

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#21 LARSON A23-656 (2352'FNL&535'FWL,SEC.19)
 Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: LARSON A23-656
 Facility: SEC.19-T06N-R63W Wellbore: LARSON A23-656 PWB

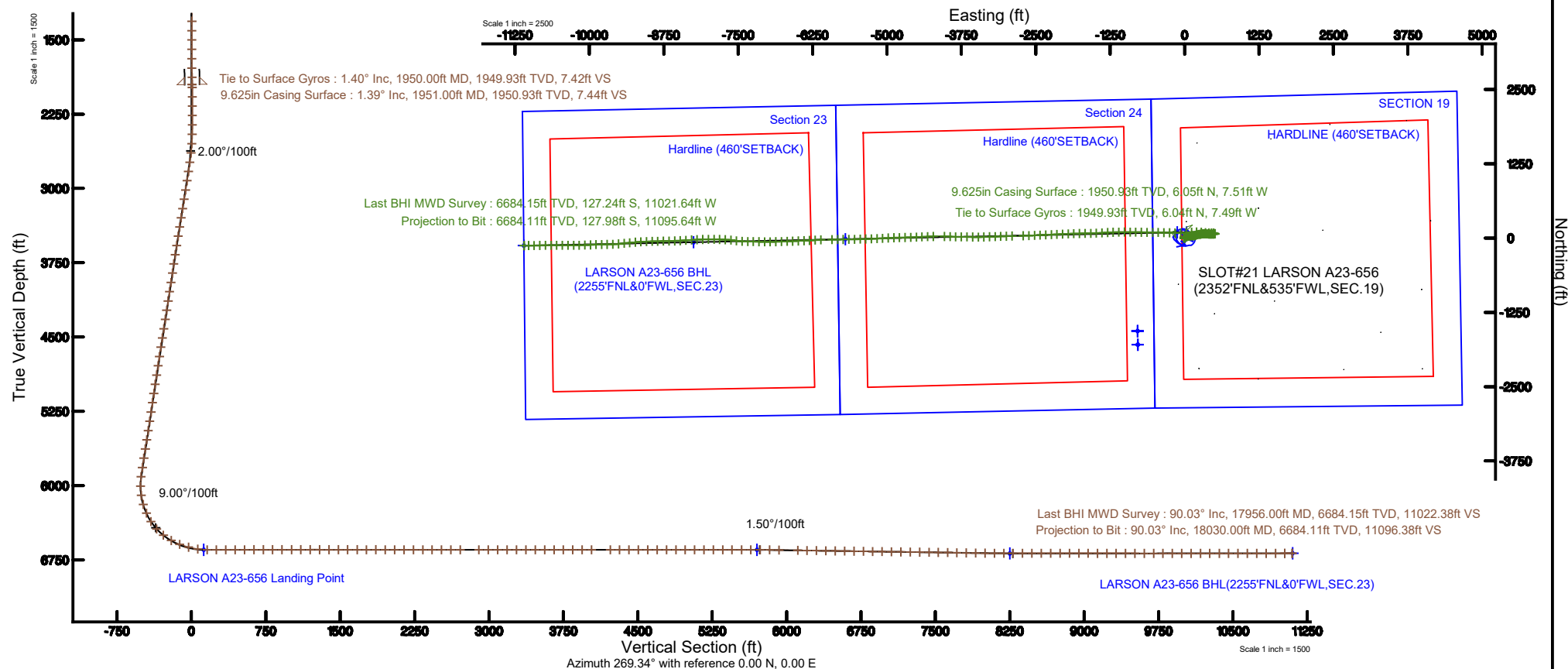
Plot reference wellpath is LARSON A23-656 (REV-A.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 517 (30'KB) (RKB)	North Reference: Grid north
Measured depths are referenced to H&P 517 (30'KB) (RKB)	Scale: True distance
H&P 517 (30'KB) (RKB) to Mean Sea Level: 4679 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: SLOT#21 LARSON A23-656 (2352FNL&535FWL,SEC.19)): 0 feet	Created by: amuntime 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-TD6N-R63W			3282103.737	1414428.283	40°27'59.888"N	104°29'09.888"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#21 LARSON A23-656 (2352FNL&535FWL,SEC.19)	2194.20	-242.12	3281861.629	1416622.404	40°28'21.396"N	104°29'12.696"W
H&P 517 (30YB) (RKB) to Ground level (At Slot: SLOT#21 LARSON A23-656 (2352FNL&535FWL,SEC.19))					4679ft	
Mean Sea Level to Ground level (At Slot: SLOT#21 LARSON A23-656 (2352FNL&535FWL,SEC.19))					0ft	
H&P 517 (30YB) (RKB) to Mean Sea Level					4679ft	



Survey Program					
Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	18028.63	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		LARSON A23-656 PWB

Comments	
SURFACE LOCATION: SWNW	
40.47261N	
104.48686W	
API: 05-123-45516	





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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#21 LARSON A23-656 (2352'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 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 10:21:45 AM
Convergence at slot	0.65° East	Database/Source file	WA DENVER/LARSON_A23-656_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2194.20	-242.12	3281861.63	1416622.40	40°28'21.396"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#21 LARSON A23-656 (2352'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	269.34°



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Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	41.410	0.00	0.00	0.00	0.00	40°28'21.396"N	104°29'12.696"W	0.00	
85.00	0.100	41.410	85.00	-0.05	0.06	0.05	40°28'21.397"N	104°29'12.695"W	0.12	
181.00	0.130	184.120	181.00	-0.10	0.01	0.10	40°28'21.396"N	104°29'12.695"W	0.23	
272.00	0.210	82.720	272.00	-0.25	-0.07	0.25	40°28'21.395"N	104°29'12.693"W	0.29	
367.00	0.460	320.640	367.00	-0.19	0.24	0.19	40°28'21.398"N	104°29'12.694"W	0.63	
461.00	0.180	356.930	461.00	0.05	0.68	-0.06	40°28'21.403"N	104°29'12.697"W	0.35	
556.00	0.430	339.410	556.00	0.18	1.17	-0.20	40°28'21.408"N	104°29'12.698"W	0.28	
650.00	0.730	284.110	649.99	0.88	1.64	-0.90	40°28'21.412"N	104°29'12.707"W	0.64	
745.00	0.490	264.650	744.99	1.87	1.75	-1.89	40°28'21.414"N	104°29'12.720"W	0.33	
839.00	0.290	273.190	838.98	2.51	1.73	-2.53	40°28'21.413"N	104°29'12.728"W	0.22	
934.00	0.540	290.610	933.98	3.17	1.90	-3.19	40°28'21.415"N	104°29'12.737"W	0.29	
1029.00	0.610	276.800	1028.98	4.08	2.12	-4.11	40°28'21.417"N	104°29'12.749"W	0.16	
1124.00	0.390	326.940	1123.97	4.76	2.45	-4.79	40°28'21.421"N	104°29'12.758"W	0.49	
1218.00	0.360	337.180	1217.97	5.04	2.99	-5.08	40°28'21.426"N	104°29'12.761"W	0.08	
1312.00	0.280	38.080	1311.97	5.01	3.44	-5.05	40°28'21.431"N	104°29'12.761"W	0.35	
1407.00	0.100	106.000	1406.97	4.78	3.60	-4.83	40°28'21.432"N	104°29'12.758"W	0.27	
1502.00	0.280	135.200	1501.97	4.54	3.41	-4.58	40°28'21.430"N	104°29'12.755"W	0.21	
1596.00	0.140	96.410	1595.97	4.27	3.24	-4.31	40°28'21.428"N	104°29'12.751"W	0.20	
1691.00	0.180	341.030	1690.97	4.20	3.37	-4.24	40°28'21.430"N	104°29'12.750"W	0.29	
1785.00	0.810	300.840	1784.96	4.81	3.85	-4.86	40°28'21.435"N	104°29'12.758"W	0.73	
1879.00	1.320	311.650	1878.95	6.18	4.91	-6.24	40°28'21.445"N	104°29'12.776"W	0.58	
1950.00	1.400	312.520	1949.93	7.42	6.04	-7.49	40°28'21.456"N	104°29'12.792"W	0.12	Tie to Surface Gyros
1980.00	1.220	300.620	1979.92	7.96	6.45	-8.03	40°28'21.461"N	104°29'12.799"W	1.08	
2075.00	0.070	238.890	2074.91	8.87	6.93	-8.95	40°28'21.465"N	104°29'12.811"W	1.25	
2169.00	0.030	352.420	2168.91	8.93	6.93	-9.01	40°28'21.465"N	104°29'12.812"W	0.09	
2264.00	0.070	266.880	2263.91	8.99	6.95	-9.07	40°28'21.466"N	104°29'12.812"W	0.08	
2359.00	0.030	85.200	2358.91	9.02	6.95	-9.10	40°28'21.466"N	104°29'12.813"W	0.11	
2453.00	1.640	61.740	2452.90	7.80	7.59	-7.89	40°28'21.472"N	104°29'12.797"W	1.72	
2548.00	3.820	67.310	2547.79	3.66	9.45	-3.77	40°28'21.490"N	104°29'12.743"W	2.31	
2643.00	6.020	72.190	2642.43	-4.03	12.19	3.89	40°28'21.516"N	104°29'12.644"W	2.36	
2737.00	8.540	73.190	2735.67	-15.45	15.72	15.27	40°28'21.550"N	104°29'12.496"W	2.68	
2832.00	9.170	73.190	2829.53	-29.49	19.95	29.26	40°28'21.590"N	104°29'12.314"W	0.66	
2926.00	9.250	73.970	2922.32	-43.97	24.20	43.70	40°28'21.630"N	104°29'12.127"W	0.16	
3021.00	9.160	76.620	3016.10	-58.71	28.06	58.39	40°28'21.667"N	104°29'11.936"W	0.46	
3115.00	9.270	80.060	3108.89	-73.48	31.10	73.13	40°28'21.695"N	104°29'11.745"W	0.60	
3210.00	8.770	80.310	3202.71	-88.18	33.64	87.80	40°28'21.718"N	104°29'11.555"W	0.53	
3304.00	9.060	85.200	3295.58	-102.64	35.46	102.24	40°28'21.735"N	104°29'11.368"W	0.86	
3399.00	9.220	88.680	3389.37	-117.71	36.27	117.30	40°28'21.741"N	104°29'11.173"W	0.61	
3493.00	9.150	94.010	3482.17	-132.69	35.92	132.29	40°28'21.736"N	104°29'10.979"W	0.91	
3588.00	9.210	91.600	3575.95	-147.82	35.18	147.42	40°28'21.727"N	104°29'10.783"W	0.41	
3683.00	9.290	76.790	3669.73	-162.90	36.72	162.49	40°28'21.740"N	104°29'10.588"W	2.50	
3777.00	9.310	67.440	3762.50	-177.36	41.37	176.90	40°28'21.785"N	104°29'10.401"W	1.61	
3871.00	9.140	65.820	3855.28	-191.26	47.34	190.73	40°28'21.842"N	104°29'10.221"W	0.33	
3966.00	9.380	69.680	3949.05	-205.47	53.12	204.87	40°28'21.898"N	104°29'10.037"W	0.70	
4061.00	9.100	77.140	4042.82	-220.11	57.48	219.46	40°28'21.939"N	104°29'09.848"W	1.29	



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Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (190 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4155.00	9.010	81.870	4135.65	-234.67	60.18	233.99	40°28'21.964"N	104°29'09.660"W	0.80	
4250.00	8.810	82.520	4229.50	-249.27	62.18	248.57	40°28'21.982"N	104°29'09.471"W	0.24	
4344.00	9.080	83.180	4322.36	-263.79	63.99	263.07	40°28'21.999"N	104°29'09.283"W	0.31	
4439.00	8.910	78.630	4416.19	-278.47	66.34	277.73	40°28'22.020"N	104°29'09.093"W	0.77	
4533.00	8.830	77.850	4509.07	-292.70	69.29	291.92	40°28'22.048"N	104°29'08.909"W	0.15	
4628.00	8.900	83.220	4602.93	-307.15	71.69	306.34	40°28'22.070"N	104°29'08.722"W	0.87	
4723.00	8.900	90.970	4696.79	-321.80	72.43	320.99	40°28'22.075"N	104°29'08.532"W	1.26	
4817.00	8.630	95.680	4789.70	-336.08	71.61	335.28	40°28'22.066"N	104°29'08.347"W	0.82	
4912.00	8.730	94.560	4883.61	-350.34	70.33	349.56	40°28'22.051"N	104°29'08.163"W	0.21	
5006.00	8.830	91.050	4976.51	-364.66	69.64	363.88	40°28'22.043"N	104°29'07.978"W	0.58	
5100.00	8.480	90.000	5069.44	-378.80	69.50	378.03	40°28'22.040"N	104°29'07.795"W	0.41	
5195.00	8.410	94.420	5163.41	-392.73	68.97	391.96	40°28'22.033"N	104°29'07.614"W	0.69	
5289.00	8.530	95.510	5256.38	-406.50	67.77	405.75	40°28'22.020"N	104°29'07.436"W	0.21	
5384.00	8.290	94.310	5350.36	-420.33	66.58	419.59	40°28'22.006"N	104°29'07.257"W	0.31	
5479.00	9.130	93.680	5444.26	-434.67	65.58	433.94	40°28'21.995"N	104°29'07.072"W	0.89	
5573.00	9.030	93.860	5537.09	-449.46	64.60	448.75	40°28'21.984"N	104°29'06.880"W	0.11	
5667.00	9.090	88.560	5629.91	-464.24	64.29	463.53	40°28'21.979"N	104°29'06.689"W	0.89	
5762.00	8.970	84.700	5723.74	-479.12	65.17	478.40	40°28'21.986"N	104°29'06.497"W	0.65	
5856.00	9.230	82.990	5816.55	-493.92	66.76	493.18	40°28'22.000"N	104°29'06.305"W	0.40	
5951.00	7.370	70.970	5910.56	-507.28	69.68	506.51	40°28'22.027"N	104°29'06.132"W	2.67	
6045.00	1.090	285.370	6004.33	-512.15	71.89	511.35	40°28'22.049"N	104°29'06.069"W	8.82	
6140.00	11.200	310.600	6098.67	-504.32	78.15	503.46	40°28'22.111"N	104°29'06.170"W	10.76	
6234.00	15.820	278.910	6190.16	-484.79	86.09	483.83	40°28'22.192"N	104°29'06.423"W	9.11	
6328.00	23.760	267.560	6278.57	-453.17	87.27	452.19	40°28'22.207"N	104°29'06.832"W	9.35	
6423.00	32.740	270.290	6362.17	-408.26	86.58	407.29	40°28'22.205"N	104°29'07.414"W	9.55	
6518.00	42.420	276.480	6437.40	-350.62	90.34	349.60	40°28'22.249"N	104°29'08.159"W	10.93	
6612.00	52.520	277.770	6500.86	-282.09	98.98	280.97	40°28'22.342"N	104°29'09.046"W	10.79	
6707.00	59.710	268.250	6553.87	-203.57	102.84	202.40	40°28'22.389"N	104°29'10.062"W	11.23	
6801.00	70.320	264.810	6593.53	-118.61	97.58	117.49	40°28'22.347"N	104°29'11.161"W	11.76	
6896.00	75.410	265.760	6621.51	-28.08	90.13	27.05	40°28'22.283"N	104°29'12.333"W	5.44	
6990.00	80.910	268.600	6640.80	63.81	85.63	-64.80	40°28'22.249"N	104°29'13.522"W	6.56	
7085.00	90.180	271.710	6648.17	158.39	85.90	-159.39	40°28'22.263"N	104°29'14.746"W	10.29	
7179.00	90.150	271.740	6647.90	252.31	88.73	-253.35	40°28'22.301"N	104°29'15.961"W	0.05	
7274.00	90.090	271.580	6647.70	347.23	91.48	-348.31	40°28'22.339"N	104°29'17.189"W	0.18	
7368.00	90.220	271.140	6647.44	441.17	93.71	-442.28	40°28'22.372"N	104°29'18.405"W	0.49	
7463.00	90.180	270.830	6647.11	536.13	95.34	-537.27	40°28'22.399"N	104°29'19.633"W	0.33	
7557.00	90.030	270.150	6646.94	630.11	96.15	-631.27	40°28'22.417"N	104°29'20.849"W	0.74	
7652.00	90.120	271.000	6646.82	725.09	97.10	-726.26	40°28'22.437"N	104°29'22.078"W	0.90	
7746.00	89.880	271.080	6646.82	819.05	98.81	-820.24	40°28'22.465"N	104°29'23.294"W	0.27	
7841.00	90.030	270.790	6646.89	914.01	100.36	-915.23	40°28'22.491"N	104°29'24.523"W	0.34	
7936.00	90.000	269.920	6646.87	1009.00	100.95	-1010.23	40°28'22.507"N	104°29'25.752"W	0.92	
8030.00	90.090	268.370	6646.79	1102.99	99.54	-1104.21	40°28'22.504"N	104°29'26.968"W	1.65	
8125.00	90.090	267.800	6646.64	1197.97	96.37	-1199.16	40°28'22.483"N	104°29'28.197"W	0.60	
8219.00	89.910	267.130	6646.64	1291.92	92.21	-1293.07	40°28'22.453"N	104°29'29.413"W	0.74	
8314.00	90.030	266.690	6646.69	1386.83	87.09	-1387.93	40°28'22.413"N	104°29'30.641"W	0.48	



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Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8409.00	89.910	266.970	6646.74	1481.74	81.84	-1482.78	40°28'22.372"N	104°29'31.869"W	0.32	
8503.00	89.970	268.960	6646.84	1575.71	78.50	-1576.72	40°28'22.349"N	104°29'33.085"W	2.12	
8598.00	89.880	269.470	6646.96	1670.71	77.20	-1671.71	40°28'22.347"N	104°29'34.314"W	0.55	
8692.00	90.060	268.950	6647.01	1764.71	75.90	-1765.70	40°28'22.345"N	104°29'35.530"W	0.59	
8787.00	89.970	268.390	6646.99	1859.70	73.70	-1860.68	40°28'22.334"N	104°29'36.759"W	0.60	
8882.00	89.970	267.680	6647.04	1954.68	70.44	-1955.62	40°28'22.312"N	104°29'37.988"W	0.75	
8976.00	89.970	267.440	6647.09	2048.63	66.44	-2049.53	40°28'22.283"N	104°29'39.204"W	0.26	
9071.00	90.000	267.270	6647.11	2143.58	62.05	-2144.43	40°28'22.250"N	104°29'40.433"W	0.18	
9165.00	89.940	267.770	6647.16	2237.53	57.99	-2238.34	40°28'22.221"N	104°29'41.648"W	0.54	
9260.00	89.940	267.770	6647.26	2332.49	54.29	-2333.27	40°28'22.195"N	104°29'42.877"W	0.00	
9354.00	89.940	267.120	6647.36	2426.44	50.10	-2427.18	40°28'22.164"N	104°29'44.093"W	0.69	
9449.00	89.780	266.030	6647.59	2521.33	44.42	-2522.01	40°28'22.118"N	104°29'45.320"W	1.16	
9543.00	90.030	269.130	6647.75	2615.27	40.46	-2615.91	40°28'22.090"N	104°29'46.536"W	3.31	
9637.00	89.970	268.910	6647.75	2709.27	38.85	-2709.90	40°28'22.084"N	104°29'47.752"W	0.24	
9826.00	90.060	268.150	6647.70	2898.25	34.00	-2898.83	40°28'22.058"N	104°29'50.197"W	0.40	
9921.00	89.910	268.040	6647.72	2993.23	30.84	-2993.78	40°28'22.037"N	104°29'51.426"W	0.20	
10016.00	90.220	268.430	6647.62	3088.21	27.92	-3088.74	40°28'22.019"N	104°29'52.655"W	0.52	
10110.00	90.030	267.920	6647.41	3182.19	24.92	-3182.69	40°28'22.000"N	104°29'53.871"W	0.58	
10205.00	89.940	267.850	6647.44	3277.16	21.42	-3277.62	40°28'21.975"N	104°29'55.100"W	0.12	
10300.00	89.970	268.420	6647.51	3372.14	18.32	-3372.57	40°28'21.956"N	104°29'56.329"W	0.60	
10394.00	90.060	269.770	6647.49	3466.13	16.84	-3466.56	40°28'21.951"N	104°29'57.545"W	1.44	
10489.00	90.030	270.910	6647.41	3561.12	17.40	-3561.56	40°28'21.968"N	104°29'58.775"W	1.20	
10584.00	90.060	270.820	6647.34	3656.08	18.84	-3656.54	40°28'21.992"N	104°30'00.003"W	0.10	
10678.00	89.880	269.590	6647.39	3750.07	19.17	-3750.54	40°28'22.006"N	104°30'01.219"W	1.32	
10773.00	90.030	271.720	6647.46	3845.04	20.26	-3845.53	40°28'22.027"N	104°30'02.448"W	2.25	
10867.00	90.000	272.200	6647.44	3938.94	23.47	-3939.48	40°28'22.070"N	104°30'03.663"W	0.51	
10962.00	90.000	271.550	6647.44	4033.85	26.58	-4034.42	40°28'22.111"N	104°30'04.891"W	0.68	
11151.00	89.880	268.290	6647.63	4222.81	26.32	-4223.40	40°28'22.129"N	104°30'07.336"W	1.73	
11245.00	89.970	267.560	6647.76	4316.78	22.92	-4317.34	40°28'22.106"N	104°30'08.552"W	0.78	
11340.00	89.850	267.330	6647.91	4411.73	18.68	-4412.24	40°28'22.075"N	104°30'09.781"W	0.27	
11434.00	89.910	267.800	6648.10	4505.69	14.69	-4506.16	40°28'22.046"N	104°30'10.997"W	0.50	
11529.00	90.030	268.330	6648.15	4600.66	11.48	-4601.10	40°28'22.025"N	104°30'12.226"W	0.57	
11623.00	89.910	268.770	6648.20	4694.65	9.10	-4695.07	40°28'22.012"N	104°30'13.442"W	0.49	
11718.00	90.090	269.040	6648.20	4789.65	7.29	-4790.05	40°28'22.004"N	104°30'14.671"W	0.34	
11813.00	90.120	268.150	6648.03	4884.64	4.96	-4885.02	40°28'21.992"N	104°30'15.900"W	0.94	
11907.00	90.060	266.870	6647.88	4978.59	0.87	-4978.93	40°28'21.962"N	104°30'17.116"W	1.36	
12001.00	89.880	267.000	6647.93	5072.51	-4.15	-5072.80	40°28'21.923"N	104°30'18.331"W	0.24	
12096.00	89.940	267.490	6648.08	5167.45	-8.72	-5167.69	40°28'21.888"N	104°30'19.559"W	0.52	
12190.00	90.090	267.840	6648.05	5261.40	-12.55	-5261.61	40°28'21.860"N	104°30'20.775"W	0.41	
12285.00	89.880	268.060	6648.08	5356.38	-15.95	-5356.55	40°28'21.837"N	104°30'22.004"W	0.32	
12379.00	90.060	268.340	6648.13	5450.36	-18.90	-5450.50	40°28'21.819"N	104°30'23.220"W	0.35	
12474.00	90.030	268.750	6648.05	5545.35	-21.31	-5545.47	40°28'21.805"N	104°30'24.449"W	0.43	
12568.00	89.940	269.430	6648.08	5639.35	-22.81	-5639.46	40°28'21.801"N	104°30'25.665"W	0.73	
12663.00	90.150	269.690	6648.00	5734.35	-23.54	-5734.46	40°28'21.804"N	104°30'26.895"W	0.35	
12757.00	89.170	269.290	6648.56	5828.34	-24.37	-5828.45	40°28'21.806"N	104°30'28.111"W	1.13	



Actual Wellpath Report

LARSON A23-656 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#21 LARSON A23-656 (2352'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
12851.00	89.080	268.820	6650.00	5922.33	-25.92	-5922.43	40°28'21.801"N	104°30'29.327"W	0.51	
13041.00	88.950	267.810	6653.26	6112.27	-31.51	-6112.31	40°28'21.767"N	104°30'31.785"W	0.54	
13135.00	89.170	267.180	6654.80	6206.21	-35.62	-6206.21	40°28'21.737"N	104°30'33.000"W	0.71	
13230.00	89.110	267.440	6656.23	6301.14	-40.07	-6301.09	40°28'21.703"N	104°30'34.228"W	0.28	
13324.00	89.200	267.430	6657.62	6395.08	-44.28	-6394.99	40°28'21.672"N	104°30'35.444"W	0.10	
13419.00	89.200	267.280	6658.94	6490.01	-48.66	-6489.88	40°28'21.639"N	104°30'36.672"W	0.16	
13513.00	89.140	267.440	6660.31	6583.94	-52.99	-6583.77	40°28'21.607"N	104°30'37.888"W	0.18	
13608.00	89.170	268.240	6661.71	6678.90	-56.57	-6678.69	40°28'21.582"N	104°30'39.116"W	0.84	
13703.00	88.950	268.620	6663.26	6773.87	-59.18	-6773.64	40°28'21.567"N	104°30'40.345"W	0.46	
13797.00	89.200	268.550	6664.78	6867.85	-61.50	-6867.60	40°28'21.554"N	104°30'41.561"W	0.28	
13892.00	89.080	269.650	6666.21	6962.84	-62.99	-6962.58	40°28'21.550"N	104°30'42.790"W	1.16	
13987.00	89.170	270.510	6667.66	7057.82	-62.86	-7057.57	40°28'21.562"N	104°30'44.019"W	0.91	
14081.00	89.230	270.970	6668.97	7151.78	-61.64	-7151.55	40°28'21.584"N	104°30'45.235"W	0.49	
14176.00	89.230	271.130	6670.25	7246.73	-59.90	-7246.52	40°28'21.612"N	104°30'46.464"W	0.17	
14270.00	89.110	270.910	6671.61	7340.68	-58.23	-7340.50	40°28'21.639"N	104°30'47.679"W	0.27	
14365.00	89.230	273.220	6672.99	7435.56	-54.81	-7435.42	40°28'21.683"N	104°30'48.907"W	2.43	
14459.00	89.260	278.020	6674.23	7528.96	-45.60	-7528.93	40°28'21.784"N	104°30'50.116"W	5.11	
14554.00	89.110	275.500	6675.58	7623.15	-34.42	-7623.26	40°28'21.905"N	104°30'51.334"W	2.66	
14648.00	88.490	272.220	6677.55	7716.82	-28.10	-7717.01	40°28'21.978"N	104°30'52.546"W	3.55	
14743.00	89.350	272.870	6679.34	7811.65	-23.88	-7811.90	40°28'22.030"N	104°30'53.774"W	1.13	
14837.00	89.320	270.720	6680.43	7905.55	-20.94	-7905.84	40°28'22.069"N	104°30'54.989"W	2.29	
14932.00	89.050	269.100	6681.78	8000.54	-21.08	-8000.83	40°28'22.078"N	104°30'56.218"W	1.73	
15026.00	89.170	267.860	6683.24	8094.51	-23.58	-8094.78	40°28'22.064"N	104°30'57.434"W	1.33	
15121.00	90.150	267.120	6683.80	8189.46	-27.74	-8189.68	40°28'22.033"N	104°30'58.662"W	1.29	
15215.00	90.030	266.840	6683.66	8283.38	-32.69	-8283.55	40°28'21.994"N	104°30'59.877"W	0.32	
15310.00	90.250	266.130	6683.42	8378.26	-38.51	-8378.37	40°28'21.947"N	104°31'01.105"W	0.78	
15405.00	90.220	266.700	6683.03	8473.14	-44.45	-8473.19	40°28'21.899"N	104°31'02.333"W	0.60	
15499.00	90.090	268.440	6682.78	8567.09	-48.44	-8567.10	40°28'21.870"N	104°31'03.548"W	1.86	
15594.00	90.000	269.100	6682.70	8662.08	-50.48	-8662.08	40°28'21.860"N	104°31'04.777"W	0.70	
15688.00	90.030	268.850	6682.68	8756.08	-52.16	-8756.06	40°28'21.854"N	104°31'05.994"W	0.27	
15783.00	89.750	269.080	6682.86	8851.08	-53.88	-8851.05	40°28'21.847"N	104°31'07.223"W	0.38	
15878.00	89.820	268.180	6683.22	8946.07	-56.15	-8946.02	40°28'21.835"N	104°31'08.452"W	0.95	
15972.00	89.720	267.720	6683.60	9040.04	-59.51	-9039.96	40°28'21.812"N	104°31'09.668"W	0.50	
16067.00	89.910	266.550	6683.90	9134.97	-64.26	-9134.83	40°28'21.776"N	104°31'10.896"W	1.25	
16161.00	90.060	266.020	6683.93	9228.83	-70.35	-9228.64	40°28'21.726"N	104°31'12.111"W	0.59	
16255.00	89.880	263.550	6683.98	9322.53	-78.89	-9322.24	40°28'21.652"N	104°31'13.323"W	2.63	
16350.00	90.060	263.230	6684.03	9417.02	-89.83	-9416.61	40°28'21.554"N	104°31'14.546"W	0.39	
16444.00	89.820	265.340	6684.12	9510.65	-99.19	-9510.14	40°28'21.471"N	104°31'15.757"W	2.26	
16539.00	90.000	268.140	6684.27	9605.54	-104.59	-9604.97	40°28'21.428"N	104°31'16.985"W	2.95	
16634.00	89.970	269.280	6684.30	9700.53	-106.73	-9699.95	40°28'21.418"N	104°31'18.214"W	1.20	
16728.00	90.150	269.310	6684.20	9794.53	-107.89	-9793.94	40°28'21.416"N	104°31'19.430"W	0.19	
16822.00	89.850	267.380	6684.20	9888.51	-110.60	-9887.90	40°28'21.400"N	104°31'20.646"W	2.08	
16917.00	89.910	267.200	6684.40	9983.45	-115.09	-9982.79	40°28'21.366"N	104°31'21.875"W	0.20	
17011.00	90.120	268.430	6684.37	10077.42	-118.68	-10076.72	40°28'21.341"N	104°31'23.091"W	1.33	
17106.00	89.940	269.050	6684.33	10172.41	-120.76	-10171.70	40°28'21.330"N	104°31'24.320"W	0.68	



Actual Wellpath Report

LARSON A23-656 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#21 LARSON A23-656 (2352'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 AWB
Facility	SEC.19-T06N-R63W		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17200.00	90.090	269.830	6684.30	10266.41	-121.68	-10265.69	40°28'21.332"N	104°31'25.536"W	0.84	
17295.00	89.970	270.420	6684.25	10361.40	-121.48	-10360.69	40°28'21.344"N	104°31'26.765"W	0.63	
17389.00	90.060	270.080	6684.23	10455.39	-121.07	-10454.69	40°28'21.358"N	104°31'27.981"W	0.37	
17484.00	89.910	269.150	6684.25	10550.39	-121.70	-10549.69	40°28'21.362"N	104°31'29.210"W	0.99	
17578.00	89.910	269.620	6684.40	10644.39	-122.71	-10643.68	40°28'21.362"N	104°31'30.427"W	0.50	
17673.00	89.970	270.020	6684.50	10739.38	-123.01	-10738.68	40°28'21.370"N	104°31'31.656"W	0.43	
17767.00	90.090	268.530	6684.45	10833.38	-124.20	-10832.67	40°28'21.368"N	104°31'32.872"W	1.59	
17862.00	90.120	269.180	6684.27	10928.38	-126.10	-10927.65	40°28'21.360"N	104°31'34.101"W	0.68	
17956.00	90.030	269.430	6684.15	11022.38	-127.24	-11021.64	40°28'21.359"N	104°31'35.318"W	0.28	Last BHI MWD Survey
18030.00	90.030	269.430	6684.11	11096.38	-127.98	-11095.64	40°28'21.359"N	104°31'36.275"W	0.00	Projection to Bit

HOLE & CASING SECTIONS - Ref Wellbore: LARSON A23-656 AWB Ref Wellpath: LARSON A23-656 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	1951.00	1921.00	30.00	1950.93	0.01	0.01	6.05	-7.51
9.625in Casing Surface	30.00	1951.00	1921.00	30.00	1950.93	0.01	0.01	6.05	-7.51
8.5in Open Hole	1951.00	18030.00	16079.00	1950.93	6684.11	6.05	-7.51	-127.98	-11095.64



Actual Wellpath Report

LARSON A23-656 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#21 LARSON A23-656 (2352'FNL&535'FWL,SEC.19)
Area	COLORADO	Well	LARSON A23-656
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	LARSON A23-656 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	-1564.74	-789.07	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON A23-639 Section 24	3.00	-1564.74	-789.07	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon
LARSON AA19-618 SECTION 19	3.00	-1794.24	-786.46	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	-1794.24	-786.46	3281075.20	1414828.23	40°28'03.756"N	104°29'23.136"W	polygon
LARSON A23-656 Landing Point	6648.00	95.00	-125.00	3281736.63	1416717.40	40°28'22.349"N	104°29'14.299"W	point
LARSON A23-656 Target 1	6648.00	-18.27	-5700.82	3276161.02	1416604.13	40°28'21.853"N	104°30'26.459"W	point
LARSON A23-656 BHL (2255'FNL&0'FWL,SEC.23)	6682.97	-127.98	-11100.34	3270761.70	1416494.43	40°28'21.360"N	104°31'36.336"W	point
LARSON A23-656 Target 2	6685.00	-70.07	-8250.29	3273611.65	1416552.34	40°28'21.621"N	104°30'59.452"W	point
LARSON A23-639 SECTION 23 Hardline (460'SETBACK)	7003.00	-1564.74	-789.07	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	-1564.74	-789.07	3281072.59	1415057.73	40°28'06.024"N	104°29'23.136"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: LARSON A23-656 AWB					Ref Wellpath: LARSON A23-656 AWP	
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment		Wellbore	
0.00	1950.00	Gyrodata standard - Drop gyro or Multi-shot	3rd Party Surface Gyros <85'-1950'>		LARSON A23-656 AWB	
1950.00	17956.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BH/ATC 8.5" OWSG MWD+IFR1+MSA <1980'-17956'>		LARSON A23-656 AWB	
17956.00	18030.00	Blind Drilling (std)	Projection to bit		LARSON A23-656 AWB	