



# **Noble Energy, Inc**

Weld County, CO (NAD 83)

Sec 21 - T6N - R63W (Wells Ranch AA21)

Wells Ranch State AA21-69-1HN

Wellbore #1

Design: OH

## **Standard Survey Report**

25 June, 2014





# IDS Survey Report



|                  |  |                                     |                                    |
|------------------|--|-------------------------------------|------------------------------------|
| <b>Company:</b>  | Noble Energy, Inc                      | <b>Local Co-ordinate Reference:</b> | Well Wells Ranch State AA21-69-1HN |
| <b>Project:</b>  | Weld County, CO (NAD 83)               | <b>TVD Reference:</b>               | Well @ 4745.0usft (HP 277)         |
| <b>Site:</b>     | Sec 21 - T6N - R63W (Wells Ranch AA21) | <b>MD Reference:</b>                | Well @ 4745.0usft (HP 277)         |
| <b>Well:</b>     | Wells Ranch State AA21-69-1HN          | <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                  | Sec 21 - T6N - R63W (Wells Ranch AA21) |              |                   |                   |                  |
| Site Position:        |  | Northing:    | 1,417,534.23 usft | Latitude:         | 40° 28' 28.704 N |
| From:                 | Lat/Long                               | Easting:     | 3,296,552.46 usft | Longitude:        | 104° 26' 2.472 W |
| Position Uncertainty: | 0.0 usft                               | Slot Radius: | 13-3/16 "         | Grid Convergence: | 0.69 °           |

|                      |                               |          |                     |                   |               |                  |
|----------------------|-------------------------------|----------|---------------------|-------------------|---------------|------------------|
| Well                 | Wells Ranch State AA21-69-1HN |          |                     |                   |               |                  |
| Well Position        | +N/-S                         | 0.0 usft | Northing:           | 1,417,723.67 usft | Latitude:     | 40° 28' 30.576 N |
|                      | +E/-W                         | 0.0 usft | Easting:            | 3,296,552.96 usft | Longitude:    | 104° 26' 2.436 W |
| Position Uncertainty |                               | 0.0 usft | Wellhead Elevation: | 0.0 usft          | Ground Level: | 4,721.0 usft     |

|                 |             |  |  |  |  |
|-----------------|-------------|--|--|--|--|
| <b>Wellbore</b> | Wellbore #1 |  |  |  |  |
|-----------------|-------------|--|--|--|--|

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|-----------|------------|-------------|-----------------|---------------|---------------------|
|           | IGRF2010   | 11/17/2013  | 8.36            | 67.08         | 52,950              |

|               |    |  |  |  |  |
|---------------|----|--|--|--|--|
| <b>Design</b> | OH |  |  |  |  |
|---------------|----|--|--|--|--|

|                     |     |               |        |                      |     |
|---------------------|-----|---------------|--------|----------------------|-----|
| <b>Audit Notes:</b> |     |               |        |                      |     |
| <b>Version:</b>     | 1.0 | <b>Phase:</b> | ACTUAL | <b>Tie On Depth:</b> | 0.0 |

| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|-------------------|-------------------------|--------------|--------------|---------------|
|                   | 0.0                     | 0.0          | 0.0          | 284.99        |

| Survey Program |           | Date 6/25/2014          |           |                |
|----------------|-----------|-------------------------|-----------|----------------|
| From (usft)    | To (usft) | Survey (Wellbore)       | Tool Name | Description    |
| 277.0          | 928.0     | Survey #1 (Wellbore #1) | EMS       | EMS - Standard |
| 1,021.0        | 7,146.0   | Survey #2 (Wellbore #1) | MWD       | MWD - Standard |
| 7,217.0        | 10,950.0  | Survey #3 (Wellbore #1) | MWD       | MWD - Standard |

| Survey                |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 0.0                   | 0.00            | 0.00        | 0.0                   | 0.0          | 0.0          | 0.0                     | 0.00                    | 0.00                   | 0.00                  |
| 277.0                 | 0.50            | 24.18       | 277.0                 | 1.1          | 0.5          | -0.2                    | 0.18                    | 0.18                   | 0.00                  |
| 558.0                 | 0.10            | 174.48      | 558.0                 | 2.0          | 1.0          | -0.5                    | 0.21                    | -0.14                  | 53.49                 |
| 928.0                 | 0.20            | 291.38      | 928.0                 | 1.9          | 0.5          | 0.1                     | 0.07                    | 0.03                   | 31.59                 |
| 1,021.0               | 0.40            | 208.40      | 1,021.0               | 1.7          | 0.1          | 0.3                     | 0.46                    | 0.22                   | -89.23                |
| <b>First MWD</b>      |                 |             |                       |              |              |                         |                         |                        |                       |
| 1,115.0               | 0.40            | 212.80      | 1,115.0               | 1.1          | -0.2         | 0.5                     | 0.03                    | 0.00                   | 4.68                  |
| 1,209.0               | 0.50            | 215.30      | 1,209.0               | 0.5          | -0.6         | 0.7                     | 0.11                    | 0.11                   | 2.66                  |
| 1,304.0               | 0.70            | 202.40      | 1,304.0               | -0.4         | -1.1         | 0.9                     | 0.25                    | 0.21                   | -13.58                |





IDS  
Survey Report



|           |  |                              |                                    |
|-----------|--|------------------------------|------------------------------------|
| Company:  | Noble Energy, Inc                      | Local Co-ordinate Reference: | Well Wells Ranch State AA21-69-1HN |
| Project:  | Weld County, CO (NAD 83)               | TVD Reference:               | Well @ 4745.0usft (HP 277)         |
| Site:     | Sec 21 - T6N - R63W (Wells Ranch AA21) | MD Reference:                | Well @ 4745.0usft (HP 277)         |
| Well:     | Wells Ranch State AA21-69-1HN          | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1                            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | OH                                     | Database:                    | EDM 5000.1 Single User Db          |

| Survey                |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 1,398.0               | 0.70            | 197.60      | 1,398.0               | -1.5         | -1.5         | 1.0                     | 0.06                    | 0.00                   | -5.11                 |
| 1,492.0               | 0.70            | 191.00      | 1,492.0               | -2.6         | -1.7         | 1.0                     | 0.09                    | 0.00                   | -7.02                 |
| 1,587.0               | 0.40            | 201.10      | 1,587.0               | -3.5         | -2.0         | 1.0                     | 0.33                    | -0.32                  | 10.63                 |
| 1,681.0               | 0.20            | 298.00      | 1,681.0               | -3.7         | -2.2         | 1.2                     | 0.50                    | -0.21                  | 103.09                |
| 1,776.0               | 0.20            | 258.50      | 1,776.0               | -3.6         | -2.5         | 1.5                     | 0.14                    | 0.00                   | -41.58                |
| 1,871.0               | 1.80            | 356.10      | 1,870.9               | -2.2         | -2.8         | 2.1                     | 1.93                    | 1.68                   | 102.74                |
| 1,965.0               | 3.00            | 9.30        | 1,964.9               | 1.7          | -2.5         | 2.9                     | 1.40                    | 1.28                   | 14.04                 |
| 2,060.0               | 4.10            | 2.90        | 2,059.7               | 7.6          | -1.9         | 3.8                     | 1.23                    | 1.16                   | -6.74                 |
| 2,155.0               | 6.20            | 2.10        | 2,154.3               | 16.1         | -1.6         | 5.7                     | 2.21                    | 2.21                   | -0.84                 |
| 2,249.0               | 7.70            | 4.00        | 2,247.6               | 27.4         | -0.9         | 8.0                     | 1.61                    | 1.60                   | 2.02                  |
| 2,344.0               | 9.00            | 1.10        | 2,341.6               | 41.2         | -0.4         | 11.0                    | 1.44                    | 1.37                   | -3.05                 |
| 2,439.0               | 9.50            | 359.90      | 2,435.4               | 56.5         | -0.2         | 14.8                    | 0.56                    | 0.53                   | -1.26                 |
| 2,533.0               | 10.10           | 0.30        | 2,528.0               | 72.5         | -0.2         | 18.9                    | 0.64                    | 0.64                   | 0.43                  |
| 2,628.0               | 11.10           | 0.70        | 2,621.4               | 90.0         | 0.0          | 23.3                    | 1.06                    | 1.05                   | 0.42                  |
| 2,723.0               | 13.10           | 6.60        | 2,714.2               | 109.8        | 1.3          | 27.1                    | 2.47                    | 2.11                   | 6.21                  |
| 2,817.0               | 13.60           | 6.00        | 2,805.7               | 131.4        | 3.7          | 30.4                    | 0.55                    | 0.53                   | -0.64                 |
| 2,912.0               | 13.60           | 5.40        | 2,898.0               | 153.6        | 5.9          | 34.0                    | 0.15                    | 0.00                   | -0.63                 |
| 3,006.0               | 13.70           | 5.20        | 2,989.4               | 175.7        | 7.9          | 37.8                    | 0.12                    | 0.11                   | -0.21                 |
| 3,101.0               | 13.50           | 7.80        | 3,081.7               | 197.9        | 10.5         | 41.1                    | 0.68                    | -0.21                  | 2.74                  |
| 3,196.0               | 13.40           | 6.50        | 3,174.1               | 219.8        | 13.2         | 44.1                    | 0.34                    | -0.11                  | -1.37                 |
| 3,291.0               | 13.10           | 7.00        | 3,266.6               | 241.4        | 15.8         | 47.2                    | 0.34                    | -0.32                  | 0.53                  |
| 3,386.0               | 11.70           | 6.50        | 3,359.4               | 261.7        | 18.2         | 50.1                    | 1.48                    | -1.47                  | -0.53                 |
| 3,481.0               | 10.70           | 5.20        | 3,452.6               | 280.0        | 20.1         | 53.0                    | 1.09                    | -1.05                  | -1.37                 |
| 3,575.0               | 12.00           | 0.60        | 3,544.7               | 298.5        | 21.0         | 56.9                    | 1.68                    | 1.38                   | -4.89                 |
| 3,670.0               | 12.80           | 359.30      | 3,637.5               | 318.9        | 20.9         | 62.2                    | 0.89                    | 0.84                   | -1.37                 |
| 3,765.0               | 13.80           | 358.70      | 3,730.0               | 340.8        | 20.6         | 68.3                    | 1.06                    | 1.05                   | -0.63                 |
| 3,860.0               | 14.10           | 5.40        | 3,822.2               | 363.6        | 21.4         | 73.4                    | 1.73                    | 0.32                   | 7.05                  |
| 3,955.0               | 13.00           | 10.10       | 3,914.5               | 385.6        | 24.4         | 76.2                    | 1.64                    | -1.16                  | 4.95                  |
| 4,049.0               | 12.00           | 9.20        | 4,006.3               | 405.7        | 27.8         | 78.1                    | 1.08                    | -1.06                  | -0.96                 |
| 4,144.0               | 11.50           | 10.60       | 4,099.3               | 424.8        | 31.1         | 79.8                    | 0.61                    | -0.53                  | 1.47                  |
| 4,239.0               | 10.80           | 11.90       | 4,192.5               | 442.8        | 34.7         | 81.0                    | 0.78                    | -0.74                  | 1.37                  |
| 4,333.0               | 9.70            | 10.10       | 4,285.0               | 459.2        | 37.9         | 82.2                    | 1.22                    | -1.17                  | -1.91                 |
| 4,428.0               | 9.50            | 358.00      | 4,378.7               | 474.9        | 39.0         | 85.1                    | 2.13                    | -0.21                  | -12.74                |
| 4,523.0               | 11.60           | 357.60      | 4,472.1               | 492.3        | 38.3         | 90.3                    | 2.21                    | 2.21                   | -0.42                 |
| 4,618.0               | 12.20           | 1.90        | 4,565.0               | 511.9        | 38.3         | 95.4                    | 1.13                    | 0.63                   | 4.53                  |
| 4,712.0               | 11.70           | 2.30        | 4,657.0               | 531.3        | 39.0         | 99.8                    | 0.54                    | -0.53                  | 0.43                  |
| 4,807.0               | 11.20           | 2.60        | 4,750.1               | 550.1        | 39.8         | 103.8                   | 0.53                    | -0.53                  | 0.32                  |
| 4,902.0               | 11.40           | 13.30       | 4,843.3               | 568.5        | 42.4         | 106.1                   | 2.21                    | 0.21                   | 11.26                 |
| 4,996.0               | 11.40           | 17.30       | 4,935.4               | 586.4        | 47.3         | 106.0                   | 0.84                    | 0.00                   | 4.26                  |
| 5,091.0               | 11.70           | 17.20       | 5,028.5               | 604.6        | 52.9         | 105.3                   | 0.32                    | 0.32                   | -0.11                 |
| 5,186.0               | 11.70           | 9.30        | 5,121.5               | 623.3        | 57.3         | 105.8                   | 1.69                    | 0.00                   | -8.32                 |
| 5,281.0               | 10.50           | 9.90        | 5,214.7               | 641.3        | 60.3         | 107.6                   | 1.27                    | -1.26                  | 0.63                  |
| 5,373.0               | 9.80            | 8.00        | 5,305.3               | 657.3        | 62.9         | 109.3                   | 0.84                    | -0.76                  | -2.07                 |



IDS  
Survey Report



|           |  |                              |                                    |
|-----------|--|------------------------------|------------------------------------|
| Company:  | Noble Energy, Inc                      | Local Co-ordinate Reference: | Well Wells Ranch State AA21-69-1HN |
| Project:  | Weld County, CO (NAD 83)               | TVD Reference:               | Well @ 4745.0usft (HP 277)         |
| Site:     | Sec 21 - T6N - R63W (Wells Ranch AA21) | MD Reference:                | Well @ 4745.0usft (HP 277)         |
| Well:     | Wells Ranch State AA21-69-1HN          | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1                            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | OH                                     | Database:                    | EDM 5000.1 Single User Db          |

Survey

| Measured Depth (usft)  | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 5,468.0  | 10.70           | 1.50        | 5,398.8               | 674.2        | 64.2         | 112.3                   | 1.54                    | 0.95                   | -6.84                 |
| 5,563.0  | 11.30           | 353.90      | 5,492.1               | 692.2        | 63.5         | 117.7                   | 1.65                    | 0.63                   | -8.00                 |
| 5,657.0  | 11.20           | 351.80      | 5,584.2               | 710.4        | 61.2         | 124.6                   | 0.45                    | -0.11                  | -2.23                 |
| 5,752.0  | 10.90           | 355.60      | 5,677.5               | 728.5        | 59.2         | 131.2                   | 0.83                    | -0.32                  | 4.00                  |
| 5,847.0  | 11.10           | 358.40      | 5,770.7               | 746.6        | 58.2         | 136.8                   | 0.60                    | 0.21                   | 2.95                  |
| 5,941.0  | 11.10           | 6.30        | 5,863.0               | 764.6        | 59.0         | 140.8                   | 1.62                    | 0.00                   | 8.40                  |
| 6,037.0  | 9.70            | 2.30        | 5,957.4               | 781.9        | 60.3         | 143.9                   | 1.64                    | -1.46                  | -4.17                 |
| 6,084.0  | 12.80           | 352.90      | 6,003.5               | 791.0        | 59.8         | 146.8                   | 7.64                    | 6.60                   | -20.00                |
| 6,132.0  | 16.50           | 346.10      | 6,049.9               | 802.9        | 57.5         | 152.1                   | 8.49                    | 7.71                   | -14.17                |
| 6,179.0  | 20.80           | 344.50      | 6,094.5               | 817.5        | 53.7         | 159.5                   | 9.21                    | 9.15                   | -3.40                 |
| 6,226.0  | 24.40           | 344.30      | 6,137.8               | 834.9        | 48.8         | 168.7                   | 7.66                    | 7.66                   | -0.43                 |
| 6,274.0  | 29.10           | 344.60      | 6,180.7               | 855.7        | 43.1         | 179.7                   | 9.80                    | 9.79                   | 0.63                  |
| 6,321.0  | 32.40           | 338.40      | 6,221.1               | 878.4        | 35.4         | 193.0                   | 9.73                    | 7.02                   | -13.19                |
| 6,368.0  | 36.00           | 332.00      | 6,260.0               | 902.3        | 24.3         | 209.9                   | 10.82                   | 7.66                   | -13.62                |
| 6,416.0  | 40.40           | 327.40      | 6,297.7               | 927.9        | 9.2          | 231.0                   | 10.91                   | 9.17                   | -9.58                 |
| 6,463.0  | 45.70           | 322.30      | 6,332.0               | 954.1        | -9.3         | 255.7                   | 13.48                   | 11.28                  | -10.85                |
| 6,510.0  | 51.00           | 318.70      | 6,363.3               | 981.1        | -31.6        | 284.3                   | 12.64                   | 11.28                  | -7.66                 |
| 6,558.0  | 53.20           | 316.20      | 6,392.8               | 1,009.0      | -57.2        | 316.2                   | 6.16                    | 4.58                   | -5.21                 |
| 6,605.0  | 55.00           | 313.10      | 6,420.3               | 1,035.8      | -84.3        | 349.3                   | 6.57                    | 3.83                   | -6.60                 |
| 6,653.0  | 58.00           | 309.70      | 6,446.8               | 1,062.2      | -114.4       | 385.2                   | 8.60                    | 6.25                   | -7.08                 |
| 6,700.0  | 61.60           | 305.50      | 6,470.5               | 1,086.9      | -146.5       | 422.6                   | 10.88                   | 7.66                   | -8.94                 |
| 6,747.0  | 64.00           | 301.80      | 6,491.9               | 1,110.1      | -181.3       | 462.2                   | 8.67                    | 5.11                   | -7.87                 |
| 6,795.0  | 65.40           | 298.90      | 6,512.5               | 1,132.0      | -218.8       | 504.1                   | 6.19                    | 2.92                   | -6.04                 |
| 6,842.0  | 66.70           | 295.80      | 6,531.5               | 1,151.7      | -256.9       | 546.0                   | 6.63                    | 2.77                   | -6.60                 |
| 6,889.0  | 68.20           | 291.70      | 6,549.6               | 1,169.2      | -296.6       | 588.9                   | 8.67                    | 3.19                   | -8.72                 |
| 6,937.0  | 70.80           | 286.50      | 6,566.4               | 1,183.9      | -339.1       | 633.7                   | 11.50                   | 5.42                   | -10.83                |
| 6,984.0  | 73.40           | 283.00      | 6,580.8               | 1,195.3      | -382.4       | 678.5                   | 8.99                    | 5.53                   | -7.45                 |
| 7,031.0  | 76.10           | 281.80      | 6,593.2               | 1,205.0      | -426.6       | 723.7                   | 6.25                    | 5.74                   | -2.55                 |
| 7,079.0  | 79.80           | 278.30      | 6,603.2               | 1,213.2      | -472.8       | 770.5                   | 10.50                   | 7.71                   | -7.29                 |
| 7,126.0  | 82.10           | 273.80      | 6,610.6               | 1,218.1      | -519.0       | 816.3                   | 10.65                   | 4.89                   | -9.57                 |
| 7,146.0  | 83.30           | 272.10      | 6,613.2               | 1,219.1      | -538.8       | 835.7                   | 10.35                   | 6.00                   | -8.50                 |
| 7,198.0  | 84.03           | 271.00      | 6,618.9               | 1,220.5      | -590.5       | 886.0                   | 2.53                    | 1.41                   | -2.11                 |
| 7" Csg @ 7198' MD / 6619' TVD / 298' FNL & 942' FEL Sec 21 - Actual 7" Csg |                 |             |                       |              |              |                         |                         |                        |                       |
| 7,217.0  | 84.30           | 270.60      | 6,620.8               | 1,220.7      | -609.4       | 904.3                   | 2.53                    | 1.41                   | -2.11                 |
| 7,311.0  | 84.30           | 269.20      | 6,630.2               | 1,220.6      | -702.9       | 994.6                   | 1.48                    | 0.00                   | -1.49                 |
| 7,406.0  | 86.50           | 269.80      | 6,637.8               | 1,219.8      | -797.6       | 1,085.9                 | 2.40                    | 2.32                   | 0.63                  |
| 7,500.0  | 89.10           | 270.00      | 6,641.4               | 1,219.6      | -891.5       | 1,176.6                 | 2.77                    | 2.77                   | 0.21                  |
| 7,595.0  | 89.00           | 270.30      | 6,643.0               | 1,219.8      | -986.5       | 1,268.4                 | 0.33                    | -0.11                  | 0.32                  |
| 7,689.0  | 88.90           | 270.80      | 6,644.7               | 1,220.7      | -1,080.5     | 1,359.4                 | 0.54                    | -0.11                  | 0.53                  |
| 7,784.0  | 89.00           | 273.20      | 6,646.4               | 1,224.1      | -1,175.4     | 1,452.0                 | 2.53                    | 0.11                   | 2.53                  |
| 7,878.0  | 90.50           | 272.00      | 6,646.8               | 1,228.3      | -1,269.3     | 1,543.8                 | 2.04                    | 1.60                   | -1.28                 |
| 7,973.0  | 92.20           | 268.70      | 6,644.6               | 1,228.9      | -1,364.2     | 1,635.6                 | 3.91                    | 1.79                   | -3.47                 |
| 8,068.0  | 90.10           | 266.80      | 6,642.7               | 1,225.2      | -1,459.1     | 1,726.3                 | 2.98                    | -2.21                  | -2.00                 |
| 8,163.0  | 89.70           | 266.40      | 6,642.9               | 1,219.5      | -1,554.0     | 1,816.5                 | 0.60                    | -0.42                  | -0.42                 |





# IDS Survey Report



|                  |  |                                     |                                    |
|------------------|--|-------------------------------------|------------------------------------|
| <b>Company:</b>  | Noble Energy, Inc                      | <b>Local Co-ordinate Reference:</b> | Well Wells Ranch State AA21-69-1HN |
| <b>Project:</b>  | Weld County, CO (NAD 83)               | <b>TVD Reference:</b>               | Well @ 4745.0usft (HP 277)         |
| <b>Site:</b>     | Sec 21 - T6N - R63W (Wells Ranch AA21) | <b>MD Reference:</b>                | Well @ 4745.0usft (HP 277)         |
| <b>Well:</b>     | Wells Ranch State AA21-69-1HN          | <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

| Measured Depth (usft)  | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|--|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| 8,257.0  | 90.30           | 265.70      | 6,642.9               | 1,213.1      | -1,647.7     | 1,905.4                 | 0.98                    | 0.64                   | -0.74                 |
| 8,352.0  | 89.40           | 265.60      | 6,643.1               | 1,205.9      | -1,742.5     | 1,995.0                 | 0.95                    | -0.95                  | -0.11                 |
| 8,446.0  | 89.10           | 268.10      | 6,644.3               | 1,200.7      | -1,836.3     | 2,084.4                 | 2.68                    | -0.32                  | 2.66                  |
| 8,541.0  | 90.00           | 269.30      | 6,645.1               | 1,198.5      | -1,931.3     | 2,175.5                 | 1.58                    | 0.95                   | 1.26                  |
| 8,635.0  | 87.40           | 266.30      | 6,647.2               | 1,194.9      | -2,025.2     | 2,265.3                 | 4.22                    | -2.77                  | -3.19                 |
| 8,729.0  | 89.10           | 266.40      | 6,650.1               | 1,189.0      | -2,118.9     | 2,354.3                 | 1.81                    | 1.81                   | 0.11                  |
| 8,823.0  | 91.30           | 267.70      | 6,649.8               | 1,184.1      | -2,212.8     | 2,443.7                 | 2.72                    | 2.34                   | 1.38                  |
| 8,917.0  | 91.70           | 269.00      | 6,647.3               | 1,181.4      | -2,306.7     | 2,533.8                 | 1.45                    | 0.43                   | 1.38                  |
| 9,011.0  | 88.50           | 267.30      | 6,647.1               | 1,178.4      | -2,400.7     | 2,623.7                 | 3.85                    | -3.40                  | -1.81                 |
| 9,105.0  | 86.80           | 266.50      | 6,651.0               | 1,173.3      | -2,494.4     | 2,713.0                 | 2.00                    | -1.81                  | -0.85                 |
| 9,200.0  | 86.80           | 266.40      | 6,656.3               | 1,167.4      | -2,589.1     | 2,802.9                 | 0.11                    | 0.00                   | -0.11                 |
| 9,294.0  | 85.30           | 269.50      | 6,662.8               | 1,164.1      | -2,682.8     | 2,892.6                 | 3.66                    | -1.60                  | 3.30                  |
| 9,389.0  | 87.00           | 271.30      | 6,669.2               | 1,164.7      | -2,777.6     | 2,984.3                 | 2.60                    | 1.79                   | 1.89                  |
| 9,483.0  | 87.80           | 271.40      | 6,673.4               | 1,166.9      | -2,871.5     | 3,075.6                 | 0.86                    | 0.85                   | 0.11                  |
| 9,577.0  | 88.70           | 271.40      | 6,676.3               | 1,169.2      | -2,965.4     | 3,166.9                 | 0.96                    | 0.96                   | 0.00                  |
| 9,672.0  | 91.00           | 270.80      | 6,676.5               | 1,171.1      | -3,060.4     | 3,259.1                 | 2.50                    | 2.42                   | -0.63                 |
| 9,766.0  | 90.70           | 270.10      | 6,675.1               | 1,171.8      | -3,154.4     | 3,350.1                 | 0.81                    | -0.32                  | -0.74                 |
| 9,860.0  | 91.40           | 269.70      | 6,673.4               | 1,171.6      | -3,248.3     | 3,440.8                 | 0.86                    | 0.74                   | -0.43                 |
| 9,954.0  | 92.60           | 269.50      | 6,670.1               | 1,171.0      | -3,342.3     | 3,531.4                 | 1.29                    | 1.28                   | -0.21                 |
| 10,049.0   | 90.70           | 267.80      | 6,667.4               | 1,168.7      | -3,437.2     | 3,622.5                 | 2.68                    | -2.00                  | -1.79                 |
| 10,144.0   | 89.20           | 268.50      | 6,667.5               | 1,165.7      | -3,532.1     | 3,713.4                 | 1.74                    | -1.58                  | 0.74                  |
| 10,239.0   | 89.50           | 268.80      | 6,668.6               | 1,163.4      | -3,627.1     | 3,804.6                 | 0.45                    | 0.32                   | 0.32                  |
| 10,334.0   | 89.40           | 268.60      | 6,669.5               | 1,161.3      | -3,722.1     | 3,895.8                 | 0.24                    | -0.11                  | -0.21                 |
| 10,428.0   | 89.40           | 267.80      | 6,670.5               | 1,158.3      | -3,816.0     | 3,985.8                 | 0.85                    | 0.00                   | -0.85                 |
| 10,523.0   | 90.50           | 268.80      | 6,670.5               | 1,155.5      | -3,911.0     | 4,076.8                 | 1.56                    | 1.16                   | 1.05                  |
| 10,618.0   | 89.60           | 271.10      | 6,670.5               | 1,155.4      | -4,006.0     | 4,168.5                 | 2.60                    | -0.95                  | 2.42                  |
| 10,713.0   | 90.00           | 271.40      | 6,670.8               | 1,157.5      | -4,101.0     | 4,260.8                 | 0.53                    | 0.42                   | 0.32                  |
| 10,807.0   | 87.90           | 270.80      | 6,672.5               | 1,159.3      | -4,194.9     | 4,352.0                 | 2.32                    | -2.23                  | -0.64                 |
| 10,887.0   | 88.40           | 270.80      | 6,675.1               | 1,160.4      | -4,274.9     | 4,429.5                 | 0.63                    | 0.63                   | 0.00                  |
| <b>Last MWD @ 10887' MD</b>  |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,950.0   | 88.40           | 270.80      | 6,676.9               | 1,161.3      | -4,337.8     | 4,490.6                 | 0.00                    | 0.00                   | 0.00                  |
| <b>PTD @ 10950' MD / 6677' MD / 343' FNL &amp; 527' FWL Sec 21</b> |                 |             |                       |              |              |                         |                         |                        |                       |

## Casing Points

| Measured Depth (usft) | Vertical Depth (usft) | Name          | Casing Diameter (") | Hole Diameter (") |
|-----------------------|-----------------------|---------------|---------------------|-------------------|
| 7,198.0               | 6,618.9               | Actual 7" Csg | 7                   | 8-3/4             |



IDS  
Survey Report



|           |  |                              |                                    |
|-----------|--|------------------------------|------------------------------------|
| Company:  | Noble Energy, Inc                      | Local Co-ordinate Reference: | Well Wells Ranch State AA21-69-1HN |
| Project:  | Weld County, CO (NAD 83)               | TVD Reference:               | Well @ 4745.0usft (HP 277)         |
| Site:     | Sec 21 - T6N - R63W (Wells Ranch AA21) | MD Reference:                | Well @ 4745.0usft (HP 277)         |
| Well:     | Wells Ranch State AA21-69-1HN          | North Reference:             | Grid                               |
| Wellbore: | Wellbore #1                            | Survey Calculation Method:   | Minimum Curvature                  |
| Design:   | OH                                     | Database:                    | EDM 5000.1 Single User Db          |

Design Annotations

| Measured<br>Depth<br>(usft) | Vertical<br>Depth<br>(usft) | Local Coordinates |                 | Comment  |
|-----------------------------|-----------------------------|-------------------|-----------------|--|
|                             |                             | +N/-S<br>(usft)   | +E/-W<br>(usft) |  |
| 1,021.0                     | 1,021.0                     | 1.7               | 0.1             | First MWD  |
| 7,198.0                     | 6,618.9                     | 1,220.5           | -590.5          | 7" Csg @ 7198' MD / 6619' TVD / 298' FNL & 942' FEL Sec 21 |
| 10,887.0                    | 6,675.1                     | 1,160.4           | -4,274.9        | Last MWD @ 10887' MD                                       |
| 10,950.0                    | 6,676.9                     | 1,161.3           | -4,337.8        | PTD @ 10950' MD / 6677' MD / 343' FNL & 527' FWL Sec 21    |

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_









# Weld County, CO (NAD 83) Wells Ranch State AA21-69-1HN HP 277 Plan #1



## CASING DETAILS

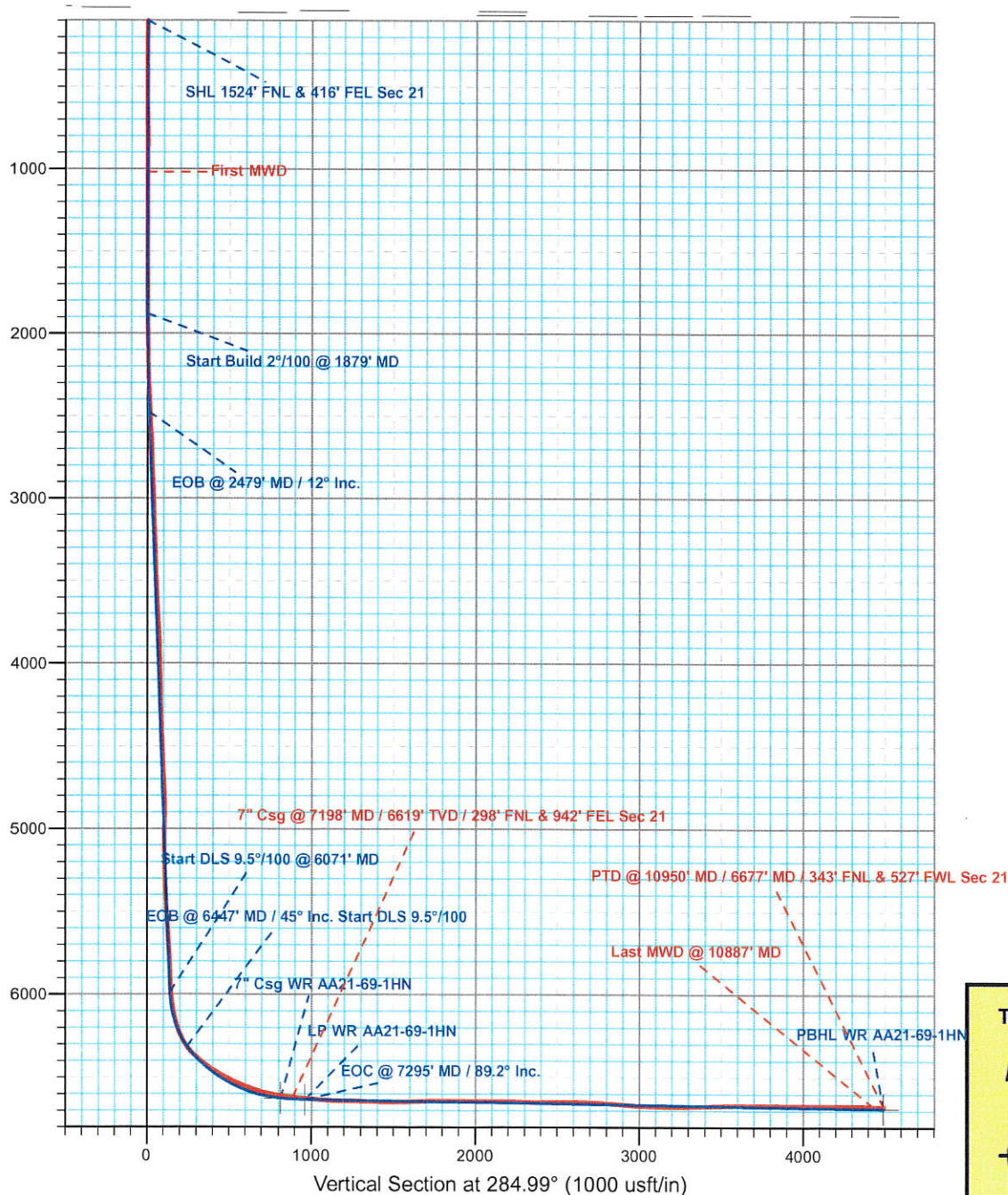
| TVD    | MD     | Name          | Size |
|--------|--------|---------------|------|
| 6618.9 | 7198.0 | Actual 7" Csg | 7    |

## SITE DETAILS: Sec 21 - T6N - R63W (Wells Ranch AA21)

Site Centre Northing: 1417534.22  
Easting: 3296552.45  
Positional Uncertainty: 0.0  
Convergence: 0.69  
Local North: Grid

## SECTION DETAILS

| MD      | Inc   | Azi    | TVD    | +N/-S  | +E/-W   | Dleg | TFace  | VSec   | Target              |
|---------|-------|--------|--------|--------|---------|------|--------|--------|---------------------|
| 0.0     | 0.00  | 0.00   | 0.0    | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                     |
| 1879.0  | 0.00  | 0.00   | 1879.0 | 0.0    | 0.0     | 0.00 | 0.00   | 0.0    |                     |
| 2479.0  | 12.00 | 5.00   | 2474.6 | 62.4   | 5.5     | 2.00 | 5.00   | 10.9   |                     |
| 6071.0  | 12.00 | 5.00   | 5988.1 | 806.3  | 70.5    | 0.00 | 0.00   | 140.4  |                     |
| 6446.8  | 45.00 | 330.00 | 6315.4 | 965.5  | 5.4     | 9.50 | -44.03 | 244.5  |                     |
| 7139.9  | 85.00 | 269.56 | 6625.6 | 1201.7 | -521.7  | 9.50 | -71.74 | 814.8  |                     |
| 7189.9  | 85.00 | 269.56 | 6630.0 | 1201.3 | -571.5  | 0.00 | 0.00   | 862.8  |                     |
| 7294.8  | 89.20 | 269.56 | 6635.3 | 1200.5 | -676.2  | 4.00 | 0.01   | 963.7  |                     |
| 10953.7 | 89.20 | 269.56 | 6686.7 | 1172.4 | -4334.7 | 0.00 | 0.00   | 4490.4 | PBHL WR AA21-69-1HN |



T G M  
 Azimuths to Grid North  
 Convergence: 0.69°  
 Total Correction: 7.68°  
 Magnetic Field  
 Strength: 52950.3snT  
 Dip Angle: 67.08°  
 Date: 11/17/2013  
 Model: IGRF2010