



Realtime Logs

Natural Formation Evaluation  
Gamma Ray

Scale: Company: Anadarko E&P

1:240 Well: Rattler 36N-3HZ

TRUE VERTICAL DEPTH Field: Weld County (Kerr McGee)

County: Weld County State: Colorado

Status: FIELD PRINT Surface Location: Latitude: 40 ° 10' 31.364" N Other Services:

API Number: 05-123-36603 Longitude: 104 ° 45' 52.654" W D/R

Section: 34 TWN: 3N Range : 66E

Permanent Datum (P.D.): Ground Level Elevation: 5008.00 ft. Elevations: N/A

Log Measured From: Rig Floor 17.00 ft. Above P.D. KB: 5008.00 ft.

Depth Reference: Driller's Depth GL: 4991.00 ft.

Interval Logged Dates Magnetic Field Reference

Top: 6730.0 ft. Date From: 20/Jul/13 Dip Angle: 67.01 ° Azi Reference North: True

Bottom: 12353.0 ft. Date To: 27/Jul/13 Total Mag to Reference

Spud Date: 19/Jul/13 Field Strength: 52772.0 nT North Correction: 8.54 °

Borehole Record

Casing Record

| Hole Size  | From       | To          | Size      | Weight      | From    | To         |
|------------|------------|-------------|-----------|-------------|---------|------------|
| 13,500 in. | Surface    | 842.0 ft.   | 9,600 in. | 36.00 lb/ft | Surface | 821.0 ft.  |
| 8,500 in.  | 842.0 ft.  | 7680.0 ft.  | 7,000 in. | 26.00 lb/ft | Surface | 7668.0 ft. |
| 6,125 in.  | 7680.0 ft. | 12353.0 ft. |           |             |         |            |
|            |            |             |           |             |         |            |
|            |            |             |           |             |         |            |
|            |            |             |           |             |         |            |
|            |            |             |           |             |         |            |

Mud Record

Deviation Record

| Type            | From       | To          | Hole Size  | Interval       | Inc / Az (Start) | Inc / Az (End)   |
|-----------------|------------|-------------|------------|----------------|------------------|------------------|
| Water Based Mud | 6730.0 ft. | 12353.0 ft. | 13,500 in. | Surface        | 0.0 ° / 0.0 °    | 1.2 ° / 3.9 °    |
|                 |            |             | 8,500 in.  | Vertical/Curve | 1.2 ° / 3.9 °    | 84.0 ° / 183.8 ° |
|                 |            |             | 6,125 in.  | Lateral        | 84.0 ° / 183.8 ° | 90.9 ° / 179.9 ° |
|                 |            |             |            |                | /                | /                |
|                 |            |             |            |                | /                | /                |
|                 |            |             |            |                | /                | /                |
|                 |            |             |            |                | /                | /                |

Acquisition System Software Version

Other

|           |          |                    |                |   |                      |
|-----------|----------|--------------------|----------------|---|----------------------|
| Advantage | 2.20U4   | Rig: / Contractor: | XTreme 8       | / | XTreme Coil Drilling |
| PAITS     | 6.4.1.34 | Job No:            | 5587407        |   |                      |
|           |          | District: / Unit:  | Rocky Mountain | / |                      |

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Log Run Summary

| LWD<br>Run<br>No. | BHA<br>Run<br>No. | Bit<br>Run<br>No. | Bit<br>Size<br><br>(in.) | Bit<br>Type | Bit<br>Gauge<br>Length<br><br>(in.) | Assembly<br>Type | Logged Interval |         | Bit Depth Interval |         | Date / Time       |                   |     |  | Circ.<br>Time<br><br>(hrs.) |
|-------------------|-------------------|-------------------|--------------------------|-------------|-------------------------------------|------------------|-----------------|---------|--------------------|---------|-------------------|-------------------|-----|--|-----------------------------|
|                   |                   |                   |                          |             |                                     |                  | Top             | Bottom  | From               | To      | Start             |                   | End |  |                             |
|                   |                   |                   |                          |             |                                     |                  | (ft.)           | (ft.)   | (ft.)              | (ft.)   |                   |                   |     |  |                             |
| 1                 | 1                 | 2                 | 8.750                    | PDC         |                                     | Rotary Steerable | 6730.0          | 6940.0  | 842.0              | 6983.0  | 20/Jul/2013 01:22 | 22/Jul/2013 02:22 | 28  |  |                             |
| 2                 | 2                 | 3                 | 8.750                    | PDC         |                                     | Rotary Steerable | 6940.0          | 7640.0  | 6983.0             | 7680.0  | 22/Jul/2013 05:32 | 24/Jul/2013 01:17 | 24  |  |                             |
| 3                 | 3                 | 4                 | 6.125                    | PDC         |                                     | Rotary Steerable | 7632.0          | 12305.0 | 7680.0             | 12353.0 | 25/Jul/2013 11:25 | 27/Jul/2013 05:25 | 28  |  |                             |

Crew

| Name            | Arrive      | Depart      | Name         | Arrive      | Depart      | Name           | Arrive      | Depart      |
|-----------------|-------------|-------------|--------------|-------------|-------------|----------------|-------------|-------------|
|                 | Wellsite    | Wellsite    |              | Wellsite    | Wellsite    |                | Wellsite    | Wellsite    |
| Nicholas Roosen | 19/Jul/2013 | 27/Jul/2013 | Gregory Dore | 24/Jul/2013 | 27/Jul/2013 | Kevin Sheridan | 19/Jul/2013 | 24/Jul/2013 |

Mud Properties Record

| Date / Time |       | LWD<br>Run No. | Measured<br>Depth<br>(ft.) | Mud<br>Type     | Density<br>(ppg) | Viscosity<br>(cps) | pH  | Fluid<br>Loss<br>(cc) | Oil /<br>Water | Source   | Total<br>Chlorides<br>(ppm) | K+<br>(%) |
|-------------|-------|----------------|----------------------------|-----------------|------------------|--------------------|-----|-----------------------|----------------|----------|-----------------------------|-----------|
| 23/Jul/2013 | 07:31 | 2              | 7345.0                     | Water Based Mud | 10.0             | 41                 | 7.5 | N/A                   | N/A            | Flowline | 2100                        | N/A       |
| 24/Jul/2013 | 7:33  | 2              | 7680.0                     | Water Based Mud | 9.7              | 35                 | 7.0 | N/A                   | N/A            | Flowline | 1900                        | N/A       |
| 26/Jul/2013 | 7:30  | 3              | 9428.0                     | Water Based Mud | 10.2             | 41                 | 7.0 | N/A                   | N/A            | Flowline | 2000                        | N/A       |
| 26/Jul/2013 | 17:30 | 3              | 10900.0                    | Water Based Mud | 10.3             | 41                 | 7.0 | N/A                   | N/A            | Flowline | 2300                        | N/A       |

Mnemonics

| Curve   | Description                        | Units |
|---------|------------------------------------|-------|
| GRAX    | Gamma Ray Apparent, 0.5 ft. Avg    | API   |
| TCDX    | Downhole Temperature               | degF  |
| ROP_AVG | Rate of Penetration, 3.0 ft. Avg   | ft/hr |
| WOB_AVG | Surface Weight on Bit, 1.0 ft. Avg | klbs  |

Equipment and Service Data

| LWD<br>Run<br>No. | Tool | Serial<br>Number | Measurement | Bit<br>Offset<br>(ft.) | Max<br>O.D.<br>(in.) | Min<br>I.D.<br>(in.) |
|-------------------|------|------------------|-------------|------------------------|----------------------|----------------------|
| 1                 | DIR  | 12011873         | Directional | 46.14                  | 6.750                | 4.250                |
| 1                 | SRIG | 12622668         | Gamma       | 42.89                  | 6.750                | 4.250                |
| 2                 | DIR  | 12011873         | Directional | 43.45                  | 6.750                | 4.250                |
| 2                 | SRIG | 12622668         | Gamma       | 40.20                  | 6.750                | 4.250                |
| 3                 | DIR  | 12373461         | Directional | 51.06                  | 4.750                | 2.688                |
| 3                 | SRIG | 12041110         | Gamma       | 47.68                  | 2.688                | 2.688                |

Service and Tool Mnemonics

| Mnemonic | Name                  | Description                                  |
|----------|-----------------------|--|
| DIR      | Directional           | Wellbore directional survey                  |
| SRIG     | Inclination and Gamma | Probe based gamma ray and inclination module |

Comments

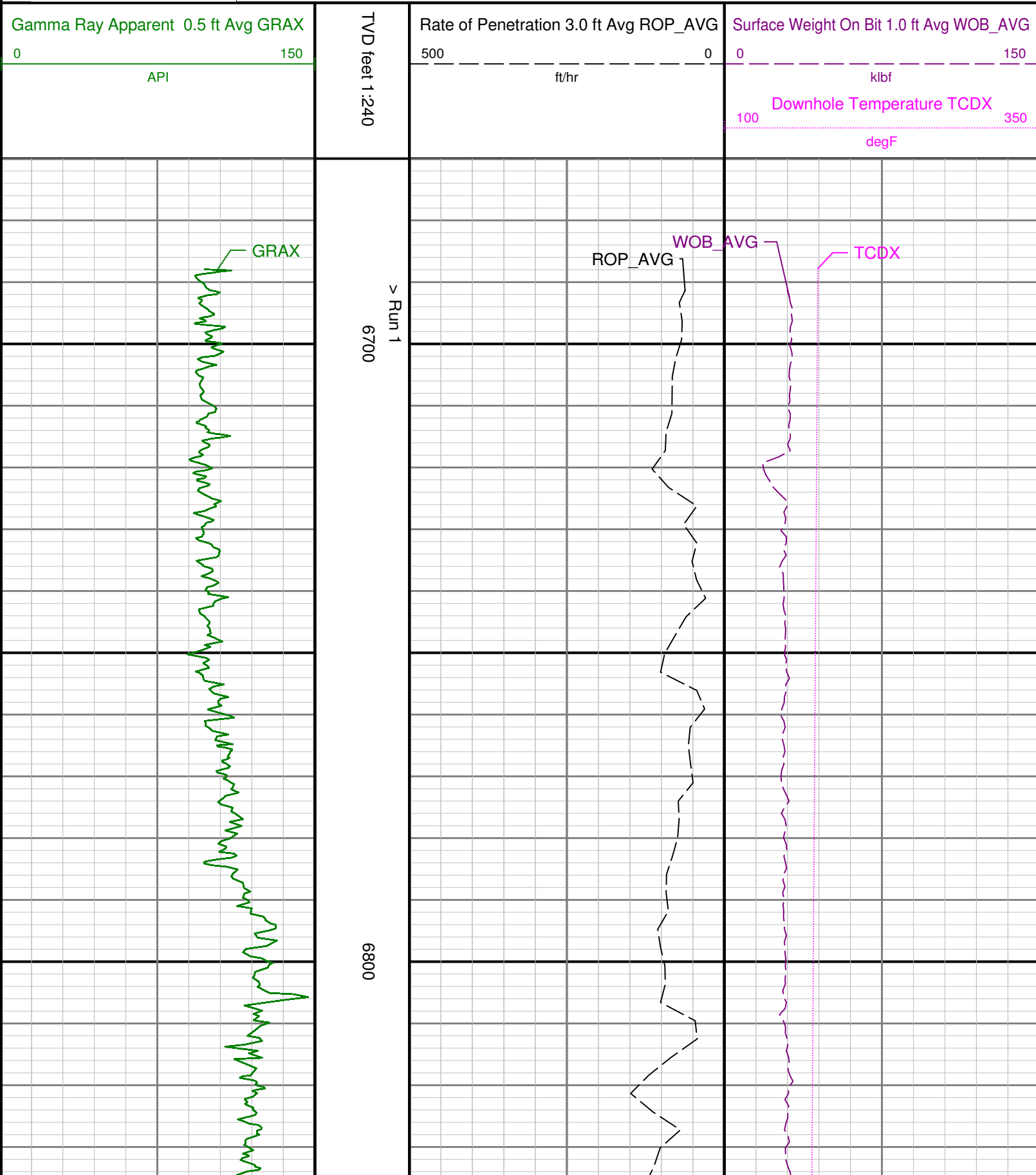
|  |
|--|
| (1) Baker Hughes INTEQ run 1 and 2, utilized 6 1/2 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 842 to 7680 feet MD (842 to 7294 feet TVD) |
|--|

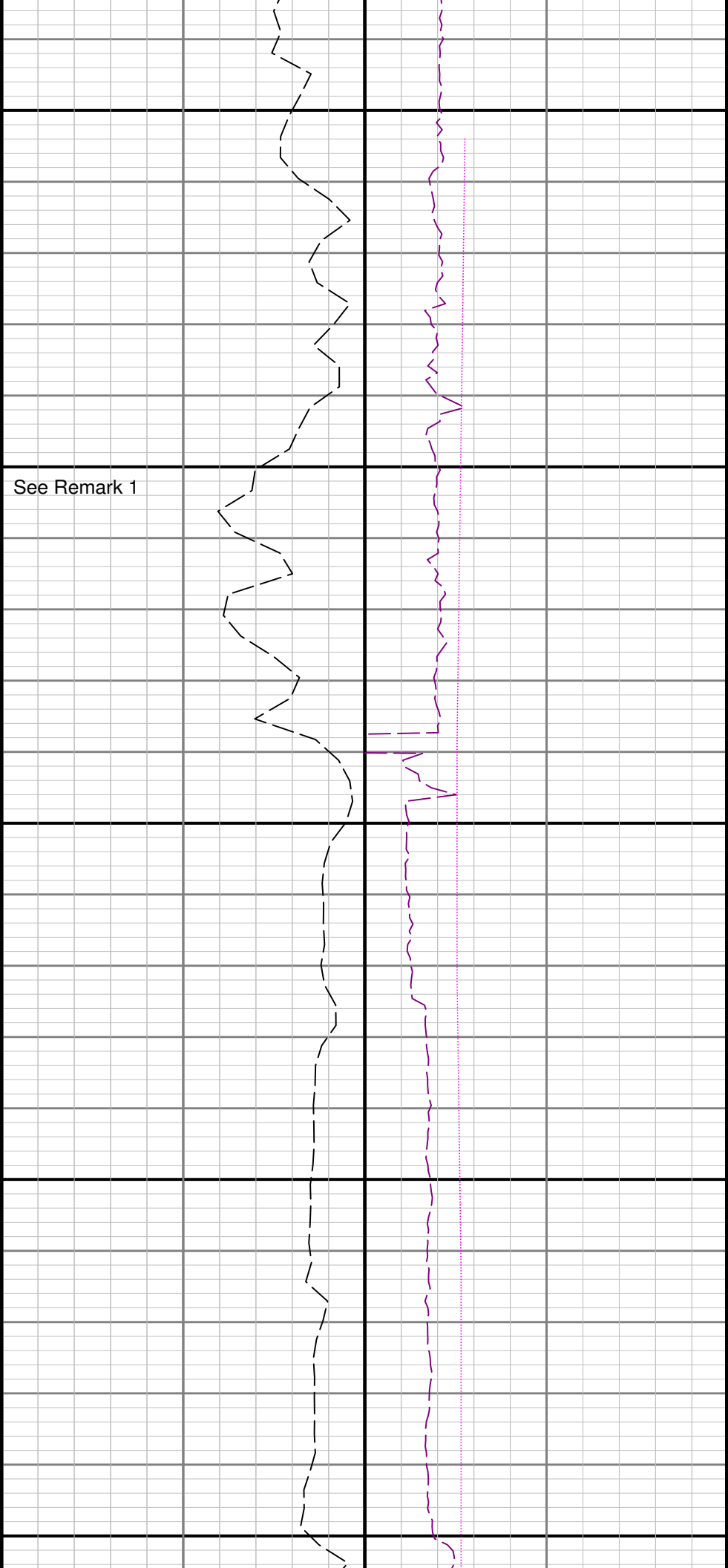
Remarks

| Number | Measured<br>Depth<br>(m.) | Hole<br>Section<br>(in.) | LWD<br>Run No. | Remark  |
|--------|---------------------------|--------------------------|----------------|---|
| 1      | 6950                      | 8.500                    | 1              | The interval from 6940 to 6983 feet MD (6893 to 6934 feet TVD) was logged up to 26 hours after being drilled due to a trip out of the hole to pick up higher degree bend motor and new bit, build rates were lower than needed. |
| 2      | 7660                      | 8.500                    | 1              | The interval from 7640 to 7680 feet MD (7290 to 7294 feet TVD) was logged up to 60 hours after being drilled due to a trip out of the hole for casing and cement operations and picking up the lateral assembly.                |



Company : Anadarko E&P  
Well : Rattler 36N-3HZ  
Interval : 6670.00 - 7310.00 feet  
Created : 27/Jul/2013 3:41:48 AM

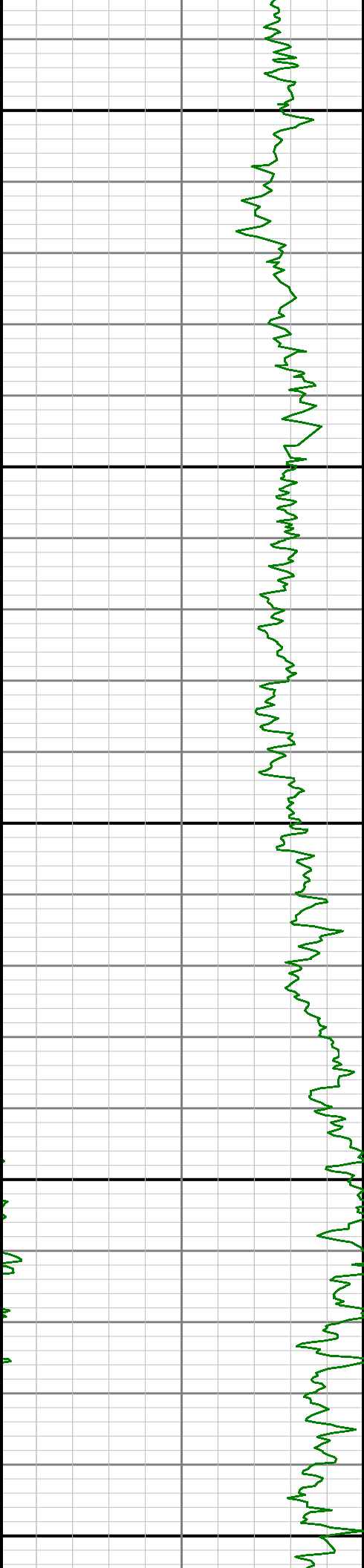


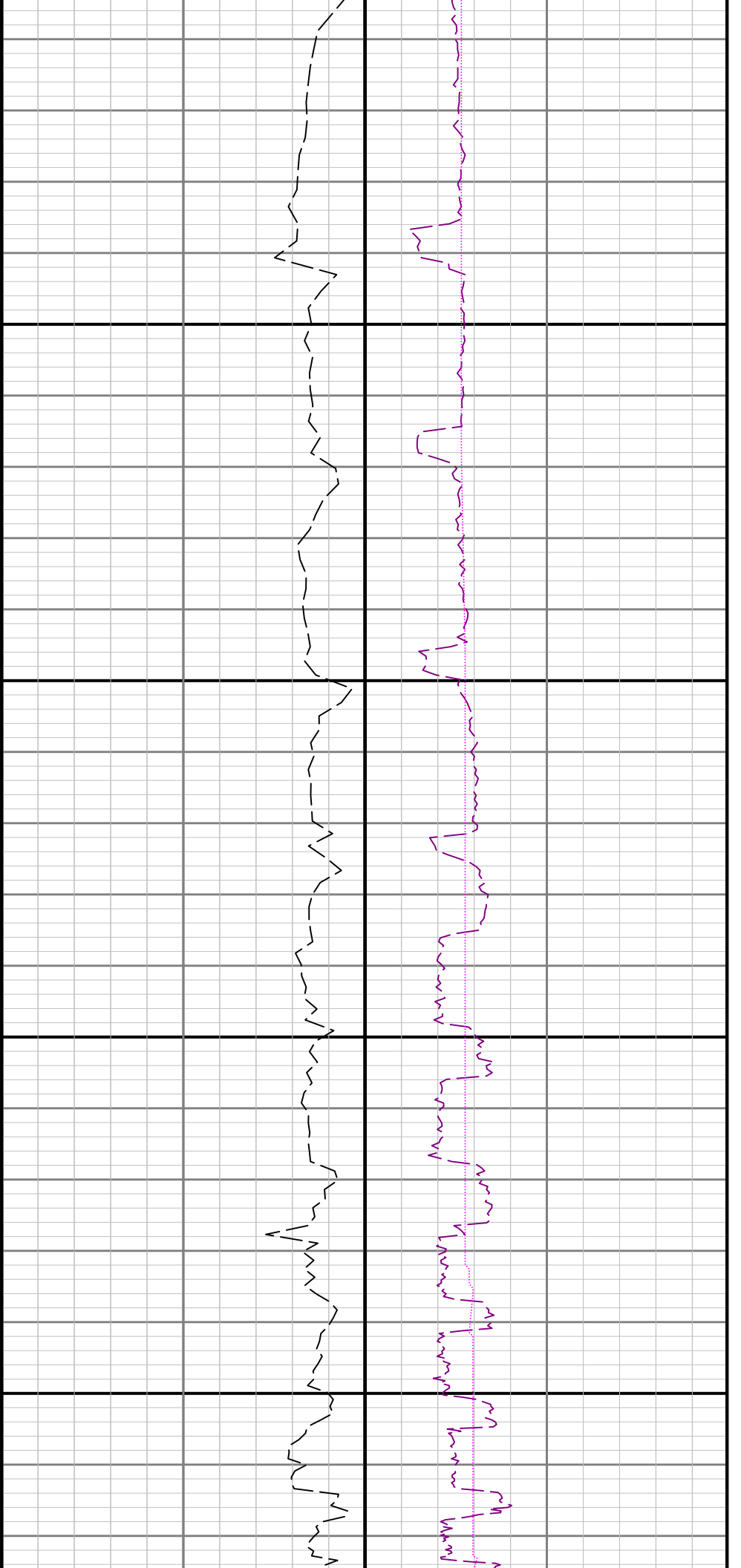


6900

Run 1 <> Run 2

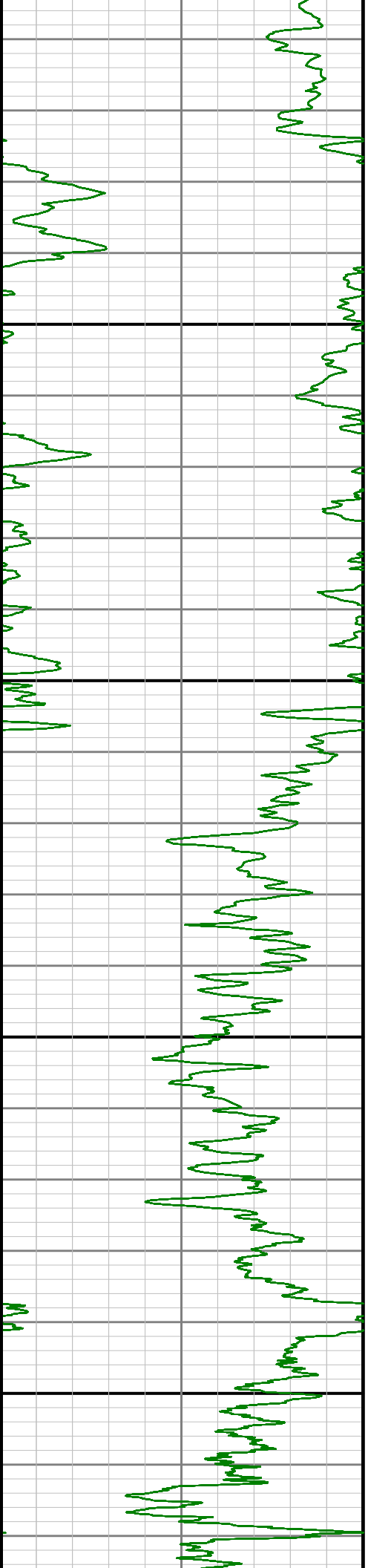
7000

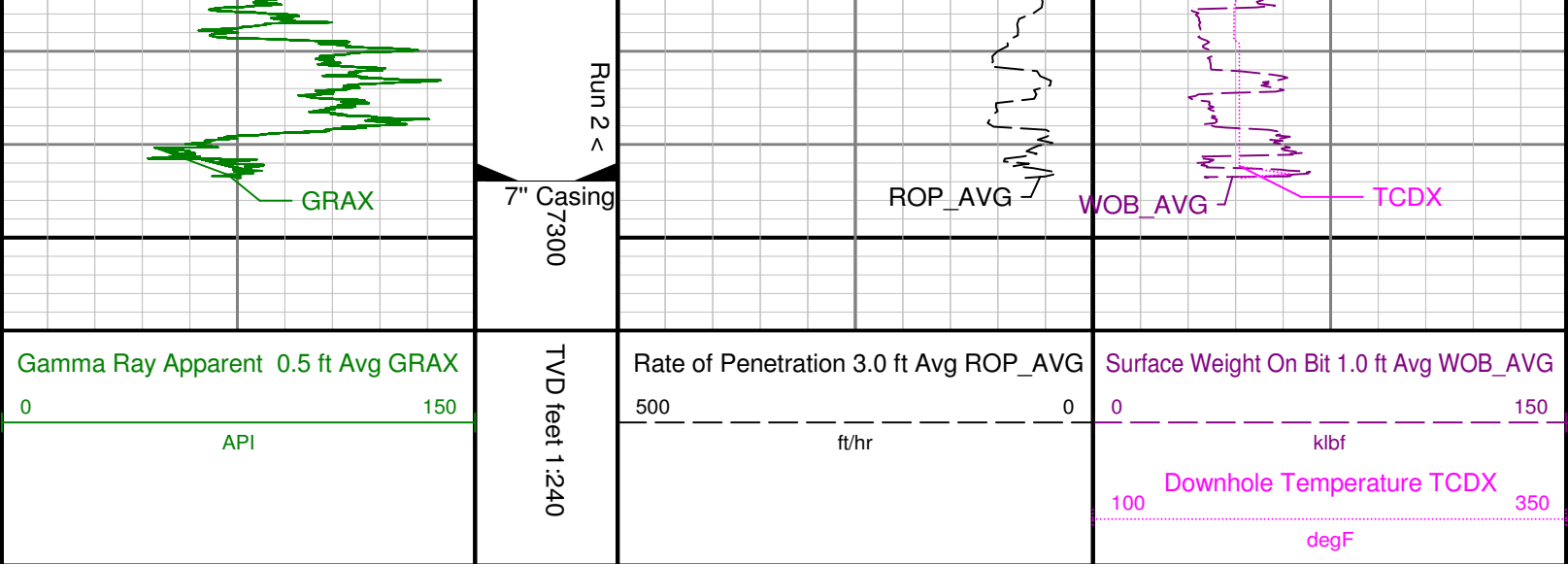




7100

7200





| ADVANTAGE Final Survey Listing             |                 |                    |                    |                            |                               |                  |                   |                              |                      |                         |                           |                          |
|--|-----------------|--------------------|--------------------|----------------------------|-------------------------------|------------------|-------------------|------------------------------|----------------------|-------------------------|---------------------------|--------------------------|
| <b>Operator</b> :Anadarko E&P              |                 |                    |                    | <b>Field</b> : weld County |                               |                  |                   | <b>API No</b> : 05-123-36603 |                      |                         |                           |                          |
| <b>Well</b> :Rattler 36N-3HZ               |                 |                    |                    | <b>Rig</b> : XTreme 8      |                               |                  |                   | <b>Job</b> :3RGKU2           |                      |                         |                           |                          |
| <b>Wellbore</b> :Rattler 36N-3HZ Orig Hole |                 |                    |                    |                            |                               |                  |                   |                              |                      |                         |                           |                          |
| Well Origin                                |                 |                    |                    |                            |                               |                  |                   |                              |                      |                         |                           |                          |
| <b>Latitude</b>                            |                 | 40.1754 deg        |                    |                            | <b>Longitude</b>              |                  | -104.7646 deg     |                              |                      |                         |                           |                          |
| <b>North Reference</b>                     |                 | True               |                    |                            | <b>Drill Depth Zero</b>       |                  | NULL              |                              |                      |                         |                           |                          |
| <b>Vertical Datum is</b>                   |                 | Ground Level       |                    |                            | <b>Vertical Datum to DDZ</b>  |                  | 17.00 ft          |                              |                      |                         |                           |                          |
| <b>Vertical Section North</b>              |                 | 0.00 ft            |                    |                            | <b>Vertical Section East</b>  |                  | 0.00 ft           |                              |                      |                         |                           |                          |
| <b>Vertical Section Azimuth</b>            |                 | 180.5400 deg       |                    |                            | <b>Vertical Section Depth</b> |                  | 0.00ft            |                              |                      |                         |                           |                          |
| <b>Grid Convergence</b>                    |                 | 0.0000 deg         |                    |                            | <b>Magnetic Declination</b>   |                  | 8.5400 deg        |                              |                      |                         |                           |                          |
| <b>Total Correction</b>                    |                 | 8.5400 deg         |                    |                            | <b>TVD Calculation Method</b> |                  | Minimal Curvature |                              |                      |                         |                           |                          |
| <b>D-Row Calculation</b>                   |                 | Magcorr1           |                    |                            | <b>Local Magnetic Field</b>   |                  | 52772 nT          |                              |                      |                         |                           |                          |
| <b>Local Magnetic Dip Angle</b>            |                 | 67.0100 deg        |                    |                            | <b>Local Gravity Field</b>    |                  | 9.798 m/s^2       |                              |                      |                         |                           |                          |
| <b>Tie</b>                                 | <b>MD</b><br>ft | <b>Incl</b><br>deg | <b>Azim</b><br>deg | <b>North</b><br>ft         | <b>East</b><br>ft             | <b>TVD</b><br>ft | <b>VS</b><br>ft   | <b>Incr VS</b><br>ft         | <b>Crs Len</b><br>ft | <b>DLS</b><br>deg/100ft | <b>Build</b><br>deg/100ft | <b>Turn</b><br>deg/100ft |

|   |         |         |          |         |        |         |        |        |        |      |       |       |
|---|---------|---------|----------|---------|--------|---------|--------|--------|--------|------|-------|-------|
| U | 732.00  | 1.1900  | 13.9000  | 4.57    | -1.52  | 731.97  | 0.00   | 0.00   |        |      |       |       |
|   | 887.00  | 0.8400  | 33.1800  | 7.08    | -0.51  | 886.95  | -7.08  | 2.71   | 155.00 | 0.31 | -0.23 | 12.44 |
|   | 979.00  | 1.2200  | 94.1900  | 7.58    | 0.83   | 978.93  | -7.58  | 4.14   | 92.00  | 1.19 | 0.41  | 66.32 |
|   | 1072.00 | 2.5500  | 101.5000 | 7.09    | 3.85   | 1071.88 | -7.13  | 7.19   | 93.00  | 1.45 | 1.43  | 7.86  |
|   | 1161.00 | 3.7700  | 107.4200 | 5.82    | 8.58   | 1160.74 | -5.90  | 12.09  | 89.00  | 1.42 | 1.37  | 6.65  |
|   | 1252.00 | 4.2700  | 117.5400 | 3.36    | 14.44  | 1251.52 | -3.49  | 18.45  | 91.00  | 0.95 | 0.55  | 11.12 |
|   | 1343.00 | 5.4200  | 128.0800 | -0.86   | 20.83  | 1342.20 | 0.66   | 26.10  | 91.00  | 1.59 | 1.26  | 11.58 |
|   | 1434.00 | 7.0400  | 126.7200 | -6.84   | 28.68  | 1432.66 | 6.57   | 35.98  | 91.00  | 1.79 | 1.78  | -1.49 |
|   | 1525.00 | 9.5900  | 130.5400 | -15.11  | 38.91  | 1522.69 | 14.74  | 49.13  | 91.00  | 2.87 | 2.80  | 4.20  |
|   | 1616.00 | 12.5000 | 132.6200 | -26.70  | 51.92  | 1612.00 | 26.21  | 66.56  | 91.00  | 3.23 | 3.20  | 2.29  |
|   | 1707.00 | 13.3900 | 133.7200 | -40.66  | 66.79  | 1700.68 | 40.02  | 86.94  | 91.00  | 1.01 | 0.98  | 1.21  |
|   | 1798.00 | 12.3500 | 133.1800 | -54.60  | 81.50  | 1789.40 | 53.83  | 107.21 | 91.00  | 1.15 | -1.14 | -0.59 |
|   | 1890.00 | 12.2100 | 128.8600 | -67.43  | 96.25  | 1879.29 | 66.52  | 126.77 | 92.00  | 1.01 | -0.15 | -4.70 |
|   | 1980.00 | 12.1200 | 127.5300 | -79.16  | 111.15 | 1967.27 | 78.11  | 145.73 | 90.00  | 0.33 | -0.10 | -1.48 |
|   | 2071.00 | 11.8900 | 130.5300 | -91.07  | 125.85 | 2056.28 | 89.88  | 164.65 | 91.00  | 0.73 | -0.25 | 3.30  |
|   | 2162.00 | 11.6300 | 136.7100 | -103.84 | 139.27 | 2145.38 | 102.53 | 183.17 | 91.00  | 1.41 | -0.29 | 6.79  |
|   | 2253.00 | 12.0300 | 137.2100 | -117.48 | 152.00 | 2234.44 | 116.04 | 201.83 | 91.00  | 0.45 | 0.44  | 0.55  |
|   | 2344.00 | 10.6800 | 135.5800 | -130.46 | 164.34 | 2323.66 | 128.91 | 219.74 | 91.00  | 1.52 | -1.48 | -1.79 |
|   | 2435.00 | 11.2900 | 134.0700 | -142.68 | 176.65 | 2412.99 | 141.01 | 237.08 | 91.00  | 0.74 | 0.67  | -1.66 |
|   | 2526.00 | 10.7200 | 132.4800 | -154.59 | 189.29 | 2502.32 | 152.80 | 254.45 | 91.00  | 0.71 | -0.63 | -1.75 |
|   | 2616.00 | 8.5800  | 139.7700 | -165.37 | 199.80 | 2591.04 | 163.48 | 269.51 | 90.00  | 2.73 | -2.38 | 8.10  |
|   | 2707.00 | 8.5800  | 135.4100 | -175.39 | 208.95 | 2681.03 | 173.41 | 283.07 | 91.00  | 0.71 | 0.00  | -4.79 |

|            |                 |                    |                    |                    |                   |                  |                 |                      |                      |                         |                           |                          |
|------------|-----------------|--------------------|--------------------|--------------------|-------------------|------------------|-----------------|----------------------|----------------------|-------------------------|---------------------------|--------------------------|
| 2797.00    | 8.5600          | 143.9100           | -185.58            | 217.61             | 2770.03           | 183.52           | 296.45          | 90.00                | 1.41                 | -0.02                   | 9.44                      |                          |
| 2886.00    | 9.4900          | 143.8900           | -196.86            | 225.83             | 2857.92           | 194.72           | 310.41          | 89.00                | 1.04                 | 1.04                    | -0.02                     |                          |
| 2971.00    | 10.7900         | 145.4400           | -209.08            | 234.48             | 2941.59           | 206.86           | 325.37          | 85.00                | 1.56                 | 1.53                    | 1.82                      |                          |
| 3056.00    | 10.2600         | 147.2400           | -221.99            | 243.09             | 3025.16           | 219.69           | 340.90          | 85.00                | 0.73                 | -0.62                   | 2.12                      |                          |
| 3141.00    | 10.1200         | 138.5300           | -233.96            | 252.13             | 3108.83           | 231.57           | 355.89          | 85.00                | 1.82                 | -0.16                   | -10.25                    |                          |
| 3226.00    | 10.9800         | 140.6500           | -245.81            | 262.21             | 3192.39           | 243.33           | 371.45          | 85.00                | 1.11                 | 1.01                    | 2.49                      |                          |
| 3312.00    | 10.2700         | 132.9700           | -257.37            | 273.01             | 3276.92           | 254.79           | 387.27          | 86.00                | 1.84                 | -0.83                   | -8.93                     |                          |
| 3397.00    | 11.0700         | 133.4000           | -268.14            | 284.48             | 3360.45           | 265.45           | 403.01          | 85.00                | 0.95                 | 0.94                    | 0.51                      |                          |
| 3482.00    | 9.5600          | 138.4000           | -279.03            | 295.10             | 3444.07           | 276.23           | 418.22          | 85.00                | 2.06                 | -1.78                   | 5.88                      |                          |
| 3568.00    | 9.1100          | 132.5600           | -288.97            | 304.86             | 3528.94           | 286.09           | 432.15          | 86.00                | 1.22                 | -0.52                   | -6.79                     |                          |
| 3653.00    | 8.9600          | 131.2400           | -297.89            | 314.79             | 3612.88           | 294.91           | 445.50          | 85.00                | 0.30                 | -0.18                   | -1.55                     |                          |
| 3738.00    | 9.0300          | 130.4800           | -306.58            | 324.84             | 3696.84           | 303.51           | 458.79          | 85.00                | 0.16                 | 0.08                    | -0.89                     |                          |
| 3823.00    | 7.9400          | 130.8400           | -314.75            | 334.36             | 3780.91           | 311.59           | 471.33          | 85.00                | 1.28                 | -1.28                   | 0.42                      |                          |
| 3909.00    | 7.1500          | 128.4400           | -321.96            | 343.04             | 3866.16           | 318.72           | 482.62          | 86.00                | 0.99                 | -0.92                   | -2.79                     |                          |
| 3994.00    | 6.5700          | 129.8700           | -328.37            | 350.92             | 3950.55           | 325.05           | 492.77          | 85.00                | 0.71                 | -0.68                   | 1.68                      |                          |
| 4080.00    | 4.7000          | 133.7700           | -333.96            | 357.24             | 4036.13           | 330.58           | 501.21          | 86.00                | 2.22                 | -2.17                   | 4.53                      |                          |
| 4165.00    | 3.1500          | 132.6400           | -337.95            | 361.47             | 4120.93           | 334.53           | 507.03          | 85.00                | 1.83                 | -1.82                   | -1.33                     |                          |
| 4250.00    | 1.5700          | 152.2900           | -340.57            | 363.73             | 4205.86           | 337.12           | 510.48          | 85.00                | 2.06                 | -1.86                   | 23.12                     |                          |
| 4335.00    | 0.5100          | 292.5100           | -341.45            | 363.92             | 4290.85           | 338.01           | 511.39          | 85.00                | 2.34                 | -1.25                   | 164.96                    |                          |
| 4676.00    | 2.2700          | 104.2000           | -342.53            | 369.07             | 4631.77           | 339.03           | 516.64          | 341.00               | 0.81                 | 0.52                    | 50.35                     |                          |
| 4762.00    | 1.6900          | 134.5700           | -343.84            | 371.62             | 4717.73           | 340.32           | 519.51          | 86.00                | 1.37                 | -0.67                   | 35.31                     |                          |
| 4847.00    | 0.4100          | 200.6100           | -345.00            | 372.41             | 4802.71           | 341.48           | 520.92          | 85.00                | 1.85                 | -1.51                   | 77.69                     |                          |
| 4932.00    | 0.7100          | 170.7800           | -345.80            | 372.39             | 4887.71           | 342.28           | 521.72          | 85.00                | 0.48                 | 0.35                    | -35.09                    |                          |
| 5017.00    | 0.4300          | 98.1800            | -346.37            | 372.79             | 4972.70           | 342.84           | 522.42          | 85.00                | 0.84                 | -0.33                   | -85.41                    |                          |
| 5102.00    | 1.8500          | 133.1500           | -347.35            | 374.10             | 5057.69           | 343.81           | 524.06          | 85.00                | 1.79                 | 1.67                    | 41.14                     |                          |
| 5273.00    | 2.6000          | 130.7500           | -351.77            | 379.06             | 5228.56           | 348.19           | 530.70          | 171.00               | 0.44                 | 0.44                    | -1.40                     |                          |
| 5358.00    | 1.1100          | 157.7700           | -353.79            | 380.83             | 5313.51           | 350.19           | 533.39          | 85.00                | 1.99                 | -1.75                   | 31.79                     |                          |
| 5443.00    | 0.6400          | 277.7900           | -354.49            | 380.67             | 5398.50           | 350.89           | 534.10          | 85.00                | 1.80                 | -0.55                   | 141.20                    |                          |
| <b>Tie</b> | <b>MD</b><br>ft | <b>Incl</b><br>deg | <b>Azim</b><br>deg | <b>North</b><br>ft | <b>East</b><br>ft | <b>TVD</b><br>ft | <b>VS</b><br>ft | <b>Incr VS</b><br>ft | <b>Crs Len</b><br>ft | <b>DLS</b><br>deg/100ft | <b>Build</b><br>deg/100ft | <b>Turn</b><br>deg/100ft |
| 5528.00    | 1.4400          | 283.0700           | -354.19            | 379.16             | 5483.49           | 350.60           | 535.64          | 85.00                | 0.95                 | 0.94                    | 6.21                      |                          |
| 5613.00    | 1.3200          | 276.3100           | -353.84            | 377.15             | 5568.46           | 350.27           | 537.69          | 85.00                | 0.24                 | -0.14                   | -7.95                     |                          |
| 5699.00    | 1.2200          | 281.1800           | -353.55            | 375.26             | 5654.44           | 350.00           | 539.59          | 86.00                | 0.17                 | -0.12                   | 5.66                      |                          |
| 5869.00    | 0.4000          | 249.5300           | -353.41            | 372.93             | 5824.43           | 349.88           | 541.93          | 170.00               | 0.53                 | -0.48                   | -18.62                    |                          |
| 6040.00    | 1.4900          | 243.6300           | -354.60            | 370.38             | 5995.40           | 351.10           | 544.74          | 171.00               | 0.64                 | 0.64                    | -3.45                     |                          |
| 6210.00    | 0.9900          | 228.1600           | -356.56            | 367.31             | 6165.36           | 353.09           | 548.39          | 170.00               | 0.35                 | -0.29                   | -9.10                     |                          |
| 6551.00    | 0.5900          | 167.3100           | -360.24            | 365.50             | 6506.33           | 356.78           | 552.49          | 341.00               | 0.26                 | -0.12                   | -17.84                    |                          |
| 6721.00    | 1.2000          | 190.0200           | -362.85            | 365.38             | 6676.31           | 359.39           | 555.10          | 170.00               | 0.41                 | 0.36                    | 13.36                     |                          |
| 6764.00    | 4.3300          | 182.9600           | -364.91            | 365.22             | 6719.26           | 361.46           | 557.17          | 43.00                | 7.31                 | 7.28                    | -16.42                    |                          |
| 6807.00    | 6.1900          | 175.3200           | -368.85            | 365.32             | 6762.07           | 365.39           | 561.10          | 43.00                | 4.61                 | 4.33                    | -17.77                    |                          |
| 6849.00    | 10.0400         | 173.2100           | -374.74            | 365.94             | 6803.65           | 371.28           | 567.03          | 42.00                | 9.19                 | 9.17                    | -5.02                     |                          |
| 6892.00    | 11.8800         | 174.8200           | -382.87            | 366.78             | 6845.86           | 379.40           | 575.20          | 43.00                | 4.34                 | 4.28                    | 3.74                      |                          |
| 6935.00    | 13.5900         | 172.0500           | -392.28            | 367.88             | 6887.80           | 388.80           | 584.68          | 43.00                | 4.22                 | 3.98                    | -6.44                     |                          |
| 6977.00    | 13.8400         | 167.8700           | -402.08            | 369.62             | 6928.60           | 398.58           | 594.63          | 42.00                | 2.43                 | 0.60                    | -9.95                     |                          |
| 7020.00    | 18.5900         | 170.1200           | -413.87            | 371.88             | 6969.88           | 410.35           | 606.63          | 43.00                | 11.14                | 11.05                   | 5.23                      |                          |
| 7062.00    | 24.5100         | 173.6000           | -429.14            | 374.00             | 7008.93           | 425.59           | 622.05          | 42.00                | 14.41                | 14.10                   | 8.29                      |                          |
| 7105.00    | 30.8500         | 176.5400           | -449.03            | 375.66             | 7046.99           | 445.47           | 642.01          | 43.00                | 15.08                | 14.74                   | 6.84                      |                          |
| 7148.00    | 36.6600         | 178.8100           | -472.89            | 376.59             | 7082.73           | 469.32           | 665.89          | 43.00                | 13.82                | 13.51                   | 5.28                      |                          |
| 7191.00    | 42.5500         | 180.3400           | -500.28            | 376.77             | 7115.84           | 496.71           | 693.28          | 43.00                | 13.88                | 13.70                   | 3.56                      |                          |
| 7233.00    | 48.5100         | 180.6700           | -530.24            | 376.51             | 7145.25           | 526.67           | 723.24          | 42.00                | 14.20                | 14.19                   | 0.79                      |                          |
| 7276.00    | 54.3300         | 180.7100           | -563.84            | 376.10             | 7172.06           | 560.27           | 756.84          | 43.00                | 13.54                | 13.53                   | 0.09                      |                          |
| 7318.00    | 59.2300         | 181.7600           | -598.96            | 375.33             | 7195.06           | 595.39           | 791.97          | 42.00                | 11.85                | 11.67                   | 2.50                      |                          |
| 7361.00    | 63.3700         | 181.8600           | -636.65            | 374.14             | 7215.71           | 633.09           | 829.68          | 43.00                | 9.63                 | 9.63                    | 0.23                      |                          |
| 7404.00    | 67.0600         | 181.9300           | -675.66            | 372.85             | 7233.73           | 672.11           | 868.71          | 43.00                | 8.58                 | 8.58                    | 0.16                      |                          |
| 7446.00    | 70.5500         | 181.8000           | -714.79            | 371.58             | 7248.91           | 711.26           | 907.86          | 42.00                | 8.31                 | 8.31                    | -0.31                     |                          |
| 7489.00    | 73.9400         | 181.3000           | -755.72            | 370.47             | 7262.02           | 752.20           | 948.81          | 43.00                | 7.96                 | 7.88                    | -1.16                     |                          |
| 7532.00    | 77.5900         | 181.4000           | -797.38            | 369.49             | 7272.59           | 793.86           | 990.48          | 43.00                | 8.49                 | 8.49                    | 0.23                      |                          |
| 7575.00    | 79.5800         | 182.4200           | -839.50            | 368.08             | 7281.10           | 836.00           | 1032.63         | 43.00                | 5.18                 | 4.63                    | 2.37                      |                          |
| 7617.00    | 82.3400         | 183.1200           | -880.93            | 366.08             | 7287.70           | 877.44           | 1074.10         | 42.00                | 6.77                 | 6.57                    | 1.67                      |                          |
| 7634.00    | 83.9500         | 183.7500           | -897.78            | 365.07             | 7289.73           | 894.30           | 1090.98         | 17.00                | 10.16                | 9.47                    | 3.71                      |                          |
| 7716.00    | 88.1400         | 183.3500           | -979.41            | 360.00             | 7295.39           | 975.97           | 1172.76         | 82.00                | 5.13                 | 5.11                    | -0.49                     |                          |
| 7758.00    | 88.4000         | 184.1000           | -1021.30           | 357.28             | 7296.65           | 1017.89          | 1214.75         | 42.00                | 1.89                 | 0.62                    | 1.79                      |                          |
| 7843.00    | 90.3400         | 184.1900           | -1106.07           | 351.13             | 7297.59           | 1102.71          | 1299.74         | 85.00                | 2.28                 | 2.28                    | 0.11                      |                          |

|                          |                 |                    |                    |                    |                   |                  |                 |                      |                      |                         |                           |                          |
|--------------------------|-----------------|--------------------|--------------------|--------------------|-------------------|------------------|-----------------|----------------------|----------------------|-------------------------|---------------------------|--------------------------|
| 7929.00                  | 90.1200         | 182.1300           | -1191.93           | 346.39             | 7297.24           | 1188.61          | 1385.73         | 86.00                | 2.41                 | -0.26                   | -2.40                     |                          |
| 8014.00                  | 90.6800         | 181.4600           | -1276.89           | 343.73             | 7296.65           | 1273.59          | 1470.73         | 85.00                | 1.03                 | 0.66                    | -0.79                     |                          |
| 8099.00                  | 90.6800         | 180.0400           | -1361.87           | 342.62             | 7295.64           | 1358.58          | 1555.72         | 85.00                | 1.67                 | 0.00                    | -1.67                     |                          |
| 8184.00                  | 90.9600         | 180.4200           | -1446.86           | 342.28             | 7294.43           | 1443.57          | 1640.71         | 85.00                | 0.56                 | 0.33                    | 0.45                      |                          |
| 8269.00                  | 91.4800         | 180.5200           | -1531.84           | 341.58             | 7292.62           | 1528.55          | 1725.69         | 85.00                | 0.62                 | 0.61                    | 0.12                      |                          |
| 8354.00                  | 90.2700         | 180.3100           | -1616.83           | 340.96             | 7291.32           | 1613.54          | 1810.68         | 85.00                | 1.44                 | -1.42                   | -0.25                     |                          |
| 8440.00                  | 90.1800         | 180.2800           | -1702.82           | 340.52             | 7290.98           | 1699.54          | 1896.68         | 86.00                | 0.11                 | -0.10                   | -0.03                     |                          |
| 8525.00                  | 90.0000         | 179.8400           | -1787.82           | 340.43             | 7290.85           | 1784.54          | 1981.68         | 85.00                | 0.56                 | -0.21                   | -0.52                     |                          |
| 8610.00                  | 91.0700         | 181.0300           | -1872.81           | 339.79             | 7290.05           | 1869.53          | 2066.67         | 85.00                | 1.88                 | 1.26                    | 1.40                      |                          |
| 8695.00                  | 88.9800         | 180.8000           | -1957.80           | 338.43             | 7290.02           | 1954.52          | 2151.67         | 85.00                | 2.47                 | -2.46                   | -0.27                     |                          |
| 8781.00                  | 89.0100         | 180.9400           | -2043.78           | 337.12             | 7291.52           | 2040.51          | 2237.65         | 86.00                | 0.17                 | 0.03                    | 0.16                      |                          |
| 8866.00                  | 88.3700         | 180.4100           | -2128.75           | 336.12             | 7293.47           | 2125.49          | 2322.63         | 85.00                | 0.98                 | -0.75                   | -0.62                     |                          |
| 8951.00                  | 89.1700         | 180.2900           | -2213.72           | 335.60             | 7295.29           | 2210.46          | 2407.61         | 85.00                | 0.95                 | 0.94                    | -0.14                     |                          |
| 9036.00                  | 88.7700         | 180.2000           | -2298.71           | 335.24             | 7296.82           | 2295.45          | 2492.60         | 85.00                | 0.48                 | -0.47                   | -0.11                     |                          |
| 9121.00                  | 88.7700         | 179.9700           | -2383.69           | 335.11             | 7298.64           | 2380.43          | 2577.58         | 85.00                | 0.27                 | 0.00                    | -0.27                     |                          |
| 9292.00                  | 88.5200         | 180.1300           | -2554.64           | 334.97             | 7302.69           | 2551.37          | 2748.53         | 171.00               | 0.17                 | -0.15                   | 0.09                      |                          |
| 9377.00                  | 88.8300         | 180.5500           | -2639.62           | 334.46             | 7304.65           | 2636.35          | 2833.51         | 85.00                | 0.61                 | 0.36                    | 0.49                      |                          |
| <b>Tie</b>               | <b>MD</b><br>ft | <b>Incl</b><br>deg | <b>Azim</b><br>deg | <b>North</b><br>ft | <b>East</b><br>ft | <b>TVD</b><br>ft | <b>VS</b><br>ft | <b>Incr VS</b><br>ft | <b>Crs Len</b><br>ft | <b>DLS</b><br>deg/100ft | <b>Build</b><br>deg/100ft | <b>Turn</b><br>deg/100ft |
|                          | 9463.00         | 89.7800            | 179.8500           | -2725.61           | 334.16            | 7305.70          | 2722.34         | 2919.50              | 86.00                | 1.37                    | 1.10                      | -0.81                    |
|                          | 9633.03         | 89.2600            | 179.4700           | -2895.63           | 335.17            | 7307.12          | 2892.34         | 3089.52              | 170.03               | 0.38                    | -0.31                     | -0.22                    |
|                          | 9718.00         | 90.5900            | 179.4000           | -2980.59           | 336.01            | 7307.23          | 2977.29         | 3174.49              | 84.97                | 1.57                    | 1.57                      | -0.08                    |
|                          | 9803.00         | 91.0500            | 179.6700           | -3065.58           | 336.70            | 7306.02          | 3062.27         | 3259.48              | 85.00                | 0.63                    | 0.54                      | 0.32                     |
|                          | 9974.00         | 90.9200            | 179.0400           | -3236.54           | 338.62            | 7303.08          | 3233.21         | 3430.45              | 171.00               | 0.38                    | -0.08                     | -0.37                    |
|                          | 10144.00        | 88.8300            | 178.7400           | -3406.50           | 341.92            | 7303.45          | 3403.13         | 3600.44              | 170.00               | 1.24                    | -1.23                     | -0.18                    |
|                          | 10230.00        | 89.4200            | 178.3900           | -3492.47           | 344.07            | 7304.76          | 3489.07         | 3686.43              | 86.00                | 0.80                    | 0.69                      | -0.41                    |
|                          | 10315.00        | 91.0200            | 179.3100           | -3577.44           | 345.77            | 7304.43          | 3574.03         | 3771.43              | 85.00                | 2.17                    | 1.88                      | 1.08                     |
|                          | 10400.00        | 90.4900            | 179.1200           | -3662.43           | 346.94            | 7303.31          | 3659.00         | 3856.42              | 85.00                | 0.66                    | -0.62                     | -0.22                    |
|                          | 10570.00        | 91.2900            | 179.7400           | -3832.40           | 348.63            | 7300.67          | 3828.94         | 4026.40              | 170.00               | 0.60                    | 0.47                      | 0.36                     |
|                          | 10741.00        | 91.2000            | 181.6400           | -4003.34           | 346.57            | 7296.96          | 3999.89         | 4197.35              | 171.00               | 1.11                    | -0.05                     | 1.11                     |
|                          | 10911.00        | 91.2000            | 181.1900           | -4173.25           | 342.37            | 7293.40          | 4169.83         | 4367.31              | 170.00               | 0.26                    | 0.00                      | -0.26                    |
|                          | 10996.00        | 89.8200            | 181.3200           | -4258.22           | 340.51            | 7292.64          | 4254.82         | 4452.31              | 85.00                | 1.63                    | -1.62                     | 0.15                     |
|                          | 11082.00        | 88.8300            | 181.0100           | -4344.20           | 338.76            | 7293.65          | 4340.81         | 4538.30              | 86.00                | 1.21                    | -1.15                     | -0.36                    |
|                          | 11167.00        | 88.9200            | 181.0400           | -4429.17           | 337.24            | 7295.32          | 4425.79         | 4623.28              | 85.00                | 0.11                    | 0.11                      | 0.04                     |
|                          | 11252.00        | 89.2200            | 180.6700           | -4514.15           | 335.98            | 7296.70          | 4510.78         | 4708.27              | 85.00                | 0.56                    | 0.35                      | -0.44                    |
|                          | 11338.00        | 89.9000            | 180.7300           | -4600.14           | 334.93            | 7297.36          | 4596.77         | 4794.27              | 86.00                | 0.79                    | 0.79                      | 0.07                     |
|                          | 11508.00        | 89.6600            | 180.2000           | -4770.13           | 333.55            | 7298.02          | 4766.77         | 4964.27              | 170.00               | 0.34                    | -0.14                     | -0.31                    |
|                          | 11593.00        | 89.8800            | 180.5000           | -4855.13           | 333.03            | 7298.36          | 4851.77         | 5049.27              | 85.00                | 0.44                    | 0.26                      | 0.35                     |
|                          | 11678.00        | 90.6800            | 180.9800           | -4940.12           | 331.93            | 7297.94          | 4936.77         | 5134.27              | 85.00                | 1.10                    | 0.94                      | 0.56                     |
|                          | 11764.00        | 90.7400            | 180.1200           | -5026.11           | 331.10            | 7296.88          | 5022.76         | 5220.26              | 86.00                | 1.00                    | 0.07                      | -1.00                    |
|                          | 11934.00        | 90.5600            | 179.5400           | -5196.09           | 331.61            | 7294.95          | 5192.74         | 5390.25              | 170.00               | 0.36                    | -0.11                     | -0.34                    |
|                          | 12019.00        | 90.6200            | 180.5800           | -5281.09           | 331.52            | 7294.07          | 5277.73         | 5475.24              | 85.00                | 1.23                    | 0.07                      | 1.22                     |
|                          | 12105.00        | 90.2500            | 180.0200           | -5367.08           | 331.07            | 7293.42          | 5363.72         | 5561.24              | 86.00                | 0.78                    | -0.43                     | -0.65                    |
|                          | 12190.00        | 90.9500            | 180.4000           | -5452.08           | 330.76            | 7292.53          | 5448.72         | 5646.23              | 85.00                | 0.94                    | 0.82                      | 0.45                     |
|                          | 12299.00        | 90.8600            | 179.9100           | -5561.06           | 330.46            | 7290.81          | 5557.70         | 5755.22              | 109.00               | 0.46                    | -0.08                     | -0.45                    |
| <b>Projection to TD:</b> |                 |                    |                    |                    |                   |                  |                 |                      |                      |                         |                           |                          |
|                          | 12353.00        | 90.8600            | 179.9100           | -5615.06           | 330.55            | 7290.00          | 5611.69         | 5809.21              | 54.00                | 0.00                    | 0.00                      | 0.00                     |