

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#13 VOGLER STATE D21-780(915FSL&973FWL,SEC.21)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: VOGLER STATE D21-780
Facility: SEC.21-T03N-R64W Wellbore: VOGLER STATE D21-780 PWB

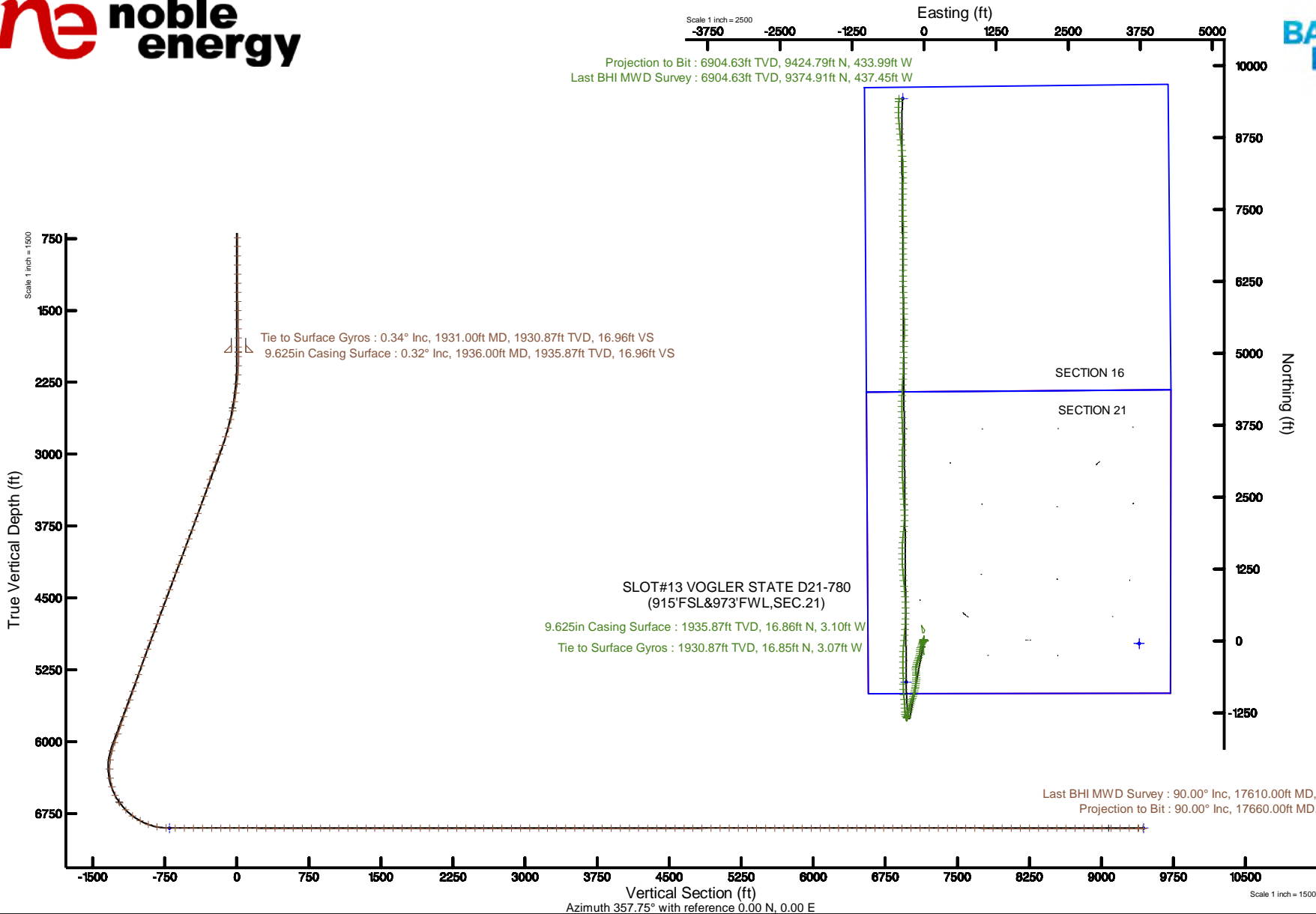
| | |
|--|--|
| Plot reference wellpath is VOGLER STATE D21-780 (REV-A.0) PWP | Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet |
| True vertical depths are referenced to RIG (30KB) (RKB) | North Reference: Grid north |
| Measured depths are referenced to RIG (30KB) (RKB) | Scale: True distance |
| RIG (30KB) (RKB) to Mean Sea Level: 4820 feet | Depths are in feet |
| Mean Sea Level to Ground level (At Slot: SLOT#13 VOGLER STATE D21-780(915FSL&973FWL,SEC.21)): 0 feet | Created by: robale01 on 2019-03-26 |
| Coordinates are in feet referenced to Slot | Database: WA DENVER |

Location Information

| Facility Name | | | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude |
|--|--------------|--------------|-------------------|--------------------|----------------|-----------------|
| SEC.21-T03N-R64W | | | 3261611.008 | 1319018.462 | 40°12'19.116"N | 104°33'48.060"W |
| Slot | Local N (ft) | Local E (ft) | Grid East (US ft) | Grid North (US ft) | Latitude | Longitude |
| SLOT#13 VOGLER STATE D21-780(915FSL&973FWL,SEC.21) | 342.09 | 309.24 | 3261920.235 | 1319360.553 | 40°12'22.464"N | 104°33'44.028"W |
| RIG (30KB) (RKB) to Ground level (At Slot: SLOT#13 VOGLER STATE D21-780(915FSL&973FWL,SEC.21)) | | | | | 4820ft | |
| Mean Sea Level to Ground level (At Slot: SLOT#13 VOGLER STATE D21-780(915FSL&973FWL,SEC.21)) | | | | | 0ft | |
| RIG (30KB) (RKB) to Mean Sea Level | | | | | 4820ft | |

Survey Program

| Start MD (ft) | End MD (ft) | Tool | Model | Log Name/Comment | Wellbore |
|---------------|-------------|---------------|---|------------------|--------------------------|
| 30.00 | 17651.10 | OWSG MWD rev2 | OWSG MWD rev2 + IFR1 + Multi-Station Correction | | VOGLER STATE D21-780 PWB |



Last BHI MWD Survey : 90.00° Inc, 17610.00ft MD, 6904.63ft TVD, 9384.86ft VS
Projection to Bit : 90.00° Inc, 17660.00ft MD, 6904.63ft TVD, 9434.57ft VS

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

REPORT SETUP INFORMATION

| | | | |
|---------------------|---|----------------------|--|
| Projection System | NAD83 / Lambert Colorado SP, Northern Zone (501), US feet | Software System | WellArchitect® 5.1 |
| North Reference | Grid | User | Robiale01 |
| Scale | 0.999957 | Report Generated | 3/26/2019 at 3:03:54 PM |
| Convergence at slot | 0.61° East | Database/Source file | WA DENVER/VOGLER_STATE_D21-780_AWP.xml |

WELLPATH LOCATION

| | Local coordinates | | Grid coordinates | | Geographic coordinates | |
|-----------------------|-------------------|----------|------------------|-----------------|------------------------|-----------------|
| | North[ft] | East[ft] | Easting[US ft] | Northing[US ft] | Latitude | Longitude |
| Slot Location | 342.09 | 309.24 | 3261920.24 | 1319360.55 | 40°12'22.464"N | 104°33'44.028"W |
| Facility Reference Pt | | | 3261611.01 | 1319018.48 | 40°12'19.116"N | 104°33'48.060"W |
| Field Reference Pt | | | 3000000.00 | 4454105.15 | 48°46'34.315"N | 105°30'00.000"W |

WELLPATH DATUM

| | | | |
|--------------------------|-------------------|--|-------------------|
| Calculation method | Minimum curvature | RIG (30'KB) (RKB) to Facility Vertical Datum | 4820.00ft |
| Horizontal Reference Pt | Slot | RIG (30'KB) (RKB) to Mean Sea Level | 4820.00ft |
| Vertical Reference Pt | RIG (30'KB) (RKB) | RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21)) | 4820.00ft |
| MD Reference Pt | RIG (30'KB) (RKB) | Section Origin | N 0.00, E 0.00 ft |
| Field Vertical Reference | Mean Sea Level | Section Azimuth | 357.36° |

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

WELLPATH DATA (189 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------------------|
| 0.00 | 0.000 | 10.520 | 0.00 | 0.00 | 0.00 | 0.00 | 40°12'22.464"N | 104°33'44.028"W | 0.00 | |
| 98.00 | 0.220 | 10.520 | 98.00 | 0.18 | 0.18 | 0.03 | 40°12'22.466"N | 104°33'44.028"W | 0.22 | |
| 179.00 | 0.370 | 319.600 | 179.00 | 0.54 | 0.54 | -0.11 | 40°12'22.469"N | 104°33'44.029"W | 0.35 | |
| 271.00 | 0.800 | 325.700 | 270.99 | 1.32 | 1.29 | -0.66 | 40°12'22.477"N | 104°33'44.036"W | 0.47 | |
| 366.00 | 0.730 | 328.920 | 365.99 | 2.42 | 2.36 | -1.35 | 40°12'22.487"N | 104°33'44.045"W | 0.09 | |
| 460.00 | 0.940 | 350.300 | 459.98 | 3.71 | 3.63 | -1.79 | 40°12'22.500"N | 104°33'44.051"W | 0.40 | |
| 555.00 | 0.490 | 2.930 | 554.97 | 4.89 | 4.81 | -1.90 | 40°12'22.512"N | 104°33'44.052"W | 0.50 | |
| 650.00 | 0.510 | 291.300 | 649.97 | 5.46 | 5.37 | -2.27 | 40°12'22.517"N | 104°33'44.057"W | 0.62 | |
| 744.00 | 0.280 | 316.610 | 743.96 | 5.81 | 5.68 | -2.82 | 40°12'22.520"N | 104°33'44.064"W | 0.30 | |
| 832.00 | 0.560 | 37.700 | 831.96 | 6.30 | 6.18 | -2.70 | 40°12'22.525"N | 104°33'44.062"W | 0.67 | |
| 934.00 | 0.660 | 83.190 | 933.96 | 6.72 | 6.65 | -1.81 | 40°12'22.530"N | 104°33'44.050"W | 0.47 | |
| 1028.00 | 0.440 | 67.110 | 1027.95 | 6.89 | 6.85 | -0.94 | 40°12'22.532"N | 104°33'44.039"W | 0.28 | |
| 1123.00 | 0.590 | 33.150 | 1122.95 | 7.41 | 7.40 | -0.34 | 40°12'22.537"N | 104°33'44.031"W | 0.35 | |
| 1218.00 | 0.490 | 322.660 | 1217.94 | 8.14 | 8.13 | -0.32 | 40°12'22.544"N | 104°33'44.031"W | 0.66 | |
| 1312.00 | 0.730 | 21.100 | 1311.94 | 9.02 | 9.01 | -0.35 | 40°12'22.553"N | 104°33'44.031"W | 0.67 | |
| 1407.00 | 0.740 | 333.970 | 1406.93 | 10.14 | 10.13 | -0.40 | 40°12'22.564"N | 104°33'44.032"W | 0.62 | |
| 1502.00 | 0.960 | 346.730 | 1501.92 | 11.48 | 11.45 | -0.85 | 40°12'22.577"N | 104°33'44.037"W | 0.30 | |
| 1597.00 | 1.320 | 7.250 | 1596.90 | 13.34 | 13.31 | -0.90 | 40°12'22.596"N | 104°33'44.038"W | 0.57 | |
| 1690.00 | 0.770 | 322.040 | 1689.89 | 14.91 | 14.87 | -1.14 | 40°12'22.611"N | 104°33'44.041"W | 1.02 | |
| 1787.00 | 0.750 | 320.280 | 1786.88 | 15.94 | 15.87 | -1.95 | 40°12'22.621"N | 104°33'44.051"W | 0.03 | |
| 1880.00 | 0.600 | 309.340 | 1879.87 | 16.76 | 16.65 | -2.72 | 40°12'22.629"N | 104°33'44.061"W | 0.21 | |
| 1931.00 | 0.340 | 282.600 | 1930.87 | 16.97 | 16.85 | -3.07 | 40°12'22.631"N | 104°33'44.065"W | 0.65 | Tie to Surface Gyros |
| 1983.00 | 0.250 | 210.280 | 1982.87 | 16.92 | 16.79 | -3.28 | 40°12'22.630"N | 104°33'44.068"W | 0.68 | |
| 2078.00 | 2.610 | 205.620 | 2077.84 | 14.84 | 14.66 | -4.32 | 40°12'22.609"N | 104°33'44.082"W | 2.49 | |
| 2173.00 | 4.710 | 200.580 | 2172.64 | 9.35 | 9.05 | -6.63 | 40°12'22.554"N | 104°33'44.112"W | 2.23 | |
| 2268.00 | 7.230 | 208.870 | 2267.12 | 0.67 | 0.17 | -10.88 | 40°12'22.467"N | 104°33'44.168"W | 2.80 | |
| 2362.00 | 9.070 | 208.010 | 2360.16 | -10.75 | -11.56 | -17.22 | 40°12'22.352"N | 104°33'44.251"W | 1.96 | |
| 2457.00 | 10.620 | 203.580 | 2453.76 | -25.05 | -26.19 | -24.24 | 40°12'22.208"N | 104°33'44.344"W | 1.81 | |
| 2552.00 | 12.200 | 201.490 | 2546.88 | -42.06 | -43.56 | -31.42 | 40°12'22.037"N | 104°33'44.439"W | 1.72 | |
| 2646.00 | 14.940 | 197.650 | 2638.25 | -62.50 | -64.35 | -38.73 | 40°12'21.832"N | 104°33'44.536"W | 3.07 | |
| 2741.00 | 18.260 | 200.600 | 2729.28 | -87.67 | -89.96 | -47.68 | 40°12'21.580"N | 104°33'44.655"W | 3.60 | |
| 2835.00 | 20.810 | 200.790 | 2817.86 | -116.53 | -119.36 | -58.79 | 40°12'21.291"N | 104°33'44.802"W | 2.71 | |
| 2930.00 | 20.840 | 190.570 | 2906.69 | -148.47 | -151.76 | -67.89 | 40°12'20.972"N | 104°33'44.924"W | 3.82 | |
| 3025.00 | 20.700 | 180.510 | 2995.54 | -181.70 | -185.17 | -71.14 | 40°12'20.642"N | 104°33'44.970"W | 3.75 | |
| 3119.00 | 20.550 | 186.200 | 3083.52 | -214.59 | -218.19 | -73.07 | 40°12'20.316"N | 104°33'44.999"W | 2.14 | |
| 3214.00 | 20.740 | 192.860 | 3172.44 | -247.28 | -251.17 | -78.61 | 40°12'19.990"N | 104°33'45.075"W | 2.48 | |

| WELLPATH DATA (189 stations) | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 3309.00 | 19.960 | 196.890 | 3261.51 | -278.78 | -283.08 | -87.07 | 40°12'19.676"N | 104°33'45.189"W | 1.69 | |
| 3404.00 | 19.670 | 201.930 | 3350.89 | -308.60 | -313.43 | -97.75 | 40°12'19.377"N | 104°33'45.330"W | 1.82 | |
| 3498.00 | 20.670 | 200.110 | 3439.13 | -338.29 | -343.69 | -109.36 | 40°12'19.079"N | 104°33'45.484"W | 1.26 | |
| 3593.00 | 20.710 | 196.060 | 3528.01 | -369.67 | -375.58 | -119.78 | 40°12'18.765"N | 104°33'45.623"W | 1.51 | |
| 3687.00 | 20.690 | 196.250 | 3615.94 | -401.12 | -407.49 | -129.02 | 40°12'18.451"N | 104°33'45.746"W | 0.07 | |
| 3782.00 | 20.760 | 193.710 | 3704.79 | -433.16 | -439.96 | -137.71 | 40°12'18.131"N | 104°33'45.863"W | 0.95 | |
| 3877.00 | 20.850 | 186.350 | 3793.61 | -466.02 | -473.12 | -143.57 | 40°12'17.804"N | 104°33'45.943"W | 2.75 | |
| 3971.00 | 20.830 | 176.550 | 3881.49 | -499.26 | -506.44 | -144.41 | 40°12'17.475"N | 104°33'45.958"W | 3.71 | |
| 4066.00 | 20.710 | 172.400 | 3970.32 | -532.89 | -539.96 | -141.18 | 40°12'17.143"N | 104°33'45.921"W | 1.55 | |

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|---------------------------------|----------|--|
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| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

WELLPATH DATA (189 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| 4161.00 | 20.680 | 174.830 | 4059.19 | -566.38 | -573.31 | -137.44 | 40°12'16.813"N | 104°33'45.877"W | 0.90 | |
| 4255.00 | 20.760 | 176.860 | 4147.11 | -599.62 | -606.48 | -135.03 | 40°12'16.485"N | 104°33'45.851"W | 0.77 | |
| 4350.00 | 20.720 | 178.660 | 4235.96 | -633.26 | -640.09 | -133.72 | 40°12'16.153"N | 104°33'45.839"W | 0.67 | |
| 4444.00 | 20.790 | 184.770 | 4323.87 | -666.43 | -673.34 | -134.72 | 40°12'15.824"N | 104°33'45.856"W | 2.30 | |
| 4539.00 | 20.800 | 187.970 | 4412.68 | -699.73 | -706.85 | -138.46 | 40°12'15.494"N | 104°33'45.909"W | 1.20 | |
| 4634.00 | 20.810 | 187.160 | 4501.49 | -732.94 | -740.30 | -142.90 | 40°12'15.164"N | 104°33'45.971"W | 0.30 | |
| 4728.00 | 20.670 | 186.440 | 4589.40 | -765.78 | -773.35 | -146.84 | 40°12'14.838"N | 104°33'46.026"W | 0.31 | |
| 4823.00 | 20.750 | 186.560 | 4678.26 | -798.95 | -806.73 | -150.65 | 40°12'14.508"N | 104°33'46.079"W | 0.10 | |
| 4918.00 | 20.730 | 190.410 | 4767.11 | -831.94 | -839.99 | -155.61 | 40°12'14.180"N | 104°33'46.148"W | 1.44 | |
| 5012.00 | 20.650 | 192.160 | 4855.04 | -864.17 | -872.55 | -162.10 | 40°12'13.859"N | 104°33'46.236"W | 0.66 | |
| 5107.00 | 20.740 | 195.220 | 4943.92 | -896.38 | -905.16 | -170.05 | 40°12'13.537"N | 104°33'46.343"W | 1.14 | |
| 5201.00 | 20.780 | 195.360 | 5031.81 | -928.08 | -937.30 | -178.84 | 40°12'13.221"N | 104°33'46.460"W | 0.07 | |
| 5296.00 | 20.510 | 197.060 | 5120.71 | -959.78 | -969.46 | -188.18 | 40°12'12.904"N | 104°33'46.585"W | 0.69 | |
| 5390.00 | 19.680 | 199.120 | 5208.99 | -989.99 | -1000.16 | -198.20 | 40°12'12.602"N | 104°33'46.719"W | 1.16 | |
| 5485.00 | 20.770 | 203.050 | 5298.14 | -1020.02 | -1030.78 | -210.03 | 40°12'12.300"N | 104°33'46.875"W | 1.83 | |
| 5579.00 | 20.760 | 199.720 | 5386.04 | -1050.45 | -1061.80 | -222.18 | 40°12'11.995"N | 104°33'47.036"W | 1.26 | |
| 5674.00 | 20.750 | 196.710 | 5474.87 | -1081.90 | -1093.76 | -232.70 | 40°12'11.680"N | 104°33'47.176"W | 1.12 | |
| 5768.00 | 20.690 | 194.400 | 5562.79 | -1113.49 | -1125.80 | -241.62 | 40°12'11.365"N | 104°33'47.295"W | 0.87 | |
| 5863.00 | 20.570 | 192.700 | 5651.70 | -1145.63 | -1158.33 | -249.46 | 40°12'11.044"N | 104°33'47.401"W | 0.64 | |
| 5958.00 | 20.060 | 194.170 | 5740.79 | -1177.33 | -1190.41 | -257.12 | 40°12'10.728"N | 104°33'47.504"W | 0.76 | |
| 6052.00 | 19.310 | 195.790 | 5829.30 | -1207.50 | -1221.00 | -265.29 | 40°12'10.427"N | 104°33'47.613"W | 0.99 | |
| 6147.00 | 20.680 | 196.070 | 5918.57 | -1238.30 | -1252.23 | -274.21 | 40°12'10.119"N | 104°33'47.732"W | 1.45 | |
| 6242.00 | 20.840 | 191.990 | 6007.41 | -1270.54 | -1284.88 | -282.37 | 40°12'09.797"N | 104°33'47.842"W | 1.53 | |
| 6336.00 | 15.300 | 187.560 | 6096.74 | -1298.94 | -1313.56 | -287.48 | 40°12'09.514"N | 104°33'47.912"W | 6.07 | |
| 6431.00 | 7.890 | 200.660 | 6189.75 | -1317.30 | -1332.11 | -291.43 | 40°12'09.331"N | 104°33'47.965"W | 8.23 | |
| 6526.00 | 5.160 | 270.270 | 6284.26 | -1323.08 | -1338.20 | -298.01 | 40°12'09.272"N | 104°33'48.051"W | 8.18 | |
| 6620.00 | 8.820 | 322.060 | 6377.62 | -1316.98 | -1332.49 | -306.68 | 40°12'09.329"N | 104°33'48.162"W | 7.37 | |
| 6715.00 | 16.910 | 334.470 | 6470.18 | -1298.27 | -1314.25 | -317.13 | 40°12'09.510"N | 104°33'48.294"W | 8.95 | |
| 6810.00 | 25.830 | 350.600 | 6558.63 | -1264.89 | -1281.27 | -326.50 | 40°12'09.837"N | 104°33'48.410"W | 11.16 | |
| 6905.00 | 36.880 | 358.330 | 6639.66 | -1215.67 | -1232.19 | -330.72 | 40°12'10.323"N | 104°33'48.458"W | 12.36 | |
| 6999.00 | 44.780 | 357.010 | 6710.73 | -1154.26 | -1170.83 | -333.27 | 40°12'10.929"N | 104°33'48.483"W | 8.45 | |
| 7094.00 | 51.970 | 355.730 | 6773.80 | -1083.31 | -1100.01 | -337.81 | 40°12'11.630"N | 104°33'48.531"W | 7.63 | |
| 7189.00 | 62.020 | 354.200 | 6825.48 | -1003.82 | -1020.76 | -344.86 | 40°12'12.413"N | 104°33'48.611"W | 10.66 | |
| 7284.00 | 69.690 | 354.950 | 6864.31 | -917.30 | -934.52 | -353.03 | 40°12'13.266"N | 104°33'48.705"W | 8.11 | |
| 7378.00 | 79.310 | 357.070 | 6889.41 | -826.85 | -844.27 | -359.28 | 40°12'14.159"N | 104°33'48.773"W | 10.46 | |
| 7473.00 | 87.880 | 359.620 | 6900.00 | -732.55 | -750.00 | -361.99 | 40°12'15.091"N | 104°33'48.795"W | 9.41 | |

| WELLPATH DATA (189 stations) | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 7568.00 | 89.970 | 360.000 | 6901.78 | -637.66 | -655.02 | -362.30 | 40°12'16.029"N | 104°33'48.786"W | 2.24 | |
| 7663.00 | 89.970 | 358.610 | 6901.83 | -542.72 | -560.03 | -363.46 | 40°12'16.968"N | 104°33'48.788"W | 1.46 | |
| 7757.00 | 90.120 | 359.600 | 6901.75 | -448.77 | -466.04 | -364.93 | 40°12'17.897"N | 104°33'48.795"W | 1.07 | |
| 7852.00 | 90.000 | 359.320 | 6901.65 | -353.83 | -371.05 | -365.82 | 40°12'18.836"N | 104°33'48.793"W | 0.32 | |
| 7946.00 | 89.850 | 0.770 | 6901.78 | -259.93 | -277.05 | -365.75 | 40°12'19.765"N | 104°33'48.779"W | 1.55 | |
| 8041.00 | 89.880 | 3.060 | 6902.00 | -165.24 | -182.11 | -362.57 | 40°12'20.702"N | 104°33'48.726"W | 2.41 | |
| 8136.00 | 89.880 | 4.840 | 6902.20 | -70.87 | -87.34 | -356.03 | 40°12'21.638"N | 104°33'48.628"W | 1.87 | |
| 8231.00 | 89.940 | 5.880 | 6902.35 | 23.20 | 7.24 | -347.15 | 40°12'22.572"N | 104°33'48.501"W | 1.10 | |
| 8325.00 | 89.850 | 4.010 | 6902.52 | 116.38 | 100.89 | -339.05 | 40°12'23.496"N | 104°33'48.384"W | 1.99 | |

| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

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|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 8420.00 | 89.910 | 4.100 | 6902.72 | 210.73 | 195.65 | -332.33 | 40°12'24.432"N | 104°33'48.284"W | 0.11 | |
| 8515.00 | 89.970 | 3.270 | 6902.82 | 305.15 | 290.45 | -326.23 | 40°12'25.368"N | 104°33'48.193"W | 0.88 | |
| 8610.00 | 90.000 | 1.690 | 6902.85 | 399.77 | 385.36 | -322.12 | 40°12'26.306"N | 104°33'48.127"W | 1.66 | |
| 8704.00 | 89.940 | 0.310 | 6902.89 | 493.58 | 479.34 | -320.48 | 40°12'27.234"N | 104°33'48.093"W | 1.47 | |
| 8799.00 | 89.940 | 358.940 | 6902.99 | 588.50 | 574.34 | -321.10 | 40°12'28.173"N | 104°33'48.088"W | 1.44 | |
| 8894.00 | 89.910 | 357.500 | 6903.12 | 683.49 | 669.29 | -324.05 | 40°12'29.111"N | 104°33'48.113"W | 1.52 | |
| 8989.00 | 89.970 | 356.190 | 6903.22 | 778.48 | 764.15 | -329.28 | 40°12'30.049"N | 104°33'48.168"W | 1.38 | |
| 9083.00 | 89.910 | 355.440 | 6903.32 | 872.45 | 857.89 | -336.14 | 40°12'30.976"N | 104°33'48.243"W | 0.80 | |
| 9178.00 | 89.940 | 354.960 | 6903.44 | 967.38 | 952.56 | -344.09 | 40°12'31.913"N | 104°33'48.333"W | 0.51 | |
| 9273.00 | 89.940 | 354.040 | 6903.54 | 1062.26 | 1047.12 | -353.19 | 40°12'32.848"N | 104°33'48.437"W | 0.97 | |
| 9367.00 | 89.910 | 354.980 | 6903.66 | 1156.14 | 1140.69 | -362.19 | 40°12'33.773"N | 104°33'48.541"W | 1.00 | |
| 9462.00 | 89.940 | 356.160 | 6903.79 | 1251.09 | 1235.40 | -369.52 | 40°12'34.710"N | 104°33'48.622"W | 1.24 | |
| 9557.00 | 89.970 | 357.680 | 6903.86 | 1346.09 | 1330.26 | -374.63 | 40°12'35.648"N | 104°33'48.675"W | 1.60 | |
| 9651.00 | 89.970 | 359.060 | 6903.91 | 1440.07 | 1424.22 | -377.30 | 40°12'36.577"N | 104°33'48.697"W | 1.47 | |
| 9746.00 | 89.940 | 359.990 | 6903.99 | 1535.00 | 1519.22 | -378.09 | 40°12'37.516"N | 104°33'48.694"W | 0.98 | |
| 9841.00 | 89.910 | 1.840 | 6904.11 | 1629.82 | 1614.20 | -376.57 | 40°12'38.454"N | 104°33'48.661"W | 1.95 | |
| 9935.00 | 89.850 | 3.330 | 6904.31 | 1723.42 | 1708.10 | -372.33 | 40°12'39.381"N | 104°33'48.594"W | 1.59 | |
| 10030.00 | 89.910 | 5.220 | 6904.51 | 1817.73 | 1802.84 | -365.25 | 40°12'40.317"N | 104°33'48.490"W | 1.99 | |
| 10125.00 | 89.910 | 5.910 | 6904.66 | 1911.76 | 1897.39 | -356.04 | 40°12'41.250"N | 104°33'48.358"W | 0.73 | |
| 10220.00 | 89.970 | 5.270 | 6904.76 | 2005.78 | 1991.94 | -346.79 | 40°12'42.183"N | 104°33'48.226"W | 0.68 | |
| 10315.00 | 90.120 | 3.000 | 6904.68 | 2100.11 | 2086.68 | -339.94 | 40°12'43.119"N | 104°33'48.125"W | 2.39 | |
| 10409.00 | 90.060 | 359.220 | 6904.53 | 2193.89 | 2180.65 | -338.11 | 40°12'44.047"N | 104°33'48.089"W | 4.02 | |
| 10504.00 | 90.030 | 355.910 | 6904.46 | 2288.88 | 2275.55 | -342.15 | 40°12'44.985"N | 104°33'48.128"W | 3.48 | |
| 10599.00 | 90.030 | 356.890 | 6904.41 | 2383.86 | 2370.36 | -348.12 | 40°12'45.923"N | 104°33'48.192"W | 1.03 | |
| 10694.00 | 90.000 | 356.540 | 6904.38 | 2478.86 | 2465.20 | -353.56 | 40°12'46.861"N | 104°33'48.249"W | 0.37 | |
| 10788.00 | 90.000 | 356.380 | 6904.38 | 2572.84 | 2559.02 | -359.36 | 40°12'47.788"N | 104°33'48.311"W | 0.17 | |
| 10883.00 | 90.030 | 356.730 | 6904.36 | 2667.84 | 2653.85 | -365.07 | 40°12'48.726"N | 104°33'48.372"W | 0.37 | |
| 10978.00 | 90.030 | 357.100 | 6904.31 | 2762.83 | 2748.71 | -370.18 | 40°12'49.664"N | 104°33'48.425"W | 0.39 | |
| 11073.00 | 90.090 | 357.990 | 6904.21 | 2857.83 | 2843.63 | -374.25 | 40°12'50.602"N | 104°33'48.464"W | 0.94 | |
| 11168.00 | 90.120 | 358.980 | 6904.04 | 2952.81 | 2938.59 | -376.77 | 40°12'51.541"N | 104°33'48.484"W | 1.04 | |
| 11263.00 | 90.030 | 359.410 | 6903.91 | 3047.76 | 3033.58 | -378.10 | 40°12'52.480"N | 104°33'48.488"W | 0.46 | |
| 11358.00 | 90.120 | 0.590 | 6903.79 | 3142.66 | 3128.58 | -378.10 | 40°12'53.418"N | 104°33'48.475"W | 1.25 | |
| 11452.00 | 90.030 | 1.980 | 6903.66 | 3236.44 | 3222.55 | -375.99 | 40°12'54.347"N | 104°33'48.435"W | 1.48 | |
| 11547.00 | 90.030 | 1.850 | 6903.61 | 3331.14 | 3317.50 | -372.82 | 40°12'55.285"N | 104°33'48.381"W | 0.14 | |
| 11642.00 | 90.120 | 0.890 | 6903.49 | 3425.90 | 3412.47 | -370.55 | 40°12'56.223"N | 104°33'48.339"W | 1.01 | |
| 11737.00 | 90.090 | 0.030 | 6903.32 | 3520.76 | 3507.47 | -369.78 | 40°12'57.161"N | 104°33'48.316"W | 0.91 | |

| WELLPATH DATA (189 stations) | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 11831.00 | 90.030 | 358.820 | 6903.22 | 3614.70 | 3601.46 | -370.73 | 40°12'58.090"N | 104°33'48.316"W | 1.29 | |
| 11926.00 | 90.120 | 358.230 | 6903.09 | 3709.68 | 3696.43 | -373.17 | 40°12'59.029"N | 104°33'48.334"W | 0.63 | |
| 12021.00 | 89.940 | 357.440 | 6903.04 | 3804.68 | 3791.36 | -376.76 | 40°12'59.967"N | 104°33'48.368"W | 0.85 | |
| 12116.00 | 90.030 | 357.610 | 6903.07 | 3899.68 | 3886.27 | -380.86 | 40°13'00.906"N | 104°33'48.407"W | 0.20 | |
| 12210.00 | 90.000 | 358.860 | 6903.04 | 3993.66 | 3980.23 | -383.76 | 40°13'01.834"N | 104°33'48.432"W | 1.33 | |
| 12305.00 | 90.030 | 0.010 | 6903.02 | 4088.60 | 4075.22 | -384.70 | 40°13'02.773"N | 104°33'48.431"W | 1.21 | |
| 12400.00 | 89.970 | 1.480 | 6903.02 | 4183.43 | 4170.21 | -383.46 | 40°13'03.712"N | 104°33'48.402"W | 1.55 | |
| 12495.00 | 89.970 | 2.310 | 6903.07 | 4278.14 | 4265.16 | -380.32 | 40°13'04.649"N | 104°33'48.349"W | 0.87 | |
| 12589.00 | 90.000 | 2.530 | 6903.09 | 4371.77 | 4359.07 | -376.35 | 40°13'05.577"N | 104°33'48.285"W | 0.24 | |

| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

| WELLPATH DATA (189 stations) | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 12684.00 | 90.090 | 3.110 | 6903.02 | 4466.34 | 4453.96 | -371.68 | 40°13'06.514"N | 104°33'48.212"W | 0.62 | |
| 12779.00 | 90.060 | 2.840 | 6902.89 | 4560.88 | 4548.83 | -366.75 | 40°13'07.451"N | 104°33'48.135"W | 0.29 | |
| 12874.00 | 90.030 | 2.510 | 6902.82 | 4655.48 | 4643.72 | -362.31 | 40°13'08.388"N | 104°33'48.065"W | 0.35 | |
| 12968.00 | 90.000 | 1.780 | 6902.79 | 4749.15 | 4737.66 | -358.79 | 40°13'09.316"N | 104°33'48.007"W | 0.78 | |
| 13063.00 | 90.060 | 1.250 | 6902.74 | 4843.90 | 4832.62 | -356.28 | 40°13'10.254"N | 104°33'47.962"W | 0.56 | |
| 13158.00 | 90.060 | 0.960 | 6902.65 | 4938.70 | 4927.61 | -354.45 | 40°13'11.193"N | 104°33'47.925"W | 0.31 | |
| 13252.00 | 90.060 | 1.270 | 6902.55 | 5032.49 | 5021.59 | -352.62 | 40°13'12.121"N | 104°33'47.889"W | 0.33 | |
| 13347.00 | 90.090 | 1.980 | 6902.42 | 5127.23 | 5116.55 | -349.93 | 40°13'13.059"N | 104°33'47.841"W | 0.75 | |
| 13442.00 | 90.030 | 1.620 | 6902.32 | 5221.95 | 5211.50 | -346.94 | 40°13'13.997"N | 104°33'47.790"W | 0.38 | |
| 13536.00 | 90.090 | 1.140 | 6902.22 | 5315.71 | 5305.48 | -344.68 | 40°13'14.926"N | 104°33'47.748"W | 0.51 | |
| 13631.00 | 90.060 | 0.500 | 6902.10 | 5410.54 | 5400.47 | -343.32 | 40°13'15.864"N | 104°33'47.717"W | 0.67 | |
| 13726.00 | 90.060 | 359.240 | 6902.00 | 5505.45 | 5495.46 | -343.53 | 40°13'16.803"N | 104°33'47.707"W | 1.33 | |
| 13820.00 | 90.090 | 358.470 | 6901.88 | 5599.42 | 5589.44 | -345.41 | 40°13'17.732"N | 104°33'47.719"W | 0.82 | |
| 13915.00 | 90.120 | 358.250 | 6901.70 | 5694.40 | 5684.40 | -348.13 | 40°13'18.670"N | 104°33'47.741"W | 0.23 | |
| 14010.00 | 90.060 | 358.220 | 6901.55 | 5789.39 | 5779.36 | -351.06 | 40°13'19.609"N | 104°33'47.766"W | 0.07 | |
| 14105.00 | 90.090 | 359.180 | 6901.43 | 5884.36 | 5874.33 | -353.21 | 40°13'20.548"N | 104°33'47.780"W | 1.01 | |
| 14199.00 | 90.060 | 358.680 | 6901.31 | 5978.33 | 5968.32 | -354.97 | 40°13'21.476"N | 104°33'47.790"W | 0.53 | |
| 14294.00 | 90.150 | 357.780 | 6901.13 | 6073.32 | 6063.27 | -357.90 | 40°13'22.415"N | 104°33'47.815"W | 0.95 | |
| 14389.00 | 90.030 | 357.710 | 6900.98 | 6168.31 | 6158.20 | -361.64 | 40°13'23.353"N | 104°33'47.850"W | 0.15 | |
| 14484.00 | 89.940 | 359.420 | 6901.01 | 6263.29 | 6253.16 | -364.02 | 40°13'24.292"N | 104°33'47.868"W | 1.80 | |
| 14578.00 | 89.910 | 0.740 | 6901.13 | 6357.18 | 6347.16 | -363.89 | 40°13'25.221"N | 104°33'47.854"W | 1.40 | |
| 14673.00 | 89.970 | 2.470 | 6901.23 | 6451.92 | 6442.12 | -361.23 | 40°13'26.159"N | 104°33'47.806"W | 1.82 | |
| 14768.00 | 90.060 | 1.650 | 6901.21 | 6546.60 | 6537.06 | -357.81 | 40°13'27.097"N | 104°33'47.749"W | 0.87 | |
| 14863.00 | 89.850 | 358.630 | 6901.28 | 6641.47 | 6632.05 | -357.58 | 40°13'28.035"N | 104°33'47.733"W | 3.19 | |
| 14957.00 | 89.910 | 358.080 | 6901.48 | 6735.46 | 6726.01 | -360.28 | 40°13'28.964"N | 104°33'47.755"W | 0.59 | |
| 15052.00 | 89.970 | 0.370 | 6901.58 | 6830.40 | 6820.99 | -361.56 | 40°13'29.903"N | 104°33'47.759"W | 2.41 | |
| 15147.00 | 90.000 | 2.080 | 6901.60 | 6925.18 | 6915.97 | -359.53 | 40°13'30.841"N | 104°33'47.720"W | 1.80 | |
| 15242.00 | 90.000 | 2.270 | 6901.60 | 7019.85 | 7010.90 | -355.93 | 40°13'31.779"N | 104°33'47.661"W | 0.20 | |
| 15336.00 | 89.850 | 358.680 | 6901.73 | 7113.70 | 7104.88 | -355.15 | 40°13'32.707"N | 104°33'47.638"W | 3.82 | |
| 15431.00 | 89.970 | 356.730 | 6901.87 | 7208.69 | 7199.80 | -358.95 | 40°13'33.646"N | 104°33'47.674"W | 2.06 | |
| 15526.00 | 89.880 | 357.370 | 6902.00 | 7303.69 | 7294.67 | -363.84 | 40°13'34.584"N | 104°33'47.724"W | 0.68 | |
| 15621.00 | 89.910 | 358.050 | 6902.17 | 7398.68 | 7389.60 | -367.64 | 40°13'35.522"N | 104°33'47.760"W | 0.72 | |
| 15715.00 | 89.970 | 359.010 | 6902.27 | 7492.66 | 7483.56 | -370.05 | 40°13'36.451"N | 104°33'47.778"W | 1.02 | |
| 15810.00 | 89.880 | 0.510 | 6902.40 | 7587.58 | 7578.56 | -370.45 | 40°13'37.389"N | 104°33'47.770"W | 1.58 | |
| 15905.00 | 89.880 | 1.070 | 6902.59 | 7682.41 | 7673.55 | -369.14 | 40°13'38.328"N | 104°33'47.741"W | 0.59 | |
| 16000.00 | 89.850 | 0.760 | 6902.82 | 7777.22 | 7768.54 | -367.62 | 40°13'39.266"N | 104°33'47.708"W | 0.33 | |

| WELLPATH DATA (189 stations) | | | | | | | | | | |
|------------------------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|----------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
| 16094.00 | 89.970 | 1.750 | 6902.97 | 7871.01 | 7862.51 | -365.56 | 40°13'40.195"N | 104°33'47.669"W | 1.06 | |
| 16189.00 | 89.910 | 1.020 | 6903.07 | 7965.77 | 7957.49 | -363.27 | 40°13'41.133"N | 104°33'47.626"W | 0.77 | |
| 16284.00 | 89.970 | 359.610 | 6903.17 | 8060.64 | 8052.48 | -362.74 | 40°13'42.072"N | 104°33'47.607"W | 1.49 | |
| 16379.00 | 89.940 | 359.360 | 6903.24 | 8155.58 | 8147.48 | -363.60 | 40°13'43.010"N | 104°33'47.605"W | 0.27 | |
| 16473.00 | 89.910 | 357.900 | 6903.36 | 8249.55 | 8241.45 | -365.84 | 40°13'43.939"N | 104°33'47.621"W | 1.55 | |
| 16568.00 | 89.940 | 357.530 | 6903.49 | 8344.55 | 8336.37 | -369.63 | 40°13'44.878"N | 104°33'47.657"W | 0.39 | |
| 16663.00 | 89.850 | 355.460 | 6903.66 | 8439.53 | 8431.19 | -375.44 | 40°13'45.815"N | 104°33'47.719"W | 2.18 | |
| 16758.00 | 90.000 | 354.410 | 6903.79 | 8534.45 | 8525.82 | -383.83 | 40°13'46.751"N | 104°33'47.814"W | 1.12 | |
| 16852.00 | 90.030 | 353.780 | 6903.76 | 8628.29 | 8619.32 | -393.50 | 40°13'47.676"N | 104°33'47.926"W | 0.67 | |

REFERENCE WELLPATH IDENTIFICATION

| | | | |
|----------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

WELLPATH DATA (189 stations)

| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Vert Sect [ft] | North [ft] | East [ft] | Latitude | Longitude | DLS [°/100ft] | Comments |
|------------|--------------------|----------------|-------------|-------------------|---------------|--------------|----------------|-----------------|------------------|---------------------|
| 16947.00 | 89.970 | 354.120 | 6903.76 | 8723.13 | 8713.79 | -403.51 | 40°13'48.611"N | 104°33'48.042"W | 0.36 | |
| 17042.00 | 89.880 | 353.660 | 6903.89 | 8817.95 | 8808.25 | -413.62 | 40°13'49.545"N | 104°33'48.160"W | 0.49 | |
| 17137.00 | 89.940 | 354.670 | 6904.03 | 8912.80 | 8902.75 | -423.28 | 40°13'50.480"N | 104°33'48.271"W | 1.07 | |
| 17231.00 | 89.910 | 354.710 | 6904.16 | 9006.70 | 8996.35 | -431.98 | 40°13'51.406"N | 104°33'48.371"W | 0.05 | |
| 17326.00 | 89.910 | 356.790 | 6904.31 | 9101.66 | 9091.08 | -439.02 | 40°13'52.342"N | 104°33'48.448"W | 2.19 | |
| 17421.00 | 89.940 | 359.410 | 6904.43 | 9196.64 | 9186.02 | -442.17 | 40°13'53.281"N | 104°33'48.476"W | 2.76 | |
| 17515.00 | 89.910 | 1.160 | 6904.55 | 9290.51 | 9280.02 | -441.70 | 40°13'54.210"N | 104°33'48.457"W | 1.86 | |
| 17610.00 | 90.000 | 3.970 | 6904.63 | 9385.11 | 9374.91 | -437.45 | 40°13'55.147"N | 104°33'48.390"W | 2.96 | Last BHI MWD Survey |
| 17660.00 | 90.000 | 3.970 | 6904.63 | 9434.78 | 9424.79 | -433.99 | 40°13'55.639"N | 104°33'48.338"W | 0.00 | Projection to Bit |

HOLE & CASING SECTIONS - Ref Wellbore: VOGLER STATE D21-780 AWB Ref Wellpath: VOGLER STATE D21-780 AWP

| String/Diameter | Start MD [ft] | End MD [ft] | Interval [ft] | Start TVD [ft] | End TVD [ft] | Start N/S [ft] | Start E/W [ft] | End N/S [ft] | End E/W [ft] |
|------------------------|------------------|----------------|------------------|-------------------|-----------------|-------------------|-------------------|-----------------|-----------------|
| 9.625in Casing Surface | 30.00 | 1936.00 | 1906.00 | 30.00 | 1935.87 | 0.02 | 0.00 | 16.86 | -3.10 |

WELLPATH COMPOSITION - Ref Wellbore: VOGLER STATE D21-780 AWB Ref Wellpath: VOGLER STATE D21-780 AWP

| Start MD [ft] | End MD [ft] | Positional Uncertainty Model | Log Name/Comment | Wellbore |
|------------------|----------------|--|---|--------------------------|
| 0.00 | 1931.00 | BHI Generic gyro - northseeking (Standard) | 3rd Party Surface Surveys <98'-1931'> | VOGLER STATE D21-780 AWB |
| 1931.00 | 17610.00 | OWSG MWD rev2 + IFR1 + Axial Corr | BH/ATC 8.5" Hole OWSG MWD rev2+IFR+MSA <1983'-17610'> | VOGLER STATE D21-780 AWB |
| 17610.00 | 17660.00 | Blind Drilling (std) | Projection to bit | VOGLER STATE D21-780 AWB |

| REFERENCE WELLPATH IDENTIFICATION | | | |
|-----------------------------------|---------------------------------|----------|--|
| Operator | NOBLE ENERGY, INC | Slot | SLOT#13 VOGLER STATE D21-780(915'FSL&973'FWL,SEC.21) |
| Area | COLORADO | Well | VOGLER STATE D21-780 |
| Field | WELD COUNTY (NOBLE NAD 83 GRID) | Wellbore | VOGLER STATE D21-780 AWB |
| Facility | SEC.21-T03N-R64W | | |

| WELLPATH COMMENTS | | | | |
|-------------------|--------------------|----------------|-------------|----------------------|
| MD [ft] | Inclination [°] | Azimuth [°] | TVD [ft] | Comment |
| 1931.00 | 0.340 | 282.600 | 1930.87 | Tie to Surface Gyros |
| 17610.00 | 90.000 | 3.970 | 6904.63 | Last BHI MWD Survey |
| 17660.00 | 90.000 | 3.970 | 6904.63 | Projection to Bit |