

ROP Rate of Penetration  
 DDS Drillstring Dynamics  
 PWD Pressure While Drilling

**PROPRIETARY**

**1 : 1200**

|  |           |                                |             |   |             |   |             |                                     |  |   |  |
|--|-----------|--------------------------------|-------------|---|-------------|---|-------------|-------------------------------------|--|---|--|
| Country : USA                                  |           | Field : Posey 6912             |             | Location : Lat: 71° 10' 24.06" North<br>Long: 163° 28' 18.67" West        |             | Well : OCS-Y-2321 BJ001 ST00BP00                            |             | Company : Shell Gulf of Mexico Inc. |  | Rig : Polar Pioneer                         |  |
| Permanent Datum : Mean Sea Level               |           | Elevation : 0.00 ft            |             | LOG LOCATION  |             | Company : Shell Gulf of Mexico Inc.                         |             | Rig : Polar Pioneer                 |  | Well : OCS-Y-2321 BJ001 ST00BP00            |  |
| Log Measured From : Drill Floor                |           | 76.00 ft Above Permanent Datum |             | Latitude : 71° 10' 24.06" North<br>Longitude : 163° 28' 18.67" West       |             | Country : Posey 6912  |             | Country : USA                       |  | API Number : 55-352-00004-00                |  |
| Drilling Measured From : Drill Floor           |           | <b>MD LOG</b>                  |             | Final UTM Easting = 555,034.550 m<br>Final UTM Northing = 7,897,425.308 m |             | Other Services<br>ADR, DGR, EWR<br>ALD, CTN, XBAT<br>MRL-WD |             | Elev. : N/A                         |  | DF : 76.00 ft<br>GL : N/A<br>WD : 146.00 ft |  |
| Depth Logged : 222.00 ft To 6,800.00 ft        |           | Unit No. : 1                   |             | Job No. : AK-XX-0901604700  |             | Date Logged : 30-Jul-15 To 21-Sep-15                        |             | Plot Type : Final                   |  | Plot Date : 31-Oct-15                       |  |
| Total Depth MD : 6,800.00 ft TVD : 6,795.34 ft |           | Spud Date : 30-Jul-15          |             | Borehole Record (MD)  |             | Casing Record (MD)  |             |                                     |  |   |  |
| Run No.  | Size      | From                           | To          | Size  | Weight      | From  | To          |                                     |  |   |  |
| 1  | 8.500 in  | 222.00 ft                      | 1,512.00 ft | 36,000 in   | 746.00 lbpf | 257.00 ft   | 375.00 ft   |                                     |  |   |  |
| 2  | 36,000 in | 222.00 ft                      | 384.00 ft   | 22,000 in   | 224.00 lbpf | 257.00 ft   | 1,475.00 ft |                                     |  |   |  |
| 3  | 36,000 in | 222.00 ft                      | 390.00 ft   | 14,000 in   | 114.00 lbpf | 257.00 ft   | 2,933.00 ft |                                     |  |   |  |
| 4  | 26,000 in | 320.00 ft                      | 425.00 ft   | 9,625 in  | 53.00 lbpf  | 2,653.00 ft   | 5,408.00 ft |                                     |  |   |  |
| 4B   | 26,000 in | 320.00 ft                      | 425.00 ft   |   |             |   |             |                                     |  |   |  |
| 5  | 17,500 in | 1,512.00 ft                    | 2,963.00 ft |   |             |   |             |                                     |  |   |  |
| 6  | 12,250 in | 2,963.00 ft                    | 5,423.00 ft |   |             |   |             |                                     |  |   |  |
| 7  | 8,500 in  | 5,423.00 ft                    | 6,800.00 ft |   |             |   |             |                                     |  |   |  |

**WELL INFORMATION**

|                                  |                 |                 |                 |                 |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|
| MWD Run Number                   | 100             | 500             | 600             | 700             |
| Date run completed               | 01-Aug-15       | 07-Sep-15       | 14-Sep-15       | 22-Sep-15       |
| Rig Bit Number                   | 100             | 500             | 600             | 700             |
| Bit Size (in)                    | 8.500           | 17.500          | 12.250          | 8.500           |
| Tool Nominal OD (in)             | 6.900           | 8.000           | 8.000           | 6.750           |
| Log Start Depth (MD, ft)         | 222.00          | 1,512.00        | 2,963.00        | 5,423.00        |
| Log End Depth (MD, ft)           | 1,512.00        | 2,963.00        | 5,423.00        | 6,800.00        |
| Drill or Wipe                    | Drill           | Drill           | Drill           | Drill           |
| Drill/Wipe Start Date and Time   | 30-Jul-15 17:05 | 04-Sep-15 18:30 | 12-Sep-15 01:20 | 20-Sep-15 08:52 |
| Drill/Wipe End Date and Time     | 01-Aug-15 11:21 | 06-Sep-15 06:30 | 13-Sep-15 16:35 | 21-Sep-15 23:09 |
| Min Inc (deg) @ Depth (MD, ft)   | 0.00 @ 0.00     | 0.12 @ 1,540.18 | 0.58 @ 3,074.55 | 3.42 @ 5,980.70 |
| Max Inc (deg) @ Depth (MD, ft)   | 0.51 @ 320.88   | 1.06 @ 2,003.18 | 3.70 @ 5,299.05 | 3.99 @ 6,745.05 |
| Bit TFA(in2) / Bit Type          | 0.71 / Tricone  | 0.75 / PDC      | 0.99 / PDC      | 0.55 / PDC      |
| Flow Rate (gpm)                  | 449.40          | 850.00          | 828.00          | 550.00          |
| Max AV (fpm) / CV (fpm) @ MWD    | 774.0 / 984.0   | 91.0 / 620.0    | 239.0 / 357.0   | 549.0 / 1,000.0 |
| Fluid Type                       | Sea Water       | Polymer         | Polymer         | Polymer         |
| Density (ppg) / Viscosity (spqt) | 8.55 / 27.00    | 10.00 / 57.00   | 11.40 / 56.00   | 12.00 / 79.00   |
| Filtrate CL (ppm)                | 35,000.00       | 130,000.00      | 100,000.00      | 135,000.00      |
| pH / Fluid Loss (mptm)           | 8.50 / 0        | 9.10 / 3        | 9.10 / 4        | 9.30 / 6        |
| PV (cP) / YP (lhf2)              | 17 / 31.00      | 20 / 27.00      | 20 / 27.00      | 23 / 33.00      |
| % Solids / % Sand                | .01 / .01       | 2.22 / 0        | 16 / 0.5        | 18 / 0.5        |
| % Oil / Oil:Water Ratio          | 0 / 0:100       | 0 / 0:86        | 0 / 0:84        | 0 / 0:79        |
| Rm @ Measured Temp (degF)        | 0.350 @ 35.60   | N/A @ N/A       | 0.080 @ 88.00   | 0.070 @ 70.00   |
| Rmf @ Measured Temp (degF)       | N/A @ N/A       | N/A @ N/A       | 0.050 @ 88.00   | 0.060 @ 70.00   |
| Rmc @ Measured Temp (degF)       | N/A @ N/A       | N/A @ N/A       | 0.120 @ 88.00   | 0.140 @ 70.00   |
| Max Tool Temp (degF) / Source    | 42.60 / HCIM    | 113.18 / HCIM   | 144.94 / HCIM   | 152.00 / HCIM   |

|                           |                |                |                 |                 |
|---------------------------|----------------|----------------|-----------------|-----------------|
| Rm @ Max Tool Temp (degF) | 0.3004 @ 42.60 | N/A @ 113.18   | 0.0849 @ 144.94 | 0.0338 @ 152.00 |
| Lead MWD Engineer         | Nick Weeks     | Jack Kleinhans | Jack Kleinhans  | Jack Kleinhans  |
| Customer Representative   | Doug Sloan     | Matt Cazalet   | Matt Cazalet    | Scott Lapiene   |

## SENSOR INFORMATION

### Downhole Processor Information

|                           |                 |                 |                 |                              |
|---------------------------|-----------------|-----------------|-----------------|------------------------------|
| Tool Type                 | HCIM            | HCIM            | HCIM            | HCIM                         |
| Software Version          | 88.58           | 88.58           | 88.58           | 88.58                        |
| Sub Serial Number         | 12272466        | 12562642        | 11902800        | 11320539                     |
| Insert Serial Number      | 14776659        | 11753209        | 12136690        | 11752800                     |
| Date and Time Initialized | 30-Jul-15 10:14 | 03-Sep-15 13:40 | 11-Sep-15 01:12 | 19-Sep-15 15:17              |
| Date and Time Read        | 01-Aug-15 18:48 | 07-Sep-15 05:57 | 18-Sep-15 18:26 | 25-Sep-15 08:40              |
| ECMB SW Version           | N/A             | N/A             | N/A             | generic 1.1.1 Linux 2.6.23.1 |

### Directional Sensor Information

|                        |          |          |          |          |
|------------------------|----------|----------|----------|----------|
| Tool Type              | PCDC     | PCDC     | PCDC     | PCDC     |
| Distance From Bit (ft) | 16.80    | 79.96    | 56.82    | 48.80    |
| Software Version       | 6.33     | 6.21     | 6.33     | 6.33     |
| Sub Serial Number      | 12510194 | 11672161 | 12606713 | 12460872 |
| Sonde Serial Number    | 12059421 | 11477951 | 12059488 | 11902192 |
| Sensor ID Number       | N/A      | N/A      | N/A      | N/A      |
| Toolface Offset (deg)  | 0.00     | 235.51   | 208.54   | 301.32   |

### Pressure Sensor Information

|                              |          |          |          |          |
|------------------------------|----------|----------|----------|----------|
| Tool Type                    | PWD      | PWD      | PWD      | PWD      |
| Distance From Bit (ft)       | 9.49     | 89.88    | 70.67    | 41.27    |
| Recorded Sample Period (sec) | 2        | 2        | 2        | 2        |
| Software Version             | 4.13     | 4.14     | 4.14     | 4.13     |
| Collar Serial Number         | 11468873 | 11905281 | 11688571 | 11103765 |
| Insert Serial Number         | 11850156 | 11996744 | 11276929 | 11631378 |

### DDSr-DGR Sensor Information

|                              |          |  |  |  |
|------------------------------|----------|--|--|--|
| Tool Type                    | DDSr-DGR |  |  |  |
| Distance From Bit (ft)       | 6.78     |  |  |  |
| Recorded Sample Period (sec) | 12       |  |  |  |
| Software Version             | 10.88    |  |  |  |
| Sub Serial Number            | 12519619 |  |  |  |
| Insert Serial Number         | 12528703 |  |  |  |
| Sensor ID Number             | 11660    |  |  |  |

### DDSr-HCIM Sensor Information

|                              |           |           |           |           |
|------------------------------|-----------|-----------|-----------|-----------|
| Tool Type                    | DDSr-HCIM | DDSr-HCIM | DDSr-HCIM | DDSr-HCIM |
| Distance From Bit (ft)       | 59.70     | 94.89     | 75.76     | 94.55     |
| Recorded Sample Period (sec) | 16        | 16        | 12        | 12        |
| Software Version             | 20.87     | 20.88     | 20.88     | 20.87     |
| Sub Serial Number            | 12272466  | 12562642  | 11651705  | 90432746  |
| Insert Serial Number         | 11512895  | 11463449  | 11764590  | 12139943  |
| Sensor ID Number             | 7475      | 7194      | 10088     | 10412     |

## REMARKS

- ALL DEPTHS ARE MEASURED DEPTHS (MD), UNLESS OTHERWISE NOTED. THESE DEPTHS ARE BIT DEPTHS AND ARE CALLIBRATED TO THE DRILLERS PIPE TALLY. NO DEPTH CORRECTIONS HAVE BEEN MADE FOR PIPE STRETCH OR COMPRESSION.

2. ALL DEPTHS ARE TRUE VERTICAL DEPTHS (TVD), UNLESS OTHERWISE NOTED. ONLY INVERTED / REVERTED SECTIONS GREATER THAN 30' TVD ARE PRESENTED
3. ALL DATA PRESENTED IS RECORDED DATA UNLESS OTHERWISE STATED.
4. LWD RUN 1 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, AZIMUTHAL DEEP ELECTROMAGNETIC WAVE RESISTIVITY (ADR), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), MAGNETIC RESONANCE WHILE DRILLING (MRIL-WD), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).
5. RUN 200 WAS A 36" HOLE OPENING RUN, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
6. RUN 300 WAS A 42" HOLE OPENING RUN, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
7. RUN 400 WAS A CLEANOUT RUN TO DRILL OUT THE SHOE TRACK AND 30' OF NEW FORMATION, NO MWD TOOLS WERE PRESENT THEREFOR IT IS NOT PRESENTED.
8. RUN 401 WAS A 26" HOLE OPENING RUN UTILIZING DIRECTIONAL, DRILL STRING DYNAMICS SENSOR AND PRESSURE WHILE DRILLING. NO LOGGING SENSORS WERE PRESENT.
9. MWD RUN 500 WAS A 17.5" DRILLING RUN UTILIZING DIRECTIONAL, DRILL STRING DYNAMICS SENSOR AND PRESSURE WHILE DRILLING. NO LOGGING SENSORS WERE PRESENT.
10. LWD RUN 6 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, ELECTROMAGNETIC WAVE RESISTIVITY PHASE 4 (EWR-P4), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).
11. LWD RUN 7 WAS COMPRISED OF DIRECTIONAL, DUAL GAMMA RAY (DGR) UTILIZING GEIGER-MUELLER TUBE TYPE DETECTORS, AZIMUTHAL DEEP ELECTROMAGNETIC WAVE RESISTIVITY (ADR), PRESSURE WHILE DRILLING (PWD) DRILLSTRING DYNAMICS SENSOR (DDSr), AZIMUTHAL LITHODENSITY (ALD), COMPENSATED THERMAL NEUTRON (CTN), MAGNETIC RESONANCE WHILE DRILLING (MRIL-WD), AZIMUTHAL BIMODAL ACOUSTIC TOOL (XBAT), AND THE AZIMUTHAL ACOUSTIC CALIPER TOOL (XCAL).
12. OVER THE COURSE OF THE 12.25" HOLE SECTION THERE ARE SEVERAL INSTANCES WHERE THE BOREHOLE RUGOSITY HAS CREATED "SPIKES" IN THE RESISTIVITY DATA. THIS IS DUE TO ONE RECIEVER READING THE HIGH SALINITY BOREHOLE FLUID (WASHOUT) AND THE OTHER READING THE FORMATION. THERE ARE ALSO AREAS ACROSS THE LOGGED INTERVAL THAT SHOW AN UNDERGAUGE HOLE.
13. RUNS 1- 7 REPRESENT THE OCS-Y-2321 BJ001 ST00BP00 WELL WITH AN API# OF 55-352-00004-00. THIS WELL REACHED A TOTAL DEPTH OF 6,800'MD / 6,795'TVD

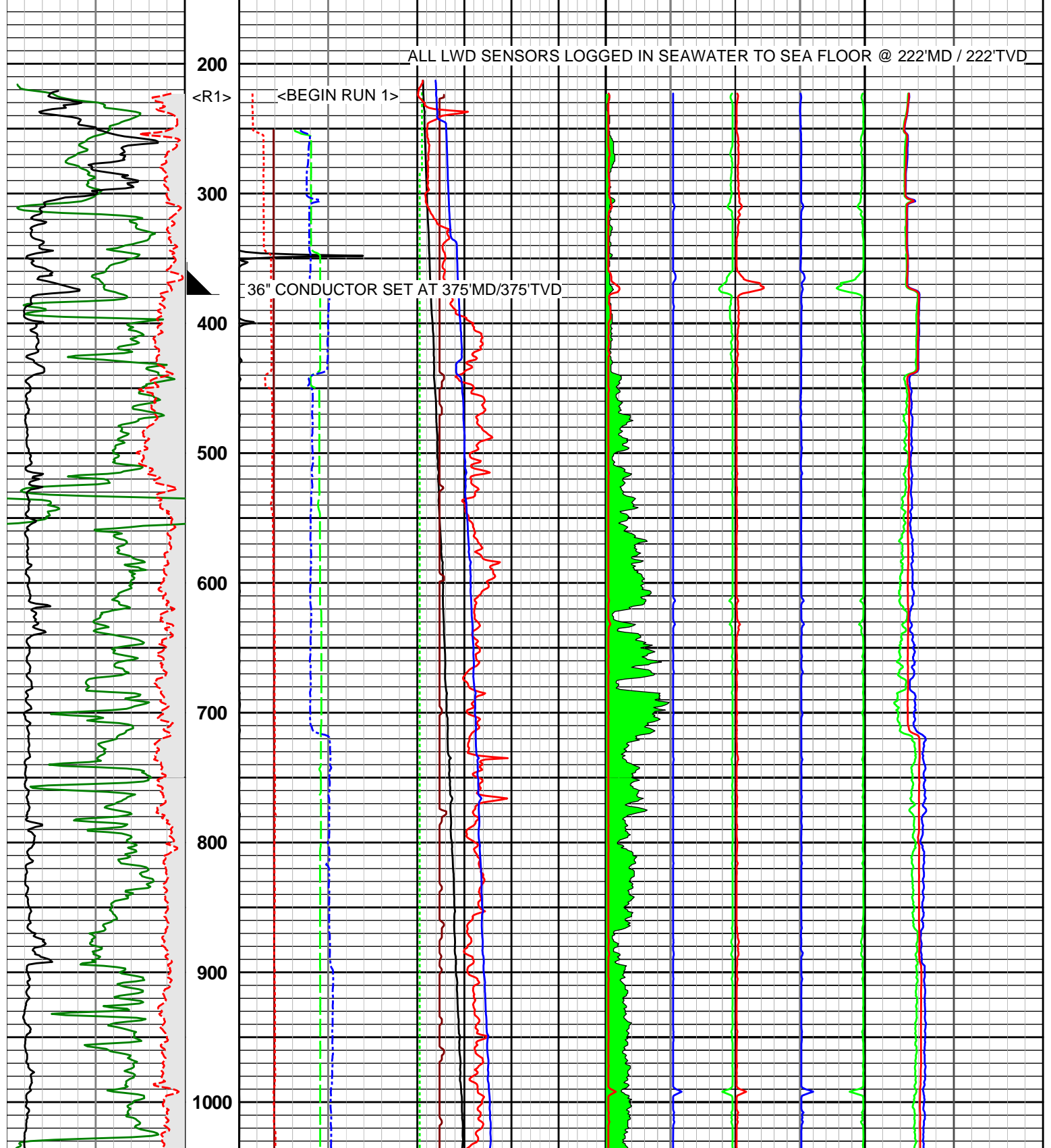
## WARRANTY

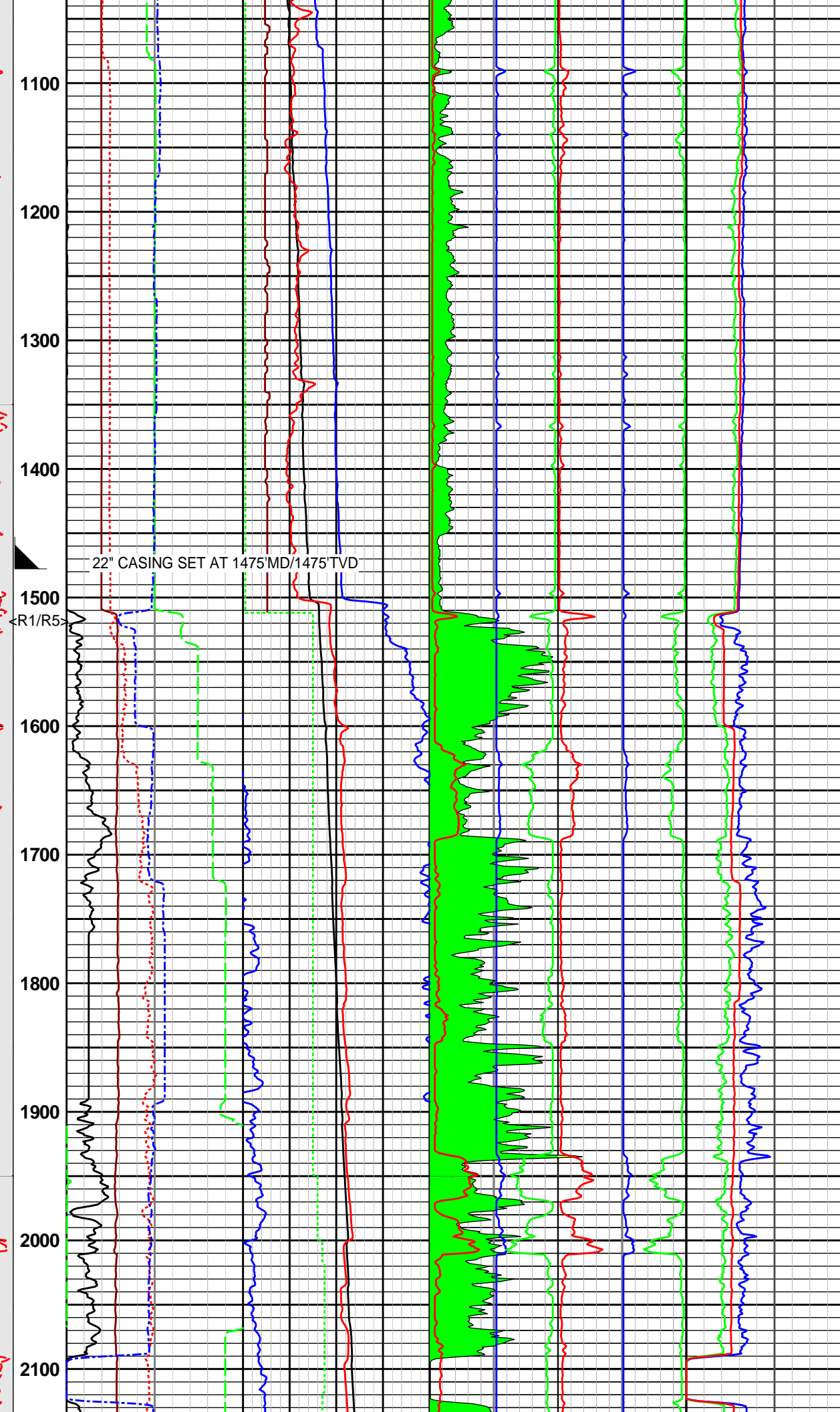
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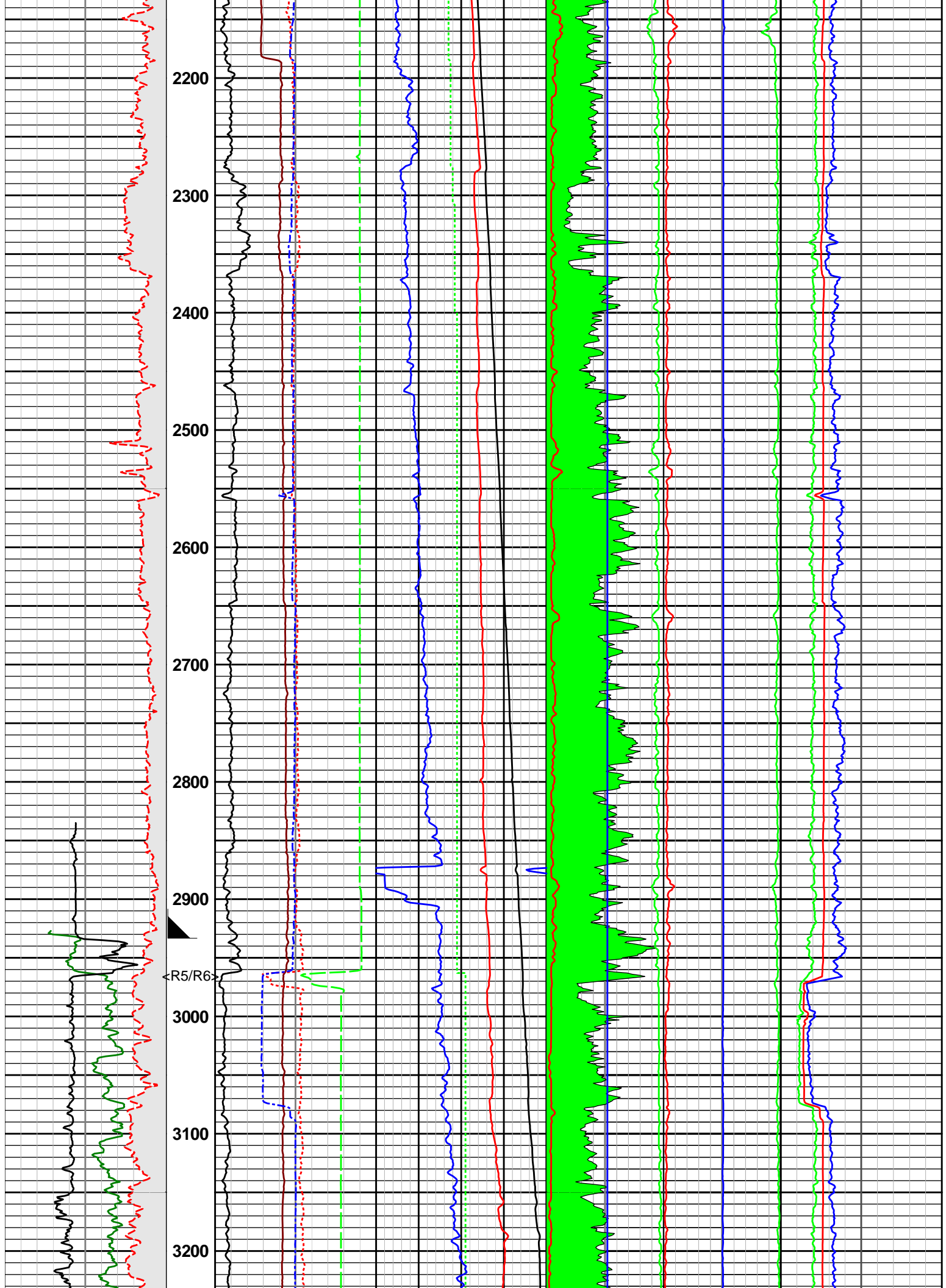
| Hookload Avg |     |     | DDSr Temperature |    |     |         |
|--------------|-----|-----|------------------|----|-----|---------|
| 0            | 200 | 400 | 0                | 75 | 150 | 225 300 |

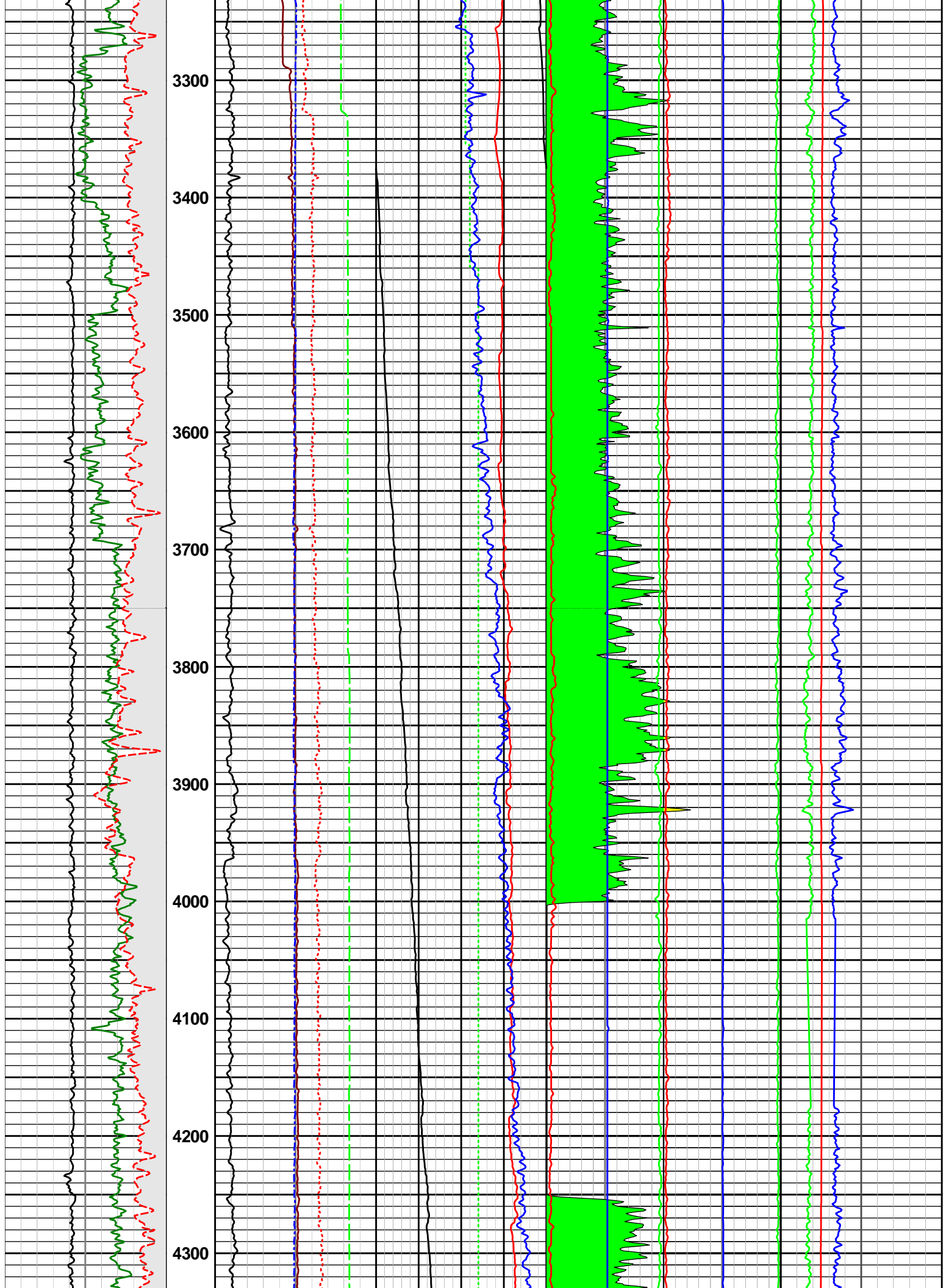
**DDSr Stick-Slip**

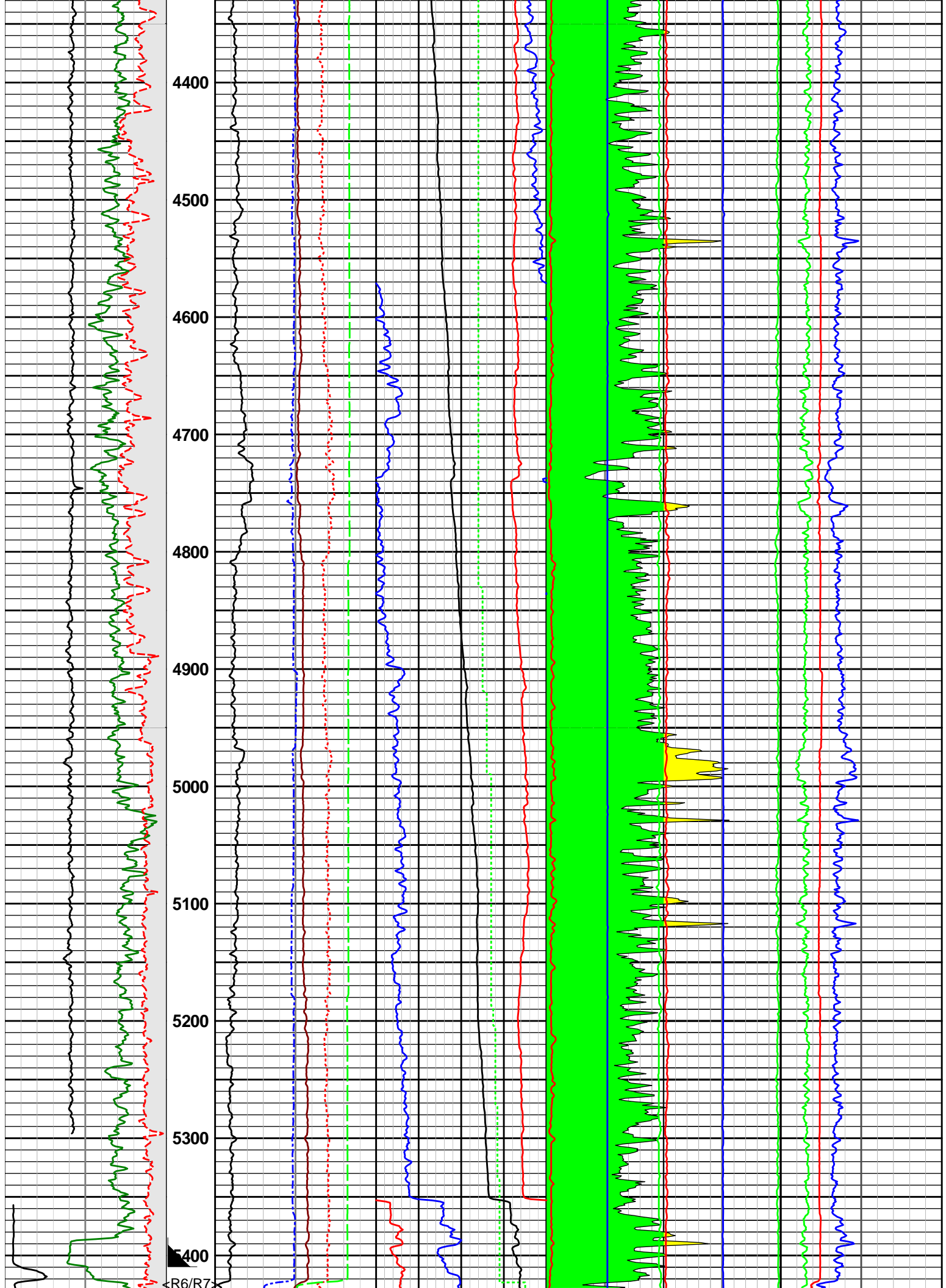
|                           |             |                              |                              |                |   |            |                    |         |                      |
|---------------------------|-------------|------------------------------|------------------------------|----------------|---|------------|--------------------|---------|----------------------|
|                           |             |                              | kilo pounds                  | fahrenheit     | 0                                       | 50         | 100                | 150     | 200                  |
|                           |             | <b>Torque Abs Avg</b>        | <b>PWD Annular Pressure</b>  |                | 0% - 100% 100% - 150% > 200%            |            |                    |         |                      |
|                           |             | 0 12.5K 25K                  | 0                            | 500 1K 1.5K 2K | Low DDSr SSI Med DDSr SSI High DDSr SSI |            |                    |         |                      |
|                           |             | foot-pound                   | lbs / in2 gauge              |                |   |            |                    |         |                      |
| <b>XCAL Equivalent HS</b> |             | <b>RPM Surface Avg</b>       | <b>PWD Internal Pressure</b> |                | <b>DDSr Avg Z</b>                       |            | <b>DDSr Peak Z</b> |         | <b>DDSr RPM Max</b>  |
| 8 18                      |             | 0 100 200                    | 0                            | 500 1K 1.5K 2K | -5 0 5                                  | -50 0 50   | 0                  | 150 300 |                      |
|                           | inches      | rev per min                  | lbs / in2 gauge              |                | g                                       |            | g                  |         | rev per min          |
| <b>ROP Avg</b>            |             | <b>Total Flow</b>            | <b>Dens Mud In Avg</b>       |                | <b>DDSr Avg Y</b>                       |            | <b>DDSr Peak Y</b> |         | <b>DDSr RPM Min</b>  |
| 500 250 0                 |             | 0 500 1K                     | 8.5 9.5 10.5 11.3 12.5       |                | 10 5 0                                  | 100 50 0 0 |                    | 150 300 |                      |
|                           | feet per hr | gallon per min               | lbs per gal                  |                | g                                       |            | g                  |         | rev per min          |
| <b>Gamma Ray</b>          | Depth MD    | <b>Surface Pres Xducer 2</b> | <b>Annular ECD</b>           |                | <b>DDSr Avg X</b>                       |            | <b>DDSr Peak X</b> |         | <b>DDSr RPM Mean</b> |
| 0 150                     | 1 : 1200    | 0 2.5K 5K                    | 8.5 9.5 10.5 11.3 12.5       |                | 0 5 10                                  | 0 50 100   | 0                  | 150 300 |                      |
|                           | api         | lbs / in2 gauge              | lbs per gal                  |                | g                                       |            | g                  |         | rev per min          |



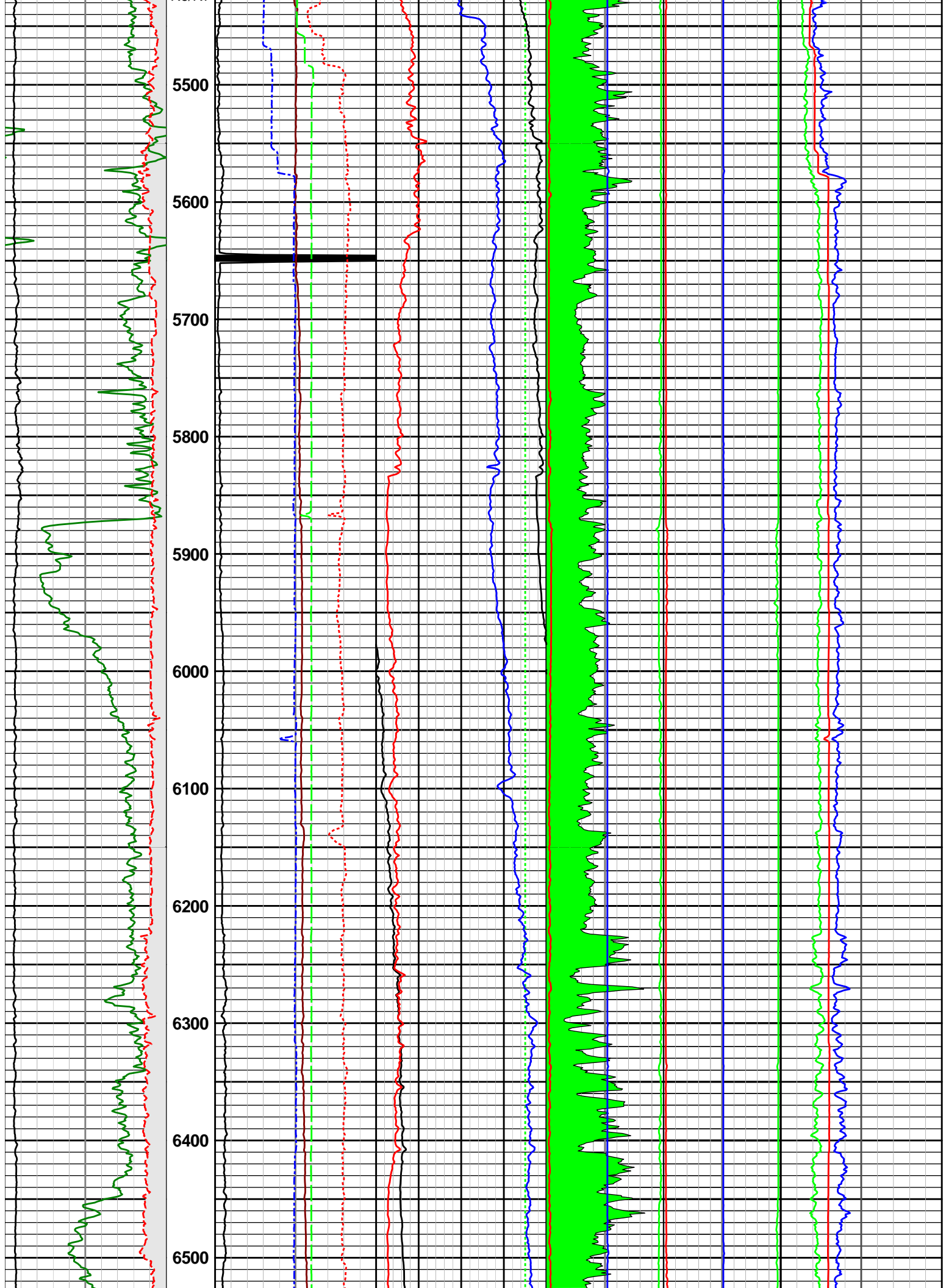


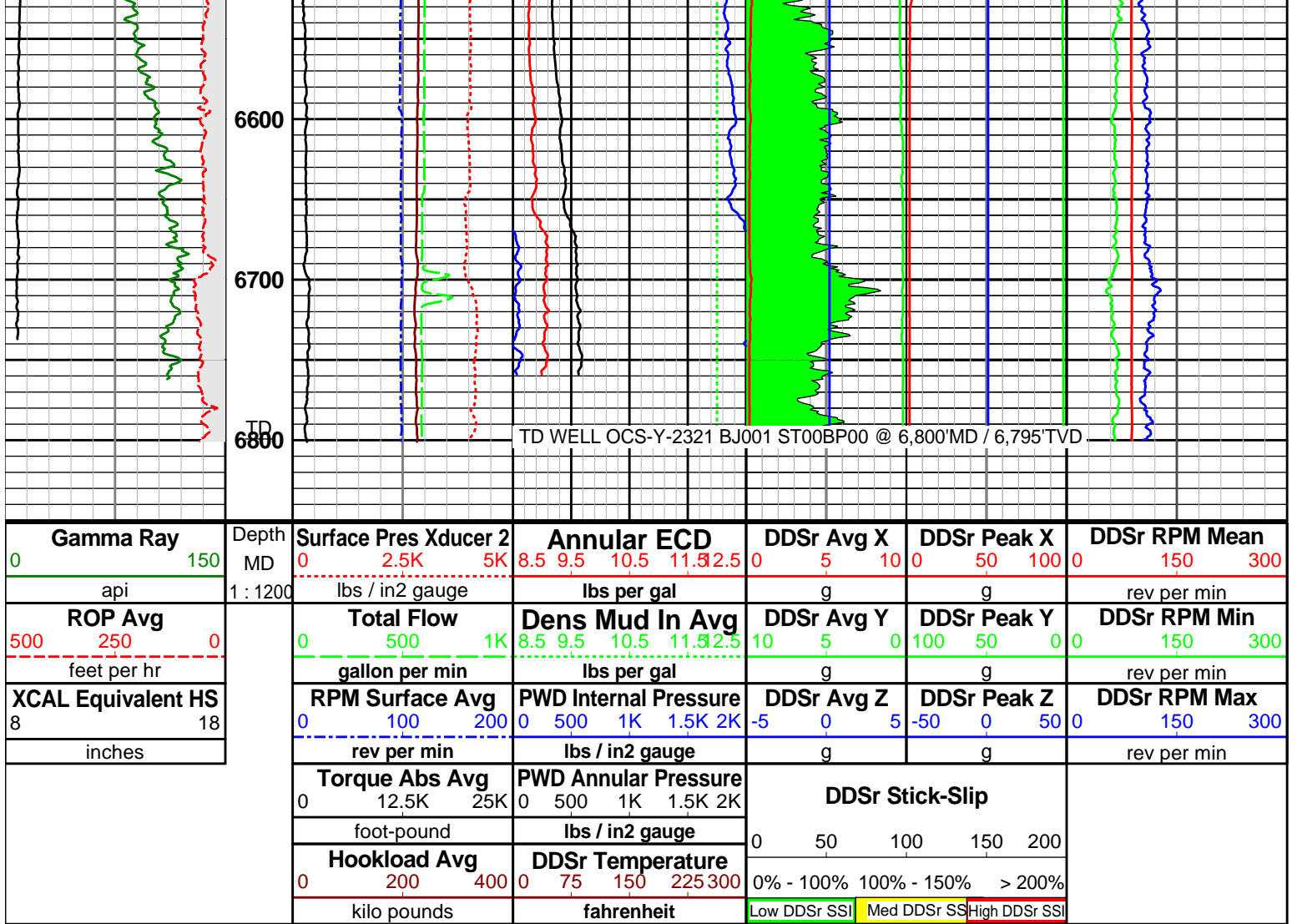












## HALLIBURTON

### DIRECTIONAL SURVEY REPORT

Shell Gulf of Mexico Inc.  
OCS-Y-2321 BJ001 ST00BP00  
Posey 6912  
Alaska  
USA  
AK-XX-0901604700  
Final Survey is projected to well TD

| Measured Depth (feet) | Inclination (degrees) | Direction (degrees) | Vertical Depth (feet) | Latitude (feet) | Departure (feet) | Vertical Section (feet) | Dogleg (deg/100ft) |
|-----------------------|-----------------------|---------------------|-----------------------|-----------------|------------------|-------------------------|--------------------|
| 0.00                  | 0.00                  | 0.00                | 0.00                  | 0.00 N          | 0.00 E           | 0.00                    | TIE-IN             |
| 220.00                | 0.00                  | 0.00                | 220.00                | 0.00 N          | 0.00 E           | 0.00                    | 0.00               |
| 320.88                | 0.51                  | 129.60              | 320.88                | 0.29 S          | 0.35 E           | -0.29                   | 0.50               |
| 406.77                | 0.31                  | 89.93               | 406.76                | 0.53 S          | 0.88 E           | -0.53                   | 0.39               |
| 495.25                | 0.99                  | 122.22              | 495.24                | 0.93 S          | 1.76 E           | -0.93                   | 0.84               |
| 590.43                | 0.31                  | 82.72               | 590.41                | 1.34 S          | 2.71 E           | -1.34                   | 0.81               |
| 684.05                | 0.64                  | 327.24              | 684.03                | 0.87 S          | 2.68 E           | -0.87                   | 0.88               |
| 866.10                | 0.28                  | 101.20              | 866.08                | 0.09 S          | 2.55 E           | -0.09                   | 0.47               |
| 957.99                | 0.00                  | 269.46              | 957.97                | 0.13 S          | 2.77 E           | -0.13                   | 0.30               |
| 1051.65               | 0.14                  | 176.72              | 1051.63               | 0.24 S          | 2.78 E           | -0.24                   | 0.15               |
| 1144.54               | 0.26                  | 120.65              | 1144.52               | 0.46 S          | 2.97 E           | -0.46                   | 0.23               |
| 1235.66               | 0.41                  | 134.11              | 1235.63               | 0.80 S          | 3.38 E           | -0.80                   | 0.19               |
| 1328.60               | 0.51                  | 59.75               | 1328.58               | 0.83 S          | 3.98 E           | -0.83                   | 0.61               |
| 1378.50               | 0.25                  | 111.62              | 1378.48               | 0.76 S          | 4.27 E           | -0.76                   | 0.81               |
| 1540.18               | 0.12                  | 50.83               | 1540.15               | 0.78 S          | 4.74 E           | -0.78                   | 0.14               |

|         |      |       |         |          |          |        |      |
|---------|------|-------|---------|----------|----------|--------|------|
| 1723.74 | 0.39 | 34.99 | 1723.71 | 0.14 S   | 5.26 E   | -0.14  | 0.15 |
| 1818.58 | 0.58 | 50.01 | 1818.55 | 0.43 N   | 5.81 E   | 0.43   | 0.24 |
| 2003.18 | 1.06 | 39.81 | 2003.12 | 2.35 N   | 7.62 E   | 2.35   | 0.27 |
| 2095.93 | 0.87 | 35.51 | 2095.87 | 3.57 N   | 8.57 E   | 3.57   | 0.22 |
| 2186.15 | 0.69 | 72.12 | 2186.07 | 4.30 N   | 9.49 E   | 4.30   | 0.57 |
| 2373.34 | 0.75 | 76.36 | 2373.25 | 4.93 N   | 11.76 E  | 4.93   | 0.04 |
| 2463.93 | 0.78 | 75.65 | 2463.83 | 5.23 N   | 12.93 E  | 5.23   | 0.03 |
| 2555.30 | 0.79 | 70.25 | 2555.19 | 5.59 N   | 14.13 E  | 5.59   | 0.08 |
| 2646.22 | 0.79 | 76.51 | 2646.11 | 5.95 N   | 15.33 E  | 5.95   | 0.10 |
| 2743.03 | 0.70 | 74.08 | 2742.91 | 6.27 N   | 16.55 E  | 6.27   | 0.10 |
| 2837.42 | 0.74 | 67.59 | 2837.29 | 6.66 N   | 17.68 E  | 6.66   | 0.10 |
| 2875.38 | 0.64 | 69.95 | 2875.25 | 6.83 N   | 18.10 E  | 6.83   | 0.27 |
| 2978.31 | 0.74 | 64.69 | 2978.17 | 7.31 N   | 19.25 E  | 7.31   | 0.11 |
| 3074.55 | 0.58 | 52.33 | 3074.40 | 7.88 N   | 20.20 E  | 7.88   | 0.22 |
| 3169.04 | 0.67 | 47.05 | 3168.89 | 8.55 N   | 20.99 E  | 8.55   | 0.11 |
| 3258.93 | 0.77 | 27.36 | 3258.77 | 9.44 N   | 21.65 E  | 9.44   | 0.30 |
| 3351.80 | 0.94 | 33.05 | 3351.63 | 10.64 N  | 22.35 E  | 10.64  | 0.21 |
| 3445.40 | 0.89 | 33.34 | 3445.22 | 11.90 N  | 23.18 E  | 11.90  | 0.06 |
| 3537.90 | 0.88 | 39.68 | 3537.71 | 13.05 N  | 24.03 E  | 13.05  | 0.11 |
| 3630.29 | 0.86 | 29.57 | 3630.09 | 14.20 N  | 24.82 E  | 14.20  | 0.17 |
| 3724.13 | 1.05 | 46.97 | 3723.91 | 15.40 N  | 25.80 E  | 15.40  | 0.37 |
| 3815.47 | 1.16 | 37.46 | 3815.23 | 16.71 N  | 26.98 E  | 16.71  | 0.24 |
| 3909.95 | 1.11 | 27.77 | 3909.70 | 18.28 N  | 27.99 E  | 18.28  | 0.21 |
| 4001.96 | 1.54 | 18.87 | 4001.69 | 20.24 N  | 28.80 E  | 20.24  | 0.52 |
| 4095.18 | 1.55 | 21.22 | 4094.87 | 22.60 N  | 29.67 E  | 22.60  | 0.07 |
| 4189.17 | 1.52 | 19.27 | 4188.83 | 24.97 N  | 30.54 E  | 24.97  | 0.06 |
| 4280.67 | 1.73 | 13.84 | 4280.29 | 27.46 N  | 31.27 E  | 27.46  | 0.28 |
| 4373.26 | 2.11 | 22.24 | 4372.83 | 30.39 N  | 32.25 E  | 30.39  | 0.51 |
| 4465.71 | 1.69 | 19.56 | 4465.23 | 33.26 N  | 33.35 E  | 33.26  | 0.46 |
| 4559.04 | 2.02 | 19.56 | 4558.51 | 36.11 N  | 34.37 E  | 36.11  | 0.35 |
| 4651.17 | 2.19 | 23.91 | 4650.58 | 39.24 N  | 35.62 E  | 39.24  | 0.25 |
| 4743.27 | 2.64 | 25.07 | 4742.59 | 42.77 N  | 37.23 E  | 42.77  | 0.49 |
| 4836.87 | 3.09 | 32.03 | 4836.08 | 46.87 N  | 39.49 E  | 46.87  | 0.61 |
| 4929.20 | 3.15 | 34.87 | 4928.26 | 51.06 N  | 42.26 E  | 51.06  | 0.18 |
| 5021.52 | 3.28 | 37.85 | 5020.45 | 55.22 N  | 45.33 E  | 55.22  | 0.23 |
| 5113.59 | 3.34 | 39.69 | 5112.36 | 59.37 N  | 48.66 E  | 59.37  | 0.13 |
| 5206.14 | 3.59 | 47.76 | 5204.74 | 63.39 N  | 52.52 E  | 63.39  | 0.59 |
| 5299.05 | 3.70 | 48.27 | 5297.46 | 67.34 N  | 56.92 E  | 67.34  | 0.12 |
| 5364.19 | 3.45 | 52.11 | 5362.48 | 69.95 N  | 60.04 E  | 69.95  | 0.54 |
| 5429.81 | 3.65 | 46.91 | 5427.97 | 72.59 N  | 63.12 E  | 72.59  | 0.58 |
| 5518.31 | 3.73 | 45.18 | 5516.29 | 76.55 N  | 67.22 E  | 76.55  | 0.15 |
| 5612.70 | 3.58 | 42.26 | 5610.48 | 80.90 N  | 71.39 E  | 80.90  | 0.25 |
| 5704.09 | 3.56 | 42.97 | 5701.70 | 85.09 N  | 75.24 E  | 85.09  | 0.06 |
| 5795.19 | 3.47 | 41.51 | 5792.62 | 89.22 N  | 79.00 E  | 89.22  | 0.13 |
| 5889.32 | 3.48 | 42.48 | 5886.58 | 93.46 N  | 82.82 E  | 93.46  | 0.06 |
| 5980.70 | 3.42 | 42.67 | 5977.80 | 97.52 N  | 86.54 E  | 97.52  | 0.07 |
| 6075.07 | 3.43 | 41.69 | 6072.00 | 101.69 N | 90.33 E  | 101.69 | 0.06 |
| 6167.81 | 3.55 | 39.12 | 6164.57 | 105.99 N | 93.98 E  | 105.99 | 0.21 |
| 6259.59 | 3.53 | 39.52 | 6256.17 | 110.37 N | 97.57 E  | 110.37 | 0.03 |
| 6346.61 | 3.75 | 37.26 | 6343.02 | 114.70 N | 100.99 E | 114.70 | 0.30 |
| 6445.34 | 3.99 | 34.54 | 6441.52 | 120.10 N | 104.89 E | 120.10 | 0.31 |
| 6536.48 | 3.96 | 35.37 | 6532.44 | 125.27 N | 108.51 E | 125.27 | 0.07 |
| 6628.63 | 3.92 | 37.01 | 6624.37 | 130.38 N | 112.25 E | 130.38 | 0.13 |
| 6721.62 | 3.89 | 35.41 | 6717.15 | 135.49 N | 115.99 E | 135.49 | 0.12 |
| 6745.05 | 3.99 | 35.86 | 6740.52 | 136.80 N | 116.93 E | 136.80 | 0.46 |
| 6800.00 | 3.99 | 35.86 | 6795.34 | 139.90 N | 119.17 E | 139.90 | 0.00 |

**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 A DIRECTION OF 0.00 DEGREES (GRID)  
A TOTAL CORRECTION OF 10.95 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED**

**HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.  
HORIZONTAL DISPLACEMENT(CLOSURE) AT 6800.00 FEET  
IS 183.78 FEET ALONG 40.42 DEGREES (GRID)**

