

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#22 LARSON A23-662 (2329'FNL&535'FWL, SEC.19)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: LARSON A23-662
Facility: SEC.19-T06N-R63W Wellbore: LARSON A23-662 PWB

Plot reference wellpath is LARSON A23-662 (REV-B.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 517 (30'KB) (RKB)	North Reference: Grid north
Measured depths are referenced to H&P 517 (30'KB) (RKB)	Scale: True distance
H&P 517 (30'KB) (RKB) to Mean Sea Level: 4679 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: SLOT#22 LARSON A23-662 (2329'FNL&535'FWL, SEC.19)): 0 feet	Created by: amuntine on 2018-06-15
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.19-T06N-R63W			3282103.737	1414428.283	40°27'59.688"N	104°29'09.888"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#22 LARSON A23-662 (2329'FNL&535'FWL, SEC.19)	2216.06	-242.37	3281861.379	1416644.261	40°28'21.612"N	104°29'12.696"W
H&P 517 (30'KB) (RKB) to Ground level (At Slot: SLOT#22 LARSON A23-662 (2329'FNL&535'FWL, SEC.19))					4679ft	
Mean Sea Level to Ground level (At Slot: SLOT#22 LARSON A23-662 (2329'FNL&535'FWL, SEC.19))					0ft	
H&P 517 (30'KB) (RKB) to Mean Sea Level					4679ft	

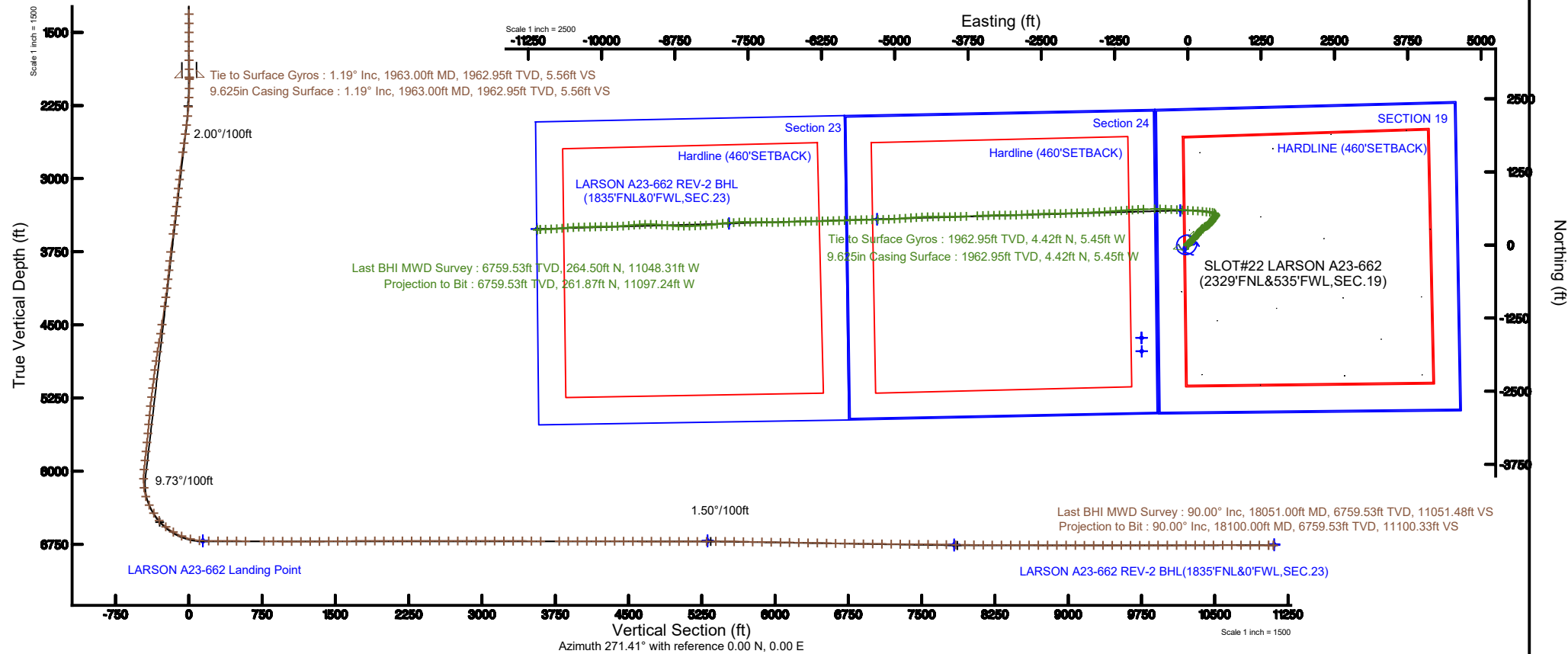


Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	18102.71	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		LARSON A23-662 PWB

Comments

SURFACE LOCATION: SWNW
40.47267N
104.48686W
API: 05-123-45513





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REFERENCE WELLPATH IDENTIFICATION			
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Area	COLORADO	Well	LARSON A23-662
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Amuntime
Scale	0.999964	Report Generated	6/15/2018 at 9:02:54 AM
Convergence at slot	0.65° East	Database/Source file	WA DENVER/LARSON_A23-662_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2216.06	-242.37	3281861.38	1416644.26	40°28'21.612"N	104°29'12.696"W
Facility Reference Pt			3282103.74	1414428.28	40°27'59.688"N	104°29'09.888"W
Field Reference Pt			3000000.00	4454105.15	48°46'34.315"N	105°30'00.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P 517 (30'KB) (RKB) to Facility Vertical Datum	4679.00ft
Horizontal Reference Pt	Slot	H&P 517 (30'KB) (RKB) to Mean Sea Level	4679.00ft
Vertical Reference Pt	H&P 517 (30'KB) (RKB)	H&P 517 (30'KB) (RKB) to Ground Level at Slot (SLOT#22 LARSON A23-662 (2329'FNL&535'FWL,SEC.19))	4679.00ft
MD Reference Pt	H&P 517 (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	271.41°



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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (189 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	346.290	0.00	0.00	0.00	0.00	40°28'21.612"N	104°29'12.696"W	0.00	
85.00	0.280	346.290	85.00	0.05	0.20	-0.05	40°28'21.614"N	104°29'12.697"W	0.33	
181.00	0.310	310.520	181.00	0.32	0.60	-0.30	40°28'21.618"N	104°29'12.700"W	0.19	
272.00	0.410	327.190	272.00	0.69	1.03	-0.67	40°28'21.622"N	104°29'12.704"W	0.16	
367.00	0.200	220.260	367.00	0.99	1.19	-0.96	40°28'21.624"N	104°29'12.708"W	0.53	
461.00	0.130	314.410	461.00	1.17	1.14	-1.14	40°28'21.623"N	104°29'12.711"W	0.26	
556.00	0.420	236.030	555.99	1.53	1.02	-1.51	40°28'21.622"N	104°29'12.715"W	0.44	
650.00	0.090	239.180	649.99	1.87	0.79	-1.85	40°28'21.620"N	104°29'12.720"W	0.35	
745.00	0.320	352.930	744.99	1.98	1.02	-1.95	40°28'21.622"N	104°29'12.721"W	0.38	
839.00	0.150	296.100	838.99	2.13	1.33	-2.09	40°28'21.625"N	104°29'12.723"W	0.29	
934.00	0.150	324.890	933.99	2.31	1.49	-2.28	40°28'21.627"N	104°29'12.725"W	0.08	
1029.00	0.020	149.060	1028.99	2.38	1.57	-2.34	40°28'21.628"N	104°29'12.726"W	0.18	
1124.00	0.100	0.280	1123.99	2.37	1.64	-2.33	40°28'21.629"N	104°29'12.726"W	0.12	
1218.00	0.180	287.300	1217.99	2.51	1.77	-2.47	40°28'21.630"N	104°29'12.728"W	0.19	
1312.00	0.080	149.160	1311.99	2.62	1.76	-2.58	40°28'21.630"N	104°29'12.729"W	0.26	
1407.00	0.190	253.260	1406.99	2.74	1.65	-2.70	40°28'21.629"N	104°29'12.731"W	0.24	
1502.00	0.280	130.480	1501.99	2.71	1.46	-2.67	40°28'21.627"N	104°29'12.730"W	0.44	
1596.00	0.050	7.080	1595.99	2.52	1.35	-2.49	40°28'21.626"N	104°29'12.728"W	0.33	
1691.00	0.380	5.950	1690.99	2.49	1.70	-2.45	40°28'21.629"N	104°29'12.727"W	0.35	
1785.00	0.740	293.020	1784.99	3.03	2.25	-2.98	40°28'21.635"N	104°29'12.734"W	0.77	
1879.00	1.200	310.900	1878.97	4.36	3.13	-4.28	40°28'21.643"N	104°29'12.751"W	0.58	
1963.00	1.190	324.820	1962.95	5.56	4.42	-5.45	40°28'21.656"N	104°29'12.766"W	0.34	Tie to Surface Gyros
1980.00	0.620	333.810	1979.95	5.70	4.65	-5.59	40°28'21.659"N	104°29'12.768"W	3.45	
2075.00	2.270	28.710	2074.92	5.08	6.76	-4.91	40°28'21.679"N	104°29'12.759"W	2.08	
2169.00	4.160	43.260	2168.77	1.95	10.88	-1.68	40°28'21.720"N	104°29'12.716"W	2.17	
2264.00	6.120	45.010	2263.38	-3.84	16.97	4.26	40°28'21.779"N	104°29'12.638"W	2.07	
2359.00	8.070	47.350	2357.65	-12.13	25.07	12.75	40°28'21.858"N	104°29'12.527"W	2.07	
2453.00	10.140	51.200	2450.46	-23.19	34.72	24.05	40°28'21.952"N	104°29'12.380"W	2.29	
2548.00	10.500	50.650	2543.93	-36.13	45.45	37.26	40°28'22.057"N	104°29'12.207"W	0.39	
2643.00	10.630	49.950	2637.32	-49.26	56.58	50.66	40°28'22.165"N	104°29'12.032"W	0.19	
2737.00	10.680	46.970	2729.70	-61.97	68.10	63.67	40°28'22.278"N	104°29'11.862"W	0.59	
2926.00	10.430	41.930	2915.50	-85.60	92.78	87.90	40°28'22.519"N	104°29'11.545"W	0.51	
3021.00	10.620	39.620	3008.90	-96.60	105.92	99.23	40°28'22.647"N	104°29'11.396"W	0.49	
3115.00	10.500	36.810	3101.31	-106.92	119.45	109.88	40°28'22.780"N	104°29'11.257"W	0.56	
3210.00	10.090	34.780	3194.78	-116.51	133.21	119.82	40°28'22.915"N	104°29'11.126"W	0.58	
3304.00	10.540	38.490	3287.27	-126.22	146.71	129.87	40°28'23.047"N	104°29'10.994"W	0.85	
3399.00	10.030	41.980	3380.74	-136.84	159.66	140.81	40°28'23.174"N	104°29'10.851"W	0.85	
3493.00	9.500	47.620	3473.38	-147.77	170.97	152.01	40°28'23.284"N	104°29'10.704"W	1.16	
3588.00	10.610	49.030	3566.92	-159.89	181.99	164.41	40°28'23.392"N	104°29'10.542"W	1.20	
3777.00	10.880	41.310	3752.61	-184.19	206.80	189.32	40°28'23.634"N	104°29'10.216"W	0.77	
3871.00	10.630	32.960	3844.97	-194.42	220.74	199.90	40°28'23.771"N	104°29'10.077"W	1.68	
3966.00	10.440	30.920	3938.37	-203.24	235.47	209.09	40°28'23.915"N	104°29'09.956"W	0.44	
4061.00	10.560	36.360	4031.78	-212.47	249.87	218.67	40°28'24.056"N	104°29'09.830"W	1.05	
4155.00	10.700	43.590	4124.17	-223.26	263.13	229.79	40°28'24.186"N	104°29'09.684"W	1.43	
4250.00	10.300	48.590	4217.58	-235.42	275.13	242.24	40°28'24.303"N	104°29'09.521"W	1.05	



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Area	COLORADO	Well	LARSON A23-662
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (189 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4344.00	10.420	51.510	4310.05	-248.10	285.98	255.20	40°28'24.409"N	104°29'09.352"W	0.57	
4533.00	9.970	55.950	4496.07	-274.54	305.78	282.13	40°28'24.602"N	104°29'09.000"W	0.48	
4628.00	10.460	65.230	4589.57	-288.98	314.00	296.78	40°28'24.681"N	104°29'08.810"W	1.81	
4723.00	10.570	64.490	4682.97	-304.49	321.36	312.47	40°28'24.752"N	104°29'08.606"W	0.18	
4817.00	10.340	61.860	4775.41	-319.52	329.06	327.69	40°28'24.826"N	104°29'08.407"W	0.56	
4912.00	10.560	58.070	4868.84	-334.21	337.68	342.60	40°28'24.910"N	104°29'08.213"W	0.76	
5006.00	10.470	48.570	4961.27	-347.67	347.89	356.31	40°28'25.009"N	104°29'08.034"W	1.84	
5100.00	10.460	39.940	5053.71	-359.24	360.08	368.20	40°28'25.128"N	104°29'07.879"W	1.67	
5195.00	10.400	42.400	5147.14	-370.24	373.03	379.52	40°28'25.255"N	104°29'07.730"W	0.47	
5289.00	10.340	41.970	5239.60	-381.29	385.56	390.88	40°28'25.378"N	104°29'07.582"W	0.10	
5384.00	10.490	36.610	5333.04	-391.82	398.85	401.74	40°28'25.508"N	104°29'07.439"W	1.03	
5479.00	10.210	31.410	5426.50	-401.02	412.97	411.28	40°28'25.646"N	104°29'07.314"W	1.03	
5573.00	10.160	31.490	5519.02	-409.34	427.15	419.95	40°28'25.785"N	104°29'07.199"W	0.06	
5667.00	10.130	35.580	5611.55	-418.14	440.95	429.10	40°28'25.920"N	104°29'07.079"W	0.77	
5762.00	10.130	38.390	5705.07	-427.86	454.29	439.14	40°28'26.051"N	104°29'06.947"W	0.52	
5856.00	10.190	39.950	5797.59	-438.01	467.14	449.62	40°28'26.177"N	104°29'06.809"W	0.30	
5951.00	10.350	39.210	5891.07	-448.48	480.20	460.41	40°28'26.305"N	104°29'06.668"W	0.22	
6045.00	10.260	36.460	5983.56	-458.46	493.47	470.72	40°28'26.435"N	104°29'06.533"W	0.53	
6140.00	9.070	2.820	6077.28	-463.51	507.77	476.12	40°28'26.575"N	104°29'06.461"W	5.98	
6234.00	15.060	335.930	6169.23	-458.43	526.35	471.50	40°28'26.760"N	104°29'06.518"W	8.58	
6328.00	19.180	302.930	6259.25	-439.97	545.95	453.51	40°28'26.955"N	104°29'06.747"W	11.04	
6423.00	26.020	276.860	6347.12	-405.80	556.96	419.60	40°28'27.068"N	104°29'07.185"W	12.61	
6518.00	32.960	272.490	6429.77	-359.15	560.58	373.03	40°28'27.109"N	104°29'07.787"W	7.64	
6612.00	41.220	276.810	6504.70	-302.64	565.37	316.62	40°28'27.163"N	104°29'08.516"W	9.21	
6707.00	50.650	277.230	6570.70	-234.79	573.72	248.95	40°28'27.253"N	104°29'09.390"W	9.93	
6801.00	60.170	274.320	6624.01	-157.72	581.39	172.05	40°28'27.337"N	104°29'10.384"W	10.44	
6896.00	67.820	273.640	6665.63	-72.49	587.29	86.94	40°28'27.405"N	104°29'11.484"W	8.08	
6990.00	75.440	273.290	6695.23	16.60	592.67	-2.04	40°28'27.468"N	104°29'12.635"W	8.11	
7085.00	84.730	272.640	6711.57	110.04	597.50	-95.40	40°28'27.527"N	104°29'13.842"W	9.80	
7179.00	89.850	273.550	6716.02	203.86	602.57	-189.12	40°28'27.587"N	104°29'15.054"W	5.53	
7274.00	90.060	273.170	6716.09	298.81	608.14	-283.96	40°28'27.653"N	104°29'16.280"W	0.46	
7368.00	89.820	272.040	6716.19	392.78	612.41	-377.86	40°28'27.706"N	104°29'17.495"W	1.23	
7463.00	89.720	270.930	6716.57	487.78	614.87	-472.83	40°28'27.741"N	104°29'18.723"W	1.17	
7557.00	89.720	268.670	6717.03	581.74	614.54	-566.82	40°28'27.748"N	104°29'19.939"W	2.40	
7746.00	89.660	268.350	6718.05	770.49	609.63	-755.75	40°28'27.721"N	104°29'22.384"W	0.17	
7841.00	89.630	266.680	6718.64	865.27	605.51	-850.66	40°28'27.691"N	104°29'23.613"W	1.76	
7936.00	89.720	265.910	6719.18	959.89	599.37	-945.46	40°28'27.641"N	104°29'24.840"W	0.82	
8030.00	89.600	266.930	6719.74	1053.53	593.50	-1039.27	40°28'27.593"N	104°29'26.055"W	1.09	
8125.00	89.910	265.710	6720.14	1148.15	587.41	-1134.07	40°28'27.544"N	104°29'27.283"W	1.33	
8219.00	90.030	265.530	6720.19	1241.67	580.23	-1227.80	40°28'27.483"N	104°29'28.496"W	0.23	
8314.00	90.550	265.870	6719.71	1336.20	573.10	-1322.53	40°28'27.424"N	104°29'29.723"W	0.65	
8409.00	90.370	266.770	6718.95	1430.82	567.01	-1417.33	40°28'27.374"N	104°29'30.951"W	0.97	
8503.00	90.520	267.020	6718.22	1524.53	561.91	-1511.19	40°28'27.334"N	104°29'32.166"W	0.31	
8598.00	90.580	267.570	6717.31	1619.28	557.43	-1606.08	40°28'27.301"N	104°29'33.394"W	0.58	
8692.00	90.550	267.640	6716.38	1713.07	553.50	-1699.99	40°28'27.272"N	104°29'34.610"W	0.08	



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Facility	SEC.19-T06N-R63W		

WELLPATH DATA (189 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8787.00	90.680	267.870	6715.36	1807.87	549.78	-1794.91	40°28'27.246"N	104°29'35.839"W	0.28	
8882.00	90.030	267.860	6714.77	1902.69	546.24	-1889.84	40°28'27.222"N	104°29'37.067"W	0.68	
8976.00	90.060	267.860	6714.70	1996.51	542.73	-1983.78	40°28'27.198"N	104°29'38.283"W	0.03	
9071.00	90.030	267.790	6714.62	2091.32	539.13	-2078.71	40°28'27.173"N	104°29'39.512"W	0.08	
9165.00	90.060	269.110	6714.55	2185.19	536.59	-2172.67	40°28'27.158"N	104°29'40.728"W	1.40	
9260.00	89.720	269.670	6714.73	2280.13	535.57	-2267.67	40°28'27.159"N	104°29'41.958"W	0.69	
9354.00	89.850	269.550	6715.09	2374.09	534.93	-2361.66	40°28'27.163"N	104°29'43.174"W	0.19	
9449.00	89.750	268.150	6715.42	2468.99	533.03	-2456.64	40°28'27.155"N	104°29'44.403"W	1.48	
9543.00	89.910	267.690	6715.70	2562.81	529.62	-2550.58	40°28'27.132"N	104°29'45.619"W	0.52	
9637.00	90.000	267.580	6715.77	2656.61	525.74	-2644.50	40°28'27.104"N	104°29'46.835"W	0.15	
9732.00	89.780	267.320	6715.95	2751.38	521.51	-2739.40	40°28'27.073"N	104°29'48.063"W	0.36	
9826.00	90.120	266.980	6716.03	2845.12	516.84	-2833.29	40°28'27.037"N	104°29'49.279"W	0.51	
9921.00	89.910	267.950	6716.01	2939.90	512.63	-2928.19	40°28'27.006"N	104°29'50.507"W	1.04	
10016.00	89.910	268.980	6716.16	3034.77	510.09	-3023.16	40°28'26.992"N	104°29'51.736"W	1.08	
10110.00	90.000	270.170	6716.23	3128.72	509.39	-3117.15	40°28'26.995"N	104°29'52.953"W	1.27	
10205.00	89.850	269.810	6716.36	3223.69	509.38	-3212.15	40°28'27.006"N	104°29'54.182"W	0.41	
10300.00	89.970	268.100	6716.51	3318.60	507.64	-3307.13	40°28'26.999"N	104°29'55.411"W	1.80	
10395.00	89.910	268.110	6716.61	3413.44	504.50	-3402.08	40°28'26.979"N	104°29'56.640"W	0.06	
10489.00	89.690	267.830	6716.93	3507.27	501.17	-3496.02	40°28'26.956"N	104°29'57.856"W	0.38	
10584.00	90.000	267.680	6717.19	3602.08	497.45	-3590.95	40°28'26.930"N	104°29'59.088"W	0.36	
10773.00	90.000	267.770	6717.19	3790.69	489.95	-3779.80	40°28'26.877"N	104°30'01.529"W	0.05	
10867.00	89.820	268.600	6717.34	3884.54	486.97	-3873.75	40°28'26.858"N	104°30'02.745"W	0.90	
10962.00	89.630	267.130	6717.79	3979.36	483.43	-3968.68	40°28'26.834"N	104°30'03.974"W	1.56	
11056.00	90.150	270.000	6717.98	4073.23	481.08	-4062.64	40°28'26.821"N	104°30'05.190"W	3.10	
11151.00	89.820	270.880	6718.00	4168.22	481.81	-4157.64	40°28'26.839"N	104°30'06.419"W	0.99	
11245.00	89.820	270.240	6718.30	4262.20	482.73	-4251.63	40°28'26.858"N	104°30'07.635"W	0.68	
11340.00	89.910	269.010	6718.52	4357.16	482.11	-4346.63	40°28'26.863"N	104°30'08.865"W	1.30	
11434.00	89.910	268.450	6718.67	4451.05	480.02	-4440.61	40°28'26.852"N	104°30'10.081"W	0.60	
11529.00	89.780	266.770	6718.92	4545.84	476.06	-4535.52	40°28'26.824"N	104°30'11.309"W	1.77	
11623.00	89.910	266.200	6719.18	4639.49	470.30	-4629.34	40°28'26.777"N	104°30'12.524"W	0.62	
11718.00	89.820	265.600	6719.40	4734.05	463.50	-4724.10	40°28'26.721"N	104°30'13.751"W	0.64	
11813.00	89.970	265.890	6719.58	4828.59	456.46	-4818.84	40°28'26.662"N	104°30'14.978"W	0.34	
11907.00	90.150	266.370	6719.48	4922.19	450.11	-4912.62	40°28'26.609"N	104°30'16.192"W	0.55	
12001.00	89.720	266.880	6719.58	5015.86	444.58	-5006.46	40°28'26.565"N	104°30'17.407"W	0.71	
12096.00	90.090	267.680	6719.74	5110.62	440.07	-5101.35	40°28'26.531"N	104°30'18.636"W	0.93	
12190.00	90.030	268.420	6719.64	5204.45	436.87	-5195.29	40°28'26.510"N	104°30'19.852"W	0.79	
12285.00	89.970	269.000	6719.64	5299.35	434.73	-5290.27	40°28'26.499"N	104°30'21.081"W	0.61	
12379.00	90.210	269.740	6719.50	5393.29	433.70	-5384.26	40°28'26.499"N	104°30'22.297"W	0.83	
12474.00	89.200	268.800	6719.98	5488.22	432.49	-5479.25	40°28'26.498"N	104°30'23.527"W	1.45	
12568.00	89.020	268.280	6721.44	5582.09	430.09	-5573.21	40°28'26.485"N	104°30'24.743"W	0.59	
12663.00	89.020	267.310	6723.07	5676.89	426.44	-5668.12	40°28'26.459"N	104°30'25.971"W	1.02	
12757.00	89.020	267.450	6724.68	5770.64	422.14	-5762.01	40°28'26.427"N	104°30'27.187"W	0.15	
12851.00	88.920	269.330	6726.37	5864.49	419.50	-5855.96	40°28'26.411"N	104°30'28.402"W	2.00	
12946.00	88.950	268.610	6728.13	5959.39	417.80	-5950.92	40°28'26.405"N	104°30'29.631"W	0.76	
13041.00	88.980	267.960	6729.85	6054.23	414.95	-6045.86	40°28'26.387"N	104°30'30.860"W	0.68	



Actual Wellpath Report

LARSON A23-662 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#22 LARSON A23-662 (2329'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-662
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (189 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
13135.00	88.980	267.940	6731.52	6148.04	411.59	-6139.79	40°28'26.365"N	104°30'32.076"W	0.02	
13230.00	89.170	268.380	6733.06	6242.88	408.54	-6234.73	40°28'26.345"N	104°30'33.305"W	0.50	
13324.00	88.980	269.250	6734.57	6336.77	406.60	-6328.69	40°28'26.336"N	104°30'34.521"W	0.95	
13419.00	88.990	269.320	6736.26	6431.69	405.41	-6423.67	40°28'26.335"N	104°30'35.750"W	0.07	
13514.00	88.740	269.240	6738.14	6526.61	404.22	-6518.65	40°28'26.333"N	104°30'36.979"W	0.28	
13608.00	89.110	268.660	6739.90	6620.50	402.50	-6612.61	40°28'26.327"N	104°30'38.195"W	0.73	
13703.00	88.830	267.350	6741.61	6715.32	399.19	-6707.54	40°28'26.305"N	104°30'39.424"W	1.41	
13797.00	89.170	268.010	6743.25	6809.10	395.39	-6801.45	40°28'26.277"N	104°30'40.639"W	0.79	
13892.00	88.980	267.650	6744.78	6903.91	391.79	-6896.37	40°28'26.252"N	104°30'41.868"W	0.43	
13987.00	89.690	267.560	6745.89	6998.69	387.82	-6991.28	40°28'26.224"N	104°30'43.097"W	0.75	
14081.00	89.660	271.590	6746.42	7092.62	387.12	-7085.25	40°28'26.227"N	104°30'44.313"W	4.29	
14176.00	89.080	272.610	6747.46	7187.61	390.60	-7180.18	40°28'26.272"N	104°30'45.540"W	1.24	
14270.00	88.950	268.880	6749.08	7281.57	391.82	-7274.14	40°28'26.294"N	104°30'46.756"W	3.97	
14365.00	90.000	268.190	6749.95	7376.44	389.40	-7369.10	40°28'26.281"N	104°30'47.985"W	1.32	
14459.00	90.180	273.460	6749.80	7470.41	390.75	-7463.06	40°28'26.304"N	104°30'49.201"W	5.61	
14554.00	88.980	269.820	6750.50	7565.39	393.47	-7558.00	40°28'26.342"N	104°30'50.429"W	4.03	
14648.00	89.050	266.110	6752.12	7659.19	390.13	-7651.91	40°28'26.319"N	104°30'51.644"W	3.95	
14743.00	88.920	265.340	6753.80	7753.70	383.05	-7746.63	40°28'26.259"N	104°30'52.871"W	0.82	
14838.00	89.510	266.290	6755.10	7848.24	376.12	-7841.37	40°28'26.201"N	104°30'54.097"W	1.18	
14932.00	89.380	264.880	6756.01	7941.75	368.88	-7935.08	40°28'26.140"N	104°30'55.311"W	1.51	
15027.00	89.540	261.220	6756.91	8035.72	357.39	-8029.37	40°28'26.037"N	104°30'56.533"W	3.86	
15121.00	89.600	264.630	6757.61	8128.68	345.81	-8122.63	40°28'25.933"N	104°30'57.741"W	3.63	
15216.00	89.660	267.300	6758.23	8223.24	339.13	-8217.39	40°28'25.877"N	104°30'58.968"W	2.81	
15310.00	89.600	266.290	6758.83	8316.93	333.87	-8311.24	40°28'25.835"N	104°31'00.183"W	1.08	
15405.00	90.000	266.320	6759.17	8411.55	327.75	-8406.04	40°28'25.785"N	104°31'01.411"W	0.42	
15499.00	90.120	268.570	6759.07	8505.32	323.56	-8499.94	40°28'25.754"N	104°31'02.626"W	2.40	
15594.00	89.970	270.800	6758.99	8600.27	323.04	-8594.93	40°28'25.759"N	104°31'03.855"W	2.35	
15688.00	89.780	271.160	6759.20	8694.27	324.65	-8688.92	40°28'25.786"N	104°31'05.071"W	0.43	
15783.00	89.850	272.750	6759.50	8789.26	327.89	-8783.86	40°28'25.828"N	104°31'06.299"W	1.68	
15878.00	90.150	274.200	6759.50	8884.20	333.65	-8878.68	40°28'25.895"N	104°31'07.525"W	1.56	
15972.00	89.910	275.940	6759.45	8978.00	341.95	-8972.31	40°28'25.988"N	104°31'08.735"W	1.87	
16067.00	90.030	272.790	6759.50	9072.86	349.18	-9067.02	40°28'26.069"N	104°31'09.960"W	3.32	
16161.00	89.910	270.580	6759.55	9166.86	351.95	-9160.98	40°28'26.107"N	104°31'11.175"W	2.35	
16256.00	90.030	268.700	6759.60	9261.81	351.35	-9255.97	40°28'26.111"N	104°31'12.404"W	1.98	
16350.00	90.000	266.010	6759.58	9355.56	347.01	-9349.86	40°28'26.079"N	104°31'13.620"W	2.86	
16445.00	90.000	264.750	6759.58	9450.04	339.36	-9444.55	40°28'26.014"N	104°31'14.846"W	1.33	
16539.00	89.940	265.450	6759.63	9543.47	331.33	-9538.21	40°28'25.944"N	104°31'16.059"W	0.75	
16634.00	90.090	266.390	6759.60	9638.03	324.57	-9632.96	40°28'25.888"N	104°31'17.286"W	1.00	
16728.00	89.910	267.840	6759.60	9731.76	319.84	-9726.84	40°28'25.852"N	104°31'18.501"W	1.55	
16823.00	90.120	268.920	6759.58	9826.63	317.16	-9821.80	40°28'25.835"N	104°31'19.730"W	1.16	
16917.00	89.970	269.100	6759.50	9920.55	315.53	-9915.79	40°28'25.830"N	104°31'20.947"W	0.25	
17011.00	90.150	268.180	6759.41	10014.44	313.30	-10009.76	40°28'25.818"N	104°31'22.163"W	1.00	
17106.00	90.060	268.350	6759.23	10109.29	310.42	-10104.72	40°28'25.800"N	104°31'23.392"W	0.20	
17200.00	90.150	269.720	6759.06	10203.21	308.84	-10198.70	40°28'25.794"N	104°31'24.608"W	1.46	
17295.00	90.000	269.270	6758.94	10298.16	308.00	-10293.70	40°28'25.796"N	104°31'25.837"W	0.50	



Actual Wellpath Report

LARSON A23-662 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#22 LARSON A23-662 (2329'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-662
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (189 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17389.00	89.940	267.930	6758.98	10392.04	305.71	-10387.67	40°28'25.784"N	104°31'27.053"W	1.43	
17484.00	90.030	266.350	6759.01	10486.78	300.97	-10482.55	40°28'25.747"N	104°31'28.282"W	1.67	
17578.00	90.000	264.820	6758.98	10580.29	293.73	-10576.26	40°28'25.686"N	104°31'29.495"W	1.63	
17673.00	89.880	265.440	6759.08	10674.72	285.67	-10670.92	40°28'25.617"N	104°31'30.721"W	0.66	
17767.00	89.850	266.570	6759.31	10768.30	279.12	-10764.69	40°28'25.562"N	104°31'31.935"W	1.20	
17862.00	90.090	267.080	6759.36	10863.00	273.86	-10859.55	40°28'25.520"N	104°31'33.163"W	0.59	
17956.00	89.850	267.320	6759.40	10956.74	269.26	-10953.43	40°28'25.485"N	104°31'34.379"W	0.36	
18051.00	90.000	266.930	6759.53	11051.48	264.50	-11048.31	40°28'25.448"N	104°31'35.607"W	0.44	Last BHI MWD Survey
18100.00	90.000	266.930	6759.53	11100.33	261.87	-11097.24	40°28'25.428"N	104°31'36.241"W	0.00	Projection to Bit

HOLE & CASING SECTIONS - Ref Wellbore: LARSON A23-662 AWB Ref Wellpath: LARSON A23-662 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	1963.00	1933.00	30.00	1962.95	0.03	-0.01	4.42	-5.45
9.625in Casing Surface	30.00	1963.00	1933.00	30.00	1962.95	0.03	-0.01	4.42	-5.45
8.5in Open Hole	1963.00	18100.00	16137.00	1962.95	6759.53	4.42	-5.45	261.87	-11097.24



Actual Wellpath Report

LARSON A23-662 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#22 LARSON A23-662 (2329'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-662
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-662 AWB
Facility	SEC.19-T06N-R63W		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
LARSON A23-639 Section 23	3.00	-1586.59	-788.82	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON A23-639 Section 24	3.00	-1586.59	-788.82	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON AA19-618 SECTION 19	3.00	-1816.10	-786.21	3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"W	polygon
LARSON AA19-618 SECTION 19 HARDLINE (460'SETBACK)	3.00	-1816.10	-786.21	3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"W	polygon
LARSON A23-662 Landing Point	6710.00	590.00	-130.00	3281731.38	1417234.24	40°28'27.456"N	104°29'14.291"W	point
LARSON A23-662 Target 1	6710.00	440.53	-5300.06	3276561.52	1417084.77	40°28'26.558"N	104°30'21.207"W	point
LARSON A23-662 Landing Point 2	6720.00	590.00	-130.00	3281731.38	1417234.24	40°28'27.456"N	104°29'14.291"W	point
LARSON A23-662 Target 1_REV-2	6720.00	440.53	-5300.06	3276561.52	1417084.77	40°28'26.558"N	104°30'21.207"W	point
LARSON A23-662 REV-1 BHL (1835'FNL&0'FWL,SEC.23)	6748.70	272.75	-11104.73	3270757.07	1416917.00	40°28'25.536"N	104°31'36.336"W	point
LARSON A23-662 Target 2	6751.00	367.52	-7826.00	3274035.67	1417011.77	40°28'26.115"N	104°30'53.900"W	point
LARSON A23-662 REV-2 BHL (1835'FNL&0'FWL,SEC.23)	6758.70	272.75	-11104.73	3270757.07	1416917.00	40°28'25.536"N	104°31'36.336"W	point
LARSON A23-662 Target 2_REV-2	6761.00	367.52	-7826.00	3274035.67	1417011.77	40°28'26.115"N	104°30'53.900"W	point
LARSON A23-639 SECTION 23 Hardline (460'SETBACK)	7003.00	-1586.59	-788.82	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON A23-639 SECTION 24 Hardline (460'SETBACK)	7003.00	-1586.59	-788.82	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: LARSON A23-662 AWB					Ref Wellpath: LARSON A23-662 AWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model		Log Name/Comment		Wellbore
0.00	1963.00	Gyrodata standard - Drop gyro or Multi-shot		3rd Party Surface Gyros <85'-1963'>		LARSON A23-662 AWB
1963.00	18051.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction		BHI/ATC OWSG MWD+IFR+MSA 8.5" Hole <1980'-18051'>		LARSON A23-662 AWB
18051.00	18100.00	Blind Drilling (std)		Projection to bit		LARSON A23-662 AWB