

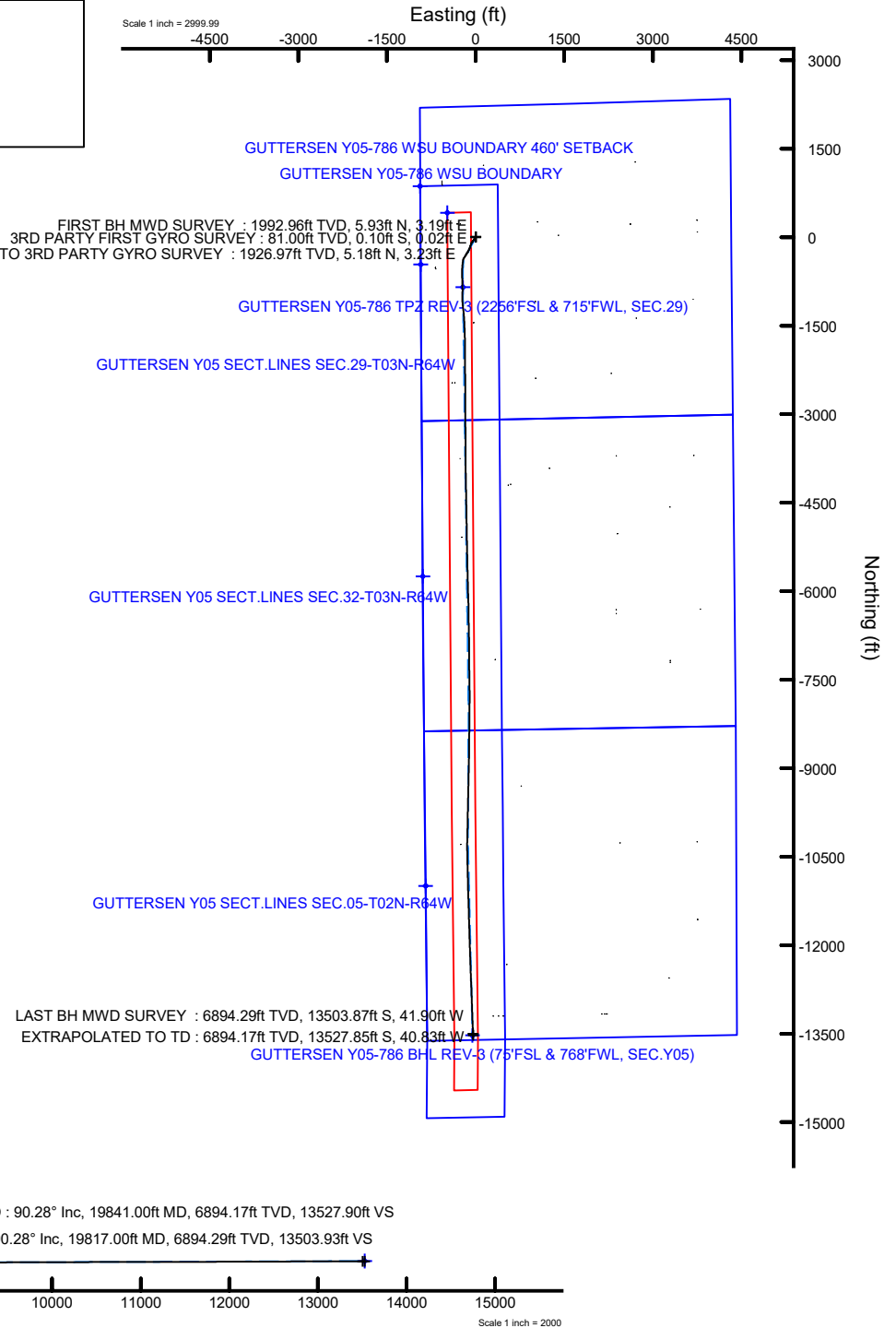
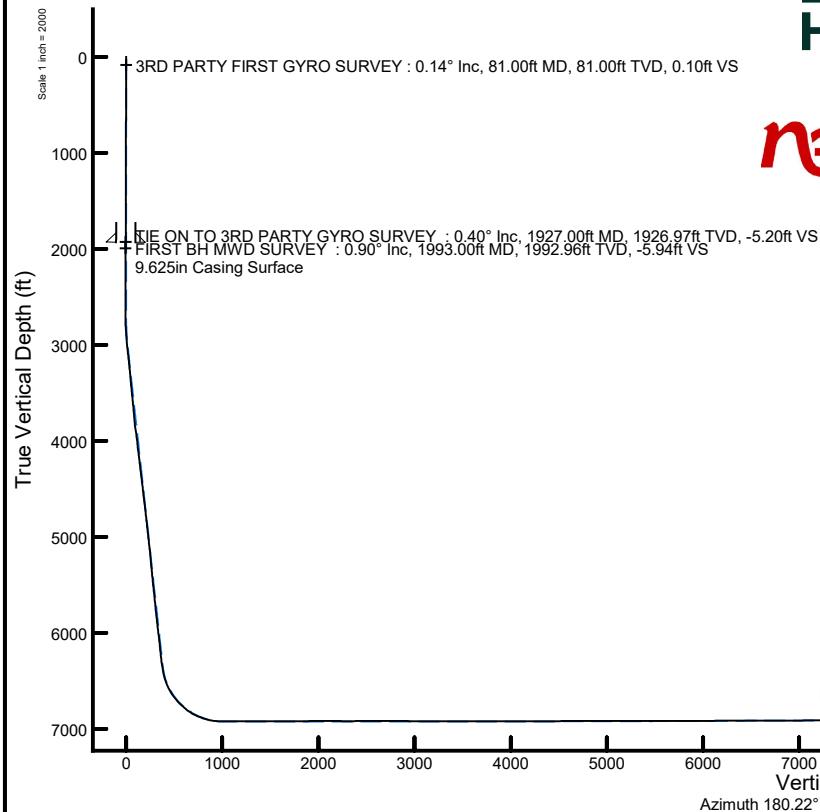
# NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)  
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: GUTTERSEN Y05-786  
Facility: SEC.29-T03N-R64W Wellbore: GUTTERSEN Y05-786 AWB

## Location Information

Facility Name				Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.29-T03N-R64W				3256078.619	1317026.618	40°12'0.0040"N	104°34'59.6280"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)	-629.50	568.82	3256067.417	1316997.158	40°11'50.7610"N	104°34'52.4219"W	
H&P 321 (4785'GL+30'KB@4815') (RKB) to Mud line (At Slot: SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29))						4815R	
Mean Sea Level to Mud line (At Slot: SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29))						0R	
H&P 321 (4785'GL+30'KB@4815') (RKB) to Mean Sea Level						4815R	

Plot reference wellpath is GUTTERSEN Y05-786 AWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 321 (4785'GL+30'KB@4815') (RKB)	North Reference: Grid north
Reference wellpath measured depths are referenced to H&P 321 (4785'GL+30'KB@4815') (RKB)	Scale: True distance
H&P 321 (4785'GL+30'KB@4815') (RKB) to Mean Sea Level: 4815 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Mud line (At Slot: SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)): 0 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: manajohi on 2020-01-02; Database: WA_NOBLE



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWP
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

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	1/2/2020 at 11:18:07 AM
Convergence at slot	0.59° 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	-929.50	568.82	3256647.42	1316097.16	40°11'50.7610"N	104°34'52.4219"W
Facility Reference Pt			3256078.62	1317026.62	40°12'0.0040"N	104°34'59.6280"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 (4785'GL+30'KB@4815') (RKB) to Facility Vertical Datum	4815.00ft
Horizontal Reference Pt	Slot	H&P 321 (4785'GL+30'KB@4815') (RKB) to Mean Sea Level	4815.00ft
Vertical Reference Pt	H&P 321 (4785'GL+30'KB@4815') (RKB)	H&P 321 (4785'GL+30'KB@4815') (RKB) to Mud Line at Slot (SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29))	4815.00ft
MD Reference Pt	H&P 321 (4785'GL+30'KB@4815') (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	180.22°

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWP
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

### WELLPATH DATA (214 stations) † = interpolated, ‡ = extrapolated station

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
0.00	0.000	166.590	0.00	-4815.00	0.00	0.00	0.00	40°11'50.7610"N	104°34'52.4219"W	0.00	0.00	0.00	0.00	
81.00	0.140	166.590	81.00	-4734.00	0.10	-0.10	0.02	40°11'50.7600"N	104°34'52.4216"W	0.17	-168.25	0.17	0.00	3RD PARTY FIRST GYRO SURVEY
176.00	0.270	4.400	176.00	-4639.00	-0.01	0.01	0.07	40°11'50.7611"N	104°34'52.4210"W	0.43	64.92	0.14	-170.73	
267.00	0.360	26.530	267.00	-4548.00	-0.48	0.48	0.21	40°11'50.7658"N	104°34'52.4191"W	0.16	143.53	0.10	24.32	
362.00	0.230	58.560	362.00	-4453.00	-0.85	0.85	0.51	40°11'50.7693"N	104°34'52.4153"W	0.22	-130.02	-0.14	33.72	
457.00	0.180	6.630	457.00	-4358.00	-1.10	1.10	0.69	40°11'50.7718"N	104°34'52.4129"W	0.19	-109.24	-0.05	-54.66	
551.00	0.170	345.900	551.00	-4264.00	-1.38	1.38	0.67	40°11'50.7746"N	104°34'52.4131"W	0.07	-46.94	-0.01	-22.05	
645.00	0.300	323.420	645.00	-4170.00	-1.71	1.71	0.49	40°11'50.7779"N	104°34'52.4154"W	0.17	-17.58	0.14	-23.91	
740.00	0.420	318.300	739.99	-4075.01	-2.17	2.17	0.11	40°11'50.7825"N	104°34'52.4202"W	0.13	133.99	0.13	-5.39	
834.00	0.330	25.990	833.99	-3981.01	-2.67	2.67	0.00	40°11'50.7874"N	104°34'52.4216"W	0.45	175.26	-0.10	72.01	
928.00	0.030	136.000	927.99	-3887.01	-2.90	2.90	0.13	40°11'50.7896"N	104°34'52.4198"W	0.36	-9.71	-0.32	117.03	
1023.00	0.100	129.190	1022.99	-3792.01	-2.83	2.83	0.22	40°11'50.7889"N	104°34'52.4187"W	0.07	-175.93	0.07	-7.17	
1117.00	0.070	319.090	1116.99	-3698.01	-2.82	2.82	0.24	40°11'50.7888"N	104°34'52.4184"W	0.18	-145.98	-0.03	-180.96	
1212.00	0.100	196.160	1211.99	-3603.01	-2.78	2.78	0.18	40°11'50.7885"N	104°34'52.4192"W	0.16	-83.43	0.03	-129.40	
1307.00	0.160	151.110	1306.99	-3508.01	-2.59	2.59	0.22	40°11'50.7866"N	104°34'52.4187"W	0.12	150.93	0.06	-47.42	
1401.00	0.090	181.780	1400.99	-3414.01	-2.40	2.40	0.28	40°11'50.7847"N	104°34'52.4179"W	0.10	-115.98	-0.07	32.63	
1496.00	0.160	96.180	1495.99	-3319.01	-2.31	2.31	0.41	40°11'50.7838"N	104°34'52.4163"W	0.19	-29.59	0.07	-90.11	
1590.00	0.450	76.700	1589.99	-3225.01	-2.38	2.38	0.90	40°11'50.7844"N	104°34'52.4100"W	0.32	-79.44	0.31	-20.72	
1685.00	0.560	49.440	1684.99	-3130.01	-2.78	2.77	1.62	40°11'50.7882"N	104°34'52.4007"W	0.27	-27.60	0.12	-28.69	
1779.00	0.890	38.790	1778.98	-3036.02	-3.65	3.64	2.42	40°11'50.7967"N	104°34'52.3902"W	0.38	-141.92	0.35	-11.33	
1874.00	0.670	21.860	1873.97	-2941.03	-4.74	4.73	3.09	40°11'50.8074"N	104°34'52.3814"W	0.33	-164.33	-0.23	-17.82	
1924.00	0.380	9.090	1923.97	-2891.03	-5.17	5.16	3.23	40°11'50.8117"N	104°34'52.3796"W	0.62	-27.96	-0.58	-25.54	
1927.00†	0.401	7.499	1926.97	-2888.03	-5.20	5.18	3.23	40°11'50.8119"N	104°34'52.3796"W	0.79	-26.36	0.70	-53.04	TIE ON TO 3RD PARTY GYRO SURVEY
1993.00	0.900	352.550	1992.96	-2822.04	-5.94	5.93	3.19	40°11'50.8192"N	104°34'52.3799"W	0.79	-144.06	0.76	-22.65	FIRST BH MWD SURVEY
2087.00	0.530	303.150	2086.96	-2728.04	-6.91	6.90	2.74	40°11'50.8289"N	104°34'52.3857"W	0.73	95.58	-0.39	-52.55	
2181.00	0.730	352.460	2180.95	-2634.05	-7.74	7.73	2.29	40°11'50.8371"N	104°34'52.3913"W	0.59	168.52	0.21	52.46	
2276.00	0.170	102.260	2275.95	-2539.05	-8.31	8.30	2.35	40°11'50.8427"N	104°34'52.3905"W	0.85	154.33	-0.59	115.58	
2371.00	0.380	245.410	2370.95	-2444.05	-8.14	8.14	2.20	40°11'50.8412"N	104°34'52.3924"W	0.55	-148.98	0.22	150.68	
2465.00	0.280	140.820	2464.95	-2350.05	-7.84	7.83	2.06	40°11'50.8381"N	104°34'52.3943"W	0.56	-125.00	-0.11	-111.27	
2560.00	0.310	63.540	2559.95	-2255.05	-7.77	7.76	2.44	40°11'50.8375"N	104°34'52.3894"W	0.39	-81.99	0.03	-81.35	
2654.00	0.420	28.510	2653.94	-2161.06	-8.19	8.18	2.83	40°11'50.8415"N	104°34'52.3843"W	0.26	175.74	0.12	-37.27	
2749.00	1.780	203.240	2748.93	-2066.07	-7.14	7.13	2.42	40°11'50.8312"N	104°34'52.3898"W	2.31	15.98	1.43	183.93	
2843.00	4.340	212.740	2842.79	-1972.21	-2.79	2.79	-0.08	40°11'50.7886"N	104°34'52.4226"W	2.77	39.47	2.72	10.11	
2937.00	6.390	226.660	2936.38	-1878.62	3.81	-3.79	-5.81	40°11'50.7242"N	104°34'52.4973"W	2.57	-91.58	2.18	14.81	
3032.00	6.830	204.240	3030.76	-1784.24	12.61	-12.57	-11.98	40°11'50.6380"N	104°34'52.5779"W	2.74	74.56	0.46	-23.60	
3126.00	6.970	207.980	3124.08	-1690.92	22.77	-22.70	-16.95	40°11'50.5384"N	104°34'52.6433"W	0.50	140.74	0.15	3.98	
3221.00	6.820	209.020	3218.39	-1596.61	32.81	-32.72	-22.39	40°11'50.4399"N	104°34'52.7148"W	0.21	153.31	-0.16	1.09	
3315.00	5.650	215.170	3311.84	-1503.16	41.49	-41.39	-27.76	40°11'50.3549"N	104°34'52.7852"W	1.43	8.10	-1.24	6.54	
3411.00	7.260	216.980	3407.23	-1407.77	50.23	-50.10	-34.13	40°11'50.2695"N	104°34'52.8684"W	1.69	-126.78	1.68	1.89	
3504.00	6.520	207.080	3499.56	-1315.44	59.65	-59.49	-40.07	40°11'50.1772"N	104°34'52.9462"W	1.50	61.83	-0.80	-10.65	
3598.00	6.850	211.880	3592.92	-1222.08	69.18	-69.01	-45.46	40°11'50.0838"N	104°34'53.0169"W	0.69	118.00	0.35	5.11	
3692.00	6.270	224.600	3686.31	-1128.69	77.62	-77.42	-52.03	40°11'50.0013"N	104°34'53.1027"W	1.66	33.97	-0.62	13.53	
3787.00	7.770	231.790	3780.59	-1034.41	85.32	-85.09	-60.72	40°11'49.9264"N	104°34'53.2157"W	1.83	-88.68	1.58	7.57	
3882.00	9.370	198.880	3874.59	-940.41	96.65	-96.38	-68.27	40°11'49.8156"N	104°34'53.3145"W	5.34	177.72	1.68	-34.64	
3976.00	7.370	199.500	3967.58	-847.42	109.59	-109.31	-72.76	40°11'49.6883"N	104°34'53.3741"W	2.13	169.90	-2.13	0.66	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWB
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

WELLPATH DATA (214 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	
4071.00	6.440	200.980	4061.89	-753.11	120.32	-120.03	-76.70	40°11'49.5828"N	104°34'53.4263"W	1.00	-3.13	-0.98	1.56		
4165.00	8.090	200.340	4155.13	-659.87	131.46	-131.15	-80.89	40°11'49.4733"N	104°34'53.4817"W	1.76	179.22	1.76	-0.68		
4259.00	6.940	200.470	4248.32	-566.68	143.00	-142.67	-85.17	40°11'49.3599"N	104°34'53.5385"W	1.22	-40.85	-1.22	0.14		
4354.00	7.220	198.570	4342.60	-472.40	154.05	-153.71	-89.08	40°11'49.2512"N	104°34'53.5903"W	0.38	-99.87	0.29	-2.00		
4448.00	7.180	196.520	4435.86	-379.14	165.30	-164.94	-92.63	40°11'49.1406"N	104°34'53.6376"W	0.28	79.19	-0.04	-2.18		
4542.00	7.250	199.120	4529.11	-285.89	176.55	-176.18	-96.25	40°11'49.0300"N	104°34'53.6856"W	0.36	114.65	0.07	2.77		
4637.00	7.180	200.370	4623.36	-191.64	187.79	-187.41	-100.28	40°11'48.9194"N	104°34'53.7391"W	0.18	126.83	-0.07	1.32		
4732.00	6.830	204.500	4717.65	-97.35	198.52	-198.11	-104.68	40°11'48.8141"N	104°34'53.7973"W	0.65	-99.22	-0.37	4.35		
4826.00	6.790	202.110	4810.99	-4.01	208.77	-208.35	-109.09	40°11'48.7134"N	104°34'53.8555"W	0.30	40.58	-0.04	-2.54		
4920.00	7.860	208.520	4904.22	89.22	219.58	-219.14	-114.25	40°11'48.6072"N	104°34'53.9234"W	1.43	152.51	1.14	6.82		
5015.00	7.210	211.250	4998.40	183.40	230.41	-229.95	-120.45	40°11'48.5011"N	104°34'54.0047"W	0.78	-99.74	-0.68	2.87		
5110.00	7.110	203.470	5092.66	277.66	240.92	-240.44	-125.88	40°11'48.3980"N	104°34'54.0761"W	1.03	129.91	-0.11	-8.19		
5204.00	6.110	216.590	5186.04	371.04	250.29	-249.79	-131.18	40°11'48.3061"N	104°34'54.1457"W	1.92	25.14	-1.06	13.96		
5299.00	6.930	219.740	5280.43	465.43	258.79	-258.26	-137.86	40°11'48.2231"N	104°34'54.2329"W	0.94	-109.54	0.86	3.32		
5393.00	6.600	208.510	5373.78	558.78	267.92	-267.37	-144.06	40°11'48.1338"N	104°34'54.3140"W	1.45	-86.26	-0.35	-11.95		
5488.00	6.620	206.430	5468.15	653.15	277.64	-277.07	-149.11	40°11'48.0384"N	104°34'54.3803"W	0.25	58.12	0.02	-2.19		
5583.00	7.290	214.120	5562.45	747.45	287.56	-286.96	-154.93	40°11'47.9413"N	104°34'54.4566"W	1.21	-157.52	0.71	8.09		
5678.00	6.830	212.510	5656.73	841.73	297.33	-296.71	-161.34	40°11'47.8455"N	104°34'54.5406"W	0.53	-104.42	-0.48	-1.69		
5772.00	6.790	211.130	5750.07	935.07	306.83	-306.19	-167.22	40°11'47.7526"N	104°34'54.6176"W	0.18	-7.70	-0.04	-1.47		
5867.00	7.400	210.490	5844.34	1029.34	316.93	-316.26	-173.23	40°11'47.6536"N	104°34'54.6963"W	0.65	110.03	0.64	-0.67		
5962.00	7.320	212.290	5938.55	1123.55	327.34	-326.65	-179.56	40°11'47.5516"N	104°34'54.7794"W	0.26	-65.30	-0.08	1.89		
6057.00	7.810	205.340	6032.73	1217.73	338.31	-337.60	-185.56	40°11'47.4440"N	104°34'54.8581"W	1.09	121.52	0.52	-7.32		
6151.00	7.280	213.010	6125.92	1310.92	349.10	-348.37	-191.54	40°11'47.3382"N	104°34'54.9366"W	1.21	64.14	-0.56	8.16		
6246.00	7.990	222.110	6220.08	1405.08	359.08	-358.32	-199.25	40°11'47.2407"N	104°34'55.0372"W	1.47	-107.92	0.75	9.58		
6341.00	7.600	204.340	6314.21	1499.21	369.73	-368.94	-206.26	40°11'47.1365"N	104°34'55.1291"W	2.56	-23.99	-0.41	-18.71		
6436.00	11.840	195.420	6407.83	1592.83	384.88	-384.07	-211.45	40°11'46.9875"N	104°34'55.1979"W	4.72	-27.78	4.46	-9.39		
6530.00	18.890	184.450	6498.44	1683.44	409.39	-408.57	-215.20	40°11'46.7458"N	104°34'55.2495"W	8.08	8.48	7.50	-11.67		
6625.00	27.270	187.160	6585.76	1770.76	446.40	-445.56	-219.11	40°11'46.3806"N	104°34'55.3048"W	8.89	-8.10	8.82	2.85		
6719.00	36.320	185.000	6665.57	1850.57	495.62	-494.76	-224.23	40°11'45.8950"N	104°34'55.3774"W	9.70	-2.66	9.63	-2.30		
6814.00	45.020	184.430	6737.56	1922.56	557.29	-556.41	-229.29	40°11'45.2863"N	104°34'55.4508"W	9.17	-39.19	9.16	-0.60		
6909.00	52.280	177.210	6800.32	1985.32	628.46	-627.58	-230.06	40°11'44.5831"N	104°34'55.4701"W	9.53	0.47	7.64	-7.60		
7004.00	62.000	177.300	6851.81	2036.81	708.06	-707.20	-226.24	40°11'43.7960"N	104°34'55.4316"W	10.23	5.14	10.23	0.09		
7098.00	70.970	178.150	6889.27	2074.27	794.09	-793.23	-222.85	40°11'42.9455"N	104°34'55.3993"W	9.58	10.95	9.54	0.90		
7193.00	80.290	179.970	6912.83	2097.83	885.99	-885.14	-221.37	40°11'42.0371"N	104°34'55.3926"W	9.98	12.85	9.81	1.92		
7288.00	89.940	182.160	6920.91	2105.91	980.52	-979.67	-223.14	40°11'41.1033"N	104°34'55.4280"W	10.41	-88.96	10.16	2.31		
7382.00	90.030	177.210	6920.93	2105.93	1074.48	-1073.63	-222.62	40°11'40.1747"N	104°34'55.4339"W	5.27	-90.48	0.10	-5.27		
7477.00	90.000	173.620	6920.91	2105.91	1169.13	-1168.32	-215.03	40°11'39.2384"N	104°34'55.3486"W	3.78	-31.26	-0.03	-3.78		
7572.00	90.280	173.450	6920.68	2105.68	1263.49	-1262.71	-204.33	40°11'38.3045"N	104°34'55.2234"W	0.34	104.91	0.29	-0.18		
7667.00	89.750	175.440	6920.65	2105.65	1358.00	-1357.26	-195.14	40°11'37.3693"N	104°34'55.1175"W	2.17	78.53	-0.56	2.09		
7761.00	90.310	178.200	6920.60	2105.60	1451.83	-1451.11	-189.92	40°11'36.4414"N	104°34'55.0629"W	3.00	-120.52	0.60	2.94		
7856.00	89.750	177.250	6920.55	2105.55	1546.73	-1546.03	-186.15	40°11'35.5030"N	104°34'55.0269"W	1.16	93.88	-0.59	-1.00		
7950.00	89.660	178.580	6921.04	2106.04	1640.65	-1639.96	-182.73	40°11'34.5745"N	104°34'54.9954"W	1.42	55.44	-0.10	1.41		
8045.00	90.280	179.480	6921.09	2106.09	1735.63	-1734.95	-181.12	40°11'33.6357"N	104°34'54.9874"W	1.15	-37.30	0.65	0.95		
8139.00	90.490	179.320	6920.46	2105.46	1829.62	-1828.94	-180.14	40°11'32.7068"N	104°34'54.9872"W	0.28	104.04	0.22	-0.17		
8234.00	90.430	179.560	6919.69	2104.69	1924.61	-1923.93	-179.21	40°11'31.7681"N	104°34'54.9879"W	0.26	160.97	-0.06	0.25		

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWP
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

### WELLPATH DATA (214 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
8328.00	89.850	179.760	6919.46	2104.46	2018.60	-2017.93	-178.65	40°11'30.8392"N	104°34'54.9933"W	0.65	39.81	-0.62	0.21	
8423.00	89.910	179.810	6919.66	2104.66	2113.60	-2112.93	-178.30	40°11'29.9004"N	104°34'55.0014"W	0.08	-83.42	0.06	0.05	
8517.00	89.940	179.550	6919.78	2104.78	2207.60	-2206.93	-177.77	40°11'28.9715"N	104°34'55.0071"W	0.28	-148.50	0.03	-0.28	
8612.00	89.630	179.360	6920.14	2105.14	2302.59	-2301.92	-176.87	40°11'28.0327"N	104°34'55.0082"W	0.38	18.43	-0.33	-0.20	
8707.00	90.980	179.810	6919.64	2104.64	2397.58	-2396.92	-176.18	40°11'27.0940"N	104°34'55.0120"W	1.50	149.04	1.42	0.47	
8801.00	90.280	180.230	6918.60	2103.60	2491.57	-2490.91	-176.21	40°11'26.1652"N	104°34'55.0249"W	0.87	-137.68	-0.74	0.45	
8896.00	89.720	179.720	6918.60	2103.60	2586.57	-2585.91	-176.17	40°11'25.2265"N	104°34'55.0371"W	0.80	25.41	-0.59	-0.54	
8991.00	90.120	179.910	6918.73	2103.73	2681.57	-2680.91	-175.86	40°11'24.2877"N	104°34'55.0458"W	0.47	-173.66	0.42	0.20	
9086.00	89.850	179.880	6918.76	2103.76	2776.56	-2775.91	-175.69	40°11'23.3490"N	104°34'55.0562"W	0.29	-171.47	-0.28	-0.03	
9180.00	89.450	179.820	6919.33	2104.33	2870.56	-2869.91	-175.44	40°11'22.4201"N	104°34'55.0656"W	0.43	13.39	-0.43	-0.06	
9275.00	89.660	179.870	6920.07	2105.07	2965.56	-2964.90	-175.19	40°11'21.4814"N	104°34'55.0749"W	0.23	-123.32	0.22	0.05	
9370.00	89.200	179.170	6921.02	2106.02	3060.54	-3059.89	-174.39	40°11'20.5426"N	104°34'55.0774"W	0.88	-0.61	-0.48	-0.74	
9465.00	91.080	179.150	6920.78	2105.78	3155.52	-3154.88	-173.00	40°11'19.6039"N	104°34'55.0721"W	1.98	-163.01	1.98	-0.02	
9559.00	88.920	178.490	6920.78	2105.78	3249.49	-3248.85	-171.06	40°11'18.6751"N	104°34'55.0597"W	2.40	30.77	-2.30	-0.70	
9654.00	90.650	179.520	6921.14	2106.14	3344.46	-3343.83	-169.41	40°11'17.7364"N	104°34'55.0511"W	2.12	164.32	1.82	1.08	
9749.00	89.510	179.840	6921.01	2106.01	3439.45	-3438.83	-168.88	40°11'16.7976"N	104°34'55.0569"W	1.25	-2.39	-1.20	0.34	
9843.00	89.750	179.830	6921.62	2106.62	3533.45	-3532.83	-168.61	40°11'15.8688"N	104°34'55.0660"W	0.26	4.40	0.26	-0.01	
9938.00	89.880	179.840	6921.92	2106.92	3628.45	-3627.83	-168.34	40°11'14.9300"N	104°34'55.0751"W	0.14	24.54	0.14	0.01	
10032.00	90.340	180.050	6921.74	2106.74	3722.45	-3721.83	-168.25	40°11'14.0011"N	104°34'55.0865"W	0.54	-96.46	0.49	0.22	
10127.00	90.280	179.520	6921.23	2106.23	3817.44	-3816.82	-167.89	40°11'13.0624"N	104°34'55.0946"W	0.56	139.54	-0.06	-0.56	
10221.00	89.940	179.810	6921.05	2106.05	3911.44	-3910.82	-167.34	40°11'12.1335"N	104°34'55.1001"W	0.48	-63.84	-0.36	0.31	
10315.00	90.220	179.240	6920.92	2105.92	4005.43	-4004.82	-166.56	40°11'11.2046"N	104°34'55.1025"W	0.68	-152.53	0.30	-0.61	
10410.00	89.970	179.110	6920.76	2105.76	4100.41	-4099.81	-165.20	40°11'10.2658"N	104°34'55.0976"W	0.30	-42.61	-0.26	-0.14	
10504.00	90.220	178.880	6920.60	2105.60	4194.39	-4193.79	-163.55	40°11'9.3369"N	104°34'55.0889"W	0.36	-143.43	0.27	-0.24	
10599.00	89.910	178.650	6920.49	2105.49	4289.36	-4288.77	-161.50	40°11'8.3982"N	104°34'55.0752"W	0.41	15.12	-0.33	-0.24	
10693.00	90.280	178.750	6920.34	2105.34	4383.33	-4382.75	-159.37	40°11'7.4694"N	104°34'55.0602"W	0.41	107.20	0.39	0.11	
10788.00	90.150	179.170	6919.98	2104.98	4478.30	-4477.73	-157.64	40°11'6.5306"N	104°34'55.0507"W	0.46	-63.43	-0.14	0.44	
10882.00	90.310	178.850	6919.61	2104.61	4572.28	-4571.71	-156.02	40°11'5.6017"N	104°34'55.0423"W	0.38	-132.80	0.17	-0.34	
10977.00	90.060	178.580	6919.30	2104.30	4667.25	-4666.69	-153.89	40°11'4.6630"N	104°34'55.0275"W	0.39	75.96	-0.26	-0.28	
11072.00	90.370	179.820	6918.94	2103.94	4762.23	-4761.68	-152.56	40°11'3.7243"N	104°34'55.0231"W	1.35	-131.08	0.33	1.31	
11166.00	89.690	179.040	6918.89	2103.89	4856.22	-4855.67	-151.63	40°11'2.7954"N	104°34'55.0236"W	1.10	-11.31	-0.72	-0.83	
11261.00	90.090	178.960	6919.08	2104.08	4951.20	-4950.66	-149.97	40°11'1.8566"N	104°34'55.0149"W	0.43	116.57	0.42	-0.08	
11355.00	90.060	179.020	6918.95	2103.95	5045.18	-5044.64	-148.31	40°11'0.9277"N	104°34'55.0061"W	0.07	146.31	-0.03	0.06	
11450.00	89.910	179.120	6918.98	2103.98	5140.16	-5139.63	-146.77	40°10'59.9889"N	104°34'54.9989"W	0.19	-44.44	-0.16	0.11	
11545.00	90.430	178.610	6918.70	2103.70	5235.13	-5234.61	-144.89	40°10'59.0502"N	104°34'54.9873"W	0.77	105.95	0.55	-0.54	
11639.00	90.370	178.820	6918.04	2103.04	5329.09	-5328.58	-142.78	40°10'58.1214"N	104°34'54.9727"W	0.23	-169.70	-0.06	0.22	
11734.00	90.150	178.780	6917.61	2102.61	5424.06	-5423.56	-140.79	40°10'57.1827"N	104°34'54.9597"W	0.24	63.43	-0.23	-0.04	
11829.00	90.310	179.100	6917.23	2102.23	5519.04	-5518.55	-139.03	40°10'56.2439"N	104°34'54.9498"W	0.38	-131.53	0.17	0.34	
11923.00	90.000	178.750	6916.97	2101.97	5613.02	-5612.53	-137.27	40°10'55.3150"N	104°34'54.9396"W	0.50	-36.87	-0.33	-0.37	
12017.00	90.120	178.660	6916.87	2101.87	5706.98	-5706.50	-135.15	40°10'54.3862"N	104°34'54.9248"W	0.16	-120.96	0.13	-0.10	
12112.00	89.970	178.410	6916.80	2101.80	5801.94	-5801.47	-132.72	40°10'53.4475"N	104°34'54.9061"W	0.31	40.60	-0.16	-0.26	
12206.00	90.180	178.590	6916.68	2101.68	5895.90	-5895.44	-130.26	40°10'52.5187"N	104°34'54.8870"W	0.29	-164.48	0.22	0.19	
12301.00	89.820	178.490	6916.68	2101.68	5990.86	-5990.41	-127.84	40°10'51.5800"N	104°34'54.8684"W	0.39	-42.93	-0.38	-0.11	
12395.00	90.250	178.090	6916.62	2101.62	6084.80	-6084.37	-125.03	40°10'50.6513"N	104°34'54.8448"W	0.62	93.37	0.46	-0.43	
12489.00	90.220	178.600	6916.23	2101.23	6178.75	-6178.33	-122.32	40°10'49.7226"N	104°34'54.8224"W	0.54	74.58	-0.03	0.54	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWP
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

### WELLPATH DATA (214 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
12584.00	90.460	179.470	6915.67	2100.67	6273.73	-6273.31	-120.72	40°10'48.7838"N	104°34'54.8145"W	0.95	-173.66	0.25	0.92	
12679.00	90.280	179.450	6915.06	2100.06	6368.72	-6368.30	-119.82	40°10'47.8451"N	104°34'54.8156"W	0.19	-119.40	-0.19	-0.02	
12773.00	89.880	178.740	6914.92	2099.92	6462.70	-6462.29	-118.34	40°10'46.9162"N	104°34'54.8090"W	0.87	-14.04	-0.43	-0.76	
12868.00	90.000	178.710	6915.02	2100.02	6557.67	-6557.27	-116.22	40°10'45.9775"N	104°34'54.7944"W	0.13	23.20	0.13	-0.03	
12962.00	90.280	178.830	6914.79	2099.79	6651.64	-6651.25	-114.20	40°10'45.0486"N	104°34'54.7810"W	0.32	-18.43	0.30	0.13	
13057.00	90.520	178.650	6914.13	2099.13	6746.61	-6746.22	-112.20	40°10'44.1099"N	104°34'54.7678"W	0.27	108.85	0.25	-0.08	
13151.00	89.660	179.450	6913.98	2098.98	6840.59	-6840.21	-110.72	40°10'43.1810"N	104°34'54.7613"W	1.18	34.12	-0.91	0.74	
13245.00	89.970	179.660	6914.29	2099.29	6934.58	-6934.21	-109.99	40°10'42.2521"N	104°34'54.7645"W	0.40	2.01	0.33	0.22	
13340.00	91.110	179.700	6913.39	2098.39	7029.57	-7029.20	-109.46	40°10'41.3134"N	104°34'54.7703"W	1.20	-100.54	1.20	0.04	
13434.00	90.920	178.680	6911.73	2096.73	7123.54	-7123.17	-108.13	40°10'40.3846"N	104°34'54.7657"W	1.10	108.43	-0.20	-1.09	
13529.00	90.430	180.150	6910.61	2095.61	7218.52	-7218.16	-107.16	40°10'39.4459"N	104°34'54.7659"W	1.63	-122.41	-0.52	1.55	
13623.00	90.030	179.520	6910.23	2095.23	7312.51	-7312.16	-106.89	40°10'38.5171"N	104°34'54.7749"W	0.79	45.00	-0.43	-0.67	
13718.00	90.090	179.580	6910.13	2095.13	7407.51	-7407.15	-106.15	40°10'37.5783"N	104°34'54.7780"W	0.09	-41.73	0.06	0.06	
13812.00	90.830	178.920	6909.38	2094.38	7501.49	-7501.14	-104.91	40°10'36.6494"N	104°34'54.7747"W	1.05	167.91	0.79	-0.70	
13907.00	89.850	179.130	6908.81	2093.81	7596.47	-7596.13	-103.30	40°10'35.7107"N	104°34'54.7665"W	1.05	-66.47	-1.03	0.22	
14001.00	90.120	178.510	6908.84	2093.84	7690.44	-7690.11	-101.36	40°10'34.7818"N	104°34'54.7541"W	0.72	95.25	0.29	-0.66	
14096.00	89.940	180.470	6908.79	2093.79	7785.43	-7785.10	-100.52	40°10'33.8431"N	104°34'54.7559"W	2.07	82.88	-0.19	2.06	
14190.00	89.970	180.710	6908.86	2093.86	7879.42	-7879.09	-101.49	40°10'32.9144"N	104°34'54.7809"W	0.26	1.43	0.03	0.26	
14284.00	90.370	180.720	6908.58	2093.58	7973.42	-7973.08	-102.66	40°10'31.9857"N	104°34'54.8086"W	0.43	48.81	0.43	0.01	
14378.00	90.860	181.280	6907.57	2092.57	8067.40	-8067.06	-104.30	40°10'31.0572"N	104°34'54.8422"W	0.79	-127.76	0.52	0.60	
14473.00	90.000	180.170	6906.86	2091.86	8162.40	-8162.05	-105.50	40°10'30.1187"N	104°34'54.8704"W	1.48	-33.69	-0.91	-1.17	
14567.00	90.090	180.110	6906.79	2091.79	8256.40	-8256.05	-105.73	40°10'29.1899"N	104°34'54.8859"W	0.12	13.24	0.10	-0.06	
14662.00	91.790	180.510	6905.23	2090.23	8351.38	-8351.03	-106.24	40°10'28.2514"N	104°34'54.9052"W	1.84	-175.36	1.79	0.42	
14757.00	89.820	180.350	6903.89	2088.89	8446.36	-8446.02	-106.96	40°10'27.3129"N	104°34'54.9270"W	2.08	172.88	-2.07	-0.17	
14851.00	89.420	180.400	6904.52	2089.52	8540.36	-8540.01	-107.57	40°10'26.3841"N	104°34'54.9475"W	0.43	-66.13	-0.43	0.05	
14945.00	89.690	179.790	6905.25	2090.25	8634.36	-8634.01	-107.73	40°10'25.4553"N	104°34'54.9620"W	0.71	88.87	0.29	-0.65	
15040.00	89.720	181.310	6905.74	2090.74	8729.35	-8729.00	-108.64	40°10'24.5168"N	104°34'54.9864"W	1.60	107.70	0.03	1.60	
15135.00	89.570	181.780	6906.32	2091.32	8824.33	-8823.96	-111.20	40°10'23.5786"N	104°34'55.0321"W	0.52	-82.41	-0.16	0.49	
15229.00	89.630	181.330	6906.98	2091.98	8918.30	-8917.93	-113.75	40°10'22.6504"N	104°34'55.0775"W	0.48	-63.02	0.06	-0.48	
15323.00	89.910	180.780	6907.36	2092.36	9012.29	-9011.91	-115.48	40°10'21.7219"N	104°34'55.1123"W	0.66	105.95	0.30	-0.59	
15418.00	89.750	181.340	6907.64	2092.64	9107.28	-9106.89	-117.24	40°10'20.7835"N	104°34'55.1476"W	0.61	13.50	-0.17	0.59	
15512.00	90.000	181.400	6907.84	2092.84	9201.26	-9200.86	-119.49	40°10'19.8551"N	104°34'55.1891"W	0.27	-12.31	0.27	0.06	
15606.00	90.550	181.280	6907.39	2092.39	9295.24	-9294.84	-121.69	40°10'18.9268"N	104°34'55.2299"W	0.60	180.00	0.59	-0.13	
15701.00	90.150	181.280	6906.81	2091.81	9390.22	-9389.81	-123.81	40°10'17.9885"N	104°34'55.2699"W	0.42	78.02	-0.42	0.00	
15795.00	90.220	181.610	6906.51	2091.51	9484.20	-9483.78	-126.18	40°10'17.0602"N	104°34'55.3130"W	0.36	-86.27	0.07	0.35	
15890.00	90.250	181.150	6906.12	2091.12	9579.18	-9578.75	-128.47	40°10'16.1220"N	104°34'55.3551"W	0.49	-114.44	0.03	-0.48	
15985.00	90.150	180.930	6905.79	2090.79	9674.17	-9673.74	-130.19	40°10'15.1835"N	104°34'55.3900"W	0.25	67.04	-0.11	-0.23	
16079.00	90.400	181.520	6905.34	2090.34	9768.15	-9767.71	-132.20	40°10'14.2551"N	104°34'55.4284"W	0.68	-116.04	0.27	0.63	
16174.00	89.970	180.640	6905.03	2090.03	9863.14	-9862.69	-133.99	40°10'13.3167"N	104°34'55.4642"W	1.03	101.31	-0.45	-0.93	
16268.00	89.850	181.240	6905.18	2090.18	9957.13	-9956.68	-135.53	40°10'12.3882"N	104°34'55.4966"W	0.65	-90.00	-0.13	0.64	
16363.00	89.850	181.190	6905.43	2090.43	10052.11	-10051.66	-137.55	40°10'11.4499"N	104°34'55.5352"W	0.05	0.00	0.00	-0.05	
16457.00	90.520	181.190	6905.12	2090.12	10146.10	-10145.64	-139.50	40°10'10.5214"N	104°34'55.5729"W	0.71	-167.47	0.71	0.00	
16552.00	90.250	181.130	6904.49	2089.49	10241.09	-10240.62	-141.42	40°10'9.5831"N	104°34'55.6103"W	0.29	-80.27	-0.28	-0.06	
16646.00	90.490	179.730	6903.88	2088.88	10335.08	-10334.61	-142.13	40°10'8.6543"N	104°34'55.6319"W	1.51	-84.47	0.26	-1.49	
16740.00	90.520	179.420	6903.05	2088.05	10429.07	-10428.60	-141.43	40°10'7.7255"N	104°34'55.6355"W	0.33	-112.48	0.03	-0.33	



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWP
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

WELLPATH DATA (214 stations) † = interpolated, ‡ = extrapolated station														
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
16835.00	90.280	178.840	6902.39	2087.39	10524.05	-10523.59	-139.99	40°10'6.7867"N	104°34'55.6295"W	0.66	-111.42	-0.25	-0.61	
16930.00	89.970	178.050	6902.18	2087.18	10619.00	-10618.55	-137.41	40°10'5.8481"N	104°34'55.6090"W	0.89	49.50	-0.33	-0.83	
17024.00	91.140	179.420	6901.27	2086.27	10712.96	-10712.52	-135.33	40°10'4.9193"N	104°34'55.5948"W	1.92	-134.21	1.24	1.46	
17118.00	89.690	177.930	6900.59	2085.59	10806.92	-10806.49	-133.16	40°10'3.9906"N	104°34'55.5793"W	2.21	56.84	-1.54	-1.59	
17213.00	90.180	178.680	6900.70	2085.70	10901.87	-10901.45	-130.35	40°10'3.0519"N	104°34'55.5558"W	0.94	85.33	0.52	0.79	
17308.00	90.220	179.170	6900.36	2085.36	10996.84	-10996.43	-128.57	40°10'2.1132"N	104°34'55.5455"W	0.52	-114.29	0.04	0.52	
17402.00	89.850	178.350	6900.31	2085.31	11090.81	-11090.41	-126.53	40°10'1.1844"N	104°34'55.5318"W	0.96	-80.14	-0.39	-0.87	
17496.00	89.970	177.660	6900.45	2085.45	11184.74	-11184.35	-123.26	40°10'0.2557"N	104°34'55.5022"W	0.75	46.93	0.13	-0.73	
17591.00	90.400	178.120	6900.15	2085.15	11279.66	-11279.28	-119.76	40°09'59.3173"N	104°34'55.4698"W	0.66	-174.81	0.45	0.48	
17686.00	89.850	178.070	6899.94	2084.94	11374.59	-11374.23	-116.61	40°09'58.3787"N	104°34'55.4418"W	0.58	69.86	-0.58	-0.05	
17780.00	90.180	178.970	6899.92	2084.92	11468.55	-11468.20	-114.18	40°09'57.4499"N	104°34'55.4231"W	1.02	-118.14	0.35	0.96	
17875.00	89.720	178.110	6900.00	2085.00	11563.51	-11563.17	-111.76	40°09'56.5113"N	104°34'55.4046"W	1.03	-17.53	-0.48	-0.91	
17969.00	89.910	178.050	6900.30	2085.30	11657.44	-11657.11	-108.61	40°09'55.5826"N	104°34'55.3765"W	0.21	66.43	0.20	-0.06	
18064.00	90.150	178.600	6900.25	2085.25	11752.39	-11752.07	-105.83	40°09'54.6440"N	104°34'55.3534"W	0.63	-50.44	0.25	0.58	
18158.00	90.340	178.370	6899.85	2084.85	11846.35	-11846.04	-103.35	40°09'53.7152"N	104°34'55.3339"W	0.32	-103.63	0.20	-0.24	
18252.00	90.180	177.710	6899.42	2084.42	11940.28	-11939.98	-100.13	40°09'52.7866"N	104°34'55.3051"W	0.72	61.87	-0.17	-0.70	
18347.00	90.490	178.290	6898.87	2083.87	12035.20	-12034.92	-96.82	40°09'51.8481"N	104°34'55.2750"W	0.69	161.57	0.33	0.61	
18442.00	90.340	178.340	6898.18	2083.18	12130.15	-12129.88	-94.02	40°09'50.9095"N	104°34'55.2517"W	0.17	-117.18	-0.16	0.05	
18537.00	90.150	177.970	6897.77	2082.77	12225.09	-12224.83	-90.96	40°09'49.9709"N	104°34'55.2250"W	0.44	71.57	-0.20	-0.39	
18631.00	90.180	178.060	6897.50	2082.50	12319.02	-12318.77	-87.71	40°09'49.0423"N	104°34'55.1955"W	0.10	-90.00	0.03	0.10	
18725.00	90.180	177.850	6897.21	2082.21	12412.94	-12412.71	-84.35	40°09'48.1137"N	104°34'55.1649"W	0.22	90.00	0.00	-0.22	
18820.00	90.180	178.010	6896.91	2081.91	12507.87	-12507.65	-80.92	40°09'47.1752"N	104°34'55.1333"W	0.17	-100.62	0.00	0.17	
18914.00	90.090	177.530	6896.69	2081.69	12601.78	-12601.58	-77.27	40°09'46.2467"N	104°34'55.0988"W	0.52	-63.44	-0.10	-0.51	
19009.00	90.150	177.410	6896.49	2081.49	12696.67	-12696.48	-73.07	40°09'45.3084"N	104°34'55.0574"W	0.14	85.10	0.06	-0.13	
19104.00	90.180	177.760	6896.22	2081.22	12791.57	-12791.40	-69.07	40°09'44.3701"N	104°34'55.0185"W	0.37	48.81	0.03	0.37	
19198.00	90.250	177.840	6895.86	2080.86	12885.48	-12885.33	-65.46	40°09'43.4416"N	104°34'54.9845"W	0.11	97.39	0.07	0.09	
19293.00	90.180	178.380	6895.51	2080.51	12980.42	-12980.28	-62.33	40°09'42.5030"N	104°34'54.9569"W	0.57	-104.04	-0.07	0.57	
19387.00	90.090	178.020	6895.28	2080.28	13074.36	-13074.23	-59.37	40°09'41.5743"N	104°34'54.9314"W	0.39	-69.62	-0.10	-0.38	
19482.00	90.220	177.670	6895.03	2080.03	13169.28	-13169.16	-55.80	40°09'40.6359"N	104°34'54.8980"W	0.39	151.82	0.14	-0.37	
19576.00	89.940	177.820	6894.90	2079.90	13263.19	-13263.09	-52.10	40°09'39.7074"N	104°34'54.8629"W	0.34	-36.57	-0.30	0.16	
19671.00	90.250	177.590	6894.74	2079.74	13358.10	-13358.01	-48.30	40°09'38.7690"N	104°34'54.8266"W	0.41	-136.85	0.33	-0.24	
19765.00	90.090	177.440	6894.46	2079.46	13451.99	-13451.92	-44.22	40°09'37.8406"N	104°34'54.7866"W	0.23	0.00	-0.17	-0.16	
19817.00	90.280	177.440	6894.29	2079.29	13503.93	-13503.87	-41.90	40°09'37.3270"N	104°34'54.7636"W	0.37	0.00	0.37	0.00	LAST BH MWD SURVEY
19841.00‡	90.280	177.440	6894.17	2079.17	13527.90	-13527.85	-40.83	40°09'37.0900"N	104°34'54.7530"W	0.00		0.00	0.00	EXTRAPOLATED TO TD

DIRECTIONAL DIFFICULTY INDEX			
Directional Difficulty Index @ TD = <b>6.97</b>		Reference: IADC/SPE 59196	
Values	Wellpath characterized as:	Values	Wellpath characterized as:
< 6.0	Relatively short or simple profiles with low tortuosity	6.4-6.8	Longer with relatively tortuous well paths
< 6.0-6.4	Shorter with high tortuosity or longer with lower tortuosity	> 6.8	Long tortuous profiles, high degree of difficulty

## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWB
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

## HOLE & CASING SECTIONS - Ref Wellbore: GUTTERSEN Y05-786 AWB Ref Wellpath: GUTTERSEN Y05-786 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	1929.00	1899.00	30.00	1928.97	-0.01	0.00	5.20	3.23
9.625in Casing Surface	30.00	1929.00	1899.00	30.00	1928.97	-0.01	0.00	5.20	3.23
8.5in Open Hole	1929.00	19841.00	17912.00	1928.97	6894.17	5.20	3.23	-13527.85	-40.83

## TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
GUTTERSEN Y05-786 BHL REV-3 (75'FSL & 768'FWL, SEC.Y05)	6891.76	-13528.75	-52.08	3256595.34	1302569.01	40°09'37.0822"N	104°34'54.8980"W	point
GUTTERSEN Y05-786 TPZ REV-3 (2256'FSL & 715'FWL, SEC.29)	6903.31	-849.19	-214.62	3256432.81	1315248.00	40°11'42.3917"N	104°34'55.3008"W	point
GUTTERSEN Y05 SECT.LINES SEC.05-T02N-R64W	9001.00	-10995.54	-845.37	3255802.08	1305102.11	40°10'2.1952"N	104°35'4.7782"W	polygon
	2D Polygon: dimensions not calculated							
GUTTERSEN Y05 SECT.LINES SEC.29-T03N-R64W	9001.00	-461.70	-928.49	3255718.96	1315635.48	40°11'46.2937"N	104°35'4.4480"W	polygon
	2D Polygon: dimensions not calculated							
GUTTERSEN Y05 SECT.LINES SEC.32-T03N-R64W	9001.00	-5747.70	-892.42	3255755.04	1310349.72	40°10'54.0565"N	104°35'4.6863"W	polygon
	2D Polygon: dimensions not calculated							
GUTTERSEN Y05-786 WSU BOUNDARY	9001.00	863.10	-940.51	3255706.95	1316960.22	40°11'59.3858"N	104°35'4.4266"W	polygon
	2D Polygon: dimensions not calculated							
GUTTERSEN Y05-786 WSU BOUNDARY 460' SETBACK	9001.00	414.40	-477.65	3256169.79	1316511.54	40°11'54.9048"N	104°34'58.5217"W	polygon
	2D Polygon: dimensions not calculated							

## WELLPATH COMPOSITION - Ref Wellbore: GUTTERSEN Y05-786 AWB Ref Wellpath: GUTTERSEN Y05-786 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
0.00	1924.00	Gyrodata 2015 - GC+DROP+COND	13.5" Gyrodata (GYRODATA 2015-GC-DROP-COND) <0° - 1924°>	GUTTERSEN Y05-786 AWB	12/22/2019
1924.00	19841.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	8.5" ATK (OWSG MWD REV.2+IFR1+MSA) <1993° - 19817°>	GUTTERSEN Y05-786 AWB	12/22/2019



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Well	GUTTERSEN Y05-786
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	05-123-48037-00
Facility	SEC.29-T03N-R64W	Wellbore	GUTTERSEN Y05-786 AWB
Slot	SLOT#34 GUTTERSEN Y05-786 (2206'FNL & 935'FWL, SEC.29)		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
81.00	0.140	166.590	81.00	3RD PARTY FIRST GYRO SURVEY
1927.00	0.401	7.499	1926.97	TIE ON TO 3RD PARTY GYRO SURVEY
1993.00	0.900	352.550	1992.96	FIRST BH MWD SURVEY
19817.00	90.280	177.440	6894.29	LAST BH MWD SURVEY
19841.00	90.280	177.440	6894.17	EXTRAPOLATED TO TD