

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: LARSON A23-678
Facility: SEC.24-T06N-R64W Wellbore: LARSON A23-678 PWB

Plot reference wellpath is LARSON A23-678 (REV-A.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to RIG (30'KB) (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to RIG (30'KB) (RKB)	North Reference: Grid north
RIG (30'KB) (RKB) to Mean Sea Level: 4682 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: guenaler on 2018-08-07
	Database: WA_DEN_Denver_Defn

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC.24-T06N-R64W			3281075.203	1414828.232	40°28'03.756"N	104°29'23.136"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)	3471.68	-42.34	3281032.869	1418299.782	40°28'38.064"N	104°29'23.172"W
RIG (30'KB) (RKB) to Ground level (At Slot: SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24))					4682ft	
Mean Sea Level to Ground level (At Slot: SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24))					0ft	
RIG (30'KB) (RKB) to Mean Sea Level					4682ft	

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	17115.38	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		LARSON A23-678 PWB

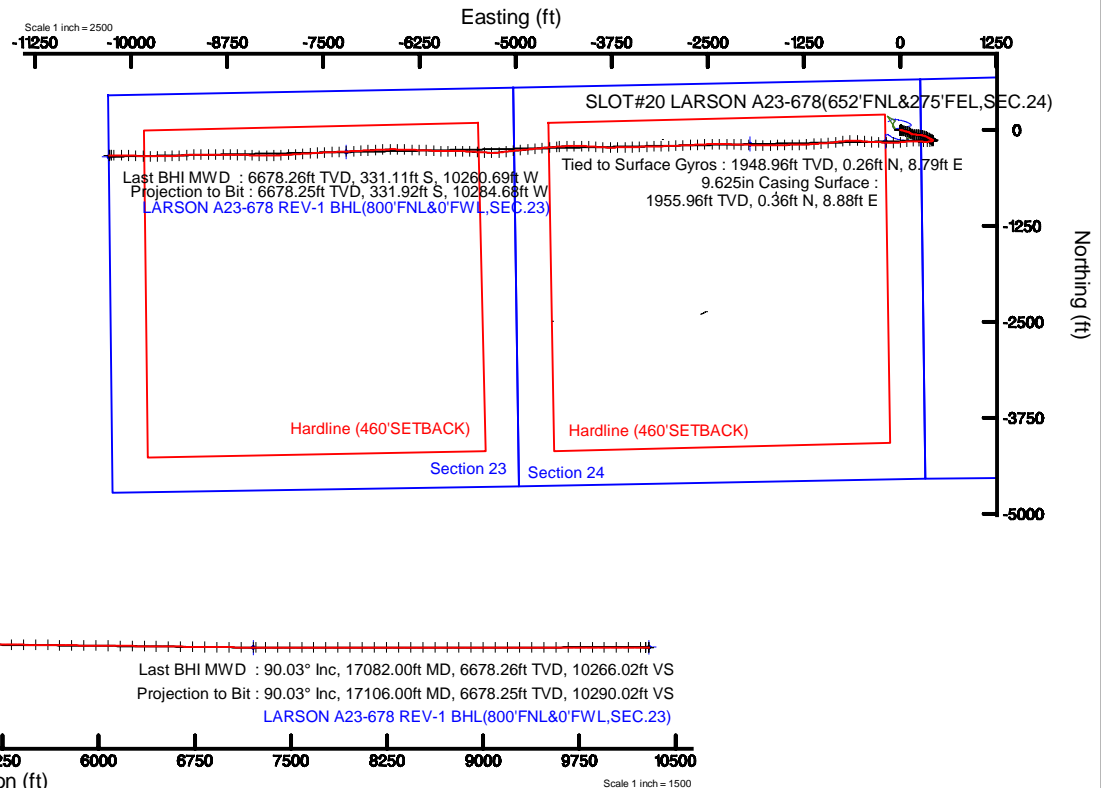
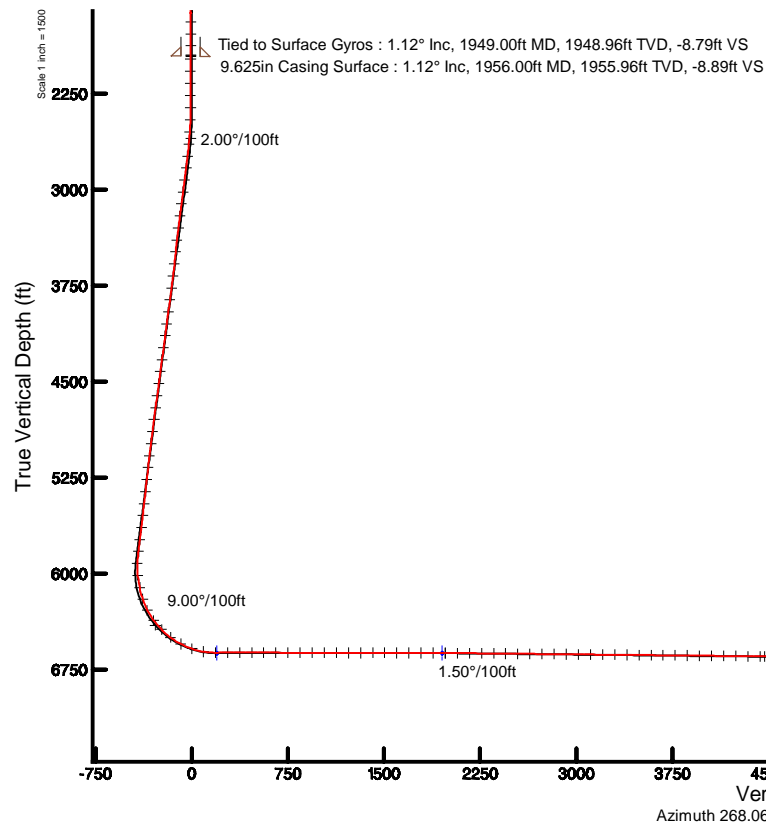
Comments

SURFACE LOCATION: NENE

40.47724N

104.48977W

API: 05-123-45096



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Guenaler
Scale	0.999965	Report Generated	8/7/2018 at 9:57:43 AM
Convergence at slot	0.66° East	Database/Source file	WA_DEN_Denver_Defn/LARSON_A23-678_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	3471.68	-42.34	3281032.87	1418299.78	40°28'38.064"N	104°29'23.172"W
Facility Reference Pt			3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"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	4682.00ft
Horizontal Reference Pt	Slot	RIG (30'KB) (RKB) to Mean Sea Level	4682.00ft
Vertical Reference Pt	RIG (30'KB) (RKB)	RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#20 LARSON A23-678 (652'FNL&275'FEL,SEC.24))	4682.00ft
MD Reference Pt	RIG (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	268.06°



Actual Wellpath Report

LARSON A23-678 AWP



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Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	132.980	0.00	0.00	0.00	0.00	40°28'38.064"N	104°29'23.172"W	0.00	
78.00	0.250	132.980	78.00	-0.12	-0.12	0.12	40°28'38.063"N	104°29'23.170"W	0.32	
178.00	0.410	142.450	178.00	-0.48	-0.55	0.50	40°28'38.059"N	104°29'23.166"W	0.17	
269.00	0.270	109.400	269.00	-0.87	-0.88	0.90	40°28'38.055"N	104°29'23.160"W	0.26	
364.00	0.260	141.050	364.00	-1.21	-1.12	1.25	40°28'38.053"N	104°29'23.156"W	0.15	
458.00	0.240	133.700	457.99	-1.48	-1.42	1.53	40°28'38.050"N	104°29'23.152"W	0.04	
553.00	0.330	103.320	552.99	-1.88	-1.62	1.94	40°28'38.048"N	104°29'23.147"W	0.18	
647.00	0.350	108.560	646.99	-2.41	-1.78	2.47	40°28'38.046"N	104°29'23.140"W	0.04	
742.00	0.590	85.180	741.99	-3.17	-1.83	3.23	40°28'38.046"N	104°29'23.130"W	0.32	
836.00	0.330	74.650	835.99	-3.92	-1.71	3.98	40°28'38.047"N	104°29'23.121"W	0.29	
931.00	0.590	75.980	930.98	-4.66	-1.52	4.72	40°28'38.048"N	104°29'23.111"W	0.27	
1120.00	0.360	104.540	1119.98	-6.18	-1.44	6.23	40°28'38.049"N	104°29'23.092"W	0.17	
1214.00	0.280	80.560	1213.97	-6.69	-1.47	6.75	40°28'38.049"N	104°29'23.085"W	0.16	
1309.00	0.240	104.790	1308.97	-7.11	-1.49	7.17	40°28'38.049"N	104°29'23.079"W	0.12	
1403.00	0.150	120.430	1402.97	-7.41	-1.60	7.46	40°28'38.047"N	104°29'23.076"W	0.11	
1498.00	0.060	94.680	1497.97	-7.56	-1.67	7.62	40°28'38.047"N	104°29'23.074"W	0.10	
1592.00	0.110	121.730	1591.97	-7.68	-1.72	7.75	40°28'38.046"N	104°29'23.072"W	0.07	
1687.00	0.240	19.850	1686.97	-7.83	-1.58	7.89	40°28'38.048"N	104°29'23.070"W	0.30	
1781.00	0.100	44.840	1780.97	-7.97	-1.33	8.02	40°28'38.050"N	104°29'23.068"W	0.17	
1875.00	0.700	13.050	1874.97	-8.18	-0.72	8.20	40°28'38.056"N	104°29'23.066"W	0.66	
1949.00	1.120	41.790	1948.96	-8.79	0.26	8.79	40°28'38.066"N	104°29'23.058"W	0.82	Tied to Surface Gyros
1980.00	1.190	62.550	1979.95	-9.29	0.64	9.28	40°28'38.069"N	104°29'23.052"W	1.36	
2075.00	0.070	221.390	2074.95	-10.14	1.05	10.11	40°28'38.073"N	104°29'23.041"W	1.32	
2169.00	0.000	97.190	2168.95	-10.10	1.00	10.08	40°28'38.073"N	104°29'23.041"W	0.07	
2264.00	0.030	94.240	2263.95	-10.13	1.00	10.10	40°28'38.073"N	104°29'23.041"W	0.03	
2359.00	0.360	271.810	2358.95	-9.86	1.01	9.83	40°28'38.073"N	104°29'23.045"W	0.41	
2453.00	1.940	113.050	2452.93	-11.00	0.40	11.00	40°28'38.067"N	104°29'23.030"W	2.42	
2548.00	4.130	110.150	2547.79	-15.63	-1.41	15.69	40°28'38.048"N	104°29'22.969"W	2.31	
2642.00	5.240	106.450	2641.48	-22.84	-3.79	22.98	40°28'38.024"N	104°29'22.875"W	1.22	
2737.00	7.070	105.670	2735.93	-32.53	-6.60	32.77	40°28'37.995"N	104°29'22.749"W	1.93	



Actual Wellpath Report

LARSON A23-678 AWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2831.00	7.730	105.900	2829.14	-44.06	-9.90	44.42	40°28'37.961"N	104°29'22.599"W	0.70	
2926.00	7.640	105.710	2923.29	-56.16	-13.36	56.65	40°28'37.926"N	104°29'22.441"W	0.10	
3020.00	7.660	104.590	3016.45	-68.12	-16.63	68.72	40°28'37.892"N	104°29'22.285"W	0.16	
3115.00	7.650	100.800	3110.61	-80.36	-19.41	81.06	40°28'37.863"N	104°29'22.126"W	0.53	
3209.00	7.600	102.760	3203.78	-92.48	-21.95	93.27	40°28'37.837"N	104°29'21.968"W	0.28	
3304.00	7.560	110.350	3297.95	-104.33	-25.51	105.26	40°28'37.800"N	104°29'21.814"W	1.05	
3399.00	7.410	119.020	3392.14	-115.37	-30.66	116.47	40°28'37.748"N	104°29'21.669"W	1.20	
3493.00	7.470	126.250	3485.35	-125.37	-37.21	126.70	40°28'37.682"N	104°29'21.538"W	1.00	
3588.00	7.710	122.900	3579.52	-135.46	-44.32	137.03	40°28'37.611"N	104°29'21.405"W	0.53	
3682.00	7.810	115.790	3672.66	-146.28	-50.53	148.08	40°28'37.548"N	104°29'21.263"W	1.03	
3777.00	7.720	105.270	3766.79	-158.09	-55.02	160.05	40°28'37.502"N	104°29'21.109"W	1.50	
3871.00	7.700	97.930	3859.95	-170.33	-57.55	172.37	40°28'37.476"N	104°29'20.950"W	1.05	
3966.00	7.600	94.860	3954.10	-182.84	-58.96	184.94	40°28'37.461"N	104°29'20.788"W	0.44	
4060.00	7.650	93.780	4047.27	-195.24	-59.90	197.37	40°28'37.450"N	104°29'20.627"W	0.16	
4154.00	7.590	94.710	4140.44	-207.63	-60.82	209.80	40°28'37.439"N	104°29'20.466"W	0.15	
4249.00	7.550	95.540	4234.61	-220.05	-61.94	222.27	40°28'37.427"N	104°29'20.305"W	0.12	
4343.00	7.630	95.990	4327.79	-232.35	-63.18	234.62	40°28'37.413"N	104°29'20.145"W	0.11	
4437.00	7.870	97.070	4420.93	-244.89	-64.63	247.22	40°28'37.398"N	104°29'19.983"W	0.30	
4532.00	7.670	96.070	4515.06	-257.59	-66.10	259.97	40°28'37.382"N	104°29'19.818"W	0.25	
4626.00	7.500	97.510	4608.24	-269.85	-67.56	272.29	40°28'37.366"N	104°29'19.659"W	0.27	
4721.00	7.630	99.840	4702.41	-282.14	-69.45	284.65	40°28'37.346"N	104°29'19.499"W	0.35	
4815.00	7.390	102.130	4795.60	-294.12	-71.79	296.71	40°28'37.321"N	104°29'19.343"W	0.41	
4910.00	7.650	105.580	4889.79	-306.07	-74.77	308.78	40°28'37.290"N	104°29'19.188"W	0.55	
5004.00	7.740	108.420	4982.94	-317.97	-78.45	320.81	40°28'37.253"N	104°29'19.033"W	0.42	
5099.00	7.520	110.900	5077.10	-329.70	-82.69	332.69	40°28'37.209"N	104°29'18.879"W	0.42	
5193.00	7.250	116.440	5170.32	-340.59	-87.53	343.74	40°28'37.160"N	104°29'18.737"W	0.81	
5288.00	7.310	120.130	5264.56	-350.98	-93.23	354.34	40°28'37.103"N	104°29'18.601"W	0.50	
5382.00	7.580	122.790	5357.76	-361.15	-99.59	364.72	40°28'37.039"N	104°29'18.467"W	0.47	
5477.00	7.580	118.650	5451.93	-371.69	-105.99	375.49	40°28'36.974"N	104°29'18.329"W	0.57	
5572.00	7.550	116.290	5546.11	-382.58	-111.75	386.58	40°28'36.916"N	104°29'18.186"W	0.33	



Actual Wellpath Report

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Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5666.00	7.750	117.000	5639.27	-393.57	-117.37	397.77	40°28'36.860"N	104°29'18.042"W	0.24	
5760.00	7.860	117.750	5732.40	-404.70	-123.24	409.10	40°28'36.800"N	104°29'17.897"W	0.16	
5854.00	7.540	112.730	5825.55	-415.89	-128.61	420.48	40°28'36.746"N	104°29'17.750"W	0.79	
5949.00	5.570	136.810	5919.95	-424.59	-134.38	429.39	40°28'36.688"N	104°29'17.636"W	3.52	
6043.00	7.900	247.530	6013.57	-421.54	-140.20	426.53	40°28'36.631"N	104°29'17.674"W	11.87	
6138.00	11.160	258.690	6107.26	-406.35	-144.50	411.48	40°28'36.590"N	104°29'17.869"W	3.93	
6232.00	18.290	256.740	6198.11	-382.88	-149.67	388.17	40°28'36.541"N	104°29'18.171"W	7.60	
6327.00	26.730	267.100	6285.83	-346.83	-154.18	352.24	40°28'36.501"N	104°29'18.637"W	9.78	
6421.00	37.010	274.100	6365.58	-297.40	-153.23	302.76	40°28'36.516"N	104°29'19.277"W	11.61	
6515.00	44.810	275.860	6436.57	-236.36	-147.81	241.50	40°28'36.576"N	104°29'20.069"W	8.39	
6610.00	53.030	269.790	6498.97	-165.10	-144.53	170.08	40°28'36.617"N	104°29'20.993"W	9.90	
6705.00	62.810	262.900	6549.41	-84.82	-149.90	89.94	40°28'36.573"N	104°29'22.030"W	11.98	
6799.00	70.840	263.760	6586.37	1.23	-159.91	4.18	40°28'36.483"N	104°29'23.141"W	8.58	
6893.00	80.510	269.180	6609.62	92.13	-165.42	-86.58	40°28'36.439"N	104°29'24.317"W	11.70	
6988.00	90.250	272.770	6617.26	186.57	-163.79	-181.13	40°28'36.466"N	104°29'25.540"W	10.92	
7082.00	90.000	271.780	6617.06	280.31	-160.06	-275.05	40°28'36.513"N	104°29'26.755"W	1.09	
7176.00	90.090	272.310	6616.98	374.08	-156.71	-368.99	40°28'36.557"N	104°29'27.970"W	0.57	
7270.00	90.280	277.090	6616.68	467.43	-149.01	-462.65	40°28'36.644"N	104°29'29.180"W	5.09	
7365.00	89.690	274.350	6616.70	561.57	-139.54	-557.17	40°28'36.748"N	104°29'30.402"W	2.95	
7460.00	89.850	267.290	6617.09	656.40	-138.18	-652.10	40°28'36.772"N	104°29'31.630"W	7.43	
7554.00	89.570	262.470	6617.56	750.22	-146.57	-745.69	40°28'36.700"N	104°29'32.842"W	5.14	
7649.00	89.630	262.880	6618.23	844.80	-158.68	-839.92	40°28'36.591"N	104°29'34.063"W	0.44	
7743.00	89.540	264.810	6618.91	938.54	-168.76	-933.37	40°28'36.501"N	104°29'35.274"W	2.06	
7838.00	90.180	266.570	6619.14	1033.46	-175.89	-1028.09	40°28'36.442"N	104°29'36.501"W	1.97	
7932.00	89.820	265.780	6619.14	1127.40	-182.16	-1121.88	40°28'36.390"N	104°29'37.715"W	0.92	
8027.00	89.970	266.860	6619.31	1222.36	-188.26	-1216.69	40°28'36.340"N	104°29'38.943"W	1.15	
8121.00	89.940	268.750	6619.39	1316.35	-191.86	-1310.61	40°28'36.315"N	104°29'40.159"W	2.01	
8216.00	90.250	269.190	6619.23	1411.34	-193.57	-1405.60	40°28'36.309"N	104°29'41.388"W	0.57	
8310.00	89.720	269.150	6619.25	1505.32	-194.93	-1499.59	40°28'36.306"N	104°29'42.604"W	0.57	
8404.00	89.880	268.100	6619.58	1599.32	-197.19	-1593.56	40°28'36.295"N	104°29'43.820"W	1.13	



Actual Wellpath Report

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8499.00	89.970	268.760	6619.71	1694.31	-199.79	-1688.52	40°28'36.279"N	104°29'45.050"W	0.70	
8593.00	89.940	270.260	6619.78	1788.28	-200.59	-1782.51	40°28'36.282"N	104°29'46.266"W	1.60	
8688.00	90.000	272.600	6619.83	1883.11	-198.22	-1877.48	40°28'36.316"N	104°29'47.494"W	2.46	
8782.00	89.940	272.450	6619.88	1976.82	-194.08	-1971.39	40°28'36.367"N	104°29'48.709"W	0.17	
8877.00	89.230	271.980	6620.57	2071.57	-190.41	-2066.31	40°28'36.414"N	104°29'49.937"W	0.90	
8971.00	89.450	271.780	6621.65	2165.36	-187.33	-2160.26	40°28'36.455"N	104°29'51.152"W	0.32	
9066.00	89.320	271.540	6622.67	2260.16	-184.58	-2255.21	40°28'36.493"N	104°29'52.380"W	0.29	
9161.00	89.420	270.730	6623.71	2355.02	-182.69	-2350.19	40°28'36.522"N	104°29'53.609"W	0.86	
9255.00	89.420	268.570	6624.67	2448.97	-183.27	-2444.17	40°28'36.527"N	104°29'54.825"W	2.30	
9350.00	89.110	267.180	6625.88	2543.96	-186.79	-2539.10	40°28'36.503"N	104°29'56.054"W	1.50	
9444.00	89.690	266.990	6626.87	2637.94	-191.57	-2632.97	40°28'36.466"N	104°29'57.269"W	0.65	
9539.00	89.350	267.040	6627.66	2732.93	-196.52	-2727.84	40°28'36.428"N	104°29'58.497"W	0.36	
9633.00	89.350	266.950	6628.73	2826.90	-201.44	-2821.70	40°28'36.390"N	104°29'59.712"W	0.10	
9728.00	89.350	267.810	6629.81	2921.89	-205.79	-2916.60	40°28'36.357"N	104°30'00.941"W	0.91	
9822.00	89.450	268.170	6630.79	3015.88	-209.08	-3010.53	40°28'36.335"N	104°30'02.157"W	0.40	
9917.00	89.350	268.350	6631.79	3110.88	-211.97	-3105.48	40°28'36.317"N	104°30'03.386"W	0.22	
10011.00	89.420	268.800	6632.80	3204.87	-214.31	-3199.45	40°28'36.305"N	104°30'04.602"W	0.48	
10106.00	89.570	268.370	6633.63	3299.86	-216.65	-3294.42	40°28'36.292"N	104°30'05.831"W	0.48	
10201.00	89.380	267.990	6634.50	3394.86	-219.67	-3389.36	40°28'36.273"N	104°30'07.060"W	0.45	
10295.00	89.140	267.660	6635.72	3488.85	-223.24	-3483.29	40°28'36.248"N	104°30'08.276"W	0.43	
10390.00	89.350	268.910	6636.97	3583.84	-226.08	-3578.24	40°28'36.230"N	104°30'09.505"W	1.33	
10484.00	89.380	269.220	6638.01	3677.82	-227.61	-3672.22	40°28'36.226"N	104°30'10.721"W	0.33	
10579.00	89.540	269.840	6638.91	3772.78	-228.39	-3767.21	40°28'36.229"N	104°30'11.950"W	0.67	
10674.00	89.510	274.050	6639.70	3867.54	-225.17	-3862.13	40°28'36.271"N	104°30'13.178"W	4.43	
10768.00	89.230	273.440	6640.73	3961.07	-219.03	-3955.92	40°28'36.342"N	104°30'14.391"W	0.71	
10862.00	89.420	273.800	6641.84	4054.62	-213.09	-4049.73	40°28'36.411"N	104°30'15.604"W	0.43	
10957.00	89.480	271.250	6642.75	4149.32	-208.91	-4144.62	40°28'36.463"N	104°30'16.831"W	2.68	
11051.00	89.200	269.280	6643.83	4243.24	-208.47	-4238.61	40°28'36.478"N	104°30'18.047"W	2.12	
11146.00	89.260	268.210	6645.11	4338.22	-210.55	-4333.58	40°28'36.468"N	104°30'19.276"W	1.13	
11241.00	89.230	265.870	6646.36	4433.19	-215.46	-4428.44	40°28'36.430"N	104°30'20.504"W	2.46	



Actual Wellpath Report

LARSON A23-678 AWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11277.00	89.510	265.550	6646.76	4469.16	-218.15	-4464.34	40°28'36.407"N	104°30'20.969"W	1.18	
11372.00	89.290	264.350	6647.75	4564.01	-226.51	-4558.96	40°28'36.335"N	104°30'22.195"W	1.28	
11467.00	89.510	264.980	6648.75	4658.84	-235.35	-4653.54	40°28'36.258"N	104°30'23.420"W	0.70	
11561.00	89.480	264.730	6649.57	4752.69	-243.78	-4747.16	40°28'36.185"N	104°30'24.633"W	0.27	
11656.00	89.350	264.230	6650.54	4847.50	-252.91	-4841.71	40°28'36.105"N	104°30'25.857"W	0.54	
11751.00	89.320	264.480	6651.65	4942.29	-262.26	-4936.25	40°28'36.023"N	104°30'27.082"W	0.27	
11845.00	89.320	264.940	6652.76	5036.13	-270.92	-5029.84	40°28'35.948"N	104°30'28.294"W	0.49	
11939.00	89.450	260.920	6653.77	5129.72	-282.49	-5123.10	40°28'35.844"N	104°30'29.503"W	4.28	
12034.00	89.380	264.660	6654.74	5224.30	-294.41	-5217.33	40°28'35.737"N	104°30'30.723"W	3.94	
12129.00	89.260	272.400	6655.87	5319.22	-296.85	-5312.22	40°28'35.723"N	104°30'31.952"W	8.15	
12223.00	89.230	272.990	6657.11	5412.90	-292.43	-5406.11	40°28'35.777"N	104°30'33.166"W	0.63	
12318.00	89.510	273.700	6658.15	5507.49	-286.88	-5500.94	40°28'35.843"N	104°30'34.392"W	0.80	
12412.00	89.290	273.760	6659.14	5601.03	-280.77	-5594.73	40°28'35.913"N	104°30'35.605"W	0.24	
12506.00	89.200	271.770	6660.38	5694.70	-276.23	-5688.61	40°28'35.968"N	104°30'36.819"W	2.12	
12600.00	89.260	269.280	6661.64	5788.60	-275.37	-5782.59	40°28'35.987"N	104°30'38.035"W	2.65	
12694.00	89.320	269.680	6662.81	5882.56	-276.23	-5876.58	40°28'35.989"N	104°30'39.251"W	0.43	
12789.00	89.480	271.530	6663.80	5977.46	-275.22	-5971.56	40°28'36.010"N	104°30'40.480"W	1.95	
12884.00	89.510	273.650	6664.64	6072.15	-270.93	-6066.46	40°28'36.063"N	104°30'41.707"W	2.23	
12978.00	89.170	273.050	6665.72	6165.74	-265.44	-6160.29	40°28'36.127"N	104°30'42.921"W	0.73	
13073.00	89.200	270.980	6667.07	6260.50	-262.10	-6255.22	40°28'36.171"N	104°30'44.148"W	2.18	
13168.00	89.380	272.460	6668.25	6355.30	-259.25	-6350.16	40°28'36.209"N	104°30'45.376"W	1.57	
13262.00	89.290	271.990	6669.34	6449.05	-255.60	-6444.09	40°28'36.256"N	104°30'46.591"W	0.51	
13357.00	89.200	271.130	6670.59	6543.86	-253.01	-6539.04	40°28'36.292"N	104°30'47.820"W	0.91	
13451.00	89.170	269.220	6671.93	6637.78	-252.73	-6633.03	40°28'36.305"N	104°30'49.036"W	2.03	
13546.00	89.290	267.010	6673.21	6732.77	-255.85	-6727.96	40°28'36.284"N	104°30'50.264"W	2.33	
13640.00	89.290	266.750	6674.37	6826.74	-260.97	-6821.82	40°28'36.244"N	104°30'51.480"W	0.28	
13735.00	89.230	267.290	6675.60	6921.72	-265.90	-6916.68	40°28'36.206"N	104°30'52.708"W	0.57	
13830.00	89.420	267.780	6676.72	7016.70	-269.99	-7011.58	40°28'36.176"N	104°30'53.936"W	0.55	
13924.00	89.290	266.450	6677.78	7110.68	-274.72	-7105.46	40°28'36.139"N	104°30'55.152"W	1.42	
14019.00	90.000	265.940	6678.36	7205.63	-281.02	-7200.24	40°28'36.087"N	104°30'56.379"W	0.92	



Actual Wellpath Report
LARSON A23-678 AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
14113.00	90.000	268.660	6678.36	7299.61	-285.45	-7294.13	40°28'36.054"N	104°30'57.594"W	2.89	
14208.00	90.000	267.410	6678.36	7394.61	-288.71	-7389.07	40°28'36.032"N	104°30'58.823"W	1.32	
14302.00	89.880	266.960	6678.46	7488.60	-293.33	-7482.96	40°28'35.997"N	104°31'00.039"W	0.50	
14397.00	90.180	266.710	6678.41	7583.58	-298.57	-7577.82	40°28'35.955"N	104°31'01.267"W	0.41	
14491.00	89.780	266.500	6678.45	7677.55	-304.14	-7671.65	40°28'35.911"N	104°31'02.482"W	0.48	
14586.00	90.030	266.380	6678.60	7772.51	-310.04	-7766.47	40°28'35.863"N	104°31'03.710"W	0.29	
14680.00	90.060	265.850	6678.53	7866.45	-316.41	-7860.25	40°28'35.810"N	104°31'04.924"W	0.56	
14775.00	90.030	266.750	6678.45	7961.41	-322.54	-7955.05	40°28'35.760"N	104°31'06.152"W	0.95	
14869.00	90.180	267.090	6678.28	8055.39	-327.59	-8048.91	40°28'35.720"N	104°31'07.367"W	0.40	
14964.00	89.970	267.600	6678.16	8150.38	-331.99	-8143.81	40°28'35.687"N	104°31'08.595"W	0.58	
15058.00	89.940	269.750	6678.23	8244.37	-334.16	-8237.78	40°28'35.676"N	104°31'09.812"W	2.29	
15153.00	90.060	272.000	6678.23	8339.25	-332.71	-8332.76	40°28'35.701"N	104°31'11.040"W	2.37	
15247.00	90.060	272.250	6678.13	8433.01	-329.22	-8426.70	40°28'35.745"N	104°31'12.255"W	0.27	
15342.00	89.880	271.820	6678.18	8527.79	-325.85	-8521.64	40°28'35.789"N	104°31'13.483"W	0.49	
15437.00	90.120	271.280	6678.18	8622.61	-323.28	-8616.60	40°28'35.825"N	104°31'14.712"W	0.62	
15532.00	89.940	270.920	6678.13	8717.48	-321.46	-8711.59	40°28'35.853"N	104°31'15.940"W	0.42	
15626.00	90.000	270.540	6678.18	8811.37	-320.26	-8805.58	40°28'35.875"N	104°31'17.156"W	0.41	
15721.00	89.820	269.540	6678.33	8906.32	-320.19	-8900.58	40°28'35.886"N	104°31'18.386"W	1.07	
15815.00	90.060	269.360	6678.43	9000.29	-321.10	-8994.57	40°28'35.888"N	104°31'19.602"W	0.32	
15909.00	89.850	270.450	6678.50	9094.24	-321.25	-9088.57	40°28'35.896"N	104°31'20.818"W	1.18	
16004.00	90.000	268.180	6678.63	9189.21	-322.39	-9183.56	40°28'35.895"N	104°31'22.048"W	2.39	
16099.00	89.850	266.720	6678.75	9284.20	-326.61	-9278.46	40°28'35.864"N	104°31'23.276"W	1.54	
16193.00	89.970	265.570	6678.90	9378.15	-332.93	-9372.25	40°28'35.812"N	104°31'24.491"W	1.23	
16288.00	90.150	266.970	6678.80	9473.10	-339.11	-9467.04	40°28'35.761"N	104°31'25.718"W	1.49	
16382.00	89.630	268.130	6678.98	9567.09	-343.13	-9560.96	40°28'35.732"N	104°31'26.934"W	1.35	
16477.00	90.220	270.540	6679.11	9662.06	-344.23	-9655.94	40°28'35.731"N	104°31'28.163"W	2.61	
16571.00	90.120	271.450	6678.83	9755.94	-342.60	-9749.93	40°28'35.757"N	104°31'29.379"W	0.97	
16666.00	90.000	271.810	6678.73	9850.75	-339.90	-9844.89	40°28'35.794"N	104°31'30.607"W	0.40	
16760.00	90.150	272.720	6678.60	9944.50	-336.18	-9938.81	40°28'35.841"N	104°31'31.822"W	0.98	
16855.00	90.030	271.960	6678.46	10039.23	-332.31	-10033.73	40°28'35.890"N	104°31'33.050"W	0.81	



Actual Wellpath Report

LARSON A23-678 AWP



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH DATA (184 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
16949.00	89.970	270.740	6678.46	10133.07	-330.09	-10127.70	40°28'35.922"N	104°31'34.265"W	1.30	
17044.00	90.180	269.140	6678.33	10228.02	-330.19	-10222.70	40°28'35.931"N	104°31'35.494"W	1.70	
17082.00	90.030	268.080	6678.26	10266.02	-331.11	-10260.69	40°28'35.926"N	104°31'35.986"W	2.82	Last BHI MWD
17106.00	90.030	268.080	6678.25	10290.02	-331.92	-10284.68	40°28'35.921"N	104°31'36.297"W	0.00	Projection to Bit

HOLE & CASING SECTIONS - Ref Wellbore: LARSON A23-678 Ref Wellpath: LARSON A23-678 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	1956.00	1926.00	30.00	1955.96	-0.02	0.02	0.36	8.88
9.625in Casing Surface	30.00	1956.00	1926.00	30.00	1955.96	-0.02	0.02	0.36	8.88
8.5in Open Hole	1956.00	17106.00	15150.00	1955.96	6678.25	0.36	8.88	-331.92	-10284.68



Actual Wellpath Report

LARSON A23-678 AWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
LARSON A23-639 Section 23	6.00	-3242.18	39.72	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON A23-639 Section 24	6.00	-3242.18	39.72	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON AA19-618 SECTION 19	6.00	-3471.68	42.34	3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"W	polygon
LARSON AA19-618 SECTION 19 HARDLINE (460'SETBACK)	6.00	-3471.68	42.34	3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"W	polygon
LARSON A23-678 LANDING POINT	6621.00	-150.00	-190.00	3280842.88	1418149.79	40°28'36.603"N	104°29'25.653"W	point
LARSON A23-678 TARGET 1	6621.00	-184.56	-1950.00	3279082.94	1418115.23	40°28'36.459"N	104°29'48.431"W	point
LARSON A23-678 REV-1 BHL(800'FNL&0'FWL,SEC.23)	6676.58	-348.24	-10287.54	3270745.71	1417951.56	40°28'35.760"N	104°31'36.336"W	point
LARSON A23-678 TARGET 2	6679.00	-287.63	-7200.00	3273833.14	1418012.16	40°28'36.022"N	104°30'56.377"W	point
LARSON A23-639 SECTION 23 Hardline (460'SETBACK)	7006.00	-3242.18	39.72	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON A23-639 SECTION 24 Hardline (460'SETBACK)	7006.00	-3242.18	39.72	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon



Actual Wellpath Report

LARSON A23-678 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH COMPOSITION - Ref Wellbore: LARSON A23-678 Ref Wellpath: LARSON A23-678 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1949.00	Gyrodatta standard - Drop gyro or Multi-shot	3rd Party Surface Gyros <78'-1949'	LARSON A23-678
1949.00	17082.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BHI/ATC 8.5" Hole, OWSG MWD rev2+IFR+MSA <1980'-17082'>	LARSON A23-678
17082.00	17106.00	Blind Drilling (std)	Projection to bit	LARSON A23-678



Actual Wellpath Report

LARSON A23-678 AWP



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#20 LARSON A23-678(652'FNL&275'FEL,SEC.24)
Area	COLORADO	Well	LARSON A23-678
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-678
Facility	SEC.24-T06N-R64W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1949.00	1.120	41.790	1948.96	Tied to Surface Gyros
17082.00	90.030	268.080	6678.26	Last BHI MWD
17106.00	90.030	268.080	6678.25	Projection to Bit

COMMENTS	
<div>Wellpath general comments</div> <div>SURFACE LOCATION: NENE</div> <div>40.47724N</div> <div>104.48977W</div> <div>API: 05-123-45096</div>	