

# NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)  
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: VOGLER STATE D21-770  
Facility: SEC.21-T03N-R64W Wellbore: VOGLER STATE D21-770 PWB

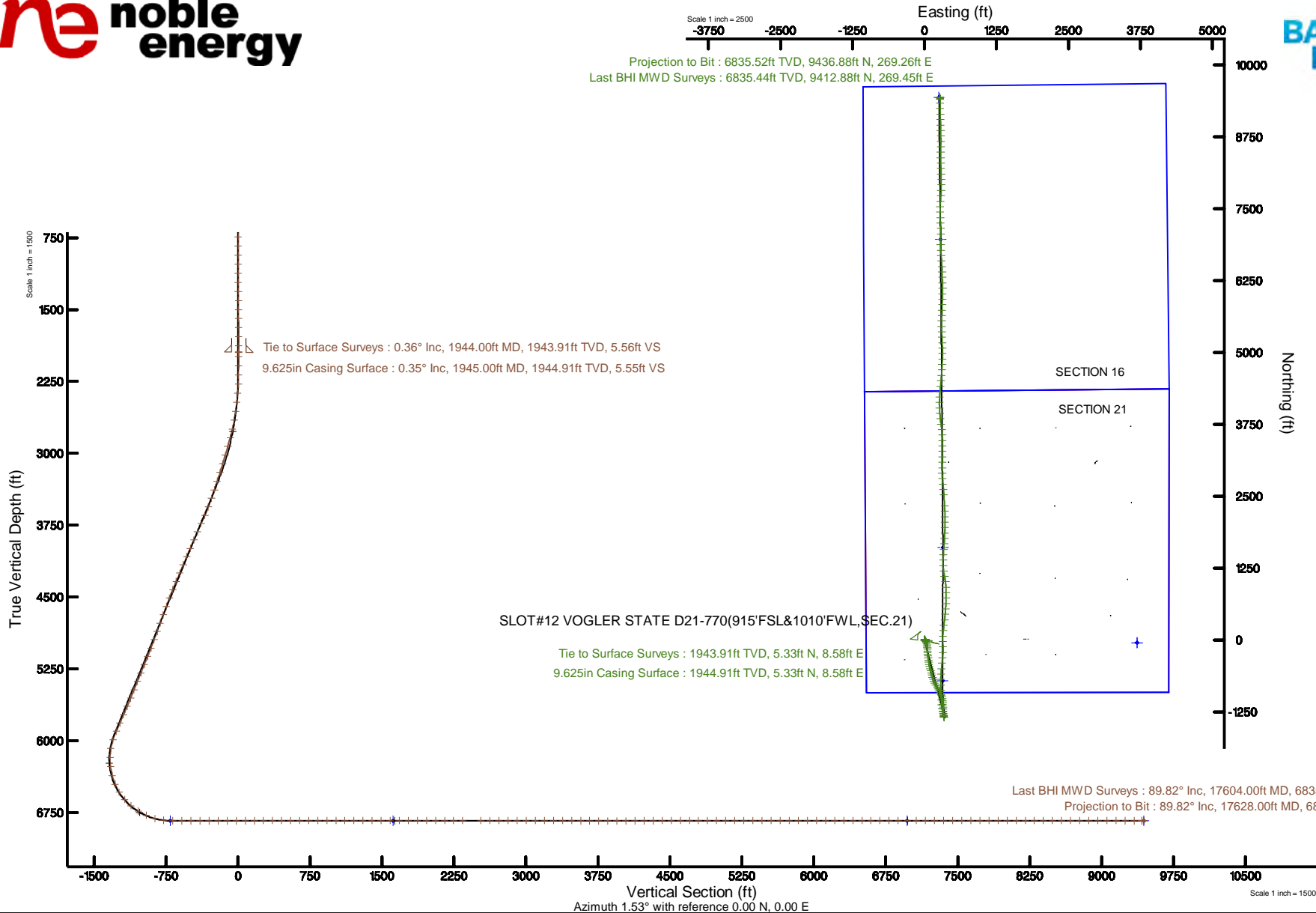
Plot reference wellpath is VOGLER STATE D21-770 (REV-A.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to RIG (30KB) (RKB)	North Reference: Grid north
Measured depths are referenced to RIG (30KB) (RKB)	Scale: True distance
RIG (30KB) (RKB) to Mean Sea Level: 4822 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)): 0 feet	Created by: robalei01 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	1319018.482	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#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)	342.50	348.34	3261959.336	1319360.967	40°12'22.464"N	104°33'43.524"W
RIG (30KB) (RKB) to Ground level (At Slot: SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21))					4822ft	
Mean Sea Level to Ground level (At Slot: SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21))					0ft	
RIG (30KB) (RKB) to Mean Sea Level					4822ft	

## Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	17620.20	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		VOGLER STATE D21-770 PWB



### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)
Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWP
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 2:45:46 PM
Convergence at slot	0.61° East	Database/Source file	WA DENVER/VOGLER_STATE_D21-770_AWP.xml

### WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	342.50	348.34	3261959.34	1319360.97	40°12'22.464"N	104°33'43.524"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	4822.00ft
Horizontal Reference Pt	Slot	RIG (30'KB) (RKB) to Mean Sea Level	4822.00ft
Vertical Reference Pt	RIG (30'KB) (RKB)	RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21))	4822.00ft
MD Reference Pt	RIG (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	1.53°

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

WELLPATH DATA (188 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	40.130	0.00	0.00	0.00	0.00	40°12'22.464"N	104°33'43.524"W	0.00	
84.00	0.210	40.130	84.00	0.12	0.12	0.10	40°12'22.465"N	104°33'43.523"W	0.25	
177.00	0.210	31.940	177.00	0.40	0.39	0.30	40°12'22.468"N	104°33'43.520"W	0.03	
269.00	0.100	245.240	269.00	0.51	0.50	0.32	40°12'22.469"N	104°33'43.520"W	0.32	
364.00	0.160	255.840	364.00	0.44	0.43	0.11	40°12'22.468"N	104°33'43.523"W	0.07	
458.00	0.370	59.090	458.00	0.57	0.56	0.24	40°12'22.469"N	104°33'43.521"W	0.56	
553.00	0.640	26.310	552.99	1.21	1.19	0.74	40°12'22.476"N	104°33'43.514"W	0.41	
654.00	0.210	93.960	653.99	1.72	1.68	1.18	40°12'22.481"N	104°33'43.509"W	0.59	
742.00	0.400	106.100	741.99	1.63	1.59	1.63	40°12'22.480"N	104°33'43.503"W	0.23	
837.00	0.420	52.430	836.99	1.77	1.71	2.23	40°12'22.481"N	104°33'43.495"W	0.39	
932.00	0.700	88.120	931.98	2.02	1.94	3.08	40°12'22.483"N	104°33'43.484"W	0.46	
1028.00	0.670	120.300	1027.98	1.79	1.68	4.16	40°12'22.480"N	104°33'43.470"W	0.40	
1121.00	0.940	90.880	1120.97	1.53	1.39	5.39	40°12'22.477"N	104°33'43.454"W	0.52	
1216.00	1.240	63.590	1215.95	2.02	1.84	7.09	40°12'22.481"N	104°33'43.432"W	0.62	
1310.00	0.740	59.320	1309.94	2.82	2.60	8.52	40°12'22.489"N	104°33'43.414"W	0.54	
1405.00	0.500	45.650	1404.93	3.45	3.20	9.34	40°12'22.495"N	104°33'43.403"W	0.30	
1500.00	0.510	19.410	1499.93	4.15	3.89	9.78	40°12'22.501"N	104°33'43.397"W	0.24	
1594.00	0.700	34.540	1593.92	5.03	4.76	10.25	40°12'22.510"N	104°33'43.391"W	0.26	
1689.00	0.480	355.660	1688.92	5.91	5.63	10.54	40°12'22.519"N	104°33'43.387"W	0.47	
1784.00	0.770	264.410	1783.91	6.23	5.97	9.88	40°12'22.522"N	104°33'43.396"W	0.96	
1878.00	0.600	242.970	1877.91	5.91	5.68	8.81	40°12'22.519"N	104°33'43.410"W	0.32	
1944.00	0.360	157.820	1943.91	5.56	5.33	8.58	40°12'22.516"N	104°33'43.413"W	1.02	Tie to Surface Surveys
1994.00	0.110	168.260	1993.91	5.37	5.14	8.65	40°12'22.514"N	104°33'43.412"W	0.51	
2089.00	0.100	193.520	2088.91	5.20	4.97	8.65	40°12'22.512"N	104°33'43.412"W	0.05	
2184.00	0.060	219.870	2183.91	5.08	4.85	8.60	40°12'22.511"N	104°33'43.413"W	0.06	
2279.00	2.640	152.410	2278.87	3.13	2.87	9.58	40°12'22.491"N	104°33'43.400"W	2.76	
2373.00	5.730	152.420	2372.61	-2.86	-3.21	12.76	40°12'22.431"N	104°33'43.360"W	3.29	
2468.00	8.060	152.670	2466.92	-12.84	-13.33	18.01	40°12'22.330"N	104°33'43.294"W	2.45	
2563.00	9.190	152.740	2560.84	-25.32	-25.99	24.54	40°12'22.205"N	104°33'43.211"W	1.19	
2657.00	10.720	158.870	2653.43	-39.97	-40.82	31.13	40°12'22.057"N	104°33'43.128"W	1.98	
2752.00	13.230	166.880	2746.36	-58.64	-59.65	36.79	40°12'21.871"N	104°33'43.058"W	3.16	
2846.00	15.470	165.490	2837.42	-81.10	-82.27	42.37	40°12'21.647"N	104°33'42.989"W	2.41	
2941.00	16.760	173.180	2928.69	-106.83	-108.14	47.17	40°12'21.391"N	104°33'42.931"W	2.62	
3036.00	16.750	177.240	3019.66	-134.04	-135.41	49.46	40°12'21.121"N	104°33'42.905"W	1.23	
3130.00	16.590	179.180	3109.71	-160.95	-162.36	50.30	40°12'20.854"N	104°33'42.898"W	0.62	
3225.00	17.500	179.040	3200.54	-188.78	-190.20	50.74	40°12'20.579"N	104°33'42.896"W	0.96	

WELLPATH DATA (188 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
3320.00	18.290	174.970	3290.95	-217.86	-219.33	52.28	40°12'20.291"N	104°33'42.880"W	1.56	
3415.00	17.680	172.340	3381.31	-246.91	-248.48	55.51	40°12'20.003"N	104°33'42.842"W	1.07	
3509.00	20.060	171.380	3470.25	-276.87	-278.57	59.83	40°12'19.705"N	104°33'42.791"W	2.55	
3604.00	21.610	170.360	3559.03	-310.07	-311.93	65.20	40°12'19.375"N	104°33'42.726"W	1.68	
3699.00	24.070	173.740	3646.58	-346.44	-348.44	70.25	40°12'19.014"N	104°33'42.666"W	2.93	
3793.00	24.210	173.660	3732.36	-384.52	-386.65	74.47	40°12'18.636"N	104°33'42.617"W	0.15	
3888.00	24.240	169.820	3819.00	-422.91	-425.21	80.06	40°12'18.254"N	104°33'42.550"W	1.66	
3982.00	24.260	166.380	3904.71	-460.45	-462.97	88.02	40°12'17.880"N	104°33'42.453"W	1.50	
4077.00	24.130	164.780	3991.37	-497.88	-500.68	97.72	40°12'17.506"N	104°33'42.333"W	0.70	

### REFERENCE WELLPATH IDENTIFICATION

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Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

### WELLPATH DATA (188 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4172.00	24.020	164.070	4078.10	-534.92	-538.01	108.12	40°12'17.136"N	104°33'42.204"W	0.33	
4266.00	24.200	162.830	4163.90	-571.42	-574.81	119.06	40°12'16.772"N	104°33'42.068"W	0.57	
4361.00	24.020	164.240	4250.62	-608.32	-612.02	130.06	40°12'16.403"N	104°33'41.931"W	0.64	
4455.00	24.090	163.280	4336.45	-644.81	-648.81	140.77	40°12'16.038"N	104°33'41.798"W	0.42	
4550.00	23.170	160.620	4423.49	-680.68	-685.01	152.55	40°12'15.679"N	104°33'41.651"W	1.48	
4645.00	23.260	157.910	4510.80	-715.33	-720.02	165.81	40°12'15.332"N	104°33'41.485"W	1.13	
4740.00	22.290	153.470	4598.40	-748.41	-753.52	180.91	40°12'14.999"N	104°33'41.295"W	2.08	
4834.00	23.050	150.020	4685.14	-779.84	-785.42	198.07	40°12'14.682"N	104°33'41.078"W	1.63	
4929.00	23.310	149.510	4772.47	-811.63	-817.72	216.90	40°12'14.361"N	104°33'40.840"W	0.35	
5023.00	23.170	150.250	4858.84	-843.20	-849.80	235.52	40°12'14.042"N	104°33'40.605"W	0.34	
5118.00	23.510	150.080	4946.07	-875.34	-882.45	254.24	40°12'13.718"N	104°33'40.368"W	0.36	
5212.00	23.470	153.980	5032.29	-907.93	-915.53	271.81	40°12'13.389"N	104°33'40.146"W	1.65	
5307.00	23.350	157.920	5119.47	-941.95	-949.97	287.18	40°12'13.047"N	104°33'39.952"W	1.65	
5401.00	23.480	162.080	5205.74	-976.68	-985.06	299.95	40°12'12.699"N	104°33'39.793"W	1.76	
5496.00	23.200	167.620	5292.97	-1012.69	-1021.35	309.78	40°12'12.339"N	104°33'39.671"W	2.33	
5590.00	23.010	172.540	5379.44	-1048.81	-1057.65	316.14	40°12'11.980"N	104°33'39.594"W	2.06	
5685.00	21.730	174.990	5467.29	-1084.63	-1093.58	320.09	40°12'11.624"N	104°33'39.548"W	1.67	
5779.00	22.250	177.280	5554.45	-1119.66	-1128.69	322.45	40°12'11.277"N	104°33'39.522"W	1.07	
5874.00	23.660	176.470	5641.93	-1156.59	-1165.69	324.48	40°12'10.911"N	104°33'39.501"W	1.52	
5969.00	23.660	177.900	5728.94	-1194.60	-1203.76	326.35	40°12'10.535"N	104°33'39.482"W	0.60	
6064.00	23.620	176.210	5815.97	-1232.57	-1241.80	328.31	40°12'10.159"N	104°33'39.462"W	0.71	
6158.00	23.730	174.920	5902.06	-1270.11	-1279.43	331.23	40°12'09.787"N	104°33'39.430"W	0.56	
6253.00	17.940	171.820	5990.82	-1303.55	-1312.99	335.00	40°12'09.455"N	104°33'39.386"W	6.20	
6347.00	10.200	170.130	6081.93	-1326.01	-1335.55	338.50	40°12'09.231"N	104°33'39.344"W	8.24	
6442.00	0.720	152.930	6176.39	-1334.80	-1344.39	340.21	40°12'09.144"N	104°33'39.323"W	10.02	
6537.00	7.770	344.530	6271.12	-1329.18	-1338.72	338.77	40°12'09.200"N	104°33'39.341"W	8.92	
6632.00	15.300	346.770	6364.14	-1310.89	-1320.30	334.18	40°12'09.383"N	104°33'39.397"W	7.94	
6726.00	23.310	345.230	6452.78	-1281.00	-1290.20	326.59	40°12'09.681"N	104°33'39.491"W	8.54	
6821.00	32.400	347.150	6536.69	-1238.21	-1247.12	316.11	40°12'10.108"N	104°33'39.620"W	9.61	
6916.00	41.150	351.170	6612.72	-1182.70	-1191.30	305.63	40°12'10.660"N	104°33'39.748"W	9.55	
7010.00	49.620	355.770	6678.70	-1116.51	-1124.89	298.23	40°12'11.317"N	104°33'39.834"W	9.66	
7105.00	57.870	358.530	6734.84	-1040.20	-1048.46	294.52	40°12'12.073"N	104°33'39.871"W	8.99	
7200.00	65.830	357.440	6779.62	-956.67	-964.81	291.55	40°12'12.900"N	104°33'39.898"W	8.44	
7295.00	73.940	357.120	6812.26	-867.78	-875.78	287.31	40°12'13.780"N	104°33'39.941"W	8.54	
7389.00	83.890	358.880	6830.31	-775.83	-783.71	284.12	40°12'14.690"N	104°33'39.969"W	10.74	
7484.00	89.910	1.360	6835.45	-681.05	-688.90	284.33	40°12'15.627"N	104°33'39.954"W	6.85	

WELLPATH DATA (188 stations)										
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7579.00	90.030	3.330	6835.50	-586.06	-593.99	288.21	40°12'16.564"N	104°33'39.891"W	2.08	
7674.00	90.000	5.180	6835.48	-491.18	-499.25	295.26	40°12'17.500"N	104°33'39.787"W	1.95	
7768.00	90.150	5.780	6835.35	-397.40	-405.68	304.24	40°12'18.423"N	104°33'39.658"W	0.66	
7863.00	90.000	5.700	6835.23	-302.65	-311.16	313.74	40°12'19.356"N	104°33'39.523"W	0.18	
7958.00	90.000	2.180	6835.23	-207.75	-216.40	320.27	40°12'20.292"N	104°33'39.426"W	3.71	
8052.00	90.000	358.230	6835.23	-113.80	-122.42	320.60	40°12'21.221"N	104°33'39.409"W	4.20	
8147.00	90.000	358.800	6835.23	-18.93	-27.45	318.14	40°12'22.159"N	104°33'39.428"W	0.60	
8242.00	90.120	1.720	6835.13	76.04	67.54	318.57	40°12'23.098"N	104°33'39.409"W	3.08	
8337.00	90.060	6.400	6834.98	170.92	162.27	325.30	40°12'24.033"N	104°33'39.310"W	4.93	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)
Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

### WELLPATH DATA (188 stations)

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8431.00	90.150	8.250	6834.81	264.43	255.50	337.28	40°12'24.953"N	104°33'39.142"W	1.97	
8526.00	90.000	6.880	6834.68	358.91	349.67	349.79	40°12'25.883"N	104°33'38.968"W	1.45	
8621.00	90.030	4.800	6834.66	453.63	444.17	359.45	40°12'26.815"N	104°33'38.831"W	2.19	
8715.00	90.000	4.700	6834.63	547.48	537.85	367.24	40°12'27.740"N	104°33'38.718"W	0.11	
8810.00	90.060	2.960	6834.58	642.40	632.64	373.58	40°12'28.676"N	104°33'38.623"W	1.83	
8905.00	90.000	0.640	6834.53	737.40	727.58	376.57	40°12'29.614"N	104°33'38.572"W	2.44	
9000.00	90.090	358.900	6834.46	832.35	822.58	376.18	40°12'30.553"N	104°33'38.564"W	1.83	
9094.00	90.030	357.630	6834.36	926.19	916.53	373.34	40°12'31.482"N	104°33'38.587"W	1.35	
9189.00	90.030	351.870	6834.31	1020.49	1011.09	364.65	40°12'32.417"N	104°33'38.686"W	6.06	
9284.00	90.000	347.930	6834.29	1113.52	1104.60	347.99	40°12'33.343"N	104°33'38.888"W	4.15	
9378.00	89.940	353.610	6834.34	1205.83	1197.35	332.92	40°12'34.261"N	104°33'39.070"W	6.04	
9473.00	90.060	358.140	6834.34	1300.34	1292.08	326.09	40°12'35.197"N	104°33'39.145"W	4.77	
9568.00	90.150	0.880	6834.16	1395.27	1387.06	325.28	40°12'36.136"N	104°33'39.143"W	2.89	
9663.00	90.030	3.640	6834.01	1490.25	1481.98	329.02	40°12'37.074"N	104°33'39.081"W	2.91	
9757.00	90.090	4.700	6833.91	1584.15	1575.73	335.86	40°12'37.999"N	104°33'38.980"W	1.13	
9852.00	90.090	3.810	6833.76	1679.04	1670.47	342.91	40°12'38.935"N	104°33'38.877"W	0.94	
9947.00	90.060	2.920	6833.64	1773.99	1765.30	348.48	40°12'39.871"N	104°33'38.792"W	0.94	
10041.00	90.000	1.920	6833.59	1867.98	1859.22	352.45	40°12'40.799"N	104°33'38.728"W	1.07	
10136.00	90.030	0.660	6833.57	1962.98	1954.19	354.59	40°12'41.737"N	104°33'38.687"W	1.33	
10231.00	90.090	359.680	6833.47	2057.95	2049.19	354.87	40°12'42.676"N	104°33'38.671"W	1.03	
10326.00	90.120	359.560	6833.29	2152.90	2144.19	354.24	40°12'43.615"N	104°33'38.666"W	0.13	
10420.00	90.060	358.760	6833.14	2246.82	2238.18	352.86	40°12'44.543"N	104°33'38.671"W	0.85	
10515.00	90.120	357.190	6833.00	2341.63	2333.12	349.51	40°12'45.482"N	104°33'38.701"W	1.65	
10705.00	89.940	355.420	6832.90	2530.83	2522.71	337.26	40°12'47.357"N	104°33'38.833"W	0.94	
10799.00	90.060	356.000	6832.90	2624.35	2616.45	330.23	40°12'48.284"N	104°33'38.911"W	0.63	
10894.00	90.120	353.540	6832.75	2718.68	2711.05	321.57	40°12'49.219"N	104°33'39.010"W	2.59	
10989.00	89.880	354.970	6832.75	2812.91	2805.57	312.06	40°12'50.154"N	104°33'39.119"W	1.53	
11084.00	89.780	358.970	6833.03	2907.59	2900.41	307.04	40°12'51.092"N	104°33'39.171"W	4.21	
11179.00	89.820	2.310	6833.36	3002.56	2995.39	308.10	40°12'52.030"N	104°33'39.144"W	3.52	
11274.00	89.880	1.590	6833.61	3097.56	3090.34	311.34	40°12'52.968"N	104°33'39.090"W	0.76	
11369.00	89.750	0.820	6833.92	3192.56	3185.32	313.33	40°12'53.907"N	104°33'39.051"W	0.82	
11464.00	89.970	0.150	6834.15	3287.54	3280.31	314.14	40°12'54.845"N	104°33'39.028"W	0.74	
11558.00	89.820	0.080	6834.32	3381.51	3374.31	314.33	40°12'55.774"N	104°33'39.012"W	0.18	
11653.00	89.690	358.620	6834.73	3476.44	3469.30	313.25	40°12'56.713"N	104°33'39.013"W	1.54	
11748.00	89.690	356.850	6835.24	3571.23	3564.22	309.50	40°12'57.651"N	104°33'39.049"W	1.86	
11842.00	89.940	352.580	6835.54	3664.54	3657.80	300.84	40°12'58.577"N	104°33'39.148"W	4.55	

WELLPATH DATA (188 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11937.00	90.000	353.190	6835.59	3758.46	3752.07	289.07	40°12'59.509"N	104°33'39.286"W	0.65	
12032.00	89.910	353.020	6835.67	3852.43	3846.38	277.67	40°13'00.443"N	104°33'39.421"W	0.20	
12127.00	90.030	355.360	6835.72	3946.65	3940.89	268.05	40°13'01.377"N	104°33'39.532"W	2.47	
12221.00	90.090	357.690	6835.62	4040.28	4034.71	262.35	40°13'02.305"N	104°33'39.592"W	2.48	
12316.00	90.220	0.600	6835.36	4135.19	4129.69	260.94	40°13'03.244"N	104°33'39.597"W	3.07	
12411.00	90.120	3.270	6835.08	4230.18	4224.62	264.14	40°13'04.182"N	104°33'39.543"W	2.81	
12506.00	90.090	4.330	6834.91	4325.10	4319.41	270.44	40°13'05.118"N	104°33'39.449"W	1.12	
12600.00	90.250	6.120	6834.63	4418.90	4413.02	279.00	40°13'06.042"N	104°33'39.326"W	1.91	
12695.00	90.150	4.960	6834.30	4513.67	4507.57	288.17	40°13'06.975"N	104°33'39.195"W	1.23	



### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)
Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

### WELLPATH DATA (188 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12790.00	90.280	3.340	6833.94	4608.56	4602.32	295.05	40°13'07.911"N	104°33'39.093"W	1.71	
12885.00	90.280	4.050	6833.48	4703.50	4697.12	301.17	40°13'08.847"N	104°33'39.001"W	0.75	
12979.00	90.180	3.570	6833.10	4797.42	4790.91	307.41	40°13'09.773"N	104°33'38.908"W	0.52	
13074.00	90.060	0.860	6832.90	4892.40	4885.83	311.09	40°13'10.710"N	104°33'38.848"W	2.86	
13169.00	89.910	0.300	6832.92	4987.39	4980.83	312.05	40°13'11.649"N	104°33'38.822"W	0.61	
13263.00	89.820	359.370	6833.15	5081.35	5074.82	311.78	40°13'12.578"N	104°33'38.813"W	0.99	
13358.00	89.780	357.590	6833.48	5176.21	5169.79	309.26	40°13'13.516"N	104°33'38.833"W	1.87	
13453.00	89.750	356.920	6833.87	5270.94	5264.68	304.71	40°13'14.455"N	104°33'38.878"W	0.71	
13547.00	89.850	358.040	6834.19	5364.71	5358.58	300.57	40°13'15.383"N	104°33'38.919"W	1.20	
13642.00	89.820	358.900	6834.47	5459.57	5453.55	298.04	40°13'16.322"N	104°33'38.939"W	0.91	
13737.00	90.030	1.660	6834.59	5554.54	5548.54	298.50	40°13'17.260"N	104°33'38.920"W	2.91	
13831.00	90.150	3.340	6834.45	5648.52	5642.44	302.60	40°13'18.188"N	104°33'38.854"W	1.79	
13926.00	90.090	1.070	6834.25	5743.51	5737.37	306.26	40°13'19.125"N	104°33'38.794"W	2.39	
14021.00	90.090	1.770	6834.10	5838.51	5832.34	308.61	40°13'20.063"N	104°33'38.751"W	0.74	
14116.00	90.060	2.250	6833.97	5933.50	5927.28	311.94	40°13'21.001"N	104°33'38.695"W	0.51	
14210.00	89.910	0.820	6834.00	6027.50	6021.24	314.46	40°13'21.929"N	104°33'38.649"W	1.53	
14305.00	90.060	359.650	6834.02	6122.47	6116.24	314.85	40°13'22.868"N	104°33'38.631"W	1.24	
14400.00	89.940	358.400	6834.02	6217.38	6211.22	313.23	40°13'23.807"N	104°33'38.639"W	1.32	
14495.00	90.030	357.690	6834.05	6312.20	6306.17	309.99	40°13'24.745"N	104°33'38.668"W	0.75	
14589.00	90.030	358.240	6834.00	6406.02	6400.11	306.66	40°13'25.674"N	104°33'38.698"W	0.59	
14684.00	89.940	357.170	6834.02	6500.81	6495.03	302.85	40°13'26.612"N	104°33'38.734"W	1.13	
14779.00	90.030	356.370	6834.05	6595.48	6589.88	297.50	40°13'27.550"N	104°33'38.790"W	0.85	
14874.00	89.970	354.810	6834.05	6689.97	6684.59	290.19	40°13'28.487"N	104°33'38.872"W	1.64	
14968.00	90.030	356.680	6834.05	6783.48	6778.33	283.22	40°13'29.414"N	104°33'38.949"W	1.99	
15063.00	90.090	1.800	6833.95	6878.37	6873.29	281.96	40°13'30.352"N	104°33'38.952"W	5.39	
15158.00	90.030	1.710	6833.85	6973.37	6968.25	284.87	40°13'31.290"N	104°33'38.901"W	0.11	
15253.00	90.030	359.670	6833.80	7068.36	7063.24	286.01	40°13'32.229"N	104°33'38.874"W	2.15	
15348.00	89.940	357.480	6833.82	7163.23	7158.20	283.65	40°13'33.167"N	104°33'38.891"W	2.31	
15442.00	90.000	357.380	6833.87	7256.99	7252.11	279.44	40°13'34.096"N	104°33'38.933"W	0.12	
15537.00	89.940	356.930	6833.92	7351.71	7346.99	274.72	40°13'35.034"N	104°33'38.981"W	0.48	
15632.00	90.060	358.820	6833.92	7446.51	7441.92	271.20	40°13'35.972"N	104°33'39.013"W	1.99	
15726.00	89.940	2.820	6833.92	7540.48	7535.89	272.54	40°13'36.901"N	104°33'38.983"W	4.26	
15821.00	90.180	5.100	6833.82	7635.39	7630.66	279.10	40°13'37.836"N	104°33'38.885"W	2.41	
15916.00	89.940	3.230	6833.72	7730.29	7725.40	286.00	40°13'38.772"N	104°33'38.783"W	1.98	
16011.00	90.030	1.350	6833.75	7825.28	7820.32	289.80	40°13'39.709"N	104°33'38.722"W	1.98	
16106.00	90.000	0.660	6833.72	7920.27	7915.31	291.47	40°13'40.648"N	104°33'38.687"W	0.73	

WELLPATH DATA (188 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16200.00	90.060	359.680	6833.67	8014.24	8009.30	291.74	40°13'41.577"N	104°33'38.671"W	1.04	
16295.00	90.150	358.300	6833.50	8109.15	8104.29	290.07	40°13'42.515"N	104°33'38.679"W	1.46	
16390.00	90.030	358.060	6833.35	8203.98	8199.24	287.05	40°13'43.454"N	104°33'38.705"W	0.28	
16484.00	90.150	358.360	6833.20	8297.83	8293.19	284.12	40°13'44.383"N	104°33'38.730"W	0.34	
16579.00	90.030	359.240	6833.05	8392.72	8388.17	282.13	40°13'45.321"N	104°33'38.743"W	0.93	
16674.00	90.030	359.830	6833.00	8487.66	8483.17	281.36	40°13'46.260"N	104°33'38.740"W	0.62	
16769.00	89.780	2.700	6833.16	8582.65	8578.13	283.45	40°13'47.198"N	104°33'38.700"W	3.03	
16863.00	89.910	0.550	6833.42	8676.64	8672.09	286.12	40°13'48.126"N	104°33'38.653"W	2.29	
16958.00	89.780	357.900	6833.67	8771.56	8767.07	284.83	40°13'49.065"N	104°33'38.656"W	2.79	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)
Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

WELLPATH DATA (188 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17053.00	89.820	358.590	6834.00	8866.40	8862.03	281.92	40°13'50.004"N	104°33'38.681"W	0.73	
17148.00	89.850	358.640	6834.28	8961.27	8957.00	279.63	40°13'50.942"N	104°33'38.697"W	0.06	
17242.00	89.820	358.560	6834.55	9055.15	9050.97	277.33	40°13'51.871"N	104°33'38.714"W	0.09	
17337.00	89.850	358.420	6834.82	9150.02	9145.94	274.83	40°13'52.810"N	104°33'38.734"W	0.15	
17432.00	89.910	358.570	6835.02	9244.88	9240.90	272.33	40°13'53.749"N	104°33'38.753"W	0.17	
17526.00	89.850	359.070	6835.22	9338.78	9334.88	270.40	40°13'54.677"N	104°33'38.765"W	0.54	
17604.00	89.820	359.540	6835.44	9416.72	9412.88	269.45	40°13'55.448"N	104°33'38.766"W	0.60	Last BHI MWD Surveys
17628.00	89.820	359.540	6835.52	9440.70	9436.88	269.26	40°13'55.685"N	104°33'38.766"W	0.00	Projection to Bit

HOLE & CASING SECTIONS - Ref Wellbore: VOGLER STATE D21-770 AWB Ref Wellpath: VOGLER STATE D21-770 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	1945.00	1915.00	30.00	1944.91	0.02	0.01	5.33	8.58	

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
VOLGER STATE D21-790 Seciton 16	-28.00	-48.10	3693.32	3265652.49	1319312.87	40°12'21.600"N	104°32'55.932"W	polygon
VOLGER STATE D21-790 Seciton 21	-28.00	-48.10	3693.32	3265652.49	1319312.87	40°12'21.600"N	104°32'55.932"W	polygon
VOGLER STATE D21-770 BHL from plan (200'FNL&1320'FWL,SEC.16)	6835.00	9437.42	252.58	3262211.90	1328797.96	40°13'55.692"N	104°33'38.981"W	point
VOGLER STATE D21-770 Landing Point	6835.00	-714.75	314.89	3262274.21	1318646.25	40°12'15.368"N	104°33'39.563"W	point
VOGLER STATE D21-770 Target 1	6835.00	1606.36	321.04	3262280.36	1320967.25	40°12'38.304"N	104°33'39.167"W	point
VOGLER STATE D21-770 Target 2	6835.00	6965.23	280.47	3262239.79	1326325.88	40°13'31.261"N	104°33'38.959"W	point

WELLPATH COMPOSITION - Ref Wellbore: VOGLER STATE D21-770 AWB      Ref Wellpath: VOGLER STATE D21-770 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1944.00	Gyrodata standard - Drop gyro or Multi-shot	Third Party Surface Gyros <84'-1944'>	VOGLER STATE D21-770 AWB
1944.00	17604.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BH/ATC 8.5" Hole OWSG MWD rev2+IFR1+MSA <1994'-17604'>	VOGLER STATE D21-770 AWB
17604.00	17628.00	Blind Drilling (std)	Projection to bit	VOGLER STATE D21-770 AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#12 VOGLER STATE D21-770(915'FSL&1010'FWL,SEC.21)
Area	COLORADO	Well	VOGLER STATE D21-770
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	VOGLER STATE D21-770 AWB
Facility	SEC.21-T03N-R64W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1944.00	0.360	157.820	1943.91	Tie to Surface Surveys
17604.00	89.820	359.540	6835.44	Last BHI MWD Surveys
17628.00	89.820	359.540	6835.52	Projection to Bit