# SANTOS – INPEX

## COMPILED FOR

## SANTOS LIMITED

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

# HILL-1

# BASIC DATA REPORT

**PREPARED BY:**
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**(Consultant)**
**March 2004**

# HILL-1
# BASIC DATA REPORT

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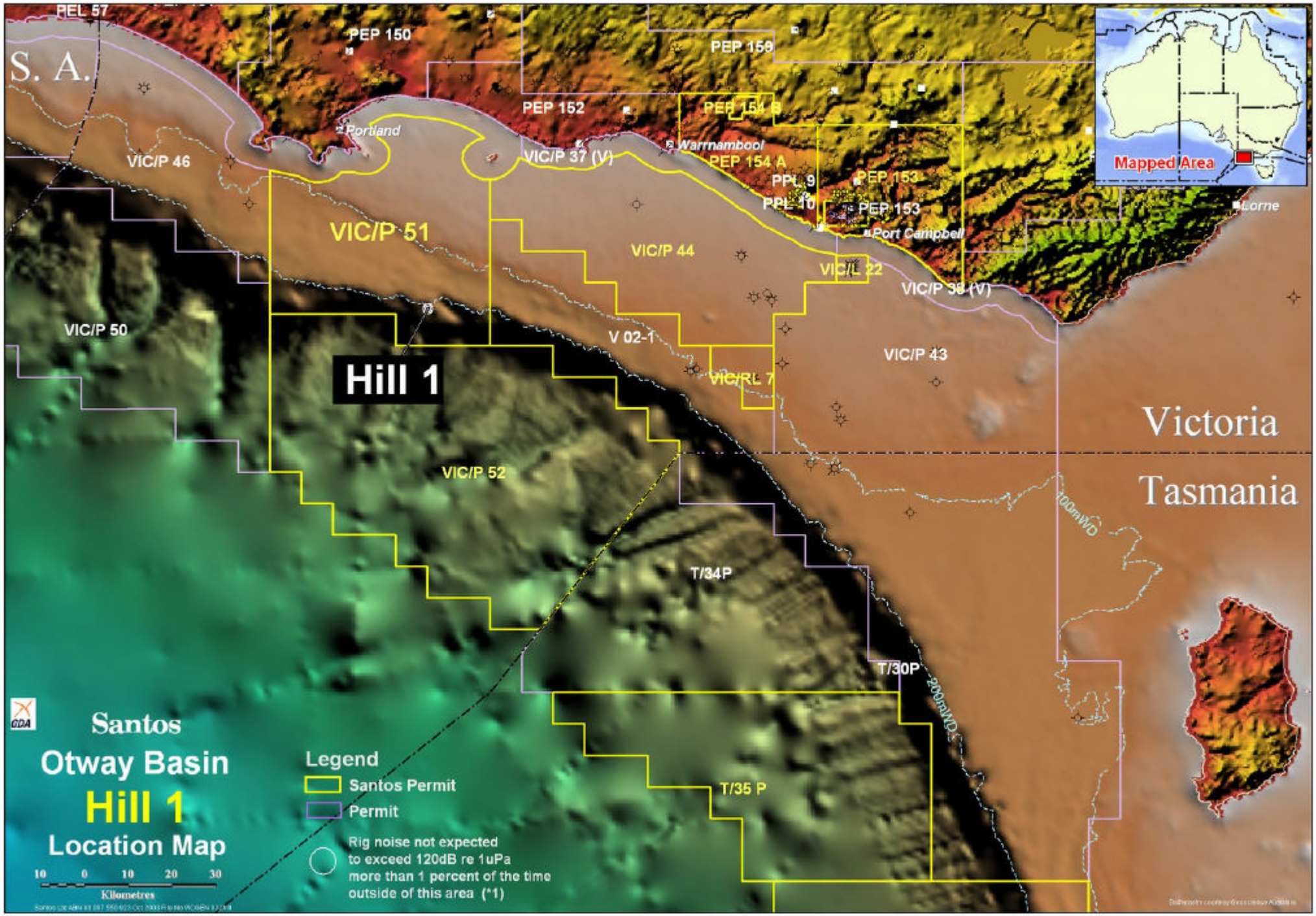
# LOCATION MAP


REL 57
PEP 150
S. A.
PEP 159
PEP 152
PEP 154 B
Portland
Warrnambool
VIC/P 46
VIC/P 37 (V)
PEP 154 A
PPL 9
PEP 153
PPL 10
PEP 153
Port Campbell
Lorne
Mapped Area
VIC/P 51
VIC/P 44
VIC/L 22
VIC/P 38 (V)
VIC/P 50
V 02-1
Hill 1
VIC/RL 7
VIC/P 43
Victoria
VIC/P 52
Tasmania
100mWD
T/34P
T/30P
200mWD
T/35 P
GDA
Santos
Otway Basin
Hill 1
Location Map
10 0 10 20 30
Kilometres
Legend
Santos Permit
Permit
Rig noise not expected
to exceed 120dB re 1uPa
more than 1 percent of the time
outside of this area (*1)

# GENERAL DATA CARD

| | | |
|---|---|---|
| **WELL: HILL-1** | **WELL CATEGORY:** OFFSHORE OIL/GAS EXP | **SPUD:** 08-12-03 **TD REACHED:** 20-12-03 |
| | **WELL INTENT:** OIL/GAS | **RIG RELEASED**: 25-12-03 **CMPLT**: |
| | | **RIG**: OCEAN EPOCH |
| | | **STATUS**: ABANDONED DRY HOLE (ABDH) |
| **SURFACE LOCATION:** **LAT:** 38° 48' 50.381" S **LONG:** 141° 50' 39.579" E (GDA94) **NORTHING:** 5703525.73M **EASTING:** 573303.40M | | **REMARKS**: |
| **SEISMIC STATION:** OSO2 3D IL8714, XL2049 | | |
| **ELEVATION SEA FLOOR**: -212.7M LAT **RT** +22.4M LAT | | |
| **BLOCK/LICENCE**: OTWAY BASIN - VIC / P 51 | | |
| **TD** 2576 M (LOGR EXTRAP) 2575 M (DRLR) | | |
| **PBTD** M (LOGR) M (DRLR) | | |
| **TYPE STRUCTURE**: TILTED FAULT BLOCK CLOSURE | | |
| **TYPE COMPLETION**: NIL | | |
| **ZONE(S):** | | |

| HOLE SIZE | CASING SIZE | SHOE DEPTH | TYPE |
|---|---|---|---|
| 914MM | 762MM | 268.0M | 680 KG/M X56 |
| 445MM | 340MM | 769.0M | 101 KG/M BTC L80 |
| 311MM | 244MM | 1801.2M | 31.5 KG/M NEW VAM L80 |

| LOG | SUITE/ RUN | INTERVAL (M) | BHT/TIME COMMENTS |
|---|---|---|---|
| **PEX-DSI-HALS** | **1 / 1** | | |
| GR | | 2543 TO SURFACE | 87C, 187F / 9:15 HRS |
| HNGS | | 2543 TO 1801 | |
| MCFL | | 2548 TO 1801 | NO REPEAT SECTION |
| HLLD | | 2553 TO 1801 | |
| HLLS | | 2553 TO 1801 | |
| HCAL | | 2550 TO 1801 | |
| SP | | 2575 TO 1801 | |
| DSI | | 2549 TO 1801 | |
| RHOZ | | 2550 TO 1801 | |
| TNPH | | 2545 TO 1801 | |
| CSAT - CHECKSHOT | **1 / 2** | 2570 TO 1070 | 93C, 199F / 16:15 HRS TOTAL 30 STATIONS AT 50M INTERVALS. LOST SIGNAL @ 1070M |
| **MDT** | **1 / 3** | 1978 TO 2282 | 82.8C, 181F / 24:30 HRS TOTAL 11 PRETESTS, 2 CURTAILED, 9 NORMAL. |
| **CST-GR** | **1 / 4** | 2543 TO 1842 | 43 CORES ATTEMPTED. 21 RECOVERED, 15 LOST BULLETS, 2 EMPTY, 5 MISFIRES. |

- No Production Tests were conducted at the Hill 1 location.

# SECTION 1 : WELL HISTORY

## 1.1 INTRODUCTION

Hill-1 was drilled as an Otway Basin deep water exploration wildcat well in the VIC/P51 licence. The Surface Location is Latitude: 38° 48' 50.381" S Longitude: 141° 50' 39.579" E (GDA94), Northing: 5703525.73m Easting: 573303.40m (MGA-94). The well is 59 km south southeast of Portland, Victoria. The Hill Structure is covered by the recently acquired OS02 3D survey and lies within the interpreted Paaratte Sandstone play fairway. The water depth at the well location was 212.7m LAT.

The Hill-1 Prospect is a tilted fault block closure with up to 180m of structural relief over an area of up to 27km2 at the Paaratte Sandstone primary target.

Hill-1 was drilled as an oil-target with a high probability that gas would be encountered in the reservoir. Hill-1 was a critical test of one of a series of structural closures at the top Paaratte Sandstone. The well would assist in establishing whether an oil model is applicable to the area plus confirm the top seal potential of the Timboon Formation equivalent section for drilling opportunities in the deep water region (VIC/P52).

Hill-1 was drilled by the semi-submersible drilling rig "Diamond Offshore Ocean Epoch".

## 1.2 GENERAL DATA

| | | |
|---|---|---|
| Well Name: | HILL-1 | |
| Well Classification: | Offshore Oil/Gas Exploration | |
| Interest Holders: | Santos Ltd | 80% |
| | INPEX Alpha Ltd | 20% |
| Participating Interests: | Santos Ltd | 80% |
| | INPEX Alpha Ltd | 20% |
| Operator: | Santos Ltd. | |
| Location: | Offshore Victoria – Otway Basin VIC / P51. | |
| Surveyed Location (GDA94) | Latitude: 38° 48' 50.381" South | |
| | Longitude: 141° 50' 39.579" East | |
| | Northing: 5703525.73m | |
| | Easting: 573303.40m | |
| Seismic Location: | IL 8714, XL 2049 | |
| Seismic Survey: | OS02 3D | |
| Elevations: | Water Depth 212.7m LAT | |
| | Rotary Table 22.4m LAT | |

| | |
|---|---|
| Total Depth: | Driller : 2575m RT<br>Logger : 2576m RT<br>Logger Extrapolated : 2576 RT |
| Status: | Abandoned Dry Hole (ABDH) |
| License: | VIC/P51 Offshore Victoria |
| Date Drilling Commenced: | 21:00 hours on 8th December 2003. |
| Date Drilling Completed: | 01:30 hours on 20th December 2003. |
| Date Rig Released: | 04:00 hours on 25th December 2003. |
| Total Well Time: | 16 days |
| Contractor: | Diamond Offshore |
| Rig: | Ocean Epoch (Semi-submersible) |

## 1.3 DRILLING SUMMARY

### (a) Drilling Summary (All Depths Driller's RT)

Hill-1 was spudded at 21:00 hrs on 8th December 2003 utilising the semi-submersible drilling facility "Ocean Epoch".

Bit 1, a re-run 660mm (26") Smith DSJ, run in conjunction with a 914mm (36") hole opener, drilled the 914mm (36") phase from seafloor at 235.2m to section total depth at 268m. Returns were to the seafloor. A string of 762mm (30") (680 kg/m X56) casing was run and set at 268m. The casing running tool and 914mm (36") BHA were laid out.

Bit 2, a Reed EMS11GC was run in hole to tag the cement top at 117.0m and was used to drill the entire 445mm (17.5") hole section from 268m to 777m. The hole was circulated clean and displaced with gel. A string of 340mm (13.375") (101 kg/m L80) casing was run and set at 769m and pressure tested. The casing running tool was released and laid out. The cement head was racked back. The choke and kill lines were tested at surface. The blowout preventers were installed on the marine riser and function tested. Drillpipe was picked up and the 445 mm (17.5") BHA was laid out.

Thereafter, the 311 mm (12.25") BHA with Bit 3, Hughes HC605 was run in hole to tag top of cement at 742m. The cement plugs, cement, casing shoe, rathole and 3m of new hole from 777m to 780m were drilled. The hole was displaced to seawater and a Leak-off Test was performed to 1.80 SG (15.0ppg) EMW. The hole was drilled from 780m to 1444m with seawater and gel sweeps. At 1444m, the hole was displaced to 1.03 SG (8.6ppg) KCl/Polymer mud and drilling continued from 1444m to 1810m without major problems except for a 19bbls mud loss at 1611m. The bit was pulled to surface to run casing. A string of 9.625" casing was run and set at 1801.2m. The Blowout Preventers were tested successfully.

Bit 4, a Hycalog DSX104 of 216mm (8.5") diameter was run in hole along with Sperry Sun LWD tools to record Gamma Ray, Resistivity and Deviation Survey data. Top of cement was tagged at 1772m. The plugs, float collar and shoe track were drilled out along with 3m of formation to 1813m. The hole was displaced to KCL/PHPA mud and a Leak Off Test was performed to fetch an Equivalent Mud Weight of 1.25SG (10.5ppg). Drilling of the 216mm (8.5") phase continued from 1813m to the Total Depth of 2575m (D) which was reached at 01:30 hrs on 20th December 2003.

At Total Depth, the hole was circulated clean and a wiper trip to the casing shoe was performed with some intermittent tight hole being observed on this wiper trip. The hole was circulated clean at bottom and the drillstring was pulled out of hole to run wireline logs. Schlumberger was rigged up and the following wireline logs were run. Run 1: PEX-DSI-HALS, Run 2: Checkshot survey, Run 3: MDT-GR and Run 4: CST-GR. Schlumberger wireline was then rigged down.

Thereafter abandonment plugs were set as per program, Plug 1: 2575m to 2525m, Plug 2: 1831m to 1672m and Plug 3: 310m to 260m. The rig was released at 04:00 hours on December 25, 2003.

## (b) Mudlogging Services

Mudlogging services were provided by Geoservices Unit 170 with the following parameters monitored:

1. Total Gas
2. Chromatographic Gas Breakdown
3. Hydrogen Sulphide Levels
4. Depth/Rate of Penetration.
5. Pipe Speed/Block Position
6. Top drive RPM
7. Top drive Torque
8. Hook Load/Weight On Bit
9. Standpipe Pressure
10. Casing Shut-in Pressure
11. Mud Pump Rate (3 pumps)
12. Mud Flow Out
13. Mud Pit Levels (6 pits)
14. Mud Weight In and Out
15. Mud Temperature In and Out
16. Resistivity In and Out
17. Carbon Dioxide Detectors

Ditch cuttings were collected at 5m intervals from 777m to 1641m and between 1641m and the total depth of 2575m, samples were collected at 3m intervals. However very fast drilling rates required the sampling interval to be increased to 10m and 6m respectively, when necessary. In addition to microscopic examination of all drilled cuttings, samples were examined under the fluoroscope for hydrocarbon indications. Additional information pertinent to Mudlogging is presented in Geoservices' report in Section 12: Mudlogging Well Report. Details of all wellsite samples is found in Section 2.4: Catalogue of Wellsite Samples

### (c) LWD Data

Logging While Drilling (LWD) data was acquired by Sperry-Sun Drilling Services in Hill-1.

Sperry-Sun's 203mm (8") FEWD tool suite was utilised in the 311 mm (12.25") Hole Section. This tool suite consisted of a Dual Gamma Ray (DGR), Four Phase Electromagnetic Wave Resistivity (EWR-P4) and a Directional Modual (DM) for deviation control. The 311mm hole section was drilled in one bit run from 777m to 1810 mMDRT. All recorded data was recovered on surface.

Sperry-Sun's 171mm (6.75") FEWD tool suite was utilised in the 216 mm (8.5") Hole Section. This consisted of a Dual Gamma Ray (DGR), Four Phase Electromagnetic Wave Resistivity (EWR-P4) and a Directional Modual (DM) for deviation control. This hole section was drilled in one bit run from 1810 mMDRT to the total depth of 2575.0 mDMRT (D). All recorded data was recovered on surface.

Sperry Sun's detailed report is attached in Section 3.5: LWD End of Well Report

### (d) Testing

Production testing was not performed at the Hill-1 location.

### (e) Coring

No cores were cut in Hill-1.

### (f) Biostratigraphy

Micro-palaeontology studies were not conducted in Hill-1.

### (g) Electric Logging

Electric Logging Services were provided by Schlumberger Wireline Services. One suite of electric logs were attempted at Hill-1 as follows:

**TABLE 1**

| LOG | SUITE/ RUN | INTERVAL (m) | BHT/TIME COMMENTS |
|---|---|---|---|
| **PEX-DSI-HALS** | **1 / 1** | | |
| GR | | 2543 to Surface | 87C, 187F / 9:15 hrs |
| HNGS | | 2543 to 1801 | |
| MCFL | | 2548 to 1801 | No repeat section |
| HLLD | | 2553 to 1801 | |
| HLLS | | 2553 to 1801 | |
| HCAL | | 2550 to 1801 | |
| SP | | 2575 to 1801 | |
| DSI | | 2549 to 1801 | |
| RHOZ | | 2550 to 1801 | |
| TNPH | | 2545 to 1801 | |
| CSAT - Checkshot | **1 / 2** | 2570 to 1070 | 93C, 199F / 16:15 hrs<br>Total 30 stations at 50m intervals. Lost signal 1070m |
| **MDT** | **1 / 3** | 1978 to 2282 | 82.8C, 181F / 24:30 hrs<br>Total 11 pretests, 2 curtailed, 9 normal. |
| **CST-GR** | **1 / 4** | 2543 to 1842 | 43 cores attempted. 21 recovered, 15 lost bullets, 2 empty, 5 misfires. |

### (h) MDT Pressure Data

An MDT pressure survey was conducted at the Hill-1 location. A total of 11 pre-tests were attempted of which 9 were normal tests and 2 were curtailed. No samples were collected. The MDT Pressure Survey data are presented in Section 3.4: MDT Pressure Survey Results.

### (i) Hole Deviation

Hill-1 was drilled as a vertical hole. Survey Data are presented in Section 15: Deviation Summary. At Total Depth, the calculated displacement from the wellhead was approximately 15m in a northerly direction.

### (j) Velocity Surveys

No velocity survey was conducted at the Hill-1 location.

### (k) Casing & Cementing Summary

The following Table 3 summarises casing sizes, depths and cementing details for Hill-1. Casing and Cementing Reports for each casing run are detailed in Section 11: Casing & Cementing Summary.

**TABLE 3**

| HOLE SIZE | DEPTH | CASING SIZE | CASING DEPTH | JOINTS | CASING TYPE | CEMENT |
|---|---|---|---|---|---|---|
| 914mm (36”) | 268.0m | 762mm (30”) | 268m | 3 | 680 kg/m X56 | 820 sacks class "G" cement of total volume 168 bbl, 1% CaCl2 BWOC, mixed to a slurry weight of 1.9sg. |
| 445mm (17.5") | 777m | 340 mm (13.375") | 769m | 45 | 101kg/m L80 BTC | Lead: 604 sacks class "G" cement of total volume 240 bbl, mixed to a slurry weight of 1.5sg. Tail: 713 sacks class "G" cement of total volume 150 bbl, mixed to a slurry weight of 1.9sg with seawater. |
| 311mm (12.25") | 1810m | 244 mm (9.625") | 1801m | 126 | 31.5 kg/m L80 New VAM | Lead: 192 sacks class "G" cement of total volume 73 bbl, mixed to a slurry weight of 1.5sg. Tail: 215 sacks class "G" cement of total volume 45 bbl, mixed to a slurry weight of 1.9sg. |

# SECTION 2 : LITHOLOGICAL DESCRIPTIONS

# SECTION 2.1: HYDROCARBON SHOWS

SANTOS LIMITED

# OIL SHOW EVALUATION REPORT

WELL: HILL 1 GEOLOGIST: J.PITMAN

INTERVAL: 1973 – 1998m DATE:

FORMATION: Timboon

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| C1 ppm | 1 U | 10k | 20k | 30k | 40k | 50k | 100k | 150k | 200k | >250k |
| C2+ ppm | 5ppm | 750 | 1k | 2k | 3k | 4k | 5k | 7.5k | 10k | >15k |
| Porosity Ø | tight | | | poor | | fair | | good | | |
| % with fluorescence | trace-5% | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | >90 |
| Fluorescence appearance | trace | | spotted | pinpoint | | streaked | | patchy | | solid |
| Brightness of fluorescence | v. dull | | dull | | dim | | | bright | v. bright | glowing |
| Type of cut | trace | v. slow crush cut | crush cut | instant crush cut | v. slow streaming cut | slow stream | moderate streaming | streaming | fast streaming | instant |
| Residue on spot plate | trace | heavy trace | v. thin ring | thin ring | thick ring | v. thick ring | thin film | mod. film | thick film | solid |
| Show rating | trace | | poor | | fair | | good | | | |
| Comments: | SANDSTONE: clear, translucent, light brown in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, minor – abundant white argillaceous matrix, trace fine carbonaceous specks, loose in part, poor visual porosity, Fluorescence: trace – 5% moderately bright yellowish white spotted, very slow very faint white crush cut, no residue. | | | | | | | | | |

# SECTION 2.2: CUTTINGS DESCRIPTIONS

## 2.1 HILL-1 – CUTTINGS DESCRIPTIONS

Return were to the sea to a depth of 777m. Depths are referenced to Loggers Depth.

780 – 810m 100% Cement contamination.

810 – 850m CALCAREOUS CLAYSTONE WITH INTERBEDDED SANDSTONE AND LIMESTONE.
CALCAREOUS CLAYSTONE: Medium grey, light grey in part, brownish grey, slightly silty in part, trace micro carbonaceous specks, trace nodular pyrite, trace very fine glauconite, firm, subfissile to subblocky.
LIMESTONE: White, cream, common fossil fragments, forams, shell fragments, moderately hard.
SANDSTONE: Clear, translucent, fine to medium grained, moderately well sorting, subrounded, loose in part, common light grey argillaceous matrix, firm aggregates, poor inferred porosity, no fluorescence.

850 – 955m CALCAREOUS CLAYSTONE WITH MINOR INTERBEDDED SANDSTONE.
CALCAREOUS CLAYSTONE: Light grey, light greenish grey, grading to marl in part, trace very fine glauconite, trace pyrite, trace fine carbonaceous specks, soft to firm, dispersive.
SANDSTONE: Clear, translucent light grey, fine to medium grained, moderately well sorting, subrounded, common light grey argillaceous matrix, trace carbonaceous specks, firm aggregates, loose in part, poor inferred porosity, no fluorescence.

955 – 975m CALCAREOUS CLAYSTONE.
CALCAREOUS CLAYSTONE: Light grey, grading to Marl in part, becoming very finely arenaceous in part, trace micro carbonaceous specks, trace forams, trace very fine glauconite, firm to soft, dispersive in part.

975 – 1035m MARL WITH INTERBEDDED CALCAREOUS CLAYSTONE AND SANDSTONE.
MARL: Very light grey, off white, grading to calcareous claystone in part, rare fine carbonaceous specks, rare coal fragments, soft to firm, dispersive.
CALCAREOUS CLAYSTONE: Very light grey, light grey, grading to Marl in part, becoming very finely arenaceous in part, trace micro carbonaceous specks, trace forams, trace very fine glauconite, firm to soft, dispersive in part.
SANDSTONE: Very light grey, light brownish grey, clear, translucent in part, very fine to medium predominantly fine grained, moderately well sorting, subrounded, common light grey argillaceous matrix, rare moderately strong calcareous cement in part, trace pyrite, common micro carbonaceous specks, trace brown lithics, loose to predominantly firm aggregates, very poor visual porosity, no fluorescence.

1035 – 1110m SANDSTONE WITH INTERBEDDED SILTSTONE, CALCAREOUS CLAYSTONE AND MARL.
MARL: Very light grey, off white, grading to calcareous claystone in part, rare fine carbonaceous specks, rare coal fragments, soft to firm, dispersive.
CALCAREOUS CLAYSTONE: Very light grey, light grey, grading to Marl in part, becoming very finely arenaceous in part, trace micro carbonaceous specks, trace forams, trace very fine glauconite, firm to soft, dispersive in part.
CALCAREOUS SILTSTONE: Light grey, argillaceous, very finely arenaceous, grading to calcareous claystone, trace fine carbonaceous specks, trace fossil fragments, firm, sub fissile to sub blocky.
SANDSTONE: Light grey, translucent, clear in part, very fine to medium predominantly fine grained, moderately well sorting, subrounded, abundant light grey argillaceous matrix, rare moderately strong calcareous cement, trace very fine glauconite, trace fine carbonaceous specks, trace light brown lithics, trace fossil fragments, trace forams, very poor visual porosity, no fluorescence.

1110 – 1430m CALCAREOUS CLAYSTONE WITH MINOR INTERBEDDED CALCARENITE.
CALCARENITE: Very light brown, off white, cream, argillaceous in part, very finely arenaceous in part, trace fossil fragments, trace forams, moderately hard to hard, subblocky to occasionally subfissile.
CALCAREOUS CLAYSTONE: Very light brownish grey, light grey, grading to calcareous siltstone in part, grading to marl in part, trace fossil fragments, trace forams, minor fine carbonaceous specks, dispersive to firm, subblocky.

1430 – 1590m CALCAREOUS CLAYSTONE WITH INTERBEDDED CALCILUTITE.
CALCAREOUS CLAYSTONE: Very light grey as above. 100% Calcareous Claystone from 1515m.
CALCILUTITE: Moderate yellowish grey, light grey, grading to calcareous claystone in part, minor fine carbonaceous specks, soft to firm, dispersive in part, subblocky.

**Note: Changed to KCl/Polymer mud system at 1444m.**

1590 – 1600m CALCAREOUS CLAYSTONE WITH INTERBEDDED CALCILUTITE.
CALCAREOUS CLAYSTONE: Very light brownish grey, light grey, grading to calcareous siltstone in part, grading to marl in part, trace fossil fragments, trace forams, minor fine carbonaceous specks, dispersive to firm, subblocky.
CALCILUTITE: Moderate yellowish grey, light grey, grading to calcareous claystone in part, minor fine carbonaceous specks, soft to firm, dispersive in part, subblocky.

1600 – 1615m INTERBEDDED CALCAREOUS CLAYSTONE, CALCAREOUS SILTSTONE WITH MINOR SANDSTONE AND CHERT.
CALCAREOUS CLAYSTONE: Generally as above, very light grey, off white, grading to calcareous siltstone, trace forams and shell fragments, minor fine carbonaceous specks, dispersive to firm, subblocky.
CALCAREOUS SILTSTONE: Medium grey, light to predominantly medium olive grey, grading to calcareous claystone in part, rare fine carbonaceous specks, trace nodular pyrite, trace CHERT (light grey, translucent), firm, subblocky.
SANDSTONE: Clear, translucent, yellow brown, fine to medium grained, subangular to rounded, fair sorting, trace weak calcareous cement, predominantly loose quartz grains, fair to good inferred porosity, no fluorescence.

1615 – 1630m INTERBEDDED CALCILUTITE AND SILTSTONE / SANDSTONE.
CALCILUTITE: White, very light grey, off white, uniform, moderately hard, brittle, subblocky to predominantly subfissile.
SANDSTONE / SILTSTONE: Medium brown, red brown in part, dark pinkish brown, very fine sandstone grading to arenaceous siltstone, very fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, abundant medium brown silty matrix, rare fine carbonaceous specks, minor fine grained glauconite, rare nodular pyrite, moderately hard aggregates, tight to very poor visual porosity, no fluorescence.

1630 – 1646m SILTSTONE WITH INTERBEDDED CALCILUTITE.
CALCILUTITE: White, very light grey as above.
SILTSTONE: Grading to silty SANDSTONE, medium brown, red brown, brown – translucent in part, calcareous, very finely arenaceous, minor glauconite, rare nodular pyrite, trace lithics and carbonaceous specks, friable to moderately hard, subblocky to blocky.

1646 – 1660m SANDSTONE: Clear, translucent, light grey, fine to very coarse predominantly medium to coarse grained, subangular to subrounded, poor to fair sorting, predominantly loose clean quartz grains, trace nodular pyrite, trace glauconite, trace lithics, rare carbonaceous specks / fragments, good inferred porosity, no fluorescence.

1660 – 1707m INTERBEDDED SILTSTONE AND SANDSTONE.
SANDSTONE: Clear, translucent, light grey, fine to very coarse predominantly coarse grained, subangular to subrounded, poor to fair sorting, predominantly loose clean quartz grains, trace nodular pyrite, trace glauconite, trace lithics, rare carbonaceous specks / fragments, good inferred porosity, no fluorescence.
SILTSTONE: Medium brown, arenaceous in part grading to very fine sandstone, rare fine carbonaceous specks, rare glauconite, rare nodular pyrite, trace lithics and carbonaceous flecks, moderately hard, subblocky.

1707 – 1767m SILTSTONE WITH INTERBEDDED SANDSTONE.
SANDSTONE: Clear, translucent, light grey, fine to very coarse predominantly coarse grained, subangular to subrounded, poor to fair sorting, predominantly loose clean quartz grains, trace nodular pyrite, trace glauconite, trace lithics, rare carbonaceous specks / fragments, good inferred porosity, no fluorescence.
SILTSTONE: Medium brownish grey, medium grey, argillaceous grading to claystone in part, trace fine grained glauconite, trace carbonaceous specks, firm, subblocky, dispersive in part.

1767 – 1810m SILTSTONE: Medium brownish grey, medium brown, argillaceous grading to claystone, non to occasionally very slightly calcareous, trace forams, rare fine carbonaceous specks / flecks, firm, dispersive in part, subblocky.

1810 – 1960m SILTSTONE: Medium brownish grey, medium dark grey, argillaceous grading to silty claystone in part, non to locally very slightly calcareous, trace dolomite, trace very fine glauconite, trace fine carbonaceous specks, trace nodular pyrite, locally with trace loose clear coarse quartz grains, firm to moderately hard, subblocky to blocky.

1960 – 1974m SILTSTONE: Medium brownish grey, medium dark grey, argillaceous grading to silty claystone in part, non to locally very slightly calcareous, trace dolomite, trace very fine glauconite, trace fine carbonaceous specks, trace nodular pyrite, locally with trace loose clear coarse quartz grains, firm to moderately hard, subblocky to blocky.

1974 – 1986m INTERBEDDED SANDSTONE AND SILTSTONE.
SANDSTONE: Clear, translucent, light brown in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, minor – abundant white argillaceous matrix, trace fine carbonaceous specks, loose in part, poor visual porosity, **Fluorescence: trace – 5% moderately bright yellowish white spotted, very slow very faint white crush cut, no residue.**
SILTSTONE: Light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine grained glauconite, trace fine carbonaceous specks, friable to moderately hard aggregates, subblocky.

1986 – 2001m INTERBEDDED SANDSTONE AND SILTSTONE.
SILTSTONE: Light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine grained glauconite, trace fine carbonaceous specks, friable to moderately hard aggregates, subblocky..
SANDSTONE: Light brown, white in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, argillaceous, silty in part grading to arenaceous siltstone, common fine carbonaceous specks, trace nodular pyrite, trace fine grained glauconite, friable to firm aggregates, very poor visual porosity, **Fluorescence: trace moderately bright yellowish white spotted, very faint white crush cut, no residue.**

2001 – 2019m SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.
SANDSTONE: White, light brownish grey, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, abundant very light brownish white argillaceous matrix, common light grey silty matrix in part, interbedded with and grading to arenaceous siltstone, trace very fine carbonaceous specks, firm aggregates, very poor visual porosity, no fluorescence.
SILTSTONE: Light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine carbonaceous specks, friable to moderately hard aggregates, subblocky.

2019 – 2031m INTERBEDDED SANDSTONE AND SILTSTONE.
SILTSTONE: Light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine carbonaceous specks, friable to moderately hard aggregates, subblocky.
SANDSTONE: Light grey, off white, very light brownish white, very fine to fine grained, moderately well sorting, subangular to subrounded, abundant light brown / white argillaceous matrix, grading to siltstone in part, common moderately strong calcareous cement, trace fine carbonaceous specks, friable to firm, very poor visual porosity, **Fluorescence: 2019 – 2024m, trace moderately bright yellowish white spotted, very faint white crush cut, no residue.**

2031 – 2196m SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.
SILTSTONE: Light to medium brownish grey, arenaceous grading to very fine sandstone in part, locally argillaceous, trace fine carbonaceous specks, trace nodular pyrite, friable to firm, moderately hard in part, subblocky.
SANDSTONE: Very light brown, light brownish white, light grey in part, very fine to fine grained, subangular to subrounded, moderately strong calcareous cement, common light brownish white argillaceous matrix, common light brown silty matrix, trace carbonaceous specks, trace pyrite, friable to firm, moderately hard in part, very poor visual porosity, no fluorescence.

| | |
|---|---|
| 2196 – 2214m | INTERBEDDED SANDSTONE AND SILTSTONE.<br>SILTSTONE: Light to medium brown, arenaceous generally as above.<br>SANDSTONE: clear, translucent, frosted, fine to coarse, subangular to subrounded, poor sorting, trace weak calcareous cement, trace white argillaceous matrix, trace nodular pyrite, predominantly loose clean quartz grains, fair inferred porosity, no fluorescence. |
| 2214 – 2576m | SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.<br>SILTSTONE: Light to medium brownish grey, arenaceous grading to very fine sandstone in part, locally argillaceous, trace fine carbonaceous specks, trace nodular pyrite, friable to firm, moderately hard in part, subblocky.<br>SANDSTONE: Clear, translucent, very fine to fine grained, trace medium – coarse, subangular to subrounded, rare weak calcareous cement, minor white argillaceous matrix, trace pyrite, friable to firm, loose in part, poor inferred porosity, no fluorescence. |

**TOTAL DEPTH DRILLER : 2575m**
**TOTAL DEPTH LOGGER EXTRAPOLATED : 2576m**

# SECTION 2.3 : SIDEWALL CORES DESCRIPTIONS

SANTOS LIMITED

## SIDEWALL CORE DESCRIPTION

**WELL:** HILL 1 **DATE:** 21/12/03 **PAGE:** 1

**GUN NO.:** SUITE 1 **SHOTS FIRED:** 43 **SHOTS BOUGHT:** 21

**GEOLOGIST** J.PITMAN

| CORE NO. | DEPTH | REC. (mm) | PALYN. EVAL. REJECT | LITH. | COLOUR | GRAIN SIZE | HYDR. INDIC. (Y/N) | SUPPLEMENTARY INFORMATION |
|---|---|---|---|---|---|---|---|---|
| 1 | 2543 | | | | | | | Lost Bullet |
| 2 | 2507 | | | | | | | Lost Bullet |
| 3 | 2475 | 25 | Y | clystn | dark grey | n/a | N | soft – plastic, trace calcite. |
| 4 | 2461 | | | | | | | Lost Bullet |
| 5 | 2423 | 26 | Y | clyste | dark gry | n/a | N | soft – plastic, slightly silty. |
| 6 | 2384 | 27 | Y | clyste | dark gry | n/a | N | soft – plastic, trace calcite. |
| 7 | 2365 | 26 | Y | clyste | dark gry | n/a | N | slightly silty, trace micromicaceous. |
| 8 | 2333 | | | | | | | Lost Bullet |
| 9 | 2307 | | | | | | | Lost Bullet |
| 10 | 2286 | | | | | | | Lost Bullet |
| 11 | 2281 | 30 | Y | sndst | medium grey | fine | N | SANDSTONE: medium grey, translucent in part, very fine to fine grained, trace medium grained, subangular to subrounded, common light grey silty matrix, abundant fine grained glauconite, firm, poor vis ual porosity, no fluorescence. |
| 12 | 2271 | 27 | Y | clystn | dark grey | n/a | N | firm – plastic, uniform. |
| 13 | 2243 | 25 | Y | clystn | dark gry | n/a | N | firm, uniform. |
| 14 | 2220 | | | | | | | Lost Bullet |
| 15 | 2206 | 25 | Y | clystn | dark grey | n/a | N | uniform, slightly arenaceous. |
| 16 | 2196 | 34 | Y | sndst | medium – dark grey | very fine | N | SANDSTONE: medium grey, very fine to fine grained, well sorting, subangular to subrounded, abundant grey silty matrix, minor fine grained glauconite, firm, poor inferred porosity, no fluorescence. |
| 17 | 2192 | | | | | | | Lost Bullet |

| CORE NO. | DEPTH | REC. (mm) | PALYN. EVAL. REJECT | LITH. | COLOUR | GRAIN SIZE | HYDR. INDIC. (Y/N) | SUPPLEMENTARY INFORMATION |
|---|---|---|---|---|---|---|---|---|
| 18 | 2157 | | | | | | | Lost Bullet |
| 19 | 2115 | | | | | | | Lost Bullet |
| 20 | 2092 | | | | | | | Lost Bullet |
| 21 | 2078.5 | 28 | Y | sndst | medium grey | very fine | N | SANDSTONE: medium grey, translucent, clear, very fine to fine grained, well sorting, subangular to subrounded, abundant grey silty matrix, poor inferred porosity, no fluorescence. |
| 22 | 2075 | 29 | Y | sndst | medium grey | fine | N | SANDSTONE: medium grey, translucent, very fine to fine grained, moderately well sorting, subangular to subrounded, common medium grey argillaceous / silty matrix, poor inferred porosity, no fluorescence. |
| 23 | 2061 | | | | | | | Lost Bullet |
| 24 | 2044 | | | | | | | Misfire |
| 25 | 2039 | | | | | | | Misfire |
| 26 | 2023 | 36 | Y | sndst | white – light grey | fine | N | SANDSTONE: white, very light grey, translucent in part, fine grained, well sorting, subrounded to subangular, minor white argillaceous matrix, trace glauconite, trace pyrite, friable to firm, fair inferred porosity, no fluorescence. |
| 27 | 2019 | | | | | | | Empty |
| 28 | 2016 | | | | | | | Misfire |
| 29 | 2016 | 36 | Y | sndst | light grey | fine | N | Requested 2014m 2016 shot instead (28 repeated.<br>SANDSTONE: light grey, translucent, white, very fine to predominantly fine grained, moderately well sorting, subangular to subrounded, rare light grey silty matrix, trace pyrite, friable, fair inferred porosity, no fluorescence. |
| 30 | 2010.5 | 30 | Y | sltstn | grey brown | n/a | N | SILTSTONE: medium to dark brownish grey, argillaceous in part, firm to friable. |
| 31 | 2007.5 | 30 | Y | sndst | light grey | very fine | N | SANDSTONE: light grey, white, very fine grained, common white argillaceous matrix, poor inferred porosity, no fluorescence. |
| 32 | 2002 | 35 | Y | sndst | light grey | fine | N | SANDSTONE: as above interbedded with medium to dark brownish grey siltstone. |
| 33 | 1999 | 35 | Y | sndst | light grey | fine | N | SANDSTONE: light grey, translucent, white, very fine to fine grained, moderately well sorting, subrounded to subangular, rare white argillaceous matrix, friable to firm, fair inferred porosity, no fluorescence. |

| CORE NO. | DEPTH | REC. (mm) | PALYN. EVAL. REJECT | LITH. | COLOUR | GRAIN SIZE | HYDR. INDIC. (Y/N) | SUPPLEMENTARY INFORMATION |
|---|---|---|---|---|---|---|---|---|
| 34 | 1995 | 30 | Y | sndst | light grey | fine | N | SANDSTONE: light grey, translucent, clear, very fine to fine grained, moderately well sorting, subrounded, trace light grey silty matrix, rare carbonaceous specks, friable, fair inferred porosity, no fluorescence. |
| 35 | 1992 | 28 | Y | sndst | light grey | fine | N | SANDSTONE: light grey, translucent, fine grained, well sorting, subrounded, rare light grey silty matrix, friable to firm, fair inferred porosity, no fluorescence. |
| 36 | 1985 | 25 | Y | sltstn | grey brown | very fine | N | SILTSTONE: finely arenaceous grading to very fine sandstone in part. |
| 37 | 1981 | | | | | | | Misfire |
| 38 | 1977 | | | | | | | Empty |
| 39 | 1969 | | | | | | | Lost Bullet |
| 40 | 1957 | | | | | | | Lost Bullet |
| 41 | 1920 | | | | | | | Misfire |
| 42 | 1886 | 35 | Y | clystn | dark brown grey | n/a | N | CLAYSTONE: medium to dark brownish grey, massive. |
| 43 | 1842 | | | | | | | Lost Bullet |

COMMENTS:

Total 43 sidewall cores attempted. Recovered Bullets: 21 Misfire: 5 Empty: 2 Lost: 15

# SECTION 2.4 : CATALOGUE OF WELLSITE SAMPLES

## SAMPLE MANIFEST HILL - 1

---

**DATE:** 20-12-03

**SAMPLE INTERVALS:** All returns from spud to 777 m were to the sea floor.
777 m – 1641 m 5 m Samples
1641 m – 2575 m 3 m Samples

---

**SAMPLES SENT TO GEOSERVICES, ADELAIDE FOR SPLITTING:**

Washed and Dried already split from 777m to 1015m

| | |
|---|---|
| Box 1 of 20 | Split samples to be sorted |
| Box 2 of 20 | Split samples to be sorted |
| Box 3 of 20 | Split samples to be sorted & marked bags |
| Box 4 of 20 | 1015 m - 1205 m |
| Box 5 of 20 | 1205 m - 1360 m |
| Box 6 of 20 | 1360 m - 1565 m |
| Box 7 of 20 | 1565 m - 1605 m |
| Box 8 of 20 | 1605 m - 1710 m |
| Box 9 of 20 | 1710 m - 1740 m |
| Box 10 of 20 | 1740 m - 1884 m |
| Box 11 of 20 | 1884 m - 1959 m |
| Box 12 of 20 | 1959 m - 2049 m |
| Box 13 of 20 | 2049 m - 2124 m |
| Box 14 of 20 | 2124 m - 2268 m |
| Box 15 of 20 | 2268 m - 2454 m |
| Box 16 of 20 | 2454 m - 2544 m |
| Box 17 of 20 | 2544 m - 2575 m (T.D.) |
| Box 18 of 20 | Samplex trays 777m – 2575m |
| Box 19 of 20 | Samplex trays 777m – 2575m |
| Box 20 of 20 | Mud samples (1000m, 1480m, 1610m, 1845m, 1989m, 1992m, 1995m, 2001m, 2020m, 2340m, 2575m) & filtrate samples (1790m, 1810m, 2330m) |

Box of marked plastic bags

---

SEND TO:

GEOSERVICES, UNIT 1 / 6 SOMERSET CIRCUIT, LONSDALE, SOUTH AUSTRALIA, 5160.

Sent in container number: 25140, from the Ocean Epoch.

Signed for Geoservices: …….

# SECTION 3: WIRELINE LOGGING REPORTS

# SECTION 3.1 : SUITE 1 - LOGGING ORDER FORM

# Santos

*A.B.N. 80 007 550 923*

## LOGGING ORDER FORM

| | | | |
|---|---|---|---|
| **COMPANY:** | SANTOS | | |
| **WELL:** | HILL 1 | **FIELD:** | CASINO |
| **RIG:** | DIAMOND EPOCH | **STATE:** | VICTORIA |
| **LOCATION:** | Inline 8714, XL 2049 | **BLOCK:**<br>**LICENCE:** | OTWAY BASIN<br>VIC / P44 |
| **LATITUDE:** | 38° 48' 50.381" S | **LONGITUDE:** | 141° 50' 39.579" E |

**ELEVATIONS:**

| | | | | | |
|---|---|---|---|---|---|
| **RT:** | 22.4 m | **WATER DEPTH** | 212.8 m | **SEABED:** | 235.2 m |

| | | | | | |
|---|---|---|---|---|---|
| **914mm (36") HOLE:** | 268m | **760mm (30") CSG:** | 268 | **WT:** | 310 ppf |
| **445mm (17½") HOLE:** | 777m | **340mm (13-3/8") CSG** | 769m | **WT:** | 68 ppf (ID 12.415" 315mm) |
| **311m (12-1/4") HOLE:** | 1810m | **244mm (9 5/8") CSG:** | 1801m | **WT:** | 47 ppf |

| | |
|---|---|
| **TD (DRILLER):** | 2575m |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MUD SYSTEM:** | KCl / PHPA | | | **CIRCULATION STOPPED:** | | 12:30 hr 20/12/03 | |
| **BARITE:** | nil | | | | | | |
| **WT:** | 1.15 | **VIS:** | 70 | **pH:** | 9.0 | **FLUID LOSS:** | 4.2 |

| | |
|---|---|
| **GEOLOGIST:** | J. Pitman |

***INFORMATION GIVEN ABOVE IS TO BE USED ON LOG HEADER SHEETS***

**HOLE CONDITIONS (TIGHT SPOTS, DEVIATION, COALS, BARITE IN MUD, ETC.)**
Maximum Deviation : 1.04 deg @ 1570m

**DRILL STEM TESTS/CORED INTERVALS:**

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

Standard Santos scales to be applied to all logs run.

# Santos

*A.B.N. 80 007 550 923*

## LOGGING ORDER FORM

**LOGGING PROGRAMME:**

| LOG | INTERVAL | REPEAT SECTION |
|---|---|---|
| **RUN 1**: PEX-DSI-HNGS | | No repeat section required, check |
| GR | TD to Seafloor | repeatability with down log. |
| HNGS | TD – 9 5/8" Casing Shoe | No filtering of GR |
| Resistivity-Caliper-SP | TD to casing shoe | |
| Sonic (Dipole shear) | TD to casing shoe | Only upper dipole required |
| Sonic (P&S WFT) | TD to casing shoe | STC processing |
| Neutron Density | TD to casing shoe | |
| **RUN 2**: Checkshot | 50m Intervals TD-500m | |
| **RUN 3**: SWC | 30 / 60 bullets TBA | |

**REMARKS: (ALL OPERATIONS AS PER CURRENT 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.
3. ALL THERMOMETER READINGS TO BE RECORDED ON LOG
4. ALL SCALES AND PRESENTATIONS TO CONFIRM TO STANDARDS UNLESS OTHERWISE ADVISED.
5. THE FIELD/EDIT TAPE MUST BE A MERGED COPY OF ALL LOGS RUN. SEPARATE TAPES ARE ONLY ACCEPTABLE AS AN INTERIM MEASURE.
6. ANY CHANGE FROM STANDARD PROCEDURES/SCALES TO BE NOTED IN REMARKS SECTION.
7. RM, RMF, RMC AND BHT MUST BE ANNOTATED ON FAXED LOGS. FAXED LOGS SHOULD ALSO INDICATE IF ON DEPTH OR NOT.
8. 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 WELLSITE GEOLOGIST MUST BE IMMEDIATELY INFORMED.

# SECTION 3.2 : SUITE 1 – FIELD ELECTRIC LOGGING REPORT

# SANTOS LIMITED
# FIELD ELECTRIC LOG REPORT

| | | | |
|---|---|---|---|
| **WELL:** | HILL-1 | **GEOLOGIST:** | J.PITMAN |
| **LOGGING ENGINEER:** | AWOBADEJO / SINGH | | |
| **RUN NO.:** | SUITE 1 | **DATE LOGGED:** | 20 – 21/12/03 |
| **DRILLERS DEPTH:** | 2575m | **LOGGERS DEPTH:** | 2576m |
| **ARRIVED ON SITE:** | 18/12/03 | | |
| **ACTUAL LOG TIME:** | 26.75 hr | **LOST TIME LOGGER:** | nil |
| **TOTAL TIME:** | 27.5 hr | **LOST TIME OTHER:** | 0.75 hr (wait on weather) |

| **TYPE OF LOG** | **PEX-DSI-HALS** | **VSP** | **MDT** | **CST** | |
|---|---|---|---|---|---|
| TIME CIRC. STOPPED | 12:30 20/12 | 12:30 20/12 | 12:30 20/12 | 12:30 20/12 | |
| TIME TOOL RIG UP | 18:30 20/12 | 02:15 21/12 | 07:45 21/12 | 14:30 21/12 | |
| TIME TOOL RIH | 20:15 20/12 | 03:15 21/12 | 08:30 21/12 | 16:15 21/12 | |
| TIME TOOL RIG DOWN | 02:15 21/12 | 07:45 21/12 | 14:30 21/12 | 22:00 21/12 | |
| TOTAL TIME | 7.75 hr | 5.5 hr | 6.75 hr | 7.5 hr | |

| **TYPE OF LOG** | **FROM (m)** | **TO (m)** | **REPEAT SECTION** | **TIME SINCE LAST CIRCULATION** | **BHT °C** |
|---|---|---|---|---|---|
| **Suite 1 Run 1** | | | | | |
| **PEX-DSI-HALS** | | | | | |
| GR | 2543 | Surface | | 9 hours 15 minutes | 87 C |
| HNGS | 2543 | 1801 | | | (189 F) |
| MCFL | 2548 | 1801 | | | |
| HLLD | 2553 | 1801 | | | |
| HLLS | 2553 | 1801 | | | |
| HCAL | 2550 | 1801 | | | |
| SP | 2575 | 1801 | | | |
| DSI | 2549 | 1801 | | | |
| RHOZ | 2550 | 1801 | | | |
| TNPH | 2545 | 1801 | | | |
| **Suite 1 Run 2** | | | | 16 hours 15 minutes | 93 C |
| CSAT - Checkshot | 2570 | 1070 | | Total 30 stations at 50m intervals<br>Loss of signal at 1070m | (199 F) |
| **Suite 1 Run 3** | | | | 24 hours 30 minutes | 82.8 C |
| MDT | 1978 | 2282 | | Total 11 pretests attempted.<br>2 curtailed, 9 normal. | (181 F) |
| **Suite 1 Run 4** | | | | | |
| **CST** | 2543 | 1842 | | CST Run 4: 43 attempted.<br>21 recovered, 5 misfire, 2 empty<br>15 lost bullets | |

## SANTOS LIMITED
## FIELD ELECTRIC LOG REPORT

| | |
|---|---|
| **MUD SYSTEM**: KCl / PHPA | MW: 1.15 FV: 70 |
| Rm = 0.09 Ωm @ 21°C | WL: 4.2 PV/YP 23/35 |
| Rmf = 0.078 Ωm @ 21°C | pH: 9.0 Cl: 42k |
| Rmc = 0.1289 Ωm @ 21.3°C | KCl: 8.5% |
| HOLE CONDITIONS: Good | |

**REMARKS / RECOMMENDATIONS**

1. No tight spots observed while running in hole with Run 1.
2. Bottom Hole Temperature Run 1 87 C (189 deg F)
3. Casing shoe found at 1801m (drl) 1801m (lgr)
4. Total Depth Run 1 2576m Driller 2575m
5. Run 2 checkshot tag bottom and come up to 2570m for first point.
6. Total 30 stations attempted at 50m intervals. Loss of signal at 1070m
7. Bottom Hole Temperature Run 2: 93 C (199 F)
8. Run 3 MDT total 11 pretests, 2 curtailed, 9 normal.
9. Bottom Hole Temperature: Run 3 82.8 C (181 F)
10. Run 4 sidewall cores. 43 shots were attempted, 21 recovered, 5 misfire, 2 empty, 15 lost.
11. A thunderstorm during the rig up of run 4 CST resulted in 0.75 hr of waiting on weather.

## WELLSITE LOG QUALITY CONTROL CHECKS

| | | | | | |
|---|---|---|---|---|---|
| LOG ORDER FORM | Y | MUD SAMPLE RESISTIVITY | N/A | TOOL NO. / CODE CHECK | Y |
| OFFSET WELL DATA | *1 | CABLE DATA CARD | Y | LOG SEQUENCE CONFIRM. | *2 |

| LOG TYPE | DSI | GR | HCAL | HALS | RXOZ | RHOZ | TNPH | MDT | CST | VSP | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CASING CHECK | 57 us/ft | | 8.6" | | | | | | | | |
| SCALE CHECK | 40-140us/ft | 0- 200 | 6 – 16" | 0.2-200 | 0.2-200 | 1.95-2.95 | 0.45-/-0.15 | | | | |
| DEPTH Casing Total | *3 | Y | Y | Y | Y | Y | Y | Y | Y | Y | |
| CALIBRATIONS OK | Y | Y | Y | Y | Y | Y | Y | Y | | | |
| REPEATABILITY | Y | Y | Y | Y | Y | Y | Y | | | | |
| LOGGING SPEED | Y | Y | Y | Y | Y | Y | Y | | | | Logging speed Run 1 1800'/hr |
| OFFSET WELL Repeatability | Y | Y | Y | Y | N/A | N/A | N/A | | | | |
| NOISY / MISSING DATA | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | |
| CURVES/LOGS Depth Matched | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | |
| Rm MEASUREMENT | | | | *4 | Y | | | | | | |
| LLS / LLD / CHECK | | | | | | *5 | Y | | | | |
| PEF / RHOB CHECK | | | | | | Y | Y | | | | |
| LOG HEADER / TAIL | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | |
| PRINT/FILM QUALITY | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | |

COMMENTS:
*1. Offset wells - Bridgewater Bay 1
*2. Confirmed with SANTOS geology operations and Schlumberger.
*3 Casing Driller: 1801m Logger: 1801m Total Depth Driller: 2575m Logger: 2576m
*4 Rmc>Rm>Rmf
*5 Curves overlay in 0 porosity shale.

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

# SECTION 3.3 : SUITE 1 – ELECTRIC LOGGING TIME SUMMARY

# Geology Operations

**Santos**
ABN 80 007 550 923

## ELECTRIC LOGGING TIME SUMMARY

| | |
|---|---|
| **LOGGING UNIT:** | 571 |
| **START DATE:** | 20/12/03 |
| **END DATE:** | 21/12/03 |
| **DEPTH DRILLER:** | 2575m |
| **DEPTH LOGGER:** | 2576m |

| | |
|---|---|
| **LEFT BASE:** | 18/12/03 |
| **ARRIVED AT THE WELLSITE:** | 18/12/03 |
| **INITIAL RIG UP:** | 20/12/03 |
| **FINAL RIG DOWN:** | 21/12/03 |
| **RETURN TO BASE:** | 22/12/03 |

| | |
|---|---|
| **WELL NAME:** | Hill 1 |
| **TRIP NUMBER:** | Suite 1 |
| **WELLSITE GEOLOGIST:** | J.Pitman |
| **LOGGING ENGINEER:** | T.AwobadeJo |
| **PAGE / DATE:** | 1 20/12/03 |

| DATE / TIME | RIG UP / DOWN | TOOL CHECK | RIH / POOH | LOGGING | DATA TX | LOST TIME SCHL | I. O. | WIPER TRIP | LOST TIME OTHERS | OTHERS | COMMENTS / REMARKS |
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**TOTALS**

| **WSG (SIGN)** | **ENGINEER(SIGN)** |
|---|---|
| J.Pitman | T.Awobadejo |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | **TOOLS RUN:** |
| | | | | | | | | | | **TOOLS RUN:** |
| | | | | | | | | | | **TOOLS RUN:** |

| LOGGING UNIT: | 571 | WELL NAME | Hill 1 | PAGE | 1A |
|---|---|---|---|---|---|

| DATE / TIME | RIG UP / DOWN | TOOL CHECK | RIH / POOH | LOGGING | DATA TX | LOST TIME SCHL | I. O. | WIPER TRIP | LOST TIME OTHERS | OTHERS | COMMENTS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 | | | | | | | | | | | |
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| | | | | | | | | | | | |
| :30 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 17:00 | | | | | | | | | | | |
| | | | | | | | | | | | |
| :30 | | | | | | | | | | | **HILL 1 SUITE 1 WIRELINE LOGS** |
| | | | | | | | | | | | TOTAL DEPTH DRILLER: 2575m |
| 18:00 | | | | | | | | | | | CASING SHOE DRILLER: 1801m |
| | | | | | | | | | | | |
| :30 | X | | | | | | | | | | 18:30 HR HOLD SAFETY MEETING |
| | X | | | | | | | | | | |
| 19:00 | X | | | | | | | | | | 19:00 HR RIG UP RUN 1 PEX-DSI |
| | X | | | | | | | | | | |
| :30 | X | | | | | | | | | | |
| | X | | | | | | | | | | LOAD SOURCES. |
| 20:00 | X | | | | | | | | | | |
| | | | X | | | | | | | | 20:15 HR RUN IN HOLE RUN 1 |
| :30 | | | X | | | | | | | | COMPENSATE |
| | | | X | | | | | | | | |
| 21:00 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| :30 | | | X | | | | | | | | |
| | | | | X | | | | | | | 21:53 HR LOG UP MAIN LOG |
| 22:00 | | | | X | | | | | | | TOTAL DEPTH SCHLUMBERGER: 2576m |
| | | | | X | | | | | | | |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| 23:00 | | | | X | | | | | | | CASING SHOE SCHLUMBERGER: 1801m |
| | | | | X | | | | | | | AT CASING SHOE LOG GR TO SURFACE |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| **TOTALS** | | | | | | | | | | | |

| WSG (SIGN) | ENGINEER(SIGN) |
|---|---|
| J.Pitman | T.Awobadejo |
| **TOOLS RUN:** | |

**SERVICE QUALITY SUMMARY**

| CLIENT WSG | | | | | ENGINEER | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | |
| | | | | | | | | | | **SAFETY** |
| | | | | | | | | | | **PROMPTNESS** |
| | | | | | | | | | | **TOOL & SURFACE SYSTEM PERFORMANCE** |
| | | | | | | | | | | **ATTITUDE & CO-OPERATION** |
| | | | | | | | | | | **WELLSITE PRODUCTS / LOG QUALITY** |
| | | | | | | | | | | **COMMUNICATIONS / TX PERFORMANCE** |
| | | | | | | | | | | **OTHER (PLEASE SPECIFY)** |
| 1: Excellent - 2 - 3: Normal - 4 - 5: Very Poor | | | | | | | | | | |

# Geology Operations

**Santos**
ABN 80 007 550 923

## ELECTRIC LOGGING TIME SUMMARY

| | |
|---|---|
| **LOGGING UNIT:** | 571 |
| **START DATE:** | 20/12/03 |
| **END DATE:** | 21/12/03 |
| **DEPTH DRILLER:** | 2575m |
| **DEPTH LOGGER:** | 2576m |

| | |
|---|---|
| **LEFT BASE:** | 18/12/03 |
| **ARRIVED AT THE WELLSITE:** | 18/12/03 |
| **INITIAL RIG UP:** | 20/12/03 |
| **FINAL RIG DOWN:** | 21/12/03 |
| **RETURN TO BASE:** | 22/12/03 |

| | |
|---|---|
| **WELL NAME:** | Hill 1 |
| **TRIP NUMBER:** | Suite 1 |
| **WELLSITE GEOLOGIST:** | J.Pitman |
| **LOGGING ENGINEER:** | T.AwobadeJo |
| **PAGE / DATE:** | 2 21/12/03 |

| DATE / TIME | RIG UP / DOWN | TOOL CHECK | RIH / POOH | LOGGING | DATA TX | LOST TIME SCHL | I. O. | WIPER TRIP | LOST TIME OTHERS | OTHERS | COMMENTS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 00:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | LOG GR TO SURFACE |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| 01:00 | | | | X | | | | | | | 01:15 HR TOOL AT SURFACE |
| | X | | | | | | | | | | |
| :30 | X | | | | | | | | | | |
| | X | | | | | | | | | | |
| 02:00 | X | | | | | | | | | | 02:15 HR FINISH RIG DOWN RUN 1 |
| | X | | | | | | | | | | RIG CSAT GUNS |
| :30 | X | | | | | | | | | | |
| | X | | | | | | | | | | |
| 03:00 | X | | | | | | | | | | 03:00 HR PICK UP TOOLS |
| | | | X | | | | | | | | 03:15 HR RUN IN HOLE RUN 2 CHECKSHOT |
| :30 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| 04:00 | | | X | | | | | | | | 03:50 HR AT CASING SHOE |
| | | | X | | | | | | | | |
| :30 | | | X | | | | | | | | |
| | | | | X | | | | | | | 04:45 HR LOG UP FROM 2570m |
| 05:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| 06:00 | | | | X | | | | | | | TOTAL: 30 STATIONS AT 50m INTERVALS |
| | | | | X | | | | | | | |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | LOSS OF SIGNAL AT 1070m |
| 07:00 | | | | X | | | | | | | 07:15 HR PULL OUT OF HOLE |
| | | | X | | | | | | | | |
| :30 | X | | | | | | | | | | 07:45 HR FINISH RIGGING DOWN RUN 2 |
| | X | | | | | | | | | | |
| 08:00 | X | | | | | | | | | | |
| | X | | | | | | | | | | |
| :30 | | | X | | | | | | | | 08:30 HR RIG RUN 3 MDT |
| | | | X | | | | | | | | |
| 09:00 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| :30 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| 10:00 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| :30 | | | | X | | | | | | | 10:30 HR FIRST PRETEST |
| | | | | X | | | | | | | |
| 11:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| :30 | | | | X | | | | | | | |
| | | | | X | | | | | | | |

**TOTALS**

| TOTAL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.75 | 2.75 | | 1.5 | 3.5 | | | | | | | |
| 5.5 | 1.25 | | 1.75 | 2.5 | | | | | | | |

| **WSG (SIGN)** | **ENGINEER(SIGN)** |
|---|---|
| J.PITMAN | T.Awobadejo |

**TOOLS RUN:** RUN 1 PEX DSI

**TOOLS RUN:** RUN 2 CHECKSHOT

| LOGGING UNIT: | 571 | WELL NAME | HILL 1 | PAGE | 2A |
|---|---|---|---|---|---|

| DATE / TIME | RIG UP / DOWN | TOOL CHECK | RIH / POOH | LOGGING | DATA TX | LOST TIME SCHL | I. O. | WIPER TRIP | LOST TIME OTHERS | OTHERS | COMMENTS / REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | LOGGING RUN 3 MDT |
| :30 | | | | X | | | | | | | TOTAL 11 PRETESTS, 2 CURTAILED |
| | | | | X | | | | | | | 9 NORMAL |
| 13:00 | | | X | | | | | | | | 13:00 HR PULL OUT OF HOLE RUN 3 MDT |
| | | | X | | | | | | | | |
| :30 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| 14:00 | X | | | | | | | | | | 14:00 HR TOOL ON SURFACE |
| | X | | | | | | | | | | 14:30 HR FINISH RIGGING DOWN MDT |
| :30 | X | | | | | | | | | | 14:30 HR START TO RIG UP RUN 4 CST'S |
| | X | | | | | | | | | | |
| 15:00 | | | | | | | | | | X | 15:00 HR WAIT ON WEATHER – THUNDER |
| | | | | | | | | | | X | STORM |
| :30 | | | | | | | | | | X | |
| | X | | | | | | | | | | 15:45 HR PICK UP GUNS |
| 16:00 | X | | | | | | | | | | |
| | | | X | | | | | | | | 16:15 HR RUN IN HOLE RUN 4 CST |
| :30 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| 17:00 | | | X | | | | | | | | |
| | | | | X | | | | | | | 17:15 HR CORRELATE AND START TAKING |
| :30 | | | | X | | | | | | | CORES |
| | | | | X | | | | | | | |
| 18:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | TOTAL 43 SIDEWALLS ATTEMPTED, |
| :30 | | | | X | | | | | | | 21 RECOVERED, 5 MISFIRE, 2 EMPTY |
| | | | | X | | | | | | | 15 LOST BULLETS |
| 19:00 | | | | X | | | | | | | |
| | | | | X | | | | | | | |
| :30 | | | X | | | | | | | | 19:30 HR FINISH SIDEWALL CORES PULL |
| | | | X | | | | | | | | OUT OF HOLE |
| 20:00 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| :30 | | | X | | | | | | | | |
| | | | X | | | | | | | | |
| 21:00 | X | | | | | | | | | | 21:00 HR TIOOL AT SURFACE |
| | X | | | | | | | | | | |
| :30 | X | | | | | | | | | | |
| | X | | | | | | | | | | 22:00 HR FINISH RIGGING DOWN |
| 22:00 | | | | | | | | | | | SCHLUMBERGER WIRELINE |
| | | | | | | | | | | | |
| :30 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 23:00 | | | | | | | | | | | |
| | | | | | | | | | | | |
| :30 | | | | | | | | | | | |
| | | | | | | | | | | | |

| WSG (SIGN) | ENGINEER(SIGN) |
|---|---|
| J.PITMAN | T.Awobadejo |

**TOTALS**

| TOTAL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 6.75 | 1.25 | | 3.0 | 2.5 | | | | | | |
| 7.5 | 2.0 | | 2.5 | 2.25 | | | | | | 0.75 |

**TOOLS RUN:** RUN 3 MDT

**TOOLS RUN:** RUN 4 CST

| SERVICE QUALITY SUMMARY | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CLIENT WSG | | | | | ENGINEER | | | | | |
| 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | |
| | | | | | | | | | | **SAFETY** |
| | | | | | | | | | | **PROMPTNESS** |
| | | | | | | | | | | **TOOL & SURFACE SYSTEM PERFORMANCE** |
| | | | | | | | | | | **ATTITUDE & CO-OPERATION** |
| | | | | | | | | | | **WELLSITE PRODUCTS / LOG QUALITY** |
| | | | | | | | | | | **COMMUNICATIONS / TX PERFORMANCE** |
| | | | | | | | | | | **OTHER (PLEASE SPECIFY)** |
| 1: Excellent - 2 - 3: Normal - 4 - 5: Very Poor | | | | | | | | | | |

# SECTION 3.4 : MDT PRESSURE SURVEY RESULTS

# Santos

## MDT PRESSURE SURVEY (RUN 3)

**WELL: Hill 1** RT: 22.4 metres Gauge Type : CQG Page : 1 OF 1
WITNESS: J Pitman Time since last circ : 12:30 hrs on 20/12/03 Probe/Packer Type : Standard Date : 21/12/2003

| | FORMATION | DEPTH | DEPTH | FILE | | TEST RESULTS | | | | | INTERPRETATION | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | RT MD m | SUBSEA m | NO | HYDRO BEFORE PSIA | FORM PRESS PSIA | HYDRO AFTER PSIA | TEMP deg C | D/D MOB MD/CP | TYPE D/D | TYPE BUILD | Super Charged | |
| | | | | 66 | | | | | | | | CORRELATION | |
| 1 | PAARATTE | 1978.0 | 1955.6 | 67 | 3417.00 | 2844.05 | 3411.57 | 74.0 | 37.2 | N | GOOD - STABILISED | | 20cc |
| 2 | PAARATTE | 1994.0 | 1971.6 | 68 | 3443.00 | 2866.29 | 3436.42 | 75.1 | 401.9 | N | GOOD - STABILISED | | 20cc |
| 3 | PAARATTE | 1997.0 | 1974.6 | 69 | 3443.60 | 2870.78 | 3441.55 | 75.6 | 164.3 | N | GOOD - STABILISED | | 20cc |
| 4 | PAARATTE | 2005.0 | 1982.6 | 70 | 3462.47 | - | 3454.50 | 76.5 | - | N | TIGHT ? | TOOL PLUGGING ? | |
| 5 | PAARATTE | 2005.5 | 1983.1 | 71 | 3457.50 | 2882.58 | 3455.49 | 76.5 | 75.2 | N | GOOD - STABILISED | | 20cc |
| 6 | PAARATTE | 2014.0 | 1991.6 | 72 | 3476.50 | 2894.66 | 3470.50 | 76.8 | 1088.3 | N | GOOD - STABILISED | | 20cc |
| 7 | PAARATTE | 2016.0 | 1993.6 | 73 | 3475.50 | 2897.54 | 3473.60 | 77.0 | 608.1 | N | GOOD - STABILISED | | 20cc |
| 8 | PAARATTE | 2022.0 | 1999.6 | 74 | 3488.78 | 2905.68 | 3484.27 | 77.3 | 996.30 | N | GOOD - STABILISED | | 20cc |
| | | | | 75 | | | | | | | | CORRELATION | |
| 9 | PAARATTE | 2074.0 | 2051.6 | 76 | 3587.50 | 3007.07 | 3573.55 | 78.6 | 1.00 | N | SLOW - STABILISED | | 20cc |
| 10 | PAARATTE | 2193.0 | 2170.6 | 77 | 3805.55 | - | 3791.14 | 80.7 | - | L | - | | CURTAILED |
| 11 | PAARATTE | 2282.0 | 2259.6 | 78 | 3955.70 | 3274.64 | 3935.40 | 82.8 | 4.00 | N | SLOW - STABILISED | | 20cc |

**TOTAL PRETESTS:** 11

**CURTAILED** 2

**NORMAL** 9

Expected Water Gradient: 0.433 psi/ft
Mud Weight : 9.8ppg

# SECTION 3.5 : MWD END OF WELL REPORT (Sperry Sun)

# End of Well Report
# for
# Santos SBU

| | |
|---|---|
| Rig: | Ocean Epoch |
| Well: | Hill-1 |
| Field: | Exploration |
| Country: | Australia |
| Job No: | AU-FE-0002774266 |
| Date: | 08-Dec-03 |
| API No: | |

# Table of Contents

# General Information

| | | |
|---|---|---|
| Company: | Santos SBU | |
| Rig: | Ocean Epoch | |
| Well: | Hill-1 | |
| Field: | Exploration | |
| Country: | Australia | |
| API Number: | | |
| Sperry-Sun Job Number: | AU-FE-0002774266 | |
| Job start date: | 08-Dec-03 | |
| Job end date: | 20-Dec-03 | |
| North reference: | Grid | |
| Declination: | 10.483 | deg |
| Dip angle: | -70.112 | deg |
| Total magnetic field: | 61074.953 | nT |
| Date of magnetic data: | 12-Dec-03 | |
| Wellhead coordinates N: | 38 deg. 48 min 50.380 sec South | |
| Wellhead coordinates E: | 141 deg. 50 min 39.580 sec East | |
| Vertical section direction: | Closure | deg |
| MWD Engineers: | T.Oborne | A.Wilson |

| | |
|---|---|
| Company Representatives: | G.Howard |
| Company Geologist: | J.Pittman |
| Lease Name: | VIC-P-51 |
| Unit Number: | LT-1087 |
| State: | Victoria |
| County: | |

# Operational Overview

Sperry-Sun Drilling Services was contracted by Santos SBU to supply Logging While Drilling (LWD) services on the well Hill-1 in permit VIC-P-51. The well was drilled with Diamond Offshore's MODU Ocean Epoch.

311 mm (12 1/4") Hole Section.
Sperry-Sun's 8" FEWD tool suite was utilised in this hole section. This consists of a Dual Gamma Ray (DGR), Four Phase Electromagnetic Wave Resistivity (EWR-P4) and a Directional Modual (DM) for deviation control. This hole section was drilled in one bit run from 777.0 - 1810.0 mMDRT. All recorded data was recovered on surface.

216 mm (8 1/2") Hole Section.
Sperry-Sun's 6 3/4" FEWD tool suite was utilised in this hole section. This consists of a Dual Gamma Ray (DGR), Four Phase Electromagnetic Wave Resistivity (EWR-P4) and a Directional Modual (DM) for deviation control. This hole section was drilled in one bit run from 1810.0 mMDRT to the well TD at 2575.0 mDMRT. All recorded data was recovered on surface.

# Summary of MWD runs

| Run No. | Bit No. | Hole Size (mm) | MWD Sensors | Start Depth (m) | End Depth (m) | Drill/Wipe Distance (m) | Run Start Date Time | Run End Date Time | BRT Hrs. | Oper. Hrs. | Circ. Hrs. | Max. Temp. (degC) | Serv. Int. | Trip for MWD | Failure Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0100 | 100 | 311.00 | DIR-FE | 777.00 | 1810.00 | 1033.00 | 14-Dec-03 18:29 | 16-Dec-03 21:59 | 51.50 | 49.59 | 32.00 | 52.00 | No | No | |
| 0200 | 200 | 216.00 | DIR-FE | 1810.00 | 2575.00 | 765.00 | 18-Dec-03 12:37 | 20-Dec-03 18:34 | 53.95 | 53.97 | 33.70 | 70.00 | No | No | |
| TOTALS | ====> | | | | | 1798.00 | | | 105.45 | 103.56 | 65.70 | | 0 | 0 | |

# Bit run Summary

## Run Time Data

| | |
|---|---|
| MWD Run : | 0100 |
| Rig Bit No: | 100 |
| Hole Size : | 311.00 mm |
| Run Start : | 14-Dec-03 18:29 |
| Run End : | 16-Dec-03 21:59 |
| BRT Hrs : | 51.50 |
| Circ. Hrs : | 32.00 |
| Oper. Hrs : | 49.59 |

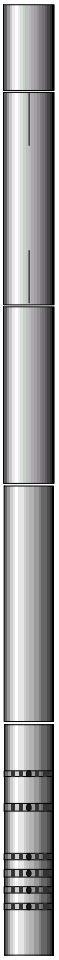
## Drilling Data

| | | |
|---|---|---|
| Start Depth : | 777.00 | m |
| End Depth : | 1810.00 | m |
| Footage : | 1033.00 | m |
| Avg. Flow Rate : | 860.00 | gpm |
| Avg. RPM : | 145.00 | rpm |
| Avg. WOB : | 25.00 | klb |
| Avg. ROP : | 43.20 | m/hr |
| Avg. SPP : | 3800.00 | psig |

## Mud Data

| | | | | |
|---|---|---|---|---|
| Mud Type : | KCl/PHPA | | | |
| Weight / Visc : | 1.11 | sg / | 42.30 | spl |
| Chlorides : | 37000 | ppm | | |
| PV / YP : | 16.00 | cp / | 11.50 | pa |
| Solids/Sand : | 6 | % / | 0.6 | % |
| %Oil / O:W : | N/A | % / | N/A:100 | |
| pH/Fluid Loss: | 8.80 | pH / | 7.00 | cptm |
| Max. Temp. : | 52.00 | degC | | |

## MWD Schematics




5. Hang-off Sub
SN :

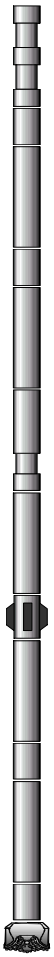
4. PM
SN : 103286
16.02 m From Bit

3. HCIM
SN : 170439

2. DGR
SN : 188554
12.49 m From Bit

1. EWR-P4
SN : 77242
9.46 m From Bit

## BHA Schematics




| | Component | Length (m) | O.D. (mm) | I.D. (mm) |
|---|---|---|---|---|
| 13. | HWDP | 113.38 | 114.000 | 76.000 |
| 12. | Cross Over Sub | 1.10 | 214.000 | 49.000 |
| 11. | Drill Collar | 9.51 | 209.550 | 71.438 |
| 10. | Cross Over Sub | 8.19 | 214.000 | 76.000 |
| 09. | Drill Collar | 27.61 | 209.550 | 71.438 |
| 08. | Drilling Jars | 9.77 | 214.000 | 49.000 |
| 07. | Drill Collar | 65.76 | 209.550 | 71.438 |
| 06. | 3-Point String Reamer | 2.01 | 214.000 | 76.000 |
| 05. | MWD | 12.92 | 214.000 | 54.400 |
| 04. | Cross Over Sub | 2.01 | 203.000 | 76.000 |
| 03. | Drill Collar | 2.97 | 209.550 | 71.438 |
| 02. | Bit Sub | 2.15 | 214.000 | 76.000 |
| 01. | HC-605 | 0.38 | 311.000 | 0.000 |

## Comments

Drilled 311mm hole section from 777.0 - 1810.00 mMDRT. All recorded data was recovered at surface.

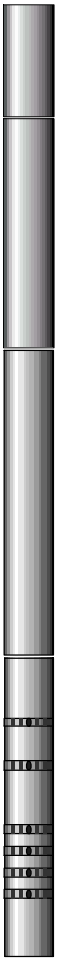
## MWD Performance

| | | | | |
|---|---|---|---|---|
| Tool OD / Type : | 203.20 | mm / | P4M | |
| MWD Real-time%: | 95.00 | % / | 100.00 | % |
| MWD Recorded%: | 96.00 | % / | 100.00 | % |
| Min. Inc. : | 0.12 | deg / | 787.46 | m |
| Max. Inc. : | 1.04 | deg / | 1569.90 | m |
| Final Az. : | 348.35 | deg | | |
| Max Op. Press. : | 2730 | psig | | |

# Bit run Summary

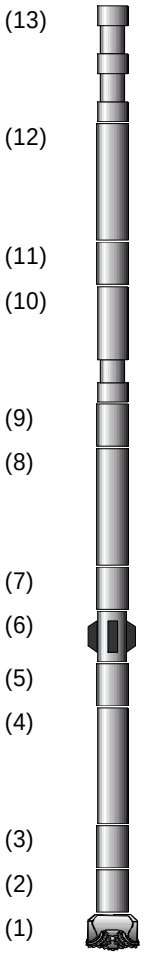
| Run Time Data | | Drilling Data | | | Mud Data | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MWD Run : | 0200 | Start Depth : | 1810.00 | m | Mud Type : | KCl/PHPA | | | |
| Rig Bit No: | 200 | End Depth : | 2575.00 | m | Weight / Visc : | 1.15 | sg / | 74.00 | spl |
| Hole Size : | 216.00 mm | Footage : | 765.00 | m | Chlorides : | 42000 | ppm | | |
| Run Start : | 18-Dec-03 12:37 | Avg. Flow Rate : | 650.00 | gpm | PV / YP : | 23.00 | cp / | 16.70 | pa |
| Run End : | 20-Dec-03 18:34 | Avg. RPM : | 145.00 | rpm | Solids/Sand : | 9.5 | % / | 0.25 | % |
| BRT Hrs : | 53.95 | Avg. WOB : | 25.00 | klb | %Oil / O:W : | N/A | % / | N/A:100 | |
| Circ. Hrs : | 33.70 | Avg. ROP : | 32.70 | m/hr | pH/Fluid Loss: | 9.00 | pH / | 4.20 | cptm |
| Oper. Hrs : | 53.97 | Avg. SPP : | 3200.00 | psig | Max. Temp. : | 70.00 | degC | | |

## MWD Schematics




4. Hang-off Sub
   SN :
3. HCIM
   SN : 191774
2. DGR
   SN : 016131
   7.51 m From Bit
1. EWR-P4
   SN : 130937
   4.47 m From Bit

## BHA Schematics




| | Component | Length (m) | O.D. (mm) | I.D. (mm) |
|---|---|---|---|---|
| 13. | HWDP | 113.34 | 114.000 | 76.000 |
| 12. | Drill collar | 28.08 | 165.000 | 76.000 |
| 11. | Cross Over Sub | 0.36 | 166.000 | 76.000 |
| 10. | Drilling Jars | 9.63 | 166.000 | 76.000 |
| 09. | Cross Over Sub | 0.82 | 169.000 | 76.000 |
| 08. | Spiral Drill collar | 111.52 | 166.000 | 76.000 |
| 07. | Cross Over Sub | 0.36 | 169.000 | 76.000 |
| 06. | 3-Point String Reamer | 1.42 | 171.000 | 76.000 |
| 05. | Cross Over Sub | 0.59 | 169.000 | 76.000 |
| 04. | MWD | 12.00 | 171.000 | 83.000 |
| 03. | Cross Over Sub | 0.50 | 171.000 | 76.000 |
| 02. | Bit Sub | 1.58 | 160.000 | 76.000 |
| 01. | DSX104-HGN | 0.23 | 311.000 | 0.000 |

## Comments

Drill 8 1/2" hole section from 1810.0 to 2575.0 mMDRT. All recorded data was recovered on surface.

## MWD Performance

| | | | | |
|---|---|---|---|---|
| Tool OD / Type : | 171.45 | mm / | P4M | |
| MWD Real-time%: | 95.00 | % / | 100.00 | % |
| MWD Recorded%: | 95.00 | % / | 100.00 | % |
| Min. Inc. : | 0.12 | deg / | 2266.83 | m |
| Max. Inc. : | 0.88 | deg / | 1830.94 | m |
| Final Az. : | 204.43 | deg | | |
| Max Op. Press. : | 4250 | psig | | |

# Directional Survey Data

| Measured Depth (metres) | Inclination (degrees) | Direction (degrees) | Vertical Depth (metres) | Latitude (metres) | Departure (metres) | Vertical Section (metres) | Dogleg (deg/30m) |
|---|---|---|---|---|---|---|---|
| 215.0( | 0.0( | 0.0( | 215.0( | 0.0( N | 0.0( E | 0.0( | TIE-IN |
| 256.00 | 1.00 | 0.00 | 256.00 | 0.00 N | 0.00 E | 0.00 | 0.01 |
| 771.0( | 0.5( | 0.0( | 771.0( | 0.22 N | 0.54 E | 0.35 | 0.01 |
| 787.4( | 0.12 | 67.24 | 787.4( | 0.24 N | 0.57 E | 0.37 | 0.01 |
| 843.00 | 0.22 | 48.21 | 843.00 | 0.33 N | 0.70 E | 0.49 | 0.06 |
| 904.44 | 0.31 | 35.64 | 904.44 | 0.55 N | 0.89 E | 0.75 | 0.05 |
| 929.63 | 0.4( | 38.33 | 929.63 | 0.67 N | 0.98 E | 0.89 | 0.11 |
| 1017.4( | 0.87 | 38.98 | 1017.39 | 1.42 N | 1.59 E | 1.76 | 0.16 |
| 1045.4( | 0.84 | 22.92 | 1045.4( | 1.78 N | 1.8( E | 2.16 | 0.26 |
| 1075.6( | 0.81 | 9.37 | 1075.6( | 2.19 N | 1.92 E | 2.59 | 0.19 |
| 1107.14 | 0.72 | 9.97 | 1107.12 | 2.6( N | 1.99 E | 3.01 | 0.08 |
| 1162.24 | 0.83 | 10.31 | 1162.22 | 3.34 N | 2.12 E | 3.75 | 0.06 |
| 1191.3( | 0.96 | 20.31 | 1191.3( | 3.77 N | 2.25 E | 4.2( | 0.21 |
| 1222.78 | 0.96 | 24.23 | 1222.75 | 4.26 N | 2.45 E | 4.72 | 0.06 |
| 1248.5( | 0.97 | 35.16 | 1248.52 | 4.64 N | 2.66 E | 5.14 | 0.21 |
| 1280.63 | 0.93 | 40.57 | 1280.59 | 5.05 N | 2.98 E | 5.63 | 0.09 |
| 1309.3( | 0.84 | 37.96 | 1309.2( | 5.4( N | 3.27 E | 6.02 | 0.1( |
| 1339.1( | 0.93 | 39.7( | 1339.06 | 5.75 N | 3.55 E | 6.44 | 0.09 |
| 1394.96 | 0.89 | 36.1( | 1394.91 | 6.45 N | 4.1( E | 7.25 | 0.04 |
| 1455.71 | 0.92 | 32.58 | 1455.65 | 7.24 N | 4.64 E | 8.15 | 0.03 |
| 1483.0( | 1.02 | 32.83 | 1482.99 | 7.63 N | 4.89 E | 8.59 | 0.11 |
| 1510.37 | 1.03 | 29.55 | 1510.30 | 8.05 N | 5.14 E | 9.05 | 0.06 |
| 1538.7( | 1.01 | 27.64 | 1538.63 | 8.49 N | 5.38 E | 9.54 | 0.04 |
| 1569.9( | 1.04 | 13.43 | 1569.82 | 9.01 N | 5.58 E | 10.09 | 0.24 |
| 1627.36 | 1.04 | 9.82 | 1627.27 | 10.03 N | 5.78 E | 11.13 | 0.03 |
| 1655.58 | 0.87 | 5.35 | 1655.49 | 10.5( N | 5.85 E | 11.6( | 0.19 |
| 1685.81 | 0.94 | 10.68 | 1685.72 | 10.97 N | 5.92 E | 12.07 | 0.11 |
| 1712.12 | 0.96 | 9.64 | 1712.02 | 11.40 N | 5.99 E | 12.51 | 0.03 |
| 1745.9( | 0.99 | 6.48 | 1745.8( | 11.97 N | 6.07 E | 13.08 | 0.06 |
| 1772.73 | 0.77 | 353.39 | 1772.62 | 12.38 N | 6.08 E | 13.48 | 0.33 |
| 1791.4( | 0.69 | 348.35 | 1791.29 | 12.61 N | 6.04 E | 13.70 | 0.17 |
| 1830.94 | 0.88 | 326.25 | 1830.83 | 13.1( N | 5.82 E | 14.12 | 0.27 |
| 1856.75 | 0.78 | 329.33 | 1856.64 | 13.42 N | 5.62 E | 14.38 | 0.12 |
| 1918.2( | 0.81 | 316.68 | 1918.08 | 14.09 N | 5.11 E | 14.91 | 0.09 |
| 1944.22 | 0.66 | 306.66 | 1944.1( | 14.32 N | 4.87 E | 15.07 | 0.22 |
| 1973.45 | 0.62 | 331.7( | 1973.33 | 14.56 N | 4.66 E | 15.25 | 0.29 |
| 2002.66 | 0.61 | 346.23 | 2002.54 | 14.85 N | 4.55 E | 15.50 | 0.16 |
| 2031.42 | 0.65 | 345.22 | 2031.29 | 15.15 N | 4.47 E | 15.78 | 0.04 |
| 2059.75 | 0.63 | 337.25 | 2059.62 | 15.45 N | 4.37 E | 16.05 | 0.1( |
| 2089.98 | 0.79 | 349.72 | 2089.85 | 15.81 N | 4.26 E | 16.37 | 0.21 |

# Directional Survey Data

| Measured Depth (metres) | Inclination (degrees) | Direction (degrees) | Vertical Depth (metres) | Latitude (metres) | Departure (metres) | Vertical Section (metres) | Dogleg (deg/30m) |
|---|---|---|---|---|---|---|---|
| 2122.0 | 0.7 | 341.3 | 2121.9 | 16.2 N | 4.1 E | 16.7 | 0.12 |
| 2151.0 | 0.47 | 3.16 | 2150.89 | 16.51 N | 4.11 E | 17.02 | 0.35 |
| 2179.6 | 0.4 | 356.67 | 2179.5 | 16.7 N | 4.11 E | 17.2 | 0.06 |
| 2206.8 | 0.3 | 7.86 | 2206.7 | 16.9 N | 4.11 E | 17.4 | 0.12 |
| 2237.9 | 0.14 | 43.0 | 2237.76 | 17.06 N | 4.15 E | 17.56 | 0.27 |
| 2266.8 | 0.12 | 51.6 | 2266.69 | 17.11 N | 4.20 E | 17.62 | 0.02 |
| 2323.7 | 0.31 | 195.67 | 2323.6 | 17.0 N | 4.21 E | 17.51 | 0.22 |
| 2352.5 | 0.50 | 187.16 | 2352.41 | 16.80 N | 4.17 E | 17.31 | 0.20 |
| 2382.6 | 0.57 | 188.7 | 2382.5 | 16.5 N | 4.1 E | 17.0 | 0.07 |
| 2412.0 | 0.5 | 186.7 | 2411.8 | 16.2 N | 4.0 E | 16.7 | 0.03 |
| 2440.8 | 0.6 | 189.7 | 2440.6 | 15.9 N | 4.0 E | 16.4 | 0.08 |
| 2470.1 | 0.64 | 190.52 | 2469.98 | 15.59 N | 3.99 E | 16.09 | 0.01 |
| 2498.1 | 0.6 | 197.21 | 2498.0 | 15.2 N | 3.91 E | 15.7 | 0.08 |
| 2524.2 | 0.70 | 194.84 | 2524.05 | 14.98 N | 3.83 E | 15.46 | 0.06 |
| 2553.3 | 0.8 | 204.4 | 2553.1 | 14.61 N | 3.6 E | 15.07 | 0.21 |
| 2575.0 | 0.86 | 204.43 | 2574.85 | 14.32 N | 3.55 E | 14.75 | 0.00 |

# Directional Survey Data

CALCULATION BASED ON Minimum Curvature METHOD

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT
TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG CLOSURE OF 13.95 DEGREES (GRID)
A TOTAL CORRECTION OF 11.01 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 2575.00 METRES
IS 14.75 METRES ALONG 13.95 DEGREES (GRID)

Final survey is projected to TD.
Surveys at 256.0 and 771.0 mMDRT are from an Andergauge survey tool.

# Sperry-Sun, A Halliburton Company

# SECTION 4 : PRODUCTION TEST REPORT

No Production tests were conducted at Hill-1

# SECTION 5 : DAILY GEOLOGICAL REPORTS

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 09/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 4 |
|---|---|---|

Note: Geological Reorts numbered to correspond with Drilling Reports. Previous Drilling Reports (1-3) refer to pre-spud and rig move operations.

**(As at 2400 hours EST, 8/12/03)** **DEPTH :** 268 m **PROGRESS:** 33m **DAYS FROM SPUD:** 0.12
**OPERATION** : DISPLACING HOLE TO MUD PRIOR TO RUNNING 30" CASING.

**(As at 0600 hours EST, 09/12/03)** **DEPTH :** 268m
**OPERATION** : RUNNING 30 / 20" CONDUCTOR AND PERMANENT GUIDE BASE.

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**CASING DEPTH:** 30/20" SET AT 268m **RIG: OCEAN EPOCH**
**RT – SEAFLOOR: 235.2**m
**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH: 212.8**m

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| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Spud Mud | 8.8 | | | | | | | |

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| **BIT DATA** (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 1 | STC | DSJ | 26" | 1.41 | 33 | 1-1-FC-A-2-I-NO-TD |
| | LAST | | | | | | | |

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**SURVEYS**: MD (m) INCLINATION AZIMUTH MD (m) INCLINATION AZIMUTH

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**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

RIG UNDER TOW TO LOCATION. RUN ANCHORS. BALLAST RIG TO 55' DRILLING DRAFT. PICK UP AND RACK BACK 20 STANDS OF 5" DRILL PIPE. MAKE UP 30" RUNNING TOOL. PICK UP BOTTOM HOLE ASSEMBLY AND RUN IN HOLE. TAG SEABED AT 235.2m. **SPUD HILL 1 AT 21:00 HOURS ON 08/12/03.** DRILL 36" HOLE TO 268m. SWEEP HOLE. SPOT HI-VIS MUD. PULL OUT OF HOLE TO 242m. HOLE GOOD. RUN IN HOLE TO 268m. NO FILL. DISPLACE HOLE WITH 200BBLS OF MUD. SURVEY.

**00:00 – 06:00 HOURS 9/12/03:**

DROP TOTCO SURVEY AND RECOVER. MISFIRE. RE-RUN SURVEY, 1 DEG. PULL OUT OF HOLE. LAY DOWN 26" BIT AND 36" HOLE OPENER. MAKE UP CEMENT HEAD. MOVE PERMANENT GUIDE BASE TO THE MOON POOL. RUN 30" CASING.

**ANTICIPATED OPERATIONS:**

RUN AND CEMENT 30" CASING. PICK UP 17½" DRILLING ASSEMBLY AND RUN IN HOLE.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 09/12/03 - 0600 HRS | HILL 1 | REPORT NO: 4 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 08/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0100 | 1.0 | Lady dawn on tow bridle. Continue towing rig to location. Make turn for final approach (from 290 deg to 240 deg) at 00:07 hrs, and cut speed to below 2 knots. Continue on final apprach path. Pay out 400 ft of anchor chain on number 7 anchor at 00:50 hrs. Continue approach anchor drop zone. |
| 0100 | 1200 | 11.0 | Drop anchor #7, on target. Anchor #7 on bottom at 01:04 am.<br>#3 pendant passed to Pacific Challenger at 01:46 hrs. #3 anchor on bottom at 02:22 hrs. #3 pendant back to rig at 02:53.<br>#6 pendant passed to Pacific Challenger at 03:05 hrs. #6 anchor on bottom at 03:34 hrs. #6 pendant back to rig at 04:04.<br>#2 pendant passed to Pacific Challenger at 04:21 hrs. #2 anchor on bottom at 04:54 hrs. #2 pendant back to rig at 05:19.<br>#8 pendant passed to Pacific Challenger at 05:39 hrs. #8 anchor on bottom at 06:04 hrs. #8 pendant back to rig at 06:30.<br>Lady Dawn released from tow-bridle at 06:07 hrs.<br>#4 pendant passed to Pacific Challenger at 06:51 hrs. #4 anchor on bottom at 07:17 hrs. #4 pendant back to rig at 08:37.<br>#1 pendant passed to Lady Dawn at 07:26 hrs. #1 anchor on bottom at 08:23 hrs. #1 pendant back to rig at 09:10.<br>#5 pendant passed to Pacific Challenger at 08:53 hrs. #5 anchor on bottom at 09:20 hrs. #5 pendant back to rig at 09:50.<br>Commence ballast rig at 01:00 hrs. Finish Ballast rig at 11:48 hrs, with rig at 55 ft drilling draft.<br>SIMOPS - Pick up and rack back 4 stands HWDP. 7 stands 5" drill pripe. |
| 1200 | 1400 | 2.0 | Pick up and rack back 13 stands 5" drill pipe. (Total 20 stands 5" drill pipe made up and stood back in derrick.) |
| 1400 | 1530 | 1.5 | Pick up and make up Dril Quip 30" casing running tool. Stand back in derrick. |
| 1530 | 2030 | 5.0 | Pick up bottom hole assembly, including 17½" bottom hole assembly components, and run in hole. Tag sea bed at 235.2 m RT LAT. |
| 2030 | 2100 | 0.5 | Verify tag seabed with ROV. Pick-up 10 m and survey with anderdrift tool. Survey = 0.5 deg. |
| 2100 | 2300 | 2.0 | Spud well from 235 m to 268 m. Wash down 5 m from mud line, at 200 gpm, pumping hi-vis PHB, at 20 RPM. Switch to Seawater and stage flow up to 1200 gpm. Increase rotary to 50 RPM. Sweep hole with 50 bbls hi-vis every tool joint. |
| 2300 | 2330 | 0.5 | Spot 200 bbls hi-vis into hole and take inclination survey with anderdrift tool. Tool indicates 2.25 deg. Take check survey. Tool indicates 2.0 deg. |
| 2330 | 2400 | 0.5 | Pull out of hole to 242 m. No drag. Take check survey with Anderdrift tool. Tool indicates 1.5 deg. Run in hole to 268 m. No fill. Hole good. Take check survey. Tool indicates 2.25 deg. Displace hole with 200 bbls PHB and prepare to drop TOTCO survey. |

# Santos

*ABC.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 09/12/03 - 0600 HRS | HILL 1 | REPORT NO: 4 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| | 36" HOLE SECTION RETURNS TO SEAFLOOR. | |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 10/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 5 |
|---|---|---|

**(As at 2400 hours EST, 9/12/03)** **DEPTH :** 268 m **PROGRESS:** 0m **DAYS FROM SPUD:** 1.12
**OPERATION** : RUNNING INTO THE HOLE WITH THE 17½" DRILLING ASSEMBLY.

**(As at 0600 hours EST, 10/12/03)** **DEPTH :** 268m
**OPERATION** : DRILLING OUT THE 20" CASING SHOE AT 268m.

**CASING DEPTH:** 30/20" SET AT 268m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR: 235.2**m
**WATER DEPTH: 212.8**m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Spud Mud | 8.8 | | | | | | | |

| | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| **BIT DATA** | PRESENT | 2 | REED | EMS11GC | 17 -½" | - | - | IN HOLE |
| (2400 Hours) | LAST | 1 | STC | DSJ | 26" | 1.41 | 33 | 1-1-FC-A-2-I-NO-TD |

| **SURVEYS**: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|
| | 256.0 | 1.0 | | | | |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

DROP TOTCO SURVEY AND RECOVER. MISFIRE. RE-RUN SURVEY, 1 DEG. PULL OUT OF HOLE. LAY DOWN 26" BIT AND 36" HOLE OPENER. MAKE UP CEMENT HEAD. MOVE PERMANENT GUIDE BASE TO THE MOON POOL. RUN 30" CASING, LATCH INTO PERMANENT GUIDE BASE. LOWER TO SEAFLOOR FILLING WITH SEAWATER. STAB INTO HOLE. RUN IN HOLE AND TAG AT 268m. CIRCULATE CASING AND HOLE CLEAN. CEMENT CASING. NO CEMENT RETURNS OBSERVED AT SEABED. SUPPORT CASING STRING AND WAIT ON CEMENT. PULL OUT WITH CEMENT STINGER AND LOWER INTO HOLE BESIDE 30" WELLHEAD HOUSING TO 248.3m. PUMP 91BBLS OF 15.9PPG CEMENT AS TOP UP. CEMENT OBSERVED AT SEAFLOOR. FLUSH AND PULL OUT WITH CEMENT STINGER. MAKE UP 18¾" WELLHEAD, CEMENTING PLUG ASSEMBLY AND RUNNING TOOL. LAY OUT 36" HOLE OPENER. MAKE UP 17½" DRILLING ASSEMBLY AND RUN IN HOLE.

**00:00 – 06:00 HOURS 10/12/03:**

GUIDE ROPES CONNECTED TO BOTTOM OF BOTTOM HOLE ASSEMBLY PARTED. TRIP OUT AND REPLACE GUIDE ROPES. RUN IN HOLE WITH 17 ½" DRILLING ASSEMBLY. TAG TOP OF CEMENT AT 264m. DRILL CEMENT AND 20" CASING SHOE AT 268m.

**ANTICIPATED OPERATIONS:**

DRILL 17½" HOLE SECTION TO 13 3/8" CASING DEPTH AT +/- 765m.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 10/12/03 - 0600 HRS | HILL 1 | REPORT NO: 5 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 09/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Rig up to run TOTCO survey on rig slick-line. Drop TOTCO and recover. Mis-fire. Re-dress TOTCO tool and re-run. Recover TOTCO. Survey indicates 1 degree. |
| 0130 | 0300 | 1.5 | Pull out and rack back bottom hole assembly. Break out and lay down 26" bit and 36" hole opener. |
| 0300 | 0400 | 1 | Make up cementing stand and rack back in derrick. Hold JSA for running 30" casing. Pick up permanent guide base and move over moon pool. |
| 0400 | 0430 | 0.5 | Re-sheave guide wires for permanent guide base. Unlock spider beams in moonpool and move to receive permanent guide base. |
| 0430 | 0500 | 0.5 | Land permanent guide base on spider beams. Pick up 30" elevators. |
| 0500 | 0900 | 4 | Run 30" casing / wellhead housing and latch into permanent guide base on spider beams. Lower assembly to sea level and fill with water. |
| 0900 | 1030 | 1.5 | Run 30" casing and permanent guide base on 5" drill pipe, stab into hole and continue to run in. |
| 1030 | 1100 | 0.5 | Make up cementing stand & hose, run in and tag bottom at 268m. |
| 1100 | 1130 | 0.5 | Circulate casing and hole clean at 264m with 400 gpm. Position permanent guide base with 240 deg heading and top of housing 2m above seabed with conductor shoe at 268m. |
| 1130 | 1230 | 1 | Test cement lines to 1500 psi, pump 5 bbls of freshwater spacer (with dye), mix & pump 168 bbls of 15.9ppg cement slurry and displace with 21 bbls seawater. No cement returns noted at seabed. |
| 1230 | 1500 | 2.5 | Support permanent guide base / casing string in position (indicated permanent guide base angle 1/4 deg) and wait on cement. |
| 1500 | 1700 | 2 | Release CART from wellhead housing and pull out with cement stinger. Lower stinger through permanent guide base and into hole beside 30" wellhead housing to 248.3m. |
| 1700 | 1800 | 1 | Test cement lines and pump 91 bbls of 15.9 ppg cement as top up and displace with 10 bbls seawater. Cement returns noted at seabed. |
| 1800 | 1930 | 1.5 | Pick up out of hole/permanent guide base with stinger, flush pipe and trip out to surface. Lay out CART and 5" DP stinger. |
| 1930 | 2130 | 2 | Make up 18-3/4" wellhead and install SSR cementing plug assembly and running tool. |
| 2130 | 2230 | 1 | Break down and lay out cementing stand and 36" hole opener. |
| 2230 | 2400 | 1.5 | Make up and run 17-1/2" drilling assembly and commence running in. |
| | | | |

# Santos

*ABC.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 10/12/03 - 0600 HRS | HILL 1 | REPORT NO: 5 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| | NO NEW FORMATION DRILLED. | |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 11/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 6 |
|---|---|---|

**(As at 2400 hours EST, 10/12/03)** **DEPTH :** 777 m **PROGRESS:** 509m **DAYS FROM SPUD:** 2.12
**OPERATION** : PULLING OUT OF THE HOLE TO RUN 13 3/8" CASING.

**(As at 0600 hours EST, 11/12/03)** **DEPTH :** 777m
**OPERATION** : MAKING UP 13 3/8" SHOE TRACK.

**CASING DEPTH:** 30/20" SET AT 268m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR: 235.2**m
**WATER DEPTH: 212.8**m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Spud Mud | 8.8 | | | 10.4 | | 900 | | |

| **BIT DATA** (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 2 | REED | EMS11GC | 17 ½" | 13.93 | 509 | In hole |
| | LAST | | | | | | | |

| **SURVEYS**: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|
| | 771 | 0.5 | | | | |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

ATTACH NEW GUIDE ROPES TO BOTTOM OF BOTTOM HOLE ASSEMBLY. CONTINUE TO RUN IN HOLE WITH 17½" DRILLING ASSEMBLY. LOAD DARTS AND MAKE UP CEMENT HEAD / PUP JOINT ASSEMBLY. RUN IN HOLE. TAG TOP OF CEMENT AT 264m. DRILL CEMENT FROM 264m TO 20" CASING SHOE AT 268m. DRILL AHEAD 17½" HOLE FROM 268m TO 777m. SWEEP HOLE WITH PHG MUD SWEEPS. DISPLACE HOLE TO MUD. DROP SURVEY AND PULL OUT OF HOLE.

**00:00 – 06:00 HOURS 11/12/03:**

PULL OUT OF HOLE. RIG TO RUN 13 3/8" CASING. MAKE UP 13 3/8" SHOE TRACK.

**ANTICIPATED OPERATIONS:**

RUN AND CEMENT 13 3/8" CASING. PRPEPARE TO RUN BLOW OUT PREVENTER AND MARINE RISER.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 11/12/03 - 0600 HRS | HILL 1 | REPORT NO: 6 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 10/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0100 | 1 | Guide ropes attached to the bottom of Bottom Hole Assembly parted. Trip out 2 stands and connect new guide ropes. |
| 0100 | 0230 | 1.5 | Continue to run in hole with 17-1/2" drilling assembly. |
| 0230 | 0330 | 1 | Load darts and make up Nodeco cement head / pup joint assembly. |
| 0330 | 0430 | 1 | Run in hole and tag top of cement at 264m with 10k. |
| 0430 | 0600 | 1.5 | Drill out cement from 264m to 20" casing shoe at 268m. |
| 0600 | 2230 | 16.5 | Drill 17-1/2" hole from 268m to surface casing total depth at 777m, pumping seawater with gel sweeps - continuous returns noted at seabed. Indicated well angle (via Anderdrift tool) 1/2 deg. |
| 2230 | 2300 | 0.5 | Pump tandem PHG mud sweeps and displace hole to mud. Displace drill string with seawater. |
| 2300 | 2400 | 1 | Drop Totco survey barrel and commence pulling out of hole, racking back drill pipe. |

# Santos

*ABC.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 11/12/03 - 0600 HRS | HILL 1 | REPORT NO: 6 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| | RETURNS TO SEAFLOOR. | |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 12/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 7 |
|---|---|---|

**(As at 2400 hours EST, 11/12/03)** **DEPTH :** 777 m **PROGRESS:** 0m **DAYS FROM SPUD:** 3.12
**OPERATION** : PREPARING TO RUN BLOW OUT PREVENTER.

**(As at 0600 hours EST, 12/12/03)** **DEPTH :** 777m
**OPERATION** : RUNNING BLOW OUT PREVENTER AND MARINE RISER.

**CASING DEPTH:** 13 3/8" SET AT 769m **RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH:** 212.8m

| MUD DATA | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Spud Mud | 8.8 | | | 10.2 | | 1000 | | |

| BIT DATA (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | | | | | | | |
| | LAST | 2 | REED | EMS11GC | 17 ½" | 13.93 | 509 | 0-0-NO-A-N-I-NO-TD |

| SURVEYS: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

CONTINUE TO PULL OUT WITH 17½" DRILLING ASSEMBLY. WEATHER DETERIORATING. RECOVER SURVEY BARREL. RIG TO RUN CASING. RUN 13 3/8" CASING SHOE TRACK. RUN 13 3/8" 68 LB/FT L80 BTC CASING. RE-POSITION RIG TO STAB INTO WELLHEAD HOUSING. CONTINUE TO RUN CASING. TOTAL 44 JOINTS RUN. MAKE UP 18¾" WELLHEAD HOUSING AND RUNNING TOOL ASSEMBLY. CONTINUE TO RUN CASING ON 5" DRILL PIPE. MAKE UP CEMENT HEAD STAND AND LAND CASING AT 769m. CONFIRM WELLHEAD LATCH. CIRCULATE CASING AND HOLE CLEAN. CEMENT CASING. RELEASE RUNNING TOOL. PULL OUT AND LAY OUT RUNNING TOOL. PREPARE TO RUN BLOW OUT PREVENTERS.

**00:00 – 06:00 HOURS 12/12/03:**

PICK UP AND MOVE BLOW OUT PREVENTER TO MOON POOL. LAND ON BEAMS. PICK UP LOWER MARINE RISER PACKAGE AND CONNECT TO BLOW OUT PREVENTER. MAKE UP AND PRESSURE TEST CHOKE AND KILL LINE STAB CONNECTIONS. RIG UP TO INSTALL RISER DUMP VALVE.

**ANTICIPATED OPERATIONS:**

RUN BLOW OUT PREVENTER AND MARINE RISER. RUN WEAR BUSHING AND TEST CONNECTORS. LAY OUT 17 ½" BOTTOM HOLE ASSEMBLY. PICK UP 12 ¼" DRILLING ASSEMBLY.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 12/12/03 - 0600 HRS | HILL 1 | REPORT NO: 7 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 10/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Continue to pull out with 17-1/2" drilling assembly (max overpull 30k at 600m), hole good. Weather deteriorating. |
| 0130 | 0330 | 2 | Inclement weather, conduct JSA and continue pulling out with bottom hole assembly. |
| 0330 | 0400 | 0.5 | Recover Totco survey barrel (indicated well angle of 1/2 deg at 771m). Clear work area/rig floor, review JSA and conduct pre casing operational and safety meeting. |
| 0400 | 0530 | 1.5 | Rig up to run 13-3/8" casing. |
| 0530 | 0600 | 0.5 | Pick up and run 13-3/8" casing shoe track. |
| 0600 | 0930 | 3.5 | Run in hole with 13-3/8" 68 ppf L-80 BTC casing (inclement weather). |
| 0930 | 1030 | 1 | Reposition rig to stab casing into wellhead housing at 233.2m. |
| 1030 | 1200 | 1.5 | Continue to run in with 13-3/8" casing, total of 44 joints run. |
| 1200 | 1500 | 3 | Make up Drill-Quip 18-3/4" wellhead and running tool assembly. Continue to run casing on 5" drillpipe, make up cement head/stand and land wellhead/casing with shoe at 769m and wellhead top at 232.28m. Take 50 k over pull to confirm wellhead latch. |
| 1500 | 1530 | 0.5 | Made up cementing lines, circulated casing and hole clean. |
| 1530 | 1830 | 3 | Tested lines to 3000psi. Mixed and pumped 240 bbls 12.5 ppg Class G lead and 150 bbls 15.8 ppg class G tail slurry. Released the top dart and displaced drill pipe/casing with 25 bbls seawater via Halliburton (no noted plug shear) and 238.5 bbls seawater with rig pump @ 12 bpm. Bumped plug with 900 psi and tested casing to 3000 psi. Bled back 2.6 bbls to zero. |
| 1830 | 2200 | 3.5 | Remove cementing line and release the running tool from the well head. Lay out cementing head, pull out with 5" drillpipe / running string and lay out running tool. ROV clear bulls eye (1/4 deg.) and confirm wellhead seal area clean. |
| 2200 | 2400 | 2 | Clear rig floor, rig up riser handling equipment. Prepare to move blow out preventers to moon pool. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 12/12/03 - 0600 HRS | HILL 1 | REPORT NO: 7 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY**<br>No new formation drilled. | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| | | |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 13/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 8 |
|---|---|---|

**(As at 2400 hours EST, 12/12/03)** **DEPTH :** 777 m **PROGRESS:** 0m **DAYS FROM SPUD:** 4.12

**OPERATION** : WAITING ON WEATHER, ATTEMPTING TO RUN BLOW OUT PREVENTER AS WEATHER PERMITS.

**(As at 0600 hours EST, 13/12/03)** **DEPTH :** 777m

**OPERATION** : WAITING ON WEATHER, ATTEMPTING TO RUN BLOW OUT PREVENTER AS WEATHER PERMITS.

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**CASING DEPTH:** 13 3/8" SET AT 769m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH:** 212.8m

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| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Seawater / gel sweeps | | | | | | | | |

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| | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| **BIT DATA** (2400 Hours) | PRESENT | | | | | | | |
| | LAST | | | | | | | |

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**SURVEYS**: MD (m) INCLINATION AZIMUTH MD (m) INCLINATION AZIMUTH

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**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

PREPARE TO RUN BLOW OUT PREVENTERS. MOVE BLOW OUT PREVENTER TO THE MOONPOOL AND LAND OUT ON SPIDER BEAMS. PICK UP LOWER MARINE RISER PACKAGE AND LAND / CONNECT TO BLOW OUT PREVENTER. MAKE UP CHOKE AND KILL LINES. INSTALL RISER FILL VALVE ON LOWER MARINE RISER PACKAGE. INSTALL BLUE AND YELLOW PODS. TEST RISER FILL VALVE, FAILED. FUNCTION TEST BLOW OUT PREVENTER AND WORK ON RISER FILL VALVE. NIPPLE DOWN AND LAY OUT RISER FILL VALVE. PICK UP RISER DOUBLE AND INSTALL TO LOWER MARINE RISER PACKAGE. PICK UP AND ATTEMPT TO RUN BLOW OUT PREVENTER THROUGH MOON POOL. NO GO DUE TO WEATHER / RIG MOVEMENT. WAIT ON WEATHER. ATTEMPT TO PERIODICALLY RUN BLOW OUT PREVENTER, SLAMMING INTO MOONPOOL BEAMS WHEN LIFTED.

**00:00 – 06:00 HOURS 13/12/03:**

WAITING ON WEATHER. UNABLE TO RUN BLOW OUT PREVENTER. RIG MOVEMENT SLAMMING BLOWOUT PREVENTER INTO RIG WHEN LIFTED OFF SPIDER BEAMS.

**ANTICIPATED OPERATIONS:**

WAIT ON WEATHER. RUN BLOW OUT PREVENTER AND MARINE RISER. LAND OUT AND TEST CONNECTORS. RUN WEAR BUSHING. LAY OUT 17½" BOTTOM HOLE ASSEMBLY. PICK UP 12¼" DRILLING ASSEMBLY.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 13/12/03 - 0600 HRS | HILL 1 | REPORT NO: 8 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 12/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0300 | 3 | Conduct JSA , stabilise blow out preventer stack with winches, pick up and move stack into moon pool and land out on spider beams. |
| 0300 | 0430 | 1.5 | Pick up lower marine riser package and land out / connect to blow out preventer stack. |
| 0430 | 0530 | 1 | Make up and pressure test kill and choke line stab connections. |
| 0530 | 0900 | 3.5 | Rig up and lift riser fill valve from moon pool area and install on lower marine riser package. |
| 0900 | 1200 | 3 | Install and function test blue and yellow pods. Close blind/shear rams, fill stack and test riser fill valve - failed. |
| 1200 | 1500 | 3 | Function test blow out preventer and work on riser fill valve. |
| 1500 | 1600 | 1 | Nipple down and lay out riser fill valve. |
| 1600 | 1700 | 1 | Pick up riser double and connect to lower marine riser package / blow out preventer stack. Pick up and attempt to run stack through moon pool - no-go due to weather/rig movement. |
| 1700 | 2400 | 7 | Wait on weather - Re-attempt to run blow out preventer stack periodically, slamming into moon pool beams when lifted.<br><br>Wind 20-30 kn, waves 1- 2m, swell 2-3m, pitch 1-2 deg, roll 1-1.5 deg, heave 1-2m. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 13/12/03 - 0600 HRS | HILL 1 | REPORT NO: 8 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY<br><br>No new formation drilled. | GAS |
|---|---|---|

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 14/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 9 |
|---|---|---|

**(As at 2400 hours EST, 13/12/03)** **DEPTH :** 777 m **PROGRESS:** 0m **DAYS FROM SPUD:** 5.12
**OPERATION** : CONTINUE TO RUN BLOW OUT PREVENTER AND MARINE RISER.

**(As at 0600 hours EST, 14/12/03)** **DEPTH :** 777m
**OPERATION** : INSTALL RUCKER LINES PRIOR TO LANDING BLOW OUT PREVENTER.

---

**CASING DEPTH:** 13 3/8" SET AT 769m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH:** 212.8m

---

| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Seawater / gel sweeps | | | | | | | | |

---

| | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| **BIT DATA** (2400 Hours) | PRESENT | | | | | | | |
| | LAST | | | | | | | |

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**SURVEYS**: MD (m) INCLINATION AZIMUTH MD (m) INCLINATION AZIMUTH

---

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

WAIT ON WEATHER. ATTEMPT TO PERIODICALLY RUN BLOW OUT PREVENTER, RIG MOVEMENT SLAMMING BLOW OUT PREVENTER INTO MOONPOOL BEAMS WHEN LIFTED. LIFT BLOW OUT PREVENTER, CLEAR SPIDER BEAMS AND PROCEED TO RUN BLOW OUT PREVENTER AND MARINE RISER. UNABLE TO MAKE UP RUNNING TOOL FULLY INTO RISER BOX CONNECTION. IDENTIFY PROUD WELD ON COLLET / RETAINER RINGS. GRIND BACK WELDS AND PICK UP RISER SECTION. CONTINUE TO RUN MARINE RISER.

**00:00 – 06:00 HOURS 14/12/03:**

CONTINUE TO RUN RISER AND BLOW OUT PREVENTER. RUN SLIP JOINT. MAKE UP LANDING JOINT. ROV MONITOR BLOW OUT PREVENTER AND WELLHEAD POSITIONS. LOWER SLIP JOINT TO SPACE OUT CHOKE AND KILL LINE POSITIONS IN MOONPOOL. MOVE RIG TO POSITION STACK ABOVE PERMANENT GUIDE BASE. PRESSURE TEST CHOKE AND KILL LINE CONNECTIONS. INSTALL RUCKER LINES.

**ANTICIPATED OPERATIONS:**

LAND BLOW OUT PREVENTER. TEST CONNECTOR. STROKE OUT SLIP JOINT. NIPPLE UP DIVERTER. RUN WEAR BUSHING. LAY OUT 17½" BOTTOM HOLE ASSEMBLY. PICK UP 12¼" DRILLING ASSEMBLY.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 14/12/03 - 0600 HRS | HILL 1 | REPORT NO: 9 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 13/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 1530 | 15.5 | Wait on weather - Unable to run blow out preventer, rig movement slamming blow out preventer stack into moonpool when lifted off spider beams.<br><br>Wind 25-30 kn, waves 1- 2m, swell 2-3m, pitch 1-2 deg, roll 1-2.5 deg, heave 1-2m.<br><br>Monitor weather / rig movement and attempt to run stack at 06:00 and 12:00 hrs - damage to beams and blow out preventer frame. |
| 1530 | 1830 | 3 | Lift blow out preventer, clear spider beams and proceed to run blow out preventer picking up riser sections. |
| 1830 | 2030 | 2 | Unable to make up running tool fully into riser box connection. Identify proud weld on collet / dog retainer rings. Grind back welds and pick up riser section. |
| 2030 | 2130 | 1 | Continue to run blow out preventer making up riser sections (retainer ring welds ground back on deck). |
| 2130 | 2230 | 1 | Unable to achieve even locking dog travel on running tool to riser connection. Make up riser section in spider and inspect connection. Disconnect riser section and check locking dogs / box connection. |
| 2230 | 2400 | 1.5 | Re-stab riser, engage lock dogs and check connection. Continue to run riser / blow out preventer. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 14/12/03 - 0600 HRS | HILL 1 | REPORT NO: 9 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY<br><br>No new formation drilled. | GAS |
|---|---|---|

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 15/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 10 |
|---|---|---|

**(As at 2400 hours EST, 14/12/03)** **DEPTH :** 777 m **PROGRESS:** 0m **DAYS FROM SPUD:** 6.12
**OPERATION** : TESTING LOWER MARINE RISER PACKAGE AND FUNCTION TESTING CONTROL PODS PRIOR TO DRILLING SHOE TRACK.

**(As at 0600 hours EST, 15/12/03)** **DEPTH :** 780m
**OPERATION** : DRILLING AHEAD WITH 12¼" HOLE.

**CASING DEPTH:** 13 3/8" SET AT 769m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: (IN PITS) | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | Seawater / gel sweeps | 8.8 | | | | | 1000 | | |

| **BIT DATA** (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 3 | HTC | HC605 | 12¼" | - | - | In hole |
| | LAST | | | | | | | |

**SURVEYS**: MD (m) INCLINATION AZIMUTH MD (m) INCLINATION AZIMUTH

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

CONTINUE TO RUN RISER AND BLOW OUT PREVENTER. RUN SLIP JOINT. MAKE UP LANDING JOINT. ROV MONITOR BLOW OUT PREVENTER AND WELLHEAD POSITIONS. LOWER SLIP JOINT TO SPACE OUT CHOKE AND KILL LINE POSITIONS IN MOONPOOL. MOVE RIG TO POSITION STACK ABOVE PERMANENT GUIDE BASE. PRESSURE TEST CHOKE AND KILL LINE CONNECTIONS. INSTALL RUCKER LINES. POSITION RIG AND LAND BLOW OUT PREVENTER AT 07:15 HOURS. SCOPE OUT SLIP JOINT. RUN WEAR BUSHING. MAKE UP EMERGENCY HANG OFF TOOL AND RACK IN DERRICK. LAY DOWN 17 ½" BOTTOM HOLE ASSEMBLY. MAKE UP 9 5/8" CASING HANGER. MAKE UP 12 ¼" PDC BIT AND BOTTOM HOLE ASSEMBLY, FEWD TOOL AND RUN IN HOLE. TAG CEMENT AT 742.6m. FUNCTION TEST CONTROL PODS.

**00:00 – 06:00 HOURS 15/12/03:**

TEST LOWER MARINE RISER PACKAGE CONNECTOR. FUNCTION TEST YELLOW AND BLUE PODS. TAG TOP OF CEMENT AT 742.6m. COMMENCE DRILLING WIPER PLUGS / FLOAT COLLAR. .ATTEMPT TO PUMP SWEEP, 1500 PSI PRESSURE LOSS, RE-ESTABLISH PRIME ON SEAWATER, CLEAR STRING, NORMAL RATE / PRESSURE. DRILL SHOE TRACK AND SHOE AT 769m. DRILL RAT HOLE AND 3m OF FORMATION TO 780m. PERFORM LEAK OFF TEST TO 11.5ppg EQUIVALENT MUD WEIGHT.

**ANTICIPATED OPERATIONS:**

DRILL AHEAD 12¼" HOLE.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 15/12/03 - 0600 HRS | HILL 1 | REPORT NO: 10 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 14/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0200 | 2 | Continue to run riser / blow out preventer, make up remaining two sections and pressure test choke / kill lines. ROV check stack angle and confirm AX gasket in place. |
| 0200 | 0300 | 1 | Pick up and run slip joint , make up landing joint, monitor stack and wellhead position with ROV and lower slip joint to space out choke / kill line connections at moon pool for make up. |
| 0300 | 0430 | 1.5 | Move rig forward and port to place stack above permanent guide base, connect choke and kill lines. |
| 0430 | 0500 | 0.5 | Pressure test choke and kill line connections. |
| 0500 | 0700 | 2 | Connect control line saddles and rucker lines to slip joint. |
| 0700 | 0930 | 2.5 | Position rig, land blow out preventer stack (at 07:15 hrs) and confirm latch with 50k overpull. Unpin and scope out slip joint inner barrel. Lay down riser landing joint. |
| 0930 | 1000 | 0.5 | Lay down spider and riser handling equipment, clear work floor. ROV record lower marine riser package angle of 1/2 deg, permanent guide base angle 1/4 deg. |
| 1000 | 1200 | 2 | Run and set wear bushing in 18-3/4" wellhead at 233.61m. Pull out of hole. |
| 1200 | 1230 | 0.5 | Make up emergency hang off tool and rack back in derrick. |
| 1230 | 1500 | 2.5 | Break down and lay out 17-1/2" bottom hole assembly. |
| 1500 | 1700 | 2 | Make up 9-5/8" casing hanger and cement plug assembly. |
| 1700 | 2030 | 3.5 | Make up and run 12-1/4" PDC bit and bottom hole assembly, function test MWD/FEWD tools. |
| 2030 | 2330 | 3 | Run in hole picking up drill pipe and tag top of cement at 742.6m. |
| 2330 | 2400 | 0.5 | Space out and line up to pressure test lower marine riser package connector and function test control pods. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 15/12/03 - 0600 HRS | HILL 1 | REPORT NO: 10 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Offset | H/L to Offset |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 777 – 780m | 100% Cement contamination. | |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 16/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 11 |
|---|---|---|

**(As at 2400 hours EST, 15/12/03)** **DEPTH :** 1484 m **PROGRESS:** 707m **DAYS FROM SPUD:** 7.12
**OPERATION** : DRILLING 12¼" HOLE

**(As at 0600 hours EST, 16/12/03)** **DEPTH :** 1608m
**OPERATION** : DRILLING 12 ¼" HOLE

**CASING DEPTH:** 13 3/8" SET AT 769m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| MUD DATA | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/Polymer | 8.9 | 52 | 7.0 | 10.2 | 8.0 | 39500 | 16/23 | 0.1 ohm.m @ 75 C |

| BIT DATA (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 3 | HTC | HC605 | 12¼" | 13.2 | 707 | In hole |
| | LAST | | | | | | | |

| SURVEYS: MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|
| 753.81 | 0.09 | 215.22 | 1162.24 | 0.83 | 10.31 |
| 787.46 | 0.12 | 67.24 | 1191.38 | 0.96 | 20.31 |
| 843.00 | 0.22 | 48.21 | 1222.78 | 0.96 | 24.23 |
| 904.44 | 0.31 | 35.64 | 1248.55 | 0.97 | 35.16 |
| 929.63 | 0.40 | 38.33 | 1280.63 | 0.93 | 40.57 |
| 1017.40 | 0.87 | 38.98 | 1309.30 | 0.84 | 37.96 |
| 1045.49 | 0.84 | 22.92 | 1339.10 | 0.93 | 39.70 |
| 1075.66 | 0.81 | 9.37 | 1394.96 | 0.89 | 36.10 |
| 1107.14 | 0.72 | 9.97 | 1455.71 | 0.92 | 32.58 |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

TEST LOWER MARINE RISER PACKAGE CONNECTOR. FUNCTION TEST YELLOW AND BLUE PODS. TAG TOP OF CEMENT AT 742.6m. COMMENCE DRILLING WIPER PLUGS / FLOAT COLLAR. .ATTEMPT TO PUMP SWEEP, 1500 PSI PRESSURE LOSS, RE-ESTABLISH PRIME ON SEAWATER, CLEAR STRING, NORMAL RATE / PRESSURE. DRILL SHOE TRACK AND SHOE AT 769m. DRILL RAT HOLE AND 3m OF FORMATION TO 780m. PERFORM LEAK OFF TEST TO 11.5ppg EQUIVALENT MUD WEIGHT. DRILL AHEAD WITH 12 ¼" HOLE FROM 780m TO 1484m. DISPLACE HOLE TO KCl/POLYMER MUD AT 1444m WHILE DRILLING AHEAD.

**00:00 – 06:00 HOURS 16/12/03:**

DRILL 12 ¼" HOLE FROM 1484m TO 1608m.

**ANTICIPATED OPERATIONS:**

DRILL AHEAD 12¼" HOLE TO 9 5/8" CASING DEPTH AT APPROXIMATELY 1800m.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 16/12/03 - 0600 HRS | HILL 1 | REPORT NO: 11 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 15/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Test lower marine riser package connector against upper annular 200/2500psi. Bleed off and function test preventors / control pods. Yellow pod from rig floor, Blue pod from remote in pushers office. |
| 0130 | 0200 | 0.5 | Tagged top of cement at 742.6m, commence drilling wiper plugs / float collar. |
| 0200 | 0300 | 1 | Attempt to pump sweep - 1500 psi pump pressure loss. Re-establish pump prime on seawater. Pump pressure spiking to 3500 psi, clear string, re-establish normal rate/pressure. |
| 0300 | 0500 | 2 | Drill out float collar, shoe track and shoe at 769m. |
| 0500 | 0530 | 0.5 | Drill out rat hole plus 3m formation to 780m. |
| 0530 | 0600 | 0.5 | Displace drill string to clean fluid, close annular and perform LOT to 11.5ppg equivalent mud weight (EMW). |
| 0600 | 2400 | 18 | Drill 12-1/4" hole from 780m to 1484m RT. WOB 25-35k, RPM 150, GPM 850. Displaced hole to KCl/Polymer mud system at 1444m, while drilling ahead. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 16/12/03 - 0600 HRS | HILL 1 | REPORT NO: 11 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 780 – 810m | 100% Cement contamination. | 10 – 20 U 100/- |
| 810 – 850m<br>40 – 200 m/hr<br>Av: 150 m/hr | CALCAREOUS CLAYSTONE WITH INTERBEDDED SANDSTONE AND LIMESTONE.<br>CALCAREOUS CLAYSTONE: medium grey, light grey in part, brownish grey, slightly silty in part, trace micro carbonaceous specks, trace nodular pyrite, trace very fine glauconite, firm, sub fissile to sub blocky.<br>LIMESTONE: white, cream, common fossil fragments, forams, shell fragments, moderately hard.<br>SANDSTONE: clear, translucent, fine to medium grained, moderately well sorting, subrounded, loose in part, common light grey argillaceous matrix, firm aggregates, poor inferred porosity, no fluorescence. | 20 – 60 U 100/trace |
| 850 – 955m<br>2 – 150 m/hr<br>Av: 100 m/hr | CALCAREOUS CLAYSTONE WITH MINOR INTERBEDDED SANDSTONE.<br>CALCAREOUS CLAYSTONE: light grey, light greenish grey, grading to marl in part, trace very fine glauconite, trace pyrite, trace fine carbonaceous specks, soft to firm, dispersive.<br>SANDSTONE: clear, translucent light grey, fine to medium grained, moderately well sorting, subrounded, common light grey argillaceous matrix, trace carbonaceous specks, firm aggregates, loose in part, poor inferred porosity, no fluorescence. | 20 – 60 U 100/- |
| 955 – 975m<br>30 – 120 m/hr<br>Av: 70 m/hr | CALCAREOUS CLAYSTONE.<br>CALCAREOUS CLAYSTONE: light grey, grading to Marl in part, becoming very finely arenaceous in part, trace micro carbonaceous specks, trace forams, trace very fine glauconite, firm to soft, dispersive in part. | 20 – 60 U 100/trace/trace |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 975 – 1035m<br>70 – 150 m/hr<br>Av: 100 m/hr | MARL WITH INTERBEDDED CALCAREOUS CLAYSTONE AND SANDSTONE.<br>MARL: very light grey, off white, grading to calcareous claystone in part, rare fine carbonaceous specks, rare coal fragments, soft to firm, dispersive.<br>CALCAREOUS CLAYSTONE: very light grey, light grey as above.<br>SANDSTONE: very light grey, light brownish grey, clear, translucent in part, very fine to medium predominantly fine grained, moderately well sorting, subrounded, common light grey argillaceous matrix, rare moderately strong calcareous cement in part, trace pyrite, common micro carbonaceous specks, trace brown lithics, loose to predominantly firm aggregates, very poor visual porosity, no fluorescence. | 20 – 80 U<br>100/trace/trace/<br>trace |
| 1035 – 1110m<br>35 – 150 m/hr<br>Av: 100 m/hr | SANDSTONE WITH INTERBEDDED SILTSTONE, CALCAREOUS CLAYSTONE AND MARL.<br>MARL: as above.<br>CALCAREOUS CLAYSTONE: as above.<br>CALCAREOUS SILTSTONE: light grey, argillaceous, very finely arenaceous, grading to calcareous claystone, trace fine carbonaceous specks, trace fossil fragments, firm, sub fissile to sub blocky.<br>SANDSTONE: light grey, translucent, clear in part, very fine to medium predominantly fine grained, moderately well sorting, subrounded, abundant light grey argillaceous matrix, rare moderately strong calcareous cement, trace very fine glauconite, trace fine carbonaceous specks, trace light brown lithics, trace fossil fragments, trace forams, very poor visual porosity, no fluorescence. | 20 – 80<br>100/trace/trace/<br>trace |
| 1110 – 1430m<br>20 – 100m/hr<br>Av: 40 m/hr | CALCAREOUS CLAYSTONE WITH MINOR INTERBEDDED CALCARENITE.<br>CALCARENITE: very light brown, off white, cream, argillaceous in part, very finely arenaceous in part, trace fossil fragments, trace forams, moderately hard to hard, sub blocky to occasionally sub fissile.<br>CALCAREOUS CLAYSTONE: very light brownish grey, light grey, grading to calcareous siltstone in part, grading to marl in part, trace fossil fragments, trace forams, minor fine carbonaceous specks, dispersive to firm, sub blocky. | 20 – 100 U<br>100/trace/trace |
| 1430 – 1590m<br>12 – 40 m/hr<br>Av: 25 m/hr | CALCAREOUS CLAYSTONE WITH INTERBEDDED CALCILUTITE.<br>CALCAREOUS CLAYSTONE: very light grey as above. 100% Calcareous Claystone from 1515m.<br>CALCILUTITE: moderate yellowish grey, light grey, grading to calcareous claystone in part, minor fine carbonaceous specks, soft to firm, dispersive in part, sub blocky.<br><br>**Note: Change to KCl/Polymer mud system at 1444m.** | 10 – 30 U<br>100/trace/trace |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 17/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 12 |
|---|---|---|

**(As at 2400 hours EST, 16/12/03)** **DEPTH :** 1810 m **PROGRESS:** 326m **DAYS FROM SPUD:** 8.12
**OPERATION** : RETRIEVING WEAR BUSHING.

**(As at 0600 hours EST, 17/12/03)** **DEPTH :** 1810m
**OPERATION** : RUNNING 9-5/8" 47 LB/FT L80 CASING.

**CASING DEPTH:** 13 3/8" SET AT 769m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/Polymer | 9.1 | 55 | 7.0 | 8.5 | 7.5 | 36500 | 16/23 | 0.1 ohm.m @ 75 C |

| **BIT DATA** (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | | | | | | | |
| | LAST | 3 | HTC | HC605 | 12¼" | 23.8 | 1033 | 7-3-BT-C-X-1-PN-TD |

| **SURVEYS**: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|
| | 1483.05 | 1.02 | 32.83 | 1685.81 | 0.94 | 10.68 |
| | 1510.37 | 1.03 | 29.55 | 1712.12 | 0.96 | 9.64 |
| | 1538.70 | 1.01 | 27.64 | 1745.90 | 0.99 | 6.48 |
| | 1569.90 | 1.04 | 13.43 | 1772.73 | 0.77 | 353.39 |
| | 1627.36 | 1.04 | 9.82 | 1791.40 | 0.69 | 348.35 |
| | 1655.58 | 0.87 | 5.35 | | | |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

DRILL 12 ¼" HOLE FROM 1484m TO 1810M. PUMP HI-VISUAL SWEEP AND CIRCULATE BOTTOMS UP / HOLE CLEAN. PULL OUT OF HOLE WORKING TIGHT SPOTS AT 1722m - 1715m, 1674m - 1650m. (55k OVERPULL). LAY OUT MWD TOOL. MAKE UP WEAR BUSHING RUNNING TOOL AND RUN IN HOLE, UNABLE TO PASS UPPER ANNULAR. WORK TOOL AND SUBSEA ENGINEER ADJUST ANNULAR PRESSURE. PASS THROUGH ANNULAR PREVENTOR AND LATCH WEAR BUSHING.

**00:00 – 06:00 HOURS 17/12/03:**

PULL OUT OF HOLE AND LAY OUT WEAR BUSHING. MAKE UP CEMENT HEAD AND RACK BACK. RIG TO RUN 9 5/8" CASING. MAKE UP 9-5/8" SHOE TRACK. RUN IN HOLE WITH 9-5/8" 47 LB/FT L80 CASING.

**ANTICIPATED OPERATIONS:**

CONTINUE TO RUN 9-5/8" CASING. CIRCULATE AND CEMENT CASING. PRESSURE TEST BLOW OUT PREVENTER. RUN WEAR BUSHING. LAY DOWN 12-¼" BOTTOM HOLE ASSEMBLY. MAKE UP 8½" BOTTOM HOLE ASSEMBLY AND RUN IN HOLE. DRILL SHOE TRACK.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 17/12/03 - 0600 HRS | HILL 1 | REPORT NO: 12 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 16/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0600 | 6 | Drill 12¼" hole from 1484m to 1608m RT. WOB 25-30, RPM 150, GPM 860. |
| 0600 | 1300 | 7 | Pump LCM sweep to cure losses and continue to drill 12¼" hole from 1608m to section total depth at 1810m RT. |
| 1300 | 1430 | 1.5 | Pump high viscosity sweep, circulate bottoms up and hole / shakers clean. |
| 1430 | 1830 | 4 | Pull out of hole racking back 5" drill pipe. Work tight sections at 1722m - 1715m and 1674m - 1650m clear (55k overpull). |
| 1830 | 2200 | 3.5 | Pull out with 12¼" bottom hole assembly, lay out MWD / LWD tools and bit. |
| 2200 | 2400 | 2 | Make up wear bushing pulling tool and run in hole, unable to pass upper annular. Work tool and subsea engineer adjust annular pressure. Pass through annular preventor and latch wear bushing. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 17/12/03 - 0600 HRS | HILL 1 | REPORT NO: 12 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 1590 – 1600m<br>15 – 40 m/hr<br>Av: 20 m/hr | CALCAREOUS CLAYSTONE WITH INTERBEDDED CALCILUTITE.<br>CALCAREOUS CLAYSTONE: very light brownish grey, light grey, grading to calcareous siltstone in part, grading to marl in part, trace fossil fragments, trace forams, minor fine carbonaceous specks, dispersive to firm, sub blocky.<br>CALCILUTITE: moderate yellowish grey, light grey, grading to calcareous claystone in part, minor fine carbonaceous specks, soft to firm, dispersive in part, sub blocky. | 20 – 30 U<br>100/trace/trace |
| 1600 – 1615m<br>6 – 20 m/hr<br>Av: 10 m/hr | INTERBEDDED CALCAREOUS CLAYSTONE, CALCAREOUS SILTSTONE WITH MINOR SANDSTONE AND CHERT.<br>CALCAREOUS CLAYSTONE: generally as above, very light grey, off white, grading to calcareous siltstone, trace forams and shell fragments, minor fine carbonaceous specks, dispersive to firm, sub blocky.<br>CALCAREOUS SILTSTONE: medium grey, light to predominantly medium olive grey, grading to calcareous claystone in part, rare fine carbonaceous specks, trace nodular pyrite, trace CHERT (light grey, translucent), firm, sub blocky.<br>SANDSTONE: clear, translucent, yellow brown, fine to medium grained, subangular to rounded, fair sorting, trace weak calcareous cement, predominantly loose quartz grains, fair to good inferred porosity, no fluorescence. | 10 – 20 U<br>100/trace/trace |
| 1615 – 1630m<br>10 – 30 m/hr<br>Av: 20 m/hr | INTERBEDDED CALCILUTITE AND SILTSTONE / SANDSTONE.<br>CALCILUTITE: white, very light grey, off white, uniform, moderately hard, brittle, sub blocky to predominantly sub fissile.<br>SANDSTONE / SILTSTONE: medium brown, red brown in part, dark pinkish brown, very fine sandstone grading to arenaceous siltstone, very fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, abundant medium brown silty matrix, rare fine carbonaceous specks, minor fine grained glauconite, rare nodular pyrite, moderately hard aggregates, tight to very poor visual porosity, no fluorescence. | 10 – 20 U<br>100/trace/trace |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 1630 – 1646m<br>20 – 80 m/hr<br>Av: 50 m/hr | SILTSTONE WITH INTERBEDDED CALCILUTITE.<br>CALCILUTITE: white, very light grey as above.<br>SILTSTONE: grading to silty SANDSTONE, medium brown, red brown, brown – translucent in part, calcareous, very finely arenaceous, minor glauconite, rare nodular pyrite, trace lithics and carbonaceous specks, friable to moderately hard, sub blocky to blocky. | 30 – 40 U<br>100/trace/trace<br>CO2: 0.2% @ 1640m |
| 1646 – 1660m<br>20 – 120 m/hr<br>Av: 80 m/hr | SANDSTONE: clear, translucent, light grey, fine to very coarse predominantly medium to coarse grained, subangular to subrounded, poor to fair sorting, predominantly loose clean quartz grains, trace nodular pyrite, trace glauconite, trace lithics, rare carbonaceous specks / fragments, good inferred porosity, no fluorescence. | 10 – 20 U<br>100/trace |
| 1660 – 1707m<br>10 – 100 m/hr<br>Av: 40 m/hr | INTERBEDDED SILTSTONE AND SANDSTONE.<br>SANDSTONE: generally as above, predominantly coarse grained.<br>SILTSTONE: medium brown, arenaceous in part grading to very fine sandstone, rare fine carbonaceous specks, rare glauconite, rare nodular pyrite, trace lithics and carbonaceous flecks, moderately hard, sub blocky. | 20 – 50 U<br>100/trace/trace |
| 1707 – 1767m<br>6 – 120 m/hr<br>Av: 40 m/hr | SILTSTONE WITH INTERBEDDED SANDSTONE.<br>SANDSTONE: as above.<br>SILTSTONE: medium brownish grey, medium grey, argillaceous grading to claystone in part, trace fine grained glauconite, trace carbonaceous specks, firm, sub blocky, dispersive in part. | 15 – 30 U<br>100/trace |
| 1767 – 1810m<br>40 – 90 m/hr<br>Av: 50 m/hr | SILTSTONE: medium brownish grey, medium brown, argillaceous grading to claystone, non to occasionally very slightly calcareous, trace forams, rare fine carbonaceous specks / flecks, firm, dispersive in part, sub blocky. | 20 – 30 U<br>100/trace |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 18/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 13 |
|---|---|---|

**(As at 2400 hours EST, 17/12/03)** **DEPTH :** 1810 m **PROGRESS:** 0m **DAYS FROM SPUD:** 9.12
**OPERATION** : ATTEMPTING TO RUN WEAR BUSHING.

**(As at 0600 hours EST, 18/12/03)** **DEPTH :** 1810m
**OPERATION** : LAYING OUT 12¼" BOTTOM HOLE ASSEMBLY.

**CASING DEPTH:** 9 5/8" SET AT 1801m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/Polymer | 9.1 | 56 | 7.0 | 8.5 | 7.5 | 36500 | 17/21 | 0.1 ohm.m @ 75 C |

| | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| **BIT DATA** (2400 Hours) | PRESENT | | | | | | | |
| | LAST | | | | | | | |

| **SURVEYS**: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

PULL OUT OF HOLE AND LAY OUT WEAR BUSHING. MAKE UP CEMENT HEAD AND RACK BACK. RIG TO RUN 9-5/8" CASING. MAKE UP 9-5/8" SHOE TRACK. RUN IN HOLE WITH 9-5/8" 47 LB/FT L80 CASING. (TOTAL 126 JOINTS). WASH THROUGH TIGHT SPOT 1650-1700m. SHOE SET AT 1801m. CIRCULATE CASING AND HOLE CLEAN. CEMENT CASING. DISPLACE CEMENT, BUMP PLUG AND TEST CASING TO 3000 PSI. SET AND PRESSURE TEST 9-5/8" CASING SEAL. WASH AROUND RUNNING TOOL / HANGER. DISPLACE RISER TO SEAWATER. PRESSURE TEST BLOW OUT PREVENTER. PULL OUT WITH CASING HANGER / SEAL ASSEMBLY RUNNING TOOL. SEAL ASSEMBLY SET, LAY OUT RUNNING TOOL.

**00:00 – 06:00 HOURS 18/12/03:**

RUN IN HOLE WITH WEAR BUSHING. ATTEMPT TO SET WEAR BUSHING. NO POSITIVE OVERPULL / INDICATION. PULL OUT. WEAR BUSHING NOT SET. MAKE UP JETTING TOOL TO RUNNING TOOL. WASH THROUGH SEAL ASSEMBLY AND HANGER. ATTEMPT TO SET SEAL ASSEMBLY. ATTEMPT TO SET WEAR BUSHING WITH SLOW ROTATION, NO GO. PULL OUT AND LAY OUT WEAR BUSHING AND RUNNING TOOL. LAY OUT 12¼" BOTTOM HOLE ASSEMBLY.

**ANTICIPATED OPERATIONS:**

LAY OUT 12¼" BOTTOM HOLE ASSEMBLY. MAKE UP 8½" BOTTOM HOLE ASSEMBLY AND RUN IN HOLE. DRILL SHOE TRACK AND 3m OF NEW FORMATION. CONDUCT LEAK OFF TEST. DRILL AHEAD WITH 8½" HOLE.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 18/12/03 - 0600 HRS | HILL 1 | REPORT NO: 13 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 17/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0100 | 1 | Record index depth, trip out of the hole and lay out the wear bushing. |
| 0100 | 0200 | 1 | Make up cement head / stand and rack back. |
| 0200 | 0300 | 1 | Pick up handling equipment and rig up to run 9-5/8" casing. |
| 0300 | 0600 | 3 | Conduct pre job operational and safety meeting. Make up and check 9-5/8" shoe track, Run in hole with 9-5/8" 47ppf L-80 (New Vam & NK3SB) casing. |
| 0600 | 1400 | 8 | Continue to run in with 9-5/8" casing (total of 126 full joints plus 2 X-over pups). Make up casing hanger / running tool assembly and run in with 5" heavy-weight drill pipe. Break circulation and wash casing through tight section at 1650 - 1700m (Upper Timboon Formation). Continue to run in and land out casing with shoe at 1801m. |
| 1400 | 1500 | 1 | Rig up and pressure test cementing lines, circulate casing and hole clean. |
| 1500 | 1730 | 2.5 | Mix and pump 73 bbls of 12.5ppg Class G lead and 45 bbls 15.8ppg Class G tail cement. Halliburton displace running string and shear out wiper plug with 20 bbls, rig pumps displaced casing with 4170 stks, bumped plug and tested casing to 3000 psi. |
| 1730 | 2000 | 2.5 | Set and pressure test 9-5/8" casing hanger seal, release running tool (no positive indication of shear out from seal assembly), wash around running tool /top of hanger clean and displace riser to seawater. Re-seat running tool, sitting down string weight, prior to testing blow out preventer stack. |
| 2000 | 2230 | 2.5 | Pressure test blow out preventer stack, ram preventers and valves 250/5000 psi, annular preventers 250/2500 psi. |
| 2230 | 2400 | 1.5 | Pick up on the Casing Hanger / seal assembly running tool and pull out. Seal assembly set, lay out running tool. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 18/12/03 - 0600 HRS | HILL 1 | REPORT NO: 13 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| INTERVAL | LITHOLOGY | GAS |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 19/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 14 |
|---|---|---|

**(As at 2400 hours EST, 18/12/03)** **DEPTH :** 1867 m **PROGRESS:** 57m **DAYS FROM SPUD:** 10.12
**OPERATION** : DRILLING 8½" HOLE IN THE TIMBOON MUDSTONE.

**(As at 0600 hours EST, 19/12/03)** **DEPTH :** 1980m
**OPERATION** : DRILLING 8½" HOLE IN THE TIMBOON MUDSTONE.

**CASING DEPTH:** 9 5/8" SET AT 1801m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH:** 212.8m

| MUD DATA | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/PHPA | 9.2 | 60 | 6.0 | 9.0 | 8.0 | 39500 | 18/17 | 0.1 ohm.m @ 75 C |

| BIT DATA (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 4 | HYC | DSX104 | 8 ½" | 3.5 | 57 | Drilling |
| | LAST | | | | | | | |

| SURVEYS: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|
| | 1830.94 | 0.88 | 326.25 | 1944.22 | 0.66 | 306.66 |
| | 1856.75 | 0.78 | 329.33 | 1830.94 | 0.88 | 326.25 |
| | 1918.20 | 0.81 | 316.68 | | | |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

RUN IN HOLE WITH WEAR BUSHING. ATTEMPT TO SET WEAR BUSHING. NO POSITIVE OVERPULL / INDICATION. PULL OUT. WEAR BUSHING NOT SET. MAKE UP JETTING TOOL TO RUNNING TOOL. WASH THROUGH SEAL ASSEMBLY AND HANGER. ATTEMPT TO SET SEAL ASSEMBLY. ATTEMPT TO SET WEAR BUSHING WITH SLOW ROTATION, NO GO. PULL OUT AND LAY OUT WEAR BUSHING AND RUNNING TOOL. LAY OUT 12¼" BOTTOM HOLE ASSEMBLY. MAKE UP 8½" BOTTOM HOLE ASSEMBLY AND RUN IN HOLE. TAG CEMENT AT 1772m. DRILL CEMENT, WIPER PLUGS, FLOAT, SHOE TRACK AND THE CASING SHOE AT 1801m. CLEAN THE RAT HOLE TO 1810m AND DRILL 3m OF NEW FORMATION TO 1813m. DISPLACE HOLE TO KCl/PHPA MUD AND CONDUCT A LEAK-OFF TEST. EQUIVALENT MUD WEIGHT = 10.5ppg. CONTINUE TO DRILL 8 ½" HOLE FROM 1813m TO 1867m.

**00:00 – 06:00 HOURS 19/12/03:**

CONTINUE TO DRILL 8 ½" HOLE FROM 1867m TO 1980m.

**ANTICIPATED OPERATIONS:**

DRILL AHEAD WITH 8½" HOLE.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 19/12/03 - 0600 HRS | HILL 1 | REPORT NO: 14 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 18/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Make up and run in hole with wear bushing, running tool and cup tester assembly. |
| 0130 | 0230 | 1 | Retest 9-5/8" casing hanger seal assembly to 5000 psi and attempt to set wear bushing. Unable to achieve positive overpull/shear out indication. Pull out of hole. |
| 0230 | 0300 | 0.5 | Out of hole (wear bushing not set), make up jetting tool to wear bushing running tool. |
| 0300 | 0400 | 1 | Run in hole and wash through seal assembly & hanger profiles. Unable to engage wear bushing into profile. Attempt to wash and set wear bushing with slow rotation and centralised with annular – no go. |
| 0400 | 0500 | 1 | Pull out and lay out wear bushing and running tool. |
| 0500 | 0930 | 4.5 | Break down and lay out 12-1/4" bottom hole assembly. |
| 0930 | 1330 | 4 | Make up PDC bit and 8-1/2" drilling assembly, program MWD and continue to run in picking up bottom hole assembly. |
| 1330 | 1730 | 4 | Run in hole with 8-1/2" drilling assembly on 5" drill pipe. |
| 1730 | 1930 | 2 | Tag top of cement/wiper plugs at 1772m (float collar at 1776m), drill out plugs, float collar, shoe track and rat hole. |
| 1930 | 2000 | 0.5 | Drill from 1810m to 1813m, displacing hole to KCl / PHPA mud. |
| 2000 | 2030 | 0.5 | Line up cement unit with mud, close annular and perform Leak Off Test to 1.25 SG (10.5 ppg) Equivalent Mud Weight |
| 2030 | 2400 | 3.5 | Drill ahead 8-1/2" hole from 1813m to 1867m (WOB 25k, RPM 150, GPM 650). |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 19/12/03 - 0600 HRS | HILL 1 | REPORT NO: 14 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| **INTERVAL** | **LITHOLOGY** | **GAS** |

| **INTERVAL (m/hr)** | **GEOLOGICAL SUMMARY**<br>**LITHOLOGY** | **GAS** |
|---|---|---|
| 1810 – 1960m<br>6 – 55 m/hr<br>Av: 17 m/hr | SILTSTONE: medium brownish grey, medium dark grey, argillaceous grading to silty claystone in part, non to locally very slightly calcareous, trace dolomite, trace very fine glauconite, trace fine carbonaceous specks, trace nodular pyrite, locally with trace loose clear coarse quartz grains, firm to moderately hard, sub blocky to blocky. | 5 – 30 U<br>100/trace |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 20/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 15 |
|---|---|---|

**(As at 2400 hours EST, 19/12/03)** **DEPTH :** 2515 m **PROGRESS:** 648m **DAYS FROM SPUD:** 11.12
**OPERATION** : DRILLING 8½" HOLE IN THE PAARATTE FORMATION.

**(As at 0600 hours EST, 20/12/03)** **DEPTH :** 2575m
**OPERATION** : PULLING OUT OF HOLE ON A WIPER TRIP (HOLE TIGHT) PRIOR TO SUITE 1 WIRELINE LOGS.

**CASING DEPTH:** 9 5/8" SET AT 1801m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/PHPA | 9.7 | 70 | 4.0 | 9.0 | 8.5 | 42000 | 23/35 | 0.08 ohm.m @ 75 C |

| **BIT DATA** (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 4 | HYC | DSX104 | 8 ½" | 22.0 | 705m | In Hole. |
| | LAST | | | | | | | |

**SURVEYS**:

| MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|
| 1973.45 | 0.62 | 331.70 | 2323.77 | 0.31 | 195.67 |
| 2002.66 | 0.61 | 346.23 | 2352.55 | 0.50 | 187.16 |
| 2031.42 | 0.65 | 345.22 | 2382.66 | 0.57 | 188.78 |
| 2059.75 | 0.63 | 337.25 | 2412.01 | 0.59 | 186.72 |
| 2089.98 | 0.79 | 349.72 | 2440.80 | 0.65 | 189.72 |
| 2122.03 | 0.73 | 341.38 | 2470.12 | 0.64 | 190.52 |
| 2151.02 | 0.47 | 3.16 | 2498.18 | 0.66 | 197.21 |
| 2179.66 | 0.45 | 356.67 | 2524.20 | 0.70 | 194.84 |
| 2206.86 | 0.38 | 7.86 | 2553.31 | 0.86 | 204.43 |
| 2237.90 | 0.14 | 43.04 | 2575.00 | 0.86 | 204.43 |
| 2266.83 | 0.12 | 51.65 | | | |

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

DRILL 8½" HOLE FROM 1867m TO 1994m. INVESTIGATE STAND PIPE PRESSURE DROP. CONTINUE TO DRILL 8½" HOLE FROM 1994m TO 2515m.

**00:00 – 06:00 HOURS 20/12/03:**

CONTINUE TO DRILL 8½" HOLE FROM 2515m TO 2575m. SWEEP HOLE. CIRCULATE BOTTOMS UP AND SHAKERS CLEAN. COMMENCE PULLING OUT OF HOLE. HOLE TIGHT AT 2490m. (PULL 15-50 KLBS) PUMP OUT OF HOLE. PULL TIGHT AT 2288m (UP TO 100 KLBS OVERPULL). WORK STRING, WASH AND BACKREAM AT 2280m. CONTINUE TO PULL OUT TO THE 9-5/8" SHOE, PULLING TIGHT AND PUMPING OUT AS REQUIRED.

**ANTICIPATED OPERATIONS:**

CONTINUE TO CONDUCT WIPER TRIP. PULL OUT OF HOLE. RIG SCHLUMBERGER AND CONDUCT SUITE 1 WIRELINE LOGS.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 20/12/03 - 0600 HRS | HILL 1 | REPORT NO: 15 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 19/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0630 | 6.5 | Drill 8-1/2" hole from 1867m to 1994m. WOB 20-30k, RPM 150, GPM 650. |
| 0630 | 0700 | 0.5 | Investigate standpipe pressure drop, circulate and condition mud. |
| 0700 | 2400 | 17 | Drill ahead 8-1/2" hole from 1994m to 2515m RT. WOB 30, RPM 175, GPM 650. Recorded SPRs at 2150m and flow checked drilling breaks at 2199m and 2283m. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 20/12/03 - 0600 HRS | HILL 1 | REPORT NO: 15 |
|---|---|---|

| FORMATION TOPS: | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

**HYDROCARBON SHOW SUMMARY**

| INTERVAL | LITHOLOGY | GAS |
|---|---|---|
| 1974 – 1986m<br>20 – 80 m/hr<br>Av: 30 m/hr | SANDSTONE: clear, translucent, light brown in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, minor – abundant white argillaceous matrix, trace fine carbonaceous specks, loose in part, poor visual porosity, Fluorescence: trace – 5% moderately bright yellowish white spotted, very slow very faint white crush cut, no residue. | 7 – 12 U<br>100/trace/trace |
| 1986 – 2001m<br>40 – 100 m/hr<br>Av: 70 m/hr | SANDSTONE: light brown, white in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, argillaceous, silty in part grading to arenaceous siltstone, common fine carbonaceous specks, trace nodular pyrite, trace fine grained glauconite, friable to firm aggregates, very poor visual porosity, Fluorescence: trace moderately bright yellowish white spotted, very faint white crush cut, no residue. | 5 – 10 U<br>100/trace/trace |
| 2019 – 2031m<br>3 – 80 m/hr<br>Av: 50 m/hr | SANDSTONE: light grey, off white, very light brownish white, very fine to fine grained, moderately well sorting, subangular to subrounded, abundant light brown / white argillaceous matrix, grading to siltstone in part, common moderately strong calcareous cement, trace fine carbonaceous specks, friable to firm, very poor visual porosity, Fluorescence: 2019 – 2024m, trace moderately bright yellowish white spotted, very faint white crush cut, no residue. | 3 – 10 U<br>99/1 |

**GEOLOGICAL SUMMARY**

| INTERVAL (m/hr) | LITHOLOGY | GAS |
|---|---|---|
| 1960 – 1974m<br>10 – 50 m/hr<br>Av: 25 m/hr | SILTSTONE: medium brownish grey, medium dark grey, argillaceous grading to silty claystone in part, non to locally very slightly calcareous, trace dolomite, trace very fine glauconite, trace fine carbonaceous specks, trace nodular pyrite, locally with trace loose clear coarse quartz grains, firm to moderately hard, sub blocky to blocky. | 7 – 10 U<br>100/trace/trace |
| 1974 – 1986m<br>20 – 80 m/hr<br>Av: 30 m/hr | INTERBEDDED SANDSTONE AND SILTSTONE.<br>SANDSTONE: clear, translucent, light brown in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, minor – abundant white argillaceous matrix, trace fine carbonaceous specks, loose in part, poor visual porosity, Fluorescence: trace – 5% moderately bright yellowish white spotted, very slow very faint white crush cut, no residue.<br>SILTSTONE: light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine grained glauconite, trace fine carbonaceous specks, friable to moderately hard aggregates, sub blocky. | 7 – 12 U<br>100/trace/trace |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|
| 1986 – 2001m<br>40 – 100 m/hr<br>Av: 70 m/hr | INTERBEDDED SANDSTONE AND SILTSTONE.<br>SILTSTONE: as above.<br>SANDSTONE: light brown, white in part, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, argillaceous, silty in part grading to arenaceous siltstone, common fine carbonaceous specks, trace nodular pyrite, trace fine grained glauconite, friable to firm aggregates, very poor visual porosity, Fluorescence: trace moderately bright yellowish white spotted, very faint white crush cut, no residue. | 5 – 10 U<br>100/trace/trace |
| 2001 – 2019m<br>30 – 100 m/hr<br>Av: 50 m/hr | SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.<br>SANDSTONE: white, light brownish grey, very fine to fine grained, moderately well sorting, subangular to subrounded, moderately strong calcareous cement, abundant very light brownish white argillaceous matrix, common light grey silty matrix in part, interbedded with and grading to arenaceous siltstone, trace very fine carbonaceous specks, firm aggregates, very poor visual porosity, no fluorescence.<br>SILTSTONE: light to medium brown, brownish grey, argillaceous in part, common very finely arenaceous grading to and interbedded with very fine sandstone, trace fine carbonaceous specks, friable to moderately hard aggregates, sub blocky. | 3 – 12 U<br>100/trace trace |
| 2019 – 2031m<br>3 – 80 m/hr<br>Av: 50 m/hr | INTERBEDDED SANDSTONE AND SILTSTONE.<br>SILTSTONE: as above.<br>SANDSTONE: light grey, off white, very light brownish white, very fine to fine grained, moderately well sorting, subangular to subrounded, abundant light brown / white argillaceous matrix, grading to siltstone in part, common moderately strong calcareous cement, trace fine carbonaceous specks, friable to firm, very poor visual porosity, Fluorescence: 2019 – 2024m, trace moderately bright yellowish white spotted, very faint white crush cut, no residue. | 3 – 10 U<br>99/1 |
| 2031 – 2196m<br>9 – 110 m/hr<br>Av: 30 m/hr | SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.<br>SILTSTONE: light to medium brownish grey, arenaceous grading to very fine sandstone in part, locally argillaceous, trace fine carbonaceous specks, trace nodular pyrite, friable to firm, moderately hard in part, sub blocky.<br>SANDSTONE: very light brown, light brownish white, light grey in part, very fine to fine grained, subangular to subrounded, moderately strong calcareous cement, common light brownish white argillaceous matrix, common light brown silty matrix, trace carbonaceous specks, trace pyrite, friable to firm, moderately hard in part, very poor visual porosity, no fluorescence. | 3 – 12 U<br>99/1/trace |
| 2196 – 2214m<br>40 – 120 m/hr<br>Av: 70 m/hr | INTERBEDDED SANDSTONE AND SILTSTONE.<br>SILTSTONE: light to medium brown, arenaceous generally as above.<br>SANDSTONE: clear, translucent, frosted, fine to coarse, subangular to subrounded, poor sorting, trace weak calcareous cement, trace white argillaceous matrix, trace nodular pyrite, predominantly loose clean quartz grains, fair inferred porosity, no fluorescence. | 10 – 20 U<br>99/1/trace/trace |
| 2214 – 2575m<br>20 – 140 m/hr<br>Av: 50 m/hr | SILTSTONE WITH MINOR INTERBEDDED SANDSTONE.<br>SILTSTONE: light to medium brownish grey, arenaceous grading to very fine sandstone in part, locally argillaceous, trace fine carbonaceous specks, trace nodular pyrite, friable to firm, moderately hard in part, sub blocky.<br>SANDSTONE: clear, translucent, very fine to fine grained, trace medium – coarse, subangular to subrounded, rare weak calcareous cement, minor white argillaceous matrix, trace pyrite, friable to firm, loose in part, poor inferred porosity, no fluorescence. | 10 – 25 U<br>99/1/trace/trace |

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 21/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 16 |
|---|---|---|

**(As at 2400 hours EST, 20/12/03)** **DEPTH :** 2575 m **PROGRESS:** 0m **DAYS FROM SPUD:** 12.12
**OPERATION** : CONDUCTING SUITE 1 WIRELINE LOGS, RUN 1 PEX-DSI-HALS.

**(As at 0600 hours EST, 21/12/03)** **DEPTH :** 2575m
**OPERATION** : CONDUCTING SUITE 1 WIRELINE LOGS, RUN 2 CHECKSHOT SURVEY.

**CASING DEPTH:** 9 5/8" SET AT 1801m **RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT **WATER DEPTH:** 212.8m

| MUD DATA | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/PHPA | 9.8 | 81 | 5.0 | 9.0 | 8.5 | 42000 | 24/35 | 0.08 ohm.m @ 75 C |

| BIT DATA (2400 Hours) | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| | PRESENT | 4 | HYC | DSX104 | 8 ½" | 22.0 | 705m | 2-4-WT-T-X-I-CT-TD |
| | LAST | | | | | | | |

| SURVEYS: | MD (m) | INCLINATION | AZIMUTH | MD (m) | INCLINATION | AZIMUTH |
|---|---|---|---|---|---|---|

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

DRILL 8½" HOLE FROM 2515m TO 2575m. CIRCULATE AND SWEEP HOLE, BOTTOMS UP AND SHAKERS CLEAN. PULL OUT OF HOLE. HOLE TIGHT AT 2490m. (PULL 15-50 KLBS) PUMP OUT OF HOLE. PULL TIGHT AT 2288m (UP TO 100 KLBS OVERPULL). WORK STRING, WASH AND BACKREAM AT 2280m. CONTINUE TO PULL OUT TO THE 9-5/8" SHOE, PULLING TIGHT AND PUMPING OUT AS REQUIRED. RUN IN HOLE AND TAG FILL AT 2562m. WASH AND REAM TO 2575m. PUMP HI-VIS SWEEPS AND CIRCULATE HOLE CLEAN. PULL OUT OF HOLE, HOLE GOOD. LAY OUT MWD TOOL. RIG SCHLUMBERGER. RIG AND RUN LOG 1 PEX-DSI-HALS.

**00:00 – 06:00 HOURS 21/12/03:**

CONDUCTING SUITE 1 WIRELINE LOG RUN 1 PEX-DSI-HALS. RIG DOWN RUN 1. RIG AIR GUNS FOR RUN 2, CSAT - CHECKSHOT SURVEY. RUN IN HOLE RUN 2 CSAT-CHECKSHOT. LOG UP FROM 2570m.

**ANTICIPATED OPERATIONS:**

CONTINUE TO CONDUCT SUITE 1 WIRELINE LOGS.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 21/12/03 - 0600 HRS | HILL 1 | REPORT NO: 16 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 20/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Drill 8-1/2" hole from 2515m to total depth at 2575m RT. |
| 0130 | 0245 | 1.25 | Pump tandem Hi-vis sweeps, circulate bottoms up and circulate hole/shakers clean. |
| 0245 | 0315 | 0.5 | Commence pulling out of hole on wiper trip to 9-5/8" casing shoe. Pulling tight (15 - 50k over) and swabbing at 2490m. |
| 0315 | 0430 | 1.25 | Proceed to pump out of hole, pulled tight (up to 100k over) at 2288m. |
| 0430 | 0500 | 0.5 | Worked string, washed and backreamed until pipe free at 2280m. |
| 0500 | 0900 | 4 | Continue to pump out of hole on wiper trip to 9-5/8" casing shoe at 1801m. Pulling tight, work string, back ream as required and boost riser. |
| 0900 | 1000 | 1 | Run in hole without problem and tag fill at 2562m. |
| 1000 | 1030 | 0.5 | Wash and ream 13m of fill from 2562m to 2575m. |
| 1030 | 1200 | 1.5 | Pump tandem 100 bbl hi-vis sweeps spaced with 100 bbls KCl/PHPA mud and circulate hole clean. |
| 1200 | 1730 | 5.5 | Pull out from 2575m, pump slug at 10 stands and continue out of hole without problem. |
| 1730 | 1830 | 1 | Break out and lay down bit, roller reamers, X-overs and MWD tools. |
| 1830 | 2015 | 1.75 | Conduct pre logging safety meeting, rig up Schlumberger and make up PEX-DSI-HALS toolstring. |
| 2015 | 2400 | 3.75 | Run in hole for logging Run #1 - PEX-DSI-HALS, no hole problems encountered, tag bottom at 2576m MDWL and log out of hole. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 21/12/03 - 0600 HRS | HILL 1 | REPORT NO: 16 |
|---|---|---|

| FORMATION TOPS: * mudlog picks | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| INTERVAL | LITHOLOGY | GAS |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY<br>LITHOLOGY | GAS |
|---|---|---|

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 22/12/03 - 06:00 HRS | HILL 1 | REPORT NO: 17 |
|---|---|---|

**(As at 2400 hours EST, 21/12/03)** **DEPTH :** 2575 m **PROGRESS:** 0m **DAYS FROM SPUD:** 13.12
**OPERATION** : RUNNING INTO THE HOLE TO SET ABANDONMENT PLUGS.

**(As at 0600 hours EST, 22/12/03)** **DEPTH :** 2575m
**OPERATION** : PULLING OUT OF THE HOLE AFTER SETTING ABANDONMENT PLUG 1 TO CIRCULATE STRING CLEAN AND POSITION FOR ABANDONMENT PLUG 2.

**CASING DEPTH:** 9 5/8" SET AT 1801m

**RIG: OCEAN EPOCH**
**RT – SEAFLOOR:** 235.2m
**WATER DEPTH:** 212.8m

**PROGRAMMED TD:** 2575m **ROTARY TABLE:** 22.4m LAT

| **MUD DATA** | Type: | Wt: | Vis: | FL: | PH: | KCl | Cl : | PV / YP: | Rmf: |
|---|---|---|---|---|---|---|---|---|---|
| (24:00 Hours) | KCl/PHPA | 9.7 | 79 | 5.0 | 9.0 | 8.5 | 41500 | 24/33 | 0.08 ohm.m @ 75 C |

| | | No. | Make | Type | Size | Hours | Drilled | Condition |
|---|---|---|---|---|---|---|---|---|
| **BIT DATA** (2400 Hours) | PRESENT | | | | | | | |
| | LAST | | | | | | | |

**SURVEYS**: MD (m) INCLINATION AZIMUTH MD (m) INCLINATION AZIMUTH

**PREVIOUS 24 HOURS OPERATIONS SUMMARY:**

CONDUCTING SUITE 1 WIRELINE LOG RUN 1 PEX-DSI-HALS. RIG DOWN RUN 1. RIG AIR GUNS FOR RUN 2, CSAT - CHECKSHOT SURVEY. RUN IN HOLE RUN 2 CSAT-CHECKSHOT. LOG UP FROM 2570m TO SIGNAL LOSS AT 1070m. PULL OUT, LAY OUT TOOLS. PICK UP MDT AND RUN IN HOLE. ATTEMPT 11 PRETESTS, (9 NORMAL TESTS, 2 CURTAILED). LAY OUT TOOLS. PREPEARE TO RUN LOG 4, SIDEWALL CORES. WAIT ON WEATHER DUE TO LOCAL LIGHTNING PREVENTING SAFE ARMING OF GUNS. RUN IN HOLE. ATTEMPT 43 CORES (RECOVERED 21, 5 MISFIRED, 2 EMPTY, 15 LOST). PULL OUT. LAY OUT TOOL STRING. RIG DOWN SCHLUMBERGER. RUN IN HOLE WITH 5" DRILL PIPE TO SET ABANDONMENT PLUGS.

**00:00 – 06:00 HOURS 22/12/03:**

CONTINE TO RUN IN HOLE. HIGH WINDS AND ROLL SLOWING OPERATIONS. MAKE UP CEMENTING STAND. CIRCULATE BOTTOM OF HOLE CLEAN. TEST LINES. PUMP 14 BBLS OF 15.8 PPG CEMENT, DISPLACE WITH MUD SETTING ABANDONMENT PLUG 1 FROM 2525m TO 2575m.

**ANTICIPATED OPERATIONS:**

CONTINUE TO PLUG AND ABANDON WELL. SET ABANDONMENT PLUG 2. PULL OUT OF HOLE AND LAY OUT BOTTOM HOLE ASSEMBLY. RUN IN HOLE AND TAG CEMENT PLUG. CUT AND RECOVER 9 5/8" CASING.

# Santos

*A.B.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 22/12/03 - 0600 HRS | HILL 1 | REPORT NO: 17 |
|---|---|---|

**SUMMARY OF OPERATIONS (00:00 hours – 24:00 hours, 21/12/03):**

| FROM | TO | HRS | ACTIVITY DESCRIPTION |
|---|---|---|---|
| 0000 | 0130 | 1.5 | Log out of hole with PEX-DSI-HALS toolstring. |
| 0130 | 0315 | 1.75 | Lay out PEX toolstring and pick up Check-shot survey tools for logging run #2. Hang air line and sensors from crane and test air pressure/shot sequence. |
| 0315 | 0745 | 4.5 | Run in hole on logging run #2 and record Check-shot data at 50m intervals from 2570m to 1070m (casing reverberation). Pull out and layout tools. |
| 0745 | 1430 | 6.75 | Pick up MDT toolstring and run in logging run #3. Record 11 Pre-tests (9 normal, 2 curtailed). Pull out and lay down tools. |
| 1430 | 1500 | 0.5 | Radio silence and prepare to run CST (side wall cores), logging run #4. |
| 1500 | 1545 | 0.75 | Wait on inclement weather, local lightning preventing safe arming of CST gun. |
| 1545 | 2130 | 5.75 | Picked up CST guns (43 shots loaded) and run in for logging run #4. Take cores and pull out. Radio silence and lay out toolstring (21 cores recovered, 2 cases empty, 5 missfires and 15 lost down hole). |
| 2130 | 2200 | 0.5 | Rig down Schlumberger and clear rig floor. |
| 2200 | 2400 | 2 | Make up cementing stand and reposition HWDP/DC to forward side. Inclement weather, 3 deg roll & high winds. Run in hole with open 5" drill pipe to place abandonment plug # 1. |
| | | | |

# Santos

*AB.N. 80 007 550 923*

## WELL PROGRESS REPORT

| DATE: 22/12/03 - 0600 HRS | HILL 1 | REPORT NO: 17 |
|---|---|---|

| FORMATION TOPS: * mudlog picks | MD RT | Subsea | H/L to Prognosis | H/L to Bridge water Bay 1 | H/L to Champion 1 |
|---|---|---|---|---|---|
| | | | | | |

| HYDROCARBON SHOW SUMMARY | | |
|---|---|---|
| INTERVAL | LITHOLOGY | GAS |
| | | |

| INTERVAL (m/hr) | GEOLOGICAL SUMMARY LITHOLOGY | GAS |
|---|---|---|
| | | |

# SECTION 6 : DAILY DRILLING REPORTS

Santos

# DRILLING MORNING REPORT # 1
## Hill #1 ( 05 Dec 2003 )

**From : Howard / Douglass**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 0 m | Cur. Hole Size | 0 in | | |
| Field | Hill | TVD | 0 m | Casing OD | 0 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 0 m | | |
| Rig | Ocean Epoch | Days from spud | 1.00 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 210.0 m | Days on well | 0.63 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | On tow to Hill-1 Location at Latitude 39 deg 25.24 sec, Longitude 146 deg 45.23 sec. | | | | |
| RT-ML | 232.4 m | Planned Op | Continue tow to Hill-1 Location. | | | | |

## Summary of Period 0000 to 2400 Hrs

Receive Rig from BHP at Megamouth -1 location at 09:00 hrs. Rig under tow, following tow path as per program.

## Operations For Period 0000 Hrs to 2400 Hrs on 05 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0900 | 1200 | 3.00 | 0 m | Receive MODU from BHP Petroleum, at Megamouth-1 location, 38 deg 35 min 44.23 sec S, 148 deg 16 min 31.86 sec E at 09:00 hrs.<br><br>Confirm statement of facts from DOGC, supply boats, and third party contractors. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 12:00 hrs:<br>Lat: 38 deg 45.5 min S Long: 148 deg 22.7 min E.<br>Course 148 deg. 3 hr distance 10.6 nm. 3 hr average speed 3.5 knots.<br>Total distance travelled 10.6 nm in 3.5 hrs. Distance to Hill-1 location 322 nm. Total average tow speed 3.5 knots.<br>ETA Hill-1 location 08:00 hrs 09 Dec 2004. |
| RM | P | RM | 1200 | 1600 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 16:00 hrs:<br>Lat: 38 deg 54.0 min S Long: 148 deg 06.0 min E.<br>Course 238 deg. 4 hr distance 14.5 nm. 4 hr average speed 3.6 knots.<br>Total distance travelled 25.1 nm in 7 hrs. Distance to Hill-1 location 306 nm. Total average tow speed 3.6 knots.<br>ETA Hill-1 location 04:30 hrs 09 Dec 2004. |
| RM | P | RM | 1600 | 2000 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 20:00 hrs:<br>Lat: 39 deg 05.2 min S Long: 147 deg 43.3 min E.<br>Course 238 deg. 4 hr distance 20.0 nm. 4 hr average speed 5 knots.<br>Total distance travelled 45.1 nm in 11 hrs. Distance to Hill-1 location 286 nm. Total average tow speed 4.1 knots.<br>ETA Hill-1 location 18:00 hrs 08 Dec 2004. |
| RM | P | RM | 2000 | 2400 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 24:00 hrs:<br>Lat: 39 deg 17.3 min S Long: 147 deg 18.3 min E.<br>Course 238 deg. 4 hr distance 22.5 nm. 4 hr average speed 5.6 knots.<br>Total distance travelled 67 nm in 15 hrs. Distance to Hill-1 location 264 nm. Total average tow speed 4.4 knots.<br>ETA Hill-1 location 12:00 hrs 08 Dec 2004.<br><br>Operations during Tow:<br>Lay out and inspect drill collars. Service TDS. Inspect and service mud pumps. Change liners. Clean mud pits. Ongoing PMS schedule. |

## Operations For Period 0000 Hrs to 0600 Hrs on 06 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0400 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 04:00 hrs:<br>Lat: 39 deg 25.03 min S Long: 146 deg 57.7 min E.<br>Course 270 deg. 4 hr distance 19 nm. 4 hr average speed 4.75 knots.<br>Total distance travelled 86 nm in 19 hrs. Distance to Hill-1 location 245 nm. Total average tow speed 4.5 knots.<br>ETA Hill-1 location 10:00 hrs 08 Dec 2004. |
| RM | P | RM | 0400 | 0600 | 2.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 06:00 hrs:<br>Lat: 39 deg 25.24 min S Long: 146 deg 45.23 min E. |

## Phase Data to 2400hrs, 05 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 15 | 05 Dec 2003 | 05 Dec 2003 | 15 | 1 days | 0 m |

## General Comments

| Comments | Rig Requirements | Lessons Learnt |
|---|---|---|
| Rig handed over from BHP at Megamouth-1 location at 09:00 hrs AEDST. | | |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 2899 |
| Gel | sx | 0 | 0 | 0 | 1770 |
| Potable Water | MT | 0 | 4 | 0 | 131 |
| Drill Water | MT | 0 | 79 | 0 | 846 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 4 | 0 | 512 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 2 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| MO47 | 8 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Marcomm | 1 |
| Thales | 2 |
| TMT | 6 |
| Total | 75 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 3 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 10 Nov 2003 | 25 Days | |
| BOP Test | 04 Nov 2003 | 31 Days | |
| Fire Drill | 10 Nov 2003 | 25 Days | |
| First Aid | 29 Oct 2003 | 37 Days | |
| Lost Time Incident | 24 Apr 2001 | 954 Days | |
| Near Miss | 04 Nov 2003 | 31 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Recordable Case | 22 Feb 2002 | 651 Days | |
| Safety Meeting | 02 Nov 2003 | 33 Days | Weekly safety meetings held at 13:00 hrs, 19:00 hrs and 01:00 hrs. |
| Walkabout | 05 Dec 2003 | 0 Days | |

## Marine

Weather check on 05 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 6.00 nm | 15.0 kn | 240 deg | 1022 bar | 16.0 C° | 0.7 m | 240 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 1.0 deg | 0.9 deg | 0 m | 0.9 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 0 deg | 0 klb | 3730.0 klb | |

**Rig Support**

| Anchors | Tension (klb) |
|---|---|
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| 7 | 0 |
| 8 | 0 |


Printed on 06 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Pacific Challenger** — 09:00

Standing By.
Vessel Status at handover of rig from BHP at Megamouth-1 location.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 204 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 406 |
| Jet Fuel | Litres | 0 |

**Lady Dawn** — 09:00

On tow bridle.
Vessel Status at handover of rig from BHP at Megamouth-1 location.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 538 |
| Drill Water | MT | 86 |
| Mud | sx | 0 |
| Fuel | MT | 519 |
| Jet Fuel | Litres | 0 |

**Lady Dawn**

On tow bridle, towing rig to Hill-1 location.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 535 |
| Drill Water | MT | 86 |
| Mud | sx | 0 |
| Fuel | MT | 500.3 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger**

Shadowing Rig, which is on tow to Hill-1 location.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 201 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 400.5 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 01 | 12:00 | Ocean Epoch | NB. A flight occured (but is not reported) before SANTOS received rig from BHP at 09:00 hrs. | 0 |
| 01 | 12:15 | Essendon | | 3 |

Santos

# DRILLING MORNING REPORT # 2
## Hill #1 ( 06 Dec 2003 )

**From : Howard / Douglass**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 0 m | Cur. Hole Size | 0 in | | |
| Field | Hill | TVD | 0 m | Casing OD | 0 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 0 m | | |
| Rig | Ocean Epoch | Days from spud | | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 210.0 m | Days on well | 1.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | On tow to Hill-1 location at Lat 39 deg 17.1 min, Long 143 deg 54.5 min. | | | | |
| RT-ML | 232.4 m | Planned Op | Continue tow to Hill-1 location, as per tow path program. | | | | |

### Summary of Period 0000 to 2400 Hrs

On tow to Hill-1 location.

### Operations For Period 0000 Hrs to 2400 Hrs on 06 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0400 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 04:00 hrs:<br>Lat: 39 deg 25.03 min S Long: 146 deg 57.7 min E.<br>Course 270 deg. 4 hr distance 19 nm. 4 hr average speed 4.75 knots.<br>Total distance travelled 86 nm in 19 hrs. Distance to Hill-1 location 245 nm. Total average tow speed 4.5 knots.<br>ETA Hill-1 location 10:00 hrs 08 Dec 2004. |
| RM | P | RM | 0400 | 0800 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger shadowing rig.<br><br>Tow data at 08:00 hrs:<br>Lat: 39 deg 25.6 min S Long: 146 deg 30.5 min E.<br>Course 274 deg. 4 hr distance 22 nm. 4 hr average speed 5.5 knots.<br>Total distance travelled 108 nm in 23 hrs. Distance to Hill-1 location 223 nm. Total average tow speed 4.7 knots.<br>ETA Hill-1 location 08:00 hrs 08 Dec 2004. |
| RM | P | RM | 0800 | 1200 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger released from escort duties at 09:30 and instructed to steam to Portland for ETA at 07:30, 07 December 2004.<br><br>Tow data at 12:00 hrs:<br>Lat: 39 deg 23.9 min S Long: 146 deg 03.0 min E.<br>Course 274 deg. 4 hr distance 21 nm. 4 hr average speed 5.25 knots.<br>Total distance travelled 130 nm in 27 hrs. Distance to Hill-1 location 202 nm. Total average tow speed 4.8 knots.<br>ETA Hill-1 location 06:00 hrs 08 Dec 2004. |
| RM | P | RM | 1200 | 1600 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland.<br><br>Tow data at 16:00 hrs:<br>Lat: 39 deg 22.0 min S Long: 145 deg 35.0 min E.<br>Course 274 deg. 4 hr distance 22 nm. 4 hr average speed 5.45 knots.<br>Total distance travelled 151 nm in 31 hrs. Distance to Hill-1 location 180 nm. Total average tow speed 4.9 knots.<br>ETA Hill-1 location 04:30 hrs 08 Dec 2004. |
| RM | P | RM | 1600 | 2000 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland.<br><br>Tow data at 20:00 hrs:<br>Lat: 39 deg 20.9 min S Long: 145 deg 05.9 min E.<br>Course 274 deg. 4 hr distance 23 nm. 4 hr average speed 5.75 knots.<br>Total distance travelled 174 nm in 35 hrs. Distance to Hill-1 location 157 nm. Total average tow speed 5.0 knots.<br>ETA Hill-1 location 03:00 hrs 08 Dec 2004. |
| RM | P | RM | 1600 | 2400 | 8.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland.<br><br>Tow data at 24:00 hrs:<br>Lat: 39 deg 19.6 min S Long: 144 deg 37.1 min E.<br>Course 274 deg. 4 hr distance 22.5 nm. 4 hr average speed 5.6 knots.<br>Total distance travelled 196 nm in 39 hrs. Distance to Hill-1 location 135 nm. Total average tow speed 5.0 knots.<br>ETA Hill-1 location 03:00 hrs 08 Dec 2004. |

### Operations For Period 0000 Hrs to 0600 Hrs on 07 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0400 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland. |



Printed on 07 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| | | | | | | | Tow data at 04:00 hrs:<br>Lat: 39 deg 18.0 min S Long: 144 deg 07.0 min E.<br>Course 274 deg. 4 hr distance 22.5 nm. 4 hr average speed 5.6 knots.<br>Total distance travelled 219 nm in 43 hrs. Distance to Hill-1 location 113 nm. Total average tow speed 5.1 knots.<br>ETA Hill-1 location 02:00 hrs 08 Dec 2004. |
| RM | P | RM | 0400 | 0600 | 2.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland.<br><br>Tow data at 24:00 hrs:<br>Lat: 39 deg 17.1 min S Long: 143 deg 54.5 min E. |

## Phase Data to 2400hrs, 06 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 43 | 05 Dec 2003 | 06 Dec 2003 | 43 | 2 days | 0 m |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 2899 |
| Gel | sx | 0 | 0 | 0 | 1770 |
| Potable Water | MT | 25 | 19 | 0 | 137 |
| Drill Water | MT | 0 | 15 | 0 | 831 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 5 | 0 | 507 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 2 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| MO47 | 8 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Marcomm | 1 |
| Thales | 2 |
| TMT | 6 |
| Total | 75 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 3 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 10 Nov 2003 | 26 Days | |
| BOP Test | 04 Nov 2003 | 32 Days | |
| Fire Drill | 10 Nov 2003 | 26 Days | |
| First Aid | 29 Oct 2003 | 38 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 955 Days | None |
| Near Miss | 04 Nov 2003 | 32 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Safety Meeting | 02 Nov 2003 | 34 Days | Weekly safety meetings held at 13:00 hrs, 19:00 hrs and 01:00 hrs. |
| Walkabout | 06 Dec 2003 | 0 Days | |

## Marine

Weather check on 06 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 8.0 kn | 135 deg | 1022 bar | 19.0 C° | 0.1 m | 135 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.6 deg | 0.4 deg | 0 m | 1.3 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 0 deg | 0 klb | 3813.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| 7 | 0 |
| 8 | 0 |


Printed on 07 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn**

On Tow Bridle.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 530 |
| Drill Water | MT | 86 |
| Mud | sx | 0 |
| Fuel | MT | 471.5 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger**

09:30

en route to Portland.
Bulk stock status at departure from rig.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 200 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 396.3 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 3
## Hill #1 ( 07 Dec 2003 )

**From : G. Howard / S. Douglass**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 0 m | Cur. Hole Size | 0 in | | |
| Field | Hill | TVD | 0 m | Casing OD | 0 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 0 m | | |
| Rig | Ocean Epoch | Days from spud | 0.00 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 210.0 m | Days on well | 2.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Running anchors. (Four primary anchors set.) Ballasting rig to drilling draft. | | | | |
| RT-ML | 232.4 m | Planned Op | Continue anchoring operations. Prepare to spud well. | | | | |

### Summary of Period 0000 to 2400 Hrs

Continue towing rig to Hill-1 location.

### Operations For Period 0000 Hrs to 2400 Hrs on 07 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0400 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger en route to Portland.<br><br>Tow data at 04:00 hrs:<br>Lat: 39 deg 18.0 min S Long: 144 deg 07.0 min E.<br>Course 274 deg. 4 hr distance 22.5 nm. 4 hr average speed 5.6 knots.<br>Total distance travelled 219 nm in 43 hrs. Distance to Hill-1 location 113 nm. Total average tow speed 5.1 knots.<br>ETA Hill-1 location 02:00 hrs 08 Dec 2004. |
| RM | P | RM | 0400 | 0800 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle. Pacific Challenger at Portland.<br><br>Tow data at 08:00 hrs:<br>Lat: 39 deg 16.0 min S Long: 143 deg 42.1 min E.<br>Course 274 deg. 4 hr distance 20.0 nm. 4 hr average speed 5.0 knots.<br>Total distance travelled 239 nm in 47 hrs. Distance to Hill-1 location 93 nm. Total average tow speed 5.1 knots.<br>ETA Hill-1 location 02:00 hrs 08 Dec 2004. |
| RM | P | RM | 0800 | 1200 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle.<br><br>Tow data at 12:00 hrs:<br>Lat: 39 deg 13.9 min S Long: 143 deg 14.4 min E.<br>Course 291 deg. 4 hr distance 21.8 nm. 4 hr average speed 5.4 knots.<br>Total distance travelled 262 nm in 51 hrs. Distance to Hill-1 location 70 nm. Total average tow speed 5.1 knots.<br>ETA Hill-1 location 02:00 hrs 08 Dec 2004. |
| RM | P | RM | 1200 | 1600 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle.<br><br>Tow data at 16:00 hrs:<br>Lat: 39 deg 05.0 min S Long: 142 deg 46.0 min E.<br>Course 291 deg. 4 hr distance 23.5 nm. 4 hr average speed 5.9 knots.<br>Total distance travelled 286 nm in 55 hrs. Distance to Hill-1 location 46 nm. Total average tow speed 5.2 knots.<br>ETA Hill-1 location 01:00 hrs 08 Dec 2004. |
| RM | P | RM | 1600 | 2000 | 4.00 | 0 m | On tow to Hill-1 location. Lady Dawn on tow bridle.<br><br>Tow data at 20:00 hrs:<br>Lat: 38 deg 56.9 min S Long: 142 deg 19.3 min E.<br>Course 291 deg. 4 hr distance 22.0 nm. 4 hr average speed 5.5 knots.<br>Total distance travelled 308 nm in 59 hrs. Distance to Hill-1 location 24 nm. Total average tow speed 5.2 knots.<br>ETA Hill-1 location 01:00 hrs 08 Dec 2004. |
| RM | P | RM | 2000 | 2400 | 4.00 | 0 m | Lady Dawn on tow bridle. Continue on tow path to final turn point. |

### Operations For Period 0000 Hrs to 0600 Hrs on 08 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0100 | 1.00 | 0 m | Lady dawn on tow bridle. Continue towing rig to location. Make turn for final approach (from 290 deg to 240 deg) at 00:07 hrs, and cut speed to below 2 knots. Continue on final apprach path. Pay out 400 ft of anchor chain on number 7 anchor at 00:50 hrs. Continue approach anchor drop zone. |
| RM | P | AH | 0100 | 0600 | 5.00 | 0 m | Drop anchor #7, on target. Anchor #7 on bottom at 01:04 am.<br>#3 pendant passed to Pacific Challenger at 01:46 hrs. #3 anchor on bottom at 02:22 hrs.<br>#6 pendant passed to Pacific Challenger at 03:05 hrs. #6 anchor on bottom at 03:34 hrs.<br>#2 pendant passed to Pacific Challenger at 04:21 hrs. #2 anchor on bottom at 04:54 hrs.<br>#8 pendant passed to Pacific Challenger at 05:39 hrs. #8 anchor on bottom at 06:04 hrs. |

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| | | | | | | | Lady Dawn released from tow-bridle at 06:07 hrs. |

## Phase Data to 2400hrs, 07 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 67 | 05 Dec 2003 | 07 Dec 2003 | 67 | 3 days | 0 m |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 2899 |
| Gel | sx | 0 | 0 | 0 | 1770 |
| Potable Water | MT | 13 | 7 | 0 | 143 |
| Drill Water | MT | 12 | 17 | 0 | 826 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 6 | 0 | 501 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 2 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| MO47 | 8 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Marcomm | 1 |
| Thales | 2 |
| TMT | 6 |
| Total | 75 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |
| 3 | Oilwell A1700PT | 6.50 | 9.30 | 95 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 0 Days | |
| BOP Test | 07 Dec 2003 | 0 Days | |
| Fire Drill | 07 Dec 2003 | 0 Days | |
| First Aid | 29 Oct 2003 | 39 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 956 Days | None |
| Near Miss | 04 Nov 2003 | 33 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Safety Meeting | 07 Dec 2003 | 0 Days | |
| Walkabout | 07 Dec 2003 | 0 Days | |

## Marine

Weather check on 07 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 120 deg | 1016 bar | 16.0 C° | 0.3 m | 120 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.8 deg | 0.7 deg | 0 m | 1.3 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 0 deg | 0 klb | 3792.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 0 |
| 2 | 0 |
| 3 | 0 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| 7 | 0 |
| 8 | 0 |


Printed on 08 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn**

On Tow Bridle, preparing to make final turn for approach.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 525 |
| Drill Water | MT | 86 |
| Mud | sx | 0 |
| Fuel | MT | 442.7 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger**

20:00

Standing by 2 nm from Hill-1 location, awaiting arrival of rig.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 195 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 4
## Hill #1 ( 08 Dec 2003 )

**From : G. Howard / S. Douglass / C. Wise**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 268.0 m | Cur. Hole Size | 36.000 in | | |
| Field | Hill | TVD | 268.0 m | Casing OD | 0 in | | |
| Drill Co. | DOGC | Progress | 32.8 m | Shoe TVD | 0 m | | |
| Rig | Ocean Epoch | Days from spud | 0.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 3.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Run 30" x 20" conductor and PGB. | | | | |
| RT-ML | 235.2 m | Planned Op | Run and cement 30" x 20" conductor with PGB. Pick up 17 1/ 2" bit and drill ahead 17 1/ 2" hole. | | | | |

### Summary of Period 0000 to 2400 Hrs

Move onto Hill-1 location, run anchors, and ballast rig to drilling draft. Make up BHA. RIH and spud well, drilling 36" hole from seabed at 235.2 mRT LAT, to 268 m.

### Operations For Period 0000 Hrs to 2400 Hrs on 08 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| RM | P | RM | 0000 | 0100 | 1.00 | 0 m | Lady dawn on tow bridle. Continue towing rig to location. Make turn for final approach (from 290 deg to 240 deg) at 00:07 hrs, and cut speed to below 2 knots. Continue on final apprach path. Pay out 400 ft of anchor chain on number 7 anchor at 00:50 hrs. Continue approach anchor drop zone. |
| RM | P | AH | 0100 | 1200 | 11.00 | 0 m | Drop anchor #7, on target. Anchor #7 on bottom at 01:04 am.<br>#3 pendant passed to Pacific Challenger at 01:46 hrs. #3 anchor on bottom at 02:22 hrs. #3 pendant back to rig at 02:53.<br>#6 pendant passed to Pacific Challenger at 03:05 hrs. #6 anchor on bottom at 03:34 hrs. #6 pendant back to rig at 04:04.<br>#2 pendant passed to Pacific Challenger at 04:21 hrs. #2 anchor on bottom at 04:54 hrs. #2 pendant back to rig at 05:19.<br>#8 pendant passed to Pacific Challenger at 05:39 hrs. #8 anchor on bottom at 06:04 hrs. #8 pendant back to rig at 06:30.<br>Lady Dawn released from tow-bridle at 06:07 hrs.<br>#4 pendant passed to Pacific Challenger at 06:51 hrs. #4 anchor on bottom at 07:17 hrs. #4 pendant back to rig at 08:37.<br>#1 pendant passed to Lady Dawn at 07:26 hrs. #1 anchor on bottom at 08:23 hrs. #1 pendant back to rig at 09:10.<br>#5 pendant passed to Pacific Challenger at 08:53 hrs. #5 anchor on bottom at 09:20 hrs. #5 pendant back to rig at 09:50.<br>Commence ballast rig at 01:00 hrs. Finish Ballast rig at 11:48 hrs, with rig at 55 ft drilling draft.<br>SIMOPS - Pick up and rack back 4 stands HWDP. 7 stands 5" drill pripe. |
| CH | P | PUP | 1200 | 1400 | 2.00 | 0 m | Pick up and rack back 13 stands 5" drill pipe. (Total 20 stands 5" drill pipe made up and stood back in derrick.) |
| CH | P | HT | 1400 | 1530 | 1.50 | 0 m | Pick up and make up Dril Quip 30" casing running tool. Stand back in derrick. |
| CH | P | HBHA | 1530 | 2030 | 5.00 | 235.2 m | Pick up BHA, including 17 1/ 2" BHA components, and RIH. Tag sea bed at 235.2 m RT LAT. |
| CH | P | SVY | 2030 | 2100 | 0.50 | 235.2 m | Verify tag seabed with ROV. Pick-up 10 m and survey with anderdrift tool. Survey = 0.5 deg. |
| CH | P | DA | 2100 | 2300 | 2.00 | 268.0 m | Spud well from 235 m to 268 m. Wash down 5 m from mud line, at 200 gpm, pumping hi-vis PHB, at 20 RPM. Switch to Seawater and stage flow up to 1200 gpm. Increase rotary to 50 RPM. Sweep hole with 50 bbls hi-vis every tool joint. |
| CH | P | SVY | 2300 | 2330 | 0.50 | 268.0 m | Spot 200 bbls hi-vis into hole and take inclination survey with anderdrift tool. Tool indicates 2.25 deg. Take check survey. Tool indicates 2.0 deg. |
| CH | P | WT | 2330 | 2400 | 0.50 | 268.0 m | POOH to 242 m. No drag. Take check survey with Anderdrift tool. Tool indicates 1.5 deg. RIH to 268 m. No fill. Hole good. Take check survey. Tool indicates 2.25 deg. Displace hole with 200 bbls PHB and prepare to drop TOTCO survey. |

### Operations For Period 0000 Hrs to 0600 Hrs on 09 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| CH | TP | SVY | 0000 | 0130 | 1.50 | 268.0 m | Rig up to run TOTCO survey on rig slick-line. Drop TOTCO and recover. Mis-fire. Re-dress TOTCO tool and re-run. Recover TOTCO. Survey indicates 1 degree. |
| CH | P | TO | 0130 | 0300 | 1.50 | 268.0 m | POOH and rack back BHA. Break out and lay down 26" bit and 36" hole opener. |
| CH | P | RRC | 0300 | 0400 | 1.00 | 268.0 m | Make up cementing stand and rack back in derrick. Hold JSA for running 30" casing. Pick up PGB and move over moon pool. |
| CH | TP | RRC | 0400 | 0430 | 0.50 | 268.0 m | Re-sheave guide wires for PGB. Unlock spider beams in moonpool and move to receive PGB. |
| CH | P | RRC | 0430 | 0500 | 0.50 | 268.0 m | Land PGB on spider beams. Pick up 30" elevators. |
| CH | P | CRN | 0500 | 0600 | 1.00 | 268.0 m | Run 30" casing. |

## Phase Data to 2400hrs, 08 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 12 | 08 Dec 2003 | 08 Dec 2003 | 91 | 4 days | 268.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Spud Mud | API FL: | 0 cm³/ 30m | Cl: | 1100 | Solids(%vol): | 0 | Viscosity: | 160 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 11 cp |
| Time: | 20:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 550 | Oil(%): | 0 % | YP: | 72 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 51 |
| Temp: | 16.0 C° | | | PM: | 0 | pH: | 0 | Gels 10m: | 60 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 52 |
| | | | | | | | | Fann 006: | 56 |
| | | | | | | | | Fann 100: | 67 |
| | | | | | | | | Fann 200: | 72 |
| | | | | | | | | Fann 300: | 83 |
| | | | | | | | | Fann 600: | 94 |

## Bit # 1 RR1

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
|---|---|---|---|---|---|---|---|---|---|
| Size ("): | 26.00 in | IADC# | 1-1-1 | No. | Size | Progress | 32.8 m | Cum. Progress | 32.8 m |
| Mfr: | SMITH | WOB(avg) | 1.0 klb | 3 | 24 / 32nd" | On Bottom Hrs | 1.41 h | Cum. On Btm Hrs | 1.41 h |
| Type: | Rock | RPM(avg) | 50 | | | IADC Drill Hrs | 2.00 h | Cum IADC Drill Hrs | 2.00 h |
| Serial No.: | MJ5779 | F.Rate | 1200 gpm | | | Total Revs | 4 | Cum Total Revs | 4 |
| Bit Model | DSJ | SPP | 1550 psi | | | ROP(avg) | 23 m/ h | ROP(avg) | 23.3 |
| Depth In | 235.2 m | TFA | 1.326 | | | | | | |
| Depth Out | 268.0 m | | | | | | | | |

Run Comment: 26" bit with 36" hole opener.

## BHA # 1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 0 klb | Length | 214.2 m | Torque(max) | 0 ft-lbs | D.C. (1) Ann Velocity | 48.4 |
| Wt Below Jar(Wet) | 0 klb | String | 0 klb | Torque(Off.Btm) | 0 ft-lbs | D.C. (2) Ann Velocity | 50.2 |
| | | Pick-Up | 0 klb | Torque(On.Btm) | 0 ft-lbs | H.W.D.P. Ann Velocity | 45.2 |
| | | Slack-Off | 0 klb | | | D.P. Ann Velocity | 45.2 |

BHA Run Description: Spud BHA. (The 17 1/ 2" BHA made up and used to drill the 17 1/ 2" hole.)

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| 26 in Bit | 0.64 m | 26.00 in | 0 in | MJ5779 | Re-run 26" bit (from Casino3) |
| 9.5 in pony DC | 3.22 m | 9.57 in | 3.50 in | | 9 1/ 2" pony drill collar. |
| 36 in Hole Opener | 2.43 m | 36.00 in | 2.81 in | 48131 | 36 inch hole opener. |
| Float Sub | 1.24 m | 9.63 in | 3.06 in | EX0073 | Float sub with ported float. |
| Anderdrift Survey Tool | 2.93 m | 9.44 in | 3.06 in | ADB916 | Andergauge. |
| String Stabiliser | 2.01 m | 9.50 in | 3.03 in | S5 | 17 1/ 2" string stabiliser |
| 9.5 in DC | 9.29 m | 9.56 in | 3.06 in | 1039504 | 9 1/ 2" Drill Collar |
| String Stabiliser | 2.19 m | 9.50 in | 3.06 in | Illegible | 17 1/ 2" String Stabiliser |
| 9.5 in DC | 18.43 m | 9.50 in | 3.06 in | | 9 1/ 2" Drill Collars |
| X/ O | 1.05 m | 9.50 in | 3.06 in | EX 0063 | X/ O 6 5/ 8" reg pin x 7 5/ 8" reg box |
| 8.25in DC | 56.32 m | 8.25 in | 2.88 in | | 8 1/ 4" Drill collars |
| X/ O | 1.10 m | 8.38 in | 3.00 in | EX0060 | X/ O 6 5/ 8" reg pin x 4 1/ 2" IF box |
| 5in HWDP | 113.33 m | 5.00 in | 3.00 in | | 5" Hevi-wate drill pipe. |


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## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 2899 |
| Gel | sx | 0 | 499 | 0 | 1271 |
| Potable Water | MT | 24 | 41 | 0 | 126 |
| Drill Water | MT | 4 | 276 | 0 | 554 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 170 | 8 | 0 | 663 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 4 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| MO47 | 8 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Marcomm | 1 |
| Thales | 2 |
| TMT | 6 |
| Total | 78 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 81 | 1550 | 400 |
| 2 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 81 | 1550 | 400 |
| 3 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 82 | 1550 | 400 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 1 Day | |
| BOP Test | 07 Dec 2003 | 1 Day | |
| Fire Drill | 07 Dec 2003 | 1 Day | |
| First Aid | 29 Oct 2003 | 40 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 957 Days | None |
| Near Miss | 04 Nov 2003 | 34 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Safety Meeting | 07 Dec 2003 | 1 Day | |
| Walkabout | 08 Dec 2003 | 0 Days | |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin

| **Available** | **964 bbl** |
|---|---|
| Active | 964.0 bbl |
| Mixing | 0 bbl |
| Hole | 0 bbl |
| Slug | 0 bbl |
| Reserve | 0 bbl |
| Kill | 0 bbl |

| **Losses** | **634 bbl** |
|---|---|
| Downhole | 0 bbl |
| Surf+ Equip | 0 bbl |
| Dumped | 0 bbl |
| De-Sander | 0 bbl |
| De-Silter | 0 bbl |
| Centrifuge | 0 bbl |
| Sweeps / Displacements | 634.0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment Mixed 1542 bbls water plus 56 bbls product.

## Marine

Weather check on 08 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 120 deg | 1012 bar | 17.0 C° | 0.3 m | 120 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.6 deg | 0.5 deg | 0 m | 1.3 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 4240.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 215.0 |
| 2 | 225.0 |
| 3 | 205.0 |
| 4 | 205.0 |
| 5 | 210.0 |
| 6 | 230.0 |
| 7 | 215.0 |
| 8 | 220.0 |


Printed on 09 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — Standing by at anchor.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 520 |
| Drill Water | MT | 80 |
| Mud | sx | 0 |
| Fuel | MT | 257.8 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — Departed: 09:30 — Along port side for backload.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 192 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 370.8 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 01 | 15:10 | Ocean Epoch | | 6 |
| 01 | 15:22 | Essendon | | 12 |

Santos

# DRILLING MORNING REPORT # 5
## Hill #1 ( 09 Dec 2003 )

**From : G. Howard / S. Douglass / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 268.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 268.0 m | Casing OD | 30.000 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 0 m | | |
| Rig | Ocean Epoch | Days from spud | 1.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 4.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Drilling out 20" casing shoe at 268m. | | | | |
| RT-ML | 235.2 m | Planned Op | Drill 17-1/ 2" hole section to surface casing TD of +/ - 765m. | | | | |

## Summary of Period 0000 to 2400 Hrs

POOH with 36" drilling assembly from 268m, run and cement 30" casing, WOC and perform top up cement job. Prepare wellhead, make up and run 17-1/ 2" drilling assembly.

## Operations For Period 0000 Hrs to 2400 Hrs on 09 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| CH | TP | SVY | 0000 | 0130 | 1.50 | 268.0 m | Rig up to run TOTCO survey on rig slick-line. Drop TOTCO and recover. Mis-fire. Re-dress TOTCO tool and re-run. Recover TOTCO. Survey indicates 1 degree. |
| CH | P | TO | 0130 | 0300 | 1.50 | 268.0 m | POOH and rack back BHA. Break out and lay down 26" bit and 36" hole opener. |
| CH | P | RRC | 0300 | 0400 | 1.00 | 268.0 m | Make up cementing stand and rack back in derrick. Hold JSA for running 30" casing. Pick up PGB and move over moon pool. |
| CH | TP | RRC | 0400 | 0430 | 0.50 | 268.0 m | Re-sheave guide wires for PGB. Unlock spider beams in moonpool and move to receive PGB. |
| CH | P | RRC | 0430 | 0500 | 0.50 | 268.0 m | Land PGB on spider beams. Pick up 30" elevators. |
| CH | P | CRN | 0500 | 0900 | 4.00 | 268.0 m | Run 30" casing / wellhead housing and latch into PGB on spider beams. Lower assembly to sea level and fill with water. |
| CH | P | CRN | 0900 | 1030 | 1.50 | 268.0 m | Run 30" casing and PGB on 5" drill pipe, stab into hole and continue RIH. |
| CH | P | HT | 1030 | 1100 | 0.50 | 268.0 m | Make up cementing stand & hose, RIH and tag bottom at 268m. |
| CH | P | CIC | 1100 | 1130 | 0.50 | 268.0 m | Circulate casing and hole clean at 264m with 400 gpm. Position PGB with 240 deg heading and top of housing 2m above seabed with conductor shoe at 268m. |
| CH | P | CMC | 1130 | 1230 | 1.00 | 268.0 m | Test cement lines to 1500 psi, pump 5 bbls of freshwater spacer (with dye), mix & pump 168 bbls of 15.9ppg cement slurry and displace with 21 bbls seawater. No cement returns noted at seabed. |
| CH | P | WOC | 1230 | 1500 | 2.50 | 268.0 m | Support PGB / casing string in position (indicated PGB angle 1/ 4 deg) and wait on cement. |
| CH | U | TUC | 1500 | 1700 | 2.00 | 268.0 m | Release CART from wellhead housing and POOH with cement stinger. Lower stinger through PGB and into hole beside 30" wellhead housing to 248.3m. |
| CH | U | TUC | 1700 | 1800 | 1.00 | 268.0 m | Test cement lines and pump 91 bbls of 15.9 ppg cement as top up and displace with 10 bbls seawater. Cement returns noted at seabed. |
| CH | P | TO | 1800 | 1930 | 1.50 | 268.0 m | Pick up out of hole/ PGB with stinger, flush pipe and trip out to surface. Lay out CART and 5" DP stinger. |
| SH | P | HT | 1930 | 2130 | 2.00 | 268.0 m | Make up 18-3/ 4" wellhead and install SSR cementing plug assembly and running tool. |
| SH | P | HT | 2130 | 2230 | 1.00 | 268.0 m | Break down and lay out cementing stand and 36" hole opener. |
| SH | P | HBHA | 2230 | 2400 | 1.50 | 268.0 m | Make up and run 17-1/ 2" drilling assembly and commence RIH. |

## Operations For Period 0000 Hrs to 0600 Hrs on 10 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SH | TP | HBHA | 0000 | 0100 | 1.00 | 268.0 m | Guide ropes attached to the bottom of BHA parted. Trip out 2 stands and connect new guide ropes. |
| SH | P | HBHA | 0100 | 0230 | 1.50 | 268.0 m | Continue RIH with 17-1/ 2" drilling assembly. |
| SH | P | HT | 0230 | 0330 | 1.00 | 268.0 m | Load darts and make up Nodeco cement head/ pup jnt assembly. |
| SH | P | WOC | 0330 | 0430 | 1.00 | 268.0 m | RIH and tag top of cement at 264m with 10k. |
| SH | P | DC | 0430 | 0600 | 1.50 | 268.0 m | Drill out cement from 264m to 20" casing shoe at 268m. |

## Phase Data to 2400hrs, 09 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 4.5 | 09 Dec 2003 | 09 Dec 2003 | 115 | 5 days | 268.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Spud Mud | API FL: | 0 cm³/ 30m | Cl: | 1100 | Solids(%vol): | 0 | Viscosity: | 145 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 19 cp |
| Time: | 19:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 350 | Oil(%): | 0 % | YP: | 70 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 0 |
| Temp: | 20.0 C° | | | PM: | 0 | pH: | 10.6 | Gels 10m: | 0 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 38 |
| | | | | | | | | Fann 006: | 45 |
| | | | | | | | | Fann 100: | 67 |
| | | | | | | | | Fann 200: | 75 |
| | | | | | | | | Fann 300: | 89 |
| | | | | | | | | Fann 600: | 108 |

## Bit # 1 RR1

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | 1 | 1 | FC | A | 2 | I | NO | TD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size ("): | 26.00 in | IADC# | 1-1-1 | **Nozzles** | | **Drilled over last 24 hrs** | | **Calculated over Bit Run** | |
| Mfr: | SMITH | WOB(avg) | 1.0 klb | No. | Size | Progress | 0 m | Cum. Progress | 32.8 m |
| Type: | Rock | RPM(avg) | 50 | 3 | 24 / 32nd" | On Bottom Hrs | 0 h | Cum. On Btm Hrs | 1.41 h |
| Serial No.: | MJ5779 | F.Rate | 1200 gpm | | | IADC Drill Hrs | 0 h | Cum IADC Drill Hrs | 2.00 h |
| Bit Model | DSJ | SPP | 1550 psi | | | Total Revs | 4 | Cum Total Revs | 8 |
| Depth In | 235.2 m | TFA | 1.326 | | | ROP(avg) | N/ A | ROP(avg) | 23.3 |
| Depth Out | 268.0 m | | | | | | | | |

Run Comment: 26" bit with 36" hole opener.

## BHA # 1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 0 klb | Length | 214.2 m | Torque(max) | 0 ft-lbs | D.C. (1) Ann Velocity | 48.4 |
| Wt Below Jar(Wet) | 0 klb | String | 0 klb | Torque(Off.Btm) | 0 ft-lbs | D.C. (2) Ann Velocity | 50.2 |
| | | Pick-Up | 0 klb | Torque(On.Btm) | 0 ft-lbs | H.W.D.P. Ann Velocity | 45.2 |
| | | Slack-Off | 0 klb | | | D.P. Ann Velocity | 45.2 |

BHA Run Description: Spud BHA. (incorporating pre assembly of 17 1/ 2" stabilisers/ BHA.)

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| 26 in Bit | 0.64 m | 26.00 in | 0 in | MJ5779 | Re-run 26" bit (from Casino3) |
| 9.5 in pony DC | 3.22 m | 9.57 in | 3.50 in | | 9 1/ 2" pony drill collar. |
| 36 in Hole Opener | 2.43 m | 36.00 in | 2.81 in | 48131 | 36 inch hole opener. |
| Float Sub | 1.24 m | 9.63 in | 3.06 in | EX0073 | Float sub with ported float. |
| Anderdrift Survey Tool | 2.93 m | 9.44 in | 3.06 in | ADB916 | Andergauge. |
| String Stabiliser | 2.01 m | 9.50 in | 3.03 in | S5 | 17 1/ 2" string stabiliser |
| 9.5 in DC | 9.29 m | 9.56 in | 3.06 in | 1039504 | 9 1/ 2" Drill Collar |
| String Stabiliser | 2.19 m | 9.50 in | 3.06 in | Illegible | 17 1/ 2" String Stabiliser |
| 9.5 in DC | 18.43 m | 9.50 in | 3.06 in | | 9 1/ 2" Drill Collars |
| X/ O | 1.05 m | 9.50 in | 3.06 in | EX 0063 | X/ O 6 5/ 8" reg pin x 7 5/ 8" reg box |
| 8.25in DC | 56.32 m | 8.25 in | 2.88 in | | 8 1/ 4" Drill collars |
| X/ O | 1.10 m | 8.38 in | 3.00 in | EX0060 | X/ O 6 5/ 8" reg pin x 4 1/ 2" IF box |
| 5in HWDP | 113.33 m | 5.00 in | 3.00 in | | 5" Hevi-wate drill pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |


Printed on 10 Dec 2003

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 1301 | 0 | 1598 |
| Gel | sx | 0 | 454 | 0 | 817 |
| Potable Water | MT | 23 | 22 | 0 | 127 |
| Drill Water | MT | 267 | 158 | 0 | 663 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 10 | 0 | 653 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 4 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Thales | 2 |
| TMT | 6 |
| Total | 69 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 81 | 1550 | 400 |
| 2 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 81 | 1550 | 400 |
| 3 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 82 | 1550 | 400 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |
| 0 | 20 | 0 | 98 | 30 | 0 | 147 | 40 | 0 | 197 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 2 Days | |
| BOP Test | 07 Dec 2003 | 2 Days | |
| Fire Drill | 07 Dec 2003 | 2 Days | |
| First Aid | 29 Oct 2003 | 41 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 958 Days | None |
| Near Miss | 04 Nov 2003 | 35 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Pre-Tour Meeting | 09 Dec 2003 | 0 Days | Pre tour operational & safety meetings conducted. |
| Safety Meeting | 07 Dec 2003 | 2 Days | |
| Walkabout | 09 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin

| **Available** | **964 bbl** |
|---|---|
| Active | 964.0 bbl |
| Mixing | 0 bbl |
| Hole | 0 bbl |
| Slug | 0 bbl |
| Reserve | 0 bbl |
| Kill | 0 bbl |

| **Losses** | **634 bbl** |
|---|---|
| Downhole | 0 bbl |
| Surf+ Equip | 0 bbl |
| Dumped | 0 bbl |
| De-Sander | 0 bbl |
| De-Silter | 0 bbl |
| Centrifuge | 0 bbl |
| Sweeps / Displacements | 634.0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment Mixed 1542 bbls water plus 56 bbls product.

## Marine

Weather check on 09 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 12.0 kn | 045 deg | 1004 bar | 16.0 C° | 0.3 m | 045 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.6 deg | 0.5 deg | 0 m | 1.3 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 4240.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 220.0 |
| 2 | 235.0 |
| 3 | 200.0 |
| 4 | 210.0 |
| 5 | 205.0 |
| 6 | 230.0 |
| 7 | 235.0 |
| 8 | 235.0 |


Printed on 10 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — 21:35 — Portland

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 200 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 251 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — 20:40 — On standby near rig.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 213 |
| Drill Water | MT | 290 |
| Mud | sx | 0 |
| Fuel | MT | 362 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 6
## Hill #1 ( 10 Dec 2003 )

**From : G. Howard / C. Wise**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 777.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 777.0 m | Casing OD | 30.000 in | | |
| Drill Co. | DOGC | Progress | 509.0 m | Shoe TVD | 268.0 m | | |
| Rig | Ocean Epoch | Days from spud | 2.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 5.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Making up 13-3/ 8" shoe track. | | | | |
| RT-ML | 235.2 m | Planned Op | Run and cement 13-3/ 8" casing, release from 18-3/ 4" wellhead assembly, trip out and prepare to run BOPs & riser. | | | | |

### Summary of Period 0000 to 2400 Hrs

RIH with 17-1/ 2" drilling assembly, drilled out 20" casing shoe and 17-1/ 2" hole section from 268m to 777m. Circulated hole clean and commenced POOH.

### Operations For Period 0000 Hrs to 2400 Hrs on 10 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SH | TP | HBHA | 0000 | 0100 | 1.00 | 268.0 m | Guide ropes attached to the bottom of BHA parted. Trip out 2 stands and connect new guide ropes. |
| SH | P | HBHA | 0100 | 0230 | 1.50 | 268.0 m | Continue RIH with 17-1/ 2" drilling assembly. |
| SH | P | HT | 0230 | 0330 | 1.00 | 268.0 m | Load darts and make up Nodeco cement head/ pup jnt assembly. |
| SH | P | WOC | 0330 | 0430 | 1.00 | 268.0 m | RIH and tag top of cement at 264m with 10k. |
| SH | P | DC | 0430 | 0600 | 1.50 | 268.0 m | Drill out cement from 264m to 20" casing shoe at 268m. |
| SH | P | DA | 0600 | 2230 | 16.50 | 777.0 m | Drill 17-1/ 2" hole from 268m to surface casing TD at 777m, pumping seawater with gel sweeps - continuous returns noted at seabed. Indicated well angle (via Anderdrift tool) 1/ 2 deg. |
| SH | P | CHC | 2230 | 2300 | 0.50 | 777.0 m | Pump tandem PHG sweeps and displace hole to mud. Displace drill string with seawater. |
| SC | P | TO | 2300 | 2400 | 1.00 | 777.0 m | Drop Totco survey barrel and commence POOH, racking back drill pipe. |

### Operations For Period 0000 Hrs to 0600 Hrs on 11 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | TO | 0000 | 0130 | 1.50 | 777.0 m | Continue POOH with 17-1/ 2" drilling assembly (max overpull 30k at 600m), hole good. Weather deteriorating. |
| SC | P | TO | 0130 | 0330 | 2.00 | 777.0 m | Inclement weather, conduct JSA and continue POOH with BHA. |
| SC | P | SM | 0330 | 0400 | 0.50 | 777.0 m | Recover Totco survey barrel (indicated well angle of 1/ 2 deg at 771m). Clear work area/ rig floor, review JSA and conduct pre casing operational & safety meeting. |
| SC | P | RRC | 0400 | 0530 | 1.50 | 777.0 m | Rig up to run 13-3/ 8" casing. |
| SC | P | CRN | 0530 | 0600 | 0.50 | 777.0 m | Pick up and run 13-3/ 8" casing shoe track. |

### Phase Data to 2400hrs, 10 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 1 | 10 Dec 2003 | 10 Dec 2003 | 139 | 6 days | 777.0 m |

### WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Spud Mud/ Gel | API FL: | 0 cm³/ 30m | Cl: | 900 | Solids(%vol): | 0 | Viscosity: | 128 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 19 cp |
| Time: | 22:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 280 | Oil(%): | 0 % | YP: | 71 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 0 |
| Temp: | 25.0 C° | | | PM: | 0 | pH: | 10.4 | Gels 10m: | 0 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 37 |
| | | | | | | | | Fann 006: | 41 |
| | | | | | | | | Fann 100: | 63 |
| | | | | | | | | Fann 200: | 74 |
| | | | | | | | | Fann 300: | 90 |
| | | | | | | | | Fann 600: | 109 |


Printed on 11 Dec 2003

## Bit # 2

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
|---|---|---|---|---|---|---|---|---|---|
| Size (''): | 17.50 in | IADC# | 115 | No. | Size | Progress | 509.0 m | Cum. Progress | 509.0 m |
| Mfr: | REED | WOB(avg) | 10.0 klb | 4 | 20 / 32nd'' | On Bottom Hrs | 13.93 h | Cum. On Btm Hrs | 13.93 h |
| Type: | Rock | RPM(avg) | 115 | | | IADC Drill Hrs | 16.50 h | Cum IADC Drill Hrs | 16.50 h |
| Serial No.: | X83718 | F.Rate | 1000 gpm | | | Total Revs | 0 | Cum Total Revs | 0 |
| Bit Model | EMS11GC | SPP | 2500 psi | | | ROP(avg) | 37 m/ h | ROP(avg) | 36.5 |
| Depth In | 268.0 m | TFA | 1.227 | | | | | | |
| Depth Out | 777.0 m | | | | | | | | |
| Run Comment | | New bit. | | | | | | | |

## BHA # 2

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 0 klb | Length | 268.0 m | Torque(max) | 0 ft-lbs | D.C. (1) Ann Velocity | 102.9 |
| Wt Below Jar(Wet) | 48.0 klb | String | 255.0 klb | Torque(Off.Btm) | 0 ft-lbs | D.C. (2) Ann Velocity | 113.5 |
| | | Pick-Up | 255.0 klb | Torque(On.Btm) | 0 ft-lbs | H.W.D.P. Ann Velocity | 87.1 |
| | | Slack-Off | 252.0 klb | | | D.P. Ann Velocity | 87.1 |

BHA Run Description: 17.5" Bit, NB Stab c/ w; ported float; Anderdrift with totco, 17.5" Stab, 1 x 9.5" DC, 17.5" Stab, 2 x 9.5" DC's, x/ o, 6 x 8.25" DC's, 8" Jar, 3 x 8.25" DC's, 8" Accel, 1 x 8.25 DC, x/ o, 12 x 5" HWDP.

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.45 m | 17.50 in | 0 in | X83718 | New EMS11GC |
| Near Bit Stabiliser | 1.96 m | 17.50 in | 3.13 in | NB2 | |
| Anderdrift Survey Tool | 2.93 m | 9.44 in | 3.06 in | ADB916 | Andergauge. |
| String Stabiliser | 2.01 m | 9.50 in | 3.03 in | S5 | 17 1/ 2" string stabiliser |
| 9.5 in DC | 9.29 m | 9.56 in | 3.06 in | 1039504 | 9 1/ 2" Drill Collar |
| String Stabiliser | 2.19 m | 9.50 in | 3.06 in | Illegible | 17 1/ 2" String Stabiliser |
| 9.5 in DC | 18.43 m | 9.50 in | 3.06 in | | 9 1/ 2" Drill Collars |
| X/ O | 1.05 m | 9.50 in | 3.06 in | EX 0063 | X/ O 6 5/ 8" reg pin x 7 5/ 8" reg box |
| 8.25in DC | 56.32 m | 8.25 in | 2.88 in | | 8 1/ 4" Drill collars |
| 8in Hydraulic Jars | 9.77 m | 8.13 in | 3.00 in | N/ R | |
| 8.25in DC | 27.61 m | 8.25 in | 2.81 in | | |
| Jar Accel. | 8.19 m | 8.06 in | 3.00 in | DAHO-3434 | |
| 8.25in DC | 9.51 m | 8.25 in | 2.81 in | | |
| X/ O | 1.10 m | 8.38 in | 3.00 in | EX0060 | X/ O 6 5/ 8" reg pin x 4 1/ 2" IF box |
| 5in HWDP | 113.33 m | 5.00 in | 3.00 in | | 5" Hevi-wate drill pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |
| 771.00 | 0.50 | 0 | 770.9 | 8.97 | 0.03 | 8.97 | 0 | Totco |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 1598 |
| Gel | sx | 0 | 416 | 0 | 401 |
| Potable Water | MT | 25 | 23 | 0 | 129 |
| Drill Water | MT | 0 | 305 | 0 | 358 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 13 | 0 | 640 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Other | 1 |
| TMT | 6 |
| Premium Casing Services | 2 |
| Total | 69 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |
| 2 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |
| 3 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 3 Days | |
| BOP Test | 07 Dec 2003 | 3 Days | |
| Fire Drill | 07 Dec 2003 | 3 Days | |
| First Aid | 29 Oct 2003 | 42 Days | Employee struck by chain tong - no treatment required. |
| JHA/ HSE Audit | 11 Dec 2003 | -1 Days | Crew review JSA for handling BHA in inclement weather. |
| Lost Time Incident | 24 Apr 2001 | 959 Days | None |
| Near Miss | 04 Nov 2003 | 36 Days | 3/ 4" bolt, on swivel retaining plate, fell into the sea. |
| Pre-Tour Meeting | 10 Dec 2003 | 0 Days | Pre tour operational & safety meetings conducted. |
| Safety Meeting | 07 Dec 2003 | 3 Days | |
| Walkabout | 10 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin

| **Available** | **923 bbl** | **Losses** | **2977 bbl** |
|---|---|---|---|
| Active | 923.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |
| | | Sweeps & Displacement | 2977.0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment: 1640 bbls PHG carried over from 36" hole section. Pumped PHG sweeps throughout 17-1/ 2" hole section and displaced hole to PHG/ mud prior to POOH.

## Marine

Weather check on 10 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 23.0 kn | 315 deg | 1007 bar | 16.0 C° | 2.0 m | 315 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 2.5 deg | 1.0 deg | 2.00 m | 3.0 m | 315 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 3955.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 203.0 |
| 2 | 219.0 |
| 3 | 228.0 |
| 4 | 226.0 |
| 5 | 190.0 |
| 6 | 228.0 |
| 7 | 203.0 |
| 8 | 190.0 |


Printed on 11 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | | 21:35 09/ 12/ 03 | In port. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 20:40 09/ 12/ 03 | | On standby near rig. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 210 |
| Drill Water | MT | 295 |
| Mud | sx | 0 |
| Fuel | MT | 352 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 09:22 | Ocean Epoch | 1 x Santos, 1 x Govt., 3 x DOGC, 2 x PCS. | 7 |
| 1 | 09:30 | Essendon | 1 x Santos, 1 x ECL, 2 x Thales, 3 x DOGC. | 7 |

Santos

# DRILLING MORNING REPORT # 7
## Hill #1 ( 11 Dec 2003 )

**From : G. Howard / C. Wise**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 777.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 777.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 3.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 6.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Making up riser dump valve and riser section. | | | | |
| RT-ML | 235.2 m | Planned Op | Run and land BOP stack, run wear bushing and test connectors. Lay out 17-1/ 2" BHA and pick up 12-1/ 4" assembly. | | | | |

### Summary of Period 0000 to 2400 Hrs

POOH with 17-1/ 2" drilling assembly. Ran 13-3/ 8" casing and 18-3/ 4" wellhead. Cemented and tested casing, tripped out and rigged up to run riser and BOPs.

### Operations For Period 0000 Hrs to 2400 Hrs on 11 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | TO | 0000 | 0130 | 1.50 | 777.0 m | Continue POOH with 17-1/ 2" drilling assembly (max overpull 30k at 600m), hole good. Weather deteriorating. |
| SC | P | TO | 0130 | 0330 | 2.00 | 777.0 m | Inclement weather, conduct JSA and continue POOH with BHA. |
| SC | P | SM | 0330 | 0400 | 0.50 | 777.0 m | Recover Totco survey barrel (indicated well angle of 1/ 2 deg at 771m). Clear work area/ rig floor, review JSA and conduct pre casing operational & safety meeting. |
| SC | P | RRC | 0400 | 0530 | 1.50 | 777.0 m | Rig up to run 13-3/ 8" casing. |
| SC | P | CRN | 0530 | 0600 | 0.50 | 777.0 m | Pick up and run 13-3/ 8" casing shoe track. |
| SC | P | CRN | 0600 | 0930 | 3.50 | 777.0 m | RIH with 13-3/ 8" 68 ppf L-80 BTC casing (inclement weather). |
| SC | P | CRN | 0930 | 1030 | 1.00 | 777.0 m | Reposition rig to stab casing into wellhead housing at 233.2m. |
| SC | P | CRN | 1030 | 1200 | 1.50 | 777.0 m | Continue RIH with 13-3/ 8" casing, total of 44 jnts run. |
| SC | P | CRN | 1200 | 1500 | 3.00 | 777.0 m | Make up Drill-Quip 18-3/ 4" wellhead and running tool assembly. Continue to run casing on 5" drillpipe, make up cement head/ stand and land wellhead/ casing with shoe at 769m and wellhead top at 232.28m. Take 50 k over pull and confirm wellhead latch. |
| SC | P | CIC | 1500 | 1530 | 0.50 | 777.0 m | Made up cementing lines, circulated casing & hole clean. |
| SC | P | CMC | 1530 | 1830 | 3.00 | 777.0 m | Tested lines to 3000psi. Mixed and pumped 240 bbls 12.5 ppg Class G lead and 150 bbls 15.8 ppg class G tail slurry. Released the top dart and displaced drill pipe/ casing with 25 bbls seawater via Halliburton (no noted plug shear) and 238.5 bbls seawater with rig pump @ 12 bpm. Flourocene Dye & cement noted at sea bed. Bumped plug with 900 psi and tested casing to 3000 psi. Bled back 2.6 bbls to zero. |
| SC | P | TO | 1830 | 2200 | 3.50 | 777.0 m | Remove cementing line and release the CART from the well head. Lay out cementing head, POOH with 5" drillpipe/ running string & lay out CART. ROV clear bulls eye (1/ 4 deg.) and confirm wellhead seal area clean. |
| SC | P | BOP | 2200 | 2400 | 2.00 | 777.0 m | Clear rig floor, rig up riser handling equipment. Prepare to move BOPs to moon pool. |

### Operations For Period 0000 Hrs to 0600 Hrs on 12 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | BOP | 0000 | 0300 | 3.00 | 777.0 m | Conduct JSA , stabilise BOP stack with winches, pick up and move stack into moon pool and land out on spider beams. |
| SC | P | BOP | 0300 | 0430 | 1.50 | 777.0 m | Pick up LMRP and land out / connect to BOP stack. |
| SC | P | BOP | 0430 | 0530 | 1.00 | 777.0 m | Make up and pressure test kill & choke line stab connections. |
| SC | P | BOP | 0530 | 0600 | 0.50 | 777.0 m | Rig up to install riser dump valve from moon pool area. |

### Phase Data to 2400hrs, 11 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 25 | 10 Dec 2003 | 11 Dec 2003 | 163 | 7 days | 777.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Seawater/ Gel Sweeps | API FL: | 0 cm³/ 30m | Cl: | 1000 | Solids(%vol): | 0 | Viscosity: | 130 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 17 cp |
| Time: | 24:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 300 | Oil(%): | 0 % | YP: | 74 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 0 |
| Temp: | 25.0 C° | | | PM: | 0 | pH: | 10.2 | Gels 10m: | 0 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 36 |
| | | | | | | | | Fann 006: | 40 |
| | | | | | | | | Fann 100: | 63 |
| | | | | | | | | Fann 200: | 75 |
| | | | | | | | | Fann 300: | 91 |
| | | | | | | | | Fann 600: | 108 |

Comment: Additional PHG mixed up as contingency prior to POOH w/ 17-1/ 2" assembly. PHG ready for 12-1/ 4" section.

## Bit # 2

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | NO | A | N | I | NO | TD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size ("): | 17.50 in | IADC# | 115 | **Nozzles** | | **Drilled over last 24 hrs** | | **Calculated over Bit Run** | |
| Mfr: | REED | WOB(avg) | 10.0 klb | No. | Size | Progress | 0 m | Cum. Progress | 509.0 m |
| Type: | Rock | RPM(avg) | 115 | 4 | 20 / 32nd" | On Bottom Hrs | 0 h | Cum. On Btm Hrs | 13.93 h |
| Serial No.: | X83718 | F.Rate | 1000 gpm | | | IADC Drill Hrs | 0 h | Cum IADC Drill Hrs | 16.50 h |
| Bit Model | EMS11GC | SPP | 2500 psi | | | Total Revs | 0 | Cum Total Revs | 0 |
| Depth In | 268.0 m | TFA | 1.227 | | | ROP(avg) | N/ A | ROP(avg) | 36.5 |
| Depth Out | 777.0 m | | | | | | | | |

Bitwear Comment: Bit in very good condition, no apparent wear.

## BHA # 2

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 0 klb | Length | 268.0 m | Torque(max) | 0 ft-lbs | D.C. (1) Ann Velocity | 102.9 |
| Wt Below Jar(Wet) | 48.0 klb | String | 255.0 klb | Torque(Off.Btm) | 0 ft-lbs | D.C. (2) Ann Velocity | 113.5 |
| | | Pick-Up | 255.0 klb | Torque(On.Btm) | 0 ft-lbs | H.W.D.P. Ann Velocity | 87.1 |
| | | Slack-Off | 252.0 klb | | | D.P. Ann Velocity | 87.1 |

BHA Run Description: 17.5" Bit, NB Stab c/ w; ported float; Anderdrift with totco, 17.5" Stab, 1 x 9.5" DC, 17.5" Stab, 2 x 9.5" DC's, x/ o, 6 x 8.25" DC's, 8" Jar, 3 x 8.25" DC's, 8" Accel, 1 x 8.25 DC, x/ o, 12 x 5" HWDP.

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.45 m | 17.50 in | 0 in | X83718 | New EMS11GC |
| Near Bit Stabiliser | 1.96 m | 17.50 in | 3.13 in | NB2 | |
| Anderdrift Survey Tool | 2.93 m | 9.44 in | 3.06 in | ADB916 | Andergauge. |
| String Stabiliser | 2.01 m | 9.50 in | 3.03 in | S5 | 17 1/ 2" string stabiliser |
| 9.5 in DC | 9.29 m | 9.56 in | 3.06 in | 1039504 | 9 1/ 2" Drill Collar |
| String Stabiliser | 2.19 m | 9.50 in | 3.06 in | Illegible | 17 1/ 2" String Stabiliser |
| 9.5 in DC | 18.43 m | 9.50 in | 3.06 in | | 9 1/ 2" Drill Collars |
| X/ O | 1.05 m | 9.50 in | 3.06 in | EX 0063 | X/ O 6 5/ 8" reg pin x 7 5/ 8" reg box |
| 8.25in DC | 56.32 m | 8.25 in | 2.88 in | | 8 1/ 4" Drill collars |
| 8in Hydraulic Jars | 9.77 m | 8.13 in | 3.00 in | N/ R | |
| 8.25in DC | 27.61 m | 8.25 in | 2.81 in | | |
| Jar Accel. | 8.19 m | 8.06 in | 3.00 in | DAHO-3434 | |
| 8.25in DC | 9.51 m | 8.25 in | 2.81 in | | |
| X/ O | 1.10 m | 8.38 in | 3.00 in | EX0060 | X/ O 6 5/ 8" reg pin x 4 1/ 2" IF box |
| 5in HWDP | 113.33 m | 5.00 in | 3.00 in | | 5" Hevi-wate drill pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |
| 771.00 | 0.50 | 0 | 770.9 | 8.97 | 0.03 | 8.97 | 0 | Totco |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 1367 | 0 | 231 |
| Gel | sx | 0 | 109 | 0 | 292 |
| Potable Water | MT | 22 | 17 | 0 | 134 |
| Drill Water | MT | 0 | 22 | 0 | 336 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 7 | 0 | 633 |
| Jet Fuel | Litres | 0 | 0 | 0 | 523 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| Dril-Quip | 1 |
| Geoservices | 2 |
| Halliburton | 1 |
| Other | 1 |
| TMT | 6 |
| Premium Casing Services | 2 |
| Total | 69 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |
| 2 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |
| 3 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 77 | 2500 | 378 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 4 Days | |
| BOP Test | 07 Dec 2003 | 4 Days | |
| Fire Drill | 07 Dec 2003 | 4 Days | |
| First Aid | 29 Oct 2003 | 43 Days | Employee struck by chain tong - no treatment required. |
| JHA/ HSE Audit | 11 Dec 2003 | 0 Days | Crew reviewed JSA for handling riser and moving BOP stack. |
| Lost Time Incident | 24 Apr 2001 | 960 Days | None |
| Near Miss | 11 Dec 2003 | 0 Days | Tailing in the 18-3/ 4" wellhead assembly onto the rig floor, the load moved with vessel roll, causing the lead pup joint to swing sideways, pushing an employee over - no injury sustained. |
| Pre-Tour Meeting | 11 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discussed current operations and potential hazzards. |
| Safety Meeting | 07 Dec 2003 | 4 Days | |
| Walkabout | 11 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin

| **Available** | **1177 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 1177.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment Made up 254 bbls of PHG as contingency for POOH from 17-1/ 2" section and ready for 12-1/ 4" section.

## Marine

Weather check on 11 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 26.0 kn | 292 deg | 1010 bar | 15.0 C° | 2.0 m | 292 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 2.5 deg | 1.0 deg | 2.00 m | 3.0 m | 315 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 3627.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 217.0 |
| 2 | 222.0 |
| 3 | 210.0 |
| 4 | 236.0 |
| 5 | 185.0 |
| 6 | 239.0 |
| 7 | 186.0 |
| 8 | 188.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — 09:50 11/ 12/ 03 — Standby near rig

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 1730 |
| Gel | sx | 957 |
| Potable Water | MT | 565 |
| Drill Water | MT | 150 |
| Mud | sx | 0 |
| Fuel | MT | 438.6 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — 17:45 11/ 12/ 03 — At port

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 207 |
| Drill Water | MT | 295 |
| Mud | sx | 0 |
| Fuel | MT | 345.8 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 8
## Hill #1 ( 12 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 777.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 777.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 4.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 7.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Attempting to run BOP stack as weather permits. | | | | |
| RT-ML | 235.2 m | Planned Op | WOW, run riser / BOPs, land out & test connector. Nipple up slip joint, choke / kill lines. Run wear bushing, make up 12-1/ 4" assembly. | | | | |

## Summary of Period 0000 to 2400 Hrs

Positioned BOPs in moonpool, connected LMRP & riser fill valve. Function tested stack, removed fill valve and connected riser double to LMRP. WOW to run stack.

## Operations For Period 0000 Hrs to 2400 Hrs on 12 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | BOP | 0000 | 0300 | 3.00 | 777.0 m | Conduct JSA , stabilise BOP stack with winches, pick up and move stack into moon pool and land out on spider beams. |
| SC | P | BOP | 0300 | 0430 | 1.50 | 777.0 m | Pick up LMRP and land out / connect to BOP stack. |
| SC | P | BOP | 0430 | 0530 | 1.00 | 777.0 m | Make up and pressure test kill & choke line stab connections. |
| SC | P | BOP | 0530 | 0900 | 3.50 | 777.0 m | Rig up and lift riser fill valve from moon pool area and install on LMRP. |
| SC | P | BOP | 0900 | 1200 | 3.00 | 777.0 m | Install and function test blue and yellow pods. Close blind/ shear rams, fill stack and test riser fill valve - failed. |
| SC | P | BOP | 1200 | 1500 | 3.00 | 777.0 m | Function test BOPs and work on riser fill valve. |
| SC | TP | BOP | 1500 | 1600 | 1.00 | 777.0 m | Nipple down and lay out riser fill valve. |
| SC | P | BOP | 1600 | 1700 | 1.00 | 777.0 m | Pick up riser double and connect to LMRP/ BOP stack. Pick up and attempt to run stack through moon pool - no-go due to weather/ rig movement. |
| SC | TP | WOW | 1700 | 2400 | 7.00 | 777.0 m | Wait on weather - Re-attempt to run BOP stack periodically, slamming into moon pool beams when lifted.<br><br>Wind 20-30 kn, waves 1- 2m, swell 2-3m, pitch 1-2 deg, roll 1-1.5 deg, heave 1-2m. |

## Operations For Period 0000 Hrs to 0600 Hrs on 13 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | TP | WOW | 0000 | 0600 | 6.00 | 777.0 m | Wait on weather - Unable to run BOPs, rig movement slamming BOP stack into moonpool when lifted off spider beams.<br><br>Wind 25-30 kn, waves 1- 2m, swell 2-3m, pitch 1-2 deg, roll 1-2.5 deg, heave 1-2m. |

## Phase Data to 2400hrs, 12 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 49 | 10 Dec 2003 | 12 Dec 2003 | 187 | 8 days | 777.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Seawater/ Gel Sweeps | API FL: | 0 cm³/ 30m | Cl: | 900 | Solids(%vol): | 0 | Viscosity: | 130 sec/ qt |
| | | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 17 cp |
| Sample-From: | Pit | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 150 | Oil(%): | 0 % | YP: | 74 lb/ 100ft² |
| Time: | 23:00 | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 0 |
| Weight: | 8.80 ppg | | | PM: | 0 | pH: | 10.2 | Gels 10m: | 0 |
| Temp: | 25.0 C° | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 36 |
| | | | | | | | | Fann 006: | 40 |
| | | | | | | | | Fann 100: | 63 |
| | | | | | | | | Fann 200: | 75 |
| | | | | | | | | Fann 300: | 91 |
| | | | | | | | | Fann 600: | 108 |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |
| 771.00 | 0.50 | 0 | 770.9 | 8.97 | 0.03 | 8.97 | 0 | Totco |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 1732 | 0 | 0 | 1963 |
| Gel | sx | 778 | 0 | 0 | 1070 |
| Potable Water | MT | 21 | 22 | 0 | 133 |
| Drill Water | MT | 468 | 52 | 0 | 752 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 8 | 0 | 625 |
| Jet Fuel | Litres | 0 | 0 | -1 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 6 |
| Premium Casing Services | 2 |
| Sperry-Sun | 2 |
| Santos Service | 3 |
| Total | 78 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 0 | 0 | 0 |
| 3 | Oilwell A1700PT | 6.50 | 8.80 | 95 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 5 Days | |
| BOP Test | 07 Dec 2003 | 5 Days | |
| Fire Drill | 07 Dec 2003 | 5 Days | |
| First Aid | 29 Oct 2003 | 44 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 961 Days | None |
| Near Miss | 11 Dec 2003 | 1 Day | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 12 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 5 Days | |
| Walkabout | 12 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin / Romero Tena

| **Available** | **1177 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 1177.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment PHG ready for 12-1/ 4" section.

## Marine

Weather check on 12 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 25.0 kn | 292 deg | 1009 bar | 15.0 C° | 1.5 m | 292 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 2.5 deg | 2.0 deg | 2.00 m | 3.0 m | 315 deg | 0 ft/ sec | Cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 3669.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 214.0 |
| 2 | 221.0 |
| 3 | 218.0 |
| 4 | 236.0 |
| 5 | 174.0 |
| 6 | 231.0 |
| 7 | 176.0 |
| 8 | 176.0 |


Printed on 13 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — 09:50 11/ 12/ 03 — Standby near rig

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 181 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 426 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — 17:45 11/ 12/ 03 — Sail at 06:00 13/ 12/ 03 from port to Epoch.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 985 |
| Cement | sx | 0 |
| Gel | sx | 957 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 16:40 | Ocen Epoch | 3 x MODUspec, 2 x Sperrysun, 4 x Geosevices, 1 x BHI | 10 |
| 1 | 16:50 | Essendon | Govt. inspector. | 1 |

Santos

# DRILLING MORNING REPORT # 9
## Hill #1 ( 13 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 777.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 777.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 5.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 8.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Connecting rucker lines to slip joint. | | | | |
| RT-ML | 235.2 m | Planned Op | Land BOP stack, test connector, stroke slip jnt & nipple up diverter. Run wear bushing, lay out 17-1/ 2" BHA, make up 12-1/ 4" drilling assembly. | | | | |

## Summary of Period 0000 to 2400 Hrs

Wait on weather/ sea conditions, run BOP stack, picking up riser and testing choke/ kill lines.

## Operations For Period 0000 Hrs to 2400 Hrs on 13 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | TP | WOW | 0000 | 1530 | 15.50 | 777.0 m | Wait on weather - Unable to run BOPs, rig movement slamming BOP stack into moonpool when lifted off spider beams.<br><br>Wind 25-30 kn, waves 1- 2m, swell 2-3m, pitch 1-2 deg, roll 1-2.5 deg, heave 1-2m.<br><br>Monitor weather/ rig movement and attempt to run stack at 06:00 and 12:00 hrs - damage to beams & BOP frame. |
| SC | P | RR1 | 1530 | 1830 | 3.00 | 777.0 m | Lift BOP stack, clear spider beams and proceed to run BOPs picking up riser sections. |
| SC | TP | RR1 | 1830 | 2030 | 2.00 | 777.0 m | Unable to make up running tool fully into riser box connection. Identify proud weld on collet/ dog retainer rings. Grind back welds and pick up riser section. |
| SC | P | RR1 | 2030 | 2130 | 1.00 | 777.0 m | Continue to run BOPs making up riser sections (retainer ring welds ground back on deck). |
| SC | TP | RR1 | 2130 | 2230 | 1.00 | 777.0 m | Unable to achieve even locking dog travel on running tool to riser connection. Make up riser section in spider & inspect connection. Disconnect riser section and check locking dogs / box connection. |
| SC | P | RR1 | 2230 | 2400 | 1.50 | 777.0 m | Re-stab riser, engage lock dogs and check connection. Continue to run riser/ BOPs. |

## Operations For Period 0000 Hrs to 0600 Hrs on 14 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | RR1 | 0000 | 0200 | 2.00 | 777.0 m | Continue to run riser/ BOPs, make up remaining two sections and pressure test choke/ kill lines. ROV check stack angle and confirm AX gasket in place. |
| SC | P | RR1 | 0200 | 0300 | 1.00 | 777.0 m | Pick up and run slip joint , make up landing joint, monitor stack & wellhead position with ROV and lower slip joint to space out choke/ kill line connections at moon pool for make up. |
| SC | P | BOP | 0300 | 0430 | 1.50 | 777.0 m | Move rig forward & port to place stack above PGB, connect choke and kill lines. |
| SC | P | BOP | 0430 | 0500 | 0.50 | 777.0 m | Pressure test choke and kill line connections. |
| SC | P | BOP | 0500 | 0600 | 1.00 | 777.0 m | Connect control line saddles and rucker lines to slip joint. |

## Phase Data to 2400hrs, 13 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 73 | 10 Dec 2003 | 13 Dec 2003 | 211 | 9 days | 777.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Seawater/ Gel Sweeps | API FL: | 0 cm³/ 30m | Cl: | 900 | Solids(%vol): | 0 | Viscosity: | 125 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 17 cp |
| Time: | 07:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 140 | Oil(%): | 0 % | YP: | 64 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 27 |
| Temp: | 25.0 C° | | | PM: | 0 | pH: | 10.2 | Gels 10m: | 47 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 26 |
| | | | | | | | | Fann 006: | 38 |
| | | | | | | | | Fann 100: | 52 |
| | | | | | | | | Fann 200: | 65 |
| | | | | | | | | Fann 300: | 81 |
| | | | | | | | | Fann 600: | 98 |


Printed on 14 Dec 2003

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |
| 771.00 | 0.50 | 0 | 770.9 | 8.97 | 0.03 | 8.97 | 0 | Totco |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | 0 | 1963 |
| Gel | sx | 0 | 0 | 0 | 1070 |
| Potable Water | MT | 17 | 20 | 0 | 130 |
| Drill Water | MT | 0 | 7 | 0 | 745 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 15 | 0 | 610 |
| Jet Fuel | Litres | 0 | 0 | 0 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 6 |
| Premium Casing Services | 2 |
| Sperry-Sun | 2 |
| Santos Service | 3 |
| Total | 78 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 0 | 0 | 0 |
| 3 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 6 Days | |
| BOP Test | 07 Dec 2003 | 6 Days | |
| Fire Drill | 07 Dec 2003 | 6 Days | |
| First Aid | 29 Oct 2003 | 45 Days | Employee struck by chain tong - no treatment required. |
| JHA/ HSE Audit | 13 Dec 2003 | 0 Days | JSAs reviewed for running BOPs through moon pool and picking up riser. |
| Lost Time Incident | 24 Apr 2001 | 962 Days | None |
| Near Miss | 11 Dec 2003 | 2 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 13 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 6 Days | |
| Walkabout | 13 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin / Romero Tena

| **Available** | **1177 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 1177.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|

Comment PHG ready for 12-1/ 4" section.



Printed on 14 Dec 2003

## Marine

Weather check on 13 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 20.0 kn | 292 deg | 1019 bar | 15.0 C° | 1.5 m | 292 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 2.0 deg | 1.6 deg | 2.00 m | 2.5 m | 280 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 4039.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 220.0 |
| 2 | 221.0 |
| 3 | 210.0 |
| 4 | 234.0 |
| 5 | 172.0 |
| 6 | 232.0 |
| 7 | 181.0 |
| 8 | 185.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | 09:50 11/ 12/ 03 | | Standby near rig and collision avoidance monitoring. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 176 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 413.1 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 08:45 13/ 12/ 03 | | Close standby. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 985 |
| Cement | sx | 0 |
| Gel | sx | 958 |
| Potable Water | MT | 201 |
| Drill Water | MT | 500 |
| Mud | sx | 0 |
| Fuel | MT | 335.6 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 10
## Hill #1 ( 14 Dec 2003 )

**From : G. Howard / C. Wise**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 777.0 m | Cur. Hole Size | 17.500 in | | |
| Field | Hill | TVD | 777.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 6.12 | F.I.T. / L.O.T | N/A | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 9.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Drilling ahead 12-1/ 4" hole. | | | | |
| RT-ML | 235.2 m | Planned Op | Drill ahead toward 12-1/ 4" hole section TD of 1730m. | | | | |

### Summary of Period 0000 to 2400 Hrs

Complete running BOP stack and riser, land stack and confirm latch. Install diverter/ flowline, lay out 17-1/ 2" BHA, make up and run 12-1/ 4" drilling assembly. Tag TOC at 742.6m, space out to test LMRP connector.

### Operations For Period 0000 Hrs to 2400 Hrs on 14 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | RR1 | 0000 | 0200 | 2.00 | 777.0 m | Continue to run riser/ BOPs, make up remaining two sections and pressure test choke/ kill lines. ROV check stack angle and confirm AX gasket in place. |
| SC | P | RR1 | 0200 | 0300 | 1.00 | 777.0 m | Pick up and run slip joint , make up landing joint, monitor stack & wellhead position with ROV and lower slip joint to space out choke/ kill line connections at moon pool for make up. |
| SC | P | BOP | 0300 | 0430 | 1.50 | 777.0 m | Move rig forward & port to place stack above PGB, connect choke and kill lines. |
| SC | P | BOP | 0430 | 0500 | 0.50 | 777.0 m | Pressure test choke and kill line connections. |
| SC | P | BOP | 0500 | 0700 | 2.00 | 777.0 m | Connect control line saddles and rucker lines to slip joint. |
| SC | P | BOP | 0700 | 0930 | 2.50 | 777.0 m | Position rig, land BOP stack (at 07:15 hrs) and confirm latch with 50k overpull. Unpin and scope out slip joint inner barrel. Lay down riser landing joint. |
| SC | P | HT | 0930 | 1000 | 0.50 | 777.0 m | Lay down spider and riser handling equipment, clear work floor. ROV record LMRP angle of 1/ 2 deg, PGB angle 1/ 4 deg. |
| SC | P | WH | 1000 | 1200 | 2.00 | 777.0 m | Run and set wear bushing in 18-3/ 4" wellhead at 233.61m. POOH. |
| SC | P | HT | 1200 | 1230 | 0.50 | 777.0 m | Make up emergency hang off tool and rack back in derrick. |
| SC | P | HBHA | 1230 | 1500 | 2.50 | 777.0 m | Break down and lay out 17-1/ 2" BHA. |
| SC | P | HT | 1500 | 1700 | 2.00 | 777.0 m | Make up 9-5/ 8" casing hanger and cement plug assembly. |
| SC | P | HBHA | 1700 | 2030 | 3.50 | 777.0 m | Make up and run 12-1/ 4" PDC bit and BHA, function test MWD/ FEWD tools. |
| SC | P | TI | 2030 | 2330 | 3.00 | 777.0 m | RIH picking up drill pipe and tag top of cement at 742.6m. |
| SC | P | TI | 2330 | 2400 | 0.50 | 777.0 m | Space out and line up to pressure test LMRP connector and function test control pods. |

### Operations For Period 0000 Hrs to 0600 Hrs on 15 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | BOP | 0000 | 0130 | 1.50 | 777.0 m | Test LMRP connector against upper annular 200/ 2500psi. Bleed off and function test preventors / control pods. Yellow pod from rig floor, Blue pod from remote in pushers office. |
| SC | P | DC | 0130 | 0200 | 0.50 | 777.0 m | Tagged TOC at 742.6m, commence drilling wiper plugs/ float collar. |
| SC | TP | DFS | 0200 | 0300 | 1.00 | 777.0 m | Attempt to pump sweep - 1500 psi pump pressure loss. Re-establish pump prime on seawater. Pump pressure spiking to 3500 psi, clear string, re-establish normal rate/ pressure. |
| SC | P | DFS | 0300 | 0500 | 2.00 | 777.0 m | Drill out float collar, shoe track and shoe at 769m. |
| PH | P | DA | 0500 | 0530 | 0.50 | 780.0 m | Drill out rat hole plus 3m formation to 780m. |
| PH | P | LOT | 0530 | 0600 | 0.50 | 777.0 m | Displace drill string to clean fluid, close annular and perform LOT to 11.5ppg EMW. |

### Phase Data to 2400hrs, 14 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 97 | 10 Dec 2003 | 14 Dec 2003 | 235 | 10 days | 777.0 m |


Printed on 15 Dec 2003

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | Seawater/ Gel Sweeps | API FL: | 0 cm³/ 30m | Cl: | 1000 | Solids(%vol): | 0 | Viscosity: | 125 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 0 / 32nd" | K+C*1000: | 0 % | H2O: | 0 % | PV: | 16 cp |
| Time: | 07:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 140 | Oil(%): | 0 % | YP: | 65 lb/ 100ft² |
| Weight: | 8.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 0 | Sand: | | Gels 10s: | 27 |
| Temp: | 25.0 C° | | | PM: | 0 | pH: | 10.2 | Gels 10m: | 47 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 26 |
| | | | | | | | | Fann 006: | 38 |
| | | | | | | | | Fann 100: | 52 |
| | | | | | | | | Fann 200: | 65 |
| | | | | | | | | Fann 300: | 81 |
| | | | | | | | | Fann 600: | 97 |

## Bit # 3

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
|---|---|---|---|---|---|---|---|---|---|
| Size ("): | 12.25 in | IADC# | M233 | No. | Size | Progress | 0 m | Cum. Progress | 0 m |
| Mfr: | HUGHES | WOB(avg) | 10.0 klb | 7 | 12 / 32nd" | On Bottom Hrs | 0 h | Cum. On Btm Hrs | 0 h |
| Type: | PDC | RPM(avg) | 70 | | | IADC Drill Hrs | 0 h | Cum IADC Drill Hrs | 0 h |
| Serial No.: | 7001149 | F.Rate | 610 gpm | | | Total Revs | 0 | Cum Total Revs | 0 |
| Bit Model | HC605 | SPP | 2300 psi | | | ROP(avg) | N/ A | ROP(avg) | |
| Depth In | 777.0 m | TFA | 0.773 | | | | | | |
| Depth Out | 0 m | | | | | | | | |

## BHA # 3

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 65.0 klb | Length | 257.7 m | Torque(max) | 10000 ft-lbs | D.C. (1) Ann Velocity | 182.3 |
| Wt Below Jar(Wet) | 35.0 klb | String | 240.0 klb | Torque(Off.Btm) | 200 ft-lbs | D.C. (2) Ann Velocity | 182.3 |
| | | Pick-Up | 240.0 klb | Torque(On.Btm) | 2000 ft-lbs | H.W.D.P. Ann Velocity | 119.5 |
| | | Slack-Off | 240.0 klb | | | D.P. Ann Velocity | 119.5 |

BHA Run Description: PDC / MWD Packed BHA

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.38 m | 12.25 in | 0 in | 7001149 | 12 1/ 4" HC605 PDC Bit |
| 12.25in Roller Reamer | 2.15 m | 12.25 in | 3.00 in | XM-025 | |
| 8in DC | 2.97 m | 8.00 in | 3.00 in | 1529 | Pony drill collar |
| 12.25in Roller Reamer | 2.01 m | 12.25 in | 3.00 in | XM-023 | |
| MWD Tools | 12.92 m | 8.25 in | 3.00 in | 9003355559 | 8 1/ 4" Drill Collar |
| 12.25in Roller Reamer | 2.33 m | 8.06 in | 3.00 in | XM-024 | Roller Reamer<br>TOTCO ring. |
| 8.25in DC | 66.15 m | 8.25 in | 2.88 in | | 8 x 8 1/ 4" Drill Collar |
| 8in Hydraulic Jars | 9.63 m | 8.00 in | 3.06 in | 2872 | 8" Hydraulic Jar |
| 8.25in DC | 27.72 m | 8.25 in | 2.75 in | | 3 x 8 1/ 4" Drill Collar |
| Jar Accel. | 8.28 m | 8.00 in | 2.94 in | DAH01586 | Hydraulic Jar Accellerator |
| 8.25in DC | 9.25 m | 8.19 in | 2.88 in | 825-48 | 8 1/ 4" Drill Collar |
| X/ O | 0.81 m | 6.31 in | 2.81 in | EX-072 | Cross-Over |
| 5in HWDP | 113.41 m | 5.00 in | 3.00 in | | 5" Heavy Weight Drill Pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 1.00 | 0 | 256.0 | 2.23 | 0.12 | 2.23 | 0 | Totco |
| 771.00 | 0.50 | 0 | 770.9 | 8.97 | 0.03 | 8.97 | 0 | Totco |


Printed on 15 Dec 2003

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 667 |
| Cement | sx | 0 | 0 | -231 | 1732 |
| Gel | sx | 0 | 0 | 0 | 1070 |
| Potable Water | MT | 21 | 22 | 1 | 130 |
| Drill Water | MT | 0 | 17 | 0 | 728 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 9 | 4 | 605 |
| Jet Fuel | Litres | 0 | 0 | 0 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 4 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 6 |
| Premium Casing Services | 2 |
| Sperry-Sun | 2 |
| Santos Service | 3 |
| Total | 78 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 85 | 2300 | 305 |
| 2 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 85 | 2300 | 305 |
| 3 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |
| 0 | 20 | 0 | 0 | 30 | 0 | 0 | 40 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 7 Days | |
| BOP Test | 07 Dec 2003 | 7 Days | |
| Fire Drill | 07 Dec 2003 | 7 Days | |
| First Aid | 29 Oct 2003 | 46 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 963 Days | None |
| Near Miss | 11 Dec 2003 | 3 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 14 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 7 Days | |
| Walkabout | 14 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Mike Griffin / Romero Tena

| **Available** | **1177 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 1177.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 2 | Thule | 4 x 145 | 0 |
| Shaker 2 | Thule | 4 x 85 | 0 |

Comment PHG ready for 12-1/ 4" section.


Printed on 15 Dec 2003

## Marine

Weather check on 14 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 11.0 kn | 090 deg | 1022 bar | 15.0 C° | 1.0 m | 090 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.5 deg | 0.5 deg | 1.50 m | 2.5 m | 280 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 0 klb | 4264.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 215.0 |
| 2 | 225.0 |
| 3 | 190.0 |
| 4 | 185.0 |
| 5 | 172.0 |
| 6 | 199.0 |
| 7 | 191.0 |
| 8 | 203.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status |
|---|---|---|---|
| **Lady Dawn** | 09:50 11/ 12/ 03 | 19:05 14/ 12/ 03 | ETA 07:30 in Portland |
| **Pacific Challenger** | 08:45 13/ 12/ 03 | | Close standby and collision avoidance monitoring.. |

**Bulks**

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 170 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 402.9 |
| Jet Fuel | Litres | 0 |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 985 |
| Cement | sx | 0 |
| Gel | sx | 958 |
| Potable Water | MT | 198 |
| Drill Water | MT | 500 |
| Mud | sx | 0 |
| Fuel | MT | 324.2 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 11
## Hill #1 ( 15 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 1484.0 m | Cur. Hole Size | 12.250 in | | |
| Field | Hill | TVD | 1484.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 707.0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 7.12 | L.O.T. | 11.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 10.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Drilling 12-1/ 4" hole at 1608m RT. | | | | |
| RT-ML | 235.2 m | Planned Op | Drill & survey to 12-1/ 4" section TD of +/ - 1809m. Circulate clean and POOH to run 9-5/ 8" casing. | | | | |

## Summary of Period 0000 to 2400 Hrs

Tested LMRP connector & control pods. Drilled out 13-3/ 8" float collar and shoe track, plus 3m formation. Performed LOT to 11.5ppg EMW and drilled ahead 12-1/ 4" hole from 780m to 1484m RT displacing hole to KCl/ Polymer mud.

## Operations For Period 0000 Hrs to 2400 Hrs on 15 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| SC | P | BOP | 0000 | 0130 | 1.50 | 777.0 m | Test LMRP connector against upper annular 200/ 2500psi. Bleed off and function test preventors / control pods. Yellow pod from rig floor, Blue pod from remote in pushers office. |
| SC | P | DC | 0130 | 0200 | 0.50 | 777.0 m | Tagged TOC at 742.6m, commence drilling wiper plugs/ float collar. |
| SC | TP | DFS | 0200 | 0300 | 1.00 | 777.0 m | Attempt to pump sweep - 1500 psi pump pressure loss. Re-establish pump prime on seawater. Pump pressure spiking to 3500 psi, clear string, re-establish normal rate/ pressure. |
| SC | P | DFS | 0300 | 0500 | 2.00 | 777.0 m | Drill out float collar, shoe track and shoe at 769m. |
| PH | P | DA | 0500 | 0530 | 0.50 | 780.0 m | Drill out rat hole plus 3m formation to 780m. |
| PH | P | LOT | 0530 | 0600 | 0.50 | 780.0 m | Displace drill string to clean fluid, close annular and perform LOT to 11.5ppg EMW. |
| PH | P | DA | 0600 | 2400 | 18.00 | 1484.0 m | Drill 12-1/ 4" hole from 780m to 1484m RT. WOB 25-35k, RPM 150, GPM 850. Displaced hole to KCl/ Polymer mud system at 1444m, while drilling ahead. |

## Operations For Period 0000 Hrs to 0600 Hrs on 16 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0600 | 6.00 | 1608.0 m | Drill 12-1/ 4" hole from 1484m to 1608m RT. WOB 25-30, RPM 150, GPM 860. |

## Phase Data to 2400hrs, 15 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 19 | 15 Dec 2003 | 15 Dec 2003 | 259 | 11 days | 1484.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / Polymer | API FL: | 7 cm³/ 30m | Cl: | 39500 | Solids(%vol): | 7.5 | Viscosity: | 52 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 8 % | H2O: | 92.5 % | PV: | 16 cp |
| Time: | 23:45 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 160 | Oil(%): | 0 % | YP: | 23 lb/ 100ft² |
| Weight: | 8.90 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 5 | Sand: | 0 | Gels 10s: | 7 |
| Temp: | 25.0 C° | | | PM: | 0 | pH: | 10.2 | Gels 10m: | 15 |
| | | | | PF: | 0.2 | PHPA: | 0 ppb | Fann 003: | 7 |
| Comment | Initially pumped seawater & gel sweeps. Displaced hole to new KCL/ Polymer mud system at 1444m. | | | | | | | Fann 006: | 9 |
| | | | | | | | | Fann 100: | 24 |
| | | | | | | | | Fann 200: | 33 |
| | | | | | | | | Fann 300: | 39 |
| | | | | | | | | Fann 600: | 55 |

## Bit # 3

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
|---|---|---|---|---|---|---|---|---|---|
| Size ("): | 12.25 in | IADC# | M333 | No. | Size | Progress | 707.0 m | Cum. Progress | 707.0 m |
| Mfr: | HUGHES | WOB(avg) | 30.0 klb | 7 | 11 / 32nd" | On Bottom Hrs | 13.20 h | Cum. On Btm Hrs | 13.20 h |
| Type: | PDC | RPM(avg) | 150 | | | IADC Drill Hrs | 18.00 h | Cum IADC Drill Hrs | 18.00 h |
| Serial No.: | 7001149 | F.Rate | 610 gpm | | | Total Revs | 0 | Cum Total Revs | 0 |
| Bit Model | HC605 | SPP | 3100 psi | | | ROP(avg) | 54 m/ h | ROP(avg) | 53.6 |
| Depth In | 777.0 m | TFA | 0.65 | | | | | | |
| Depth Out | 0 m | | | | | | | | |


Printed on 16 Dec 2003

## BHA # 3

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 65.0 klb | Length | 257.7 m | Torque(max) | 18000 ft-lbs | D.C. (1) Ann Velocity | 182.3 |
| Wt Below Jar(Wet) | 35.0 klb | String | 283.0 klb | Torque(Off.Btm) | 1500 ft-lbs | D.C. (2) Ann Velocity | 182.3 |
| | | Pick-Up | 285.0 klb | Torque(On.Btm) | 8000 ft-lbs | H.W.D.P. Ann Velocity | 119.5 |
| | | Slack-Off | 283.0 klb | | | D.P. Ann Velocity | 119.5 |

BHA Run Description: PDC / MWD Packed BHA

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.38 m | 12.25 in | 0 in | 7001149 | 12 1/ 4" HC605 PDC Bit |
| 12.25in Roller Reamer | 2.15 m | 12.25 in | 3.00 in | XM-025 | |
| 8in DC | 2.97 m | 8.00 in | 3.00 in | 1529 | Pony drill collar |
| 12.25in Roller Reamer | 2.01 m | 12.25 in | 3.00 in | XM-023 | |
| MWD Tools | 12.92 m | 8.25 in | 0 in | 9003355559 | MWD / LWD and Pulser sub |
| 12.25in Roller Reamer | 2.01 m | 12.25 in | 3.00 in | XM-024 | Roller Reamer<br>TOTCO ring. |
| 8.25in DC | 65.76 m | 8.25 in | 2.88 in | | 7 x 8 1/ 4" Drill Collar |
| 8in Hydraulic Jars | 9.77 m | 8.00 in | 2.81 in | 2872 | 8" Hydraulic Jar |
| 8.25in DC | 27.61 m | 8.25 in | 2.81 in | | 3 x 8 1/ 4" Drill Collar |
| Jar Accel. | 8.19 m | 8.00 in | 3.00 in | DAH03434 | Hydraulic Jar Accellerator |
| 8.25in DC | 9.51 m | 8.19 in | 2.81 in | 825-55 | 8 1/ 4" Drill Collar |
| X/ O | 1.10 m | 6.31 in | 3.13 in | EX-0060 | Cross-Over |
| 5in HWDP | 113.41 m | 5.00 in | 3.06 in | | 5" Heavy Weight Drill Pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 787.46 | 0.12 | 0 | 787.4 | 9.06 | 0.69 | 9.06 | 0 | MWD |
| 1045.49 | 0.84 | 0 | 1045.4 | 11.23 | 0.08 | 11.23 | 0 | MWD |
| 1222.78 | 0.96 | 0 | 1222.7 | 14.01 | 0.02 | 14.01 | 0 | MWD |
| 1455.71 | 0.92 | 0 | 1455.6 | 17.83 | 0.01 | 17.83 | 0 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 807 | 0 | 0 | 1474 |
| Cement | sx | 0 | 0 | 0 | 1732 |
| Gel | sx | 827 | 375 | -35 | 1487 |
| Potable Water | MT | 23 | 22 | 0 | 131 |
| Drill Water | MT | 643 | 750 | 0 | 621 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 16 | 0 | 589 |
| Jet Fuel | Litres | 0 | 0 | 0 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Premium Casing Services | 4 |
| Sperry-Sun | 2 |
| Santos Service | 2 |
| Total | 77 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 80 | 3200 | 285 |
| 2 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 80 | 3200 | 285 |
| 3 | Oilwell A1700PT | 5.50 | 8.80 | 97 | 80 | 3200 | 285 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 1154.0 | 30 | 220 | 108 | 40 | 300 | 144 | 50 | 340 | 180 |
| 1154.0 | 30 | 150 | 108 | 40 | 200 | 0 | 50 | 350 | 180 |
| 0 | 30 | 0 | 0 | 40 | 0 | 144 | 50 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 8 Days | |
| BOP Test | 07 Dec 2003 | 8 Days | |
| Fire Drill | 07 Dec 2003 | 8 Days | |
| First Aid | 29 Oct 2003 | 47 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 964 Days | None |
| Near Miss | 11 Dec 2003 | 4 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 15 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 8 Days | |
| Walkabout | 15 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| Available | 1325 bbl | Losses | 2501 bbl |
|---|---|---|---|
| Active | 475.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 80 bbl |
| Hole | 850.0 bbl | Dumped | 2421.0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 2 | Thule | 4 x 145 | 24 |
| Shaker 2 | Thule | 4 x 85 | 24 |

Comment: Dumped seawater/ gel mud when displacing to KCl/ Polymer mud system. 10 & 20 mesh top screans on shakers.

## Marine

Weather check on 15 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 090 deg | 1019 bar | 17.0 C° | 1.0 m | 090 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.5 deg | 0.5 deg | 1.50 m | 2.5 m | 280 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4127.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 221.0 |
| 2 | 230.0 |
| 3 | 189.0 |
| 4 | 186.0 |
| 5 | 172.0 |
| 6 | 205.0 |
| 7 | 196.0 |
| 8 | 214.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status |
|---|---|---|---|
| **Lady Dawn** | 09:50 11/ 12/ 03 | 19:05 14/ 12/ 03 | In Portland - depart for Ocean Epoch approx. 08:30. |
| **Pacific Challenger** | 08:45 13/ 12/ 03 | | Close standby and collision avoidance monitoring. |

**Bulks**

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 126 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 51 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 318.2 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 16:20 | Ocean Epoch | 1 Mud logger, 2 x PCS, 1 x mud Eng, 1 x DOGC, 1 x Halliburton. | 6 |
| 1 | 16:30 | Essendon | 1 Mud logger, 1 x BHI Eng, 1 x MODUspec, 1 x Halliburton, 3 x ROV. | 7 |

Santos

# DRILLING MORNING REPORT # 12
## Hill #1 ( 16 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 1810.0 m | Cur. Hole Size | 12.250 in | | |
| Field | Hill | TVD | 1810.0 m | Casing OD | 13.375 in | | |
| Drill Co. | DOGC | Progress | 326.0 m | Shoe TVD | 769.0 m | | |
| Rig | Ocean Epoch | Days from spud | 8.12 | L.O.T. | 11.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 11.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | RIH with 9-5/ 8" 47ppf L-80 casing. | | | | |
| RT-ML | 235.2 m | Planned Op | Land and cement 9-5/ 8" casing, release running tool, displace riser & POOH. Test BOP stack, lay out tools, make up 8-1/ 2" drilling assembly. | | | | |

## Summary of Period 0000 to 2400 Hrs

Drilled 12-1/ 4" hole from 1484m to section TD at 1810m RT. Circulated clean, POOH and layed out MWD/ LWD tools. RIH to recover wear bushing.

## Operations For Period 0000 Hrs to 2400 Hrs on 16 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0600 | 6.00 | 1608.0 m | Drill 12-1/ 4" hole from 1484m to 1608m RT. WOB 25-30, RPM 150, GPM 860. |
| PH | P | DA | 0600 | 1300 | 7.00 | 1810.0 m | Continue to drill 12-1/ 4" hole from 1608m to section TD at 1810m RT. |
| PH | P | CHC | 1300 | 1430 | 1.50 | 1810.0 m | Pump high viscosity sweep, circulate bottoms up and hole/ shakers clean. |
| PH | P | TO | 1430 | 1830 | 4.00 | 1810.0 m | POOH racking back 5" drill pipe. Work tight sections at 1722m - 1715m and 1674m - 1650m clear (55k overpull). |
| PH | P | JUD | 1830 | 2200 | 3.50 | 1810.0 m | POOH with 12-1/ 4" BHA, lay out MWD/ LWD tools and bit. |
| PH | P | TI | 2200 | 2400 | 2.00 | 1810.0 m | Make up wear bushing pulling tool and RIH, unable to pass upper annular. Work tool & subsea engineer adjust annular pressure. Pass through annular preventor and latch wear bushing. |

## Operations For Period 0000 Hrs to 0600 Hrs on 17 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | TO | 0000 | 0100 | 1.00 | 1810.0 m | Record index depth, trip out of the hole and lay out the wear bushing. |
| PH | P | HT | 0100 | 0200 | 1.00 | 1810.0 m | Make up cement head / stand and rack back. |
| PH | P | RR1 | 0200 | 0300 | 1.00 | 1810.0 m | Pick up handling equipment and rig up to run 9-5/ 8" casing. |
| PH | P | CRN | 0300 | 0600 | 3.00 | 1810.0 m | Conduct pre job operational and safety meeting. Make up and check 9-5/ 8" shoe track, RIH with 9-5/ 8" 47ppf L-80 (New Vam & NK3SB) casing. |

## Phase Data to 2400hrs, 16 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 43 | 15 Dec 2003 | 16 Dec 2003 | 283 | 12 days | 1810.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / Polymer | API FL: | 7 cm³/ 30m | Cl: | 36500 | Solids(%vol): | 10.04 | Viscosity: | 55 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 7.5 % | H2O: | 88 % | PV: | 16 cp |
| Time: | 22:30 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 360 | Oil(%): | 0 % | YP: | 23 lb/ 100ft² |
| Weight: | 9.10 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 7.5 | Sand: | 0.5 | Gels 10s: | 7 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 8.5 | Gels 10m: | 15 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 7 |
| | | | | | | | | Fann 006: | 9 |
| | | | | | | | | Fann 100: | 23 |
| | | | | | | | | Fann 200: | 34 |
| | | | | | | | | Fann 300: | 39 |
| | | | | | | | | Fann 600: | 55 |

Comment: After displacing hole to KCL/ Polymer mud, continued to build volume with premix. Mixed & pumped LCM sweep.


Printed on 17 Dec 2003

## Bit # 3

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | 7 | 3 | BT | C | X | 1 | PN | TD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size (''): | 12.25 in | IADC# | M333 | **Nozzles** | | **Drilled over last 24 hrs** | | **Calculated over Bit Run** | |
| Mfr: | HUGHES | WOB(avg) | 30.0 klb | No. | Size | Progress | 326.0 m | Cum. Progress | 1033.0 m |
| Type: | PDC | RPM(avg) | 150 | 7 | 11 / 32nd" | On Bottom Hrs | 10.60 h | Cum. On Btm Hrs | 23.80 h |
| Serial No.: | 7001149 | F.Rate | 850 gpm | | | IADC Drill Hrs | 13.00 h | Cum IADC Drill Hrs | 31.00 h |
| Bit Model | HC605 | SPP | 3300 psi | | | Total Revs | 246 | Cum Total Revs | 246 |
| Depth In | 777.0 m | TFA | 0.65 | | | ROP(avg) | 31 m/ h | ROP(avg) | 43.4 |
| Depth Out | 1810.0 m | | | | | | | | |

Bitwear Comment: One center cutter broken off (including some matrix) others broken/ chipped. Some erosional wear on gauge and one nozzle was plugged solid.

## BHA # 3

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 65.0 klb | Length | 257.7 m | Torque(max) | 20000 ft-lbs | D.C. (1) Ann Velocity | 254.1 |
| Wt Below Jar(Wet) | 35.0 klb | String | 292.0 klb | Torque(Off.Btm) | 1500 ft-lbs | D.C. (2) Ann Velocity | 254.1 |
| | | Pick-Up | 295.0 klb | Torque(On.Btm) | 8000 ft-lbs | H.W.D.P. Ann Velocity | 166.6 |
| | | Slack-Off | 290.0 klb | | | D.P. Ann Velocity | 166.6 |

BHA Run Description: PDC / MWD Packed BHA

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.38 m | 12.25 in | 0 in | 7001149 | 12 1/ 4" HC605 PDC Bit |
| 12.25in Roller Reamer | 2.15 m | 12.25 in | 3.00 in | XM-025 | |
| 8in DC | 2.97 m | 8.00 in | 3.00 in | 1529 | Pony drill collar |
| 12.25in Roller Reamer | 2.01 m | 12.25 in | 3.00 in | XM-023 | |
| MWD Tools | 12.92 m | 8.25 in | 0 in | 9003355559 | MWD / LWD and Pulser sub |
| 12.25in Roller Reamer | 2.01 m | 12.25 in | 3.00 in | XM-024 | Roller Reamer<br>TOTCO ring. |
| 8.25in DC | 65.76 m | 8.25 in | 2.88 in | | 7 x 8 1/ 4" Drill Collar |
| 8in Hydraulic Jars | 9.77 m | 8.00 in | 2.81 in | 2872 | 8" Hydraulic Jar |
| 8.25in DC | 27.61 m | 8.25 in | 2.81 in | | 3 x 8 1/ 4" Drill Collar |
| Jar Accel. | 8.19 m | 8.00 in | 3.00 in | DAH03434 | Hydraulic Jar Accellerator |
| 8.25in DC | 9.51 m | 8.19 in | 2.81 in | 825-55 | 8 1/ 4" Drill Collar |
| X/ O | 1.10 m | 6.31 in | 3.13 in | EX-0060 | Cross-Over |
| 5in HWDP | 113.41 m | 5.00 in | 3.06 in | | 5" Heavy Weight Drill Pipe. |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 1455.71 | 0.92 | 32.58 | 1455.6 | 16.80 | 0.02 | 16.80 | 3.92 | MWD |
| 1538.70 | 1.01 | 27.64 | 1538.6 | 18.01 | 0.04 | 18.01 | 4.62 | MWD |
| 1712.12 | 0.96 | 9.64 | 1712.0 | 20.80 | 0.05 | 20.80 | 5.58 | MWD |
| 1791.40 | 0.69 | 348.35 | 1791.2 | 21.92 | 0.15 | 21.92 | 5.59 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1474 |
| Cement | sx | 976 | 0 | 0 | 2708 |
| Gel | sx | 0 | 0 | 0 | 1487 |
| Potable Water | MT | 21 | 18 | 0 | 134 |
| Drill Water | MT | 340 | 138 | 0 | 823 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 15 | 0 | 574 |
| Jet Fuel | Litres | 0 | 0 | 0 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Premium Casing Services | 4 |
| Sperry-Sun | 2 |
| Santos Service | 2 |
| Total | 77 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 80 | 3700 | 285 |
| 2 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 80 | 3700 | 285 |
| 3 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 80 | 3700 | 285 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 1154.0 | 30 | 220 | 108 | 40 | 300 | 144 | 50 | 340 | 180 |
| 1154.0 | 30 | 150 | 108 | 40 | 200 | 0 | 50 | 350 | 180 |
| 0 | 30 | 0 | 0 | 40 | 0 | 144 | 50 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 9 Days | |
| BOP Test | 07 Dec 2003 | 9 Days | |
| Fire Drill | 07 Dec 2003 | 9 Days | |
| First Aid | 29 Oct 2003 | 48 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 965 Days | None |
| Near Miss | 11 Dec 2003 | 5 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 16 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 9 Days | |
| Walkabout | 16 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| **Available** | **1638 bbl** | **Losses** | **71 bbl** |
|---|---|---|---|
| Active | 575.0 bbl | Downhole | 15.0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 56 bbl |
| Hole | 1063.0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 4 | Thule | 4 x 180 | 16 |

Comment 10 & 20 mesh top screans on all shakers.

## Marine

Weather check on 16 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 160 deg | 1016 bar | 18.0 C° | 1.0 m | 160 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.3 deg | 0.2 deg | 1.50 m | 1.0 m | 225 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4350.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 217.0 |
| 2 | 229.0 |
| 3 | 185.0 |
| 4 | 186.0 |
| 5 | 177.0 |
| 6 | 195.0 |
| 7 | 192.0 |
| 8 | 205.0 |


Printed on 17 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — 11:45 16/ 12/ 03 — Normal standby and collision avoidance monitoring.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 190 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 395.3 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — 08:45 13/ 12/ 03 — 12:10 16/ 12/ 03 — En-route to Burnie, ETA 12:00 hrs.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 50 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 315.2 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 13
## Hill #1 ( 17 Dec 2003 )

**From : G. Howard / C. Wise**

### Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 1810.0 m | Cur. Hole Size | 12.250 in | | |
| Field | Hill | TVD | 1810.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 9.12 | L.O.T. | 11.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 12.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Laying out 12-1/ 4" bottom hole assembly. | | | | |
| RT-ML | 235.2 m | Planned Op | Make up and run 8-1/ 2" drilling assembly, drill out float and shoe track plus 3m of new formation, displacing hole to mud. Perform LOT and drill ahead 8-1/ 2" hole. | | | | |

### Summary of Period 0000 to 2400 Hrs

Run and cement 9-5/ 8" casing with shoe at 1801m. Pressure test casing, casing hanger seal assembly and BOPs. POOH.

### Operations For Period 0000 Hrs to 2400 Hrs on 17 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | TO | 0000 | 0100 | 1.00 | 1810.0 m | Record index depth, trip out of the hole and lay out the wear bushing. |
| PH | P | HT | 0100 | 0200 | 1.00 | 1810.0 m | Make up cement head / stand and rack back. |
| PH | P | RR1 | 0200 | 0300 | 1.00 | 1810.0 m | Pick up handling equipment and rig up to run 9-5/ 8" casing. |
| PH | P | CRN | 0300 | 0600 | 3.00 | 1810.0 m | Conduct pre job operational and safety meeting. Make up and check 9-5/ 8" shoe track, RIH with 9-5/ 8" 47ppf L-80 (New Vam & NK3SB) casing. |
| PH | P | CRN | 0600 | 1400 | 8.00 | 1810.0 m | Continue to RIH with 9-5/ 8" casing (total of 126 full joints plus 2 X-over pups). Make up casing hanger/ running tool assembly & RIH with 5" HWDP. Break circulation and wash casing through tight section at 1650 - 1700m (Upper Timboon formation). Continue RIH and land out casing with shoe at 1801m. |
| PH | P | CIC | 1400 | 1500 | 1.00 | 1810.0 m | Rig up and pressure test cementing lines, circulate casing & hole clean. |
| PH | P | CMC | 1500 | 1730 | 2.50 | 1810.0 m | Mix and pump 73 bbls of 12.5ppg Class G lead and 45 bbls 15.8ppg Class G tail cement. Halliburton displace running string & shear out wiper plug with 20 bbls, rig pumps displaced casing with 4170 stks, bumped plug and tested casing to 3000 psi. |
| PH | P | WH | 1730 | 2000 | 2.50 | 1810.0 m | Set and pressure test 9-5/ 8" casing hanger seal, release running tool (no positive indication of shear out from seal assembly), wash around running tool / top of hanger clean and displace riser to seawater. Re-seat running tool, sitting down string weight, prior to testing BOP stack. |
| PH | P | PT | 2000 | 2230 | 2.50 | 1810.0 m | Pressure test BOP stack, ram preventors and valves 250/ 5000 psi, annular preventors 250/ 2500 psi. |
| PH | P | TO | 2230 | 2400 | 1.50 | 1810.0 m | Pick up on the Casing Hanger/ seal assembly running tool and POOH. Seal assembly set, lay out running tool. |

### Operations For Period 0000 Hrs to 0600 Hrs on 18 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | TI | 0000 | 0130 | 1.50 | 1810.0 m | Make up and RIH with wear bushing, running tool and cup tester assembly. |
| PH | TP | WH | 0130 | 0230 | 1.00 | 1810.0 m | Retest 9-5/ 8" casing hanger seal assembly to 5000 psi and attempt to set wear bushing. Unable to achieve positive overpull/ shear out indication. POOH. |
| PH | U | HT | 0230 | 0300 | 0.50 | 1810.0 m | Out of hole (wear bushing not set), make up jetting tool to wear bushing running tool. |
| PH | TU | WH | 0300 | 0400 | 1.00 | 1810.0 m | RIH and wash through seal assembly & hanger profiles. Unable to engage wear bushing into profile. Attempt to wash and set wear bushing with slow rotation and centralised with annular - nogo. |
| PH | P | TO | 0400 | 0500 | 1.00 | 1810.0 m | POOH and lay out wear bushing and running tool. |
| PH | P | HBHA | 0500 | 0600 | 1.00 | 1810.0 m | Break down and lay out 12-1/ 4" bottom hole assembly. |

### Phase Data to 2400hrs, 17 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 67 | 15 Dec 2003 | 17 Dec 2003 | 307 | 13 days | 1810.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / Polymer | API FL: | 7 cm³/ 30m | Cl: | 36500 | Solids(%vol): | 10.04 | Viscosity: | 56 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 7.5 % | H2O: | 88 % | PV: | 17 cp |
| Time: | 16:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 360 | Oil(%): | 0 % | YP: | 21 lb/ 100ft² |
| Weight: | 9.10 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 7.5 | Sand: | 0.5 | Gels 10s: | 7 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 8.5 | Gels 10m: | 14 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 7 |
| | | | | | | | | Fann 006: | 9 |
| | | | | | | | | Fann 100: | 25 |
| | | | | | | | | Fann 200: | 33 |
| | | | | | | | | Fann 300: | 38 |
| | | | | | | | | Fann 600: | 55 |

Comment: KCL/ Polymer mud ready for 8-1/ 2" section.

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 1455.71 | 0.92 | 32.58 | 1455.6 | 16.80 | 0.02 | 16.80 | 3.92 | MWD |
| 1538.70 | 1.01 | 27.64 | 1538.6 | 18.01 | 0.04 | 18.01 | 4.62 | MWD |
| 1712.12 | 0.96 | 9.64 | 1712.0 | 20.80 | 0.05 | 20.80 | 5.58 | MWD |
| 1791.40 | 0.69 | 348.35 | 1791.2 | 21.92 | 0.15 | 21.92 | 5.59 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | -69 | 1405 |
| Cement | sx | 0 | 527 | 0 | 2181 |
| Gel | sx | 0 | 0 | 0 | 1487 |
| Potable Water | MT | 20 | 22 | 0 | 132 |
| Drill Water | MT | 0 | 73 | 0 | 750 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 15 | 0 | 559 |
| Jet Fuel | Litres | 0 | 0 | 0 | 522 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Premium Casing Services | 4 |
| Sperry-Sun | 2 |
| Santos Service | 2 |
| Total | 77 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 80 | 2200 | 285 |
| 2 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 80 | 2200 | 285 |
| 3 | Oilwell A1700PT | 5.50 | 9.10 | 97 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 1154.0 | 30 | 220 | 108 | 40 | 300 | 144 | 50 | 340 | 180 |
| 1154.0 | 30 | 150 | 108 | 40 | 200 | 144 | 50 | 350 | 180 |
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 10 Days | |
| BOP Test | 17 Dec 2003 | 0 Days | Pressure/ function test Blow out preventors & valves prior to drilling out 9-5/ 8" casing. |
| Fire Drill | 07 Dec 2003 | 10 Days | |
| First Aid | 29 Oct 2003 | 49 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 966 Days | None |
| Near Miss | 11 Dec 2003 | 6 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 17 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 10 Days | |
| Walkabout | 17 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |


Printed on 18 Dec 2003

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| Available | 1532 bbl |
|---|---|
| Active | 1532.0 bbl |
| Mixing | 0 bbl |
| Hole | 0 bbl |
| Slug | 0 bbl |
| Reserve | 0 bbl |
| Kill | 0 bbl |

| Losses | 636 bbl |
|---|---|
| Downhole | 0 bbl |
| Surf+ Equip | 56 bbl |
| Dumped | 80.0 bbl |
| De-Sander | 0 bbl |
| De-Silter | 0 bbl |
| Centrifuge | 0 bbl |
| Behind casing | 500.0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 4 | Thule | 4 x 180 | 0 |

Comment: After cementing & testing 9-5/ 8" casing, 200 bbls KCl mud was displaced & recovered from the riser. 10 & 20 mesh top screans on all shakers.

## Marine

Weather check on 17 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 16.0 kn | 135 deg | 1020 bar | 16.0 C° | 1.0 m | 160 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 1.0 deg | 0.3 deg | 1.50 m | 2.0 m | 210 deg | 0 ft/ sec | Cloudy / Showers |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4267.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 214.0 |
| 2 | 219.0 |
| 3 | 198.0 |
| 4 | 188.0 |
| 5 | 168.0 |
| 6 | 200.0 |
| 7 | 222.0 |
| 8 | 229.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | 11:45 16/ 12/ 03 | | Normal standby and collision avoidance monitoring. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 180 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 385.9 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 08:45 13/ 12/ 03 | 12:10 16/ 12/ 03 | En-route to Portland after taking on fuel at Burnie. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 50 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 09:10 | Ocean Epoch | DOGC crew change | 11 |
| 1 | 09:20 | Essendon | DOGC crew change | 11 |
| 2 | 17:30 | Ocean Epoch | Freight. | 0 |

Santos

# DRILLING MORNING REPORT # 14
## Hill #1 ( 18 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 1867.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 1867.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 57.0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 10.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 13.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Drilling ahead in Timboon Equivalent formation at 1980m RT. | | | | |
| RT-ML | 235.2 m | Planned Op | Drill toward planned TD of 2575m RT. | | | | |

## Summary of Period 0000 to 2400 Hrs

Tested casing hanger seal assembly & attempted to set wear bushing. Layed out 12-1/ 4" BHA, picked up and RIH with 8-1/ 2" drilling assembly. Drilled out 9-5/ 8" shoe track plus 3m formation, performed LOT to 10.5ppg EMW and drilled from 1813m to 1867m RT.

## Operations For Period 0000 Hrs to 2400 Hrs on 18 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | TI | 0000 | 0130 | 1.50 | 1810.0 m | Make up and RIH with wear bushing, running tool and cup tester assembly. |
| PH | TP | WH | 0130 | 0230 | 1.00 | 1810.0 m | Retest 9-5/ 8" casing hanger seal assembly to 5000 psi and attempt to set wear bushing. Unable to achieve positive overpull/ shear out indication. POOH. |
| PH | U | HT | 0230 | 0300 | 0.50 | 1810.0 m | Out of hole (wear bushing not set), make up jetting tool to wear bushing running tool. |
| PH | TU | WH | 0300 | 0400 | 1.00 | 1810.0 m | RIH and wash through seal assembly & hanger profiles. Unable to engage wear bushing into profile. Attempt to wash and set wear bushing with slow rotation and centralised with annular - nogo. |
| PH | P | TO | 0400 | 0500 | 1.00 | 1810.0 m | POOH and lay out wear bushing and running tool. |
| PH | P | HBHA | 0500 | 0930 | 4.50 | 1810.0 m | Break down and lay out 12-1/ 4" bottom hole assembly. |
| PH | P | HBHA | 0930 | 1330 | 4.00 | 1810.0 m | Make up PDC bit and 8-1/ 2" drilling assembly, program MWD and continue RIH picking up BHA. |
| PH | P | TI | 1330 | 1730 | 4.00 | 1810.0 m | RIH with 8-1/ 2" drilling assembly on 5" drill pipe. |
| PH | P | DFS | 1730 | 1930 | 2.00 | 1810.0 m | Tag top of cement/ wiper plugs at 1772m (float collar at 1776m), drill out plugs, float collar, shoe track and rat hole. |
| PH | P | DA | 1930 | 2000 | 0.50 | 1813.0 m | Drill from 1810m to 1813m, displacing hole to KCL/ PHPA mud. |
| PH | P | LOT | 2000 | 2030 | 0.50 | 1813.0 m | Line up cement unit with mud, close annular and perform LOT to 1.25 SG (10.5 ppg) EMW. |
| PH | P | DA | 2030 | 2400 | 3.50 | 1867.0 m | Drill ahead 8-1/ 2" hole from 1813m to 1867m (WOB 25k, RPM 150, GPM 650). |

## Operations For Period 0000 Hrs to 0600 Hrs on 19 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0600 | 6.00 | 1980.0 m | Drill 8-1/ 2" hole from 1867m to 1980m. WOB 20-30k, RPM 150, GPM 650. |

## Phase Data to 2400hrs, 18 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 91 | 15 Dec 2003 | 18 Dec 2003 | 331 | 14 days | 1867.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / PHPA | API FL: | 6 cm³/ 30m | Cl: | 39500 | Solids(%vol): | 11 | Viscosity: | 60 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 8 % | H2O: | 86 % | PV: | 18 cp |
| Time: | 21:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 360 | Oil(%): | 0 % | YP: | 17 lb/ 100ft² |
| Weight: | 9.20 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 7.5 | Sand: | .25 | Gels 10s: | 7 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 9 | Gels 10m: | 14 |
| | | | | PF: | 0 | PHPA: | 0 ppb | Fann 003: | 7 |
| | | | | | | | | Fann 006: | 9 |
| | | | | | | | | Fann 100: | 24 |
| | | | | | | | | Fann 200: | 32 |
| | | | | | | | | Fann 300: | 35 |
| | | | | | | | | Fann 600: | 53 |


Printed on 19 Dec 2003

## Bit # 4

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size ("): | 8.50 in | IADC# | M223 | **Nozzles** | | **Drilled over last 24 hrs** | **Calculated over Bit Run** |
| Mfr: | HYCALOG | WOB(avg) | 25.0 klb | No. | Size | Progress 57.0 m | Cum. Progress 57.0 m |
| Type: | PDC | RPM(avg) | 150 | 5 | 12 / 32nd" | On Bottom Hrs 3.50 h | Cum. On Btm Hrs 3.50 h |
| Serial No.: | 103130 | F.Rate | 650 gpm | | | IADC Drill Hrs 4.00 h | Cum IADC Drill Hrs 4.00 h |
| Bit Model | DSX104 | SPP | 3700 psi | | | Total Revs 0 | Cum Total Revs 0 |
| Depth In | 1810.0 m | TFA | 0.552 | | | ROP(avg) 16 m/ h | ROP(avg) 16.3 |
| Depth Out | 0 m | | | | | | |

Run Comment: New PDC -drilled out plugs, float & shoe track in 1.5 hrs.

## BHA # 4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 60.0 klb | Length | 280.4 m | Torque(max) | 7000 ft-lbs | D.C. (1) Ann Velocity | 480.0 |
| Wt Below Jar(Wet) | 35.0 klb | String | 285.0 klb | Torque(Off.Btm) | 1500 ft-lbs | D.C. (2) Ann Velocity | |
| | | Pick-Up | 290.0 klb | Torque(On.Btm) | 4000 ft-lbs | H.W.D.P. Ann Velocity | 337.2 |
| | | Slack-Off | 283.0 klb | | | D.P. Ann Velocity | 337.2 |

BHA Run Description: PDC bit, 8-1/ 2" NBRR, X/ O, MWD, X/ O, 8-1/ 2" RR, X\O, 12 x 6-1/ 4" DCs, X/ O, 6-1/ 2" Jars, X/ O, 3 x 6-1/ 4" DCs, 12 x 5" HWDP

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.23 m | 8.50 in | 0 in | 103130 | New DSX104 with 5 x 12 jets. |
| NBRR | 1.58 m | 8.50 in | 2.94 in | XMA-006 | Extreamer |
| X/ O | 0.50 m | 6.06 in | 2.81 in | EX-0024 | |
| MWD Tools | 12.00 m | 0 in | 0 in | Sperry-Sun | With 8-1/ 4" sleeve stabiliser. |
| X/ O | 0.59 m | 6.63 in | 2.81 in | EX-0036 | |
| RR | 1.42 m | 6.69 in | 2.31 in | XMA-010 | Extreamer |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 111.52 m | 6.25 in | 2.94 in | As per tally | |
| X/ O | 0.82 m | 6.63 in | 2.88 in | EX-0025 | |
| Drilling jars | 9.63 m | 6.50 in | 2.00 in | DAH-02089 | |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 28.08 m | 6.25 in | 2.75 in | As per tally | |
| 5in HWDP | 113.34 m | 5.00 in | 3.06 in | As per tally | |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 1712.12 | 0.96 | 9.64 | 1712.0 | 20.80 | 0.05 | 20.80 | 5.58 | MWD |
| 1791.40 | 0.69 | 348.35 | 1791.2 | 21.92 | 0.15 | 21.92 | 5.59 | MWD |
| 1830.94 | 0.88 | 326.25 | 1830.8 | 22.41 | 0.27 | 22.41 | 5.37 | MWD |
| 1856.75 | 0.78 | 329.83 | 1856.6 | 22.72 | 0.13 | 22.72 | 5.17 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1405 |
| Cement | sx | 0 | 0 | 0 | 2181 |
| Gel | sx | 0 | 204 | 0 | 1283 |
| Potable Water | MT | 21 | 24 | 0 | 129 |
| Drill Water | MT | 0 | 157 | 0 | 593 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 11 | 0 | 548 |
| Jet Fuel | Litres | 0 | 148 | 0 | 374 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Schlumberger Wireline | 7 |
| Sperry-Sun | 2 |
| DOGC Service | 5 |
| Total | 83 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 3700 | 325 |
| 2 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 3700 | 325 |
| 3 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 0 | 0 | 0 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 1154.0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 1901.0 | 30 | 350 | 108 | 40 | 480 | 144 | 50 | 590 | 180 |
| 1901.0 | 30 | 370 | 108 | 40 | 490 | 144 | 50 | 600 | 180 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/8" | N/A | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 11 Days | |
| BOP Test | 07 Dec 2003 | 11 Days | |
| Fire Drill | 07 Dec 2003 | 11 Days | |
| First Aid | 29 Oct 2003 | 50 Days | Employee struck by chain tong - no treatment required. |
| JHA/ HSE Audit | 18 Dec 2003 | 0 Days | Reviewed JHA on laying down drill collars/ BHA. |
| Lost Time Incident | 24 Apr 2001 | 967 Days | None |
| Near Miss | 11 Dec 2003 | 7 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 18 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 11 Days | |
| Walkabout | 18 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| **Available** | **1678 bbl** |
|---|---|
| Active | 1051.0 bbl |
| Mixing | 0 bbl |
| Hole | 627.0 bbl |
| Slug | 0 bbl |
| Reserve | 0 bbl |
| Kill | 0 bbl |

| **Losses** | **688 bbl** |
|---|---|
| Downhole | 0 bbl |
| Surf+ Equip | 8 bbl |
| Dumped | 0 bbl |
| De-Sander | 0 bbl |
| De-Silter | 0 bbl |
| Centrifuge | 0 bbl |
| SW/ gel from drilling shoe track | 680.0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 4 | Thule | 4 x 180 | 4 |

Comment 10 & 20 mesh top screens on all shakers.

## Marine

Weather check on 18 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 135 deg | 1016 bar | 16.0 C° | 1.2 m | 135 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 1.0 deg | 0.4 deg | 2.00 m | 2.5 m | 160 deg | 0 ft/ sec | Cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4132.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 221.0 |
| 2 | 231.0 |
| 3 | 200.0 |
| 4 | 192.0 |
| 5 | 171.0 |
| 6 | 199.0 |
| 7 | 218.0 |
| 8 | 226.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | 11:45 16/ 12/ 03 | | Normal standby and collision avoidance monitoring. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 175 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 377.4 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 17:30 18/ 12/ 03 | 00:20 19/ 12/ 03 | En-route to Portland after taking on backloading ETA 07:30 | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 210 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 610 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 11:42 | Ocean Epoch | 3 x Blackadder, 2 x AME, 1 x ECOS, 1 x Seafest. | 7 |
| 1 | 12:05 | Essendon | 4 x PCS | 4 |
| 2 | 16:45 | Ocean Epoch | 7 x Schlumberger | 7 |
| 2 | 16:55 | Essendon | 2 x Moduspec, 1 x ECOS, 1 x Seafest. | 4 |

Santos

# DRILLING MORNING REPORT # 15
## Hill #1 ( 19 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2515.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2515.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 648.0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 11.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 14.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | POOH (tight) on wiper trip from TD to 9-5/ 8" casing shoe at 1801m. | | | | |
| RT-ML | 235.2 m | Planned Op | RIH, circulate clean, POOH and rig up Schlumberger. Run open hole logs as per program. | | | | |

## Summary of Period 0000 to 2400 Hrs

Drilled & surveyed 8-1/ 2" hole from 1867m to 2515m RT

## Operations For Period 0000 Hrs to 2400 Hrs on 19 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0630 | 6.50 | 1994.0 m | Drill 8-1/ 2" hole from 1867m to 1994m. WOB 20-30k, RPM 150, GPM 650. |
| PH | TP | CMD | 0630 | 0700 | 0.50 | 1994.0 m | Investigate standpipe pressure drop, circulate and condition mud. |
| PH | P | DA | 0700 | 2400 | 17.00 | 2515.0 m | Drill ahead 8-1/ 2" hole from 1994m to 2515m RT. WOB 30, RPM 175, GPM 650. Recorded SPRs at 2150m and flow checked drilling breaks at 2199m and 2283m. |

## Operations For Period 0000 Hrs to 0600 Hrs on 20 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0130 | 1.50 | 2575.0 m | Drill 8-1/ 2" hole from 2515m to TD at 2575m RT. |
| PH | P | CHC | 0130 | 0245 | 1.25 | 2575.0 m | Pump tandem Hi-vis sweeps, circulate bottoms up and circulate hole/ shakers clean. |
| PH | P | WT | 0245 | 0315 | 0.50 | 2575.0 m | Commence POOH on wiper trip to 9-5/ 8" casing shoe. Pulling tight (15 - 50k over) and swabbing at 2490m. |
| PH | P | WIN | 0315 | 0430 | 1.25 | 2575.0 m | Proceed to pump out of hole, pulled tight (up to 100k over) at 2288m. |
| PH | TP | WIN | 0430 | 0500 | 0.50 | 2575.0 m | Worked string, washed and backreamed until pipe free at 2280m. |
| PH | P | WIN | 0500 | 0600 | 1.00 | 2575.0 m | Continue to pump out of hole on wiper trip to 9-5/ 8" casing shoe, pulling tight. |

## Phase Data to 2400hrs, 19 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 115 | 15 Dec 2003 | 19 Dec 2003 | 355 | 15 days | 2515.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / PHPA | API FL: | 4 cm³/ 30m | Cl: | 42000 | Solids(%vol): | 11.7 | Viscosity: | 70 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 8.5 % | H2O: | 85.5 % | PV: | 23 cp |
| Time: | 21:30 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 280 | Oil(%): | 0 % | YP: | 35 lb/ 100ft² |
| Weight: | 9.70 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 7.5 | Sand: | .25 | Gels 10s: | 9 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 9 | Gels 10m: | 25 |
| | | | | PF: | 0 | PHPA: | 1 ppb | Fann 003: | 9 |
| | | | | | | | | Fann 006: | 11 |
| | | | | | | | | Fann 100: | 34 |
| | | | | | | | | Fann 200: | 48 |
| | | | | | | | | Fann 300: | 58 |
| | | | | | | | | Fann 600: | 81 |

## Bit # 4

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
|---|---|---|---|---|---|---|---|---|---|
| Size ("): | 8.50 in | IADC# | M223 | No. | Size | Progress | 648.0 m | Cum. Progress | 705.0 m |
| Mfr: | HYCALOG | WOB(avg) | 30.0 klb | 5 | 12 / 32nd" | On Bottom Hrs | 18.50 h | Cum. On Btm Hrs | 22.00 h |
| Type: | PDC | RPM(avg) | 150 | | | IADC Drill Hrs | 23.50 h | Cum IADC Drill Hrs | 27.50 h |
| Serial No.: | 103130 | F.Rate | 650 gpm | | | Total Revs | 0 | Cum Total Revs | 0 |
| Bit Model | DSX104 | SPP | 3700 psi | | | ROP(avg) | 35 m/ h | ROP(avg) | 32.0 |
| Depth In | 1810.0 m | TFA | 0.552 | | | | | | |
| Depth Out | 0 m | | | | | | | | |

Run Comment: New PDC - 22 hrs on bottom for 705m (Krev 705).


Printed on 20 Dec 2003

## BHA # 4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 60.0 klb | Length | 280.4 m | Torque(max) | 7000 ft-lbs | D.C. (1) Ann Velocity | 480.0 |
| Wt Below Jar(Wet) | 35.0 klb | String | 310.0 klb | Torque(Off.Btm) | 1500 ft-lbs | D.C. (2) Ann Velocity | |
| | | Pick-Up | 310.0 klb | Torque(On.Btm) | 5000 ft-lbs | H.W.D.P. Ann Velocity | 337.2 |
| | | Slack-Off | 305.0 klb | | | D.P. Ann Velocity | 337.2 |

BHA Run Description: PDC bit, 8-1/ 2" NBRR, X/ O, MWD, X/ O, 8-1/ 2" RR, X\O, 12 x 6-1/ 4" DCs, X/ O, 6-1/ 2" Jars, X/ O, 3 x 6-1/ 4" DCs, 12 x 5" HWDP

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.23 m | 8.50 in | 0 in | 103130 | New DSX104 with 5 x 12 jets. |
| NBRR | 1.58 m | 8.50 in | 2.94 in | XMA-006 | Extreamer |
| X/ O | 0.50 m | 6.06 in | 2.81 in | EX-0024 | |
| MWD Tools | 12.00 m | 0 in | 0 in | Sperry-Sun | With 8-1/ 4" sleeve stabiliser. |
| X/ O | 0.59 m | 6.63 in | 2.81 in | EX-0036 | |
| RR | 1.42 m | 6.69 in | 2.31 in | XMA-010 | Extreamer |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 111.52 m | 6.25 in | 2.94 in | As per tally | |
| X/ O | 0.82 m | 6.63 in | 2.88 in | EX-0025 | |
| Drilling jars | 9.63 m | 6.50 in | 2.00 in | DAH-02089 | |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 28.08 m | 6.25 in | 2.75 in | As per tally | |
| 5in HWDP | 113.34 m | 5.00 in | 3.06 in | As per tally | |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2031.42 | 0.65 | 345.22 | 2031.2 | 24.71 | 0.04 | 24.71 | 4.33 | MWD |
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1405 |
| Cement | sx | 0 | 0 | 0 | 2181 |
| Gel | sx | 0 | 204 | 0 | 1079 |
| Potable Water | MT | 22 | 20 | 0 | 131 |
| Drill Water | MT | 0 | 20 | 0 | 573 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 13 | 0 | 535 |
| Jet Fuel | Litres | 0 | 0 | 137 | 511 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Schlumberger Wireline | 7 |
| Sperry-Sun | 2 |
| DOGC Service | 5 |
| Total | 83 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 3900 | 325 |
| 3 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 3900 | 325 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 2150.0 | 30 | 380 | 108 | 40 | 490 | 144 | 50 | 620 | 180 |
| 2150.0 | 30 | 380 | 108 | 40 | 500 | 144 | 50 | 640 | 180 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 12 Days | |
| BOP Test | 07 Dec 2003 | 12 Days | |
| Fire Drill | 07 Dec 2003 | 12 Days | |
| First Aid | 29 Oct 2003 | 51 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 968 Days | None |
| Near Miss | 11 Dec 2003 | 8 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 19 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 12 Days | |
| Walkabout | 19 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| **Available** | **1667 bbl** | **Losses** | **50 bbl** |
|---|---|---|---|
| Active | 914.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 50 bbl |
| Hole | 753.0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 1 | Thule | 4 x 165 | 24 |
| Shaker 1 | Thule | 4 x 180 | 24 |
| Shaker 2 | Thule | 4 x 230 | 24 |

Comment 10 & 20 mesh top screens on all shakers.

## Marine

Weather check on 19 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 4.0 kn | 110 deg | 1013 bar | 15.0 C° | 1.0 m | 110 deg | 0 ft/ sec |
| **Roll** | **Pitch** | **Heave** | **Swell Height** | **Swell Dir.** | **Swell Period** | **Weather Comments** | |
| 1.0 deg | 0.4 deg | 2.00 m | 2.5 m | 160 deg | 0 ft/ sec | Overcast | |
| **Rig Dir.** | **Ris. Tension** | **VDL** | **Comments** | | | | |
| 240.0 deg | 241.0 klb | 4057.0 klb | | | | | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 215.0 |
| 2 | 219.0 |
| 3 | 200.0 |
| 4 | 190.0 |
| 5 | 163.0 |
| 6 | 197.0 |
| 7 | 221.0 |
| 8 | 221.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | | 03:35 20/ 12/ 03 | En-route to Burnie to load fuel. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 165 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 367 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 00:15 20/ 12/ 03 | 00:20 19/ 12/ 03 | Normal standby and collision avoidance monitoring. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 207 |
| Drill Water | MT | 130 |
| Mud | sx | 0 |
| Fuel | MT | 601 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 09:10 | Ocean Epoch | Crew change 4 x TMT catering, 9 x DOGC. | 13 |
| 1 | 09:22 | Essendon | 4 x TMT catering, 9 x DOGC. | 13 |

Santos

# DRILLING MORNING REPORT # 16
## Hill #1 ( 20 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2575.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2575.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 60.0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 12.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 15.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Wireline POOH on logging run No.2 (Check shot survey). | | | | |
| RT-ML | 235.2 m | Planned Op | Complete logging program, rig down Schlumberger, RIH to set abandonment plugs. | | | | |

## Summary of Period 0000 to 2400 Hrs

Drilled 8-1/ 2" hole from 2515m to TD at 2575m, pumped sweeps & circulated clean. Wiper tripped to the 9-5/ 8" casing shoe, pumping out of hole, working & reaming through tight sections. POOH, rigged up Schlumberger & RIH with PEX-DSI-HALS toolstring without problem.

## Operations For Period 0000 Hrs to 2400 Hrs on 20 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PH | P | DA | 0000 | 0130 | 1.50 | 2575.0 m | Drill 8-1/ 2" hole from 2515m to TD at 2575m RT. |
| PH | P | CHC | 0130 | 0245 | 1.25 | 2575.0 m | Pump tandem Hi-vis sweeps, circulate bottoms up and circulate hole/ shakers clean. |
| EP | P | WT | 0245 | 0315 | 0.50 | 2575.0 m | Commence POOH on wiper trip to 9-5/ 8" casing shoe. Pulling tight (15 - 50k over) and swabbing at 2490m. |
| EP | P | WIN | 0315 | 0430 | 1.25 | 2575.0 m | Proceed to pump out of hole, pulled tight (up to 100k over) at 2288m. |
| EP | TP | WIN | 0430 | 0500 | 0.50 | 2575.0 m | Worked string, washed and backreamed until pipe free at 2280m. |
| EP | P | WIN | 0500 | 0900 | 4.00 | 2575.0 m | Continue to pump out of hole on wiper trip to 9-5/ 8" casing shoe at 1801m. Pulling tight, work string, back ream as required and boost riser. |
| EP | P | WT | 0900 | 1000 | 1.00 | 2575.0 m | RIH without problem and tag fill at 2562m. |
| EP | P | RW | 1000 | 1030 | 0.50 | 2575.0 m | Wash and ream 13m of fill from 2562m to TD at 2575m. |
| EP | P | CHC | 1030 | 1200 | 1.50 | 2575.0 m | Pump tandem 100 bbl hi-vis sweeps spaced with 100 bbls KCl/ PHPA mud and circulate hole clean. |
| EP | P | TO | 1200 | 1730 | 5.50 | 2575.0 m | POOH from 2575m, pump slug at 10 stands and continue out of hole without problem. |
| EP | P | HBHA | 1730 | 1830 | 1.00 | 2575.0 m | Break out and lay down bit, roller reamers, X-overs and MWD tools. |
| EP | P | WIN | 1830 | 2015 | 1.75 | 2575.0 m | Conduct pre logging safety meeting, rig up Schlumberger and make up PEX-DSI-HALS toolstring. |
| EP | P | LOG | 2015 | 2400 | 3.75 | 2575.0 m | RIH for logging run #1 - PEX-DSI-HALS, no hole problems encountered, tag bottom at 2576m MDWL and log out of hole. |

## Operations For Period 0000 Hrs to 0600 Hrs on 21 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| EP | P | LOG | 0000 | 0130 | 1.50 | 2575.0 m | Log out of hole with PEX-DSI-HALS toolstring. |
| EP | P | LOG | 0130 | 0315 | 1.75 | 2575.0 m | Lay out PEX toolstring and pick up Check-shot survey tools for logging run #2. Hang air line and sensors from crane and test air pressure/ shot sequence. |
| EP | P | LOG | 0315 | 0600 | 2.75 | 2575.0 m | RIH on logging run #2 and record Check-shot data. |

## Phase Data to 2400hrs, 20 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 117.75 | 15 Dec 2003 | 20 Dec 2003 | 357.75 | 15 days | 2575.0 m |
| EVALUATION PRODUCTION HOLE(EP) | 21.25 | 20 Dec 2003 | 20 Dec 2003 | 379 | 16 days | 2575.0 m |

## WBM Data — Cost Today $ 14,090

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / PHPA | API FL: | 5 cm³/ 30m | Cl: | 42000 | Solids(%vol): | 13 | Viscosity: | 81 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 8.5 % | H2O: | 84 % | PV: | 24 cp |
| Time: | 08:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 280 | Oil(%): | 0 % | YP: | 35 lb/ 100ft² |
| Weight: | 9.80 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 17 | Sand: | .5 | Gels 10s: | 9 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 9 | Gels 10m: | 25 |
| | | | | PF: | 0 | PHPA: | 1 ppb | Fann 003: | 9 |
| | | | | | | | | Fann 006: | 11 |
| | | | | | | | | Fann 100: | 35 |
| | | | | | | | | Fann 200: | 48 |
| | | | | | | | | Fann 300: | 59 |
| | | | | | | | | Fann 600: | 83 |

Comment: Mixed 300 bbls of Hi-vis mud for sweeping hole clean prior to POOH.


Printed on 21 Dec 2003

## Bit # 4

| Wear | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|
| | 2 | 4 | WT | T | X | I | CT | TD |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Size ("): | 8.50 in | IADC# | M223 | Nozzles | | Drilled over last 24 hrs | | Calculated over Bit Run | |
| Mfr: | HYCALOG | WOB(avg) | 30.0 klb | No. | Size | Progress | 60.0 m | Cum. Progress | 765.0 m |
| Type: | PDC | RPM(avg) | 150 | 5 | 12 / 32nd" | On Bottom Hrs | 1.50 h | Cum. On Btm Hrs | 23.50 h |
| Serial No.: | 103130 | F.Rate | 650 gpm | | | IADC Drill Hrs | 1.50 h | Cum IADC Drill Hrs | 29.00 h |
| Bit Model | DSX104 | SPP | 3700 psi | | | Total Revs | 0 | Cum Total Revs | 0 |
| Depth In | 1810.0 m | TFA | 0.552 | | | ROP(avg) | 40 m/ h | ROP(avg) | 32.6 |
| Depth Out | 2575.0 m | | | | | | | | |

| | |
|---|---|
| Run Comment | New PDC - 23.5 hrs on bottom, (29 IADC hrs) for 765m (Krev 247). |
| Bitwear Comment | Some minor erosion near gauge cutters. |

## BHA # 4

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Weight(Wet) | 60.0 klb | Length | 280.4 m | Torque(max) | 7000 ft-lbs | D.C. (1) Ann Velocity | 480.0 |
| Wt Below Jar(Wet) | 35.0 klb | String | 345.0 klb | Torque(Off.Btm) | 1500 ft-lbs | D.C. (2) Ann Velocity | |
| | | Pick-Up | 350.0 klb | Torque(On.Btm) | 5000 ft-lbs | H.W.D.P. Ann Velocity | 337.2 |
| | | Slack-Off | 340.0 klb | | | D.P. Ann Velocity | 337.2 |

| | |
|---|---|
| BHA Run Description | PDC bit, 8-1/ 2" NBRR, X/ O, MWD, X/ O, 8-1/ 2" RR, X\O, 12 x 6-1/ 4" DCs, X/ O, 6-1/ 2" Jars, X/ O, 3 x 6-1/ 4" DCs, 12 x 5" HWDP |

| Equipment | Length | OD | ID | Serial # | Comment |
|---|---|---|---|---|---|
| Bit | 0.23 m | 8.50 in | 0 in | 103130 | New DSX104 with 5 x 12 jets. |
| NBRR | 1.58 m | 8.50 in | 2.94 in | XMA-006 | Extreamer |
| X/ O | 0.50 m | 6.06 in | 2.81 in | EX-0024 | |
| MWD Tools | 12.00 m | 0 in | 0 in | Sperry-Sun | With 8-1/ 4" sleeve stabiliser. |
| X/ O | 0.59 m | 6.63 in | 2.81 in | EX-0036 | |
| RR | 1.42 m | 6.69 in | 2.31 in | XMA-010 | Extreamer |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 111.52 m | 6.25 in | 2.94 in | As per tally | |
| X/ O | 0.82 m | 6.63 in | 2.88 in | EX-0025 | |
| Drilling jars | 9.63 m | 6.50 in | 2.00 in | DAH-02089 | |
| X/ O | 0.36 m | 6.47 in | 2.81 in | ISS rental | |
| 6.25 in DC | 28.08 m | 6.25 in | 2.75 in | As per tally | |
| 5in HWDP | 113.34 m | 5.00 in | 3.06 in | As per tally | |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |
| 2575.00 | 0.86 | 204.43 | 2574.8 | 23.63 | 0.12 | 23.63 | 3.34 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1405 |
| Cement | sx | 0 | 0 | 0 | 2181 |
| Gel | sx | 0 | 0 | 204 | 1283 |
| Potable Water | MT | 20 | 18 | 0 | 133 |
| Drill Water | MT | 0 | 11 | 0 | 562 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 18 | 0 | 517 |
| Jet Fuel | Litres | 0 | 0 | 0 | 511 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 2 |
| Dril-Quip | 1 |
| Geoservices | 6 |
| Halliburton | 1 |
| TMT | 3 |
| Schlumberger Wireline | 7 |
| Sperry-Sun | 2 |
| DOGC Service | 5 |
| Total | 83 |


Printed on 21 Dec 2003

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 4100 | 325 |
| 3 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 90 | 4100 | 325 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 2150.0 | 30 | 380 | 108 | 40 | 490 | 144 | 50 | 620 | 180 |
| 2150.0 | 30 | 380 | 108 | 40 | 500 | 144 | 50 | 640 | 180 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 13 Days | |
| BOP Test | 07 Dec 2003 | 13 Days | |
| Fire Drill | 07 Dec 2003 | 13 Days | |
| First Aid | 29 Oct 2003 | 52 Days | Employee struck by chain tong - no treatment required. |
| Lost Time Incident | 24 Apr 2001 | 969 Days | None |
| Near Miss | 11 Dec 2003 | 9 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 20 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 20 Dec 2003 | 0 Days | Crew safety meeting with Schlumberger prior to rigging up & running open hole logs. |
| Walkabout | 20 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| **Available** | **1696 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 840.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 856.0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 1 | Thule | 4 x 165 | 9 |
| Shaker 1 | Thule | 4 x 180 | 9 |
| Shaker 2 | Thule | 4 x 230 | 9 |

Comment 10 & 20 mesh top screens on all shakers.

Minimal down hole losses.

## Marine

Weather check on 20 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 15.0 kn | 135 deg | 1012 bar | 15.0 C° | 0.8 m | 135 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 0.5 deg | 0.4 deg | 1.50 m | 2.5 m | 160 deg | 0 ft/ sec | Partly cloudy |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4185.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 215.0 |
| 2 | 221.0 |
| 3 | 200.0 |
| 4 | 192.0 |
| 5 | 157.0 |
| 6 | 197.0 |
| 7 | 218.0 |
| 8 | 219.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — Arrived: — Departed: 03:35 20/ 12/ 03

Status: Load fuel at Burnie and then return to Epoch.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — Arrived: 00:15 20/ 12/ 03 — Departed: —

Status: Close standby and collision avoidance monitoring.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 204 |
| Drill Water | MT | 130 |
| Mud | sx | 0 |
| Fuel | MT | 593.8 |
| Jet Fuel | Litres | 0 |

Santos

# DRILLING MORNING REPORT # 17
## Hill #1 ( 21 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2575.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2575.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 13.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 16.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | POOH to circulate clean & position string for abandonment plug #2. | | | | |
| RT-ML | 235.2 m | Planned Op | Set abandonment plug #2 and POOH, laying out BHA. RIH & tag cement plug, POOH. Cut & recover 9-5/ 8" casing. | | | | |

## Summary of Period 0000 to 2400 Hrs

Completed 4 run open hole logging program, rigged down Schlumberger and commenced RIH to place abandonment plugs.

## Operations For Period 0000 Hrs to 2400 Hrs on 21 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| EP | P | LOG | 0000 | 0130 | 1.50 | 2575.0 m | Log out of hole with PEX-DSI-HALS toolstring. |
| EP | P | LOG | 0130 | 0315 | 1.75 | 2575.0 m | Lay out PEX toolstring and pick up Check-shot survey tools for logging run #2. Hang air line and sensors from crane and test air pressure/ shot sequence. |
| EP | P | LOG | 0315 | 0745 | 4.50 | 2575.0 m | RIH on logging run #2 and record Check-shot data at 50m intervals from 2570m to 1070m (casing reverberation). POOH and layout tools. |
| EP | P | LOG | 0745 | 1430 | 6.75 | 2575.0 m | Pick up MDT toolstring and RIH for logging run #3. Record 11 Pre-tests (9 normal, 2 curtailed). POOH and lay down tools. |
| EP | P | LOG | 1430 | 1500 | 0.50 | 2575.0 m | Radio silence and prepare to run CST (side wall cores), logging run #4. |
| EP | TP | WOW | 1500 | 1545 | 0.75 | 2575.0 m | Wait on inclement weather, local lightning preventing safe arming of CST gun. |
| EP | P | LOG | 1545 | 2130 | 5.75 | 2575.0 m | Picked up CST guns (43 shots loaded) and RIH for logging run #4. Take cores and POOH. Radio silence & lay out toolstring (21 cores recovered, 2 cases empty, 5 missfires and 15 lost down hole). |
| EP | P | HT | 2130 | 2200 | 0.50 | 2575.0 m | Rig down Schlumberger & clear work floor. |
| PA | P | TI | 2200 | 2400 | 2.00 | 2575.0 m | Make up cementing stand and reposition HWDP/ DC to forward side. Inclement weather, 3 deg roll & high winds. RIH with open 5" drill pipe to place abandonnment plug # 1. |

## Operations For Period 0000 Hrs to 0600 Hrs on 22 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | TI | 0000 | 0430 | 4.50 | 2575.0 m | Continue RIH with open 5"DP & BHA cementing string. High winds and roll, slowing operations, standpipe hose hanging up at side of derrick. |
| PA | P | CHC | 0430 | 0500 | 0.50 | 2575.0 m | Make up cementing stand and circulate the bottom of the hole clean at 750 GPM. |
| PA | P | CMP | 0500 | 0600 | 1.00 | 2575.0 m | Test cementing line to 2000 psi, pump 5bbls water ahead followed by 14 bbls 15.8ppg class G cement. Displaced with 136bbls of mud to place abandonment plug #1 over 2525m to 2575m RT. |

## Phase Data to 2400hrs, 21 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 117.75 | 15 Dec 2003 | 20 Dec 2003 | 357.75 | 15 days | 2575.0 m |
| EVALUATION PRODUCTION HOLE(EP) | 43.25 | 20 Dec 2003 | 21 Dec 2003 | 401 | 17 days | 2575.0 m |
| PLUG AND ABANDON(PA) | 2 | 21 Dec 2003 | 21 Dec 2003 | 403 | 17 days | 2575.0 m |

## WBM Data

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Mud Type: | KCl / PHPA | API FL: | 5 cm³/ 30m | Cl: | 41500 | Solids(%vol): | 12.2 | Viscosity: | 79 sec/ qt |
| Sample-From: | Pit | Filter-Cake: | 1 / 32nd" | K+C*1000: | 8.5 % | H2O: | 85 % | PV: | 24 cp |
| Time: | 14:00 | HTHP-FL: | 0 cm³/ 30m | Hard/Ca: | 280 | Oil(%): | 0 % | YP: | 33 lb/ 100ft² |
| Weight: | 9.70 ppg | HTHP-Cake: | 0 / 32nd" | MBT: | 15 | Sand: | .35 | Gels 10s: | 9 |
| Temp: | 49.0 C° | | | PM: | 0 | pH: | 9 | Gels 10m: | 24 |
| | | | | PF: | 0 | PHPA: | 1 ppb | Fann 003: | 9 |
| | | | | | | | | Fann 006: | 11 |
| | | | | | | | | Fann 100: | 34 |
| | | | | | | | | Fann 200: | 48 |
| | | | | | | | | Fann 300: | 57 |
| | | | | | | | | Fann 600: | 81 |

Comment: Added inhibitor and biocide to mud system.


Printed on 22 Dec 2003

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |
| 2575.00 | 0.86 | 204.43 | 2574.8 | 23.63 | 0.12 | 23.63 | 3.34 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 323 | 0 | 1082 |
| Cement | sx | 0 | 0 | 0 | 2181 |
| Gel | sx | 0 | 0 | 0 | 1283 |
| Potable Water | MT | 21 | 19 | 0 | 135 |
| Drill Water | MT | 0 | 13 | 0 | 549 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 12 | 0 | 505 |
| Jet Fuel | Litres | 0 | 0 | 0 | 511 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 3 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| Dril-Quip | 1 |
| Geoservices | 4 |
| Halliburton | 2 |
| TMT | 6 |
| Schlumberger Wireline | 7 |
| SMITH | 1 |
| DOGC Service | 5 |
| Total | 83 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 14 Days | |
| BOP Test | 07 Dec 2003 | 14 Days | |
| Fire Drill | 21 Dec 2003 | 0 Days | Fire drill & response to a simulated fire on helideck. |
| First Aid | 21 Dec 2003 | 0 Days | Derrickman injured shoulder while holding onto HWDP. |
| JHA/ HSE Audit | 21 Dec 2003 | 0 Days | Reviewed JSA on tripping pipe in inclement weather. |
| Lost Time Incident | 24 Apr 2001 | 970 Days | None |
| Near Miss | 11 Dec 2003 | 10 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 21 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 21 Dec 2003 | 0 Days | Weekly safety meeting with all crews. |
| Walkabout | 21 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Shakers, Volumes and Losses Data

Engineer : Willie McKay / Romero Tena

| **Available** | **1697 bbl** | **Losses** | **0 bbl** |
|---|---|---|---|
| Active | 841.0 bbl | Downhole | 0 bbl |
| Mixing | 0 bbl | Surf+ Equip | 0 bbl |
| Hole | 856.0 bbl | Dumped | 0 bbl |
| Slug | 0 bbl | De-Sander | 0 bbl |
| Reserve | 0 bbl | De-Silter | 0 bbl |
| Kill | 0 bbl | Centrifuge | 0 bbl |

| Equip. | Descr. | Mesh Size | Hours |
|---|---|---|---|
| De-Gaser 1 | Swaco | | 0 |
| De-Sander 1 | Harrisburgh | | 0 |
| De-Silter 1 | Swaco | | 0 |
| Shaker 1 | Thule | 4 x 165 | 0 |
| Shaker 1 | Thule | 4 x 180 | 0 |
| Shaker 2 | Thule | 4 x 230 | 0 |

Comment 10 & 20 mesh top screens on all shakers.


Printed on 22 Dec 2003

## Marine

Weather check on 21 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 40.0 kn | 330 deg | 995 bar | 15.0 C° | 2.0 m | 330 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 3.5 deg | 1.0 deg | 2.00 m | 2.5 m | 160 deg | 0 ft/ sec | Rain and high NNE winds shifting West. |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 4057.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 210.0 |
| 2 | 216.0 |
| 3 | 192.0 |
| 4 | 194.0 |
| 5 | 192.0 |
| 6 | 209.0 |
| 7 | 188.0 |
| 8 | 189.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status |
|---|---|---|---|
| **Lady Dawn** | | 03:35 20/ 12/ 03 | Sail to Ocean Epoch, ETA 24:00. |
| **Pacific Challenger** | 00:15 20/ 12/ 03 | | Close standby and collision avoidance monitoring. |

**Bulks**

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 201 |
| Drill Water | MT | 130 |
| Mud | sx | 0 |
| Fuel | MT | 587.4 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 12:10 | Ocean Epoch | 1 x Smith, 1 x Halliburton, 3 x ROV. | 5 |
| 1 | 12:21 | Essendon | 1 x BHI, 2 x Sperry-sun, 2 x Geoservices. | 5 |

Santos

# DRILLING MORNING REPORT # 18
## Hill #1 ( 22 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2575.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2575.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 14.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 17.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Set & test EZSV at 310m. | | | | |
| RT-ML | 235.2 m | Planned Op | Set abandonment plug #3 over 260m-310m, circulate clean, displace riser. Unlatch BOPs, pull riser and recover BOP stack. RIH and cut 20" casing. | | | | |

## Summary of Period 0000 to 2400 Hrs

RIH and placed abandonment plug #1 over 2525m-2575m, picked up and spotted abandonment plug #2 over 1650m-1831m. POOH laying out BHA, RIH with drillpipe and tagged top of plug #2 at 1672m RT. POOH, made up casing cutter, RIH and cut 9-5/ 8" casing at 312.72m. POOH.

## Operations For Period 0000 Hrs to 2400 Hrs on 22 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | TI | 0000 | 0430 | 4.50 | 2575.0 m | Continue RIH with open 5"DP & BHA cementing string. High winds and roll, slowing operations, standpipe hose hanging up at side of derrick. |
| PA | P | CHC | 0430 | 0500 | 0.50 | 2575.0 m | Make up cementing stand and circulate the bottom of the hole clean at 750 GPM. |
| PA | P | CMP | 0500 | 0600 | 1.00 | 2575.0 m | Test cementing line to 2000 psi, pump 5bbls water ahead followed by 14 bbls 15.8ppg class G cement. Displaced with 136bbls of mud to place abandonment plug #1 over 2525m to 2575m RT. |
| PA | P | CHC | 0600 | 0700 | 1.00 | 2575.0 m | Pull 5 stands to 2429m and circulate bottoms up with inhibited mud. |
| PA | P | TO | 0700 | 0830 | 1.50 | 2575.0 m | Continue POOH (20 stands) to position end of string at 1831m. High winds and heavy seas. |
| PA | P | CMP | 0830 | 1000 | 1.50 | 2575.0 m | Make up cement stand and break circulation. Test lines to 2000psi, pumping 5 bbls total water ahead. Mix & pump 48 bbls of 15.8ppg class G cement followed by 2 bbls water and displaced with 94 bbls mud to place abandonment plug #2 at 1650m-1831m. |
| PA | P | CHC | 1000 | 1100 | 1.00 | 2575.0 m | Pull 10 stands to 1541m and circulate bottoms up with inhibited mud. |
| PA | P | PLD | 1100 | 1430 | 3.50 | 2575.0 m | POOH sideways, laying out BHA and excess drill pipe. |
| PA | P | TI | 1430 | 1530 | 1.00 | 2575.0 m | RIH and tag top of cement plug #2 with 5k down, at 1672m RT. |
| PA | P | PLD | 1530 | 1900 | 3.50 | 2575.0 m | POOH sideways, laying down excess 5" drill pipe. |
| PA | P | TO | 1900 | 2000 | 1.00 | 2575.0 m | Continue POOH, racking back drillpipe. |
| PA | P | CCT | 2000 | 2200 | 2.00 | 2575.0 m | Make up 9-5/ 8" casing cutter assembly and RIH on 5" drill pipe. Position cutter and establish parrameters, cut casing at 312.72m (positive indication of cut). |
| PA | P | TO | 2200 | 2400 | 2.00 | 2575.0 m | Flow check and POOH racking back pipe. Lay out casing cutter (blade wear indicated full cut). |

## Operations For Period 0000 Hrs to 0600 Hrs on 23 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | TI | 0000 | 0130 | 1.50 | 2575.0 m | Pick up 9-5/ 8" casing retrieval assembly/ Itco spear and RIH. Engage casing and take progressive overpull - casing hanger/ seal assembly pulled free with 90K over. |
| PA | P | TO | 0130 | 0300 | 1.50 | 2575.0 m | POOH with cut off 9-5/ 8" casing section, racking 5" drill pipe. Release spear from casing hanger assembly and rack back in derrick. |
| PA | P | CPL | 0300 | 0430 | 1.50 | 2575.0 m | Break out and lay down 9-5/ 8" casing hanger (seal assembly not fully locked), cross-over pup, 5 jnts casing and cut joint. |
| PA | P | HT | 0430 | 0500 | 0.50 | 2575.0 m | Make up 13-3/ 8" EZSV and running tool. |
| PA | P | TI | 0500 | 0600 | 1.00 | 2575.0 m | RIH with 13-3/ 8" EZSV on 5" drill pipe to set depth of 310m RT. |

## Phase Data to 2400hrs, 22 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 117.75 | 15 Dec 2003 | 20 Dec 2003 | 357.75 | 15 days | 2575.0 m |
| EVALUATION PRODUCTION HOLE(EP) | 43.25 | 20 Dec 2003 | 21 Dec 2003 | 401 | 17 days | 2575.0 m |
| PLUG AND ABANDON(PA) | 26 | 21 Dec 2003 | 22 Dec 2003 | 427 | 18 days | 2575.0 m |


Printed on 23 Dec 2003

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |
| 2575.00 | 0.86 | 204.43 | 2574.8 | 23.63 | 0.12 | 23.63 | 3.34 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1082 |
| Cement | sx | 0 | 347 | 0 | 1834 |
| Gel | sx | 0 | 0 | 0 | 1283 |
| Potable Water | MT | 21 | 22 | 0 | 134 |
| Drill Water | MT | 0 | 52 | 0 | 497 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 9 | 0 | 496 |
| Jet Fuel | Litres | 0 | 0 | 0 | 511 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 2 |
| DOGC | 40 |
| DOGC Other | 5 |
| Total Marine Catering | 8 |
| BHI INTEQ | 1 |
| Dril-Quip | 1 |
| Geoservices | 3 |
| Halliburton | 2 |
| TMT | 6 |
| SMITH | 1 |
| DOGC Service | 2 |
| Total | 71 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 0 | 0 | 0 |
| 2 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 105 | 1900 | 377 |
| 3 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 105 | 1900 | 377 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 15 Days | |
| BOP Test | 07 Dec 2003 | 15 Days | |
| Fire Drill | 07 Dec 2003 | 15 Days | |
| First Aid | 21 Dec 2003 | 1 Day | Derrickman injured shoulder while holding onto HWDP. |
| Lost Time Incident | 24 Apr 2001 | 971 Days | None |
| Near Miss | 11 Dec 2003 | 11 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 22 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 15 Days | |
| Walkabout | 22 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |


Printed on 23 Dec 2003

## Marine

Weather check on 22 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 26.0 kn | 270 deg | 1016 bar | 16.0 C° | 2.2 m | 270 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 3.0 deg | 1.2 deg | 3.00 m | 3.0 m | 240 deg | 0 ft/ sec | |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 3999.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 218.0 |
| 2 | 225.0 |
| 3 | 199.0 |
| 4 | 192.0 |
| 5 | 153.0 |
| 6 | 208.0 |
| 7 | 197.0 |
| 8 | 185.0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | 05:15 23/ 12/ 03 | 03:35 20/ 12/ 03 | Normal standby and collision avoidance monitoring. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 00:15 20/ 12/ 03 | 05:15 23/ 12/ 03 | En-route to Portland, ETA 09:30. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 198 |
| Drill Water | MT | 130 |
| Mud | sx | 0 |
| Fuel | MT | 577.8 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 16:19 | Ocean Epoch | No passengers. | 0 |
| 1 | 16:28 | Essendon | 7 x Schlumberger, 3 x Blackadder, 1 x mud logger, 1 x Geologist. | 12 |

Santos

# DRILLING MORNING REPORT # 19
## Hill #1 ( 23 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2575.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2575.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 15.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 18.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | RIH with 20" casing cutter/ retrieval assembly. | | | | |
| RT-ML | 235.2 m | Planned Op | Cut 20" casing, recover PGB and wellhead housing. Pull anchors and release rig. | | | | |

## Summary of Period 0000 to 2400 Hrs

RIH, engaged spear and pulled casing hanger free, POOH with cut 9-5/ 8" casing. Set and pressure tested 13-3/ 8" EZSV at 310m. Placed abandonment plug #3 over 260m to 310m. Circulated clean and displaced riser/ lines to seawater. Released HAC and unlatched BOPs. Recovered riser/ BOPs and secured stack on spider beams.

## Operations For Period 0000 Hrs to 2400 Hrs on 23 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | TI | 0000 | 0130 | 1.50 | 2575.0 m | Pick up 9-5/ 8" casing retrieval assembly/ Itco spear and RIH. Engage casing and take progressive overpull - casing hanger/ seal assembly pulled free with 90K over. |
| PA | P | TO | 0130 | 0300 | 1.50 | 2575.0 m | POOH with cut off 9-5/ 8" casing section, racking 5" drill pipe. Release spear from casing hanger assembly and rack back in derrick. |
| PA | P | CPL | 0300 | 0430 | 1.50 | 2575.0 m | Break out and lay down 9-5/ 8" casing hanger (seal assembly not fully locked), cross-over pup, 5 jnts casing and cut joint. |
| PA | P | HT | 0430 | 0500 | 0.50 | 2575.0 m | Make up 13-3/ 8" EZSV and running tool. |
| PA | P | TI | 0500 | 0600 | 1.00 | 2575.0 m | RIH with 13-3/ 8" EZSV on 5" drill pipe, set with 30k overpull at 310m and sheared off running tool with 45k, ok. |
| PA | P | CMP | 0600 | 0730 | 1.50 | 2575.0 m | Rig up cement lines, break circulation, space out and close pipe rams. Pressure test EZSV to 1000 psi - solid, bleed off and open rams. Pump 7 bbls water ahead, mix & pump 25 bbls of 15.8ppg class G cement followed by 1 bbl water. Displaced string with 13.5 bbls mud. |
| PA | P | CHC | 0730 | 0830 | 1.00 | 2575.0 m | Pick up to 255m and circulate string and riser clean at 850 gpm. Displaced riser, choke and kill lines to seawater, flushed manifold, surface lines and trip tank. |
| PA | P | PLD | 0830 | 0930 | 1.00 | 2575.0 m | POOH laying down 5" drill pipe. |
| PA | P | HT | 0930 | 1200 | 2.50 | 2575.0 m | Rig up to pull diverter housing, rig down flowline, install riser spider and diverter running/ pulling tool. |
| PA | P | HT | 1200 | 1330 | 1.50 | 2575.0 m | Pull and lay out diverter, make up landing joint, close slip joint and unlatch BOP stack. ROV activate HAC release. |
| PA | P | RR2 | 1330 | 2300 | 9.50 | 2575.0 m | Nipple down rucker lines, control line saddles & disconnect choke/ kill lines. Pull riser/ BOPs, laying out riser sections. |
| PA | P | RR2 | 2300 | 2400 | 1.00 | 2575.0 m | Pull stack through moon pool, spider beam positioning ram broke off. Stabilise stack with forward winches, pull spider beam into position with tugger and set down/ secured BOPs ok. |

## Operations For Period 0000 Hrs to 0600 Hrs on 24 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | RR2 | 0000 | 0130 | 1.50 | 2575.0 m | Remove control pods & guy wires, disconnect and set back LMRP on stump. |
| PA | P | RR2 | 0130 | 0230 | 1.00 | 2575.0 m | Rig up, lift BOPs from moon pool, set back and secure on stump. |
| PA | P | RR2 | 0230 | 0330 | 1.00 | 2575.0 m | Lay out riser double from derrick. Lady Dawn repairing engine. |
| PA | P | HT | 0330 | 0430 | 1.00 | 2575.0 m | Lay out spider/ riserhandling equipment. Lady Dawn operational, commence secondary anchor recovery operations. |
| PA | P | HBHA | 0430 | 0530 | 1.00 | 2575.0 m | Make up 20" casing tension cut and wellhead recovery assembly. |
| PA | P | TI | 0530 | 0600 | 0.50 | 2575.0 m | Connect guide ropes at moon pool and RIH with 20" casing cutter/ retrieval assembly. |

## Phase Data to 2400hrs, 23 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 117.75 | 15 Dec 2003 | 20 Dec 2003 | 357.75 | 15 days | 2575.0 m |
| EVALUATION PRODUCTION HOLE(EP) | 43.25 | 20 Dec 2003 | 21 Dec 2003 | 401 | 17 days | 2575.0 m |
| PLUG AND ABANDON(PA) | 50 | 21 Dec 2003 | 23 Dec 2003 | 451 | 19 days | 2575.0 m |


Printed on 24 Dec 2003

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |
| 2575.00 | 0.86 | 204.43 | 2574.8 | 23.63 | 0.12 | 23.63 | 3.34 | MWD |

## Bulk Stocks

| Name | Unit | In | Used | Adjust | Balance |
|---|---|---|---|---|---|
| Barite | sx | 0 | 0 | 0 | 1082 |
| Cement | sx | 0 | 155 | 0 | 1679 |
| Gel | sx | 0 | 0 | 0 | 1283 |
| Potable Water | MT | 21 | 20 | 0 | 135 |
| Drill Water | MT | 0 | 86 | 0 | 411 |
| Mud | sx | 0 | 0 | 0 | 0 |
| Fuel | MT | 0 | 11 | 0 | 485 |
| Jet Fuel | Litres | 0 | 0 | 0 | 511 |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 2 |
| DOGC | 39 |
| DOGC Other | 3 |
| Total Marine Catering | 8 |
| Dril-Quip | 1 |
| Total Marine | 7 |
| Halliburton | 1 |
| TMT | 6 |
| SMITH | 1 |
| DOGC Service | 2 |
| Total | 70 |

## Pumps

**Pump Data - Last 24 Hrs**

| No. | Type | Liner (in) | MW (ppg) | Eff (%) | SPM | SPP (psi) | Flow (gpm) |
|---|---|---|---|---|---|---|---|
| 1 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 85 | 1100 | 300 |
| 2 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 105 | 900 | 377 |
| 3 | Oilwell A1700PT | 5.50 | 9.50 | 97 | 105 | 900 | 377 |

**Slow Pump Data**

| Depth (m) | SPM1 | SPP1 (psi) | Flow1 (gpm) | SPM2 | SPP2 (psi) | Flow2 (gpm) | SPM3 | SPP3 (psi) | Flow3 (gpm) |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |
| 0 | 30 | 0 | 0 | 40 | 0 | 0 | 50 | 0 | 0 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 16 Days | |
| BOP Test | 07 Dec 2003 | 16 Days | |
| Fire Drill | 07 Dec 2003 | 16 Days | |
| First Aid | 21 Dec 2003 | 2 Days | Derrickman injured shoulder while holding onto HWDP. |
| Lost Time Incident | 24 Apr 2001 | 972 Days | None |
| Near Miss | 11 Dec 2003 | 12 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 23 Dec 2003 | 0 Days | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 16 Days | |
| Walkabout | 23 Dec 2003 | 0 Days | Walk around rig inspection / hazard identification. |

## Marine

Weather check on 23 Dec 2003 at 24:00

| Visibility | Wind Speed | Wind Dir. | Pressure | Air Temp. | Wave Height | Wave Dir. | Wave Period |
|---|---|---|---|---|---|---|---|
| 8.00 nm | 12.0 kn | 240 deg | 1019 bar | 15.0 C° | 1.0 m | 270 deg | 0 ft/ sec |

| Roll | Pitch | Heave | Swell Height | Swell Dir. | Swell Period | Weather Comments |
|---|---|---|---|---|---|---|
| 1.8 deg | 1.0 deg | 1.50 m | 2.5 m | 225 deg | 0 ft/ sec | Fine. |

| Rig Dir. | Ris. Tension | VDL | Comments |
|---|---|---|---|
| 240.0 deg | 241.0 klb | 3975.0 klb | |

Rig Support

| Anchors | Tension (klb) |
|---|---|
| 1 | 225.0 |
| 2 | 232.0 |
| 3 | 185.0 |
| 4 | 191.0 |
| 5 | 156.0 |
| 6 | 214.0 |
| 7 | 203.0 |
| 8 | 194.0 |


Printed on 24 Dec 2003

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|

**Lady Dawn** — 05:15 23/ 12/ 03 — Secondary anchor recovery.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 562 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 680 |
| Jet Fuel | Litres | 0 |

**Pacific Challenger** — 16:30 23/ 12/ 03 — 05:15 23/ 12/ 03 — Normal standby and collision avoidance monitoring.

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 210 |
| Drill Water | MT | 350 |
| Mud | sx | 0 |
| Fuel | MT | 565.7 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 09:00 | Ocean Bounty | 10 x DOGC | 10 |
| 1 | 09:12 | Essendon | 13 x DOGC | 13 |
| 2 | 16:05 | Ocean Bounty | 7 x MO47 crew | 7 |
| 2 | 16:13 | Essendon | 3 x Geoservices, 1 x BHI, 1 x Halliburton. | 5 |

Santos

# DRILLING MORNING REPORT # 20
## Hill #1 ( 24 Dec 2003 )

**From : G. Howard / C. Wise**

## Well Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Country | Australia | M. Depth | 2575.0 m | Cur. Hole Size | 8.500 in | | |
| Field | Hill | TVD | 2575.0 m | Casing OD | 9.625 in | | |
| Drill Co. | DOGC | Progress | 0 m | Shoe TVD | 1801.0 m | | |
| Rig | Ocean Epoch | Days from spud | 16.12 | L.O.T. | 10.50 ppg | | |
| Wtr Dpth(LAT) | 212.8 m | Days on well | 19.79 | | | Planned TD | 2575.0 m |
| RT-ASL(LAT) | 22.4 m | Current Op @ 0600 | Last anchor racked @ 04:00<br>Rig released and on tow.<br>FINAL REPORT | | | | |
| RT-ML | 235.2 m | Planned Op | Commence rig tow to Fremantle. | | | | |

## Summary of Period 0000 to 2400 Hrs

Set back and secured LMRP and BOPs on stumps. Layed out riser double & handling equipment, RIH, cut 20" casing at 237m and pulled PGB/ wellhead to surface. Layed out tools, wellhead and set back PGB. De-ballast rig & layed out 5" drillpipe while recovering anchors.

## Operations For Period 0000 Hrs to 2400 Hrs on 24 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | P | RR2 | 0000 | 0130 | 1.50 | 2575.0 m | Remove control pods & guy wires, disconnect and set back LMRP on stump. |
| PA | P | RR2 | 0130 | 0230 | 1.00 | 2575.0 m | Rig up, lift BOPs from moon pool, set back and secure on stump. |
| PA | P | RR2 | 0230 | 0330 | 1.00 | 2575.0 m | Lay out riser double from derrick. Lady Dawn repairing engine. |
| PA | P | HT | 0330 | 0430 | 1.00 | 2575.0 m | Lay out spider/ riserhandling equipment. Lady Dawn operational, commence secondary anchor recovery operations. |
| PA | P | HBHA | 0430 | 0530 | 1.00 | 2575.0 m | Make up 20" casing tension cut and wellhead recovery assembly. |
| PA | P | TI | 0530 | 0600 | 0.50 | 2575.0 m | Connect guide ropes at moon pool and RIH with 20" casing cutter/ retrieval assembly. |
| PA | P | ROV | 0600 | 0700 | 1.00 | 2575.0 m | Difficulty stabbing into wellhead (rig moved off well center as secondary anchors were being recovered). Move rig to starboard and work ROV to stab cutter into 18-3/ 4" well head. |
| PA | P | CCT | 0700 | 0800 | 1.00 | 2575.0 m | Engage cut & retrieval tool into the wellhead and cut 20" casing at 237m RT (20 mins rotation). Pick up 90k over and pull 18-3/ 4" wellhead / PGB and Upper HAC free. |
| PA | P | TO | 0800 | 1030 | 2.50 | 2575.0 m | POOH and land PGB/ wellhead on the spider beams. Release tension cutter grapple from wellhead and lay out 20" casing cutter/ retrieval assembly. ROV complete sea bed survey - all clear. Deballast rig to 38 ft draft, proceed with secondary anchor recovery. |
| PA | P | HT | 1030 | 1230 | 2.00 | 2575.0 m | Make up Drillquip MPRT, engage wellhead/ HAC and lay out same. Move PGB off spider beams. Lady Dawn connected to tow bridle at 11:00 hrs. Rig @ 38' draft @ 11:13 hrs. |
| PA | P | PLD | 1230 | 2130 | 9.00 | 2575.0 m | Run and lay out stands of 5" drill pipe racked in the derrick.<br><br>Lady Dawn on tow bridle, Pacific Challenger recovering anchors - 45mins lost with broken Hyd hose lifting No.4., 1 hr lost with tangled work wire on No.8. Pacific Challenger completes primary anchor recovery (2, 6 and 3). |
| PA | TP | AH | 2130 | 2400 | 2.50 | 2575.0 m | Pacific Challenger working on tangled tow wire |

## Operations For Period 0000 Hrs to 0600 Hrs on 25 Dec 2003

| Phse | Cls | Op | From | To | Hrs | Depth | Activity Description |
|---|---|---|---|---|---|---|---|
| PA | TP | AH | 0000 | 0345 | 3.75 | 2575.0 m | Waiting on Pacific Challenger to straighten tow wire. |
| PA | P | AH | 0345 | 0400 | 0.25 | 2575.0 m | Challenger straightens tow wire @ 03:50. Connects to tow bridle. Rig pulls #7 anchor. Anchor racked @ 04:00. Rig Released and commence tow to Fremantle.<br><br>Distance to travel: 1538 NM ETA January 7, 2004. |

## Phase Data to 2400hrs, 24 Dec 2003

| Phase | Phase Hrs | Start On | Finish On | Cum Hrs | Cum Days | Max Depth |
|---|---|---|---|---|---|---|
| RIG MOVE/ RIG-UP/ PRESPUD(RM) | 79 | 05 Dec 2003 | 08 Dec 2003 | 79 | 3 days | 0 m |
| CONDUCTOR HOLE(CH) | 31.5 | 08 Dec 2003 | 09 Dec 2003 | 110.5 | 5 days | 268.0 m |
| SURFACE HOLE(SH) | 27.5 | 09 Dec 2003 | 10 Dec 2003 | 138 | 6 days | 777.0 m |
| SURFACE CASING(SC) | 102 | 10 Dec 2003 | 15 Dec 2003 | 240 | 10 days | 777.0 m |
| PRODUCTION HOLE(PH) | 117.75 | 15 Dec 2003 | 20 Dec 2003 | 357.75 | 15 days | 2575.0 m |
| EVALUATION PRODUCTION HOLE(EP) | 43.25 | 20 Dec 2003 | 21 Dec 2003 | 401 | 17 days | 2575.0 m |
| PLUG AND ABANDON(PA) | 74 | 21 Dec 2003 | 24 Dec 2003 | 475 | 20 days | 2575.0 m |

## Survey

| MD (m) | Incl Deg (deg) | Corr. Az (deg) | TVD (m) | 'V' Sect (m) | Dogleg (deg/ 30m) | N/S (m) | E/W (m) | Tool Type |
|---|---|---|---|---|---|---|---|---|
| 2179.66 | 0.45 | 356.67 | 2179.5 | 26.10 | 0.05 | 26.10 | 4.08 | MWD |
| 2352.55 | 0.50 | 187.16 | 2352.4 | 26.03 | 0.16 | 26.03 | 3.94 | MWD |
| 2524.20 | 0.70 | 194.84 | 2524.0 | 24.28 | 0.04 | 24.28 | 3.58 | MWD |
| 2575.00 | 0.86 | 204.43 | 2574.8 | 23.63 | 0.12 | 23.63 | 3.34 | MWD |

## Personnel On Board

| Company | Pax |
|---|---|
| Santos | 0 |
| DOGC | 38 |
| DOGC Other | 1 |
| Total Marine Catering | 8 |
| Total Marine | 8 |
| DOGC Service | 2 |
| Total | 57 |

## Casing

| OD | L.O.T. / F.I.T. | Csg Shoe (MD/TVD) | Cementing |
|---|---|---|---|
| 30 " | N/A | 268.0 m / 268.0 m | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed |
| 13 3/ 8" | L.O.T. - 11.50 ppg | 768.9 m / 768.9 m | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. |
| 9 5/ 8" | L.O.T. - 10.50 ppg | 1801.0 m / 1801.0 m | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. |

## HSE Summary

| Events | Date of Last | Days Since | Remarks |
|---|---|---|---|
| Abandon Drill | 07 Dec 2003 | 17 Days | |
| BOP Test | 07 Dec 2003 | 17 Days | |
| Fire Drill | 07 Dec 2003 | 17 Days | |
| First Aid | 21 Dec 2003 | 3 Days | Derrickman injured shoulder while holding onto HWDP. |
| Lost Time Incident | 24 Apr 2001 | 973 Days | None |
| Near Miss | 11 Dec 2003 | 13 Days | Loss of load control picking up 18-3/ 4" wellhead - no injury. |
| Pre-Tour Meeting | 23 Dec 2003 | 1 Day | Pre tour operational & safety meetings - discuss current work and potential hazards. |
| Safety Meeting | 07 Dec 2003 | 17 Days | |
| Walkabout | 23 Dec 2003 | 1 Day | Walk around rig inspection / hazard identification. |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Lady Dawn** | 05:15 23/ 12/ 03 | | On tow bridal. | |

| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

| Boats | Arrived (date/time) | Departed (date/time) | Status | Bulks |
|---|---|---|---|---|
| **Pacific Challenger** | 16:30 23/ 12/ 03 | | Normal standby and collision avoidance monitoring. | |

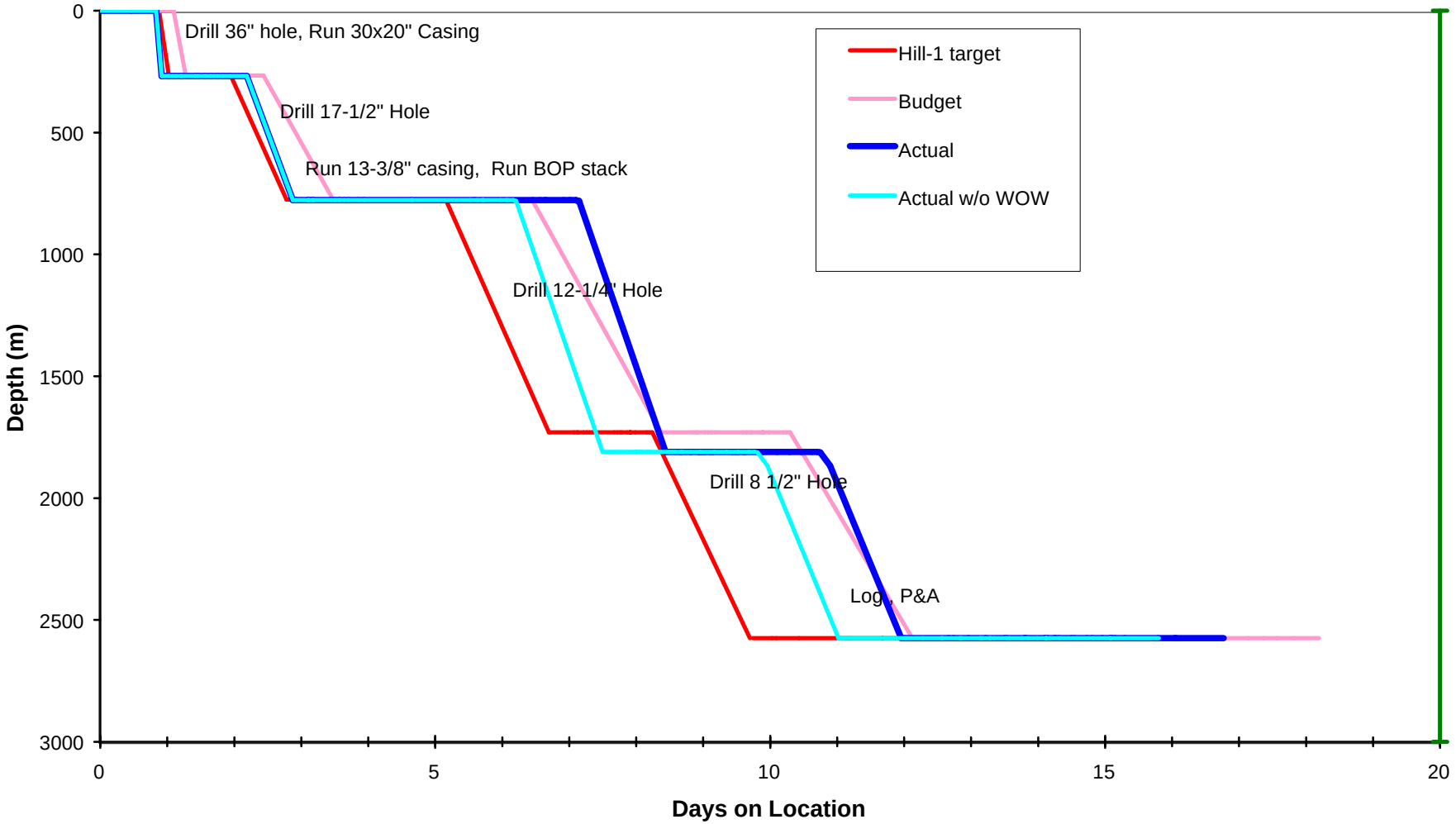
| Item | Unit | Quantity |
|---|---|---|
| Barite | sx | 0 |
| Cement | sx | 0 |
| Gel | sx | 0 |
| Potable Water | MT | 0 |
| Drill Water | MT | 0 |
| Mud | sx | 0 |
| Fuel | MT | 0 |
| Jet Fuel | Litres | 0 |

## Helicopter Movement

| Flight # | Time | Destination | Comment | Pax |
|---|---|---|---|---|
| 1 | 08:52 | Ocean Epoch | 9 x DOGC | 9 |
| 1 | 09:05 | Essendon | 12 x DOGC | 12 |
| 2 | 13:35 | Ocean Epoch | 1 x Total Marine | 1 |
| 2 | 13:46 | Essendon | 1 x Santos Supv, 1 x Smith, 1 x Halliburton, 1 x Drill Quip, 6 x ROV | 10 |
| 3 | 18:30 | Essendon | 1 x Santos Supv. | 1 |

# SECTION 7 : TIME / DEPTH CURVE

# Days vs Depth - Hill 1



# SECTION 8 : BHA SUMMARY

DFE above MSL : 22.4 m | Lat : 38 Deg 48 Min 50.37 Sec | Spud Date : 08 Dec 2003 | Release Date : 25 Dec 2003

Water Depth : 212.8 m | Long : 141 Deg 50 Min 39.58 Sec | Spud Time: 21:00 | Release Time: 04:00

## BHA Record

| # | Date-in | Length | Weight | Weight Blw/Jar | String Weight | Pick-Up Weight | Slack-Off Weight | Torque Max | Torque on Bottom | Torque off Bottom | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08 Dec 2003 | 214.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Spud BHA. (incorporating pre assembly of 17 1/ 2" stabilisers/ BHA.) |
| 2 | 10 Dec 2003 | 268.0 | 0 | 0 | 255.0 | 255.0 | 252.0 | 0 | 0 | 0 | 17.5" Bit, NB Stab c/ w; ported float; Anderdrift with totco, 17.5" Stab, 1 x 9.5" DC, 17.5" Stab, 2 x 9.5" DC's, x/ o, 6 x 8.25" DC's, 8" Jar, 3 x 8.25" DC's, 8" Accel, 1 x 8.25 DC, x/ o, 12 x 5" HWDP. |
| 3 | 11 Dec 2003 | 257.7 | 0 | 0 | 292.0 | 295.0 | 290.0 | 20000 | 8000 | 1500 | PDC / MWD Packed BHA |
| 4 | 18 Dec 2003 | 280.4 | 0 | 0 | 345.0 | 350.0 | 340.0 | 7000 | 5000 | 1500 | PDC bit, 8-1/ 2" NBRR, X/ O, MWD, X/ O, 8-1/ 2" RR, X\\O, 12 x 6-1/ 4" DCs, X/ O, 6-1/ 2" Jars, X/ O, 3 x 6-1/ 4" DCs, 12 x 5" HWDP |

# SECTION 9 : BIT RECORD & PERFORMANCE SUMMARY

DFE above MSL : 22.4 m | Lat : 38 Deg 48 Min 50.37 Sec | Spud Date : 08 Dec 2003 | Release Date : 25 Dec 2003

Water Depth : 212.8 m | Long : 141 Deg 50 Min 39.58 Sec | Spud Time: 21:00 | Release Time: 04:00

# Bit Record

Well: Hill #1

| Date In | IADC | Bit# | Size in | Ser # | Mfr | Type | Jets # x / 32nd" | D.In m | D.Out m | Prog m | Hrs o/b | SPP psi | Flow gpm | WOB klb | RPM | MW | TFA | ROP m/ hr | I | O1 | D | L | B | G | O2 | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 Dec 2003 | 1-1-1 | 1 RR1 | 26.00 | MJ5779 | SMITH | DSJ | 3 x 24 | 235.2 | 268.0 | 32.8 | 1.41 | 1550.00 | 1200.00 | 1.00 | 50.00 | 8.80 | 1.326 | 23.26 | 1 | 1 | FC | A | 2 | I | NO | TD |
| 10 Dec 2003 | 115 | 2 | 17.50 | X83718 | REED | EMS11GC | 4 x 20 | 268.0 | 777.0 | 509 | 13.93 | 2500.00 | 1000.00 | 10.00 | 115.00 | 8.80 | 1.227 | 36.54 | 0 | 0 | NO | A | N | I | NO | TD |
| 14 Dec 2003 | M333 | 3 | 12.25 | 7001149 | HUGHES | HC605 | 7 x 11 | 777.0 | 1810.0 | 1033 | 23.8 | 3189.08 | 716.89 | 30.00 | 150.00 | 8.80 | 0.65 | 43.40 | 7 | 3 | BT | C | X | 1 | PN | TD |
| 18 Dec 2003 | M223 | 4 | 8.50 | 103130 | HYCALOG | DSX104 | 5 x 12 | 1810.0 | 2575.0 | 765 | 23.5 | 3700.00 | 650.00 | 29.26 | 150.00 | 9.20 | 0.552 | 32.55 | 2 | 4 | WT | T | X | I | CT | TD |

# SECTION 10 : DRILLING FLUIDS REPORT


# Drilling Fluids End of Well Report

| | | |
|---|---|---|
| Operator | : | **Santos** |
| Well Name | : | **Hill - 1** |
| Block No. | : | **VIC/P 51** |

| | | | |
|---|---|---|---|
| **Country:** | Australia | **Mud Engineers:** | W. McKay, R. Tena, M. Griffin |
| **Well Description:** | Exploration | | |
| **Contractor:** | Diamond Offshore | | |
| **Rig:** | Ocean Epoch | | |
| **Well Start Date:** | 8 December 2003 | **Mud Co-ordinator:** | C. Hargreaves & B. Guthrie |
| **Well Final Date:** | 22 December 2003 | **RKB to Seabed:** | 235.2 m |
| **Well Spud Date**: | 8 December 2003 | **Well TD:** | 2,575.0m |
| **Well TD Date:** | 20 December 2003 | | |
| **Well Days:** | 15 | | |

| Hole Size | Total Depth (m) | Casing Size (in) | Casing Depth (m) | Mud Type | Mud Weight (sg) | Interval Problems | Meters Drilled | Days |
|---|---|---|---|---|---|---|---|---|
| 36 inch | 268 | 30 x 20 | 268 | SW / PHB sweeps | 1.05 | None | 32.5 | 2 |
| 17.5 inch | 777 | 13.375 | 777 | SW / PHB sweeps | 1.05 | None | 509 | 2 |
| 12.25 inch | 1,810 | 9.625 | 1,801 | KCl / Polymer | 1.06 - 1.09 | Minimal Losses | 1,033 | 2 |
| 8.5 inch | 2,575 | N/a | N/a | KCL / Polymer / PHPA | 1.09 - 1.17 | None | 765 | 3 |
| P & A | N/a | N/a | N/a | N/a | 1.17 | None | N/A | 1 |

| | Days | Day Rate | |
|---|---|---|---|
| Engineer 1 | 09 | 880.00 | 7,920.00 |
| Engineer 2 | 10 | 680.00 | 6,800.00 |
| Engineer 3 | 09 | 880.00 | 7,920.00 |

# TABLE OF CONTENTS

# 1 SUMMARIES

## 1.1 Well Summary

| | | | |
|---|---|---|---|
| **Operator :** | **Santos SBU** | **Well Name :** | **Casino - 3** |
| **Contractor :** | **DOGC** | **Rig :** | **Ocean Epoch** |
| **Well Type :** | **Exploration** | **RKB – Sea Level :** | **25.0m** |
| **Ending Inc :** | **0.86 deg** | **RT – Wellhead :** | **233.18 m** |
| **Arrival Date :** | **8 December 2003** | **Well TD :** | **2,575 m** |
| **Spud Date :** | **8 December 2003** | **TD Date :** | **20 December 2003** |
| **Days on Well :** | **15** | **Date Left :** | **23 December 2003** |

| Interval | Hole Depth (m) | Casing Size (inch) | Depth (m) | Mud Wt (sg) | Mud Type |
|---|---|---|---|---|---|
| 36.0 inch | 268 | 30 x 20 | 268 | 1.04 | Seawater / PHB Sweeps |
| 17.5 inch | 777 | 13.375 | 777 | 1.04 | Seawater / PHB Sweeps |
| 12.25 inch | 1,810 | 9.625 | 1,801 | 1.04 - 1.09 | Seawater PHB - KCl / Polymer |
| 8.5 inch | 2,575 | N/a | N/a | 1.17 | KCL/Polymer/PHPA |
| P & A | 2,575 | N/a | N/a | 1.17 | Inhibited KCl/Polymer/PHPA Mud |

| Interval | Days | Metres Drilled | Fluid Vol. Required (bbls) | | Fluid Vol. Used (bbls) | bbl / metre | | |
|---|---|---|---|---|---|---|---|---|
| 36.0 inch | 2 | 32.5 | 642 | | 634 | 19.5 | | |
| 17.5 inch | 2 | 509 | 3,902 | | 2,978 | 5.9 | | |
| 12.25 inch | 2 | 1,033 | 5,349 | | 3,137 | 3.0 | | |
| 8.50 inch | 3 | 765 | 2,436 | | 738 | 1.0 | | |
| P & A | 1 | | 0 | | 0 | | | |
| **Totals** | **10** | **2,339.5** | **12,329** | | **7,487** | 3.2 | | |

| | |
|---|---|
| **Engineers:** | **Will McKay, Romeo Tena, Mike Griffin ( 9 + 19 + 9 days)** |

## 1.2 Fluid Summary

| FORMATION | LITH | HOLE DEPTH RT | HOLE SIZE & CASING SIZE & DEPTH (RT) | DRILLING FLUID SYSTEM | PRODUCT | CONC | AVERAGE PROPERTIES | | COMMENTS AND TREATMENTS |
|---|---|---|---|---|---|---|---|---|---|
| | RT DEPTH (MSS DEPTH) | AIR GAP 22m | | | | | | | |
| | Water Depth 235 metres | Sea Bed 257m | 19 in Riser 257m | | | | | | |
| LIME STONE | UNDIF TERTIARY CARBONATES | | 36 in HOLE 30 x 20 in CONDUCTOR | SEA WATER BENTONITE SWEEPS | BENTONITE | 30-35 PPB | DENSITY | 1.05 sg | Drilled first 5 m with PHB |
| | | | | | CAUSTIC SODA | 0.1 PPB | VISCOSITY | 160 | Pumped one 50 bbl sweep per joint |
| | | | | | SODA ASH | 0.1 PPB | YP | 72 | Pumped 50 bbl sweep at TD |
| | | | | | | | 6 RPM | 56 | Displaced hole to 200 bbl PHB |
| | | | | | | | pH | 10.6 | Wiper trip showed no fill on bottom |
| | | 268 | Shoe @ 268 m | *TD Displacement*: Prehyd. Bentonite @ 1.5 x Hole | | | | | Displaced hole to 200 bbl PHB |
| | | | 17.5 in HOLE 13 3/8 in CASING | SEA WATER BENTONITE SWEEPS | BENTONITE | 30-35 PPB | DENSITY | 1.05 sg | |
| | | | | | CAUSTIC SODA | 0.1 PPB | VISCOSITY | 140 | Pumped 60 bbl Flocculated sweeps |
| | | | | | SODA ASH | 0.1 PPB | YP | 81 | Mid-stand |
| | | | | | | | 6 RPM | 43 | 80 bbl PHB Pill spotted around BHA on connections. |
| | | | | FLOCCULATED BENTONITE SWEEPS | BENTONITE | 30-35 PPB | | | Two sweeps ( 60 + 80 bbls ) pumped at TD |
| | | | | | CAUSTIC SODA | 0.1 PPB | | | Hole displaced to 700 bbls of PHB. |
| | | | | | SODA ASH | 0.1 PPB | | | Hole in good condition. |
| | | | | | LIME | 0.3 PPB | | | 13 3/8 in casing run with no difficulties. |
| | | 777 m | Shoe @ 777 m | *TD Displacement*: Prehyd. Bentonite @ 1.5 x Hole Volume | | | | | |
| | | | 12.25 in HOLE | INITIALLY SEWATER SWEEPS ALLOW SYSTEM TO MUD UP CHANGED TO KCL/PHPA AS DIRECTED | BENTONITE | 20-25 PPB | DENSITY | 1.03-1.05 sg | Build up gel system using hi-vis sweeps |
| | | | | | CAUSTIC SODA | 0.1 PPB | VISCOSITY | 50 + | Dump and dilute as required |
| | | | | | SODA ASH | 0.1 PPB | YP | 30 + | Additions of fibrous LCM may be required |
| | | | | | DRISPAC | 0.5 PPB | 6 RPM | 10 + | if losses are observed. Use Kwikseal and |
| | | | | | FIBROUS LCM | 5-8 PPB | | | Check-Loss to +/-8.0ppb. Revert back to seawater ans sweeps if losses are too great |
| WANGERRIP | MUDST | | | | | | | | The mus system was chenged out to a basic |
| TIMBOON SST | | | | | | | | | 8% KCL Polymer as requested by Co Rep at |
| | | 1640 m | Shoe @ 1801 m | *TD Displacement*: H | Retrieve mud while carrying out the 9 5/8" cement job | | | | 1,500m. Actual mud weight was 1.09sg |
| | | | | | | | | | Retriewd 700bbls of mud during cement job |
| TIMBOON MUDST EOVT | MUDST | | 8.5 in HOLE | AQUADRILL 8% KCL 3% AQUACOL 0.75PPB PHPA | AQUACOL | 1.5 % V/V | DENSITY | 1.05-1.22 sg | Initial mud weight was 1.09sg. |
| | | | | | AQUACOL B | 1.5 %V/V | PV | 15 - 25 | |
| | | | | | KCL | 30 PPB | YP | 20 - 30 | Mud weight will be increased to 1.20sg prior |
| | | | | | NaOH | 0.1 GPB | 6 RDG | 8 - 12 | to reaching 2,000m. |
| | | | | | GLUT'DHYDE | A/R PPB | API | < 6.0 | |
| | | | | | DRISPAC R | 1.0 PPB | HTHP | <18.0 | Use most inhibitive mud system |
| | SAND STONE | | | | DRISPAC SL | 2.0 PPB | PHPA | 1-1.5 ppb | |
| | | | | | NEW DRILL L | A/R PPB | KCL | 8% | If seepage losses are observed use a |
| | | | | | NEW DRILL P | 1.0 PPB | AQUACOL | 3% | bridging agent. |
| | | | | | FLOWZAN | 1-1.25 PPB | MAX LGS | 6% | |
| | | | | | | | | | Maintain the KCL value at 8% |
| | | | | | | | | | Pump hi-vis sweeps prior to POOH |
| NULLAWARRE | | | | TREAT THE MUD WITH NOXYGEN & BIOCIDE PRIOR TO ABANDONMENT | | | | | Added Noxygen and Gluter aldahyde prior to the abandonment programme |
| BELFAST | | | | | | | | | |
| | 2575 | 2575 m | TD @ 2575 m | | | | | | |

# 2 INTERVAL DISCUSSION

## 2.1 36 in Interval 235.2 to 268 m

### 2.1.1 Drilling Summary

The Ocean Epoch arrived on location on December 8th 2003. The anchors were run and the rig was ballasted down to 55 foot drilling draft. The 26 inch BHA was made up with a 36 inch hole opener and the seabed was tagged at 235.2 m. The well was then spudded and drilled to 268 m.

The first 5 m of hole was drilled with pre-hydrated gel at 470 gpm. Once the hole opener was buried the flow rate was increased to 1,200 gpm whilst pumping seawater. A 50 bbl PHB sweep was pumped on each joint of drill pipe. At TD a final 50 bbl sweep was pumped and the hole displaced with 200 bbls (1.5 times the hole volume) of PHB.

A wiper trip to the mud-line was carried out. No fill was seen when running back to bottom. The hole was then re-displaced with 200 bbls PHB and the string was pulled from the hole.

The 30 x 20 inch casing was run with the shoe set at 268 m. The casing was cemented as per programme, however it had to be held in position until the cement had gone off, to ensure the casing remained vertical. A top-up grouting job was carried out on the annulus to give good cementation to surface.

### 2.1.2 Fluid Selection

This interval was drilled using seawater and 50 bbl PHB sweeps pumped every joint, with returns to the seabed.

### 2.1.3 Fluid Parameters

| Property | Programmed | Actual |
|---|---|---|
| Density (sg) | Unweighted | 1.04 |
| Funnel Viscosity (seconds) | > 100 | 140 - 160 |
| 6 rpm (dial units) | > 40 | 40 - 60 |
| Yield Point (lbs / 100ft$^2$) | > 50 | 71 - 77 |

### 2.1.4 Rheology

Rheology was controlled via the 6 rpm reading, which was in excess of 40.

### 2.1.5 Solids Control

No solids control equipment was used as returns were to the seabed.

### 2.1.6 Lost Circulation

No losses were observed during this interval.

### 2.1.7 Recommendations

- This fluid regime was successful and is recommended for other wells in the location.

## 2.2 17 ½ in Interval 268 to 777 m

### 2.2.1 Drilling Summary

This interval was drilled using one roller cone bit in 16.5 hours. A 17 ½" drilling assembly was made up and run in hole, the top of cement was tagged at 264 m. The cement and shoe-track were drilled out with seawater.

When drilling ahead one 60 bbl flocculated PHB sweep was pumped halfway down a stand and an 80 bbl PHB pill spotted prior to connections. The hole was reported to be in good condition throughout and the driller found no need to increase the frequency or volume of sweeps. At TD the hole was swept with one 60 bbl flocculated sweep then an 80 bbl PHB sweep, the hole was then displaced to 700 bbls of PHB (1.5 x open hole volume) prior to pulling out of hole. The hole was reported to be in good condition, therefore no wiper trip was required.

The 13 ? inch casing was run in with no problems. The shoe was set at 777 m. The casing was cemented according to plan with cement returns observed at seabed.

### 2.2.2 Fluid Selection

This interval was drilled with seawater and 60 bbl flocculated PHB sweeps. The intermediate sweeps consisted of 32-35 ppb bentonite and 2 ppb lime. This was mixed with seawater just prior to pumping at a 2:1 ratio. This formula was adopted in order to conserve bentonite volume on board. The pills spotted on bottom, prior to a connection, were still made up with 35 ppb bentonite only, as per the previous interval.

### 2.2.3 Fluid Selection

| Property | Programmed | Actual |
|---|---|---|
| Density (sg) | Unweighted | 1.05 |
| Funnel Viscosity (seconds) | > 100 | 128 - 142 |
| 6 rpm (dial units) | > 40 | 41 - 48 |
| Yield Point (lbs / 100ft$^2$) | > 50 | 71 - 81 |

### 2.2.4 Rheology

Rheology was controlled via the 6 rpm reading, which was in excess of 40.

### 2.2.5 Solids Control

No solids control equipment was used as returns were to the seabed.

### 2.2.6 Lost Circulation

No losses were observed on this section.

### 2.2.7 Recommendations

- This fluid regime was successful and is recommended for other wells in this location.
- The use of lime and seawater for flocculated PHB provided adequate hole cleaning, when pumped as sweeps, and conserved bentonite stocks. The use of flocculated sweeps was acceptable in the formation drilled (massive carbonates) where hole stability was not as critical as it would be in a sandstone / claystone sequence.
- Guar gum was available on the rig and also could have been used to conserve bentonite stocks. Bentonite is the preferred viscosifier for this section but guar gum can be used if there is insufficient bentonite stocks or if the bentonite mixing system breaks down.
- The load cell on the Bentonite surge tank in the sack-room was not fitted. This was a great disadvantage in accurately monitoring the use of Bentonite in a top-hole section. In this case the tendency was to over-estimate the usage which led to a 'leaner' mix being used.

## 2.3 12 ¼ in Interval 777 to 1,810 m

### 2.3.1 Drilling Summary

This interval was drilled using one bit run and took 33 hours. The only problem encountered was a suspected down hole mud loss of 12 bbls over a 15 minute period. The loss immediately stopped but nevertheless, an LCM pill was pumped round as a precaution against further losses.

The BOP stack was landed and the riser latched onto the landing joint. Almost two days were then lost while waiting on weather. A 12 ¼" inch drilling assembly, with an insert bit was made up and run in hole, tagging the top of cement at 742 m. The cement, float and shoe were drilled and the rat hole cleaned with seawater and PHB sweeps. A LOT was performed, this gave a result of 1.26 sg (260 psi).

The drilling fluid for this section was primarily an enclosed sea water system with hi-viscosity gel sweeps being pumped until a workable gel/sea water system was established. The mud system was worked very well and gave no cause for concern. The rheology profile was good which resulted in good hole cleaning. Once the system was closed in the mud usage was in line with estimated dilution rates giving another indication of good hole cleaning properties.

A decision was made by the Santos Company Representative to make up a full circulating system of KCL/Polymer mud and to displace the gel system out of the well bore. A hi-viscosity pill was made up and pumped prior to pumping the new drilling fluid to give a good clear interface between the two drilling fluid systems. The displacement went ahead without any problems and drilling continued as directed.

At 1,706 m down hole losses were encountered, 12 bbls of mud was lost over a fifteen-minute period. A LCM pill was made up as per the drilling fluid programme but before it could be pumped, the loss had ceased. The LCM pill was subsequently pumped as a precaution against further losses. At a depth of 1,810 m TD was called. A 50 bbl hi-viscosity pill was pumped round the well bore. An increase in the cuttings coming over the shale shakers was observed. However this increase only lasted for a couple of minutes indicating that the hole cleaning had been good while drilling this section.

The 9 ? " casing was run and landed at 1,801 m, with light washing required on the last few joints. The casing contents were circulated prior to the commencement of the cementing programme. A minimal volume of cuttings was observed over the shale shakers while circulating. All recoverable mud was retrieved and conditioned for the 8 ½" section as discussed by the Mud Engineer and the Company Representative. The casing was then cemented as per programme with no problems.

### 2.3.2 Fluid Section

Both the gel/seawater and the KCL/Polymer drilling fluid systems worked very well during the 12 ¼" section and gave no cause for concern. The gel/seawater system gave good hole cleaning properties and reasonable fluid loss values. The KCL/Polymer system gave very good cleaning capabilities, the fluid loss was tightened up with this system with additions of Drispac R and Milpac LV. Both systems gave a good filter cake.

### 2.3.3 Fluid Parameters

Programmed and actual fluid properties while drilling are shown below.

| Property | Units | Initially Programmed | 1st System Actual | 2nd System Actual |
|---|---|---|---|---|
| Density | sg | 1.03 - 1.05 | 1.03 - 1.04 | 1.06 - 1.11 |
| Funnel Viscosity | sec / qt | > 50 | 54 - 75 | 54 - 56 |
| Plastic Viscosity | cP | Not Programmed | 8 - 18 | 10 - 16 |
| Yield Point | lb / 100 $ft^2$ | 30+ | 26 - 40 | 15 - 23 |
| 6 rpm Reading | dial units | 10+ | 15 -38 | 9 |
| Low Gravity Solids | % | < 5.0 | 0.8 - 4.9 | 0.8 - 3.09 |
| API Fluid Loss | mL / 30 min | <10 | 23 | 6.5 - 8.0 |
| PHPA Conc. | lb / bbl | Not Programmed | 0 | 0 |
| KCl Conc. | % | Not Programmed | 0 | 7.5 - 8.0 |
| Glycol | % | Not Programmed | 0 | 0 |
| pH | | 8.5 - 9.5 | 9.0 - 10.0 | 8.5 |

**Fluid Density**

The fluid density at the beginning of the interval was 1.03 sg as there was no potassium chloride or barite in the drilling fluid. When displacing out the gel system to the KCL/Polymer fluid the initial mud weight was 1.05 sg. By TD the weight had increased to 1.11 sg. The increase in weight was a direct result of having no centrifuge on board and the de-silter and de-sander did not work very well. Having a limited stock of fine shaker screen also contributed to the rise in mud weight. However the mud weight increase caused no problems but if it had been a longer section there may have been cause for concern.

**Fluid Loss**

The API fluid loss was programmed to be less than 10 mls. The initial fluid had a higher fluid loss than desired but there was no time to treat it as a decision had been made to change out the drilling fluid. Once the KCL/Polymer was introduced the fluid loss came down to 6.5 mls.

**Rheology**

The rheology was maintained with Mil-Gel on the first system and Flowzan on the second system. Once drilling was underway the rheology remained roughly constant with the Plastic Viscosity ranging from 10 - 16 cP and Yield Point 15 - 23 lb/100 $ft^2$. These properties were achieved even though the mud weight increased from 1.06 to 1.11 sg through the interval.

### 2.3.4 Solids Control

| | Shaker #1 | Shaker #2 | Shaker #3 | Shaker #4 |
|---|---|---|---|---|
| **At start of section** | 84 | 120 | 120 | 84 |
| **At end of section** | 180 | 180 | 180 | 180 |
| **Typically** | 180 | 180 | 180 | 180 |

The shakers were initially dressed with 84 and 120 mesh screens, these were changed to 145 once the KCL/Polymer mud was introduced. As drilling progressed all four shakers were dressed with 180 mesh screens and could still handle a flowrate of 850 gpm.

The rig has a three cone (12 inch) de-sander and twelve cone (4 inch) de-silter. The de-sander was only utilised for a short period as it was found to be functioning incorrectly and mainly discharged active mud. The de-silter was not run as it did not seem to function properly.

There was no centrifuge installed for this well.

### 2.3.5 Lost Circulation

There was a brief loss of 12 bbls down hole at a depth of 1,706 m. A LCM pill was pumped to prevent further losses. No more losses were observed during the remainder of the section.

### 2.3.6 Recommendations

- If drilling another well with similar formations it would be advisable to install a centrifuge as the solids control equipment on board did not seem to operate correctly. This meant that the only way to maintain the desired mud weight with minimal low gravity solids was to dump and dilute.
- The de-sander and de-silter on board require attention. They did not function properly, but with some maintenance they should be able to operate correctly.
- The mixing hopper requires new parts as at present only one mix line can be used. This causes problems during tripping as it feeds the trip tank and cannot be used for mixing. If mixing is required during a trip, the time is limited to when the trip tank is not required.

## 2.4 8 ½" Interval 1,810 to 2,575 m

### 2.4.1 Drilling Summary

This interval was drilled using one bit run and took 23.5 hours.

The 8 ½" drilling assembly was ran in the hole and tagged the cement at a depth of 1,752 m. The cement, float, shoe and 9 m of shoe track were drilled out using seawater and viscous gel sweeps. The hole content was then displaced out to an Aquadrill drilling fluid. Once an even mud weight had been established in and out of the hole, a LOT was performed. The equivalent mud weight reached was 1.26 sg.

The ROP was very good throughout the entire section and TD was reached at a depth of 2,575 m in 23.5 hrs. At TD a 50 bbl hi-viscosity pill was pumped followed by 100 bbls of drilling fluid tailed with another 50 bbl hi-vis pill.

The hole was then circulated clean and a 20 bbl 1.40 sg slug was pumped prior to pulling out of the hole. The drill string required pumping out to the 9 ? " shoe. The hole was very tight which resulted in taking six hours to pull back to the 9 ? " casing shoe. The drill string was ran back to bottom encountering no hole problems. Once on bottom, two 100 bbl hi-viscosity pills were pumped and the hole was circulated clean. Another 20 bbl 1.40 sg slug was pumped and the drill string was brought back to surface without encountering any difficulties.

The wire line logs were run as per programme followed by the Santos Abandonment Programme.

### 2.4.2 Fluid Section

This particular Aquadrill system incorporated 8% KCL and 1.5% by volume of both Aquacol and Aquacol B. The PHPA concentration was programmed to start at 1.0 ppb. It was felt that it would be prudent to begin drilling with a lower concentration and slowly build up to a desired value while drilling ahead.

Experience on Casino-3 indicated that a full 1.0 ppb concentration at the beginning assisted shaker screen blinding which caused considerable surface mud loss. Although this particular well's lithology varied from Casino-3, it was decided to air on the side of caution.

As previously discovered on Casino-3 this drilling fluid worked very well. The inhibition was excellent and the PHPA provided good clay encapsulation properties. The only problem encountered was in maintaining the desired mud weight. The solids control package was very poor and there was no centrifuge installed for this campaign. Having a limited stock of fine shaker screens meant that it was difficult to keep the low gravity solids at the desired percentage.

### 2.4.3 Fluid Parameters

Programmed and actual fluid properties while drilling are shown below.

| Property | Units | Programmed | System Actual |
|---|---|---|---|
| Density | sg | 1.05 - 1.22 | 1.03 - 1.17 |
| Funnel Viscosity | sec / qt | 50 - 70 | 54 - 75 |
| Plastic Viscosity | cP | 15 - 25 | 8.0 - 18 |
| Yield Point | lb / 100 $ft^2$ | 20 - 30 | 26 - 40 |
| 6 rpm Reading | dial units | 8 - 12 | 15 -38 |
| Low Gravity Solids | % | < 6.0 | 0.8 - 4.9 |
| API Fluid Loss | mL / 30 min | <6.0 | 4.2 - 7.5 |
| PHPA Conc. | lb / bbl | 1.0 | 0.75 |
| KCl Conc. | % | 8.0 | 8.0 - 8.5 |
| Glycol | % | 3% Total | 2.75 - 3.0 |
| pH | | 8.5 - 9.5 | 8.5 - 9.0 |

**Fluid Density**

The fluid density at the beginning of the interval was 1.09 sg. The weight was 0.025 sg greater than initially desired as the drilling fluid used to begin the section was mainly the remaining 12.25" section mud.

**Fluid Loss**

The API fluid loss was programmed to be less than 6 mls. The initial fluid had a API fluid loss of 7.5 mls but within 8 hours it had been lowered to less than 5.0 mls. At the section TD the final fluid loss was recorded at 4.5 mls.

**Rheology**

The rheology was maintained with Flowzan and Drispac Regular without any difficulties. The initial 6 & 3 rpm readings on the Fann Viscometer was 9 & 7 but was increased to 10 & 8. By TD they had reached 11 & 9 which gave very good hole cleaning properties.

### 2.4.4 Solids Control

| | Shaker #1 | Shaker #2 | Shaker #3 | Shaker #4 |
|---|---|---|---|---|
| **At start of section** | 180 | 165 | 165 | 180 |
| **At end of section** | 165 | 230 | 230 | 180 |
| **Typically** | 165 | 230 | 230 | 180 |

The shakers were initially dressed with 165 and 180 mesh screens, these were changed as soon as practicable to 180 mesh all round. Once it was obvious that the shale shakers were handling the flow two shakers were dressed with 230 mesh screens which was the desired screen size.

The only problem encountered was the limited supply of these fine screens. This scarcity resulted in the use of coarser screens to replace the torn fine screens until such a time that the finer screens could be repaired.

As on the previous section the de-sander was only utilised for a short period of time as it was not functioning efficiently and mainly discharged whole mud. The de-silter was not run as it did not seem to function properly at all. There was no centrifuge installed for this well. All of these contributing facts resulted in a greater mud weight than the well bore required.

### 2.4.5 Lost Circulation

No losses were observed during this section.

### 2.4.6 Recommendations

- As on the 12 ¼" section it is very important to have the services of a centrifuge. It was obvious on this section that if a centrifuge had been made available there would have been no mud weight issues.
- The de-sander and de-silter on board require some attention.
- A different procedure for ordering shale shaker screens is required. There had been various orders put in with the store man on the previous well for a greater variation and quantity of finer screens. This well had been completed and the outstanding orders had not come on board by the time the rig went under tow. This ordering procedure either requires re-structuring or the shore based staff need to be more efficient regarding delivery if the best possible results are to be obtained regarding drilling fluid properties.

# 3 INTERVAL MATERIAL CONSUMPTION

## 3.1 36 in Interval

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Calcium Chloride[1] | 27 | 25 kg |
| Calcium Chloride | 23 | 25 kg |
| Caustic Soda[2] | 8 | 25 kg |
| Mil-Gel[1] | 34 | 1.0 MT |
| Mil-Gel | 9 | 1.0 MT |
| Soda Ash[2] | 8 | 25 kg |
| Mud transferred out | 1,716 | 1 bbl |
| | | |

## 3.2 17.5 in Interval

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Caustic Soda[2] | 4 | 25 kg |
| Caustic Soda | 3 | 25 kg |
| Lime[1] | 7 | 18.5 kg |
| Mil-Gel | 19 | 1.0 MT |
| Soda Ash[2] | 11 | 25 kg |
| Mud transferred in | 1,716 | 1 bbl |
| | | |

## 3.3 12.25 in Interval

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Caustic Soda | 4 | 25 kg |
| Check-Loss[2] | 8 | 25 lb |
| Circal-1000[2] | 9 | 25 kg |
| Drispac R | 34 | 50 lb |
| Flowzan | 50 | 25 kg |
| Gluteraldahyde | 2 | 25 ltr |
| Guar Gum[1] | 2 | 25 kg |
| LD-8 | 1 | 5 US gal |
| Mil-Bar | 5 | 1.0 MT |
| Mil-Gel | 24 | 1.0 MT |
| Mil-Pac LV | 53 | 25 kg |
| New-Drill Liquid | 5 | 25 kg |
| New-Drill Plus | 12 | 25 kg |
| Potassium Chloride | 28 | 1.0 MT |
| Soda Ash[2] | 17 | 25 kg |
| | | |

[1] Indicates a Loaded Darwin/Dampier Price.
[2] Indicates an Insitu Portland Price.

### 3.4 8.5" in Interval

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Aquacol | 24 | 200 L |
| Aquacol B | 16 | 200 L |
| Caustic Soda | 1 | 25 kg |
| Drispac R | 10 | 50 lb |
| Flowzan | 19 | 25 kg |
| Mil-Bar | 16 | 1.0 MT |
| Mil-Gel | 9 | 1.0 MT |
| Mil-Pac LV | 37 | 25 kg |
| New-Drill Liquid[2] | 7 | 25 kg |
| New-Drill Plus | 35 | 25 kg |
| Potassium Chloride | 22 | 1.0 MT |
| Sodium Bicarbonate[2] | 13 | 25 kg |
| | | |

### 3.5 P & A Interval

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Glutaraldehyde | 4 | 25 ltr |
| Noxygen | 4 | 5 US gal |
| | | |

[1] Indicates a Loaded Darwin/Dampier Price.
[2] Indicates an Insitu Portland Price.

## 3.6 Total Well Consumption

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Aquacol | 24 | 200 L |
| Aquacol B | 16 | 200 L |
| Calcium Chloride[1] | 27 | 25 kg |
| Calcium Chloride | 23 | 25 kg |
| Caustic Soda[2] | 12 | 25 kg |
| Caustic Soda | 8 | 25 kg |
| Check-Loss[2] | 8 | 25 lb |
| Circal-1000[2] | 9 | 25 kg |
| Drispac R | 44 | 50 lb |
| Flowzan | 69 | 25 kg |
| Glutaraldehyde | 6 | 25 ltr |
| Guar Gum[1] | 2 | 25 kg |
| LD-8 | 1 | 5 US gal |
| Lime[1] | 7 | 18.5 kg |
| Mil-Bar | 21 | 1.0 MT |
| Mil-Gel[1] | 34 | 1.0 MT |
| Mil-Gel | 61 | 1.0 MT |
| Mil-Pac LV | 90 | 25 kg |
| New-Drill Liquid[2] | 12 | 25 kg |
| New-Drill Plus | 47 | 25 kg |
| Noxygen | 4 | 5 US gal |
| Potassium Chloride | 50 | 1.0 MT |
| Soda Ash[2] | 36 | 25 kg |
| Sodium Bicarbonate[2] | 13 | 25 kg |
| | | |

## 3.7 Reconciliation:

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Aquacol B | 12 | 200 L |
| Drispac R | -2 | 50 lb |
| Kwikseal F[2] | 10 | 40 lb |
| Kwikseal M[2] | 4 | 40 lb |
| Mil-Bar | 2 | 1.0 MT |
| Mil-Gel | 8.6 | 1.0 MT |
| Mil-Guar[1] | -2 | 25 kg |
| Mil-Pac R | -32 | 25 kg |
| Noxygen | 4 | 5 US gal |
| Potassium Chloride | 2 | 1.0 MT |
| Soda Ash[1] | -10 | 25 kg |
| | | |

[1] Indicates a Loaded Darwin/Dampier Price.
[2] Indicates an Insitu Portland Price.

## 3.8 Material Left on Rig

| ITEM | QUANTITY | UNIT SIZE |
|---|---|---|
| Aquacol | 28 | 200 L |
| Aquacol B | 28 | 200 L |
| Bio-Spot | 4 | 200 L |
| Calcite C300 | 141 | 25 kg |
| Calcium Chloride | 28 | 25 kg |
| Caustic Soda | 38 | 25 kg |
| Chek-Loss[2] | 42 | 25 lb |
| Chek-Loss | 160 | 25 lb |
| Circal 1000[2] | 26 | 25 kg |
| Circal 60/16 | 144 | 25 kg |
| Circal Y | 144 | 25 kg |
| Citric Acid[2] | 17 | 25 kg |
| Citric Acid | 1 | 25 kg |
| Drispac R | 12 | 50 lb |
| Flowzan | 26 | 25 kg |
| Glutaraldehyde | 37 | 25 L |
| Kwikseal F[2] | 25 | 40 lb |
| Kwikseal F | 100 | 40 lb |
| Kwikseal M[2] | 36 | 40 lb |
| Kwikseal M | 90 | 40 lb |
| LD-8 | 19 | 5 US gal |
| Lime | 59 | 18.5 kg |
| Mil-Bar | 49 | 1.0 MT |
| Mil-Gel | 58 | 1.0 MT |
| Mil-Guar[1] | 73 | 25 kg |
| Mil-Guar | 67 | 25 kg |
| Mil-Pac R | 32 | 25 kg |
| Mil-Pac LV | 80 | 25 kg |
| NewDrill Liq[2] | 52 | 5 US gal |
| NewDrill Plus | 76 | 25 kg |
| Noxygen | 24 | 5 US gal |
| Omyacarb 40 | 186 | 25 kg |
| Potassium Chloride | 4 | 1.0 MT |
| Soda Ash[2] | 44 | 25 kg |
| Soda Ash | 6 | 25 kg |
| Sodium Bicarbonate | 27 | 25 kg |
| | | |

[1] Indicates a Loaded Darwin/Dampier Price.
[2] Indicates an Insitu Portland Price.

## 4 MATERIAL RECONCILIATION

**Mud Material Reconciliation**
**Well: Hill-1**

| Product Data | | | Start Inventory on 5 Dec 2003 (SOF, Start) | | | Materials Received per BHI Delivery Dockets | | | | | | | Backload as per BHI Return Docket | | | Material Used by Interval, from Advantage ONLY | | | | | | Final Inventory on 24/12/2003 (Same as SOF, END) | | | Calc Final | Variance (Actual v | Total Material | Total Material |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Product | Unit Size | Unit Cost AUS$ | Ocean Epoch S of F | Lady Dawn | Pacific Chfger | D/D 5471 | D/D 5472 | D/D 5475 | D/D 5476 | D/D 5477 | PO POR8 | PO POR10 | R/D | R/D | R/D | 36" | 17.5" | 12.25" | 8.5" | P&A | Recon | Ocean Epoch | Lady Dawn | Pacific Chfger | Stock | Calc) | Usage | Cost $ |
| Mi Bar, bulk | tonne | 206.70 | 30 | | | | | | | | 42 | | | | | | | 5 | 16 | | -2 | 49 | | | 49 | | 23 | $ 9,824.10 |
| MI-Gel, bulk | tonne | 200.00 | 34 | | | | | | | | | | | | | 34 | | | | | | | | | | | | |
| MI-Gel, bulk | tonne | 323.08 | 46 | | | | | | | | 40.8 | 40.8 | | | | 9 | 19 | 24 | 9 | | 8.8 | 58 | | | 58 | | 89.8 | $ 22,488.37 |
| Aquacol | 55 gal | 830.59 | | | | | | | 40 | 12 | | | | | | | | | 24 | | | 28 | | | 28 | | 24 | $ 19,934.16 |
| Aquacol-B | 55 gal | 1028.14 | | | | | | | 32 | 24 | | | | | | | | | 16 | | 12 | 28 | | | 28 | | 28 | $ 28,787.92 |
| Bio-Spot | 55 gal | 517.80 | 4 | | | | | | | | | | | | | | | | | | | 4 | | | 4 | | | $ - |
| Caliba-C300C | 25 kg | 21.67 | 141 | | | | | | | | | | | | | | | | | | | 141 | | | 141 | | | $ - |
| Calcium Chloride 95% | 25 kg | 24.50 | 27 | | | | | | | | | | | | | 27 | | | | | | | | | | | 27 | $ 661.50 |
| Calcium Chloride 95% | 25 kg | 29.50 | 51 | | | | | | | | | | | | | 23 | | | | | | 28 | | | 28 | | 23 | $ 678.50 |
| Caustic Soda | 25 kg | 46.56 | 12 | | | | | | | | | | | | | 8 | 4 | | | | | | | | | | 12 | $ 558.72 |
| Caustic Soda | 25 kg | 49.56 | 46 | | | | | | | | | | | | | | 3 | 4 | 1 | | | 38 | | | 38 | | 8 | $ 396.48 |
| Chekloss | 25 lb | 44.78 | 50 | | | | | | | | | | | | | | | 8 | | | | 42 | | | 42 | | 8 | $ 358.24 |
| Chekloss | 25 lb | 60.75 | 60 | | | | | 100 | | | | | | | | | | | | | | 160 | | | 160 | | | $ - |
| Circal 1000 | 25 kg | 21.78 | 35 | | | | | | | | | | | | | | | 9 | | | | 26 | | | 26 | | 9 | $ 196.02 |
| Circal 1000 | 25 kg | 32.10 | | | | | | | | | | | | | | | | | | | | | | | | | | $ - |
| Circal 60/16 | 25 kg | 6.22 | 96 | | | | | | 48 | | | | | | | | | | | | | 144 | | | 144 | | | $ - |
| Circal Y | 25 kg | 21.67 | 48 | | | | | | 96 | | | | | | | | | | | | | 144 | | | 144 | | | $ - |
| Citric Acid | 25 kg | 57.88 | 17 | | | | | | | | | | | | | | | | | | | 17 | | | 17 | | | $ - |
| Citric Acid | 25 kg | 60.06 | 1 | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | $ - |
| Drispac R | 50 lb | 159.75 | 14 | | | | | 40 | | | | | | | | | | 34 | 10 | | -2 | 12 | | | 12 | | 42 | $ 6,709.50 |
| Drispac SL | 50 lb | 113.76 | | | | | | | | | | | | | | | | | | | | | | | | | | $ - |
| Flowzan | 25 kg | 502.38 | 55 | | | | | 40 | | | | | | | | | | 50 | 19 | | | 26 | | | 26 | | 69 | $ 34,663.84 |
| Glutaraldehyde, 25 % | 25 litre | 105.23 | 43 | | | | | | | | | | | | | | | 2 | | 4 | | 37 | | | 37 | | 6 | $ 631.38 |
| Kwikseal F | 40 lb | 49.53 | 35 | | | | | | | | | | | | | | | | | | 10 | 25 | | | 25 | | 10 | $ 495.30 |
| Kwikseal F | 40 lb | 52.25 | | | | 60 | | | 40 | | | | | | | | | | | | | 100 | | | 100 | | | $ - |
| Kwikseal M | 40 lb | 41.20 | 40 | | | | | | | | | | | | | | | | | | 4 | 36 | | | 36 | | 4 | $ 164.80 |
| Kwikseal M | 40 lb | 52.25 | 80 | | | 30 | | | | | | | | | | | | | | | | 90 | | | 90 | | | $ - |
| LD-8 | 5 gal | 111.60 | 20 | | | | | | | | | | | | | | | 1 | | | | 19 | | | 19 | | 1 | $ 111.60 |
| Lime | 18.5 kg | 9.05 | 66 | | | | | | | | | | | | | | 7 | | | | | 59 | | | 59 | | 7 | $ 63.35 |
| MI-Guar | 25 kg | 52.00 | 73 | | | | | | | | | | | | | | | 2 | | | -2 | 73 | | | 73 | | | $ - |
| MI-Guar | 25 kg | 72.70 | 67 | | | | | | | | | | | | | | | | | | | 67 | | | 67 | | | $ - |
| MI-Pac-LV | 25 kg | 161.51 | 50 | | | | | 40 | 40 | 80 | | | | | | | | 53 | 37 | | | 80 | | | 80 | | 90 | $ 14,535.90 |
| MI-Pac-R | 25 kg | 161.51 | | | | | | | | | | | | | | | | | | | -32 | 32 | | | 32 | | -32 | $ (5,168.32) |
| Newdrill Liquid | 25 kg | 67.48 | | | | | | | 64 | | | | | | | | | 5 | 7 | | | 52 | | | 52 | | 12 | $ 809.76 |
| Newdrill Liquid | 25 kg | 70.48 | | | | | | | | | | | | | | | | | | | | | | | | | | $ - |
| Newdrill Plus | 25 kg | 74.04 | 84 | | | | | | | 59 | | | | | | | | 12 | 35 | | | 76 | | | 76 | | 47 | $ 3,622.18 |
| Noxygen-L | 18.9 litre | 38.04 | 32 | | | | | | | | | | | | | | | | | 4 | 4 | 24 | | | 24 | | 8 | $ 304.32 |
| Omnycarb-40 | 25 kg | 8.22 | 96 | | | | | | 48 | | | | | | | | | | | | | 144 | | | 144 | | | $ - |
| Potassium Chloride | 1000 kg | 536.07 | | | | | | 4 | 26 | 26 | | | | | | | | 28 | 22 | | 2 | 4 | | | 4 | | 52 | $ 27,875.64 |
| Potassium Hydrox | 25 kg | 47.21 | | | | | | | | | | | | | | | | | | | | | | | | | | $ - |
| Soda Ash | 25 kg | 23.93 | 70 | | | | | | | | | | | | | 8 | 11 | 17 | | | -10 | 44 | | | 44 | | 26 | $ 622.18 |
| Soda Ash | 25 kg | 26.30 | 6 | | | | | | | | | | | | | | | | | | | 6 | | | 6 | | | $ - |
| Sodium Bicarbonate | 25 kg | 24.06 | | | | | | 40 | | | | | | | | | | | 13 | | | 27 | | | 27 | | 13 | $ 312.69 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | $ - |
| 22-Jan | | | Indicates Portland price | | | Indicates loaded Darwin/Dampier price | | | | | | | | | | | | | | | | | | | TOTAL WELL COST | | | $ 175,374.44 |

The "Final Inventory" for the previous well MUST be carried over and used for the "Start Inventory" for the current well. Reconcile ALL "Variance" by debiting or crediting the appropriate interval usage. Do not forget to debit or credit the Mud Report as well

Note: 1. DD 5471 Kwikseal on DD 5471 was delivered to rig for Santos
Note: 2. DD 5472 material was delivered for BHP
Note: 3. DD 5476 Error on Drispac R, there was not 40 sx sent to the rig. Only 200 sx in total and these had already been sent out.
Note: 4. DD 5476 Omyacarb-40, there was only ever 145 sx, the SOF at the end should read 144 sx and DD 5476 should be for 48 sx not 42
Note: 5. DD 5477 Sodium Bicarb, there was only ever 85 sx, by DD 5477 all these had been sent to rig so the 40 sx on this ticket is an error
Note: 6. MI-Bar bulk charged off 2 tonnes based on Delivery tickets and Statement of Facts.
Note: 7. MI-Gel bulk charged of 8.8 tonnes based on Delivery tickets and Statements of Fact.
Note: 8. Aquacol B charged of 12 drums based on Delivery tickets and Statements of Fact
Note: 9. Drispac R credited 2 sx based on Delivery tickets and Statements of Fact
Note: 10. Kwikseal F charged of 10 sx based on Delivery tickets and Statements of Fact
Note: 11. Kwikseal M charged of 4 sx based on Delivery tickets and Statements of Fact
Note: 12. MI-Guar credited 2 sx based on Delivery tickets and Statements of Fact
Note: 13. MI-Pac R credited 32 sx based on Delivery tickets and Statements of Fact
Note: 14. Noxygen charged of 4 pails based on Delivery tickets and Statements of Fact
Note: 15. Potassium Chloride charged of 2 bulk bags based on Delivery tickets and Statements of Fact
Note: 16. Soda Ash credited 10 sx based on Delivery tickets and Statements of Fact

# 5 INTERVAL VOLUME ACCOUNTING

## 5.1 36 in Interval

| Mud Made (bbls) | | Mud Lost (bbls) | |
|---|---|---|---|
| Water added: | 2,240 | Mud discharged: | 634 |
| Brine added: | | Mud lost on surface: | |
| Oil added: | | Mud lost down hole: | |
| Whole mud added: | | Mud lost to solids control: | |
| Chemicals added: | 109 | Other losses: | |
| Barite added: | | Left in hole: | |
| Mud received: | | Mud returned: | 1,716 |
| Other gains: | | Dead volume in mud pits: | |
| Total volume additions: | 2,350 | Total volume lost: | 634 |

## 5.2 17.5 in Interval

| Mud Made (bbls) | | Mud Lost (bbls) | |
|---|---|---|---|
| Water added: | 2,136 | Mud discharged: | 2,978 |
| Brine added: | | Mud lost on surface: | |
| Oil added: | | Mud lost down hole: | |
| Whole mud added: | | Mud lost to solids control: | |
| Chemicals added: | 50 | Other losses: | |
| Barite added: | | Left in hole: | |
| Mud received: | 1,716 | Mud returned for next section: | 923 |
| Other gains: | | Behind casing: | |
| Total volume additions: | 3,902 | Total volume lost: | 2,978 |

## 5.3 12.25 in Interval

| Mud Made (bbls) | | Mud Lost (bbls) | |
|---|---|---|---|
| Water added: | 3,052 | Mud discharged: | 2,501 |
| Brine added: | | Mud lost on surface: | |
| Oil added: | | Mud lost down hole: | |
| Whole mud added: | | Mud lost to solids control: | 136 |
| Chemicals added: | 215 | Other losses: | |
| Barite added: | 8 | Left in hole: | |
| Mud received: | 923 | Mud returned for next section: | 2,212 |
| Other gains: | 1,151 | Behind casing: | 500 |
| Total volume additions: | 5,349 | Total volume lost: | 3,137 |

## 5.4 8.5 in Interval

| Mud Made (bbls) | | Mud Lost (bbls) | |
|---|---|---|---|
| Water added: | | Mud discharged: | 841 |
| Brine added: | | Mud lost on surface: | |
| Oil added: | | Mud lost down hole: | |
| Whole mud added: | | Mud lost to solids control: | 58 |
| Chemicals added: | 200 | Other losses: | 680 |
| Barite added: | 24 | Left in hole: | 856 |
| Mud received: | 2,212 | Mud returned: | |
| Other gains: | | Behind casing: | |
| Total volume additions: | 2,436 | Total volume lost: | 738 |

## 5.5 Total Volume Summary

| Mud Made (bbls) | | Mud Lost (bbls) | |
|---|---|---|---|
| Water added: | 7,428 | Mud discharged: | 6,954 |
| Brine added: | | Mud lost on surface: | |
| Oil added: | | Mud lost down hole: | |
| Whole mud added: | | Mud lost to solids control: | 194 |
| Chemicals added: | 574 | Other losses: | 680 |
| Barite added: | 32 | Left in hole: | 856 |
| Mud received: | 4,851 | Mud returned: | 4,852 |
| Other gains: | 1,151 | Behind casing: | 500 |
| Total volume additions: | 14,036 | Total volume lost: | 14,036 |

## 6 12.25 in INTERVAL MUD PROPERTIES

| Report Date | Depth MD m | FL Temp. C | Test Temp. C | Mud Wt. sg | F.Visc sec/qt | PV cp | YP | Gels 10 sec | Gels 10 min | API Filt. cc | Cake API | Solids crtd Pct. | Water Pct. | Sand Pct. | MBT ppb | pH | Alk Pf ml | Alk Mf ml | Chloride Mg/l | Total Hdns mg/l | ASG | LGS ppb | HGS ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15/12/03 | 1,486 | 36 | 49 | 1.06 | 52 | 16 | 23 | 7 | 15 | 6.5 | 1 | 5.26 | 92.5 | 0.5 | 5 | 9.5 | 0.2 | 0.5 | 39,500 | 160 | 1.32 | 10.65 | 0 |
| 16/12/03 | 1,810 | 0 | 49 | 1.09 | 56 | 16 | 23 | 7 | 16 | 6.0 | 1 | 10.04 | 88 | 0.5 | 7.5 | 8.5 | 0 | 0.8 | 36,500 | 360 | 1.52 | 30.03 | 0 |
| 17/12/03 | 1,810 | 0 | 49 | 1.09 | 55 | 16 | 23 | 7 | 14 | 6.5 | 1 | 10 | 88 | 0.5 | 7.5 | 8.5 | 0 | 0.8 | 36,500 | 360 | 1.52 | 30.03 | 0 |

## 7 8.5 in INTERVAL MUD PROPERTIES

| Report Date | Depth MD m | FL Temp. C | Test Temp. C | Mud Wt. sg | F.Visc sec/qt | PV cp | YP | Gels 10 sec | Gels 10 min | API Filt. cc | Cake API | Solids crtd Pct. | Water Pct. | Sand Pct. | MBT ppb | pH | Alk Pf ml | Alk Mf ml | Chloride Mg/l | Total Hdns mg/l | ASG | LGS ppb | HGS ppb |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18/12/03 | 1821 | 27 | 49 | 1.09 | 60 | 18 | 22 | 7 | 14 | 5.5 | 1 | 8.92 | 86 | 0.25 | 7.5 | 9 | 0 | 0.8 | 39,500 | 360 | 1.53 | 28.2 | 0 |
| 19/12/03 | 2422 | 41.6 | 49 | 1.15 | 70 | 23 | 35 | 9 | 25 | 4.2 | 1 | 9.5 | 85.5 | 0.25 | 12.5 | 9 | 0 | 0.6 | 42,000 | 280 | 2.06 | 58.89 | 0 |
| 20/12/03 | 2575 | 43 | 49 | 1.17 | 70 | 23 | 34 | 9 | 25 | 4.3 | 1 | 10.01 | 85 | 0.5 | 15 | 9 | 0 | 0.6 | 42,000 | 280 | 2.1 | 64.75 | 0 |
| 21/12/03 | 2575 | 43 | 49 | 1.17 | 71 | 24 | 33 | 9 | 245 | 4.5 | 1 | 10.04 | 85 | 0.5 | 15 | 9 | 0 | 0.65 | 41,500 | 280 | 2.06 | 62.12 | 0 |

# SECTION 11 : CASING & CEMENTING SUMMARY

| Wellname : Hill #1 | Drilling Co. : DOGC | | Rig : Ocean Epoch |
|---|---|---|---|
| DFE above MSL : 22.4 m | Lat : 38 Deg 48 Min 50.37 Sec | Spud Date : 08 Dec 2003 | Release Date : 25 Dec 2003 |
| Water Depth : 212.8 m | Long : 141 Deg 50 Min 39.58 Sec | Spud Time : 21:00 | Release Time : 04:00 |

## Casing Summary

## Well: Hill #1

| | | | |
|---|---|---|---|
| Diameter | 30 " | L.O.T. ( Act ) | 0 ppg |
| Casing Shoe MD ( Act ) | 268.0 m | F.I.T. ( Act ) | 0 ppg |
| Casing Shoe TVD ( Act ) | 268.0 m | | |
| Cement data | 168 bbls 15.9 ppg Class G slurry. Top up job with 91 bbls 15.9 ppg Class G slurry to establish TOC at seabed | | |
| Comment | | | |

| | | | |
|---|---|---|---|
| Diameter | 13 3/ 8" | L.O.T. ( Act ) | 11.50 ppg |
| Casing Shoe MD ( Act ) | 768.9 m | F.I.T. ( Act ) | 0 ppg |
| Casing Shoe TVD ( Act ) | 768.9 m | | |
| Cement data | 240 bbls 12.5 ppg Class G lead followed by 150 bbls 15.8 ppg Class G tail. Bumped plug and tested casing to 3000 psi. Good cement returns to sea bed. | | |
| Comment | | | |

| | | | |
|---|---|---|---|
| Diameter | 9 5/ 8" | L.O.T. ( Act ) | 10.50 ppg |
| Casing Shoe MD ( Act ) | 1801.0 m | F.I.T. ( Act ) | 0 ppg |
| Casing Shoe TVD ( Act ) | 1801.0 m | | |
| Cement data | 73 bbls 12.5 ppg Class G lead followed by 45 bbls Class G Tail. Bumped plug & tested casing to 3000 psi. | | |
| Comment | | | |

# SECTION 12 : MUDLOGGING WELL REPORT

Santos

*A.B.N. 80 007 550 923*

# HILL-1

## FINAL WELL REPORT

**Prepared by**

Geoservices Overseas S.A.

Geoservices Overseas S.A.
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Lonsdale, S.A. 5160
Tel: 08-81863611
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Santos Limited
Santos House
91 King William Street
Adelaide, S.A. 5000

## CONTENTS

## 1.0 WELL DATA SUMMARY

(All depths are measured depths from rotary table (MDRT) unless otherwise specified.)

| | |
|---|---|
| Well name | : Hill-1 |
| Basin | : Otway |
| Permit | : VIC/P51 |
| Operator | : Santos Limited |
| Drilling Rig | : Ocean Epoch |
| Well Classification | : Vertical Exploration Well |
| Surface Location | |
| Latitude | : 38° 48' 50.381" S |
| Longitude | : 141° 50' 39.579" E |
| Depth Reference | : L.A.T. (lowest astronomical tide) |
| Water Depth | : 212.8m |
| Rotary Table | : 22.4 m |
| Rotary Table to Seabed | : 235.2 m |
| Casing Data | : (1) 762/500 mm (30"/20") casing shoe at 268.0 m |
| | : (2) 340 mm ($13^3/_8$") casing shoe at 769.0 m |
| | : (3) 244 mm ($9^5/_8$") casing shoe at 1801.2 m |
| Hole Size | : (1) 660mm/914 mm (26"/36") Hole from 235.0 to 268.0 m |
| | : (2) 444 mm (17½") Hole from 268.0 to 777.0 m |
| | : (3) 311 mm (12¼") Hole from 777.0 to 1810.0 m |
| | : (4) 216 mm (8½") Hole from 1810.0 to 2575.0 m |
| Mud Type | : (1) Seawater/Hi-Vis Gel Sweeps |
| | : (2) KCL / Polymer |
| | : (3) Aqua-Drill |
| Offset Wells | : Bridgewater Bay 1 (52 km NW) |
| | : Triton 1 (63 km ESE). |
| Proposed Total Depth | : 2575.0 m |
| Actual Total Depth | : 2575.0 m |
| Total Vertical Depth | : 2552.4 m TVDSSLAT |
| Date arrived on Location | : 7 December 2003 |
| Date departed Location | : 20 December 2003 |
| Date Spudded | : 21:00 hours, 8 December 2003 |
| Date TD Reached | : 01:30 hours, 20 December 2003 |
| Well Status | : Plugged and Abandoned |

## 2.0 GENERAL INFORMATION

### 2.1 Executive Summary

Hill-1 was drilled as an exploration wildcat well in the Otway Basin, licence VIC/P51. The location is offshore in 213 m of water, 55 km south-southeast of Portland. The objectives of Hill-1 were to test reservoir and hydrocarbon potential in the Late Cretaceous Paaratte Formation and Nullawarre-equivalent strata below. Hydrocarbon content was expected to be both oil and gas. The closest wells to Hill-1 are Bridgewater Bay 1 (52 km NW) and Triton 1 (63 km ESE).

Hill-1 was officially spudded at 21:00 hours on the 8th of December 2003. The well was begun with a 26" (660 mm) bit and 36" (914 mm) hole opener, tagging the seafloor at 235.2 mRT and drilling to 268 m. A combination 30" (762 mm) housing and 20" (500 mm) shoe joint was run on a PGB and cemented with the shoe at 268 m.

A 17½" (445 mm) bit drilled from 268 m to 17½" TD at 777 m. This section was cased off with a 13 3/8" casing string with the shoe set at 769 m.

The sub sea stack and riser were lowered and tested after a delay due to rough weather. The 12¼" (311 mm) phase was begun, tagging the TOC at 742 m. The cement was drilled out and 3.0 m of new hole was made to 780 m. The hole was displaced to seawater prior to performing a Leak Off Test, which reached an EMW of 15.0 ppg (1.8 SG).

12¼" (311 mm) hole was then drilled ahead from 780.0 m down to 1810 m with a PDC bit, with new KCl / Polymer mud being displaced to the hole at 1444 m after having been, until here, drilled with seawater and gel sweeps as required. 19 bbl was lost down hole at 1611 m. This bit was then pulled out to run 9 5/8" casing. The trip out of hole prior to running casing was not very smooth, with several tight spots needing to be worked through.

The well was cased with 9 5/8" with the casing shoe set at 1801.2m. The last joints of casing had to be washed down due to tight hole. The casing was cemented as per programme and the BOP was tested before the casing landing string was pulled.

The 8½" bit and BHA were made up and RIH tagging TOC at 1772 m. The cement, collar and 9 5/8" shoe and rat hole were drilled out and 3 m of new hole was drilled from 1810 - 1813 m. Aquadrill mud was then displaced into the hole and a leak off test was conducted resulting in an EMW of 10.0 ppg (1.25 SG). 8½" hole was then drilled from 1813 - 2575 m TD with no problems encountered while drilling. On pulling out of hole, several tight spots were encountered which necessitated back reaming and reaming back to bottom. On pulling out the second time, no problems were seen.

After 4 wire-line logging runs, the hole was plugged and abandoned.

Geoservices provided a full Mudlogging service from spud to TD during this well. This service included Reserval gas monitoring in addition to the regular FCP/FGP FID equipment.

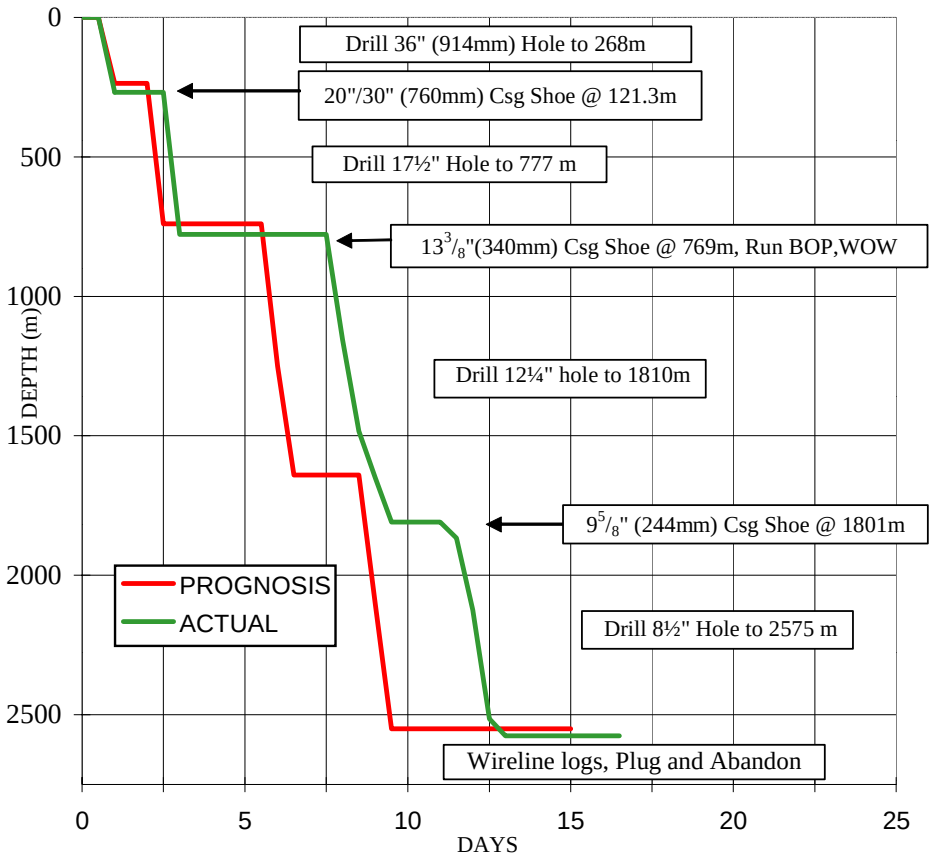
## 2.2 Geoservices Personnel

| | |
|---|---|
| ALS Engineers | : Fernandes, Gavin |
| | : Dóczy, Gedeon |
| | : Willson, Stanley |
| | : Misquitta, Patrick |
| Mudloggers | : Adderley, David |
| | : Babu, J.V. |

## 2.3 Contractor Information

| | |
|---|---|
| Drilling | : Diamond Offshore |
| Rig name | : Ocean Epoch |
| Rig type | : Semi-Submersible |
| Mud logging | : Geoservices Overseas S.A. |
| Mud engineering | : Baker Hughes INTEQ |
| MWD | : Sperry Sun Halliburton |
| Wireline logging | : Schlumberger Oilfield Australia |
| Cementing | : Halliburton |
| Well head completion | : DrilQuip |
| ROV | : Total Marine Technology |
| Casing | : Premium |
| Work boats | : Lady Dawn, Pacific Challenger |
| Helicopters | : Bristows |
| Catering | : Eurest |

## 2.4 Days versus Depth Progress Chart



## 2.5 Sample Collection Summary

5 sets of Washed and Dried Samples and 2 sets of Samplex trays were collected on this well.
From first returns at 777 m to 1641 m the collection interval was 5 m.
From 1641 m to 2575 m TD the collection interval was 3 m.

Uncollected samples, due to fast ROP, are listed below :

| 5m Samples : | | 3m Samples : | | | |
|---|---|---|---|---|---|
| 810-815 | 1160-1165 | 1656-1659 | 2139-2142 | 2292-2295 | 2406-2409 |
| 815-820 | 1180-1185 | 1659-1662 | 2157-2160 | 2298-2301 | 2409-2412 |
| 830-835 | 1190-1195 | 1683-1686 | 2178-2181 | 2301-2304 | 2412-2415 |
| 840-845 | 1195-1200 | 1722-1725 | 2196-2199 | 2307-2310 | 2418-2421 |
| 845-850 | 1210-1215 | 1725-1728 | 2202-2205 | 2310-2313 | 2424-2427 |
| 865-870 | 1225-1230 | 1740-1743 | 2205-2208 | 2319-2322 | 2427-2430 |
| 880-885 | 1240-1245 | 1749-1752 | 2211-2214 | 2328-2331 | 2433-2436 |
| 900-905 | 1255-1260 | 1755-1758 | 2220-2223 | 2331-2334 | 2436-2439 |
| 905-910 | 1260-1265 | 1767-1770 | 2226-2229 | 2343-2346 | 2442-2445 |
| 925-930 | 1265-1270 | 1770-1773 | 2232-2235 | 2346-2349 | 2445-2448 |
| 940-945 | 1275-1280 | 1773-1776 | 2235-2238 | 2352-2355 | 2448-2451 |
| 1000-1005 | 1280-1285 | 1779-1782 | 2238-2241 | 2355-2358 | 2457-2460 |
| 1020-1025 | 1315-1320 | 1785-1788 | 2243-2247 | 2367-2370 | 2460-2463 |
| 1025-1030 | 1355-1360 | 1791-1794 | 2253-2256 | 2370-2373 | 2466-2469 |
| 1045-1050 | 1375-1380 | 1797-1800 | 2259-2262 | 2376-2379 | 2472-2475 |
| 1130-1135 | 1390-1395 | 1803-1806 | 2277-2280 | 2265-2268 | 2475-2478 |
| 1140-1145 | 1435-1440 | 1809-1812 | 2280-2283 | 2388-2391 | 2382-2385 |
| 1145-1150 | 1440-1445 | 1839-1842 | 2286-2289 | 2394-2397 | 2484-2487 |
| | | 1908-1911 | 2289-2292 | 2400-2403 | |

Sample distribution was as follows:

| Recipient | Washed and Dried | | Samplex Trays |
|---|---|---|---|
| | 100 g | 200 g | |
| Santos | 2 | | 1 |
| INPEX | 1 | | 1 |
| Geoscience Australia | | 1 | |
| D.P.I. | | 1 | |

The Samplex trays and washed and dried cuttings samples were dispatched to Geoservices Adelaide for drying and packing. There were still wet samples at the time of the rig's departure to Western Australia. The samples were then forwarded to the Santos Core Library, Gillman, S.A.

Mud Samples were also dispatched. These were from **:**
1000, 1480, 1610,1845, 1989, 1992,1995,2001,2020, 2340 and 2575 m.

Filtrate samples were from :
1790 m, 1810 m and 2330 m.

## 3.0 GEOLOGICAL INFORMATION

## 3.1 Lithology and Show Summary

(From Spud to 777m returns were to the seafloor.)

**777 m - 1630 m**
**Tertiary Carbonates**

Drilling Parameters:
WOB: 10 - 35 klbs MF : 750 - 850 gpm
RPM: 135 - 160 SPP: 2000 - 3900 psi
TRQ: 3 - 11 klbs*ft

| Lithology | Lithology description | ROP m/hr | | | Depth | Total | C1 | C2 | C3 | iC4 | nC4 | C5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | avg. | max. | min. | m | Gas U | ppm | ppm | ppm | ppm | ppm | ppm |
| CLAYSTONE | Very pale brown, very pale brown grey, commonly very calcareous, commonly grading to MARL, occasionally silty in part, occasional lithics, occasional carbonaceous specks, occasional disseminated pyrite, dispersive, very soft, occasionally firm to moderately hard, amorphous, occasionally sub - blocky. | 45 | 227 | 15 | 777 - 1630 | 15 - 55 | 1651-8739 | 0 - 14 | 0 - 10 | 0 - 5 | 0 - 2 | 0 - 7 |
| CALCARENITE | Very pale to pale brown, occasionally cream, micritic, cryptocrystalline, occasional lithics, moderately hard to hard. | | | | | | | | | | | |
| CALCILUTITE | Pale yellow grey, lutitic, argillaceous, occasionally silty, occasionally carbonaceous specks and lithics, firm, moderately hard in part, occasionally soft, sub - blocky. | | | | | | | | | | | |
| SANDSTONE | Pale brown, clear to translucent, very fine to fine, well sorted, sub-round, occasionally round to sub-angular, moderately calcareous cement, nil visible matrix, loose grains, poor visible and inferred porosity, no fluorescence. | | | | | | | | | | | |
| SILTSTONE | Light grey, pale brown grey, argillaceous, arenaceous, calcareous in part, occasionally grading to MARL, occasional nodular pyrite, trace carbonaceous specks, shell fragments, trace fossil, firm to occasionally moderately hard, sub - fissile to sub - blocky. | | | | | | | | | | | |

**1630m - 1646 m**
**Wangerrip Group**

Drilling Parameters:
WOB: 25 - 30 klbs MF : 865 gpm
RPM: 154 SPP: 3600 - 3800 psi
TRQ: 5.1 - 6.9 klbs*ft

| Lithology | Lithology description | ROP m/hr | | | Depth | Total | C1 | C2 | C3 | iC4 | nC4 | C5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | avg. | max. | min. | m | Gas U | ppm | ppm | ppm | ppm | ppm | ppm |
| SANDSTONE | Clear to translucent, pale grey, very fine to coarse, commonly medium to coarse, poor sorted, sub-angular to sub-round, no visible cement, no visible matrix, trace carbonaceous specks, trace pyrite, trace milky white quartz, loose, good visible and inferred porosity, no fluorescence. | 52 | 83 | 32 | 1630 - 1646 | 26 - 41 | 5003 - 8126 | 4 - 10 | 2 - 5 | 0 - 1 | 0 | 0 - 2 |

**1646m - 1767 m**
**Upper Timboon Sandstone**

Drilling Parameters:
WOB: 8 - 30 klbs MF : 830 - 860 gpm
RPM: 145 - 160 SPP: 3680 - 3920 psi
TRQ: 3.5 - 7.2 klbs*ft

| Lithology | Lithology description | ROP m/hr | | | Depth | Total | C1 | C2 | C3 | iC4 | nC4 | C5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | avg. | max. | min. | m | Gas U | ppm | ppm | ppm | ppm | ppm | ppm |
| SANDSTONE | Clear to translucent, pale brown to pale brown grey, commonly medium, occasionally fine to coarse, fine to very fine in part, generally moderately well sorted, sub-angular to sub-round, weak calcareous and siliceous cement, occasional silty matrix, trace carbonaceous specks, loose, poor to fair inferred and visible porosity, no fluorescence. | 37 | 184 | 11 | 1646 - 1767 | 14 - 15 | 2275 - 8939 | 4 - 13 | 2 - 7 | 0 - 2 | 0 | 0 - 4 |
| SILTSTONE | Medium brown to medium grey brown, moderately to weak calcareous, arenaceous in part, grading to very fine SANDSTONE in part, occasional to common pyrite, glauconite, firm to dispersive in part, sub - blocky. | | | | | | | | | | | |

**1767m - 1974 m**
**Timboon Equivalent Mudstone**

Drilling Parameters:
WOB: 13 - 30 klbs MF : 650 - 855 gpm
RPM: 145 - 150 SPP: 3550 - 3900 psi
TRQ: 3.7 - 7.7 klbs*ft

| Lithology | Lithology description | ROP m/hr | | | Depth | Total | C1 | C2 | C3 | iC4 | nC4 | C5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | avg. | max. | min. | m | Gas U | ppm | ppm | ppm | ppm | ppm | ppm |
| SILTSTONE | Medium brown to occasionally medium brown grey, locally occasionally slightly calcareous, occasional to rare carbonaceous specks, occasionally disseminated and nodular pyrite, very soft to firm in part, sub - blocky, occasionally blocky. | 21 | 61 | 6 | 1767 - 1974 | 4 - 33 | 910 - 6393 | 4 - 6 | 1 - 3 | 0 - 1 | 0 | 0 - 10 |
| LIMESTONE | Light to medium brown, medium grey brown, arenaceous, micritic, microcrystalline, hard to very hard, blocky to sub - blocky. | | | | | | | | | | | |
| SANDSTONE | White to pale grey, light to occasionally medium brown, very fine to fine, occasionally medium to coarse, moderately well to moderately sorted, sub-angular to sub-round, weak to strong calcareous cement, locally abundant light grey silty matrix, common white argillaceous matrix, occasional abundant pale brown argillaceous matrix, friable to moderately hard, loose, poor to very poor inferred and visible porosity, nil to trace mineral fluorescence. | | | | | | | | | | | |

**1974m - 2575m (T.D.)**
**Paaratte Formation**

Drilling Parameters:
WOB: 4 - 35 klbs MF : 620 - 650 gpm
RPM: 140 - 170 SPP: 3050 - 4050 psi
TRQ: 4.2 – 8.6 klbs*ft

| Lithology | Lithology description | ROP m/hr | | | Depth | Total | C1 | C2 | C3 | iC4 | nC4 | C5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | avg. | max. | min. | m | Gas U | ppm | ppm | ppm | ppm | ppm | ppm |
| SILTSTONE | Pale to occasionally medium brown, medium brown grey, occasionally argillaceous increasing with depth, occasional to locally common carbonaceous specks, rare local carbonaceous microlams, occasional disseminated and nodular pyrite, rare to occasional glauconite grains, occasional localised micro mica, firm to moderately hard, dispersive to soft, sub - blocky to occasionally blocky, amorphous. | 43 | 148 | 4 | 1974 - 2575 | 5 - 56 | 598 - 9936 | 3 - 403 | 1 - 205 | 1 - 78 | 0 - 52 | 0 - 20 |
| SANDSTONE | Clear to translucent, occasionally off white, very fine to medium occasionally course, sub-angular to sub-round, weak calcareous cement, occasional weak siliceous cement, nil to occasional off white argillaceous matrix, rare glauconite grains, loose, fair to poor inferred porosity, no fluorescence. | | | | | | | | | | | |
| LIMESTONE | Medium grey brown, occasionally light to medium brown, arenaceous, micritic, microcrystalline, hard to very hard, sub - blocky to blocky. | | | | | | | | | | | |

### 3.2 Gas Ratio Interpretation - Introduction

Gas composition and total gas in mud were measured using the Reserval (A combined total gas detector and chromatograph supplied with gas from a GZG degasser). This degasser pumps mud continuously to an enclosed chamber with a constant mud volume, and, as a backup gas detection system, a Geoservices FID Chromatograph Panel (FCP) and FID Gas Panel (FGP) were in place. Both use the same principle of measuring ions released when organic material, actively released from the mud, is burnt. The mud is degassed at the flow line by a degasser which is essentially an agitator inside a chamber through which the mud passes. The gas is then drawn back to the unit where it is analysed for hydrocarbons. $H_2S$ and $CO_2$ are measured by independent sensors.

Although both systems use the FID (flame ionisation detector) principle, the chromatograph first separates the hydrocarbon gases by passing the sample through a column where heavier gases take longer to pass through than lighter ones. After the hydrocarbon gases are separated, they are burned at the detector in the presence of hydrogen (which maintains combustion). Each burnt hydrocarbon molecule releases ions proportional to the number of carbon atoms in the molecule. These free ions (C+) will reduce the resistivity of the air in a filament allowing a voltage to pass from the cathode to the anode. This created voltage is proportional to the gas burned. Note: as the FGP (total gas) burns all the gases simultaneously, values are recorded in methane equivalent.)

The composition of the gas in mud from the formation is significant in determining the geochemical origin and value of a show. There are several methods which can be used to determine whether the hydrocarbon gas in mud comes from a potential gas or oil zone. Amongst these methods are the Triangle Diagram (also known as the gas composition diagram), Pixler Diagram (also know as the gas ratios method) and the Wetness/Balance/Character plots.

### 3.3 Explanation of Gas Composition Diagrams

The composition of entrained reservoir gas in mud is significant in determining the origin and value of a show. The Gas Composition Diagram is used to graphically represent the hydrocarbon distribution in the gas and to determine whether it corresponds to a gas or oil reservoir.

The triangular diagram is obtained by tracing lines on three scales at 120° to each other, corresponding respectively to the ratios of ethane, propane and normal butane to the total gas. The scales are arranged in such a way that if the apex of the triangle is upward, the diagram represents the analysis of gas from a gas zone, while if the apex points downwards, the diagram represents the analysis of gas from an oil zone. A large triangle diagram represents dry gas or low GOR oil, while small triangles represent wet gases or high GOR oils.

The homothetic centre of the triangle should fall inside the area delineated by the dotted line, which encircles compositions which are 'normal'. If the triangle area is outside this area the gas indicates that the reservoir is not exploitable and that the heavier hydrocarbons composition is 'abnormal' (hydrocarbons chemically altered or gases with special compositions which are not associated with oil) and may indicate a dead show.

The Gas Ratio Analysis Diagram is a plot of the ratio of C1 to the other gas elements. The magnitude of the methane to ethane ratio determines if the reservoir contains gas or oil or if it is non-productive. The following conclusions are possible:

| | | |
|---|---|---|
| Ratio C1/C2: | < 2 | non-productive zone |
| | 2 - 15 | oil present |
| | 15 - 65 | gas present |
| | > 65 | non-productive zone |

The slope of the line of the ratio plot of C1/C2, C1/C3, C1/C4 and C1/C5 indicates whether the reservoir will produce hydrocarbons or hydrocarbons and water. Positive line slopes indicate production; negative line slopes indicate water bearing formations. When using the slope of the gas ratios plot as an indicator of a possibly productive zone the following points should be borne in mind:

1. Productive dry gas zones may show only C1, but abnormally high shows of C1 are usually indicative of salt water zones.

2. If the ratio C1/C2 is low in the oil section and the ratio C1/C4 is high in the gas section, the zone is probably non- productive.

3. If any ratio (C1/C5 except in an oil based mud) is lower than the preceding ratio then the zone is probably non- productive.

4. The ratios may not be definitive for zones of low permeability.

5. Steep gas ratio plots may be indicative of tight zones.

### 3.4 Explanation of Wetness/Balance/Character Curves

Another method for evaluating gas zones uses three ratios: hydrocarbon Wetness ($W_h$), hydrocarbon Balance ($B_h$) and hydrocarbon Character ($C_h$) plotted against depth where:

$$W_h = \frac{(C2 + C3 + C4 + C5)}{(C1+C2+C3+C4+C5)} \times 100\ (\%)$$

$$B_h = \frac{(C1 + C2)}{(C3 + C4 + C5)}$$

$$C_h = \frac{(C4 + C5)}{C3}$$

Wetness ($W_h$) is the primary zone indicator and provides a measure of the relative proportion of heavier gases in the overall gas show as follows:-

| | |
|---|---|
| $W_h < 0.5$ | Light non-associated gas with low productivity potential or only geo-pressured methane. |
| $0.5 < W_h < 17.5$ | Potentially productive gas with gas density increasing with $W_h$. |
| $17.5 < W_h < 40.0$ | Potentially productive oil with gravity decreasing as $W_h$ increases. |
| $W_h > 40.0$ | Heavy or residual oil with low productivity potential. |

Balance ($B_h$) and Wetness ($W_h$) move closer together and eventually cross as reservoir hydrocarbons become denser in transition from gas to oil. The zone guidelines for $B_h$ combine with those for $W_h$ to improve reliability of show evaluation as follows:

| | |
|---|---|
| $W_h < 0.5$ and $B_h > 100$ | Very light, dry gas which is almost certainly non-productive. |
| $0.5 < W_h < 17.5$ and $W_h < B_h < 100$ | Productive gas with gas increasing in wetness and density as the two curves converge. |
| $0.5 < W_h < 17.5$ and $B_h < W_h$ | Productive gas condensate or a high gravity gas/oil ratio. |
| $17.5 < W_h < 40$ and $B_h < W_h$ | Productive oil with oil gravity decreasing - density increasing as the curves diverge. |
| $17.5 < W_h < 40$ and $B_h > W_h$ | Non-productive residual oil. |

Character ($C_h$) serves to resolve ambiguities between oil or gas indications by defining the following:

$0.5 < W_h < 17.5$ and $B_h < W_h$ and $C_h < 0.5$ — Productive wet gas or condensate.

$0.5 < W_h < 17.5$ and $B_h < W_h$ and $C_h > 0.5$ — Productive high gravity and/or high GOR oil.

It is important to note that in the conclusion to each of the interpretive tools, the terms 'productive' and 'non-productive' are used in a geochemical sense. Ultimate production of a zone is dependent upon reservoir thickness and extent as well as other physical and economic factors which are not taken into account when analysing gas compositions. The methods discussed here are intended to assist the interpretive skills of the geologist or log analyst. We do not advocate their use blindly or in ignorance of the underlying geological and chemical principles of hydrocarbon occurrence.

Please refer to the Gas Ratio Log enclosure.

Abbreviation: GOR - Gas Oil Ratio

### 3.5 Gas Composition Discussion

From Spud to the TD of the 17½" phase at 777 m, returns were dumped to the seabed as a result of which no samples were collected nor was any gas monitored. Gas was first recorded in Hill-1 from 777 m, near the start of the 12¼" (311 mm) hole and gas was recorded continuously from here down to the TD of the well, except for between 1112 - 1127 m when hi-vis pills blocked the GZG gas-trap and between 1434 - 1450 m when the hole was displaced to new mud and the old mud was dumped from the possum belly while drilling.

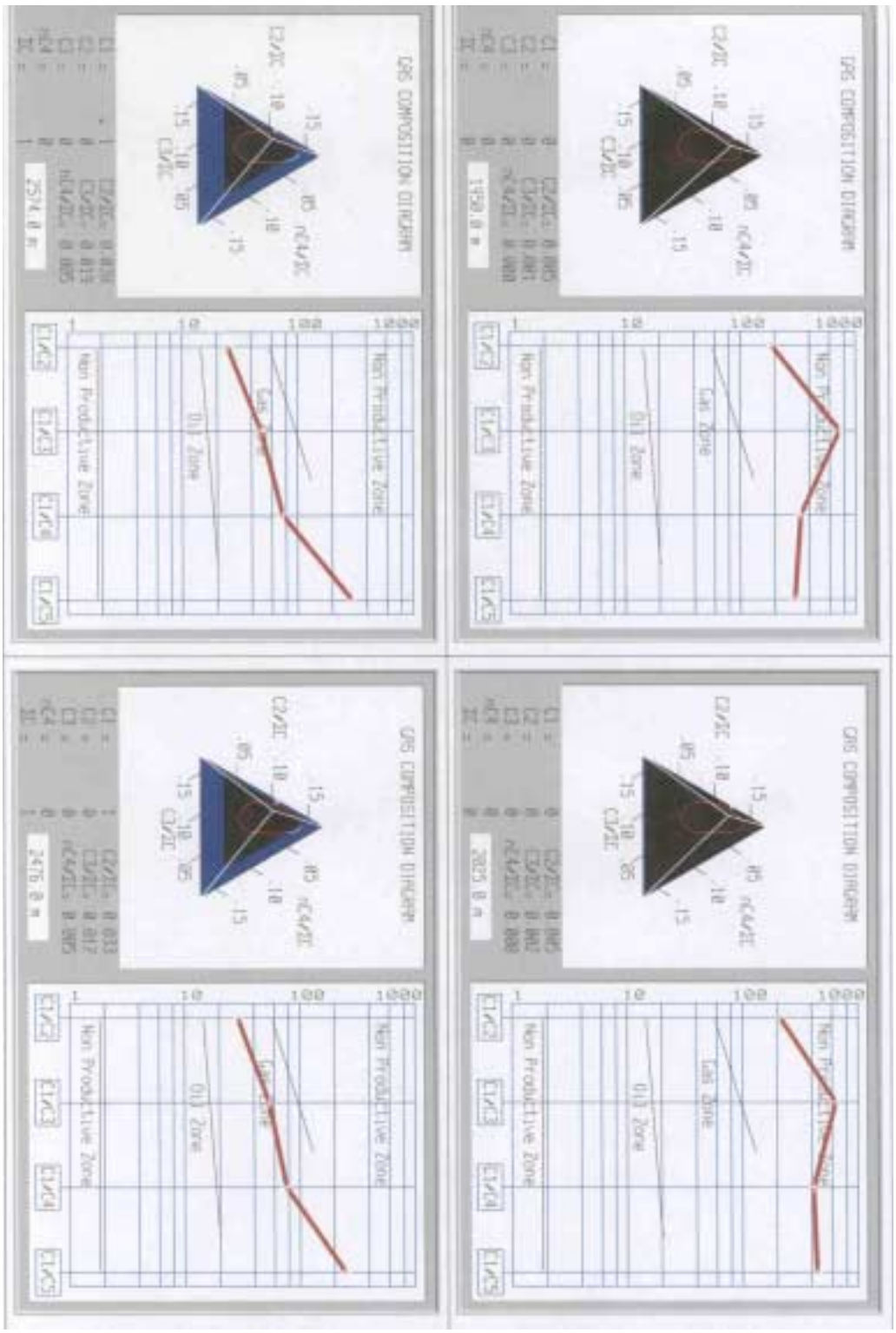
In the 12¼" section of hole, from 777 m down through the undifferentiated carbonates to 1434 m the background gas was around 55 units, comprising of Methane with minor traces of Ethane to Butane. with a maximum gas of 117 units comprising predominantly of Methane with a trace of Ethane and minor traces of Propane and Butane. This maximum gas was purely ROP related and there were no gas peaks of note in this interval.
From 1434 m, after new mud was displaced into the hole, gas readings were lower, most likely due to less gas retention by the drilling fluid. The previous fluid had become very viscous after several hi-vis pills were pumped. From 1450 - 1810 m through Wangerrip group, Timboon Sandstone and into the Timboon Mudstone equivalent the background gas ranged from 15 - 25 units comprising predominantly of Methane with minor traces of Ethane to Butane with occasional minor traces of Pentane. A maximum gas of 50 units comprising predominantly of Methane and a trace of Ethane with minor traces of Propane to Pentane coincided with the bottom of a Sandstone interval at 1668 m.

In the 8½" hole from 1810 m to 2575 m slowly and steadily with depth from 5 to 40 units, (With no significant peaks) with the maximum gas of 55.7 units recorded at 2573 m, 2 m before TD. This gas composition was pretty much the same as that above and was comprised of 9936 / 403 / 205 / 78 / 52 / 20 / 14 ppm Methane to normal Pentane respectively.

Most of the peaks analyzed and for which gas triangular diagrams were plotted indicated the gas to be of a non productive quality as can be seen in the following diagrams. For the peaks after 2475 m the Gas triangular diagrams plotted show a possibility of a productive Gas zone. But the C1/C5 ratio indicates it to be a non productive gas zone. Further Gas ratio analysis for wetness and balance indicate gas recorded after 2475 m to be a possible productive gas with the gas increasing in wetness and density as the 2 curves ($W_h$ & $B_h$) converge. After 2475 m the Wetness ratio ($W_h$) was around 5 to 8 and the Balance (Bh) was between 25 to 28 and they ran almost parallel to the end of the well without converging, thus indicating a less wet gas.

.

## 3.6 Gas Ratio Diagram



## 4.0 PRESSURE ANALYSIS

### 4.1 Pressure Summary

Formation pressures were monitored throughout this well by recording a range of indicators. These indicators vary from direct observations of background gas and cuttings form to drilling characteristics such as torque and tight hole, as well as quantitative methods like the D exponent.

All indicators pointed to a normally pressured environment from surface to TD while drilling.

No connection gases, serious hole problems or excess cavings were noted while drilling to TD at 2575.0 m. The D-exponent also indicated no abnormal formation pressure.

There was tight hole while POOH for logging at TD but this was thought to be due to inefficient hole cleaning while drilling.

Pore pressures were measured with wire-line tools to be equivalent to 1.017 sg (19793 kPa at 2007 m with 22.4 m air gap).

**Coefficients used for Hill - 1**

Sources : Gulf Coast (Soft).

aS = 0.01304 bS = -0.17314 cS = 1.43350

aK = 0.26600 bK = -2.66700

### 5.1 Mud Record

From Spud to 777 m Hill-1 was drilled with seawater and hi-vis PHG sweeps with returns to the seabed.
From 777 - 1444 m seawater and hi-vis PHG sweeps were used with returns to pits.
From 1444 - 1810 m a KCl / Polymer mud was used.
From 1810 – 2575 m (TD) AquaDrill was used.

| Depth m | MW SG | FV sec/qt | PV cps | YP lb/100ft | Gels | WL | Solids % | Sand % | Chlorides mg/l | Cake /32" |
|---|---|---|---|---|---|---|---|---|---|---|
| 1486 | 1.06 | 52 | 16 | 23 | 7/15 | 6.5 | 7.5 | 0.0 | 39500 | 1 |
| 1564 | 1.09 | 40 | 16 | 23 | 7/14 | 7.0 | 7.0 | 0.5 | 37500 | 1 |
| 1720 | 1.11 | 40 | 16 | 24 | 7/14 | 7.0 | 8.0 | 0.6 | 37000 | 1 |
| 1810 | 1.09 | 56 | 16 | 22 | 7/14 | 6.5 | 12.0 | 0.5 | 37000 | 1 |
| 1821 | 1.09 | 60 | 18 | 17 | 7/14 | 5.5 | 8.92 | 0.25 | 39500 | 1 |
| 1918 | 1.13 | 62 | 19 | 30 | 7/14 | 4.5 | 9.86 | 0.5 | 41000 | 1 |
| 2051 | 1.13 | 61 | 19 | 29 | 8/15 | 5.0 | 8.78 | 0.4 | 42000 | 1 |
| 2130 | 1.13 | 61 | 23 | 33 | 8/22 | 4.5 | 9.30 | 0.5 | 42000 | 1 |
| 2422 | 1.15 | 70 | 23 | 35 | 9/25 | 4.2 | 9.50 | 0.25 | 42000 | 1 |
| 2575 | 1.17 | 81 | 24 | 35 | 9/25 | 4.5 | 10.86 | 0.5 | 41500 | 1 |

## 5.2 Bit Record

| Bit # | Size (in) | Make | Type | Jets | TFA $In^2$ | In (m) | Out (m) | Run (m) | Hrs | WOB klbs | RPM | TORQ kft.lbs | SPP psi | Flow gpm | Grading |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26 / 36HO | Smith | S987PX | 3 x 24 | 1.33 | 235 | 268 | 33 | 1.4 | 2 | 50 | 2.2 – 3.1 | 1500 | 402 | 1-1-FC-A-2-I-NO-TD |
| | | | | | | | | | | | | | | | |
| 2 | 17½ | Reed Hycalog | EM511GC | 4 x 20 | 1.23 | 268 | 777 | 509 | 14.0 | 5-12 | 90 - 110 | 2.3 – 4.5 | 2200 - 2950 | 1000 - 1200 | 0-0-NO-A-N-I-NO-TD |
| | | | | | | | | | | | | | | | |
| 3 | 12¼ | Hughes | HC 605 | 7 x 11 | 0.65 | 777 | 1810 | 1033 | 23.8 | 10-35 | 135- 160 | 3.0 – 11.3 | 2000 - 3925 | 750 - 855 | 7-3-BT-C-X-I-PN-TD |
| | | | | | | | | | | | | | | | |
| 4 | 8½ | Reed Hycalog | DSX104-HGN | 5 x 12 | 0.55 | 1810 | 2575 | 765 | 23.36 | 25-30 | 145- 165 | 3.3 – 10.4 | 3200 - 4150 | 620- 660 | 2-4-WT-T-X-I-BU-CT-TD |
| | | | | | | | | | | | | | | | |

## 5.3 Hydraulic Listing

| Depth (m) | Mud Weight (ppg) | ECD (ppg) | Flow Rate (gpm) | Total Pressure Loss (psi) | Pressure Loss Across Bit (psi) | Mud Velocity Through bit (m/sec) | Bit Hydraulic Power (hp) | Mud Impact at Bit (lbf) | Total Hydraulic Power (hp) | Ratio (Bit Pwr/Total Pwr) (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 268 | 8.5+ | 8.6 | 1203 | 1632 | 658 | 89 | 468 | 1564 | 1159 | 40.3 |
| 770 | 8.5+ | 8.6+ | 1103 | 2650 | 654 | 88 | 420 | 1419 | 1725 | 24.4 |
| 1484 | 8.5+ | 8.7+ | 853 | 3335 | 1377 | 129 | 694 | 1602 | 1680 | 41.3 |
| 1810 | 9.1 | 9.3 | 857 | 3829 | 1473 | 129 | 745 | 1714 | 1937 | 38.5 |
| 1870 | 9.3 | 9.6 | 652 | 3620 | 1395 | 116 | 454 | 1166 | 1395 | 32.5 |
| 2515 | 9.75 | 10.34 | 627 | 4609.7 | 1173.5 | 111 | 434 | 1161 | 1465 | 29.7 |
| | | | | | | | | | | |

## 5.4 Drilling Phase Summary

### 5.4.1 36" (914 mm) Hole Section

| | |
|---|---|
| Dates | : 8 to 9 December 2003 |
| Measured depth | : 235.0 m – 268.0 m |
| TVDSSLAT | : 212.6 m – 245.6 m |
| Number of bits used | : 1 x 26" bit & 1 x 36" H/O |
| Mud type | : Seawater & gel sweeps |

Hill-1 was spudded on 8th December 2003 at 21:00 hrs with a re-run 26" (660 mm) Smith S987PX bit with 3 x 24 jets and a 36" (914 mm) hole opener. The seafloor was tagged at 235.2 m RT and was drilled to 268 m RT using seawater and gel sweeps, with returns going to the seafloor. The first 5 m was drilled using gel only at a low flow rate. At TD the hole was displaced to gel mud and no fill was observed after pulling out and running back to bottom. 33m of hole was drilled in 1.4 hrs for an average ROP of 23.6 m/hr. The 26" bit was graded as 1-1-FC-A-2-I-NO-TD

The hole was cased using a 20" (508 mm) float shoe joint and a 30" (760 mm) housing joint which were run in with the PGB and landed with the shoe at 268 m TD. A cement job was performed using 168 bbl of 15.9 ppg cement slurry but as it was unsatisfactory a top job was performed using a further 91 bbl before proceeding with the next phase.

### 5.4.2 17½" (445 mm) Hole Section

| | |
|---|---|
| Dates | : 10 to 11 December 2003 |
| Measured depth | : 268.0 m – 777.0 m |
| TVDSSLAT | : 245.6 m – 754.6 m |
| Number of bits used | : 1 |
| Mud type | : Seawater & gel sweeps |

Bit #2, a re-run 17½" (445 mm) Reed Hycalog EM511GC with 4 x 20 nozzles was made up and run in to drill this phase. The TOC inside the 20" casing was tagged at 264 m and cement was drilled out using seawater. 17½" hole was drilled from 268 m to section TD at 777 m using seawater and hi-vis gel sweeps with pills spotted on connections. At section TD the hole was displaced to PHG mud before pulling out. This bit drilled 509 m in 14.0 on bottom hours for an average ROP of 36.4 m/hr and was graded as 0-0-NO-A-N-I-NO-TD.

During rough weather, 45 joints of L80 grade $13^{3}/_{8}$" (340 mm) casing were run with the shoe set at 769 m. The cement job consisted of 240 bbl of 12.5 ppg lead slurry and 150 bbl of 15.8 ppg tail slurry. Cement returns were observed at the seabed and the plug was bumped with 900 psi.

### 5.4.3 12¼" (311 mm) Hole Section

| | |
|---|---|
| Dates | : 12 to 16 December 2003 |
| Measured depth | : 777.0 m – 1810.0 m |
| TVDSSLAT | : 754.6 m – 1787.6 m |
| Number of bits used | : 1 |
| Mud type | : Seawater and gel sweeps<br>KCl polymer |

As rough weather continued, the BOP, LMRP and riser dump valve were assembled and tested. They were left secured in the moon pool while waiting for conditions to ease. After a wait of 23 hours, the riser was run and the BOP was latched and tested.

The 12¼" (311 mm) phase was begun, with TOC being tagged at 742 m. The cement was drilled out and 3.0 m of new hole was made to 780 m. The hole was displaced to 1.03 SG drilling fluid prior to performing a Leak Off Test, which reached an EMW of 11.5 ppg.

12¼" (311 mm) hole was then drilled ahead from 780 - 1810 m by Bit #3, a 12¼" Hughes HC605 PDC with 7 x 11 nozzles, with KCl polymer mud being displaced to the hole at 1444 m after having been, until here, drilled with seawater and gel sweeps as required. 19 bbl were lost down hole at 1611 m. This bit was then pulled out to run $9^{5}/_{8}$" casing. The trip out of hole prior to running casing was not very smooth, with tight spots needing to be worked from 1722 - 1718m, 1674 - 1650m, 1243 m and 1080 m. Bit#3 drilled 1033 m in 23.8 on bottom hours for an average penetration rate of 43.4 m/hr. The bit was graded as 7-3-BT-C-X-I-PN-TD.

126 joints of L80 grade $9^{5}/_{8}$" (244 mm) casing were run with the shoe set at 1801.2 m. The cement job consisted of 73 bbl of 12.5 ppg lead slurry and 45 bbl of 15.8 ppg tail slurry. The plug was bumped with 1000 psi.

### 5.4.4 8½" (216 mm) Hole Section

| | |
|---|---|
| Dates | : 18 to 20 December 2003 |
| Measured depth | : 1810.0 m – 2575.0 m |
| TVDSSLAT | : 1787.5 m – 2552.4 m |
| Number of bits used | : 1 |
| Mud type | : Aqua-drill |

After testing the BOP and making up an 8½" bit and BHA which incorporated Sperry Sun MWD tools and running in hole with same, Bit#4, an 8½" PDC (216 mm) Reed Hycalog DSX103-HGN with 5 x 12 nozzles, tagged TOC at 1772 m. The cement, float and shoe were drilled out with seawater and 9 m rat hole was cleaned out. The hole was then displaced to AquaDrill mud and an LOT was conducted resulting in an EMW of 10.5 ppg, and 8½" (216 mm) hole was then drilled ahead from 1810 - 2575 m TD with no problems encountered while drilling. This bit was then pulled out to run TD wireline logs. Bit#4 drilled 765 m in 23.36 on bottom hours for an average penetration rate of 32.8 m/hr. The bit was graded as 2-4-WT-T-X-I-BU-CT-TD.

A wiper trip was made to the $9^{5}/_{8}$" shoe. The first trip out of hole prior to running logs encountered tight spots and back reaming was required. Major tight spots were at 2550m, 2540-2520 m, 2514-2493 m, 2479 m, 2471 m, 2447 m, 2415 m, 2393-2385 m, 2306-2286 m, 2217-2206 m and 2098-2080 m. These hole problems were put down to inefficient hole cleaning while drilling.

Wire-line logs were then run as follows:

Run 1: PEX-GR
Run 2: VSP
Run 3: MDT
Run 4: CST

After logging was completed, the hole was plugged and abandoned as per programme.

# SECTION 12a : FORMATION EVALUATION LOG

# SECTION 12b : DRILLING LOG

# SECTION 12c : GAS RATIO LOG

# SECTION 12d : OVERPRESSURE LOG

# SECTION 13 : RIG POSITIONING REPORT

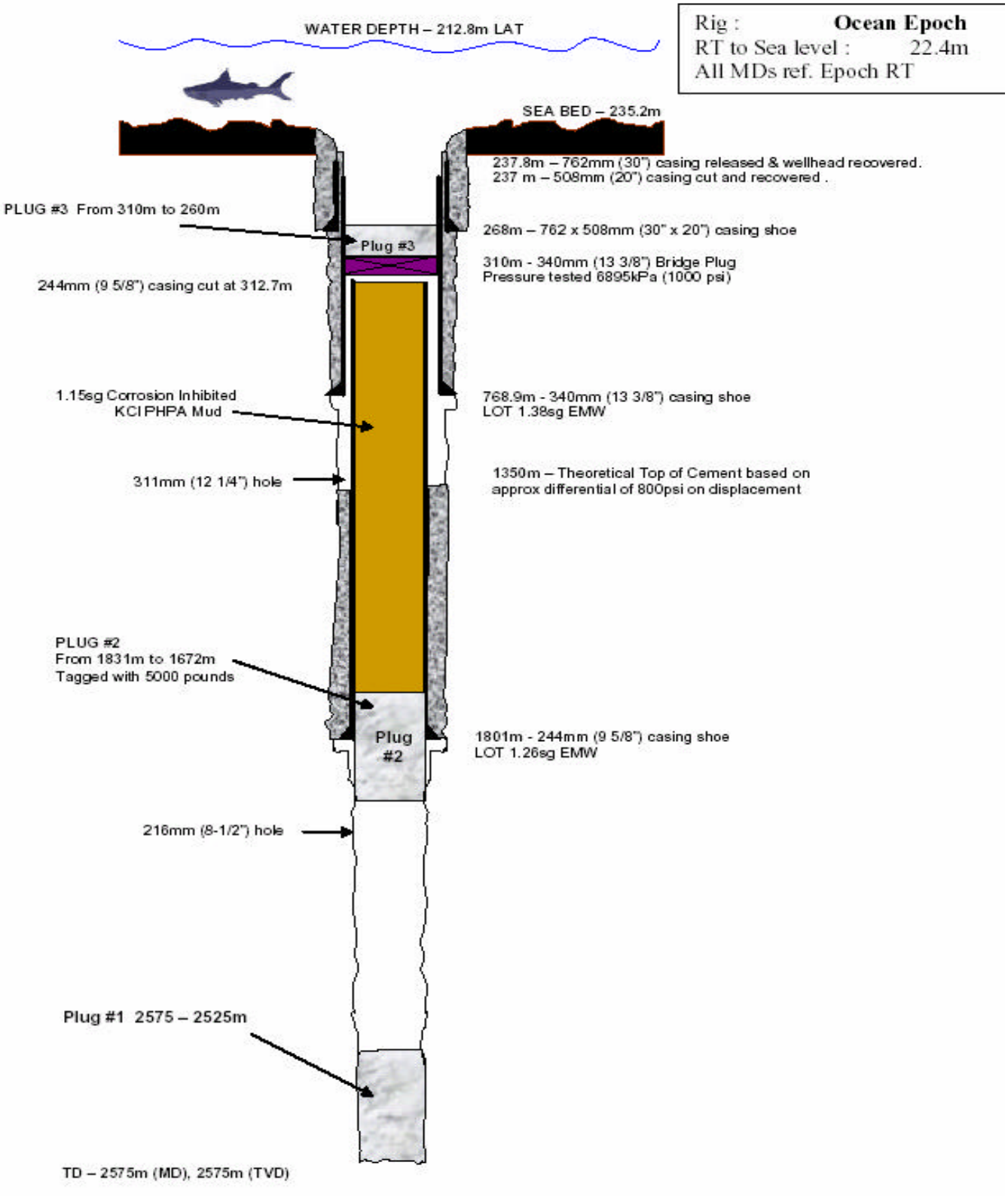
# SECTION 14 : WELL ABANDONMENT AND PLUG REPORT

Santos

25th December 2003

# WELL ABANDONMENT DIAGRAM

## V I C/P51 Hill-1




S:\DRILLING\VIC-P51 & P52\2003\AA_Wells\Hill-1\Operations\Abandonment\Hill-1 P&A Schematic.doc

# SECTION 15: DEVIATION SUMMARY

Surveys and schematics are presented overleaf.

DFE above MSL : 22.4 m | Lat : 38 Deg 48 Min 50.37 Sec | Spud Date : 08 Dec 2003 | Release Date : 25 Dec 2003

Water Depth : 212.8 m | Long : 141 Deg 50 Min 39.58 Sec | Spud Time : 21:00 | Release Time : 04:00

## Survey

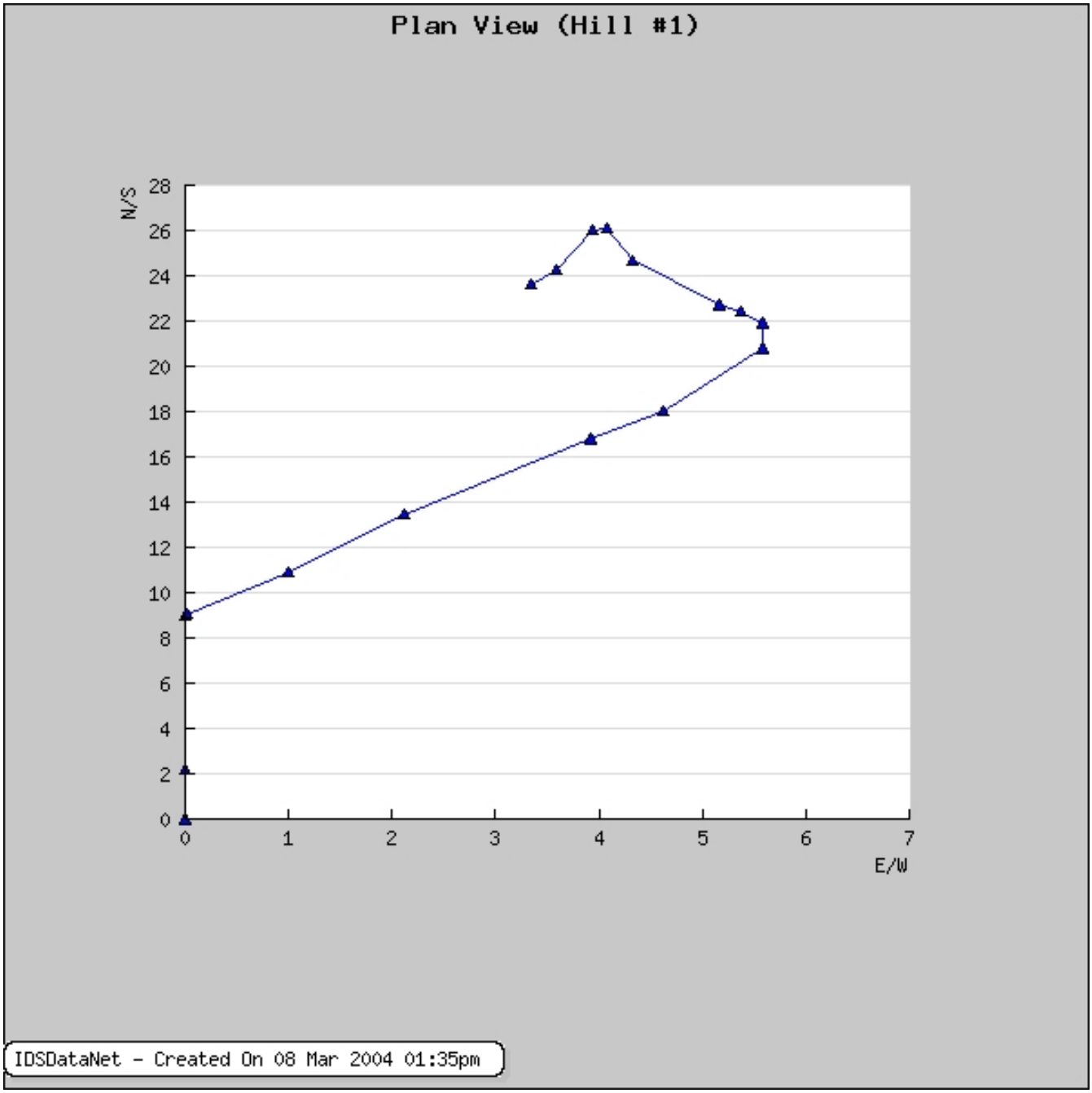
## Well: Hill #1

Mag Dec: 0 Sidetrack # 0

| MD m | TVD m | INCL deg | CORR. AZ deg | DOGLEG deg/ 30m | 'V' SECT m | N/S m | E/W m | TOOLTYPE |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 256.00 | 256.0 | 1.00 | 0 | 0.12 | 2.23 | 2.23 | 0 | Totco |
| 771.00 | 771.0 | 0.50 | 0 | 0.03 | 8.97 | 8.97 | 0 | Totco |
| 787.46 | 787.4 | 0.12 | 67.24 | 0.85 | 9.05 | 9.05 | 0.02 | MWD |
| 1045.49 | 1045.4 | 0.84 | 22.92 | 0.09 | 10.90 | 10.90 | 1.00 | MWD |
| 1222.78 | 1222.7 | 0.96 | 24.23 | 0.02 | 13.45 | 13.45 | 2.12 | MWD |
| 1455.71 | 1455.6 | 0.92 | 32.58 | 0.02 | 16.80 | 16.80 | 3.92 | MWD |
| 1538.70 | 1538.6 | 1.01 | 27.64 | 0.04 | 18.01 | 18.01 | 4.62 | MWD |
| 1712.12 | 1712.0 | 0.96 | 9.64 | 0.05 | 20.80 | 20.80 | 5.58 | MWD |
| 1791.40 | 1791.2 | 0.69 | 348.35 | 0.15 | 21.92 | 21.92 | 5.59 | MWD |
| 1830.94 | 1830.8 | 0.88 | 326.25 | 0.27 | 22.41 | 22.41 | 5.37 | MWD |
| 1856.75 | 1856.6 | 0.78 | 329.83 | 0.13 | 22.72 | 22.72 | 5.17 | MWD |
| 2031.42 | 2031.2 | 0.65 | 345.22 | 0.04 | 24.71 | 24.71 | 4.33 | MWD |
| 2179.66 | 2179.5 | 0.45 | 356.67 | 0.05 | 26.10 | 26.10 | 4.08 | MWD |
| 2352.55 | 2352.4 | 0.50 | 187.16 | 0.16 | 26.03 | 26.03 | 3.94 | MWD |
| 2524.20 | 2524.0 | 0.70 | 194.84 | 0.04 | 24.28 | 24.28 | 3.58 | MWD |
| 2575.00 | 2574.8 | 0.86 | 204.43 | 0.12 | 23.63 | 23.63 | 3.34 | MWD |

| Wellname : Hill #1 | Drilling Co. : DOGC | Rig : Ocean Epoch |
|---|---|---|

| | | | |
|---|---|---|---|
| DFE above MSL : 22.4 m | Lat : 38 Deg 48 Min 50.37 Sec | Spud Date : 08 Dec 2003 | Release Date : 25 Dec 2003 |
| Water Depth : 212.8 m | Long : 141 Deg 50 Min 39.58 Sec | Spud Time : 21:00 | Release Time : 04:00 |



| | | | |
|---|---|---|---|
| Wellname : Hill #1 | Drilling Co. : DOGC | | Rig : Ocean Epoch |
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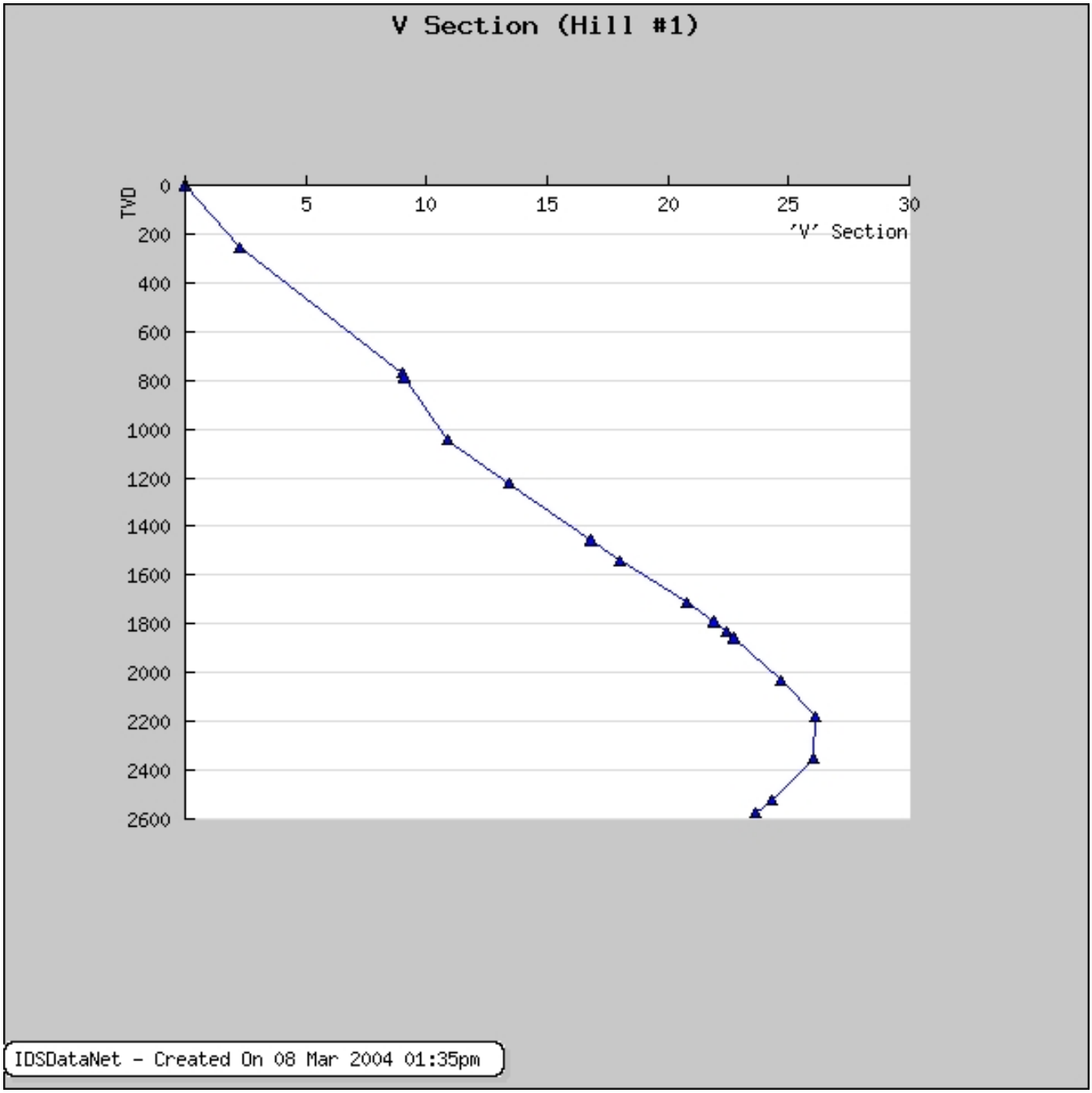

# SECTION 16: PALYNOLOGY REPORT

(includes Palynological Range Chart)

**SANTOS PALYNOLOGY SECTION**
**EXPLORATION SERVICES DEPARTMENT**

Palynology Report No. 2003/38

Author: R.HELBY
Approved by: G.WOOD

# PALYNOLOGICAL REPORT NO. 2003/38

## HILL - 1 WELL

**Santos Ltd**
A.C.N. 007 550 923

Circulation: Geology Operations, Team Leader, EIC, Palynology Files

## Introduction

Sixteen sidewall core samples and fifteen cuttings samples from Santos Hill-1, drilled in VIC P51, were examined palynologically.

R.Helby

| SAMPLE | DEPTH (M) | REMARKS |
|---|---|---|
| CUTT | 1641 | Relatively high diversity dinocyst suite with *Wilsonidinium ornatum, Kisselovia edwardsii/Charlesdowniea thompsoniae, Schematophora obscura, Hystrichokolpoma rigaudiae* and *Paucilobimorpha tripus.* |
| CUTT | 1671 | Relatively high diversity dinocyst suite with *Homotryblium tasmaniense, Apectodinium homomorphum, Corrudinium obscurum and Schematophora obscura.* The sample is dominated by *Glaphyrocysta* spp. and *Systematophora* spp. |
| CUTT | 1767 | Restricted (7%), moderately diverse dinocyst suite with *Isabelidinium korojonense, I. pellucidum* and *Nelsoniella glabra. Nummus* spp. prominent (15%). Very high diversity spore-pollen suite includes *Forcipites longus, Tricolporites lilliei* and *Tripunctisporis maastrichtiensis.* |
| CUTT | 1799 | Moderately diverse dinocyst suite with *Isabelidinium korojonense, I. pellucidum, Nelsoniella glabra,* "frequent" *Cribroperidinium spp., Odontochitina porifera* and *O. nonporifera. Nummus* spp. less prominent (>3%) than above. High diversity spore-pollen suite includes *Tricolporites lilliei, Gephyrapollenites wahooensis, Nothofagidites senectus* and is dominated by *Proteacidites* spp. (23%). *Forcipites longus* not seen. |
| SWC42 | 1886.0 | Very restricted (1%), low diversity dinocyst suite with consistent *Isabelidinium greenense, Spinidinium* spp. and *Spiniferites* spp. High diversity spore-pollen association with *Tricolporites lilliei, Gambierina rudata, Nothofagidites senectus,* dominated by *Proteacidites* spp. (19%) and *Cyathidites* spp (19%). *Forcipites longus* not seen. |
| CUTT | 1959 | Restricted (7%), moderate diversity dinocyst suite with frequent (5%)*Isabelidinium* spp. (including *I. pellucidum*), *Areosphaeridium suggestium, Chatangiella victoriensis* and *Trithyrodinium suspectum*. Very high diversity spore-pollen suite with *Tricolporites lilliei* (tentative), *Anacolosidites sectus, Gambierina rudata, Grapnelispora spiralia, Lactoropollenites* sp., *Nothofagidites senectus*, dominated by *Proteacidites* spp. (21%) and *Cyathidites* spp (19%). Unequivocal *Forcipites longus* was not recorded. |
| CUTT | 1968 | Restricted (6%), moderate diversity dinocyst suite lacking zone taxa but including frequent (4%) *Isabelidinium* spp., *Areosphaeridium suggestium* and *Tanyosphaeridium salpinx*. High diversity spore-pollen suite, lacking first order zone markers. *Proteacidites common*, including prominent *P. amolosexinus. Nothofagidites senectus and Peninsulapollenites gillii* recorded. |

| SAMPLE | DEPTH (M) | REMARKS |
|---|---|---|
| SWC36 | 1985.0 | Very restricted (<1%), moderate diversity, dinocyst suite with *Xenikoon australis, Odontochitina porifera* and *Xenascus sarjeantii.* Very high diversity spore-pollen suite with *Forcipites sabulosus, Gambierina rudata, Gephyrapollenites wahooensis, Nothofagidites senectus* and *Peninsulapollenites gillii.* |
| CUTT | 1989 | Restricted (5%), moderate diversity, dinocyst suite with *Anthosphaeridium wisemaniae, Palaeohystrichophora infusorioides* and *Xenascus sarjeantii,* but apparently lacking *Xenikoon australis.* High diversity spore-pollen suite with *Gambierina rudata, Lactoropollenites* sp., *Nothofagidites senectus* and *Peninsulapollenites gillii,* dominated by *Proteacidites* spp. (18%). |
| CUTT | 2004 | Restricted (4%), low diversity, dinocyst suite with *Heterosphaeridium spp, Odontochitina sp.,* and *Xenascus sarjeantii,* but apparently lacking *Xenikoon australis.* High diversity spore-pollen suite with *Forcipites sabulosus, Gambierina rudata, Gephyrapollenites wahooensis, Nothofagidites senectus* and *Peninsulapollenites gillii.* |
| SWC30 | 2010.5 | Very restricted (<1%), low diversity, dinocyst suite with *Xenikoon australis* and *Xenascus sarjeantii.* Very high diversity spore-pollen association with *Forcipites sabulosus, Nothofagidites senectus, Peninsulapollenites gillii, Tricolporites apoxyexinus* and very prominent (17%) *Proteacidites* spp . *Latrobosporites amplus* relatively prominent (4%). |
| SWC29 | 2016.0 | Moderate diversity spore-pollen suite with *Lygistepollenites florinii, Nothofagidites senectus and Tricolpites confessus.* No unequivocal dinocysts observed but palynomorph assemblage dominated (74%) by *Paralecaniella* sp. (cf. *P. indentata*). |
| SWC26 | 2023.0 | Restricted (<3%), low diversity dinocyst suite with *Heterosphaeridium* sp., *Hystrichodinium* sp., *Odontochitina* sp. and *Xenascus sarjeantii. Paralecaniella* sp. (cf. *P. indentata*) prominent (18%). Moderate diversity spore-pollen suite with common *Nothofagidites* spp. (9% including *N. senectus*), *Peninsulapollenites gillii* and relatively prominent *Proteacidites* spp. (>8%). |
| SWC22 | 2075.0 | Restricted (7%) moderate diversity dinocyst suite with *Xenikoon australis* and *Xenascus sarjeantii. Paralecaniella* sp. (cf. *P. indentata*) particularly prominent in the kerogen slide. Very high diversity spore-pollen suite with prominent *Nothofagidites* spp. (7% including *N. senectus*), *Peninsulapollenites gillii, Tricolporites apoxyexinus* and relatively prominent *Proteacidites* spp. (12%). |
| SWC21 | 2078.5 | Very restricted (<3%), moderate diversity dinocyst suite with *Anthosphaeridium wisemaniae, Xenascus sarjeantii* and *Xenikoon australis.* High diversity spore-pollen suite with prominent *Nothofagidites* spp. (5% including *N. senectus*), *Gambierina rudata, Gephyrapollenites wahooensis, Lactoropollenites* sp., *Peninsulapollenites gillii* and prominent *Proteacidites* spp. (10%). |
| CUTT | 2184 | Moderate diversity spore-pollen suite with *Nothofagidites senectus* but otherwise lacking diagnostic taxa. A single dinocyst was tentatively identified as *Acanthaulax* sp. |
| SWC16 | 2196.0 | Very restricted (2%), low diversity dinocyst suite with consistent *Xenikoon australis.*<br>Very high diversity spore-pollen suite with *Gambierina rudata* relatively prominent *Nothofagidites* spp. (including *N. senectus*), *Peninsulapollenites gillii, Stereisporites regium* and prominent *Proteacidites* spp. (15%). |

| SAMPLE | DEPTH (M) | REMARKS |
|---|---|---|
| SWC15 | 2206.0 | Very restricted (1%), low diversity dinocyst suite with consistent *Xenikoon australis*. High diversity spore-pollen suite with prominent *Nothofagidites* spp. (13% including *N. senectus*), *Gambierina rudata*, *Peninsulapollenites gillii*, *Tricolporites confessus* and prominent *Proteacidites* spp. (10%).. |
| CUTT | 2211 | Very restricted (3%), low diversity dinocyst suite with consistent *Xenikoon australis* and *Hystrichodinium* sp. High diversity spore-pollen suite apparently lacks diagnostic taxa although the occurrence of *Peninsulapollenites gillii* suggests it can be no older than upper *Tricolporites apoxyexinus* Zone. |
| SWC13 | 2243 | Very restricted (2%), low diversity dinocyst suite with *Xenikoon australis, Dinogymnium nelsonense and Spiniferites* sp. Very high diversity spore-pollen suite with *Nothofagidites* spp. (including *N. senectus*), *Forcipites sabulosus*, *Gambierina rudata*, *Gephyrapollenites wahooensis Peninsulapollenites gillii* and relatively prominent *Proteacidites* spp. (10%, of which *P. amolosexinus* comprises a substantial portion). |
| SWC12 | 2271.0 | Restricted (8%), very low diversity dinocyst suite with prominent *Xenikoon australis*. High diversity spore-pollen suite with *Nothofagidites* spp. (including *N. senectus*), *Forcipites sabulosus*, *Gambierina rudata*, *Peninsulapollenites gillii*, *Tricolporites confessus* and relatively prominent *Proteacidites* spp. (7%). |
| CUTT | 2274 | Very restricted (<1%), very low diversity dinocyst suite with questionable *Nelsoniella aceras* but lacking *Xenikoon australis* and other diagnostic taxa. Moderate diversity spore-pollen suite apparently lacks diagnostic taxa apart from *Nothofagidites senectus*.. |
| SWC11 | 2281.0 | Restricted (4%), low diversity dinocyst suite with *Xenikoon australis*. High diversity spore-pollen suite with *Gambierina rudata*, *Nothofagidites* spp., *Proteacidites* spp. relatively prominent. |
| CUTT | 2286 | Restricted (3%), very low diversity dinocyst suite with *Xenikoon australis*. Moderate diversity spore-pollen suite with *Nothofagidites* spp. and *Proteacidites confragosus*. |
| SWC7 | 2365.0 | Rich, low diversity dinocyst suite (34%) with abundant *Xenikoon australis* (27%) *and frequent Nelsoniella aceras* (5%) with *N. semireticulata*. High diversity spore-pollen suite with *Forcipites sabulosus*, *Gambierina rudata*, *Lactoropollenites* sp. *Nothofagidites* spp. (including *N. senectus*), *Peninsulapollenites gillii* and *Tricolpites confessus*. |
| SWC6 | 2384.0 | Rich (20%), low diversity dinocyst suite with common *Xenikoon australis* (16%) *and* "frequent" *Nelsoniella aceras* (3%). High diversity spore-pollen suite with *Gambierina rudata, Nothofagidites* spp. (including *N. senectus*) and *Peninsulapollenites gillii*. |
| SWC5 | 2423.0 | Rich (40%), low diversity dinocyst suite with common *Xenikoon australis* (26%), *Nelsoniella aceras* (11%) and *N. semireticulata*. High diversity spore-pollen suite with *Nothofagidites* spp. and *Forcipites sabulosus*. *Proteacidites* spp. common (10%). |
| CUTT | 2462 | Rich (34%), low diversity dinocyst suite with common *Xenikoon australis* (13%), *Nelsoniella aceras* (17%) with *N. semireticulata* and *Odontochitina porifera*. High diversity spore-pollen suite with *Nothofagidites* spp. and *Gambierina rudata*. *Proteacidites* spp. prominent (7%). |

| SAMPLE | DEPTH (M) | REMARKS |
|---|---|---|
| CUTT | 2472 | Rich (34%), low diversity dinocyst suite with common *Xenikoon australis* (12%), *Nelsoniella aceras* (13%) and *Odontochitina porifera*. High diversity spore-pollen suite with *Nothofagidites* spp., *Forcipites sabulosus* and *Proteacidites congfragosus*. *Proteacidites* spp. prominent (9%). |
| SWC3 | 2475.0 | Rich (52%), moderate diversity dinocyst suite with abundant *Xenikoon australis* (34%) with frequent *Nelsoniella* spp. (including *N. tuberculata*) and *Odontochitina porifera*. High diversity spore-pollen suite with frequent *Gambierina rudata, Forcipites sabulosus* (?) and *Tricolporites protolilliei. Nothofagidites* spp. not recorded. |
| CUTT | 2505 | Rich (29%), moderate diversity dinocyst suite with common *Xenikoon australis* (14%) with frequent *Nelsoniella* spp. (including *N. tuberculata*) and *Odontochitina porifera*. High diversity spore-pollen suite with *Gambierina rudata, Forcipites sabulosus*(?), *Nothofagidites* spp. and *Peninsulapollenites gillii.* |
| CUTT | 2544 | Rich (39%), moderate diversity dinocyst suite with common *Xenikoon australis* (14%), *Nelsoniella* spp. (15%) and *Odontochitina porifera*. Moderate diversity spore-pollen suite with *Forcipites sabulosus* (?) and *Nothofagidites* spp. *Proteacidites* spp. prominent (7%). |