seal. No spares on hand. Re-install flange and tree. Test flange and "P" seal. Test flange. Held 5000 psi 10 mins. NB. NO CONFIDENCE IN SEAL. Test xmas tree 5000 psi 10 mins. Release rig.

908040 080

Section 3.0

Drilling Data

- **Mud Record**
- **BHA Summary**
- **Bit Summary by Formation**
- **FIT/LOT Report**

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

Mud Co.: BAROID

RT above GL : 4 m
GL above MSL : 46 m

Lat : 38 deg 52 min 61.00 sec
Long : 142 deg 48 min 25.57 sec

Spud Date: 09/05/2001
Release Date: 19/05/2001
Spud Time: 10:00
Release Time: 20:00

Total Cost: \$ 31,214

MUD RECAP

R#	DATE	TYPE	DEPTH	TMP F	MW ppg	VIS secs /qt	PV cps	YP lbs/ 100ft2	Gel10s lbs/ 100ft2	Gel10m lbs/ 100ft2	F.L. API (cm3/ 30min)	F.L. hthp (cm3/ 30min)	Sols %	Sand %	MBT %	PH	Cl ppm	HARD /Ca ppm	KCI %	DAILY \$
5	09/05/2001	Gel	297	0	8.8	41	7	24		15	0.0	0.0								112
6	10/05/2001	Gel	485	0	8.7	30	3	4		2	0.0	0.0								112
7	11/05/2001	Gel	485	0	8.7	30	3	4		2	0.0	0.0								3,921
8	12/05/2001	Gel	996	23	8.8	39	9	8		2	6.6	0.0	2.4	.01	1.0	9.0	19,000	160	4	6,318
9	13/05/2001	Gel	1,503	27	9.0	41	11	11		2	6.4	0.0	4	.8	1.0	9.0	17,000	240	3	6,482
10	14/05/2001	Gel	1,820	28	9.1	38	10	10		2	5.5	0.0	3.8	.5	2.0	9.5	21,000	160	4	4,763
11	15/05/2001	Gel	2,157	0	9.2	42	14	12		2	5.0	0.0	4.6	.8	2.0	9.5	24,000	200	5	9,269
12	16/05/2001	PHPA	2,157	0	9.2	42	14	12		2	5.0	0.0	4.6	.8	2.0	9.5	24,000	200	5	0
13	17/05/2001	PHPA	2,157	0	9.2	42	14	12		2	5.0	0.0	4.6	.8	2.0	9.0	24,000	240	5	237

908040 081

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL 4 m
GL above MSL 46 m

Lat : 38 deg 52 min 61.00 sec
Long : 142 deg 48 min 25.57 sec

Spud Date: 09/05/2001
Spud Time: 10:00

Release Date: 19/05/2001
Release Time: 20:00

BHA SUMMARY

#	Length (m)	Weight (k-lbs)	Weight blw/Jars (k-lbs)	String Weight (k-lbs)	Pick-Up Weight (k-lbs)	Slack-Off Weight (k-lbs)	Torque Max (ft-lbs)	Torque on bottom (ft-lbs)	Torque off bottom (ft-lbs)	BHA DESCRIPTION
1	151	34500	34500	82	82	82	200	200	120	Bit, Bit sub, 6 1/2" NMDC, Stab, 11 x 6 1/2" DC, XO,4 x HWDP.
2	239	34500	34500							Bit, NB Stab, Pony DC, Stab, NMDC, Stab, 16 x 4" DC, Jar, 3 x 4" DC,4 x HWDP.

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL : 4 m Lat : 38 deg 52 min 61.00 sec
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec

Spud Date: 09/05/2001

Release Date: 19/05/2001

Spud Time: 10:00

Release Time: 20:00

BIT SUMMARY BY FORMATION

DATE	BIT#	SIZE in	MFR	TYPE	IADC	JETS	SER #	IN ft	OUT ft	MTRG	OnBoit HRS	FORMATION	TOP@ m	ROP f/hr	WOB k-lbs	RPM	TRQ 1000 ft-lb	SPP psi	FLW gpm	MW ppg	I O1	D L B G	O2	R			
10-05-01	RR1	9.88	SMITH	FGSS+2 C		2x22	LY9255	0	485	485	11.0	Undifferentiated	0	214.3	2.1	65	0.156	67	31	8.8	1	WT A	E I	WT TD	R		
15-05-01	2	6.75	OTHER	SDL419		4x11	SID0282	485	2,157	1,672	66.0	GELLIBRAND MARL BELFAST BELFAST NARRAWATUR K DILWYN PEMBER PEBBLE POINT PAARATTE SKULL CREEK WAARRE C WAARRE B WAARRE A EUMERELLA	271 271 526 568 836 952 1,039 1,534 2,026 2,054 2,069 2,119	277.4 480.0 600.0 578.6 511.1 485.7 525.7 366.7 250.0 150.0 333.3 252.6	2.8 6.0 3.8 1.7 3.4 3.3 2.1 1.6 2.2 2.5 1.9 4.5	100 116 121 124 129 133 135 135 131 134 135 141	0.415 0.943 0.945 0.957 0.931 0.949 0.932 0.941 0.911 0.944 0.922 0.956	487 874 921 1007 1046 1037 1140 1302 1335 1362 1380 1402	280	9.0	6	4	WT N	X I	CT TD		

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

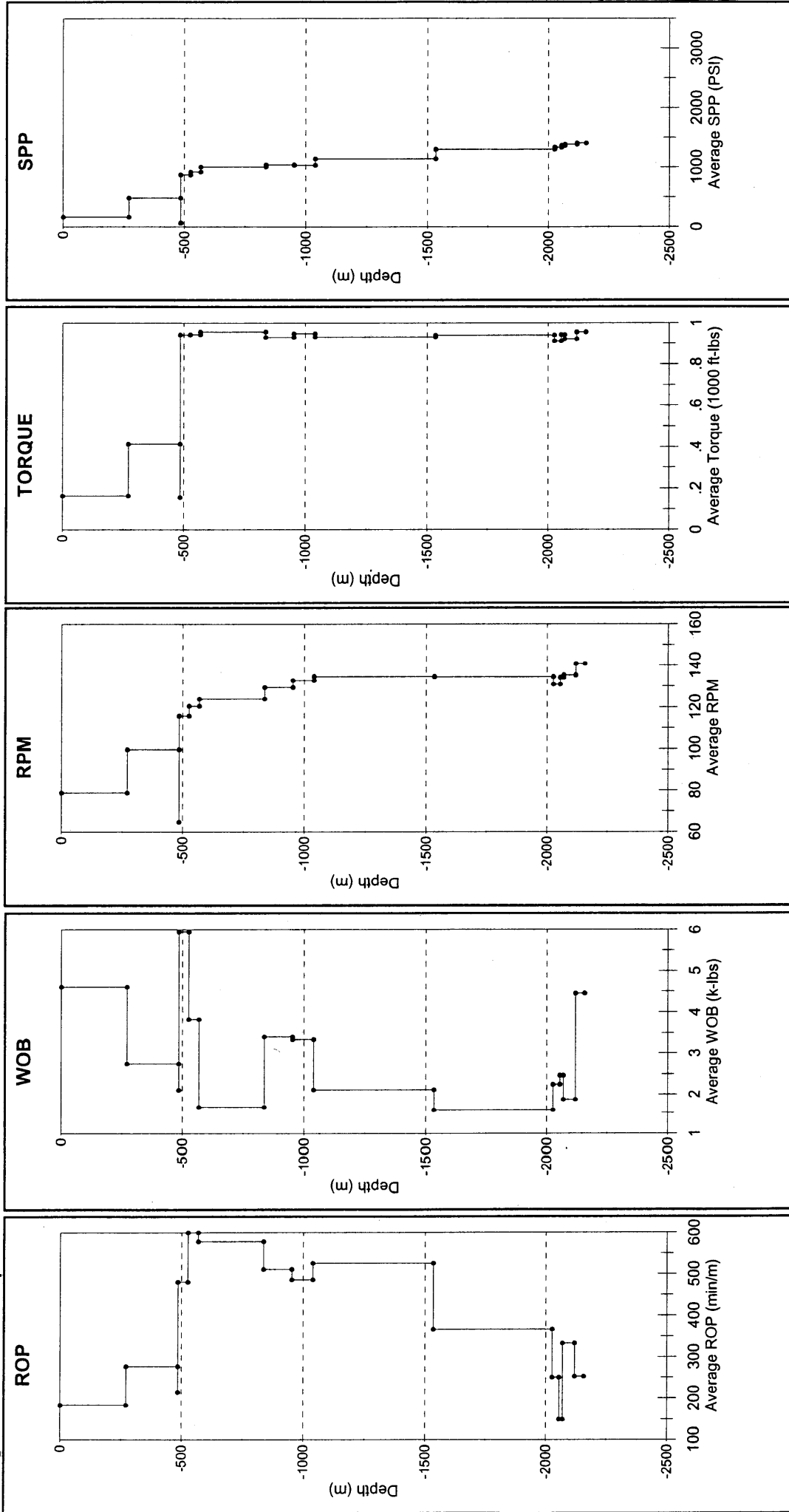
RT above GL : 4 m
GL above MSL : 46 m
Lat : 38 deg 52 min 61.00 sec
Long : 142 deg 48 min 25.57 sec

Spud Date: 09/05/2001
Spud Time: 10:00

Release Date: 19/05/2001
Release Time: 20:00

BIT SUMMARY BY FORMATION

Drilling Parameters vs Depth :



908040 084

NAYLOR #1

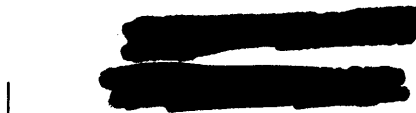
Drilling Co.: OD&E

Rig : OD&E #30

RT above GL : 4 mtrs
 GL above MSL : 46 mtrs

Spud Date: 09/05/2001
 Spud Time: 10:00:00

Release Date: 19/05/2001
 Release Time: 20:00:00



908040 085

BIT RECORD

DATE	BIT#	SIZE "	IADC	SER	MFR	TYPE	JETS	D.IN mtrs	D.OUT mtrs	MTRG	HRS IADC	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
10/05/2001	RR1	9.88		LY9255	SMITH	FGSS+2C	2x22	0	485	485	11.0	61	31	0.3	6	8.8	0.743	74	1.96	44.1	1	WT	A	E	I	WT	TD
15/05/2001	2	6.75		SID0282	OTHER	SDL419	4x11	485	2,157	1,672	79.8	900	280	5.0	110	9.0	0.371	74	2.19	21.0	6	WT	N	X	I	CT	TD



Santos

Santos Ltd
A.C.N. 007 550 923

LEAK-OFF / F.I.T REPORT

FORM

Well Name:

NAYLOR #1

DQMS F-214

REPORT BY:

WJ Westman

CASING SIZE:

7-5/8"

DATE:

12/05/2001

- A. MUD WEIGHT:
- C. HOLE DEPTH:
- D. SHOE DEPTH:
- E. LEAK OFF PRESSURE (GRAPH):
- F. EQUIVALENT DENSITY:
(Pressure. (D)/(Shoe Depth*0.052))+Mud Weight

8.6	MW(ppg)
1597	
1591	(ft)
780	(ft)
18.0	(ppg EMW)

- G. STABILIZED PRESSURE.:
- H. VOLUME PUMPED:
- I. VOLUME REGAINED:
- J. BURST PRESSURE OF CASING
- K. MINIMUM REQUIRED LEAK-OFF
- L. MAXIMUM ALLOWABLE PRESSURE
- M TEST UNIT TYPE

780	(psi)
5	(bbl)
4.5	(bbl)
6020	(psi)
13.8	(ppg EMW)
5308.5048	(psi)
P.Low	

Vol (bbl)	Pr (psi)
0	0
0.25	14
0.5	30
0.75	50
1	70
1.25	90
1.5	110
1.75	130
2	160
2.25	190
2.5	235
2.75	300
3	385
3.25	450
3.5	515
3.75	585
4	645
4.25	695
4.5	740
4.75	780
5	785
5.25	790

CASING TEST (MIN. VOL. LINE)

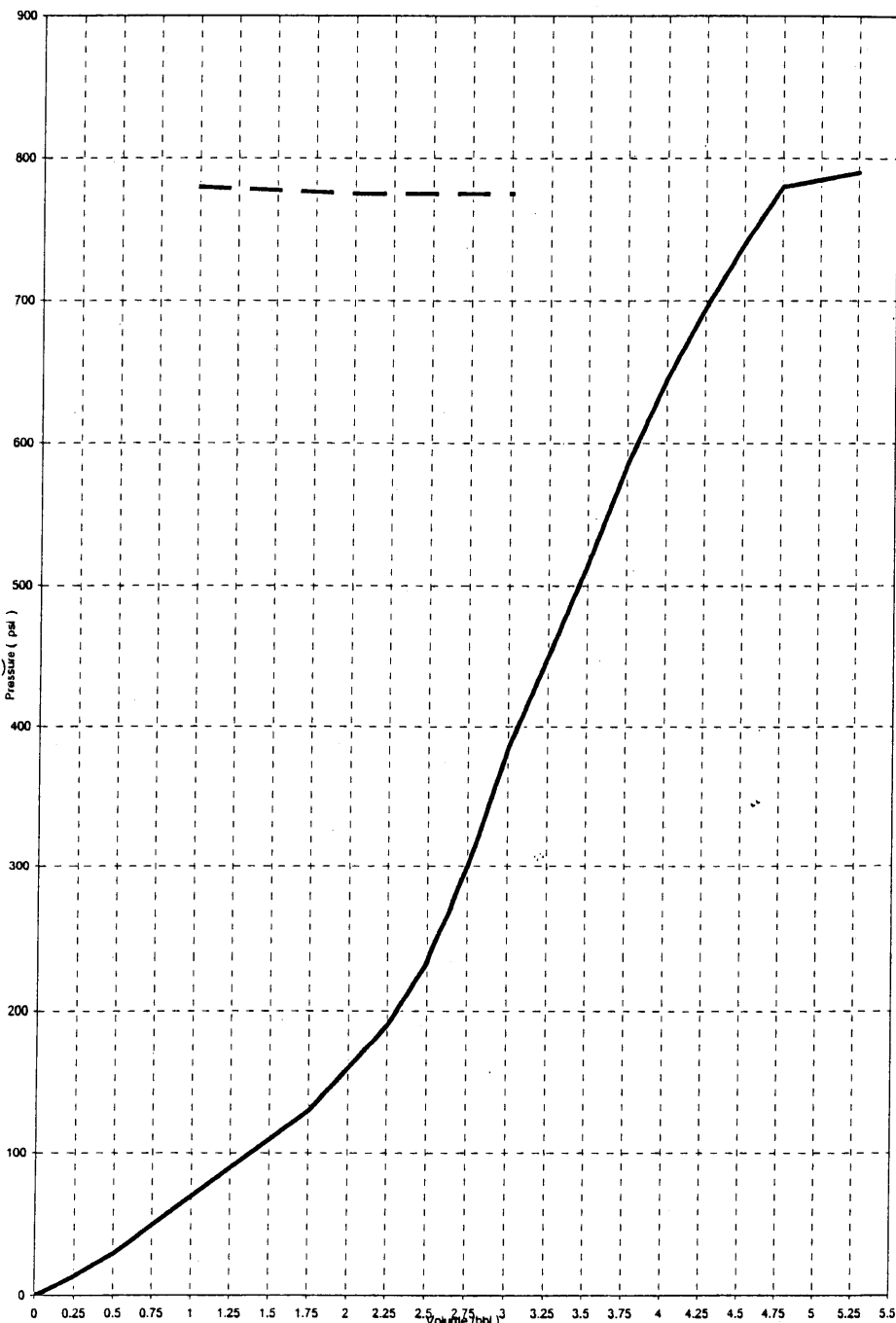
0	0

MINIMUM LEAK OFF (ppg EMW)

430
430

PLOT AFTER PUMP STOPPED

Minutes	Pressure
1	780
2	775
3	775



[REDACTED]

Section 4.0

Casing and Cementing

- Casing and Cementing Reports
- Wellhead Installation Report or
- Plug and Abandonment Report

908040 088

<h1 style="margin: 0;">Santos</h1> <small>Santos Ltd A.C.N. 007 550 923</small>		CASING AND CEMENTING REPORT				FORM DQMS F-220 <small>Rev.2</small>					
		Well Name:		NAYLOR #1							
Casing type:		<input checked="" type="checkbox"/> Surface casing		<input type="checkbox"/> Intermediate Casing		<input type="checkbox"/> Production Casing					
<input type="checkbox"/> Completion tubing		Originated by: GEOFF COKER		Checked by: GEOFF COKER		Date: 28-Jun-01					
Hole Size: 9-7/8"		T.D.: 485m MD		Date: 5/11/01		Contractor: Schlumberger					
PRE-FLUSH 40 bbls. @ 8.4 ppg.		SPACER 0 bbls@ 0 ppg.									
Additives: Water Source: CROFT #1 Water Bore				Water Source:							
CEMENT		Mixwater: 61.6 bbls		ADDITIVES							
LEAD SLURRY:		153 sacks Class		G		Product % or gps					
Slurry Yield:		2.87 cu.ft./sack				D 020 5% BWOC					
Mixwater Req't:		17.575 gal./sack				S001 CaCl2 1.5% BWOC					
Actual Slurry Pumped:		78 bbls @		11.5 ppg		D047 0.01 gal/sx					
Planned TOC:		0 m RT @		55 % o/g hole							
Actual est. TOC:		0 m RT @		% o/g hole							
TAIL SLURRY:		86 sacks Class		G		D145A .05 gal/sx					
Slurry Yield:		1.19 cu.ft./sack				S001 CaCl 0.5% bwoc					
Mixwater Req't:		5.239 gal./sack				D047 .01 gal/sx					
Actual Slurry Pumped:		18 bbls @		15.6 ppg							
Planned top tail:		392 m RT @		20 % o/g hole							
Actual est. top tail:		392 m RT @		% o/g hole							
DISPLACEMENT		Fluid: Mud		@ 8.8 ppg							
Theoretical Displ.:		70.9 bbl.				Bumped plug with 500 psi					
Actual Displ.		71 bbl @		5.5 bpm		Pressure Tested to: 1900 psi					
Displaced via RIG PUMP						Bleed back: 0.75 bbls					
ACTIVITY		Date/Time		Returns to Surface: 157 bbls mud		10 bbls cmt.					
Start Running csg.		10-May-01 11:30		Reciprocate / Rotate Casing:		Reciprocate till plug bump.					
Casing on Bottom		10-May-01 17:15		Top Up Job run: Yes / No		No sx class					
Start Circulation		10-May-01 17:15		Plug Set Make / Type:		Weatherford Model-303 (FS), Model-402NP (FC)					
Start Pressure Test		10-May-01 18:15		Centraliser Placement, type/depth:		Weatherford 479m,470m,455m,435m,412m, BSK & Cent 29m.					
Pump Preflush		10-May-01 18:00		Remarks:							
Start Mixing											
Finish Mixing		10-May-01 18:45									
Start Displacing		10-May-01 18:45									
Stop Displ./Bump		10-May-01 18:50									
Press. test		10-May-01 19:00									
No. JOINTS		SIZE OD		WT lb/ft		GRADE		THREAD		METER FROM TO	
Stick Up at RT						(Enter as negative number-do not include stretch, RT = 0)		-1.27		-1.27 0.00	
Rotary table to top of Bradenhead								(Enter for surface casing only)		5.01 0.00 5.01	
Bradenhead : WG-22-L, 7-5/8"BTC x 9-5/8"BTC x 11"5K								(Enter for surface casing only)		0.72 5.01 5.73	
Rotary table to top of cut jt								(Enter for int. or production casing only)			
39 Jts		7-5/8"		26.4		L80		BTC		452.14 5.73 457.87	
										0.00 457.87 457.87	
										0.00 457.87 457.87	
										0.00 457.87 457.87	
										0.00 457.87 457.87	
Float Collar		W'ford Model-402NP						BTC		0.40 457.87 458.27	
2 Jts		7-5/8"		26.4		L80		BTC		23.29 458.27 481.56	
Float Shoe		W'ford Model-303						BTC		0.44 481.56 482.00	
Total Jts Run		41									
Total Jts On Location		41									
Jts not run		0									
Theoretical Bouyed wt of casing(klb):		35.5		Bradenhead Height above GL		0.00					
Actual wt of casing (last joint run-block wt, klb)				Casing wt just prior to landing csg/							
Landing WT (after cementing and pressure bleed off)				setting slips		(indicator wt - blocks = wt)					

<h1 style="margin:0;">Santos</h1> <p style="font-size: small; margin: 5px 0;">Santos Ltd A.C.N. 007 550 923</p>	<h2 style="margin:0;">CASING AND CEMENTING REPORT</h2>	<h2 style="margin:0;">FORM</h2> <p style="font-size: x-large; margin: 10px 0;">DQMS F-220</p> <p style="font-size: x-small; margin: 0;">Rev.2</p>
Well Name: Naylor #1		

Casing type: Surface casing Intermediate Casing Production Casing Completion tubing

Originated by: WJ Westman **Checked by:** Geoff Coker **Date:** 28/06/2001

Hole Size: 6 3/4" **T.D.:** 2157 **Date:** 19/05/2001 **Contractor:** Schlumberger

PRE-FLUSH 40 bbls. @ 8.6 ppg. **SPACE** 10 bbls@ 8.3 ppg.

Additives: **SAPP 8 ppb**
Water Source: **Croft Bore**

Water Source: **Croft Bore**

CEMENT	Mixwater:	ADDITIVES
LEAD SLURRY:	416 sacks Clas G	Product % or gps
Slurry Yield:	2.85 cu.ft./sack	Bentonite 5%
Mixwater Req't:	21.02 gal./sack	DO81 Retarder 0.04%
Actual Slurry Pumped:	209 bbls @ 11.5 ppg	DO47 Antifoam 0.01gps
Planned TOC:	1076 ft RT @ 20 % o/g hole	
Actual est. TOC:	Surface ft RT @ 0.05 % o/g hole	
TAIL SLURRY:	121 sacks Clas G	
Slurry Yield:	1.15 cu.ft./sack	DO81 0.03 gps
Mixwater Req't:	6.48 gal./sack	DO47 0.01 gps
Actual Slurry Pumped:	25 bbls @ 15.8 ppg	DO80 0.05 gps
Planned top tail:	6447 ft RT @ 20 % o/g hole	
Actual est. top tail:	6308 ft RT @ 0.01 % o/g hole	

DISPLACEMENT Fluid: **2% KCl** @ 8.4 ppg

Theoretical Displ.: 61.5 bbl. Bumped plug with 1900 psi

Actual Displ. 61.5 bbl @ 6 bpm Pressure Tested to: 2500 psi

Displaced via **RIG / CEMENT PUMP** Bleed back: 0.5 bbls

ACTIVITY	Date/Time	Returns to Surface: Full bbls mud Nil bbls cmt.
Start Running csg.	16:00	Reciprocate / Rotate Casing: No
Casing on Bottom	02:30	Top Up Job run: Yes / No No sx class
Start Circulation	03:00	Plug Set Make / Type:
Start Pressure Test	04:30	Centraliser Placement, type/depth: Bow spring
Pump Preflush	04:15	2153, 214
Start Mixing	04:30	Remarks: Full returns throughout job. Floats held.
Finish Mixing	06:10	No cement seen at surface.
Start Displacing	06:10	
Stop Displ./Bump	06:20	
Press. test	06:25	

No. JOINTS	SIZE OD	WT lb/ft	GRADE	THREAD	FEET	FROM	TO
Stick Up at RT (Enter as negative number-do not include stretch, RT = 0)					-2	-2.00	0.00
Rotary table to top of Bradenhead (Enter for surface casing only)					0	0.00	0.00
Bradenhead (description and rating) / Tubing Hanger or slip and seal (Enter for surface casing only)					0	0.00	0.00
Rotary table to top of cut jt (Enter for int. or production casing only)					15.4	0.00	15.40
1 Cut Jt	3.5	9.2	13Cr95	Fox	22.9	15.40	38.30
157	3.5	9.2	13Cr95	Fox	6454.43	38.30	6492.73
					0	6492.73	6492.73
1 marker	3.5	9.2	13Cr95	Fox	14	6492.73	6506.73
					0		
					0		
15	3.5	9.2	13Cr95	Fox	568.27	6506.73	7075.00
Float Collar	(Make/Type)				1.18	7075.00	7076.18
1	3.5	9.2	13Cr95	Fox	40.58	7076.18	7116.76
Float Shoe	(Make/Type)				1.35		1.35
Total Jts Run					174		
Total Jts On Location							
Jts not run							

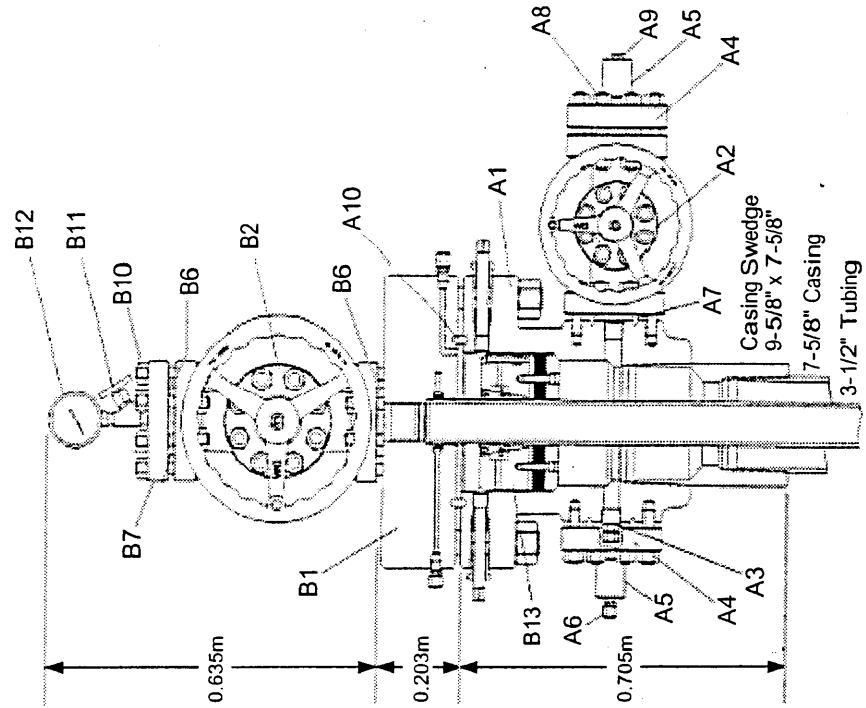
Theoretical Bouyed wt of casing(klb): 56,000	Bradenhead Height above GL: 0.02
Actual wt of casing (last joint run-block wt, klb): 46,000	Casing wt just prior to landing csg/ 44000.00
Landing WT (after cementing and pressure bleed off): 40,000	setting slips (indicator wt - blocks = wt)

**FORM
DQMS F-130**

**WELLHEAD INSTALLATION REPORT
2 STRING MONOBORE (7-5/8" SURFACE CASING)**

Santos

Well : Naylor #1
 Supervisor : WJ Westman
 Date : 19-May-2001



COMPONENT	DESCRIPTION	No USED
A1. Casing Head	11" 5k x 7-5/8" 5k w/ BTC Thread (WG-22-L)	1
A2. Gate Valve	2-1/16" 5k Model 2200	1
A3. Plug	1-1/2" line pipe w/ 1-1/4" hex	1
A4. Companion Flange	2-1/16" 5k x 2" line pipe	2
A5. Bull Plug	2" line pipe tapped w/ 1/2" NPT	2
A6. Test Fitting	1/2" NPT	1
A7. Ring Gasket	RX-24 Stainless Steel	3
A8. Studs	7/8" x 6-1/4" long w/ nuts	8
A9. Pipe Plug	1/2" NPT male	1
A10. Ring Gasket	RX-54 Stainless Steel	1
B13. Slip & Seal Assy	WG-22 11" x 3-1/2"	1
B1. Adaptor Flange	WG-A4-P 11" 5k w/ 3-1/2" P seal & 3-1/8" 5k w/ 3" H BPV	1
B2. Gate Valve	Model 2200 3-1/8" 5k CC Trim	1
B6. Ring Gasket	RX-35 Stainless Steel	2
B7. Blind Flange	3-1/8" 5k tapped 1/2" NPT	1
B10. Studs	7-1/4" x 1-1/8" w/ nuts	8
B11. Needle Valve	1/2" NPT 5k Stainless Steel	1
B12. Pressure Gauge	1/2" NPT 0-5000psi	1
	NB: "P" SEAL TESTED BUT KNOWN TO BE DAMAGED!!!	
	CHANGE "P" SEAL AND RE-TEST BEFORE PERFORMING.	
Notes:	Tubing stub cut off 2-7/8" above top flange on bradenhead.	



Section 5.0

Time Breakdown Data

- **Overview**

- **Trouble Time Breakdown**

Well : NAYLOR #1

Drilling Co : OD&E

Rig : OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

TIME BREAKDOWN DATABASE - single well overview

Spud date : 09/05/2001
 TD Depth : 2,157.0
 Final Depth : 2,157.0
 Total Time (hrs) - Spud/Release : 250.00
 Total Time (hrs) - Rig Move : 0.00
 Total NPT (hrs) : 21.00

Time-Breakdown : Times by Class and Operation

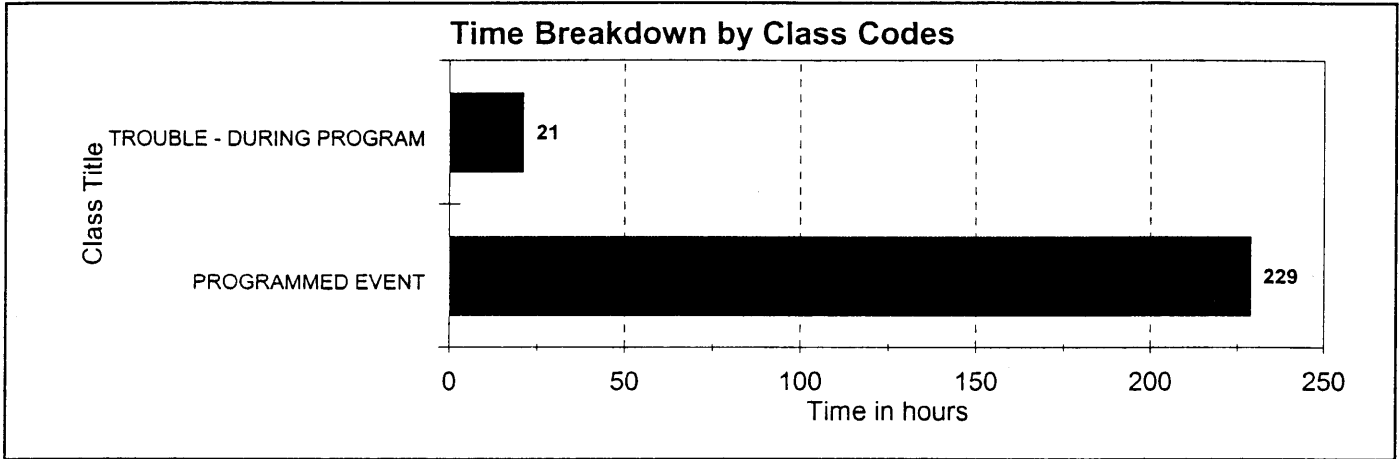
Class	Hrs
PROGRAMMED EVENT	229.0
TROUBLE - DURING PROGRAM	21.0

Operation	Hrs
DRILLING AHEAD	81.8
TOT. CSG/CMT	34.3
LOGGING	30.0
WIPER TRIP	24.5
N/U & TEST BOP's	21.0
TOT. TRIPPING	12.0
SURVEY	9.5
LAY DOWN PIPE	9.0
CIRCULATE & CONDITION MUD	8.5
CIRCULATE SAMPLE	7.5
WELL-HEAD	5.5
LOST CIRCULATION	2.5
BREAK CIRCULATION	1.5
SLIP/CUT DRILL LINE	1.5
LOT / FIT	1.0

TIME BREAKDOWN DATABASE - single well overview

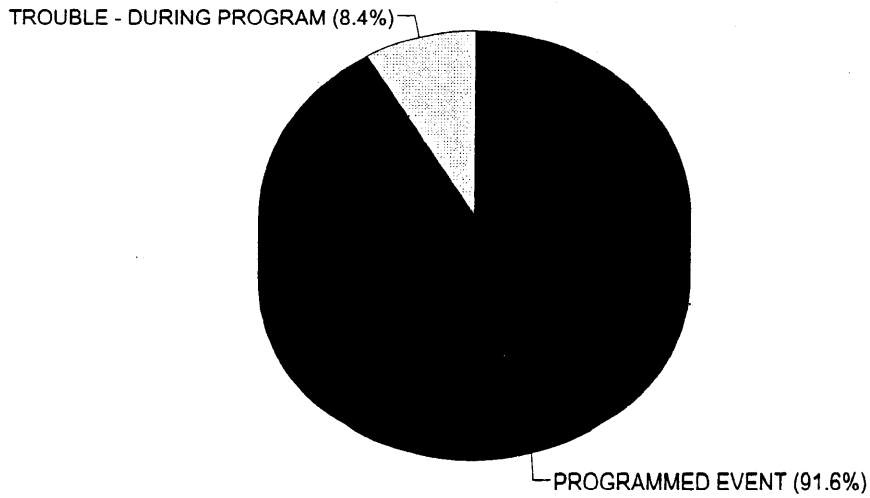
WELL : NAYLOR #1

Pacesetter : none selected



Time Analysis by Class Codes

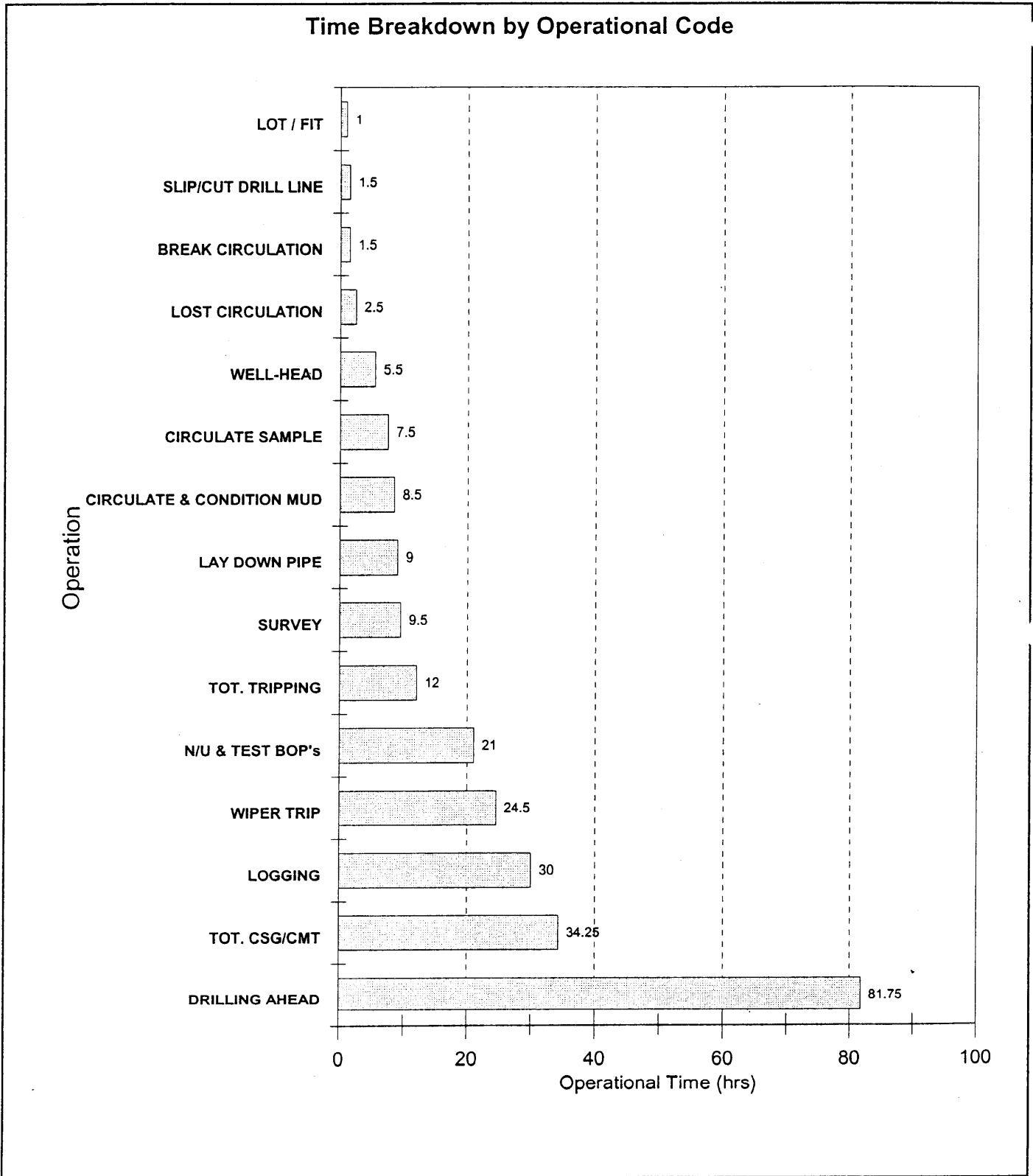
Class	Hrs
PROGRAMMED EVENT	229.0
TROUBLE - DURING PRO	21.0



TIME BREAKDOWN DATABASE - single well overview

WELL : NAYLOR #1

Pacesetter : none selected

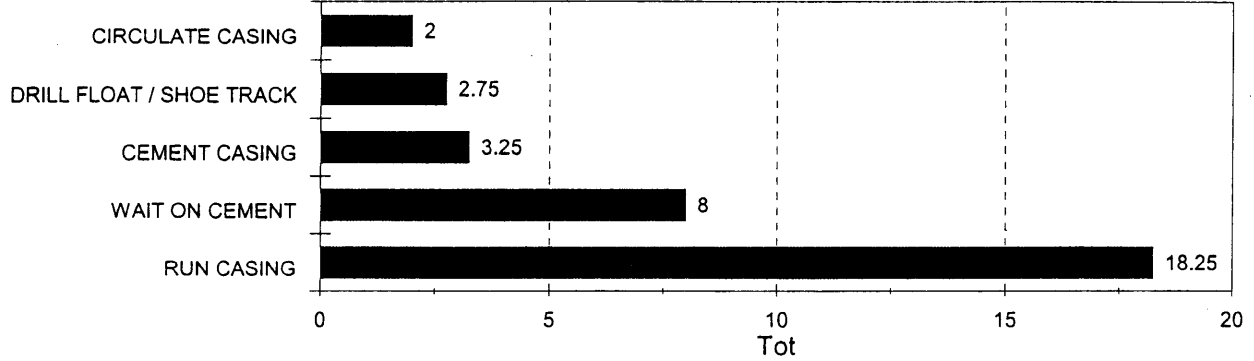


TIME BREAKDOWN DATABASE - single well overview

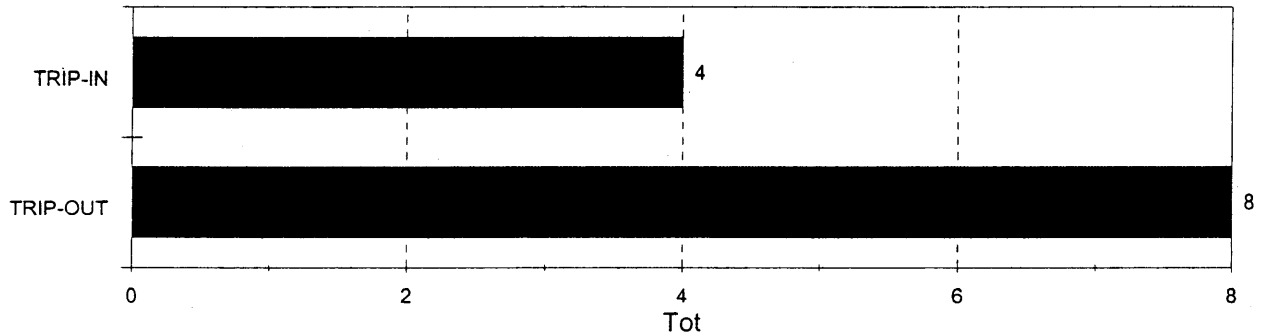
WELL : NAYLOR #1

Pacesetter : none selected

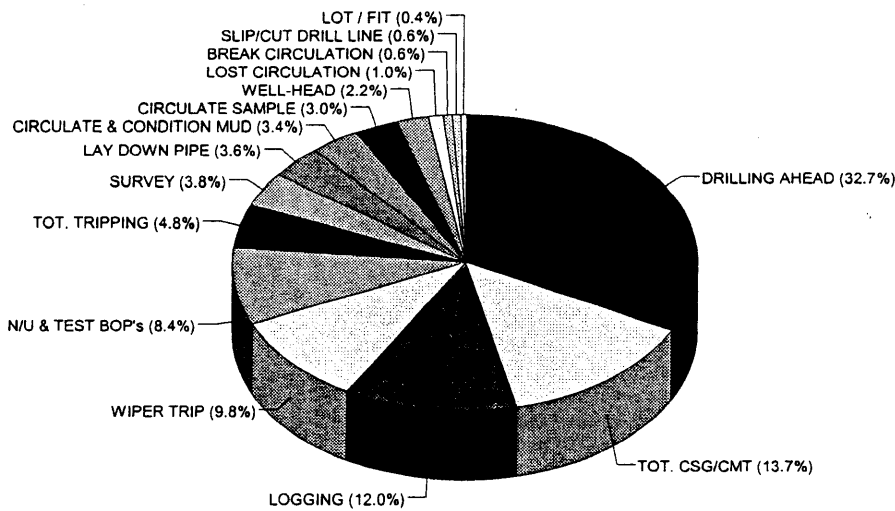
Breakdown of Total Csg & Cmtng Time



Breakdown of Total Tripping Time



Time Analysis by Operational Codes

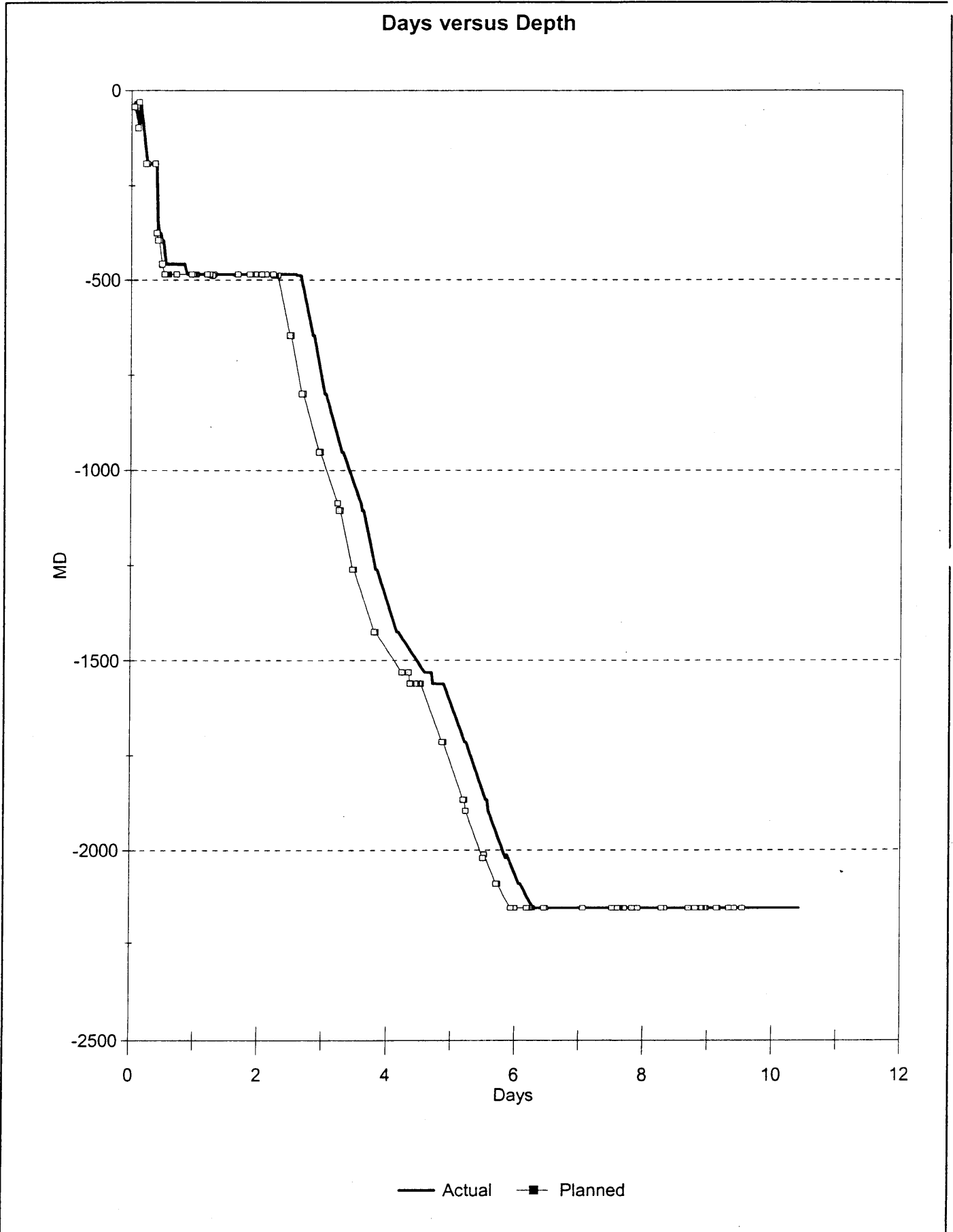


Operation	hrs
DRILLING AHEAD	81.8
TOT. CSG/CMT	34.3
LOGGING	30.0
WIPER TRIP	24.5
N/U & TEST BOP's	21.0
TOT. TRIPPING	12.0
SURVEY	9.5
LAY DOWN PIPE	9.0
CIRCULATE & CONDIT	8.5
CIRCULATE SAMPLE	7.5
WELL-HEAD	5.5
LOST CIRCULATION	2.5
BREAK CIRCULATION	1.5
SLIP/CUT DRILL LINE	1.5
LOT / FIT	1.0

TIME BREAKDOWN DATABASE - single well overview

WELL : NAYLOR #1

Pacesetter : none selected



RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL: 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

TIME BREAKDOWN DATABASE Non-Productive Time Analysis (NPT)
 (Pre-Spud time excluded)

Total Time on Well (hrs) 250.0 (days) 10.42 Spud Date : 09/05/2001
 Total Trouble Time (hrs) 21.0 (days) 0.88 Total Depth : 2,157
 Trouble Time (%) 8.40 Final Depth : 2,157

Total NPT Hours per Phase

PHASE	HOURS
SURFACE HOLE	8.5
EVALUATION PROD. HOLE	12.5

NPT during programmed time

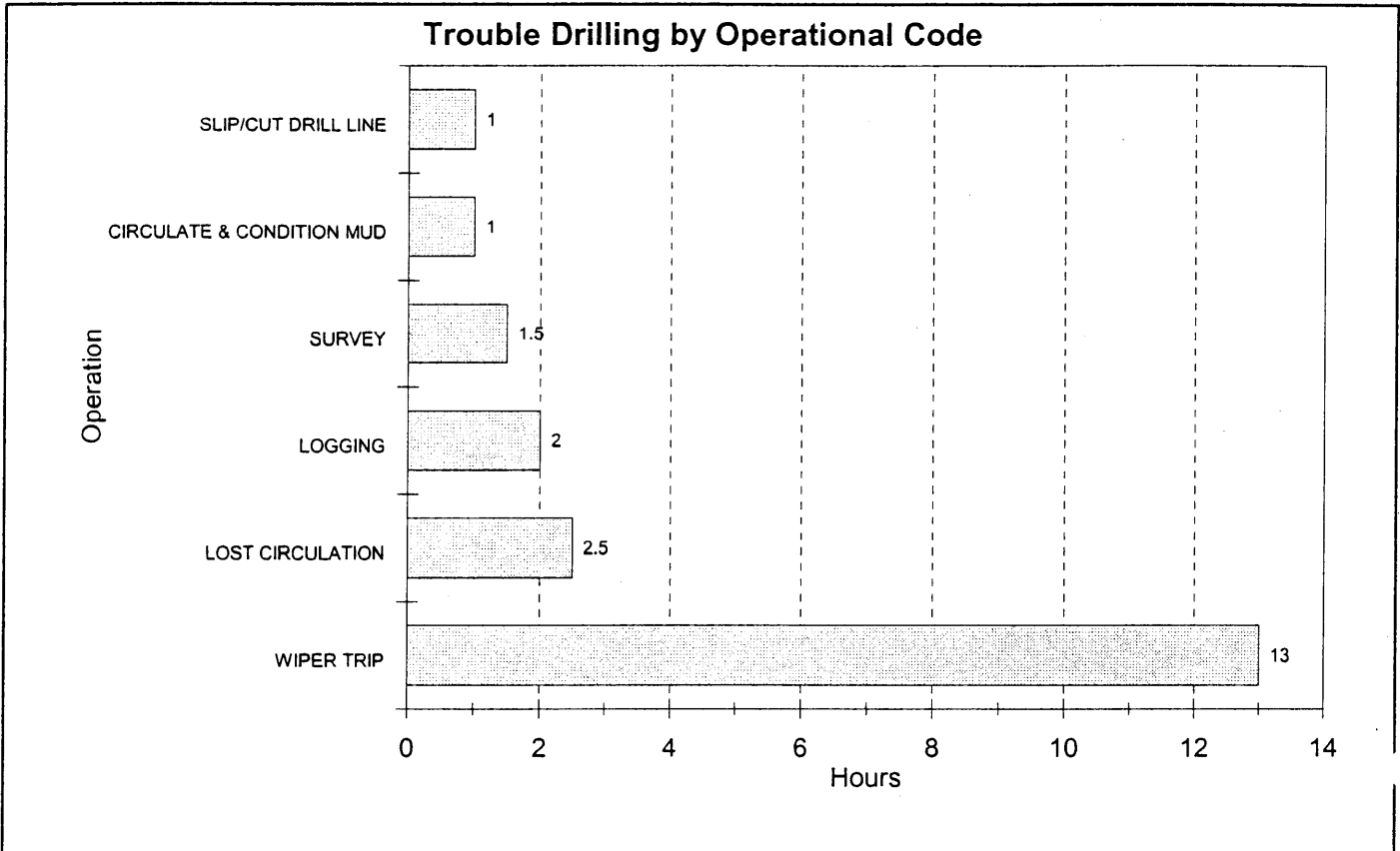
DATE	PHS	OPERATION	NPT hrs	DEPTH m	DESCRIPTION OF PROGRAMMED TROUBLE TIME
09/05/2001	SH	SURVEY	0.5	30	Run survey at 31m. Misrun. Monel sensor did not trip.
09/05/2001	SH	SURVEY	0.5	346	Survey @ 398m. Misrun.
09/05/2001	SH	SURVEY	0.5	376	Survey @ 359m. Misrun. Change out monel sensor for timer.
09/05/2001	SH	LOST CIRCULATION	0.5	458	Hole standing full at flowline. Work pipe and prepare 20bbls medium LCM at 13ppb.
09/05/2001	SH	LOST CIRCULATION	0.5	458	Spot LCM across bottom of hole. Regain partial circulation. Displace LCM from drill string. Work pipe and observe well. Fluid standing at flowline.
10/05/2001	SH	LOST CIRCULATION	0.5	458	Work pipe slowly. Observe well. Fluid static at flowline.
10/05/2001	SH	LOST CIRCULATION	0.5	458	Pull 5stds wiper trip to clear BHA.
10/05/2001	SH	LOST CIRCULATION	0.5	458	Work pipe and attempt to circulate. Hole standing full. No circulation.
10/05/2001	SH	WIPER TRIP	1.0	458	POOH. Wiper trip to clear BHA.
10/05/2001	SH	WIPER TRIP	0.5	458	Clean mud from BHA. Prepare 50 bbls LCM at 25ppb.
10/05/2001	SH	WIPER TRIP	1.0	458	RIH 5 stds. Attempt to break circulation.
10/05/2001	SH	WIPER TRIP	0.5	458	POOH 2 stds and attempt to break circulation.
10/05/2001	SH	WIPER TRIP	1.5	458	RIH to 458m. Pump 50 bbls LCM. Regained circulation. Flowline plugged. Continue to circulate. Jet cellar. Clear flowline.
16/05/2001	EP	WIPER TRIP	3.0	2,157	RIH w/ drlg assy. Wiper trip.
16/05/2001	EP	SLIP/CUT DRILL LINE	1.0	2,157	Slip 33' drlg line.
17/05/2001	EP	WIPER TRIP	1.5	2,157	RIH. Tag obstruction at 2005m.
17/05/2001	EP	WIPER TRIP	0.5	2,157	Wash and ream obstruction 2005m - 2024m.
17/05/2001	EP	WIPER TRIP	0.5	2,157	RIH to 2157m.
17/05/2001	EP	CIRCULATE & CONDITION MUD	1.0	2,157	Circulate hole clean.
17/05/2001	EP	WIPER TRIP	3.0	2,157	POOH. Work area at 2005m.
17/05/2001	EP	LOGGING	2.0	2,157	Reeves RIH w/ SWC-GR. Held up at 2000m. POOH. Abandon SWC run.

NPT during unprogrammed time

DATE	PHS	OPERATION	NPT hrs	DEPTH m	DESCRIPTION OF UNPROGRAMMED TROUBLE TIME
			0.0		No Trouble Time Present

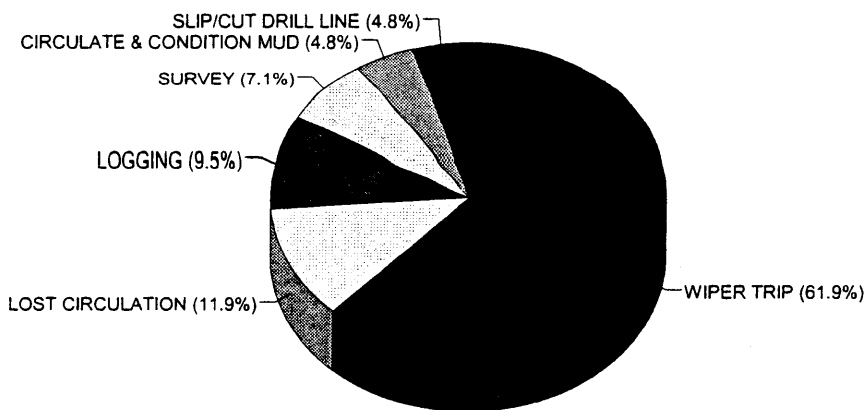
RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL: 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

TIME BREAKDOWN DATABASE Non-Productive Time Analysis (NPT)
 (Pre-Spud time excluded)



Trouble Drilling by Operational Code

OPERATION	HRS
WIPER TRIP	13.0
LOST CIRCULATION	2.5
LOGGING	2.0
SURVEY	1.5
CIRCULATE & CONDITION MUD	1.0
SLIP/CUT DRILL LINE	1.0



908040 099

Section 6.0

Survey Data

- IDS Survey Report

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
 GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

Magnetic Declination (degs): 12.00

Projection:

DEVIATION SURVEY

MD (m)	TVD (m)	INCL (deg)	AZIMUTH (deg)	CORRECT. AZ (deg)	DOGLEG (deg/30m)	'V' SECT (m)	N/S (m)	E/W (m)	CLOSURE (m)
80	80	0.20	310	322	0.3	0	0	-0	0
174	174	0.20	80	92	0.4	0	0	-0	0
377	377	0.20	323	335	0.2	1	1	0	1
473	473	0.12	315	327	0.1	1	1	0	1
635	635	1.25	85	97	0.8	1	1	2	2
787	787	0.30	20	32	0.8	1	1	4	4
934	934	0.70	286	298	0.5	2	2	3	3
1,099	1,099	0.50	355	7	0.4	3	3	2	4
1,254	1,254	0.70	235	247	0.7	3	3	1	3
1,420	1,420	0.50	178	190	0.4	2	2	0	2
1,553	1,553	0.50	157	169	0.1	1	1	0	1
1,695	1,695	2.00	147	159	1.1	-2	-2	1	2
1,848	1,848	4.75	137	149	1.8	-10	-10	6	11
2,014	2,013	8.00	125	137	2.1	-24	-24	17	30
2,070	2,068	6.90	110	122	4.0	-29	-29	23	37
2,150	2,148	5.00	107	119	2.4	-33	-33	30	45

NAYLOR #1

Drilling Co.: OD&E

Rig: OD&E #30

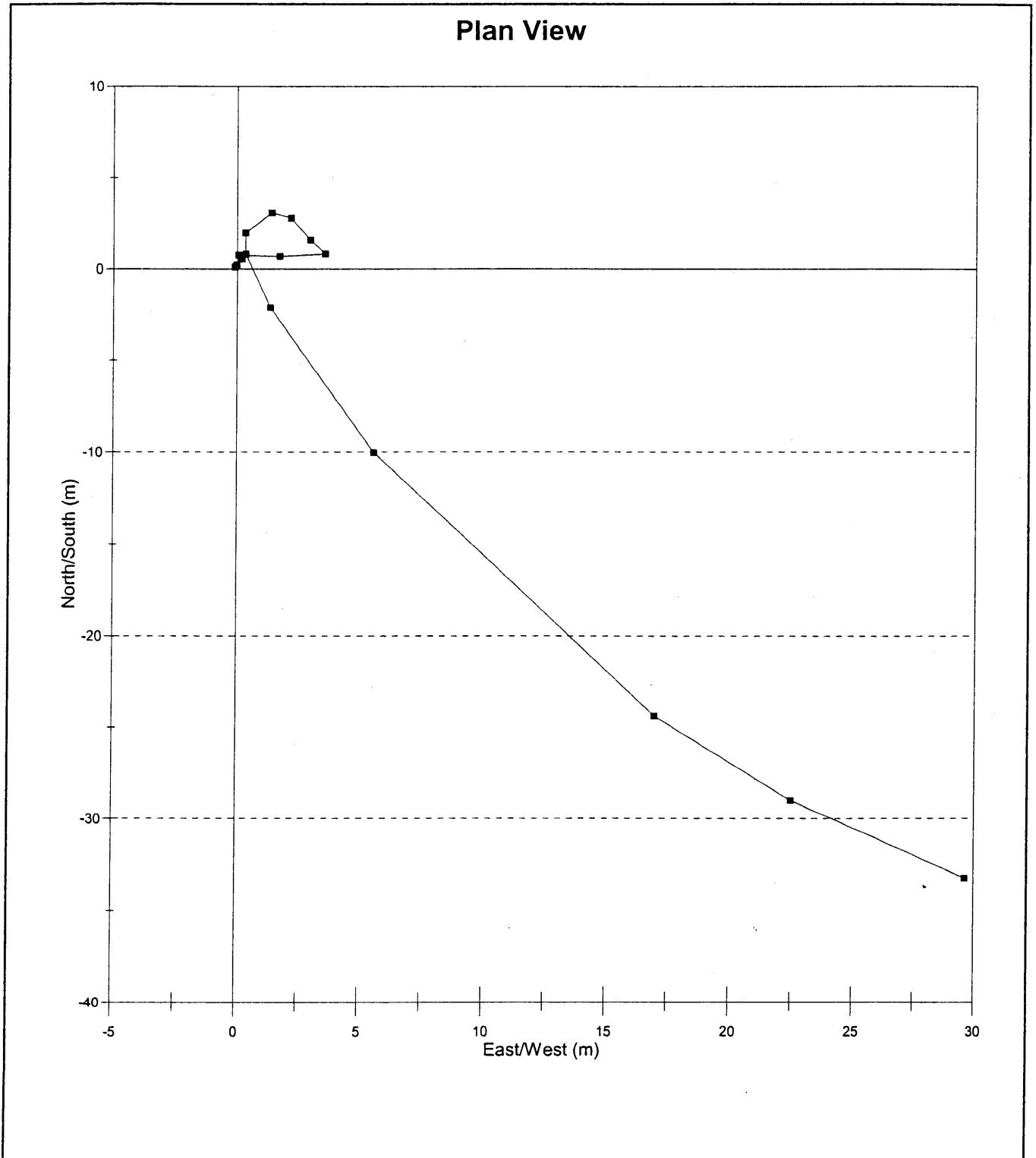
RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00

Magnetic Declination (degs): 12.00

Projection:

908040 101

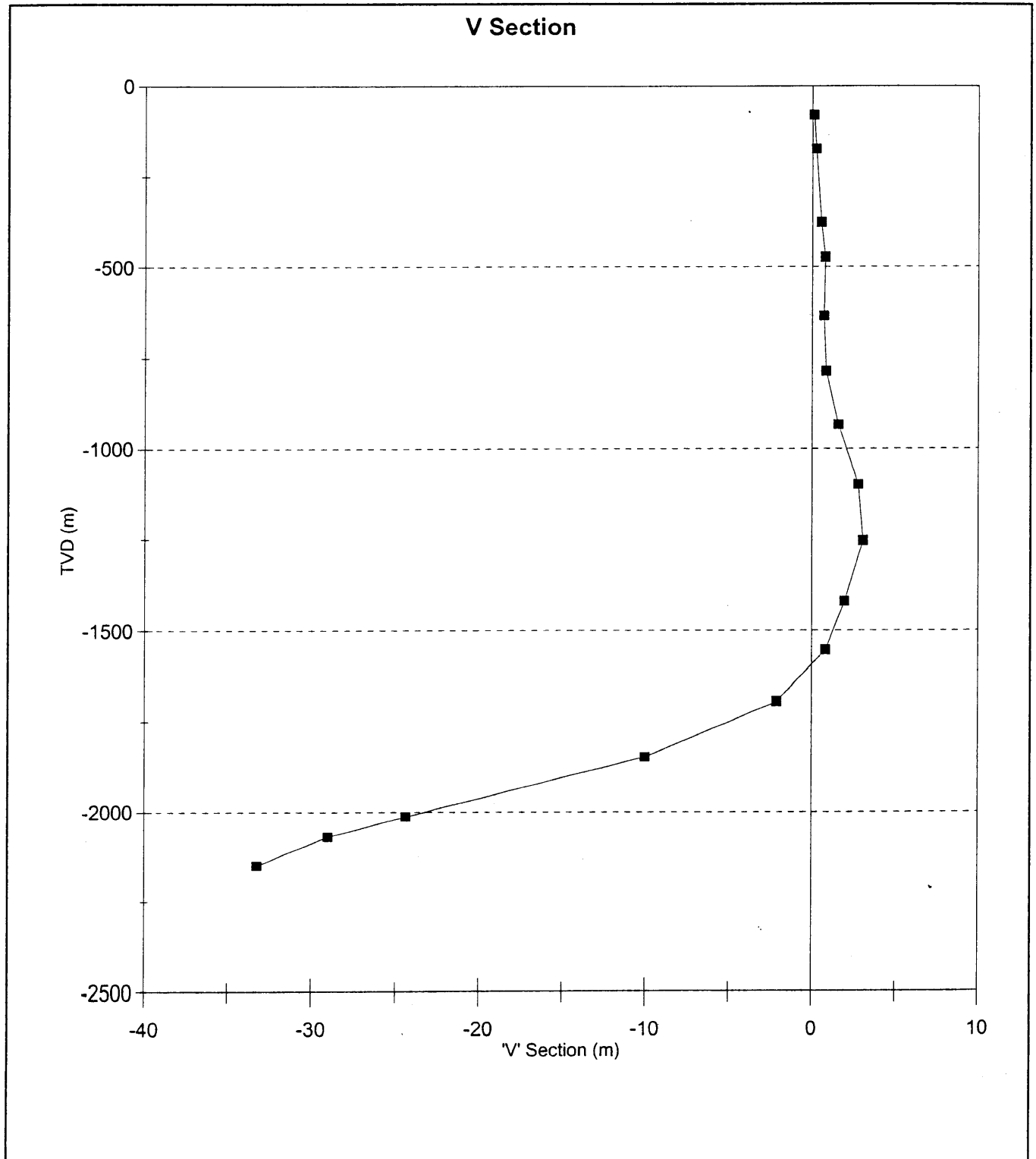
DEVIATION SURVEY



RT above GL: 4 m Lat : 38 deg 52 min 61.00 sec Spud Date: 09/05/2001 Release Date: 19/05/2001
GL above MSL : 46 m Long : 142 deg 48 min 25.57 sec Spud Time: 10:00:00 Release Time: 20:00:00
Magnetic Declination (degs): 12.00

Projection:

DEVIATION SURVEY




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APPENDIX XIII: RIG SPECIFICATIONS

Rig Inventory for RIG # 30

DRAWWORKS	:	Ideco Hydair H-725-D double drum with V-80 Parmac hydromatic brake, Martin Decker satellite automatic drilling control. Max. single line pull - 50,000 lbs. Main drum grooved for 1-1/8" drilling line.
SUBSTRUCTURE	:	One piece substructure 14' high x 13'6" wide x 50' long with 12' BOP clearance. Setback area loading: 250,000 lbs Casing area loading: 275,000 lbs
ENGINES	:	Four (4) Caterpillar Model 3412 PCTA diesel engines.
BRAKE	:	V-80 Parmac hydromatic brake,
MAST	:	Dreco Model #: M12713-510 Floor Mounted Cantilever Mast designed in accordance with API Specification 4E Drilling & Well Servicing Structures. Hook load Gross Nominal Capacity - 510,000 lbs with:- 10 lines strung - 365,000 lbs 8 lines strung - 340,000 lbs Clear working height of 127'. Base width of 13'6". Adjustable racking board with capacity for i) 108 stands of 4.1/2" drill pipe, ii) 10 stands of 6.1/2" drill collars, iii) 3 stands of 8" drill collars Designed to withstand an API windload of 84 mph with pipe racked and 100 mph with no pipe racked.
CATHEADS	:	One (1) Foster Model 37 make-up spinning cathead mounted on drillers side. One (1) Foster Model 24 break-out cathead mounted off drillers side.
TRAVELLING BLOCK/HOOK	:	One (1) 667 Crosby McKissick 250 ton combination block hook Web Wilson. 250 ton Hydra hook Unit 5 - 36" sheaves.
WINCHES	:	One (1) Ingersol Rand HU-40 with 5/8" wireline. Capacity 2,000 lb. One (1) ANSI B30.7 with 3/8" wire capacity 4000lbs @ 70 fpm
SWIVEL	:	One (1) Oilwell PC-300 ton swivel
RIG LIGHTING	:	Explosive proof fluorescent. As per approved State Specifications.
KELLY DRIVE	:	One (1) 27 HDP Varco kelly drive bushing.
MUD PUMPS	:	Two (2) Gardner Denver mud pumps Model PZH-8 each driven by 750 HP EMD D-79 motors. 8" stroke with liner size 6" through to 5". 6" liner maximum pressure 2387 psi 5.1/2" liner maximum pressure 2841 psi 5" liner maximum pressure 3437 psi 6" liner maximum volume 412 gpm 5.1/2" liner maximum volume 345 gpm 5" liner maximum volume 280 gpm
MIXING PUMP	:	Two (2) Mission Magnum 5" x 6" x 14" centrifugal pump complete with 50 HP, 600 Volt, 60 Hz, 3 phase explosion proof electric motors.
MUD AGITATORS	:	Five (5) Geograph/Pioneer 40TD - 15" 'Pitbull' mud agitators with 15 HP, 60 Volt, 60 HZ, 3 phase electric motors.

- LINEAR MOTION SHALE SHAKERS : Two (2) DFE SCR-01 Linear motion shale shakers.
- DEGASSER : 48" Dia Poor Boy Degasser
- DESILTER : One (1) DFE - Harrisburg style 12 cone desilter 12 x 5" cones. Approximate output of 960 gpm. Driven by Mission Magnum 5" x 6" x 11" centrifugal pump complete with 50 hp 600 volt 60 Hz 3 phase explosion proof motor.
- GENERATORS : Four (4) Brown Boveri 600 volt, 600 Kw, 750 kva, 3 phase, 60 HZ AC generators. Powered by four (4) Cat 3412 PCTA diesel engines.
- BOP's & ACCUMULATOR : One (1) Wagner Model 20-160 3 BND 160 gallon accumulator consisting of:
Sixteen (16) 11 gallon bladder type bottles
One (1) 20 HP electric driven triplex pump 600 volts, 60 HZ, 3 phase motor and controls.
- BOP's & ACCUMULATOR (Cont'd) : One (1) Wagner Model A 60 auxiliary air pump 4.5 gals/minute.
One (1) Wagner Model UM2SCB5S mounted hydraulic control panel with five (5) 1" stainless steel fitted selector valves and two (2) stripping controls and pressure reducing valves.
Three (3) 4" hydraulic readout gauges:- one for annular pressure- one for accumulator pressure one for manifold pressure.
One (1) Stewart & Stevenson 5 station remote drillers control with air cable umbilical with three pressure gauges, increase and decrease control for annular pressure.
One (1) Shaffer 13.5/8" x 3,000 psi spherical annular BOP,
One (1) Shaffer 13.5/8" x 5,000 psi LWS studded, double gate autolock B.O.P.
- KELLY COCK (UPPER) : Two (2) Upper Kelly Cock 7.3/4" OD with 6.5/8" API connections (1 x M&M, 1 x Hydril).
- KELLY COCK (LOWER) : Three (3) M&M Lower Kelly Cocks 6.1/2" OD with 4" IF connections
- DRILL PIPE SAFETY VALVE : One (1) Hydril 6.1/2" stabbing valve (4" IF).
One (1) Gray inside BOP with 4.3/4" OD and 2.1/4" ID with 3.1/2" IF connections c/w releasing tool and thread protectors.
- AIR COMPRESSORS AND RECEIVERS : Two (2) LeRoi Dresser Model 660A air compressor packages c/w 10 HP motors rated at 600 Volts, 60 HZ, 3 phase. Receivers each 120 gallon capacity and fitted with relief valves.
- POWER TONGS : One (1) Farr 13.5/8" - 5.1/2" hydraulic casing tongs c/w hydraulic power pack and hoses and torque gauge assembly.
One (1) Foster hydraulic kelly spinner with 6.5/8" LH connection.
- TORQUE WRENCH : Yutani c/w drive sockets 1 1/8" through to 2 3/8"
- SPOOLS : One (1) set double studded adaptor flanges to mate 13.5/8" 5,000 psi. API BOP flange to following wellhead flange
13.5/8" x 3,000 series,
11" x 3,000 series,
11" x 5,000 series
7.1/16" x 3,000 series,
7.1/16" x 5,000 series
4 1/16" 5000 x 3 1/16" 5000
3 1/16" 5000 x 2 1/16" 5000

SPOOLS (Cont'd)	:	1 double studded adaptor flange 4 1/16" 5K x 3 1/16" 5K 1 double studded adaptor flange 3 1/16" 5K x 2 1/16" 5K 1 only 14" - BOP mud cross (drilling spool) 13.5/8" 5,000 x 13.5/8" 5,000 BX160. with 2 x 3 1/16" 5K outlets. 1 only BOP spacer spool 13 5/8" 3,000 x 13 5/8" 3,000 1 only BOP spacer .spool 11" 3,000 x 13.5/8" 5,000 .
ROTARY TABLE	:	One (1) Oilwell A 20.1/2" rotary table torque tube driven from drawworks complete with Varco MASTER bushings and Insert Bowls.
MUD TANKS	:	SHAKER Active No 1. 277 BBL Desilter 73 BBL Sand Trap 50 BBL Trip Tank 29 BBL Total <u>429 BBL</u> SUCTION Active No 2 174 BBL Pre-Mix 146 BBL Pill Tank 63 BBL Total <u>383 BBL</u>
TRIP TANK	:	Trip Tank <u>29 BBL</u> One (1) Mission Magnum 2" x 3" centrifugal pump complete with 20 HP, 600 Volts, 60 HZ, 3 phase explosion proof motors
KILL LINE VALVE	:	2 x 3 1/8" Cameron FL 5K gate valves
CHOKE LINE VALVES	:	1 x 4 1/16 Cameron FC 5K hydraulic operated gate valve 1 x 4 1/16 5K manual gate valve
CHOKE MANIFOLD	:	One (1) McEvoy choke and kill manifold 3" 5,000 psi with hydraulic Swaco "super" choke.
DRILL PIPE	:	240 joints (2270 m) - 3.1/2" 13.30lb/ft drill pipe Grade 'G' 105 with 3 1/2" IF conn
PUP JOINTS	:	One (1) - 10' (3.65 m) 3.1/2" OD Grade 'G' with 3.1/2" IF conn
HEVI-WATE DRILL PIPE	:	6 joints of 3.1/2" H.W.D.P. with 3.1/2" IF conn
DRILL COLLARS	:	12 x 6.1/2" OD drill collars (113 m) with 4" IF conn 24 x 4 3/4" O.D. drill collars (227 m) with 3.1/2" IF conn 1 x 4.3/4" OD Pony Drill Collar
KELLIES	:	Two (2) Square Kelly drive 4.1/4" x 40' complete with Scabbard and 55 ft x 3 1/2" kelly hose
FISHING TOOLS	:	One (1) only 8.1/8" Bowen series 150 FS overshot One (1) 5.3/4" SH Bowen 150 Overshot c/w grapples and packoffs to fish contractors downhole equipment. One (1) only Reverse circulating junk basket 4" IF box One (1) only 6.1/2" OD Griffith Fishing Jars One (1) only 4 3/4" O.D. Bowen Type "Z" Fishing Jar One (1) only Bumper Sub 6.1/2" OD 4" IF pin & box. One (1) 5" R.C.J.B. One (1) 5" Junk Sub with 4.3/4" OD x 1.1/2" ID.
WIRELINE SURVEY UNIT	:	Gearmatic hydraulic drive Model 5 c/w .092" line

SUBSTITUTES	<ul style="list-style-type: none"> : Two (2) Bit Sub - 7.5/8" reg x 6.5/8" reg double box. Two (2) Bit Subs - 6.5/8" reg double box. Two (2) Bit Sub - 6.5/8" reg box. x 4½" IF box Two (2) Bit Subs - 4.½" reg x 4" IF double box. Two (2) 4.3/4" bit subs (36" long) with 3.1/2" IF box x 3.1/2" reg box bored for float. One (1) Float Sub 6.5/8" reg box (FC) x 6.5/8" reg pin Two (2) XO Sub - 4" IF box x 4.½" IF pin. Two (2) XO Sub - 4½" IF box x 4." IF pin. One (1) XO Sub - 4.½" reg x 4" IF double pin. Two (2) XO Sub - 6.5/8" reg pin x 4" IF box. One (1) Junk Sub - 6.5/8" reg pin x 6.5/8" reg box One (1) Junk Sub - 4.½" reg box x 4.½" reg pin. One (1) XO Sub - 4.½" IF box x 4" IF box. Two (2) Kelly Saver Subs c/w rubber 4" IF pin & box. Two (2) Kelly Saver Subs 4" IF pin & box One (1) Kelly Saver Subs 4½" IF pin & box. Two (2) 4 IF box x 3.1/2" IF pin Saver Subs. One (1) Circulating Subs - 4" IF x 2" 1502 hammer union. One (1) Circulating Subs - 4" IF x 2" 602 hammer union. Eleven (11) Lifting Subs - 18" Taper 4.½" pick up neck and 4" IF pin. Eight (8) Lift Subs with 3.1/2" OD D.P. neck and 3.1/2" IF pin connections.
HANDLING TOOLS	<ul style="list-style-type: none"> : 2 only 4.½" BJ 250 ton 18 degree taper D/P elevators. 1 only 3.½" BJ 200 ton 18 degree taper D/P elevators. 1 only 3.1/2" BJ type MGG 18° centre latch Elevators. 1 only 4.½" Varco SDXL D/P slips. 1 only 4.½" Varco SDML D/P slips 2 only 8" - 6.½" DCS-R drill collar slips. 1 only 3.1/2" Varco SDML Slips 1 only 4.3/4" Varco DCS-S Drill Collar Slips
CASING RUNNING TOOLS	<ul style="list-style-type: none"> : 1 only 13.3/8" Webb Wilson 150 ton side door elevator. 1 only 13.3/8" single joint P.U. elevators. 1 only 9.5/8" Webb Wilson 150 ton side door elevators. 1 only 9.5/8 single joint P.U. elevator. 1 only 7" BJ 150 ton side door elevators. 1 only 7" single joint P.U. elevators. 1 only 5.½" BJ 200 ton S11 1 only 2.7/8" BJ 100 ton tubing elevator. 1 only 2.3/8" BJ 100 ton tubing elevator. (all P.U. elevators c/w slings & swivel) 1 only 13.3/8" Varco CMS-XL casing slips 1 only 9.5/8" Varco CMS-XL casing slips. 1 only 7" Varco CMS-XL casing slips. 1 only 3.1/2" Varco SDML tubing slips.
CASING / TUBING DRIFTS	<ul style="list-style-type: none"> : 9 5/8, 7", 5 ½", 3 ½"
THREAD PROTECTORS	<ul style="list-style-type: none"> : 9 5/8, 7".
KELLY SPINNER	<ul style="list-style-type: none"> : One (1) Foster hydraulic kelly spinner with 6.5/8" LH connection.
PIPE SPINNER	<ul style="list-style-type: none"> : One (1) International 850H hydraulic pipe spinner
WELDING EQUIPMENT	<ul style="list-style-type: none"> : 1 - Miller 400 amp welding machine. 1 - oxy acetylene set.
DOGHOUSE	<ul style="list-style-type: none"> : 1 Doghouse 5m x 2.4m x 2.3m
GENERATOR HOUSE	<ul style="list-style-type: none"> : Ross Hill SCR

- UTILITY HOUSE : 1 Utility and Mechanics House
- CATWALKS : 2 catwalks total 18.6m long x 1.6m wide x 1.08m high
- PIPE RACKS : 8 - 9m tumble racks.
- DAY FUEL TANK : 1 only 19,000 ltrs
- WATER/FUEL TANK : WATER 1 only 320 bbls.
1 only brake cooling tank 80 bbl
FUEL 1 only 27,500 litres
- OIL STORAGE : drums
- DRILLING RATE RECORDER : 1 only 6 pen Pioneer Geograph drill sentry recorder to record:
weight (D)
penetration (feet)
pump pressure (0-6,000 psi)
electric rotary torque
rotary speed (rpm)
pump spm (with selector switch)
- DEVIATION RECORDER : 1 set Totco 'Double Shot' deviation instrument 0□-8□.
- INSTRUMENTS & INDICATORS : 1 only Martin Decker Sealtite.
1 only Martin Decker Deadline type.
1 only drillers console including the following equipment.
Martin Decker Weight Indicator type'D'
Electric rotary torque gauge.
MD Totco Mud Watch Instrumentation c/w display and alarms.
Rotary rpm gauge
- MUD TESTING : 1 set Baroid mud testing laboratory (standard kit)
- RATHOLE DRILLER : One (1) fabricated rotary table chain driven.
- MUD SAVER : Okeh unit
- CELLAR PUMP : Cellar jet from No 1 pump
- WATER PUMP : Three (3) Mission Magnum 2" x 3" centrifugal pumps c/w 20 HP,
600 Volts, 60 HZ, 3 phase explosion proof motors
- FIRE EXTINGUISHERS : Dry Chemical Rig 22 Camp 20
CO2 Rig 3 Camp 0
Foam Rig 1 Camp 1
- PIPE BINS : 5 units
- CUP TESTER : Two (2) Grey Cup Tester c/w test cups for 9.5/8" & 13.3/8".
- DRILLING LINE : 5,000' 1.1/8" - E.I.P.S


TRANSPORT EQUIPMENT AND MOTOR VEHICLES

One (1) International 530 Forklift
One (1) Tray Top Utility
One (1) Crew Bus

CAMP EQUIPMENT

Four (4) x 8-Man Bunkhouses (12 man emergency)
One (1) x Recreation/Canteen unit
One (1) x Ablution/Laundry/Freezer unit
One (1) x Kitchen/Cooler/Diner unit
One (1) x Toolpushers unit
One (1) x Meeting / Smoko unit
One (1) x Combined Water/Fuel Tank unit
Two (2) x CAT 3304PC generator sets each 106 kVa, 86 KW, 50 HZ.

NOTE: At Contractor's discretion any of the foregoing items may be replaced by equipment of equivalent or greater capacity.


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ENCLOSURE I: 1 : 200 COMPOSITE LOG

PE605298

This is an enclosure indicator page.
The enclosure PE605298 is enclosed within the
container PE908040 at this location in this
document.

The enclosure PE605298 has the following characteristics:

ITEM_BARCODE = PE605298
CONTAINER_BARCODE = PE908040
NAME = Encl.1 Naylor-1 Composite Well Log
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = COMPOSITE_LOG
DESCRIPTION = Encl.1 Naylor-1 Composite Well Log,
Scale 1:200, W1318, PEP154. Enclosure 1
contained within "Naylor-1 Well
Completion Report" [PE908040].
REMARKS =
DATE_WRITTEN = 27-NOV-2001
DATE_PROCESSED =
DATE_RECEIVED = 30-NOV-2001
RECEIVED_FROM = Santos Ltd
WELL_NAME = Naylor-1
CONTRACTOR =
AUTHOR =
ORIGINATOR = Santos Ltd
TOP_DEPTH =
BOTTOM_DEPTH =
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE II: 1 : 500 MUDLOG

PE605299

This is an enclosure indicator page.
The enclosure PE605299 is enclosed within the
container PE908040 at this location in this
document.

The enclosure PE605299 has the following characteristics:

ITEM_BARCODE = PE605299
CONTAINER_BARCODE = PE908040
NAME = Encl.2 Naylor-1 Mud Log
BASIN = OTWAY
ONSHORE? = Y
DATA_TYPE = WELL
DATA_SUB_TYPE = MUD_LOG
DESCRIPTION = Encl.2 Naylor-1 Mud Log, Scale 1:500,
by Geoservices Logging, for Santos Ltd,
W1318, PEP154. Enclosure 2 contained
within "Naylor-1 Well Completion
Report" [PE908040]
REMARKS =
DATE_WRITTEN =
DATE_PROCESSED =
DATE_RECEIVED = 30-NOV-2001
RECEIVED_FROM = Santos Ltd
WELL_NAME = Naylor-1
CONTRACTOR = Santos Ltd
AUTHOR =
ORIGINATOR = Santos Ltd
TOP_DEPTH = 0
BOTTOM_DEPTH = 2225
ROW_CREATED_BY = DN07_SW

(Inserted by DNRE - Vic Govt Mines Dept)


908040 112

ENCLOSURE III: STRUCTURE MAPS