

Sperry-Sun

915172 001

Page 1 of 10

Petroleum Development

27 JAN 2005

DEPT. NAT. RES. & ENV.



PE915172

End of Well Report for Santos Ltd

Rig: Ocean Patriot
Well: Martha-1
Field: Offshore Otway Basin
Country: Australia
Job No: AU-FE-0003287671
Date: 20-Oct-04
API No:

HALLIBURTON

915172 002

Table of Contents

1. General Information
2. Operational Overview
3. Summary of MWD Runs
4. Bitrun Summary
5. Directional Survey Data

General Information

915172 003

| | | |
|-----------------------------|---------------------------------|-------------|
| Company: | Santos Ltd | |
| Rig: | Ocean Patriot | |
| Well: | Martha-1 | |
| Field: | Offshore Otway Basin | |
| Country: | Australia | |
| API Number: | | |
| Sperry-Sun Job Number: | AU-FE-0003287671 | |
| Job start date: | 20-Oct-04 | |
| Job end date: | 29-Oct-04 | |
| North reference: | Grid | |
| Declination: | 10.884 | deg |
| Dip angle: | -69.861 | deg |
| Total magnetic field: | 60851.918 | nT |
| Date of magnetic data: | 23-Oct-04 | |
| Wellhead coordinates N: | 38 deg. 37 min 24.330 sec South | |
| Wellhead coordinates E: | 142 deg. 42 min 5.020 sec East | |
| Vertical section direction: | Closure | deg |
| MWD Engineers: | T.Oberne | D.Luoni |
| Company Representatives: | N.Walters | S.Hodgetts |
| Company Geologist: | J.Pitman | F.Fernandes |
| Lease Name: | Vic P44 | |
| Unit Number: | 197 | |
| State: | Victoria | |
| County: | | |

Operational Overview

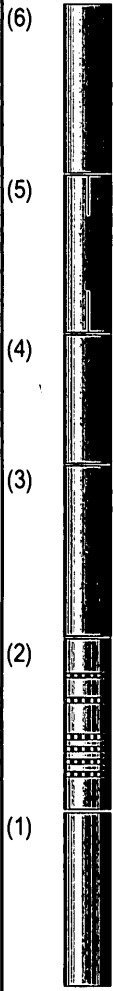
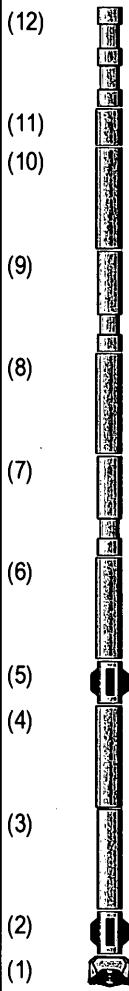
Sperry-Sun Drilling Services were contracted to provide formation evaluation and directional surveying services for the drilling of Martha-1 well by Santos Ltd on the Ocean Patriot MODU.

12 1/4" (311mm) Hole Section

Sperry-Sun's formation evaluation suite of tools were used consisting of a Dual Gamma Ray (DGR) sensor, Pressure While Drilling (PWD) and Four Phase Electromagnetic Resistivity (EWR-P4) sensors along with a Positon Monitor (PM) for directional control. The 12 1/4" hole section was drilled in two runs with the first from 628.0 mMDRT to 1262.0 mMDRT at which point a bit trip was made. Drilling resumed with a PDC bit to TD at 1800.0 mMDRT.

Bitrun Summary

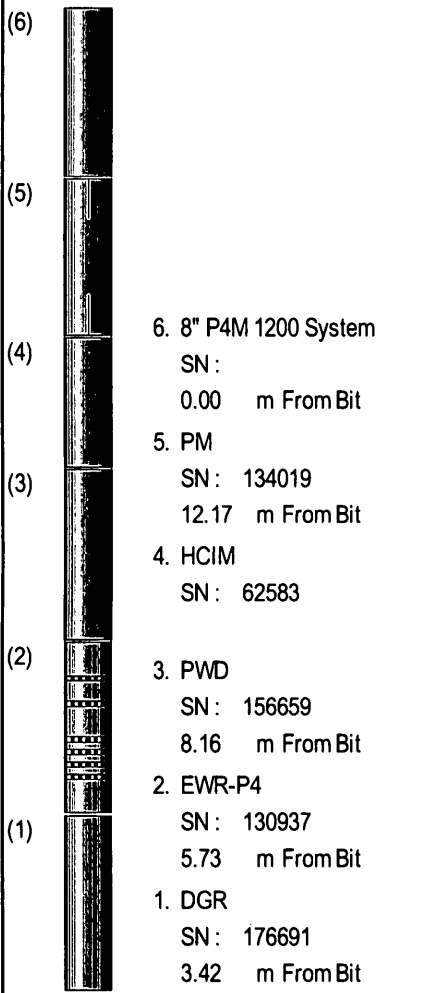
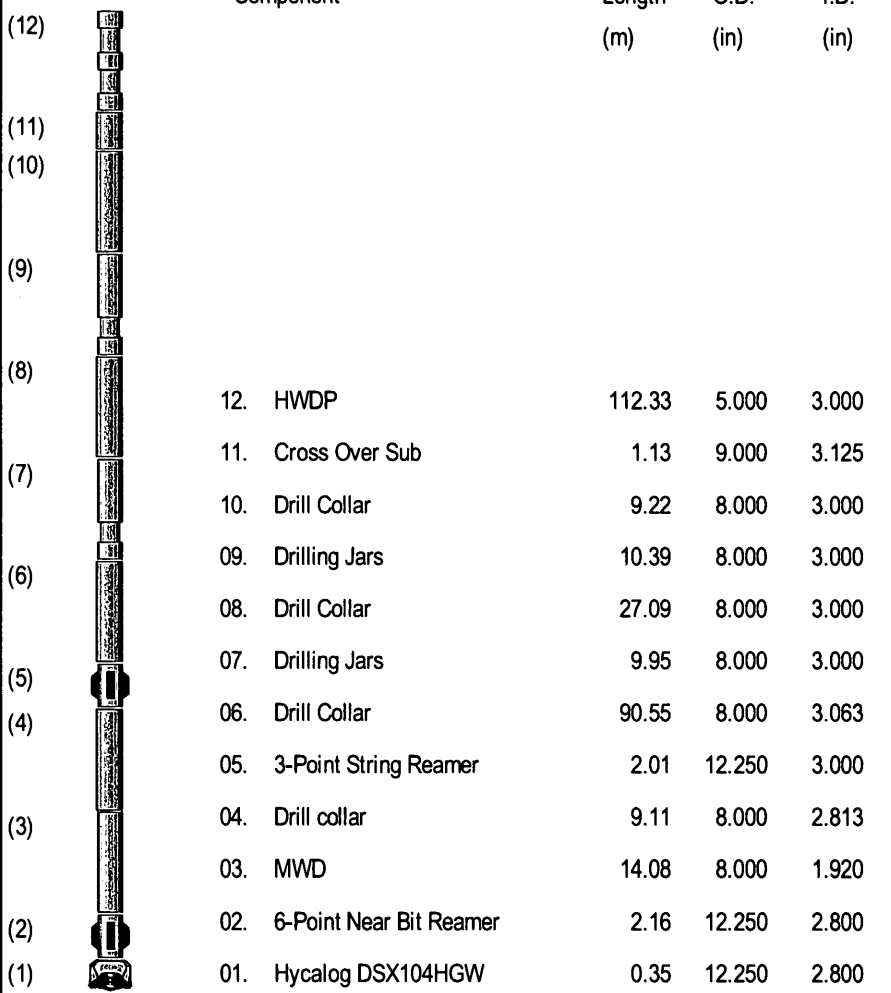
| Run Time Data | Drilling Data | Mud Data |
|-----------------------------|-----------------------------|--------------------------------------|
| MWD Run : 0300 | Start Depth : 628.00 m | Mud Type : KCI/PHPA |
| Rig Bit No: 3 | End Depth : 1262.00 m | Weight / Visc : 1.08 sg / 42.00 spqt |
| Hole Size : 12.25 in | Footage : 634.00 m | Chlorides : 38000 ppm |
| Run Start : 25-Oct-04 18:20 | Avg. Flow Rate : 900.00 gpm | PV / YP : 11.00 cp / 9.58 lhf2 |
| Run End : 28-Oct-04 09:55 | Avg. RPM : 108.00 rpm | Solids/Sand : 1 % / 0.75 % |
| BRT Hrs : 63.60 | Avg. WOB : 15.00 klb | %Oil / O:W: N/A % / N/A:100 |
| Circ. Hrs : 46.67 | Avg. ROP : 18.60 m/hr | pH/Fluid Loss: 8.00 pH / 1.00 mptm |
| Oper. Hrs : 65.63 | Avg. SPP : 2280.00 psig | Max. Temp. : 51.00 degC |

| MWD Schematics | BHA Schematics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|-----------|------------|-----------|-----------|------|--|--|--|------|--|--|--|------|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|-----|--|--|--|---|----------|--------|-------|-------|--------------------|------|-------|-------|------------------|------|-------|-------|-------------------|-------|-------|-------|------------------|-------|-------|-------|-------------------|------|-------|-------|------------------|-------|-------|-------|---------------------------|------|--------|-------|------------------|------|-------|-------|---------|-------|-------|-------|-----------------------------|------|--------|-------|---------------------|------|--------|-------|
|  <p>(6) 8" P4M 1200 System SN : 0.00 m From Bit</p> <p>(5) PM SN : 134019 12.30 m From Bit</p> <p>(4) HCIM SN : 62583</p> <p>(3) PWD SN : 104432 8.30 m From Bit</p> <p>(2) EWR-P4 SN : 142009 5.77 m From Bit</p> <p>(1) DGR SN : 151078 3.46 m From Bit</p> |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Component</th> <th>Length (m)</th> <th>O.D. (in)</th> <th>I.D. (in)</th> </tr> </thead> <tbody> <tr><td>(12)</td><td></td><td></td><td></td></tr> <tr><td>(11)</td><td></td><td></td><td></td></tr> <tr><td>(10)</td><td></td><td></td><td></td></tr> <tr><td>(9)</td><td></td><td></td><td></td></tr> <tr><td>(8)</td><td></td><td></td><td></td></tr> <tr><td>(7)</td><td></td><td></td><td></td></tr> <tr><td>(6)</td><td></td><td></td><td></td></tr> <tr><td>(5)</td><td></td><td></td><td></td></tr> <tr><td>(4)</td><td></td><td></td><td></td></tr> <tr><td>(3)</td><td></td><td></td><td></td></tr> <tr><td>(2)</td><td></td><td></td><td></td></tr> <tr><td>(1)</td><td></td><td></td><td></td></tr> </tbody> </table> | Component | Length (m) | O.D. (in) | I.D. (in) | (12) | | | | (11) | | | | (10) | | | | (9) | | | | (8) | | | | (7) | | | | (6) | | | | (5) | | | | (4) | | | | (3) | | | | (2) | | | | (1) | | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>12. HWDP</td><td>112.33</td><td>5.000</td><td>3.000</td></tr> <tr><td>11. Cross Over Sub</td><td>1.13</td><td>9.000</td><td>3.125</td></tr> <tr><td>10. Drill Collar</td><td>9.22</td><td>8.000</td><td>3.000</td></tr> <tr><td>09. Drilling Jars</td><td>10.39</td><td>8.000</td><td>3.000</td></tr> <tr><td>08. Drill Collar</td><td>27.09</td><td>8.000</td><td>3.000</td></tr> <tr><td>07. Drilling Jars</td><td>9.95</td><td>8.000</td><td>3.000</td></tr> <tr><td>06. Drill Collar</td><td>90.55</td><td>8.000</td><td>3.063</td></tr> <tr><td>05. 3-Point String Reamer</td><td>2.01</td><td>12.250</td><td>3.000</td></tr> <tr><td>04. Drill collar</td><td>9.11</td><td>8.000</td><td>2.813</td></tr> <tr><td>03. MWD</td><td>14.21</td><td>8.000</td><td>1.920</td></tr> <tr><td>02. 6-Point Near Bit Reamer</td><td>2.16</td><td>12.250</td><td>2.800</td></tr> <tr><td>01. Reed TD43HKPROH</td><td>0.35</td><td>12.250</td><td>2.800</td></tr> </tbody> </table> | 12. HWDP | 112.33 | 5.000 | 3.000 | 11. Cross Over Sub | 1.13 | 9.000 | 3.125 | 10. Drill Collar | 9.22 | 8.000 | 3.000 | 09. Drilling Jars | 10.39 | 8.000 | 3.000 | 08. Drill Collar | 27.09 | 8.000 | 3.000 | 07. Drilling Jars | 9.95 | 8.000 | 3.000 | 06. Drill Collar | 90.55 | 8.000 | 3.063 | 05. 3-Point String Reamer | 2.01 | 12.250 | 3.000 | 04. Drill collar | 9.11 | 8.000 | 2.813 | 03. MWD | 14.21 | 8.000 | 1.920 | 02. 6-Point Near Bit Reamer | 2.16 | 12.250 | 2.800 | 01. Reed TD43HKPROH | 0.35 | 12.250 | 2.800 |
| Component | Length (m) | O.D. (in) | I.D. (in) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (12) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (11) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (9) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (8) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (7) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (5) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (4) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (1) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. HWDP | 112.33 | 5.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. Cross Over Sub | 1.13 | 9.000 | 3.125 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. Drill Collar | 9.22 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09. Drilling Jars | 10.39 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08. Drill Collar | 27.09 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07. Drilling Jars | 9.95 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06. Drill Collar | 90.55 | 8.000 | 3.063 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05. 3-Point String Reamer | 2.01 | 12.250 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04. Drill collar | 9.11 | 8.000 | 2.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03. MWD | 14.21 | 8.000 | 1.920 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02. 6-Point Near Bit Reamer | 2.16 | 12.250 | 2.800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01. Reed TD43HKPROH | 0.35 | 12.250 | 2.800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Comments | MWD Performance | | | | | | | | | | | | | | |
|--|--|------------------|---------------|-----------------|---------|----------------|----------|-------------|---------------------|-------------|----------------------|-------------|------------|------------------|-----------|
| Drilled 12 1/4" hole section from 628.0 mMDRT to 1262.0 mMDRT. All recorded data was recovered at surface. | <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>Tool OD / Type :</td><td>8.00 in / MPT</td></tr> <tr><td>MWD Real-time%:</td><td>78.33 %</td></tr> <tr><td>MWD Recorded%:</td><td>100.00 %</td></tr> <tr><td>Min. Inc. :</td><td>0.36 deg / 672.92 m</td></tr> <tr><td>Max. Inc. :</td><td>3.46 deg / 1247.39 m</td></tr> <tr><td>Final Az. :</td><td>212.50 deg</td></tr> <tr><td>Max Op. Press. :</td><td>1938 psig</td></tr> </tbody> </table> | Tool OD / Type : | 8.00 in / MPT | MWD Real-time%: | 78.33 % | MWD Recorded%: | 100.00 % | Min. Inc. : | 0.36 deg / 672.92 m | Max. Inc. : | 3.46 deg / 1247.39 m | Final Az. : | 212.50 deg | Max Op. Press. : | 1938 psig |
| Tool OD / Type : | 8.00 in / MPT | | | | | | | | | | | | | | |
| MWD Real-time%: | 78.33 % | | | | | | | | | | | | | | |
| MWD Recorded%: | 100.00 % | | | | | | | | | | | | | | |
| Min. Inc. : | 0.36 deg / 672.92 m | | | | | | | | | | | | | | |
| Max. Inc. : | 3.46 deg / 1247.39 m | | | | | | | | | | | | | | |
| Final Az. : | 212.50 deg | | | | | | | | | | | | | | |
| Max Op. Press. : | 1938 psig | | | | | | | | | | | | | | |

Bitrun Summary

| Run Time Data | Drilling Data | Mud Data |
|-----------------------------|-----------------------------|--------------------------------------|
| MWD Run : 0400 | Start Depth : 1262.00 m | Mud Type : KCI/PHPA |
| Rig Bit No: 4 | End Depth : 1800.00 m | Weight / Visc : 1.23 sg / 44.00 spqt |
| Hole Size : 12.25 in | Footage : 538.00 m | Chlorides : 35000 ppm |
| Run Start : 28-Oct-04 12:33 | Avg. Flow Rate : 850.00 gpm | PV / YP : 16.00 cp / 16.00 lhf2 |
| Run End : 30-Oct-04 11:13 | Avg. RPM : 128.00 rpm | Solids/Sand : 10 % / 1.5 % |
| BRT Hrs : 46.67 | Avg. WOB : 9.10 klb | %Oil / O:W: N/A % / N/A:98.5 |
| Circ. Hrs : 30.21 | Avg. ROP : 25.99 m/hr | pH/Fluid Loss: 8.00 pH / 9.20 mptm |
| Oper. Hrs : 46.67 | Avg. SPP : 3280.00 psig | Max. Temp. : 67.00 degC |

| MWD Schematics | BHA Schematics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-----------|------------|-----------|-----------|----------|--------|-------|-------|--------------------|------|-------|-------|------------------|------|-------|-------|-------------------|-------|-------|-------|------------------|-------|-------|-------|-------------------|------|-------|-------|------------------|-------|-------|-------|---------------------------|------|--------|-------|------------------|------|-------|-------|---------|-------|-------|-------|-----------------------------|------|--------|-------|-----------------------|------|--------|-------|
|  <p>(6) 6. 8" P4M 1200 System SN : 0.00 m From Bit</p> <p>(5) 5. PM SN : 134019 12.17 m From Bit</p> <p>(4) 4. HCIM SN : 62583</p> <p>(2) 3. PWD SN : 156659 8.16 m From Bit</p> <p>(1) 2. EWR-P4 SN : 130937 5.73 m From Bit</p> <p>1. DGR SN : 176691 3.42 m From Bit</p> |  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">Component</th> <th style="width: 15%;">Length (m)</th> <th style="width: 10%;">O.D. (in)</th> <th style="width: 10%;">I.D. (in)</th> </tr> </thead> <tbody> <tr><td>12. HWDP</td><td>112.33</td><td>5.000</td><td>3.000</td></tr> <tr><td>11. Cross Over Sub</td><td>1.13</td><td>9.000</td><td>3.125</td></tr> <tr><td>10. Drill Collar</td><td>9.22</td><td>8.000</td><td>3.000</td></tr> <tr><td>09. Drilling Jars</td><td>10.39</td><td>8.000</td><td>3.000</td></tr> <tr><td>08. Drill Collar</td><td>27.09</td><td>8.000</td><td>3.000</td></tr> <tr><td>07. Drilling Jars</td><td>9.95</td><td>8.000</td><td>3.000</td></tr> <tr><td>06. Drill Collar</td><td>90.55</td><td>8.000</td><td>3.063</td></tr> <tr><td>05. 3-Point String Reamer</td><td>2.01</td><td>12.250</td><td>3.000</td></tr> <tr><td>04. Drill collar</td><td>9.11</td><td>8.000</td><td>2.813</td></tr> <tr><td>03. MWD</td><td>14.08</td><td>8.000</td><td>1.920</td></tr> <tr><td>02. 6-Point Near Bit Reamer</td><td>2.16</td><td>12.250</td><td>2.800</td></tr> <tr><td>01. Hycalog DSX104HGW</td><td>0.35</td><td>12.250</td><td>2.800</td></tr> </tbody> </table> | Component | Length (m) | O.D. (in) | I.D. (in) | 12. HWDP | 112.33 | 5.000 | 3.000 | 11. Cross Over Sub | 1.13 | 9.000 | 3.125 | 10. Drill Collar | 9.22 | 8.000 | 3.000 | 09. Drilling Jars | 10.39 | 8.000 | 3.000 | 08. Drill Collar | 27.09 | 8.000 | 3.000 | 07. Drilling Jars | 9.95 | 8.000 | 3.000 | 06. Drill Collar | 90.55 | 8.000 | 3.063 | 05. 3-Point String Reamer | 2.01 | 12.250 | 3.000 | 04. Drill collar | 9.11 | 8.000 | 2.813 | 03. MWD | 14.08 | 8.000 | 1.920 | 02. 6-Point Near Bit Reamer | 2.16 | 12.250 | 2.800 | 01. Hycalog DSX104HGW | 0.35 | 12.250 | 2.800 |
| Component | Length (m) | O.D. (in) | I.D. (in) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. HWDP | 112.33 | 5.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. Cross Over Sub | 1.13 | 9.000 | 3.125 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. Drill Collar | 9.22 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09. Drilling Jars | 10.39 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08. Drill Collar | 27.09 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07. Drilling Jars | 9.95 | 8.000 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06. Drill Collar | 90.55 | 8.000 | 3.063 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05. 3-Point String Reamer | 2.01 | 12.250 | 3.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04. Drill collar | 9.11 | 8.000 | 2.813 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03. MWD | 14.08 | 8.000 | 1.920 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02. 6-Point Near Bit Reamer | 2.16 | 12.250 | 2.800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01. Hycalog DSX104HGW | 0.35 | 12.250 | 2.800 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Comments | MWD Performance | | | | | | | | | | | | | | |
|--|---|------------------|---------------|-----------------|---------|----------------|----------|-------------|----------------------|-------------|----------------------|-------------|------------|------------------|-----------|
| Drilled from 1262.0 mMDRT to TD at 1800.00 mMDRT. All data was recovered at surface. | <table style="width: 100%; border-collapse: collapse;"> <tr><td>Tool OD / Type :</td><td>8.00 in / MPT</td></tr> <tr><td>MWD Real-time%:</td><td>86.67 %</td></tr> <tr><td>MWD Recorded%:</td><td>100.00 %</td></tr> <tr><td>Min. Inc. :</td><td>2.20 deg / 1620.36 m</td></tr> <tr><td>Max. Inc. :</td><td>3.78 deg / 1276.08 m</td></tr> <tr><td>Final Az. :</td><td>214.76 deg</td></tr> <tr><td>Max Op. Press. :</td><td>3070 psig</td></tr> </table> | Tool OD / Type : | 8.00 in / MPT | MWD Real-time%: | 86.67 % | MWD Recorded%: | 100.00 % | Min. Inc. : | 2.20 deg / 1620.36 m | Max. Inc. : | 3.78 deg / 1276.08 m | Final Az. : | 214.76 deg | Max Op. Press. : | 3070 psig |
| Tool OD / Type : | 8.00 in / MPT | | | | | | | | | | | | | | |
| MWD Real-time%: | 86.67 % | | | | | | | | | | | | | | |
| MWD Recorded%: | 100.00 % | | | | | | | | | | | | | | |
| Min. Inc. : | 2.20 deg / 1620.36 m | | | | | | | | | | | | | | |
| Max. Inc. : | 3.78 deg / 1276.08 m | | | | | | | | | | | | | | |
| Final Az. : | 214.76 deg | | | | | | | | | | | | | | |
| Max Op. Press. : | 3070 psig | | | | | | | | | | | | | | |

Directional Survey Data

| Measured Depth (metres) | Inclination (degrees) | Direction (degrees) | Vertical Depth (metres) | Latitude (metres) | Departure (metres) | Vertical Section (metres) | Dogleg (deg/30m) |
|----------------------------|--------------------------|------------------------|----------------------------|----------------------|-----------------------|------------------------------|---------------------|
| 672.92 | 0.36 | 121.62 | 672.92 | 0.98 S | 1.60 E | -0.98 | TIE-IN |
| 731.00 | 0.56 | 135.36 | 730.99 | 1.28 S | 1.95 E | 0.05 | 0.12 |
| 759.74 | 0.35 | 171.41 | 759.73 | 1.47 S | 2.07 E | 0.14 | 0.36 |
| 846.09 | 0.12 | 248.92 | 846.08 | 1.76 S | 2.02 E | 0.42 | 0.12 |
| 872.68 | 0.05 | 166.11 | 872.67 | 1.78 S | 2.00 E | 0.45 | 0.14 |
| 960.62 | 1.59 | 200.68 | 960.60 | 2.96 S | 1.58 E | 1.67 | 0.53 |
| 989.35 | 1.27 | 184.55 | 989.32 | 3.65 S | 1.41 E | 2.34 | 0.53 |
| 1017.99 | 2.00 | 214.08 | 1017.95 | 4.38 S | 1.10 E | 3.12 | 1.14 |
| 1046.87 | 2.46 | 218.63 | 1046.81 | 5.28 S | 0.44 E | 4.24 | 0.51 |
| 1075.51 | 2.33 | 211.04 | 1075.42 | 6.26 S | 0.25 W | 5.43 | 0.36 |
| 1104.15 | 2.36 | 211.11 | 1104.04 | 7.27 S | 0.85 W | 6.60 | 0.03 |
| 1132.60 | 2.43 | 210.35 | 1132.47 | 8.29 S | 1.46 W | 7.79 | 0.08 |
| 1161.23 | 2.65 | 210.29 | 1161.07 | 9.38 S | 2.10 W | 9.06 | 0.24 |
| 1189.87 | 2.78 | 210.70 | 1189.67 | 10.55 S | 2.79 W | 10.42 | 0.13 |
| 1218.57 | 3.07 | 212.16 | 1218.34 | 11.80 S | 3.55 W | 11.88 | 0.32 |
| 1247.39 | 3.46 | 212.50 | 1247.11 | 13.19 S | 4.43 W | 13.52 | 0.41 |
| 1276.08 | 3.78 | 212.66 | 1275.74 | 14.71 S | 5.41 W | 15.33 | 0.33 |
| 1304.67 | 3.60 | 212.65 | 1304.27 | 16.26 S | 6.40 W | 17.17 | 0.18 |
| 1333.52 | 3.43 | 215.56 | 1333.07 | 17.73 S | 7.39 W | 18.94 | 0.26 |
| 1362.11 | 3.23 | 216.60 | 1361.61 | 19.07 S | 8.37 W | 20.60 | 0.22 |
| 1390.88 | 3.10 | 219.06 | 1390.34 | 20.33 S | 9.34 W | 22.18 | 0.20 |
| 1419.53 | 3.12 | 219.42 | 1418.95 | 21.53 S | 10.33 W | 23.73 | 0.03 |
| 1448.27 | 3.07 | 219.27 | 1447.64 | 22.73 S | 11.31 W | 25.26 | 0.06 |
| 1476.85 | 2.88 | 220.27 | 1476.18 | 23.87 S | 12.26 W | 26.73 | 0.20 |
| 1505.48 | 2.74 | 223.28 | 1504.78 | 24.92 S | 13.19 W | 28.12 | 0.21 |
| 1591.58 | 2.35 | 219.65 | 1590.80 | 27.78 S | 15.73 W | 31.89 | 0.15 |
| 1620.36 | 2.20 | 220.22 | 1619.55 | 28.66 S | 16.47 W | 33.02 | 0.16 |
| 1649.36 | 2.43 | 227.31 | 1648.53 | 29.50 S | 17.28 W | 34.17 | 0.38 |
| 1678.05 | 2.32 | 225.45 | 1677.19 | 30.32 S | 18.14 W | 35.32 | 0.14 |
| 1706.72 | 2.40 | 224.26 | 1705.84 | 31.15 S | 18.97 W | 36.47 | 0.10 |
| 1735.43 | 2.43 | 221.48 | 1734.52 | 32.04 S | 19.79 W | 37.66 | 0.13 |
| 1763.96 | 2.56 | 220.08 | 1763.03 | 32.98 S | 20.60 W | 38.88 | 0.15 |
| 1785.46 | 2.69 | 214.76 | 1784.50 | 33.76 S | 21.20 W | 39.86 | 0.38 |
| 1800.00 | 2.69 | 214.76 | 1799.03 | 34.32 S | 21.59 W | 40.55 | 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 212.17 DEGREES (GRID)

A TOTAL CORRECTION OF 11.95 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.

HORIZONTAL DISPLACEMENT(CLOSURE) AT 1800.00 METRES

IS 40.55 METRES ALONG 212.17 DEGREES (GRID)

Final survey is projected to TD

RT-MSL = 21.5m

HALLIBURTON

915172 010
Sperry-Sun