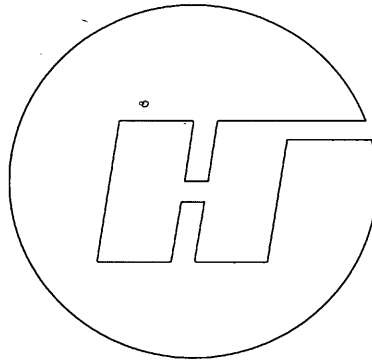


915173 001

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Patron Development

27 JAN 2005

HALLIBURTON

Sperry-Sun



SURFACE DATA LOGGING

END OF WELL REPORT

SANTOS LTD.

Martha-1

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915173 003

1.0 INTRODUCTION

A Sperry Sun Drilling Services INSITE (Integrated System for Information Technology and Engineering) mud logging unit was contracted to Santos Limited for the drilling of the Martha-1 vertical exploration well. The unit included a logging network, which gathered, processed and stored data whilst also providing real time and additional processed data capabilities.

The Diamond Offshore Ocean Patriot offshore drilling rig was used to drill the well in permit VIC-P-44.

Full surface data logging commenced from the spud, at 23:00 hrs on the 20th of October 2004, and continued for the duration of the well. The well reached a total depth of 1800.0 mMDRT at 22:30 hrs on the 29th October 2004. The well was subsequently plugged and abandoned on the 2nd of November 2004, after running electric logs.

This report is intended as a summary of the information and data collected, processed and monitored as part of the INSITE service agreement.

DATA ENGINEERS

Gary Bloom
Doug Wilson
Keith Ratnam

LOGGING ENGINEERS

Liam Clarke
David Hartney

SAMPLE CATCHERS

Adam Matuzelis
Richard Snow

2.0 WELL DATA SHEET**915173 004**

Well Name:	Martha - 1		
Permit:	VIC-P-44		
Operator:	Santos Ltd		
Drilling Rig:	Ocean Patriot		
Contractor:	Diamond Offshore		
Location:	Lat:	38° 37' 24.33" S	
	Long:	148° 42' 05.02" E	
	UTM Easting:	648 109.28	
	UTM Northing:	5 723 638.23	
RT to MSL	21.5 m		
Water Depth	54.66 m		
Hole Sizes:	1	914 mm (36") to	122.5 m
	2	445 mm (17 1/2") to	628. m
	3	311 mm (12 1/4") to	1262. m
	4	311 mm (12 1/4") to	1800 m
Casing Shoes:	1	762 x 508 mm (30" x 20") set at 120.0 m	
	2	508 x 340 mm (20" x 13 3/8") set at 620.8 m	
Date Rig on Contract:	17 th October 2004, 13:00 hrs		
Date Rig on Location:	20 th October 2004, 02:30 hrs		
Spud Date:	20 th October 2004, 23:00 hrs		
Date Reached TD:	29 th October 2004, 22:30 hrs		
Date Rig Released:	NA		
T.D. (Measured Depth, Drillers)	1800 mMDRT		
T.D. (True Vertical Depth)	1799 mTVDRT		
Well Status	P & A		

915173 005

3.0 SYNOPSIS

3.1 OPERATIONAL SUMMARY

3.1.1 914 mm (36") Hole

914 mm Hole Drilled from 76.16 mMDRT to 122.5 mMDRT

762 mm Casing set at 120.0 mMDRT

BITS USED: 1

The run included a 914 mm (36") hole opener run in conjunction with a Smith MSDS SHC 660 mm (26") bit, dressed with 2 x 22, 1 X 21 and 1 x 20 nozzles. This bit assembly was run with a conventional rotary drilling assembly and drilled from 76.16 mMDRT to section TD of 122.5 mMDRT. The section was drilled using seawater combined with and gel sweeps.

The 762 x 508 mm (30" x 20") conductor was set at 120.0 mMDRT.

BIT RUN	DEPTH IN m	MADE (m)	TRIP GAS %	REASON FOR TRIP	DRILLING FLUID
1	76.16	122.5	NA	Section TD	Sea-Water/Hi-vis Sweeps

PROBLEMS ON TRIPS

There were no problems on the trips.

WIRELINE PROGRAM

No wire line logs were run over this section

915173 006

3.1.2 445 mm (17½") Hole**445 mm Hole Drilled from 122.5 mMDRT to 628.0 mMDRT****340 mm Casing Set at 620.76 mMDRT****BITS USED: 1**

This run included a Smith XRTC bit, dressed with 3 x 22, 1 x 20 nozzles. This bit was run with a conventional rotary drilling assembly and drilled from 122.5 mMDRT to 628.0 mMDRT. The cement in the 762 x 508 mm (30" x 20") casing was tagged at 114.5 mMDRT. After washing/drilling 5.5 m of cement, the shoe was drilled at 120.0 mMDRT. Drilling continued to the hole section TD of 628.0 mMDRT with seawater combined with 40 bbls guar gum sweeps. Prior to POOH, a single shot survey (0°) was taken and an 800bbls Hi-vis sweep was pumped.

The 508 x 340 mm (20" x 13³/₈") casing was set at 620.8 mMDRT.

BIT RUN	DEPTH IN M	MADE (m)	TRIPGAS %	REASON FOR TRIP	DRILLING FLUID
2	122.5	628.0	N/A	Section TD	Sea-Water/Hi-vis Sweeps

PROBLEMS ON TRIPS

There were no problems on the trips.

WIRELINE PROGRAM

No wire line logs were run over this section.

3.1.3 311 mm (12 1/4") Hole

915173 007

311 mm Hole Drilled from 628.0 mMDRT to 1800.0 mMDRT

No. BITS USED: 2

This run included a Reed TCI TD43HKPRDH bit, dressed with 3 x 20 nozzles and was drilled with a conventional rotary drilling assembly and Sperry Sun MWD/FEWD/PWD tools. The cement in the 508 x 340 mm (20" x 13^{3/8}") casing was tagged at 570.0 mMDRT. After drilling 3 m of new formation from 628.0.0 mMDRT to 631.0.0 mMDRT, the well was displaced to 1.07 sg (8.9 ppg) KCL Polymer mud and a Leak Off Test was performed (EMW = 2.60 sg = 21.6 ppg) using 1.07 sg (8.9 ppg) KCL Polymer mud. The first presence of methane gas was encountered at 931 m MDRT. The first presence of CO2 was encountered at 939 m MDRT. A carbide lag check at 1003 m MDRT showed 264 bbls excess in open hole. The calculated average open hole size was 384 mm (15.1"). At 1262 mMDRT, bit # 3 & BHA 3 were pulled to replace the bit as per drilling program after the last pyrite formations were encountered. The MWD tool was downloaded after bit # 3 & BHA # 3 reached surface. A PDC bit # 4, Hycalog DSX104HGW, dressed with 5 x 14 nozzles was picked up and MWD FEWD was changed out. This assembly was tripped in the hole to 1262 m MDRT. Carbide lag check at 1292 m MDRT showed 305 bbls excess in open hole and a calculated average open hole size of 385 mm (15.15") (8200 strokes bottoms up versus 5210 strokes bottoms up calculated at 1292 m MDRT). This section was drilled to 1800 m MDRT, well Total Depth at 22:30 hours 29th October, 2004.

BIT RUN	DEPTH IN M	MADE (m)	TRIP GAS %	REASON FOR TRIP	DRILLING FLUID
3	628.0	634	6.88	Bit Change	KCL Polymer

BIT RUN	DEPTH IN M	MADE (m)	TRIP GAS %	REASON FOR TRIP	DRILLING FLUID
4	1262	538	N/A	Well TD	KCL Polymer

PROBLEMS ON TRIPS

The trip for bit # 4 at 1262 m MDRT encountered overpulls at 1170 - 1110 m MDRT (20- 40 klbs). Pipe displacement on this trip was 31 bbls excess volume to hole over calculated displacement. Made up bit # 4 PDC Hycalog DSX104HGW, trip in hole, hit obstruction at 898m MDRT, washed and reamed through, continued TIH to 1131 m MDRT, washed and reamed to bottom. The trip out of hole with bit #4 at 1800 m MDRT (well total depth) for electric Wireline logs showed overpulls at 1800 – 1355 m, 1355 – 1263 m, 1150 – 1144 m

and 931 – 904 m MDRT which required washing and reaming. Wireline logs stopped at 1466 m MDRT. Pulled out with Wireline logs. Tripped in hole with bit # 3 without MWD tools for wiper trip. Hit obstruction at 1121m MDRT (took 50 kbs wt). Washed through. Continued to run in hole and hit obstructions at 1266m, 1464m, 1507m, 1631m and 1715m, washed through all. Circulated bottoms up and tripped out of hole. Run elogs without problems.

WIRELINE PROGRAM

Wireline logging program as follows:

Run # 1 - Grand Slam

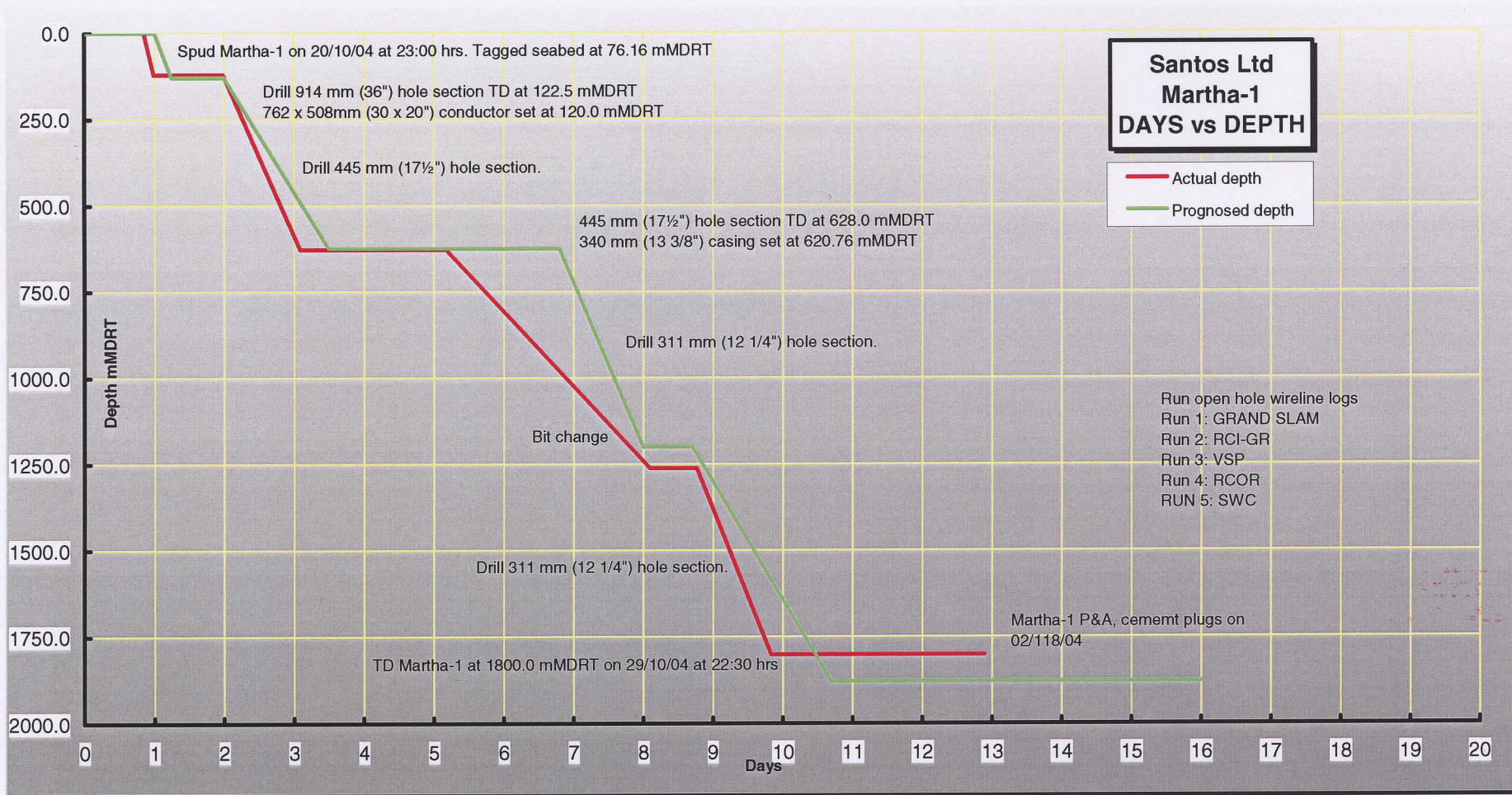
Run # 2 - RCI- GR

Run # 3 - SLR (VSP)

Run # 4 - RCOR

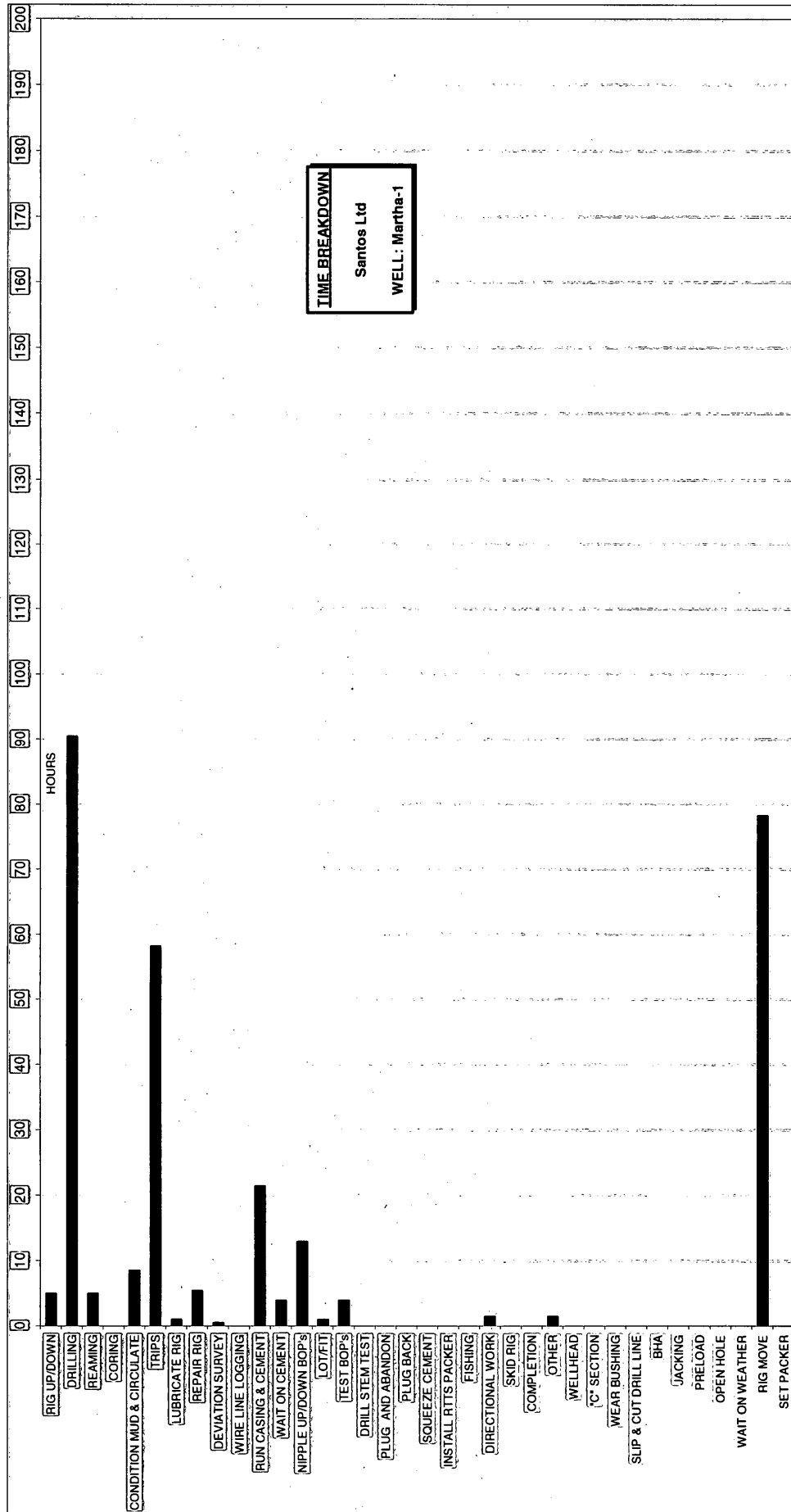
Run # 5 - SWC

3.2 DAYS VS DEPTH



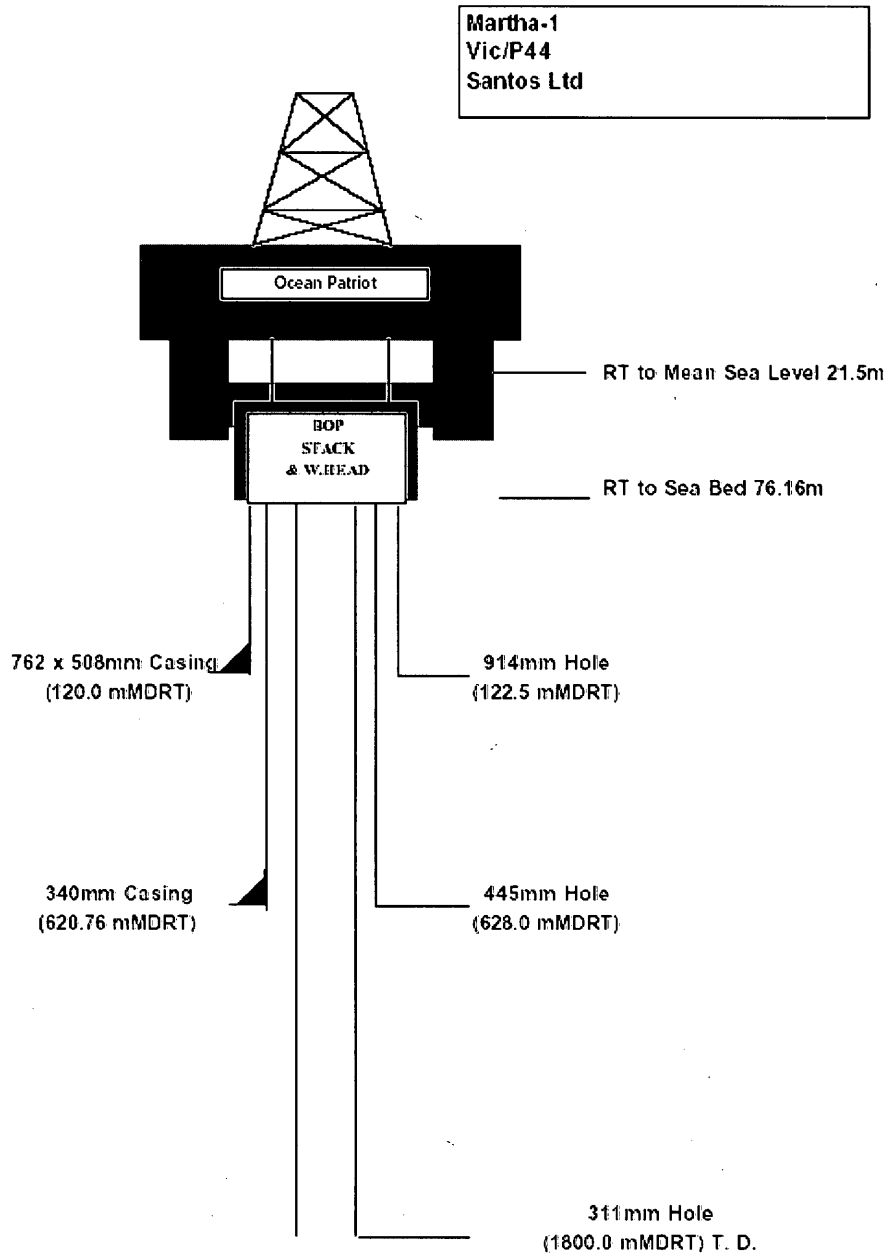
915173 009

3.3 TIME BREAKDOWN



915173 011

3.4 WELL PROFILE



4.0 LOGGING SERVICES SUPPLIED**915173 012****4.1 GEOLOGICAL MONITORING****EQUIPMENT**

Autocalcimeter

Canon Bubble Jet Printer

Company Workstation

Database PC (ADI)

Draw works Depth Encoder

FID Chromatograph

FID Total Gas Detector

Floating Gas Trap

Flow Out Paddle

H2S detectors (x4)

Hookload and WOB

HP Design jet Printer

Hydrometers

INSITE IRIS Data acquisition PC

Mud Density In/Out

Mud Temperature In/Out

Pit Volume Sensors (x7)

Pressure Sensors (x4)

Printrex Printer

Proximity Sensor

Pump Stroke Counters (x3)

Rig Floor Monitor (x2)

Standard Fluoroscope

Standard Stereo Microscope

Workstation PC

4.2 SERVICES PROVIDED

Data files in .pdf, ASCII (LAS) format
Formation Evaluation
Geological and Engineering Reporting
Hydraulics Analysis using Planit
Interpreted Lithology
Plots of daily drilling activities
Real Time Drilling Monitoring
Real Time Log Display of MWD/LWD data
Real Time monitoring of drilling fluids
Real Time Tabular Display of Data
Real Time Trip Monitoring
Real Time Display of Data
Sample Collection and Processing
Timers for Hours and Revolutions on drilling assembly

4.3 MONITORED PARAMETERS

Block Position
Choke Pressure
Continuous Gas Percentage in Air
Depth
Flow Out
Gas Analysis (C1-C5)
H2S Gas
Hookload
Hydrocarbon Shows
Formation Lithology
Mud Density In and Out
Mud Temperature In and Out
Mud Volume
LWD data
On/Off Bottom status
Pump Stroke and Volume of Mud Pumped
Rate of Penetration
Revolutions per Minute of Top Drive
Stand Pipe Pressure
Swab\Surge Calculation
Torque and Vibration

915173 014

Weight on Bit including Drag and Obstructions

Well Volumes and Lag Calculations

4.4 PERSONNEL

INSITE engineers continuously monitored all operations and maintained the database during the drilling of Martha-1. They also provided any well and drilling data upon request, notified the appropriate personnel of any irregularities or anticipated problems, provided daily reports, print outs of data and prepared master logs and final reports.

4.5 SAMPLE COLLECTION

One extra large bag (800 g) of water-washed cuttings was collected for each interval sampled. A small portion of washed sample was placed into Samplex trays (3 sets) and the remainder air-dried and split into four sets.

The splits were distributed to Santos Ltd (2 x 100g), Victorian DPI (1 x 200g) and Geoscience Australia (1 x 200g).

The two sets of Samplex Trays were distributed to Santos Ltd (x2) and Mitsui (x1).

Mud (filtrate) samples were sent to Santos Ltd.

Reservoir cores were not collected.

Sidewall cores/Rotary SWC's were at various depths and hand carried by the Wellsite Geologist to Santos Ltd.

Palynology samples were collected at depths designated by the Wellsite Geologist and Air expressed to Jack Bates

4.6 SAMPLE DISTRIBUTION

Washed and Dried Samples (4 sets)

Set 1: Washed/Dried Splits

Victorian DPI

Attn: Graeme Torr (03) 9658 4545

DPI Core Library

South Road

Werribee, Victoria 3030

Set 2: Washed/Dried Splits

Geoscience Australia (GA)

Attn: Manager Geoscience Australia Data Repositories

Core and Cuttings Repository

Cnr Jerrabomberra Ave & Hindmarsh Dr
Symonston ACT 2609

915173 015

Set 3: Washed/Dried Splits

Santos Ltd

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

Set 4: Washed/Dried Splits

Santos Ltd

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

Samplex Trays (3 Sets)

Set 2 & Set 3: Samplex Trays (x 2)

Santos Ltd

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

Set 1: Samplex Trays

Mitsui

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

915173 016

Mud Samples

Various Mud and Filtrate

Santos Ltd

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

Sidewall cores/Rotary SWC's

Santos Ltd

Attn: Core Librarian

Ascot Transport

30 Francis Street

Port Adelaide, SA 5015

Palynology Samples

Santos Ltd

Hot Shot via helicopter directly to Palynology Unit on the Jack Bates.

5.0 GEOLOGY AND SHOWS

915173 017

5.1 INTRODUCTION

Sampling of drilled cuttings by Sperry-Sun commenced in the 311 mm (12 ¼") hole section, from 628.0 mMDRT until the total well depth of 1800.0 mMDRT. Spot sample collection for quick inspection, as well as a change in the programmed sampling frequency depended on the rate of penetration and were at the discretion of the Wellsite Geologist.

Samples of washed, air-dried cuttings were collected over the following intervals:

Martha-1	
SAMPLE DEPTH mMDRT	SAMPLE FREQUENCY Metres
631.0 – 690.0	5
690.0 – 715.0	25 – Shaker run over
715.0 – 1262.0	5
1262.0 – 1620.0	3
1620.0 – 1800.0	5

Cuttings were logged on site by Sperry Sun geologists using a binocular microscope. An ultraviolet light box was used to inspect the fluorescence of cuttings.

Gas was monitored by a Total Hydrocarbon Gas detector (Flame Ionisation Detector – F.I.D), calibrated such that 50 API units, or 10,000 parts per million (ppm) is equivalent to 1% methane gas in air. An on-line F.I.D gas chromatograph recorded the gas breakdown, calibrated to analyse C1, C2, C3, isotopic C4, normal C4 alkanes, neo C5, isotopic C5 and normal C5. Regular gas system checks were performed to ensure the correct functioning of the gas detection and measurement system.

Below is a brief explanation to the use of different gas ratios in the enclosed Gas Ratio Plot. C1 Ratios (C1/C2, C1/C3, C1/C4). These display the fraction of each component compared to the fraction of C1. The ratios generally decrease with depth as more mature sediments are encountered. Mature source rocks and hydrocarbon reservoirs show low ratios. Gas Wetness Ratio (GWR): $C_2+C_3+C_4/C_1 \times 100$. The GWR gives an indication of maturity. It will generally increase with depth as the C1 fraction will represent a smaller part of the total light HC.

Light to Heavy ratio (LHR): $C_1+C_2/C_3+C_4 \times 100$. The LHR is expected to decrease with depth.

Oil Character qualifier (OQC): C_4/C_3 . Under some circumstances high amounts of C1 will mask the presence of oil. GWR and LHR could then be misinterpreted. In the presence of oil, C4 will increase relative to C3, and the OQC would increase.

Average Carbon Number (ACN): $[C_1 + (2 \times C_2) + (3 \times C_3) + (4 \times C_4)] / (C_1 + C_2 + C_3 + C_4)$.

915173 018

5.2 LITHOLOGICAL SUMMARY FOR MARTHA-1

Following is a tabulated lithological summary of Martha-1. The intervals have been determined on the basis of cuttings lithology and drilling parameters and are consistent with those delineated by the Wellsite Geologist.

Interpretative Depth 74.5 to 490.0 mMDRT		Lithology ARGILLACEOUS CALCILUTITE with minor CALCARENITE and ARGILLACEOUS CALCISILTITE.	
ROP. (metre/hour)	Drilling Parameters (Avg)	Maximum Formation Gas: 0.31%	Average Formation Gas: 0.09%
Min. 11.4 Max. 343.5 Avg. 82.0	WOB : 7.9 MT RPM(surf): 140 RPM(mot): N/A TRQ: 4046 nM	Chromatograph Analysis: C ₁ : 2794 ppm C ₂ : 20 ppm C ₃ : 6 ppm iC ₄ : 3 ppm nC ₄ : 4 ppm neoC ₅ : 0 ppm iC ₅ : 0 ppm nC ₅ : 0 ppm	Chromatograph Analysis: C ₁ : 1026 ppm C ₂ : 6 ppm C ₃ : 3 ppm iC ₄ : 1 ppm nC ₄ : 1 ppm neoC ₅ : 0 ppm iC ₅ : 0 ppm nC ₅ : 0 ppm
<p>ARGILLACEOUS CALCILUTITE (90 - 100%) : white - very light grey, occasionally bluish white - pale bluish grey, very soft - soft, amorphous, 60-70% micrite, 20-30% argillaceous matrix, weakly cemented with micritic cement, trace - occasional Fossil Fragments (Spicules, Bryozoa), trace nodular pyrite, trace glauconite, trace lithic, grading in part to CLAYSTONE.</p> <p>ARGILLACEOUS CALCARENITE (0 - 10%) : off white - very light grey, occasionally colourless - medium grey, firm - moderately hard, microcrystalline, 50-60% micrite, 30-40% argillaceous matrix, well cemented, specks, sucrosic, argillaceous, occasionally - common Fossil Fragments (Spicules, Bryozoa, Forams), trace carbonaceous specks, trace nodular pyrite, tr glauconite.</p> <p>ARGILLACEOUS CALCISILTITE (10 - 30%) : medium light grey - medium dark grey, occasionally medium olive grey, soft - firm, occasionally moderately hard, crumbly - splintery, 10-20% argillaceous matrix, weakly - moderately cemented, sucrosic, trace carbonaceous specks, grading to argillaceous CALCILUTITE.</p>			

915173 019

Interpretative Depth 490.0 – 555.0 mMDRT		Lithology MARL grading into CALCILUTITE, CALCAREOUS CLAYSTONE and SILTSTONE.	
ROP. (metre/hour)	Drilling Parameters (Avg)	Maximum Formation Gas: 0.49%	Average Formation Gas: 0.31%
Min. 12.8 Max. 161.2 Avg. 42.7	WOB : 4.9 MT RPM(surf): 140 RPM(mot): N/A TRQ: 4049 nM	Chromatograph Analysis: C ₁ : 5149 ppm C ₂ : 40 ppm C ₃ : 9 ppm iC ₄ : 3 ppm nC ₄ : 2 ppm neoC ₅ : 0 ppm iC ₅ : 4 ppm nC ₅ : 6 ppm	Chromatograph Analysis: C ₁ : 3278 ppm C ₂ : 24 ppm C ₃ : 4 ppm iC ₄ : 1 ppm nC ₄ : 1 ppm neoC ₅ : 0 ppm iC ₅ : 1 ppm nC ₅ : 2 ppm
<p>MARL (10 - 30%) : white - very light grey, occasionally light bluish grey, very soft - soft, dispersive - amorphous, 10-15% argillaceous matrix, weakly cemented, trace carbonaceous specks, trace nodular pyrite, trace very fine - fine disseminated glauconite.</p> <p>ARGILLACEOUS CALCILUTITE (10 - 40%) : light grey - light olive grey, soft, amorphous, 60-70% micrite, 30-40% argillaceous matrix, weakly - moderate cementation with micritic cement, sticky, occasionally sucrosic, occasionally carbonaceous specks, trace - rare Fossil Fragments (Forams, Bryozoa), trace nodular pyrite, grading to MARL.</p> <p>SILTSTONE (40 - 90%) : medium - dark yellowish brown, soft - firm, argillaceous, with 5-10% very fine quartz sand, trace - 5% glauconite, grading to SANDSTONE.</p>			

915173 020

Interpretative Depth 555.0 to 583.0 mMDRT		Lithology ARGILLACEOUS SILTSTONE grading into SANDSTONE, with CALCAREOUS CLAYSTONE and GREENSAND.	
ROP. (metre/hour)	Drilling Parameters (Avg)	Maximum Formation Gas: 1.64%	Average Formation Gas: 0.85%
Min. 4.5 Max. 35.7 Avg. 20.0	WOB : 1.2 MT RPM(surf): 144 RPM(mot): N/A TRQ: 2309 nM	Chromatograph Analysis: C ₁ : 18184 ppm C ₂ : 178 ppm C ₃ : 23 ppm iC ₄ : 6 ppm nC ₄ : 4 ppm neoC ₅ : 0 ppm iC ₅ : 5 ppm nC ₅ : 3 ppm	Chromatograph Analysis: C ₁ : 8741 ppm C ₂ : 74 ppm C ₃ : 8 ppm iC ₄ : 1 ppm nC ₄ : 1 ppm neoC ₅ : 0 ppm iC ₅ : 1 ppm nC ₅ : 1 ppm
<p>CLAYSTONE (0 - 20%) : light - medium greyish brown, light brownish yellow, trace light greenish grey, soft - firm, hard in part, amorphous - blocky, rare - abundant silt - fine sand grading to SILTY CLAYSTONE, trace fine glauconite, trace nodular pyrite.</p> <p>SILTSTONE (40 - 90%) : medium - dark yellowish brown, soft - firm, argillaceous, with 5-10% very fine quartz sand, trace - 5% glauconite, grading to SANDSTONE.</p> <p>SANDSTONE (10 - 50%) : medium yellowish brown, firm, occasionally soft, friable, very fine, sub angular – sub round, moderately well sorted, with 5-10% clay matrix, nil to poor inferred porosity, SHOWS: 10-20% (60% @ 571m), dull yellow natural fluorescence, slow blue - white cut fluorescence (instantaneous blue - white cut @571m) , solid - patchy blue - white residue ring.</p>			

Interpretative Depth 583.0 to 600.0 mMDRT		Lithology QUARTZ SANDSTONE with trace SILTSTONE.	
ROP. (metre/hour)	Drilling Parameters (Avg)	Maximum Formation Gas: 0.61%	Average Formation Gas: 0.32%
Min. 13.0 Max. 43.1 Avg. 22.2	WOB : 1.8 MT RPM(surf): 138 RPM(mot): N/A TRQ: 2340 nM	Chromatograph Analysis: C ₁ : 8371 ppm C ₂ : 68 ppm C ₃ : 10 ppm iC ₄ : 3 ppm nC ₄ : 2 ppm neoC ₅ : 0 ppm iC ₅ : 1 ppm nC ₅ : 3 ppm	Chromatograph Analysis: C ₁ : 3588 ppm C ₂ : 26 ppm C ₃ : 4 ppm iC ₄ : 1 ppm nC ₄ : 0 ppm neoC ₅ : 0 ppm iC ₅ : 0 ppm nC ₅ : 0 ppm
<p>SANDSTONE (50 - 80%) : colourless - milky, occasionally pale grey, predominately loose quartz grains, fine - course, predominately course grains, angular – sub-round, anhedral, moderately poorly sorted, weakly - non cemented, moderate calcareous, rare - trace medium - fine dark green, rare - trace calcareous, trace Fossil Fragments, grading in part to SILTSTONE, poor inferred porosity, NO SHOWS.</p> <p>SILTSTONE (20 - 50%): medium - dark yellowish brown, soft - firm, argillaceous, 5-10% very fine quartz sand, trace - 5% glauconite, grading to SANDSTONE.</p>			

915173 021

Interpretative Depth 600.0 to 660.0 mMDRT		Lithology QUARTZ SANDSTONE and CLAYSTONE.	
ROP. (metre/hour)	Drilling Parameters (Avg)	Maximum Formation Gas: 0.25%	Average Formation Gas: 0.11%
Min. 6.9 Max. 122.6 Avg. 46.7	WOB : 6.5 MT RPM(surf): 138 RPM(mot): N/A TRQ: 4998 nM	Chromatograph Analysis: C ₁ : 2636 ppm C ₂ : 24 ppm C ₃ : 11 ppm iC ₄ : 5 ppm nC ₄ : 7 ppm neoC ₅ : 0 ppm iC ₅ : 4 ppm nC ₅ : 9 ppm	Chromatograph Analysis: C ₁ : 1460 ppm C ₂ : 8 ppm C ₃ : 3 ppm iC ₄ : 1 ppm nC ₄ : 1 ppm neoC ₅ : 0 ppm iC ₅ : 1 ppm nC ₅ : 1 ppm
<p>SANDSTONE (60 – 90%) : colourless - frosted, translucent, white - pale grey, predominately loose quartz grains, firm - hard aggregates in part, fine - coarse, predominately coarse, angular – sub round, anhedral, moderately poorly sorted, weakly to non cemented, trace - 20% argillaceous matrix, trace calcareous cement, rare - trace medium - fine dark green glauconite, rare - trace calcareous, trace coal, trace nodular pyrite, poor - very good inferred porosity, NO SHOWS.</p> <p>CLAYSTONE (10 – 40%) : white - very light grey, soft, dispersive, trace - 5% silt – very fine sand, grading to SILTSTONE in part.</p>			

915173 022

6.0 CASING SUMMARY

Casing Type	Shoe Depth m
762 x 508mm (30" x 20") Casing X52, 459.8 kg/m, 4 joints, 46.0 m	120.0
340mm (13 3/8") Casing L-80, 101.2 kg/m, 37 joints, 547.3 m	620.8

7.0 MUD RECORD

Customer: Santos Ltd
Well: Martha-1
Area: Gippsland Basin
Lease: Vic/P44
Rig: Ocean Patriot
Mud
Company: MI

Date	Depth mMD	Type	Weight ppg	Vis sec	PV cp	YP	Gels 10 sec/min	API Filtrate cc	Cake API	Sol %	Glycol %	Water %	Oil %	pH	Chlorides mg/l	Comments
25-Oct-04	628.0	KCL Polymer Mud	8.9	45	11	11	3/3/4	9.2	1.0	1	3	99		9.5	37500	Glydril
26-Oct-04	870.0	KCL Polymer Mud	9	47	15	18	6/8/9	7.6	1	1	3	99		9.4	38000	Glydril
27-Oct-04	1193.0	KCL Polymer Mud	9.0	42	11	20	9/10/12	14.4	1.0	2.0	0.0	98.0	0.0	8.0	14000	Glydril
28-Oct-04	1310.0	KCL Polymer Mud	9.7	39	13	20	9/10/12	15	1.0	7.0	0.0	93.0	0.0	8.1	16000	Glydril
29-Oct-04	1800.0	KCL Polymer Mud	10.3	44	16	16	9/14/18	9.2	1.0	10.0	3.4	90.0	0.0	8.0	35000	Glydril

915173 023

8.0 BIT RECORD

OPERATOR: Santos Ltd		WELL : Martha-1										RIG : Ocean Patriot											
PUMP 1 : 152 x 305 mm		PUMP 2 : 152 x 305 mm										PUMP 3 : 152 x 305 mm											
Bit Size (mm)	BIT #	MAKE/TYPE	TFA (in ²)	JETS	DEPTH IN (mMDRT)	Metres Drilled	Eff Hrs On Btm	AV ROP (m/hr)	IADC hrs	WOB (kibs)	RPM	KREV	SPP (psi)	GPM (gpm)	TRQ (kftlbs)	IADC BIT GRADING							
914	1	Smith MSDS SHC	1.39	2x22, 1x21, 1x20	76.2	46.3	3.0	25.5	3.0	4.5	81	26.0	413	1035	3.1								
445	2	Smith XRTC	1.42	3x22, 1x20	122.5	505.5	20.0	25.4	20.0	13	150	252.0	2013	1100	4.1	1	1	WT	A	E	I	NO	TD
311	3	Reed TCI TD43HKPRDH	0.92	3x20	628.0	634.0	34.0	18.6	39.0	15	115	370.0	2400	900	4.2	1	1	WT	A	O	I	NO	RM
311	4	Hycalog DSX104HGW	0.75	5x14	1262.0	538.0	20.7	26.0	23.5	10	140	236.0	3300	815	8.5	2	3	BT	S	H	F	I	WT

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9.0 HYDRAULICS RECORD

OPERATOR : Santos Ltd		WELL : Martha-1											
152 x305 mm (6.0x12"), 0.0162 PUMP 1 : m3/stk (0.102 bbl/stk)		152 x305 mm (6.0x12"), 0.0162 PUMP 2 : m3/stk (0.102 bbl/stk)		152 x305 mm (6.0x12"), 0.0162 m3/stk (0.102 PUMP 3 : bbl/stk)									
Bit Size (mm)	BIT #	MAKE/TYPE	DEPTH IN (mMDRT)	TFA (mm ²)	JETS	SPP (psi)	Flow In (gpm)	Jet Imp (HP/in ²)	Jet Vel (m/s)	PRESS LOSS (psi)		ECD bit (sg)	% P Loss @ Bit
										Annulus	String		
914	1	Smith MSDS SHC	76.5	1.39	2x22, 1x21, 1x20	1308	1100	0.61	77.0	1	1307	1.05	38.0
445	2	Smith XRTC	122.5	1.42	3x22, 1x20	2094	1100	1.31	76.0	1	2093	1.08	23.0
311	3	Reed TCI TD43HKPRDH	628.0	0.92	3x20	2359	900	3.53	95.0	51	2308	1.11	34.0
311	4	Hycalog DSX104HGW	1262.0	0.75	5x14	3307	815	4.56	106.0	63	3246	1.27	34.0

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Martha-1

Sperry Sun Drilling Services