



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	VOGLER STATE D33-779
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API/Legal	
Facility	SEC.21-T03N-R64W	Wellbore	VOGLER STATE D33-779 AWP
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Manajohj
Scale	0.999957	Report Generated	2/25/2020 at 9:45:35 AM
Convergence at slot	0.61° East	Database	WA_NOBLE

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	491.46	309.06	3261920.05	1319509.92	40°12'23.9400"N	104°33'44.0100"W
Facility Reference Pt			3261611.01	1319018.48	40°12'19.1160"N	104°33'48.0600"W
Field Reference Pt			3000000.00	4454105.15	48°46'34.3150"N	105°30'0.0000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P 321 (4796'GL+30'KB@4826') (RKB) to Facility Vertical Datum	4826.00ft
Horizontal Reference Pt	Slot	H&P 321 (4796'GL+30'KB@4826') (RKB) to Mean Sea Level	4826.00ft
Vertical Reference Pt	H&P 321 (4796'GL+30'KB@4826') (RKB)	H&P 321 (4796'GL+30'KB@4826') (RKB) to Ground Level at Slot (SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21))	4826.00ft
MD Reference Pt	H&P 321 (4796'GL+30'KB@4826') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	181.06°

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Facility	SEC.21-T03N-R64W			Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)				

WELLPATH DATA (188 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Tooface [°]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
0.00	0.000	34.910	0.00	-4826.00	0.00	0.00	0.00	40°12'23.9400"N	104°33'44.0100"W	0.00	0.00	0.00	0.00	
77.00	0.440	34.910	77.00	-4749.00	-0.25	0.24	0.17	40°12'23.9424"N	104°33'44.0078"W	0.57	-24.10	0.57	0.00	FIRST 3RD PARTY GYRO SURVEY
175.00	0.490	32.320	175.00	-4651.00	-0.92	0.91	0.61	40°12'23.9489"N	104°33'44.0020"W	0.06	100.72	0.05	-2.64	
266.00	0.500	58.700	265.99	-4560.01	-1.46	1.44	1.16	40°12'23.9541"N	104°33'43.9949"W	0.25	156.27	0.01	28.99	
361.00	0.260	85.680	360.99	-4465.01	-1.70	1.67	1.73	40°12'23.9563"N	104°33'43.9875"W	0.31	-80.72	-0.25	28.40	
455.00	0.280	71.370	454.99	-4371.01	-1.80	1.76	2.16	40°12'23.9572"N	104°33'43.9820"W	0.07	46.72	0.02	-15.22	
550.00	0.350	82.470	549.99	-4276.01	-1.92	1.87	2.66	40°12'23.9582"N	104°33'43.9754"W	0.10	-147.25	0.07	11.68	
645.00	0.290	74.460	644.99	-4181.01	-2.03	1.98	3.18	40°12'23.9592"N	104°33'43.9687"W	0.08	121.56	-0.06	-8.43	
739.00	0.250	114.720	738.99	-4087.01	-2.02	1.95	3.60	40°12'23.9589"N	104°33'43.9634"W	0.20	-116.88	-0.04	42.83	
833.00	0.500	24.330	832.98	-3993.02	-2.31	2.24	3.95	40°12'23.9617"N	104°33'43.9587"W	0.60	100.14	0.27	-96.16	
928.00	0.500	44.610	927.98	-3898.02	-3.00	2.91	4.41	40°12'23.9683"N	104°33'43.9527"W	0.19	37.04	0.00	21.35	
1022.00	0.540	47.750	1021.98	-3804.02	-3.60	3.50	5.03	40°12'23.9741"N	104°33'43.9447"W	0.05	92.18	0.04	3.34	
1117.00	0.570	68.720	1116.97	-3709.03	-4.08	3.98	5.80	40°12'23.9787"N	104°33'43.9347"W	0.21	144.63	0.03	22.07	
1211.00	0.330	122.150	1210.97	-3615.03	-4.12	4.00	6.47	40°12'23.9789"N	104°33'43.9261"W	0.49	-119.59	-0.26	56.84	
1306.00	0.290	100.860	1305.97	-3520.03	-3.94	3.81	6.94	40°12'23.9769"N	104°33'43.9201"W	0.13	99.57	-0.04	-22.41	
1400.00	0.400	154.800	1399.97	-3426.03	-3.60	3.47	7.31	40°12'23.9735"N	104°33'43.9153"W	0.35	-133.43	0.12	57.38	
1494.00	0.450	61.580	1493.97	-3332.03	-3.49	3.35	7.77	40°12'23.9723"N	104°33'43.9094"W	0.66	-112.72	0.05	-99.17	
1589.00	0.430	23.730	1588.96	-3237.04	-4.00	3.85	8.24	40°12'23.9772"N	104°33'43.9032"W	0.30	-142.91	-0.02	-39.84	
1683.00	0.360	286.900	1682.96	-3143.04	-4.41	4.26	8.10	40°12'23.9813"N	104°33'43.9050"W	0.63	117.55	-0.07	-103.01	
1778.00	0.390	349.530	1777.96	-3048.04	-4.81	4.67	7.76	40°12'23.9853"N	104°33'43.9094"W	0.41	152.54	0.03	65.93	
1873.00	0.250	96.070	1872.96	-2953.04	-5.11	4.96	7.91	40°12'23.9882"N	104°33'43.9074"W	0.55	82.80	-0.15	112.15	
1932.00	0.600	154.450	1931.96	-2894.04	-4.82	4.67	8.17	40°12'23.9853"N	104°33'43.9041"W	0.87	30.07	0.59	98.95	TIE ON TO 3RD PARTY GYRO SURVEYS
1992.00	0.990	166.840	1991.95	-2834.05	-4.04	3.88	8.42	40°12'23.9775"N	104°33'43.9009"W	0.71	30.27	0.65	20.65	FIRST BH MWD SURVEY
2087.00	2.700	186.460	2086.90	-2739.10	-1.01	0.86	8.36	40°12'23.9476"N	104°33'43.9022"W	1.89	10.41	1.80	20.65	
2181.00	3.880	189.650	2180.74	-2645.26	4.34	-4.48	7.57	40°12'23.8950"N	104°33'43.9130"W	1.27	5.29	1.26	3.39	
2276.00	6.380	191.730	2275.35	-2550.65	12.70	-12.81	5.96	40°12'23.8127"N	104°33'43.9349"W	2.64	88.86	2.63	2.19	
2370.00	6.390	194.000	2368.77	-2457.23	22.93	-23.00	3.63	40°12'23.7123"N	104°33'43.9663"W	0.27	3.98	0.01	2.41	
2465.00	10.230	195.500	2462.76	-2363.24	36.26	-36.27	0.10	40°12'23.5816"N	104°33'44.0137"W	4.05	-102.71	4.04	1.58	
2559.00	10.210	194.990	2555.27	-2270.73	52.43	-52.36	-4.29	40°12'23.4231"N	104°33'44.0724"W	0.10	-170.69	-0.02	-0.54	
2654.00	8.450	193.020	2649.01	-2176.99	67.43	-67.29	-8.04	40°12'23.2759"N	104°33'44.1227"W	1.88	35.07	-1.85	-2.07	
2748.00	9.280	196.560	2741.88	-2084.12	81.49	-81.29	-11.75	40°12'23.1380"N	104°33'44.1725"W	1.06	120.83	0.88	3.77	
2843.00	8.890	201.090	2835.69	-1990.31	95.77	-95.48	-16.58	40°12'22.9983"N	104°33'44.2367"W	0.86	-179.84	-0.41	4.77	
2937.00	7.880	201.070	2928.69	-1897.31	108.65	-108.27	-21.51	40°12'22.8724"N	104°33'44.3019"W	1.07	13.22	-1.07	-0.02	
3032.00	8.700	202.340	3022.69	-1803.31	121.46	-120.99	-26.58	40°12'22.7472"N	104°33'44.3690"W	0.88	-168.90	0.86	1.34	
3127.00	7.040	199.670	3116.79	-1709.21	133.68	-133.12	-31.27	40°12'22.6279"N	104°33'44.4311"W	1.79	48.87	-1.75	-2.81	
3221.00	7.600	204.310	3210.03	-1615.97	144.85	-144.21	-35.77	40°12'22.5187"N	104°33'44.4906"W	0.87	91.54	0.60	4.94	
3316.00	7.650	212.640	3304.19	-1521.81	156.01	-155.26	-41.77	40°12'22.4102"N	104°33'44.5694"W	1.16	-38.00	0.05	8.77	
3411.00	9.030	206.050	3398.19	-1427.81	168.15	-167.28	-48.45	40°12'22.2921"N	104°33'44.6572"W	1.76	-72.23	1.45	-6.94	
3505.00	9.550	197.990	3490.96	-1335.04	182.30	-181.33	-54.10	40°12'22.1539"N	104°33'44.7319"W	1.49	36.94	0.55	-8.57	
3600.00	9.740	198.830	3584.61	-1241.39	197.49	-196.43	-59.13	40°12'22.0052"N	104°33'44.7988"W	0.25	-90.57	0.20	0.88	
3694.00	9.740	197.670	3677.26	-1148.74	212.68	-211.53	-64.11	40°12'21.8565"N	104°33'44.8650"W	0.21	99.03	0.00	-1.23	
3789.00	9.650	202.130	3770.90	-1055.10	227.81	-226.56	-69.54	40°12'21.7085"N	104°33'44.9372"W	0.80	-64.56	-0.09	4.69	
3883.00	10.540	193.280	3863.45	-962.55	243.57	-242.23	-74.49	40°12'21.5542"N	104°33'45.0030"W	1.90	-136.37	0.95	-9.41	
3978.00	9.800	188.980	3956.96	-869.04	260.07	-258.67	-77.75	40°12'21.3921"N	104°33'45.0472"W	1.12	144.40	-0.78	-4.53	
4072.00	9.000	192.730	4049.70	-776.30	275.19	-273.75	-80.61	40°12'21.2434"N	104°33'45.0862"W	1.07	49.12	-0.85	3.99	

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	API/Legal	
Facility	SEC.21-T03N-R64W	Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)		

WELLPATH DATA (188 stations)															
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Toolface [°]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments	
4167.00	9.600	196.730	4143.45	-682.55	290.10	-288.58	-84.53	40°12'21.0972"N	104°33'45.1388"W	0.93	104.16	0.63	4.21		
4262.00	9.400	202.890	4237.15	-588.85	304.92	-303.32	-89.83	40°12'20.9522"N	104°33'45.2090"W	1.09	57.96	-0.21	6.48		
4356.00	9.760	206.140	4329.84	-496.16	319.27	-317.54	-96.33	40°12'20.8123"N	104°33'45.2947"W	0.69	93.17	0.38	3.46		
4450.00	9.750	211.210	4422.48	-403.52	333.37	-331.50	-103.96	40°12'20.6752"N	104°33'45.3950"W	0.91	-74.50	-0.01	5.39		
4545.00	10.240	203.220	4516.05	-309.95	348.14	-346.14	-111.46	40°12'20.5313"N	104°33'45.4936"W	1.55	-153.47	0.52	-8.41		
4639.00	9.710	201.640	4608.63	-217.37	363.30	-361.19	-117.68	40°12'20.3832"N	104°33'45.5758"W	0.63	81.95	-0.56	-1.68		
4734.00	9.740	202.810	4702.26	-123.74	378.27	-376.04	-123.75	40°12'20.2371"N	104°33'45.6561"W	0.21	-66.52	0.03	1.23		
4828.00	9.940	200.270	4794.88	-31.12	393.31	-390.98	-129.64	40°12'20.0901"N	104°33'45.7340"W	0.51	-113.53	0.21	-2.70		
4923.00	9.660	196.090	4888.49	62.49	408.75	-406.33	-134.69	40°12'19.9389"N	104°33'45.8012"W	0.80	-63.88	-0.29	-4.40		
5018.00	10.100	191.360	4982.08	156.08	424.65	-422.16	-138.54	40°12'19.7830"N	104°33'45.8530"W	0.97	-129.45	0.46	-4.98		
5112.00	9.790	189.090	5074.67	248.67	440.67	-438.13	-141.43	40°12'19.6254"N	104°33'45.8924"W	0.53	176.56	-0.33	-2.41		
5207.00	8.240	189.740	5168.50	342.50	455.40	-452.82	-143.85	40°12'19.4806"N	104°33'45.9256"W	1.64	171.51	-1.63	0.68		
5301.00	7.350	190.780	5261.63	435.63	467.98	-465.36	-146.12	40°12'19.3568"N	104°33'45.9565"W	0.96	161.43	-0.95	1.11		
5396.00	7.190	191.210	5355.86	529.86	479.83	-477.16	-148.41	40°12'19.2405"N	104°33'45.9877"W	0.18	5.08	-0.17	0.45		
5491.00	7.290	191.280	5450.11	624.11	491.61	-488.91	-150.74	40°12'19.1247"N	104°33'46.0194"W	0.11	-5.36	0.11	0.07		
5585.00	7.890	190.870	5543.28	717.28	503.84	-501.09	-153.13	40°12'19.0045"N	104°33'46.0517"W	0.64	-42.34	0.64	-0.44		
5680.00	8.040	189.900	5637.37	811.37	516.83	-514.04	-155.50	40°12'18.8768"N	104°33'46.0841"W	0.21	8.36	0.16	-1.02		
5774.00	8.450	190.310	5730.39	904.39	530.14	-527.31	-157.87	40°12'18.7459"N	104°33'46.1164"W	0.44	-6.90	0.44	0.44		
5869.00	9.090	189.820	5824.28	998.28	544.44	-541.57	-160.40	40°12'18.6053"N	104°33'46.1509"W	0.68	9.07	0.67	-0.52		
5963.00	9.680	190.380	5917.02	1091.02	559.58	-556.66	-163.09	40°12'18.4564"N	104°33'46.1876"W	0.64	160.97	0.63	0.60		
6058.00	9.360	191.060	6010.72	1184.72	575.07	-572.10	-166.01	40°12'18.3042"N	104°33'46.2274"W	0.36	-21.04	-0.34	0.72		
6152.00	9.590	190.530	6103.43	1277.43	590.32	-587.30	-168.90	40°12'18.1543"N	104°33'46.2668"W	0.26	57.61	0.24	-0.56		
6247.00	9.650	191.090	6197.10	1371.10	605.97	-602.89	-171.88	40°12'18.0005"N	104°33'46.3073"W	0.12	150.25	0.06	0.59		
6341.00	9.540	191.470	6289.78	1463.78	621.39	-618.26	-174.95	40°12'17.8490"N	104°33'46.3489"W	0.14	2.76	-0.12	0.40		
6436.00	14.560	192.430	6382.66	1556.66	640.85	-637.65	-179.08	40°12'17.6578"N	104°33'46.4049"W	5.29	-9.43	5.28	1.01		
6530.00	22.930	188.890	6471.60	1645.60	670.63	-667.33	-184.47	40°12'17.3651"N	104°33'46.4783"W	8.98	-17.71	8.90	-3.77		
6624.00	30.890	184.010	6555.36	1729.36	712.94	-709.57	-188.99	40°12'16.9482"N	104°33'46.5423"W	8.78	-17.18	8.47	-5.19		
6719.00	38.730	180.180	6633.31	1807.31	767.10	-763.70	-190.79	40°12'16.4135"N	104°33'46.5729"W	8.56	2.75	8.25	-4.03		
6814.00	46.820	180.710	6702.98	1876.98	831.56	-828.16	-191.32	40°12'15.7766"N	104°33'46.5885"W	8.52	1.10	8.52	0.56		
6908.00	54.000	180.880	6762.85	1936.85	903.95	-900.55	-192.33	40°12'15.0614"N	104°33'46.6113"W	7.64	-15.36	7.64	0.18		
7003.00	62.270	178.330	6812.96	1986.96	984.52	-981.15	-191.69	40°12'14.2649"N	104°33'46.6141"W	9.00	-6.01	8.71	-2.68		
7097.00	70.830	177.380	6850.34	2024.34	1070.54	-1067.24	-188.44	40°12'13.4138"N	104°33'46.5840"W	9.15	7.67	9.11	-1.01		
7192.00	78.720	178.460	6875.27	2049.27	1162.00	-1158.77	-185.14	40°12'12.5090"N	104°33'46.5538"W	8.38	6.78	8.31	1.14		
7286.00	86.300	179.360	6887.51	2061.51	1255.06	-1251.88	-183.37	40°12'11.5888"N	104°33'46.5437"W	8.12	16.66	8.06	0.96		
7381.00	89.410	180.290	6891.07	2065.07	1349.96	-1346.80	-183.08	40°12'10.6508"N	104°33'46.5530"W	3.42	21.25	3.27	0.98		
7475.00	90.490	180.710	6891.15	2065.15	1443.95	-1440.80	-183.90	40°12'9.7221"N	104°33'46.5763"W	1.23	96.45	1.15	0.45		
7570.00	90.310	182.300	6890.49	2064.49	1538.95	-1535.76	-186.40	40°12'8.7840"N	104°33'46.6214"W	1.68	149.15	-0.19	1.67		
7664.00	89.540	182.760	6890.61	2064.61	1632.91	-1629.67	-190.55	40°12'7.8565"N	104°33'46.6877"W	0.95	-59.29	-0.82	0.49		
7759.00	90.550	181.060	6890.53	2064.53	1727.90	-1724.61	-193.71	40°12'6.9186"N	104°33'46.7414"W	2.08	20.80	1.06	-1.79		
7854.00	91.050	181.250	6889.21	2063.21	1822.89	-1819.58	-195.63	40°12'5.9804"N	104°33'46.7790"W	0.56	140.00	0.53	0.20		
7948.00	90.180	181.980	6888.20	2062.20	1916.88	-1913.54	-198.28	40°12'5.0522"N	104°33'46.8259"W	1.21	-65.02	-0.93	0.78		
8042.00	90.860	180.520	6887.35	2061.35	2010.87	-2007.51	-200.33	40°12'4.1239"N	104°33'46.8652"W	1.71	128.15	0.72	-1.55		
8137.00	90.090	181.500	6886.56	2060.56	2105.87	-2102.49	-202.00	40°12'3.1855"N	104°33'46.8997"W	1.31	-129.50	-0.81	1.03		
8231.00	89.480	180.760	6886.91	2060.91	2199.86	-2196.47	-203.85	40°12'2.2571"N	104°33'46.9364"W	1.02	-2.45	-0.65	-0.79		
8325.00	90.650	180.710	6886.80	2060.80	2293.86	-2290.46	-205.06	40°12'1.3284"N	104°33'46.9647"W	1.25	-148.43	1.24	-0.05		

REFERENCE WELLPATH IDENTIFICATION				
Operator	NOBLE ENERGY, INC		Well	VOGLER STATE D33-779
Field	WELD COUNTY (NOBLE NAD 83 GRID)		API/Legal	
Facility	SEC.21-T03N-R64W		Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)			

WELLPATH DATA (188 stations)														
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Toolface [°]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
8420.00	88.860	179.610	6887.21	2061.21	2388.84	-2385.45	-205.33	40°12'0.3898"N	104°33'46.9811"W	2.21	-53.31	-1.88	-1.16	
8514.00	90.030	178.040	6888.12	2062.12	2482.76	-2479.42	-203.40	40°11'59.4610"N	104°33'46.9690"W	2.08	-39.32	1.24	-1.67	
8609.00	91.080	177.180	6887.20	2061.20	2577.58	-2574.33	-199.44	40°11'58.5227"N	104°33'46.9309"W	1.43	93.75	1.11	-0.91	
8703.00	90.990	178.550	6885.50	2059.50	2671.42	-2668.25	-195.94	40°11'57.5943"N	104°33'46.8986"W	1.46	-86.93	-0.10	1.46	
8798.00	91.020	177.990	6883.84	2057.84	2766.29	-2763.19	-193.07	40°11'56.6559"N	104°33'46.8745"W	0.59	130.17	0.03	-0.59	
8892.00	90.370	178.760	6882.70	2056.70	2860.18	-2857.15	-190.40	40°11'55.7272"N	104°33'46.8530"W	1.07	-36.03	-0.69	0.82	
8987.00	90.590	178.600	6881.90	2055.90	2955.10	-2952.12	-188.21	40°11'54.7885"N	104°33'46.8377"W	0.29	65.60	0.23	-0.17	
9081.00	91.320	180.210	6880.33	2054.33	3049.04	-3046.10	-187.24	40°11'53.8598"N	104°33'46.8379"W	1.88	178.04	0.78	1.71	
9176.00	90.150	180.250	6879.11	2053.11	3144.02	-3141.09	-187.62	40°11'52.9212"N	104°33'46.8558"W	1.23	-9.62	-1.23	0.04	
9270.00	90.740	180.150	6878.38	2052.38	3238.01	-3235.08	-187.95	40°11'51.9924"N	104°33'46.8728"W	0.64	70.56	0.63	-0.11	
9365.00	90.800	180.320	6877.11	2051.11	3332.99	-3330.07	-188.34	40°11'51.0538"N	104°33'46.8908"W	0.19	-89.99	0.06	0.18	
9460.00	90.800	178.680	6875.78	2049.78	3427.94	-3425.06	-187.51	40°11'50.1151"N	104°33'46.8930"W	1.73	-127.06	0.00	-1.73	
9554.00	90.430	178.190	6874.77	2048.77	3521.84	-3519.02	-184.94	40°11'49.1864"N	104°33'46.8727"W	0.65	146.31	-0.39	-0.52	
9649.00	90.250	178.310	6874.21	2048.21	3616.72	-3613.97	-182.04	40°11'48.2478"N	104°33'46.8483"W	0.23	-94.18	-0.19	0.13	
9743.00	90.220	177.900	6873.82	2047.82	3710.59	-3707.92	-178.93	40°11'47.3192"N	104°33'46.8210"W	0.44	93.48	-0.03	-0.44	
9837.00	90.150	179.050	6873.52	2047.52	3804.50	-3801.88	-176.43	40°11'46.3904"N	104°33'46.8016"W	1.23	80.34	-0.07	1.22	
9932.00	90.310	179.990	6873.14	2047.14	3899.46	-3896.88	-175.63	40°11'45.4516"N	104°33'46.8042"W	1.00	91.30	0.17	0.99	
10027.00	90.280	181.310	6872.65	2046.65	3994.45	-3991.87	-176.71	40°11'44.5131"N	104°33'46.8311"W	1.39	-144.96	-0.03	1.39	
10121.00	88.740	180.230	6873.45	2047.45	4088.44	-4085.85	-177.97	40°11'43.5846"N	104°33'46.8601"W	2.00	3.03	-1.64	-1.15	
10216.00	90.250	180.310	6874.29	2048.29	4183.43	-4180.84	-178.42	40°11'42.6459"N	104°33'46.8788"W	1.59	88.14	1.59	0.08	
10311.00	90.310	182.160	6873.83	2047.83	4278.42	-4275.82	-180.47	40°11'41.7077"N	104°33'46.9182"W	1.95	92.79	0.06	1.95	
10405.00	90.180	184.820	6873.42	2047.42	4372.33	-4369.63	-186.19	40°11'40.7812"N	104°33'47.0047"W	2.83	-95.53	-0.14	2.83	
10500.00	90.060	183.580	6873.23	2047.23	4467.19	-4464.38	-193.15	40°11'39.8458"N	104°33'47.1072"W	1.31	-73.37	-0.13	-1.31	
10595.00	90.520	182.040	6872.74	2046.74	4562.14	-4559.26	-197.81	40°11'38.9087"N	104°33'47.1801"W	1.69	-77.85	0.48	-1.62	
10689.00	90.890	180.320	6871.59	2045.59	4656.13	-4653.23	-199.74	40°11'37.9803"N	104°33'47.2179"W	1.87	103.49	0.39	-1.83	
10784.00	90.400	182.360	6870.52	2044.52	4751.11	-4748.19	-201.96	40°11'37.0422"N	104°33'47.2594"W	2.21	-27.33	-0.52	2.15	
10878.00	91.290	181.900	6869.13	2043.13	4845.09	-4842.11	-205.46	40°11'36.1145"N	104°33'47.3172"W	1.07	-100.80	0.95	-0.49	
10973.00	90.860	179.650	6867.35	2041.35	4940.06	-4937.08	-206.74	40°11'35.1762"N	104°33'47.3467"W	2.41	107.07	-0.45	-2.37	
11067.00	90.310	181.440	6866.39	2040.39	5034.05	-5031.07	-207.64	40°11'34.2476"N	104°33'47.3710"W	1.99	-103.79	-0.59	1.90	
11161.00	89.910	179.810	6866.21	2040.21	5128.04	-5125.06	-208.66	40°11'33.3189"N	104°33'47.3970"W	1.79	-95.11	-0.43	-1.73	
11256.00	89.750	178.020	6866.49	2040.49	5222.97	-5220.04	-206.86	40°11'32.3802"N	104°33'47.3868"W	1.89	80.20	-0.17	-1.88	
11350.00	89.940	179.120	6866.75	2040.75	5316.88	-5314.01	-204.52	40°11'31.4514"N	104°33'47.3693"W	1.19	121.80	0.20	1.17	
11445.00	89.630	179.620	6867.10	2041.10	5411.84	-5409.00	-203.47	40°11'30.5126"N	104°33'47.3688"W	0.62	-55.31	-0.33	0.53	
11539.00	89.720	179.490	6867.63	2041.63	5505.80	-5503.00	-202.74	40°11'29.5837"N	104°33'47.3722"W	0.17	145.18	0.10	-0.14	
11633.00	89.260	179.810	6868.47	2042.47	5599.77	-5596.99	-202.17	40°11'28.6549"N	104°33'47.3776"W	0.60	-96.76	-0.49	0.34	
11728.00	89.170	179.050	6869.77	2043.77	5694.72	-5691.98	-201.22	40°11'27.7162"N	104°33'47.3784"W	0.81	-85.66	-0.09	-0.80	
11822.00	89.230	178.260	6871.09	2045.09	5788.63	-5785.94	-199.02	40°11'26.7874"N	104°33'47.3627"W	0.84	-21.09	0.06	-0.84	
11917.00	90.060	177.940	6871.67	2045.67	5883.50	-5880.88	-195.87	40°11'25.8489"N	104°33'47.3351"W	0.94	55.28	0.87	-0.34	
12011.00	91.390	179.860	6870.48	2044.48	5977.42	-5974.85	-194.06	40°11'24.9202"N	104°33'47.3246"W	2.48	179.51	1.41	2.04	
12106.00	90.220	179.870	6869.15	2043.15	6072.39	-6069.84	-193.84	40°11'23.9815"N	104°33'47.3347"W	1.23	174.29	-1.23	0.01	
12200.00	89.820	179.910	6869.12	2043.12	6166.37	-6163.84	-193.66	40°11'23.0527"N	104°33'47.3451"W	0.43	33.09	-0.43	0.04	
12294.00	90.710	180.490	6868.68	2042.68	6260.36	-6257.84	-193.99	40°11'22.1239"N	104°33'47.3622"W	1.13	-162.96	0.95	0.62	
12388.00	90.090	180.300	6868.03	2042.03	6354.35	-6351.83	-194.63	40°11'21.1951"N	104°33'47.3833"W	0.69	2.05	-0.66	-0.20	
12483.00	90.370	180.310	6867.64	2041.64	6449.34	-6446.83	-195.14	40°11'20.2565"N	104°33'47.4027"W	0.29	-138.01	0.29	0.01	
12577.00	89.970	179.950	6867.37	2041.37	6543.32	-6540.83	-195.35	40°11'19.3276"N	104°33'47.4183"W	0.57	-58.76	-0.43	-0.38	

REFERENCE WELLPATH IDENTIFICATION				
Operator	NOBLE ENERGY, INC		Well	VOGLER STATE D33-779
Field	WELD COUNTY (NOBLE NAD 83 GRID)		API/Legal	
Facility	SEC.21-T03N-R64W		Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)			

WELLPATH DATA (188 stations)														
MD (ft)	Inclination [°]	Azimuth [°]	TVD (ft)	TVDSS (ft)	Vert Sect (ft)	North (ft)	East (ft)	Latitude	Longitude	DLS [°/100ft]	Tooface [°]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
12671.00	90.340	179.340	6867.11	2041.11	6637.29	-6634.83	-194.77	40°11'18.3988"N	104°33'47.4236"W	0.76	-95.49	0.39	-0.65	
12766.00	90.090	176.740	6866.76	2040.76	6732.15	-6729.76	-191.52	40°11'17.4603"N	104°33'47.3946"W	2.75	-110.28	-0.26	-2.74	
12860.00	89.750	175.820	6866.89	2040.89	6825.83	-6823.56	-185.42	40°11'16.5328"N	104°33'47.3288"W	1.04	25.41	-0.36	-0.98	
12954.00	90.950	176.390	6866.31	2040.31	6919.47	-6917.34	-179.04	40°11'15.6055"N	104°33'47.2593"W	1.41	127.73	1.28	0.61	
13049.00	90.060	177.540	6865.47	2039.47	7014.22	-7012.20	-174.01	40°11'14.6626"N	104°33'47.2074"W	1.53	90.00	-0.94	1.21	
13143.00	90.060	178.210	6865.38	2039.38	7108.08	-7106.14	-170.52	40°11'13.7390"N	104°33'47.1753"W	0.71	95.57	0.00	0.71	
13238.00	89.940	179.440	6865.38	2039.38	7203.00	-7201.12	-168.57	40°11'12.8003"N	104°33'47.1632"W	1.30	72.90	-0.13	1.29	
13332.00	90.220	180.350	6865.25	2039.25	7296.98	-7295.11	-168.40	40°11'11.8714"N	104°33'47.1737"W	1.01	-130.07	0.30	0.97	
13427.00	89.690	179.720	6865.32	2039.32	7391.97	-7390.11	-168.46	40°11'10.9327"N	104°33'47.1874"W	0.87	47.64	-0.56	-0.66	
13521.00	90.620	180.740	6865.07	2039.07	7485.95	-7484.11	-168.84	40°11'10.0039"N	104°33'47.2051"W	1.47	105.34	0.99	1.09	
13616.00	90.030	182.890	6864.53	2038.53	7580.94	-7579.06	-171.85	40°11'9.0660"N	104°33'47.2568"W	2.35	153.97	-0.62	2.26	
13710.00	89.600	183.100	6864.83	2038.83	7674.88	-7672.93	-176.76	40°11'8.1390"N	104°33'47.3328"W	0.51	-42.88	-0.46	0.22	
13805.00	89.880	182.840	6865.26	2039.26	7769.83	-7767.80	-181.68	40°11'7.2020"N	104°33'47.4091"W	0.40	-132.46	0.29	-0.27	
13899.00	89.450	182.370	6865.81	2039.81	7863.79	-7861.70	-185.95	40°11'6.2746"N	104°33'47.4770"W	0.68	-36.60	-0.46	-0.50	
13994.00	90.460	181.620	6865.89	2039.89	7958.78	-7956.64	-189.26	40°11'5.3368"N	104°33'47.5325"W	1.32	73.85	1.06	-0.79	
14088.00	90.680	182.380	6864.95	2038.95	8052.76	-8050.58	-192.54	40°11'4.4089"N	104°33'47.5876"W	0.84	-149.04	0.23	0.81	
14183.00	90.180	182.080	6864.24	2038.24	8147.74	-8145.50	-196.24	40°11'3.4713"N	104°33'47.6481"W	0.61	-119.06	-0.53	-0.32	
14278.00	88.980	179.920	6864.93	2038.93	8242.73	-8240.48	-197.89	40°11'2.5329"N	104°33'47.6824"W	2.60	-74.14	-1.26	-2.27	
14372.00	89.540	177.950	6866.15	2040.15	8336.65	-8334.45	-196.15	40°11'1.6042"N	104°33'47.6727"W	2.18	-76.32	0.60	-2.10	
14467.00	89.820	176.800	6866.68	2040.68	8431.45	-8429.34	-191.80	40°11'0.6660"N	104°33'47.6295"W	1.25	-88.58	0.29	-1.21	
14561.00	89.850	175.590	6866.95	2040.95	8525.11	-8523.14	-185.56	40°10'59.7386"N	104°33'47.5619"W	1.29	-88.26	0.03	-1.29	
14656.00	89.910	173.620	6867.15	2041.15	8619.50	-8617.71	-176.63	40°10'58.8031"N	104°33'47.4597"W	2.07	-13.24	0.06	-2.07	
14750.00	90.250	173.540	6867.02	2041.02	8712.70	-8711.12	-166.12	40°10'57.8790"N	104°33'47.3370"W	0.37	90.51	0.36	-0.09	
14844.00	90.220	176.870	6866.63	2040.63	8806.20	-8804.78	-158.26	40°10'56.9527"N	104°33'47.2486"W	3.54	83.05	-0.03	3.54	
14939.00	90.710	180.900	6865.86	2039.86	8901.11	-8899.74	-156.41	40°10'56.0142"N	104°33'47.2377"W	4.27	75.96	0.52	4.24	
15033.00	90.740	181.020	6864.67	2038.67	8995.10	-8993.72	-157.99	40°10'55.0857"N	104°33'47.2708"W	0.13	-111.91	0.03	0.13	
15128.00	90.370	180.100	6863.75	2037.75	9090.09	-9088.71	-158.91	40°10'54.1471"N	104°33'47.2957"W	1.04	48.36	-0.39	-0.97	
15222.00	90.770	180.550	6862.82	2036.82	9184.08	-9182.70	-159.45	40°10'53.2184"N	104°33'47.3153"W	0.64	117.41	0.43	0.48	
15317.00	90.490	181.090	6861.77	2035.77	9279.07	-9277.68	-160.81	40°10'52.2800"N	104°33'47.3458"W	0.64	51.73	-0.29	0.57	
15411.00	91.050	181.800	6860.51	2034.51	9373.06	-9371.64	-163.18	40°10'51.3517"N	104°33'47.3891"W	0.96	68.18	0.60	0.76	
15494.00	91.450	182.800	6858.70	2032.70	9456.02	-9454.56	-166.51	40°10'50.5328"N	104°33'47.4433"W	1.30	-112.53	0.48	1.20	
15589.00	90.520	180.560	6857.06	2031.06	9550.99	-9549.49	-169.29	40°10'49.5950"N	104°33'47.4921"W	2.55	136.81	-0.98	-2.36	
15683.00	90.030	181.020	6856.61	2030.61	9644.99	-9643.48	-170.59	40°10'48.6663"N	104°33'47.5215"W	0.71	-62.39	-0.52	0.49	
15778.00	90.370	180.370	6856.28	2030.28	9739.99	-9738.47	-171.74	40°10'47.7278"N	104°33'47.5493"W	0.77	-90.00	0.36	-0.68	
15872.00	90.370	180.320	6855.67	2029.67	9833.98	-9832.47	-172.31	40°10'46.7991"N	104°33'47.5694"W	0.05	-120.96	0.00	-0.05	
15967.00	90.280	180.170	6855.13	2029.13	9928.96	-9927.47	-172.71	40°10'45.8604"N	104°33'47.5876"W	0.18	-103.52	-0.09	-0.16	
16061.00	90.030	179.130	6854.88	2028.88	10022.93	-10021.47	-172.14	40°10'44.9315"N	104°33'47.5930"W	1.14	63.98	-0.27	-1.11	
16156.00	90.650	180.400	6854.32	2028.32	10117.91	-10116.46	-171.75	40°10'43.9928"N	104°33'47.6009"W	1.49	-107.10	0.65	1.34	
16250.00	90.370	179.490	6853.48	2027.48	10211.88	-10210.46	-171.66	40°10'43.0639"N	104°33'47.6125"W	1.01	-130.82	-0.30	-0.97	
16345.00	90.180	179.270	6853.02	2027.02	10306.84	-10305.45	-170.63	40°10'42.1252"N	104°33'47.6122"W	0.31	48.92	-0.20	-0.23	
16439.00	90.520	179.660	6852.45	2026.45	10400.80	-10399.44	-169.75	40°10'41.1963"N	104°33'47.6137"W	0.55	62.52	0.36	0.41	
16534.00	90.650	179.910	6851.48	2025.48	10495.77	-10494.44	-169.40	40°10'40.2576"N	104°33'47.6220"W	0.30	-152.70	0.14	0.26	
16628.00	90.340	179.750	6850.67	2024.67	10589.75	-10588.43	-169.12	40°10'39.3287"N	104°33'47.6312"W	0.37	-155.32	-0.33	-0.17	
16723.00	89.970	179.580	6850.41	2024.41	10684.72	-10683.43	-168.56	40°10'38.3899"N	104°33'47.6370"W	0.43	77.22	-0.39	-0.18	
16817.00	90.460	181.740	6850.06	2024.06	10778.71	-10777.42	-169.64	40°10'37.4613"N	104°33'47.6637"W	2.36	86.73	0.52	2.30	



### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	VOGLER STATE D33-779
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API/Legal	
Facility	SEC.21-T03N-R64W	Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)		

### WELLPATH DATA (188 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	TVDSS [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Toothface [°]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
16912.00	90.620	184.550	6849.16	2023.16	10873.64	-10872.26	-174.86	40°10'36.5247"N	104°33'47.7438"W	2.96	-94.86	0.17	2.96	
17007.00	90.220	179.860	6848.47	2022.47	10968.59	-10967.16	-178.51	40°10'35.5873"N	104°33'47.8037"W	4.95	70.84	-0.42	-4.94	
17101.00	90.800	181.530	6847.63	2021.63	11062.58	-11061.15	-179.65	40°10'34.6587"N	104°33'47.8312"W	1.88	149.20	0.62	1.78	
17196.00	90.280	181.840	6846.73	2020.73	11157.57	-11156.10	-182.44	40°10'33.7207"N	104°33'47.8801"W	0.64	-90.00	-0.55	0.33	
17291.00	90.280	181.360	6846.27	2020.27	11252.56	-11251.06	-185.10	40°10'32.7826"N	104°33'47.9272"W	0.51	46.02	0.00	-0.51	
17385.00	90.830	181.930	6845.36	2019.36	11346.55	-11345.02	-187.79	40°10'31.8545"N	104°33'47.9748"W	0.84	-130.60	0.59	0.61	
17480.00	90.710	181.790	6844.08	2018.08	11441.53	-11439.96	-190.88	40°10'30.9166"N	104°33'48.0274"W	0.19	0.00	-0.13	-0.15	LAST BH MWD SURVEY
17520.00‡	90.710	181.790	6843.59	2017.59	11481.53	-11479.94	-192.13	40°10'30.5217"N	104°33'48.0489"W	0.00		0.00	0.00	EXTRAPOLATED TO TD

### HOLE & CASING SECTIONS - Ref Wellbore: VOGLER STATE D33-779 AWB Ref Wellpath: VOGLER STATE D33-779 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]
13.5in Open Hole	30.00	1937.00	1907.00	30.00	1936.96	0.04	0.03	4.62	8.19
9.625in Casing Surface	30.00	1937.00	1907.00	30.00	1936.96	0.04	0.03	4.62	8.19
8.5in Open Hole	1937.00	17520.00	15583.00	1936.96	6843.59	4.62	8.19	-11479.94	-192.13

### TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
VOGLER STATE D33-779 BHL REV-1 (200'FSL & 660'FWL, SEC.33)	6850.00	-11485.59	-212.49	3261707.57	1308024.84	40°10'30.4680"N	104°33'48.3120"W	point
VOGLER STATE D33-779 TPZ REV-1 (200'FNL & 758'FWL, SEC.28)	6886.00	-1265.27	-205.63	3261714.43	1318244.70	40°12'11.4588"N	104°33'46.8324"W	point
SECTION LINES - SEC.21-T03N-R64W	7000.00	4172.43	-1002.40	3260917.70	1323682.16	40°13'5.2741"N	104°33'56.3622"W	polygon
	2D Polygon: dimensions not calculated							
SECTION LINES - SEC.28-T03N-R64W	7000.00	-1066.31	-965.60	3260954.50	1318443.65	40°12'13.5040"N	104°33'56.5993"W	polygon
	2D Polygon: dimensions not calculated							
SECTION LINES - SEC.33-T03N-R64W	7000.00	-6421.53	-916.92	3261003.17	1313088.67	40°11'20.5817"N	104°33'56.6991"W	polygon
	2D Polygon: dimensions not calculated							

### WELLPATH COMPOSITION - Ref Wellbore: VOGLER STATE D33-779 AWB Ref Wellpath: VOGLER STATE D33-779 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
0.00	1932.00	Gyrodata 2015 - GC+DROP+COND	13.5" GYRODATA 2015 (GC+DROP+COND) <0' - 1932'>	VOGLER STATE D33-779 AWB	2/17/2020
1932.00	17520.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	8.5" OWSG MWD REV.2 (IFR1+MSA) <1992' - 17480'>	VOGLER STATE D33-779 AWB	2/17/2020

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	VOGLER STATE D33-779
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API/Legal	
Facility	SEC.21-T03N-R64W	Wellbore	VOGLER STATE D33-779 AWB
Slot	SLOT#36 VOGLER STATE D33-779 (1065'FSL & 973'FWL, SEC.21)		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
77.00	0.440	34.910	77.00	FIRST 3RD PARTY GYRO SURVEY
1932.00	0.600	154.450	1931.96	TIE ON TO 3RD PARTY GYRO SURVEYS
1992.00	0.990	166.840	1991.95	FIRST BH MWD SURVEY
17480.00	90.710	181.790	6844.08	LAST BH MWD SURVEY
17520.00	90.710	181.790	6843.59	EXTRAPOLATED TO TD