



# **Noble Energy, Inc**

**Weld County, CO (NAD 83)  
Crow Creek State Pad  
Crow Creek State AC36-72-1HN  
Wellbore #1**

**Design: OH**

## **Final Survey Report**

**24 November, 2013**





# IDS Final Survey Report



|                  |                              |                                     |                                   |
|------------------|------------------------------|-------------------------------------|-----------------------------------|
| <b>Company:</b>  | Noble Energy, Inc            | <b>Local Co-ordinate Reference:</b> | Well Crow Creek State AC36-72-1HN |
| <b>Project:</b>  | Weld County, CO (NAD 83)     | <b>TVD Reference:</b>               | WELL @ 4874.0usft (H&P 277)       |
| <b>Site:</b>     | Crow Creek State Pad         | <b>MD Reference:</b>                | WELL @ 4874.0usft (H&P 277)       |
| <b>Well:</b>     | Crow Creek State AC36-72-1HN | <b>North Reference:</b>             | Grid                              |
| <b>Wellbore:</b> | Wellbore #1                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                 |
| <b>Design:</b>   | OH                           | <b>Database:</b>                    | EDM 5000.1 Single User Db         |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Weld County, CO (NAD 83)  |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | Colorado Northern Zone    |                      |                |

|                       |          |                      |                   |                   |                   |
|-----------------------|----------|----------------------|-------------------|-------------------|-------------------|
| Site                  |          | Crow Creek State Pad |                   |                   |                   |
| Site Position:        |          | Northing:            | 1,435,563.26 usft | Latitude:         | 40° 31' 25.032 N  |
| From:                 | Lat/Long | Easting:             | 3,311,476.82 usft | Longitude:        | 104° 22' 46.416 W |
| Position Uncertainty: |          | Slot Radius:         | 13-3/16"          | Grid Convergence: | 0.72 °            |

|                      |                              |          |                     |                   |               |                   |
|----------------------|------------------------------|----------|---------------------|-------------------|---------------|-------------------|
| Well                 | Crow Creek State AC36-72-1HN |          |                     |                   |               |                   |
| Well Position        | +N-S                         | 0.0 usft | Northing:           | 1,435,562.76 usft | Latitude:     | 40° 31' 25.032 N  |
|                      | +E-W                         | 0.0 usft | Easting:            | 3,311,437.90 usft | Longitude:    | 104° 22' 46.920 W |
| Position Uncertainty |                              | 0.0 usft | Wellhead Elevation: | usft              | Ground Level: | 4,850.0 usft      |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | Wellbore #1       |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | IGRF2010          | 8/10/2013          | 8.38                   | 67.14                | 53,009                     |

|                          |                                |                    |                    |                      |     |
|--------------------------|--------------------------------|--------------------|--------------------|----------------------|-----|
| <b>Design</b>            | OH                             |                    |                    |                      |     |
| <b>Audit Notes:</b>      |                                |                    |                    |                      |     |
| <b>Version:</b>          | 1.0                            | <b>Phase:</b>      | ACTUAL             | <b>Tie On Depth:</b> | 0.0 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (usft)</b> | <b>+N-S (usft)</b> | <b>+E-W (usft)</b> | <b>Direction (°)</b> |     |
|                          | 0.0                            | 0.0                | 0.0                | 12.27                |     |

|                       |                  |                          |                  |                    |  |
|-----------------------|------------------|--------------------------|------------------|--------------------|--|
| <b>Survey Program</b> | <b>Date</b>      | 11/24/2013               |                  |                    |  |
| <b>From (usft)</b>    | <b>To (usft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Description</b> |  |
| 368.0                 | 581.0            | Survey #1 (Wellbore #1)  | EMS              | EMS - Standard     |  |
| 636.0                 | 11,214.0         | Survey #2 (Wellbore #1)  | MWD              | MWD - Standard     |  |

|                  |                |                          |                   |                   |                   |                      |                         |  |
|------------------|----------------|--------------------------|-------------------|-------------------|-------------------|----------------------|-------------------------|--|
| <b>Survey</b>    |                |                          |                   |                   |                   |                      |                         |  |
| <b>MD (usft)</b> | <b>Inc (°)</b> | <b>Azi (azimuth) (°)</b> | <b>TVD (usft)</b> | <b>N/S (usft)</b> | <b>E/W (usft)</b> | <b>V. Sec (usft)</b> | <b>DLeg (°/100usft)</b> |  |
| 0.0              | 0.00           | 0.00                     | 0.0               | 0.0               | 0.0               | 0.0                  | 0.00                    |  |
| 368.0            | 0.20           | 20.73                    | 368.0             | 0.6               | 0.2               | 0.6                  | 0.05                    |  |
| 581.0            | 0.40           | 28.93                    | 581.0             | 1.6               | 0.7               | 1.7                  | 0.10                    |  |
| 636.0            | 0.20           | 160.90                   | 636.0             | 1.7               | 0.8               | 1.8                  | 1.01                    |  |
| <b>First MWD</b> |                |                          |                   |                   |                   |                      |                         |  |
| 728.0            | 0.20           | 148.10                   | 728.0             | 1.4               | 1.0               | 1.6                  | 0.05                    |  |
| 821.0            | 0.20           | 269.20                   | 821.0             | 1.2               | 0.9               | 1.4                  | 0.37                    |  |
| 914.0            | 0.50           | 226.80                   | 914.0             | 1.0               | 0.4               | 1.0                  | 0.41                    |  |
| 1,008.0          | 0.50           | 177.50                   | 1,008.0           | 0.3               | 0.2               | 0.3                  | 0.44                    |  |
| 1,100.0          | 0.20           | 281.50                   | 1,100.0           | -0.1              | 0.0               | -0.1                 | 0.63                    |  |
| 1,193.0          | 1.90           | 27.70                    | 1,193.0           | 1.3               | 0.6               | 1.4                  | 2.11                    |  |



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| <b>Site:</b>     | Crow Creek State Pad         | <b>MD Reference:</b>                | WELL @ 4874.0usft (H&P 277)       |
| <b>Well:</b>     | Crow Creek State AC36-72-1HN | <b>North Reference:</b>             | Grid                              |
| <b>Wellbore:</b> | Wellbore #1                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                 |
| <b>Design:</b>   | OH                           | <b>Database:</b>                    | EDM 5000.1 Single User Db         |

| Survey       |            |                      |               |               |               |                  |                     |  |
|--------------|------------|----------------------|---------------|---------------|---------------|------------------|---------------------|--|
| MD<br>(usft) | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | V. Sec<br>(usft) | DLeg<br>(°/100usft) |  |
| 1,287.0      | 2.10       | 36.30                | 1,286.9       | 4.1           | 2.3           | 4.5              | 0.38                |  |
| 1,380.0      | 1.80       | 31.60                | 1,379.9       | 6.7           | 4.1           | 7.4              | 0.37                |  |
| 1,475.0      | 2.50       | 64.10                | 1,474.8       | 8.9           | 6.7           | 10.1             | 1.45                |  |
| 1,570.0      | 2.50       | 62.50                | 1,569.7       | 10.7          | 10.4          | 12.7             | 0.07                |  |
| 1,665.0      | 4.80       | 54.80                | 1,664.5       | 14.0          | 15.5          | 17.0             | 2.47                |  |
| 1,761.0      | 4.60       | 50.90                | 1,760.2       | 18.7          | 21.8          | 22.9             | 0.39                |  |
| 1,856.0      | 6.50       | 38.20                | 1,854.7       | 25.3          | 28.1          | 30.7             | 2.37                |  |
| 1,951.0      | 6.30       | 36.30                | 1,949.1       | 33.8          | 34.5          | 40.3             | 0.31                |  |
| 2,046.0      | 6.30       | 34.90                | 2,043.6       | 42.3          | 40.6          | 49.9             | 0.16                |  |
| 2,141.0      | 3.70       | 29.40                | 2,138.2       | 49.2          | 45.1          | 57.6             | 2.78                |  |
| 2,236.0      | 1.20       | 343.70               | 2,233.1       | 52.8          | 46.3          | 61.5             | 3.15                |  |
| 2,332.0      | 1.20       | 212.30               | 2,329.1       | 52.9          | 45.5          | 61.4             | 2.28                |  |
| 2,426.0      | 1.10       | 223.70               | 2,423.1       | 51.5          | 44.3          | 59.7             | 0.27                |  |
| 2,521.0      | 1.10       | 237.40               | 2,518.1       | 50.3          | 42.9          | 58.3             | 0.28                |  |
| 2,616.0      | 1.20       | 242.30               | 2,613.1       | 49.4          | 41.3          | 57.0             | 0.15                |  |
| 2,712.0      | 1.10       | 248.30               | 2,709.0       | 48.5          | 39.5          | 55.8             | 0.16                |  |
| 2,807.0      | 1.20       | 253.70               | 2,804.0       | 47.9          | 37.7          | 54.8             | 0.16                |  |
| 2,902.0      | 1.20       | 250.60               | 2,899.0       | 47.3          | 35.8          | 53.8             | 0.07                |  |
| 2,997.0      | 1.10       | 266.40               | 2,994.0       | 46.9          | 34.0          | 53.1             | 0.35                |  |
| 3,092.0      | 1.60       | 148.80               | 3,089.0       | 45.7          | 33.8          | 51.9             | 2.45                |  |
| 3,188.0      | 1.60       | 144.20               | 3,184.9       | 43.5          | 35.2          | 50.0             | 0.13                |  |
| 3,283.0      | 1.40       | 149.00               | 3,279.9       | 41.4          | 36.6          | 48.3             | 0.25                |  |
| 3,378.0      | 3.20       | 95.00                | 3,374.8       | 40.2          | 39.8          | 47.8             | 2.77                |  |
| 3,473.0      | 5.50       | 86.80                | 3,469.5       | 40.2          | 47.0          | 49.3             | 2.50                |  |
| 3,568.0      | 7.70       | 91.00                | 3,563.9       | 40.4          | 57.9          | 51.8             | 2.37                |  |
| 3,664.0      | 7.70       | 90.30                | 3,659.0       | 40.2          | 70.8          | 54.4             | 0.10                |  |
| 3,759.0      | 7.70       | 90.40                | 3,753.2       | 40.1          | 83.5          | 57.0             | 0.01                |  |
| 3,854.0      | 7.90       | 91.00                | 3,847.3       | 40.0          | 96.4          | 59.6             | 0.23                |  |
| 3,949.0      | 8.10       | 90.10                | 3,941.4       | 39.9          | 109.6         | 62.3             | 0.25                |  |
| 4,044.0      | 8.10       | 91.70                | 4,035.4       | 39.7          | 123.0         | 64.9             | 0.24                |  |
| 4,140.0      | 7.90       | 89.00                | 4,130.5       | 39.6          | 136.4         | 67.7             | 0.44                |  |
| 4,235.0      | 7.20       | 89.40                | 4,224.7       | 39.7          | 148.9         | 70.5             | 0.74                |  |
| 4,330.0      | 6.20       | 89.00                | 4,319.0       | 39.9          | 159.9         | 73.0             | 1.05                |  |
| 4,425.0      | 5.50       | 99.40                | 4,413.5       | 39.2          | 169.6         | 74.4             | 1.33                |  |
| 4,520.0      | 7.00       | 110.70               | 4,508.0       | 36.5          | 179.5         | 73.8             | 2.03                |  |
| 4,615.0      | 8.80       | 106.60               | 4,602.1       | 32.3          | 191.9         | 72.4             | 1.98                |  |
| 4,711.0      | 9.70       | 104.20               | 4,696.8       | 28.2          | 206.7         | 71.5             | 1.02                |  |
| 4,806.0      | 8.80       | 101.00               | 4,790.6       | 24.9          | 221.6         | 71.4             | 1.09                |  |
| 4,901.0      | 9.70       | 93.40                | 4,884.3       | 23.0          | 236.7         | 72.8             | 1.60                |  |
| 4,996.0      | 13.00      | 89.90                | 4,977.5       | 22.6          | 255.4         | 76.3             | 3.55                |  |
| 5,091.0      | 12.50      | 89.00                | 5,070.1       | 22.8          | 276.4         | 81.0             | 0.57                |  |
| 5,186.0      | 14.10      | 98.00                | 5,162.6       | 21.3          | 298.1         | 84.2             | 2.75                |  |
| 5,281.0      | 12.50      | 96.90                | 5,255.0       | 18.5          | 319.8         | 86.0             | 1.71                |  |
| 5,377.0      | 13.50      | 102.20               | 5,348.6       | 14.9          | 341.1         | 87.0             | 1.62                |  |
| 5,472.0      | 12.10      | 104.30               | 5,441.2       | 10.1          | 361.6         | 86.7             | 1.55                |  |



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| <b>Site:</b>     | Crow Creek State Pad         | <b>MD Reference:</b>                | WELL @ 4874.0usft (H&P 277)       |
| <b>Well:</b>     | Crow Creek State AC36-72-1HN | <b>North Reference:</b>             | Grid                              |
| <b>Wellbore:</b> | Wellbore #1                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                 |
| <b>Design:</b>   | OH                           | <b>Database:</b>                    | EDM 5000.1 Single User Db         |

| Survey                                                                       |            |                      |               |               |               |                  |                     |
|------------------------------------------------------------------------------|------------|----------------------|---------------|---------------|---------------|------------------|---------------------|
| MD<br>(usft)                                                                 | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | V. Sec<br>(usft) | DLeg<br>(°/100usft) |
| 5,567.0                                                                      | 13.50      | 101.30               | 5,533.9       | 5.5           | 382.1         | 86.5             | 1.63                |
| 5,662.0                                                                      | 12.50      | 102.00               | 5,626.4       | 1.1           | 403.0         | 86.8             | 1.07                |
| 5,757.0                                                                      | 13.70      | 98.90                | 5,718.9       | -2.7          | 424.2         | 87.5             | 1.46                |
| 5,853.0                                                                      | 12.30      | 98.00                | 5,812.5       | -5.9          | 445.5         | 88.9             | 1.47                |
| 5,948.0                                                                      | 13.40      | 99.40                | 5,905.1       | -9.1          | 466.4         | 90.2             | 1.20                |
| 5,988.0                                                                      | 14.60      | 98.50                | 5,943.9       | -10.6         | 476.0         | 90.8             | 3.05                |
| 6,034.0                                                                      | 13.50      | 96.70                | 5,988.5       | -12.1         | 487.0         | 91.7             | 2.57                |
| 6,082.0                                                                      | 16.20      | 86.70                | 6,034.9       | -12.4         | 499.3         | 94.0             | 7.74                |
| 6,130.0                                                                      | 20.10      | 77.40                | 6,080.6       | -10.2         | 514.0         | 99.3             | 10.10               |
| 6,177.0                                                                      | 24.70      | 67.20                | 6,124.0       | -4.6          | 531.0         | 108.3            | 12.78               |
| 6,225.0                                                                      | 24.40      | 65.00                | 6,167.7       | 3.5           | 549.2         | 120.1            | 2.00                |
| 6,272.0                                                                      | 27.50      | 63.70                | 6,209.9       | 12.4          | 567.8         | 132.7            | 6.71                |
| 6,320.0                                                                      | 33.30      | 64.00                | 6,251.3       | 23.1          | 589.6         | 147.8            | 12.09               |
| 6,367.0                                                                      | 39.10      | 64.80                | 6,289.2       | 35.0          | 614.6         | 164.8            | 12.38               |
| 6,415.0                                                                      | 42.40      | 64.80                | 6,325.6       | 48.4          | 642.9         | 183.9            | 6.87                |
| 6,463.0                                                                      | 45.00      | 65.40                | 6,360.3       | 62.3          | 673.0         | 203.9            | 5.49                |
| 6,510.0                                                                      | 47.60      | 66.40                | 6,392.7       | 76.2          | 704.0         | 224.1            | 5.74                |
| 6,558.0                                                                      | 50.20      | 66.30                | 6,424.3       | 90.7          | 737.2         | 245.3            | 5.42                |
| 6,605.0                                                                      | 53.40      | 64.60                | 6,453.4       | 106.1         | 770.7         | 267.4            | 7.38                |
| 6,653.0                                                                      | 55.80      | 59.20                | 6,481.2       | 124.5         | 805.2         | 292.8            | 10.44               |
| 6,701.0                                                                      | 58.10      | 53.80                | 6,507.4       | 146.7         | 838.7         | 321.6            | 10.58               |
| 6,748.0                                                                      | 59.20      | 48.60                | 6,531.8       | 171.9         | 870.0         | 352.8            | 9.73                |
| 6,796.0                                                                      | 58.70      | 42.40                | 6,556.6       | 200.7         | 899.3         | 387.2            | 11.11               |
| 6,843.0                                                                      | 57.70      | 36.20                | 6,581.4       | 231.5         | 924.6         | 422.7            | 11.41               |
| 6,891.0                                                                      | 56.90      | 30.10                | 6,607.3       | 265.3         | 946.7         | 460.5            | 10.82               |
| 6,938.0                                                                      | 58.20      | 23.20                | 6,632.6       | 300.8         | 964.4         | 498.8            | 12.69               |
| 6,986.0                                                                      | 62.30      | 17.50                | 6,656.4       | 339.8         | 978.9         | 540.1            | 13.38               |
| 7,034.0                                                                      | 66.00      | 12.60                | 6,677.3       | 381.5         | 990.0         | 583.2            | 11.99               |
| 7,081.0                                                                      | 70.00      | 9.30                 | 6,695.0       | 424.3         | 998.3         | 626.7            | 10.71               |
| 7,129.0                                                                      | 75.10      | 4.90                 | 6,709.3       | 469.7         | 1,003.9       | 672.3            | 13.76               |
| 7,178.0                                                                      | 78.46      | 2.91                 | 6,720.6       | 517.3         | 1,007.2       | 719.5            | 7.91                |
| <b>Actual 7" Csg @ 7178' MD / 6721' TVD / 335' FEL &amp; 773' FSL Sec 36</b> |            |                      |               |               |               |                  |                     |
| 7,231.0                                                                      | 82.10      | 0.80                 | 6,729.5       | 569.5         | 1,008.9       | 770.9            | 7.91                |
| 7,326.0                                                                      | 88.50      | 0.60                 | 6,737.3       | 664.1         | 1,010.0       | 863.6            | 6.74                |
| 7,421.0                                                                      | 91.30      | 359.60               | 6,737.5       | 759.1         | 1,010.2       | 956.4            | 3.13                |
| 7,516.0                                                                      | 90.60      | 0.40                 | 6,735.9       | 854.1         | 1,010.2       | 1,049.2          | 1.12                |
| 7,612.0                                                                      | 91.10      | 359.60               | 6,734.5       | 950.1         | 1,010.2       | 1,143.0          | 0.98                |
| 7,707.0                                                                      | 88.00      | 358.70               | 6,735.2       | 1,045.0       | 1,008.8       | 1,235.5          | 3.40                |
| 7,802.0                                                                      | 88.70      | 359.20               | 6,737.9       | 1,140.0       | 1,007.0       | 1,327.9          | 0.91                |
| 7,897.0                                                                      | 86.90      | 359.90               | 6,741.6       | 1,234.9       | 1,006.3       | 1,420.5          | 2.03                |
| 7,993.0                                                                      | 87.80      | 359.60               | 6,746.0       | 1,330.8       | 1,005.9       | 1,514.2          | 0.99                |
| 8,088.0                                                                      | 86.90      | 359.00               | 6,750.4       | 1,425.7       | 1,004.7       | 1,606.6          | 1.14                |
| 8,183.0                                                                      | 87.30      | 357.60               | 6,755.2       | 1,520.5       | 1,001.9       | 1,698.7          | 1.53                |
| 8,278.0                                                                      | 88.00      | 358.70               | 6,759.1       | 1,615.4       | 998.8         | 1,790.8          | 1.37                |



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| <b>Design:</b>   | OH                           | <b>Database:</b>                    | EDM 5000.1 Single User Db         |

| Survey                                                              |            |                      |               |               |               |                  |                     |
|---------------------------------------------------------------------|------------|----------------------|---------------|---------------|---------------|------------------|---------------------|
| MD<br>(usft)                                                        | Inc<br>(°) | Azi (azimuth)<br>(°) | TVD<br>(usft) | N/S<br>(usft) | E/W<br>(usft) | V. Sec<br>(usft) | DLeg<br>(°/100usft) |
| 8,373.0                                                             | 89.60      | 358.20               | 6,761.1       | 1,710.3       | 996.3         | 1,883.0          | 1.76                |
| 8,468.0                                                             | 88.90      | 357.30               | 6,762.3       | 1,805.2       | 992.5         | 1,974.9          | 1.20                |
| 8,564.0                                                             | 87.80      | 1.10                 | 6,765.1       | 1,901.2       | 991.2         | 2,068.4          | 4.12                |
| 8,659.0                                                             | 87.40      | 359.90               | 6,769.1       | 1,996.1       | 992.0         | 2,161.3          | 1.33                |
| 8,754.0                                                             | 87.10      | 1.80                 | 6,773.6       | 2,091.0       | 993.4         | 2,254.3          | 2.02                |
| 8,849.0                                                             | 90.10      | 0.40                 | 6,776.0       | 2,185.9       | 995.2         | 2,347.5          | 3.48                |
| 8,944.0                                                             | 89.90      | 0.40                 | 6,776.0       | 2,280.9       | 995.9         | 2,440.4          | 0.21                |
| 9,040.0                                                             | 90.30      | 359.40               | 6,775.8       | 2,376.9       | 995.7         | 2,534.2          | 1.12                |
| 9,135.0                                                             | 90.30      | 359.40               | 6,775.3       | 2,471.9       | 994.7         | 2,626.8          | 0.00                |
| 9,230.0                                                             | 90.30      | 0.80                 | 6,774.8       | 2,566.9       | 994.9         | 2,719.7          | 1.47                |
| 9,325.0                                                             | 90.30      | 358.90               | 6,774.3       | 2,661.9       | 994.7         | 2,812.5          | 2.00                |
| 9,420.0                                                             | 89.90      | 359.40               | 6,774.1       | 2,756.9       | 993.3         | 2,905.0          | 0.67                |
| 9,516.0                                                             | 88.90      | 359.20               | 6,775.1       | 2,852.9       | 992.1         | 2,998.5          | 1.06                |
| 9,611.0                                                             | 89.00      | 358.30               | 6,776.9       | 2,947.8       | 990.0         | 3,090.9          | 0.95                |
| 9,706.0                                                             | 88.30      | 358.70               | 6,779.1       | 3,042.8       | 987.5         | 3,183.1          | 0.85                |
| 9,801.0                                                             | 87.80      | 357.60               | 6,782.4       | 3,137.7       | 984.5         | 3,275.2          | 1.27                |
| 9,896.0                                                             | 88.70      | 359.40               | 6,785.3       | 3,232.6       | 982.0         | 3,367.4          | 2.12                |
| 9,992.0                                                             | 90.60      | 357.80               | 6,785.8       | 3,328.5       | 979.6         | 3,460.7          | 2.59                |
| 10,087.0                                                            | 90.60      | 357.10               | 6,784.9       | 3,423.4       | 975.4         | 3,552.5          | 0.74                |
| 10,182.0                                                            | 91.30      | 356.80               | 6,783.3       | 3,518.3       | 970.4         | 3,644.1          | 0.80                |
| 10,277.0                                                            | 91.00      | 355.50               | 6,781.4       | 3,613.1       | 964.0         | 3,735.4          | 1.40                |
| 10,372.0                                                            | 89.70      | 359.60               | 6,780.8       | 3,707.9       | 959.9         | 3,827.2          | 4.53                |
| 10,468.0                                                            | 90.10      | 0.80                 | 6,781.0       | 3,803.9       | 960.2         | 3,921.1          | 1.32                |
| 10,563.0                                                            | 90.40      | 2.20                 | 6,780.5       | 3,898.9       | 962.7         | 4,014.4          | 1.51                |
| 10,658.0                                                            | 89.60      | 5.50                 | 6,780.5       | 3,993.7       | 969.1         | 4,108.4          | 3.57                |
| 10,753.0                                                            | 89.00      | 5.00                 | 6,781.7       | 4,088.3       | 977.8         | 4,202.7          | 0.82                |
| 10,848.0                                                            | 89.70      | 3.80                 | 6,782.8       | 4,183.0       | 985.1         | 4,296.8          | 1.46                |
| 10,943.0                                                            | 90.40      | 1.50                 | 6,782.7       | 4,277.9       | 989.5         | 4,390.4          | 2.53                |
| 11,039.0                                                            | 90.40      | 1.10                 | 6,782.0       | 4,373.8       | 991.7         | 4,484.7          | 0.42                |
| 11,134.0                                                            | 89.20      | 358.70               | 6,782.4       | 4,468.8       | 991.5         | 4,577.5          | 2.82                |
| 11,159.0                                                            | 88.90      | 358.30               | 6,782.8       | 4,493.8       | 990.8         | 4,601.7          | 2.00                |
| <b>Last MWD @ 11159' MD / 6783' TVD</b>                             |            |                      |               |               |               |                  |                     |
| 11,214.0                                                            | 88.90      | 358.30               | 6,783.8       | 4,548.8       | 989.2         | 4,655.1          | 0.00                |
| <b>PTD @ 11214' MD / 6784' TVD / 297' FEL &amp; 537' FNL Sec 36</b> |            |                      |               |               |               |                  |                     |



**IDS**  
Final Survey Report



|                  |                              |                                     |                                   |
|------------------|------------------------------|-------------------------------------|-----------------------------------|
| <b>Company:</b>  | Noble Energy, Inc            | <b>Local Co-ordinate Reference:</b> | Well Crow Creek State AC36-72-1HN |
| <b>Project:</b>  | Weld County, CO (NAD 83)     | <b>TVD Reference:</b>               | WELL @ 4874.0usft (H&P 277)       |
| <b>Site:</b>     | Crow Creek State Pad         | <b>MD Reference:</b>                | WELL @ 4874.0usft (H&P 277)       |
| <b>Well:</b>     | Crow Creek State AC36-72-1HN | <b>North Reference:</b>             | Grid                              |
| <b>Wellbore:</b> | Wellbore #1                  | <b>Survey Calculation Method:</b>   | Minimum Curvature                 |
| <b>Design:</b>   | OH                           | <b>Database:</b>                    | EDM 5000.1 Single User Db         |

| Design Annotations    |                       |                   |              |                                                                   |
|-----------------------|-----------------------|-------------------|--------------|-------------------------------------------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                                                           |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                                                   |
| 636.0                 | 636.0                 | 1.7               | 0.8          | First MWD                                                         |
| 7,178.0               | 6,720.6               | 517.3             | 1,007.2      | Actual 7" Csg @ 7178' MD / 6721' TVD / 335' FEL & 773' FSL Sec 36 |
| 11,159.0              | 6,782.8               | 4,493.8           | 990.8        | Last MWD @ 11159' MD / 6783' TVD                                  |
| 11,214.0              | 6,783.8               | 4,548.8           | 989.2        | PTD @ 11214' MD / 6784' TVD / 297' FEL & 537' FNL Sec 36          |

|                   |                    |             |
|-------------------|--------------------|-------------|
| Checked By: _____ | Approved By: _____ | Date: _____ |
|-------------------|--------------------|-------------|



Weld County, CO (NAD 83)

Crow Creek State AC36-72-1HN  
H&P 277

Plan #5

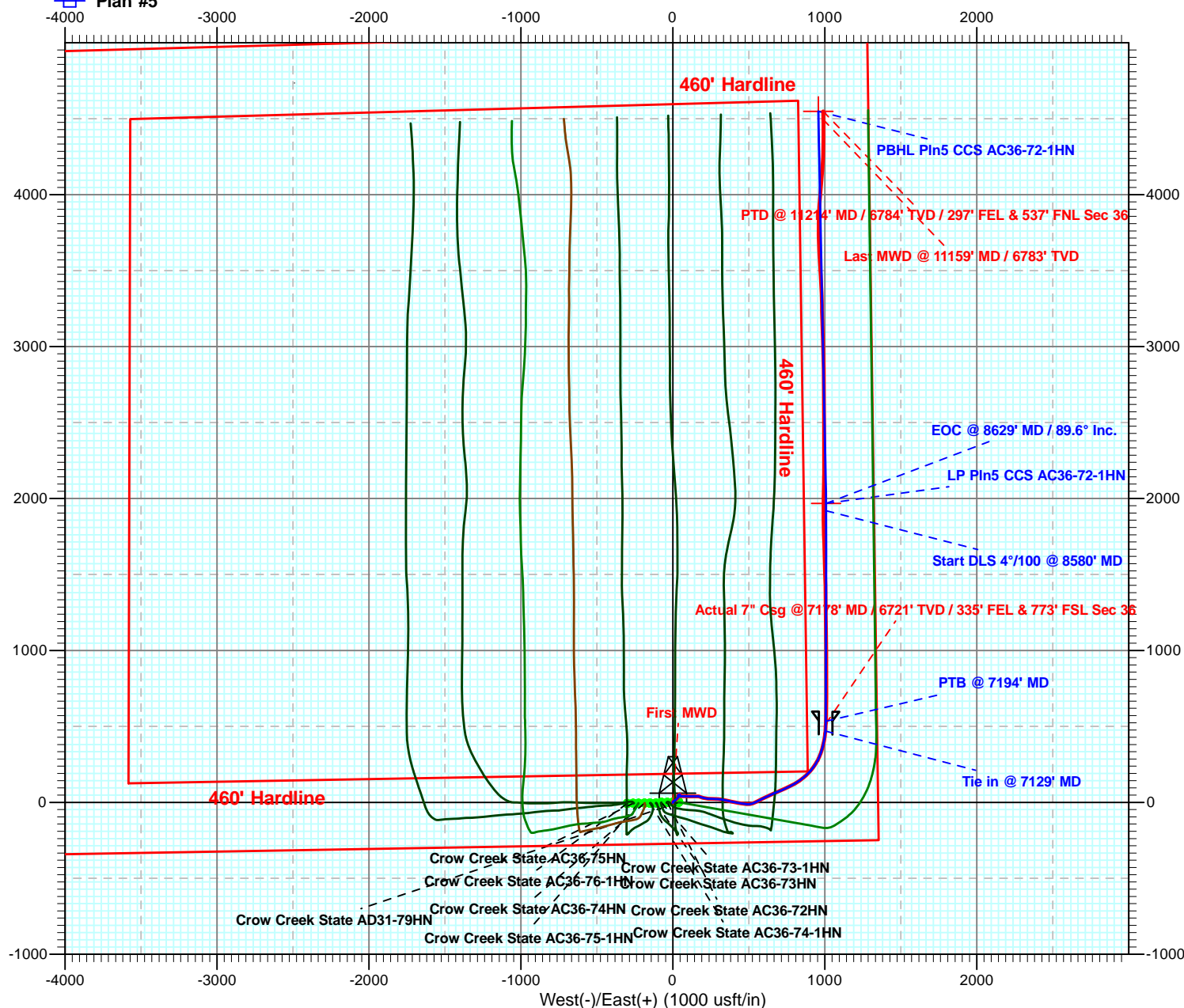


Azimuths to Grid North  
True North:  $-0.72^\circ$   
Magnetic North:  $7.65^\circ$

Magnetic Field  
Strength: 53008.8snT  
Dip Angle:  $67.14^\circ$   
Date: 8/10/2013  
Model: IGRF2010

# LEGEND

- ✗ Crow Creek State AC36-72-1HN, Wellbore #1, OH V0
- △ Crow Creek State AC36-72HN, Wellbore #1, OH V0
- Crow Creek State AC36-73-1HN, Wellbore #1, OH V0
- Crow Creek State AC36-73HN, Wellbore #1, OH V0
- Crow Creek State AC36-74-1HN, Wellbore #1, OH V0
- ◇ Crow Creek State AD31-79HN, Wellbore #1, Plan #1 V0
- Crow Creek State AC36-76-1HN, Wellbore #1, OH V0
- Crow Creek State AC36-75HN, Wellbore #1, OH V0
- ✗ Crow Creek State AC36-74HN, Wellbore #1, OH V0
- Crow Creek State AC36-75-1HN, Wellbore #1, OH V0
- Plan #5





Weld County, CO (NAD 83)  
Crow Creek State Pad  
Crow Creek State AC36-72-1HN

H&P 277

Plan #5

