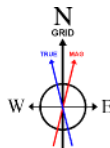


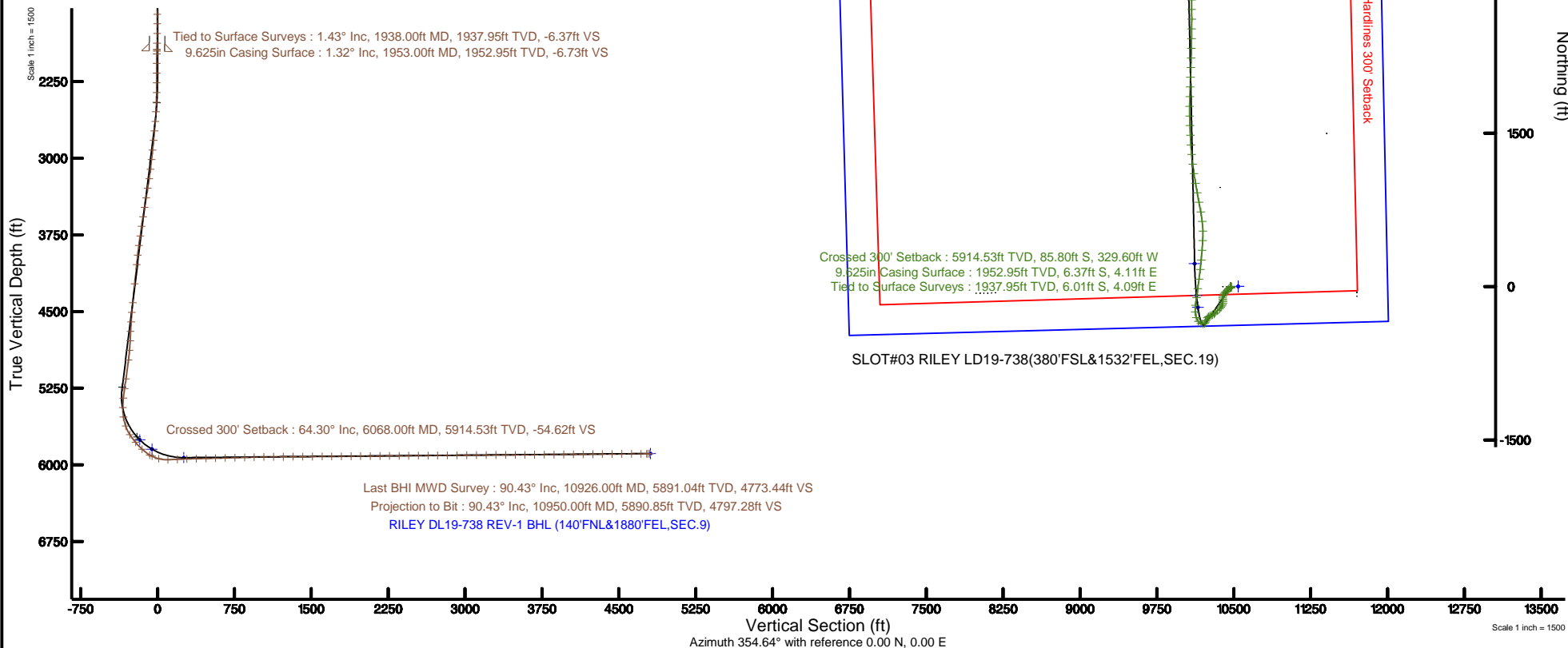
# NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)  
 Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: RILEY LD19-738  
 Facility: SEC.19-T09N-R58W Wellbore: RILEY LD19-738 PWB

Plot reference wellpath is RILEY LD19-738 (REV-A.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 524 (30'KB) (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to H&P 524 (30'KB) (RKB)	North Reference: Grid north
H&P 524 (30'KB) (RKB) to Mean Sea Level: 4850 feet	Scale: True distance
Mean Sea Level to Ground level (At Slot: SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: ingnjamm on 2016-11-07
	Database: WA_DEN_Denver_Defn



BGGM (1900.0 to 2018.0) Dip: 67.31° Field: 52777.6 nT  
 Magnetic North is 7.96 degrees East of True North (at 10/1/2016)  
 Grid North is 1.03 degrees East of True North  
 To correct azimuth from True to Grid subtract 1.03 degrees  
 To correct azimuth from Magnetic to Grid add 6.93 degrees



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Ingmjmr
Scale	0.999992	Report Generated	11/7/2016 at 9:10:34 AM
Convergence at slot	1.04° East	Database/Source file	WA_DEN_Denver_Defn/RILEY_LD19-738_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-1.35	-74.82	3442551.51	1512859.30	40°43'48.900"N	103°54'11.304"W
Facility Reference Pt			3442626.33	1512860.65	40°43'48.900"N	103°54'10.332"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 524 (30'KB) (RKB) to Facility Vertical Datum	4850.00ft
Horizontal Reference Pt	Slot	H&P 524 (30'KB) (RKB) to Mean Sea Level	4850.00ft
Vertical Reference Pt	H&P 524 (30'KB) (RKB)	H&P 524 (30'KB) (RKB) to Ground Level at Slot (SLOT#03 RILEY LD19-738 (380'FSL&1532'FEL,SEC.19))	4850.00ft
MD Reference Pt	H&P 524 (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	354.64°

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

### WELLPATH DATA (96 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
1938.00	1.430	178.690	1937.95	-6.37	-6.01	4.09	40°43'48.840"N	103°54'11.252"W	0.62	Tied to Surface Surveys
1979.00	1.140	173.050	1978.94	-7.29	-6.93	4.15	40°43'48.831"N	103°54'11.252"W	0.77	
2074.00	0.040	42.330	2073.94	-8.21	-7.84	4.29	40°43'48.822"N	103°54'11.250"W	1.23	
2168.00	0.030	116.460	2167.94	-8.20	-7.83	4.34	40°43'48.822"N	103°54'11.250"W	0.05	
2263.00	0.900	247.060	2262.93	-8.44	-8.13	3.67	40°43'48.819"N	103°54'11.258"W	0.97	
2357.00	1.960	239.180	2356.90	-9.35	-9.24	1.61	40°43'48.808"N	103°54'11.285"W	1.14	
2452.00	3.310	235.640	2451.80	-11.38	-11.62	-2.05	40°43'48.786"N	103°54'11.333"W	1.43	
2546.00	6.000	232.770	2545.48	-15.29	-16.13	-8.20	40°43'48.742"N	103°54'11.414"W	2.87	
2641.00	8.460	230.210	2639.72	-21.86	-23.60	-17.53	40°43'48.670"N	103°54'11.537"W	2.61	
2735.00	8.780	226.670	2732.66	-30.19	-32.95	-28.06	40°43'48.579"N	103°54'11.676"W	0.66	
2830.00	8.890	225.850	2826.53	-39.25	-43.04	-38.60	40°43'48.482"N	103°54'11.815"W	0.18	
2925.00	8.890	224.600	2920.39	-48.57	-53.38	-49.02	40°43'48.381"N	103°54'11.953"W	0.20	
3019.00	8.990	221.110	3013.25	-58.30	-64.09	-58.95	40°43'48.277"N	103°54'12.085"W	0.59	
3114.00	9.270	215.860	3107.05	-69.16	-75.88	-68.31	40°43'48.163"N	103°54'12.209"W	0.92	
3209.00	9.430	199.870	3200.80	-81.96	-89.40	-75.44	40°43'48.030"N	103°54'12.305"W	2.73	
3303.00	9.200	174.930	3293.60	-96.45	-104.14	-77.40	40°43'47.885"N	103°54'12.333"W	4.27	
3398.00	9.100	173.830	3387.39	-111.55	-119.17	-75.92	40°43'47.736"N	103°54'12.318"W	0.21	
3492.00	8.810	176.490	3480.24	-126.18	-133.74	-74.68	40°43'47.592"N	103°54'12.305"W	0.54	
3587.00	9.190	182.720	3574.08	-140.96	-148.58	-74.59	40°43'47.445"N	103°54'12.307"W	1.10	
3681.00	9.060	190.270	3666.89	-155.52	-163.36	-76.27	40°43'47.300"N	103°54'12.333"W	1.28	
3776.00	9.030	200.280	3760.72	-169.45	-177.72	-80.19	40°43'47.158"N	103°54'12.387"W	1.65	
3870.00	9.130	212.480	3853.55	-181.99	-190.93	-86.75	40°43'47.029"N	103°54'12.475"W	2.05	
3965.00	9.030	219.440	3947.36	-193.23	-203.05	-95.53	40°43'46.911"N	103°54'12.592"W	1.16	
4060.00	8.960	223.040	4041.19	-203.43	-214.21	-105.32	40°43'46.802"N	103°54'12.722"W	0.60	
4249.00	9.470	225.530	4227.75	-223.01	-235.86	-126.46	40°43'46.592"N	103°54'13.001"W	0.34	
4438.00	9.320	228.660	4414.22	-241.81	-256.86	-149.04	40°43'46.389"N	103°54'13.300"W	0.28	
4533.00	9.370	234.450	4507.96	-250.22	-266.44	-161.11	40°43'46.296"N	103°54'13.459"W	0.99	
4627.00	9.370	239.810	4600.71	-257.28	-274.74	-173.95	40°43'46.217"N	103°54'13.627"W	0.93	
4721.00	9.420	248.400	4693.45	-262.65	-281.42	-187.72	40°43'46.153"N	103°54'13.808"W	1.49	
4816.00	9.380	244.130	4787.18	-267.53	-287.66	-201.91	40°43'46.094"N	103°54'13.993"W	0.74	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

### WELLPATH DATA (96 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4910.00	9.380	232.000	4879.93	-274.35	-295.72	-214.84	40°43'46.017"N	103°54'14.163"W	2.10	
5004.00	9.300	222.180	4972.69	-283.61	-306.06	-225.98	40°43'45.916"N	103°54'14.310"W	1.70	
5193.00	9.480	200.110	5159.22	-307.98	-332.00	-241.59	40°43'45.663"N	103°54'14.519"W	1.90	
5288.00	9.450	194.040	5252.93	-322.40	-346.91	-246.17	40°43'45.516"N	103°54'14.582"W	1.05	
5382.00	8.910	228.070	5345.79	-334.02	-359.27	-253.47	40°43'45.396"N	103°54'14.680"W	5.72	
5477.00	11.750	262.680	5439.33	-338.74	-365.43	-268.55	40°43'45.338"N	103°54'14.877"W	7.04	
5571.00	17.170	293.500	5530.44	-332.35	-361.11	-290.82	40°43'45.384"N	103°54'15.165"W	9.82	
5666.00	21.870	323.560	5620.18	-310.37	-341.22	-314.26	40°43'45.585"N	103°54'15.465"W	11.51	
5760.00	33.590	338.650	5703.34	-270.19	-302.74	-334.22	40°43'45.969"N	103°54'15.715"W	14.45	
5855.00	40.010	357.340	5779.61	-214.18	-247.53	-345.25	40°43'46.516"N	103°54'15.846"W	13.52	
5949.00	47.430	6.810	5847.57	-150.01	-182.81	-342.54	40°43'47.155"N	103°54'15.795"W	10.51	
6044.00	60.420	8.040	5903.39	-75.30	-106.85	-332.57	40°43'47.904"N	103°54'15.648"W	13.71	
6068.00†	64.298	8.004	5914.53	-54.62	-85.80	-329.60	40°43'48.111"N	103°54'15.605"W	16.16	Crossed 300' Setback
6139.00	75.770	7.910	5938.73	10.21	-19.82	-320.38	40°43'48.761"N	103°54'15.469"W	16.16	
6233.00	91.600	7.800	5949.04	100.87	72.44	-307.66	40°43'49.670"N	103°54'15.283"W	16.84	
6328.00	92.800	6.560	5945.39	193.53	166.62	-295.79	40°43'50.599"N	103°54'15.106"W	1.82	
6422.00	91.380	5.070	5941.96	285.68	260.07	-286.27	40°43'51.520"N	103°54'14.961"W	2.19	
6517.00	91.600	4.650	5939.49	379.14	354.70	-278.23	40°43'52.454"N	103°54'14.834"W	0.50	
6612.00	91.510	3.240	5936.91	472.86	449.44	-271.69	40°43'53.389"N	103°54'14.727"W	1.49	
6706.00	91.420	358.820	5934.51	566.22	543.37	-270.01	40°43'54.316"N	103°54'14.684"W	4.70	
6801.00	91.600	353.380	5932.00	661.12	638.08	-276.46	40°43'55.253"N	103°54'14.745"W	5.73	
6895.00	91.380	349.210	5929.56	754.91	730.94	-290.68	40°43'56.173"N	103°54'14.908"W	4.44	
6990.00	91.450	349.480	5927.21	849.47	824.28	-308.24	40°43'57.098"N	103°54'15.114"W	0.29	
7084.00	91.540	350.040	5924.76	943.10	916.75	-324.95	40°43'58.015"N	103°54'15.310"W	0.60	
7179.00	91.480	350.180	5922.26	1037.77	1010.30	-341.26	40°43'58.942"N	103°54'15.500"W	0.16	
7274.00	90.250	351.020	5920.82	1132.52	1104.02	-356.77	40°43'59.871"N	103°54'15.679"W	1.57	
7369.00	90.370	352.920	5920.31	1227.41	1198.08	-370.04	40°44'00.802"N	103°54'15.830"W	2.00	
7463.00	90.370	354.590	5919.70	1321.40	1291.52	-380.27	40°44'01.727"N	103°54'15.941"W	1.78	
7558.00	90.550	356.550	5918.94	1416.38	1386.22	-387.60	40°44'02.664"N	103°54'16.014"W	2.07	
7652.00	90.400	357.610	5918.16	1510.29	1480.10	-392.39	40°44'03.592"N	103°54'16.054"W	1.14	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

### WELLPATH DATA (96 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
7747.00	90.250	357.740	5917.62	1605.15	1575.02	-396.25	40°44'04.531"N	103°54'16.082"W	0.21	
7841.00	90.370	358.980	5917.11	1698.95	1668.98	-398.94	40°44'05.460"N	103°54'16.095"W	1.33	
7936.00	90.340	0.830	5916.52	1793.54	1763.97	-399.09	40°44'06.398"N	103°54'16.075"W	1.95	
8031.00	90.550	1.900	5915.78	1887.88	1858.94	-396.83	40°44'07.336"N	103°54'16.023"W	1.15	
8125.00	90.460	1.650	5914.96	1981.15	1952.89	-393.92	40°44'08.264"N	103°54'15.963"W	0.28	
8220.00	90.430	2.200	5914.22	2075.38	2047.83	-390.73	40°44'09.201"N	103°54'15.900"W	0.58	
8315.00	90.650	2.000	5913.32	2169.57	2142.76	-387.25	40°44'10.138"N	103°54'15.832"W	0.31	
8409.00	90.460	1.740	5912.41	2262.82	2236.71	-384.18	40°44'11.066"N	103°54'15.771"W	0.34	
8504.00	90.520	0.270	5911.60	2357.23	2331.69	-382.51	40°44'12.004"N	103°54'15.727"W	1.55	
8598.00	90.520	1.690	5910.75	2450.65	2425.67	-380.91	40°44'12.932"N	103°54'15.684"W	1.51	
8693.00	90.580	0.570	5909.83	2545.03	2520.64	-379.03	40°44'13.870"N	103°54'15.637"W	1.18	
8788.00	90.520	0.020	5908.92	2639.57	2615.64	-378.54	40°44'14.808"N	103°54'15.609"W	0.58	
8882.00	90.650	359.500	5907.96	2733.19	2709.63	-378.94	40°44'15.737"N	103°54'15.592"W	0.57	
8977.00	90.520	359.870	5906.99	2827.81	2804.63	-379.46	40°44'16.676"N	103°54'15.577"W	0.41	
9072.00	90.520	359.030	5906.13	2922.47	2899.62	-380.37	40°44'17.614"N	103°54'15.566"W	0.88	
9167.00	90.340	358.030	5905.42	3017.25	2994.58	-382.81	40°44'18.553"N	103°54'15.576"W	1.07	
9261.00	90.460	357.380	5904.76	3111.11	3088.50	-386.57	40°44'19.481"N	103°54'15.603"W	0.70	
9356.00	90.680	356.930	5903.82	3206.02	3183.38	-391.29	40°44'20.420"N	103°54'15.642"W	0.53	
9451.00	90.400	356.390	5902.92	3300.95	3278.22	-396.82	40°44'21.358"N	103°54'15.691"W	0.64	
9545.00	90.150	354.190	5902.47	3394.94	3371.89	-404.54	40°44'22.284"N	103°54'15.770"W	2.36	
9640.00	90.400	353.740	5902.01	3489.93	3466.36	-414.53	40°44'23.220"N	103°54'15.877"W	0.54	
9734.00	90.400	353.320	5901.36	3583.91	3559.76	-425.12	40°44'24.144"N	103°54'15.993"W	0.45	
9829.00	90.520	354.010	5900.60	3678.89	3654.18	-435.60	40°44'25.079"N	103°54'16.107"W	0.74	
9924.00	90.580	355.030	5899.68	3773.89	3748.74	-444.67	40°44'26.015"N	103°54'16.203"W	1.08	
10019.00	90.520	355.540	5898.77	3868.88	3843.41	-452.48	40°44'26.951"N	103°54'16.282"W	0.54	
10114.00	90.620	355.460	5897.83	3963.86	3938.11	-459.93	40°44'27.888"N	103°54'16.357"W	0.13	
10208.00	90.520	357.510	5896.89	4057.80	4031.93	-465.70	40°44'28.816"N	103°54'16.410"W	2.18	
10302.00	90.460	358.290	5896.09	4151.65	4125.86	-469.14	40°44'29.745"N	103°54'16.433"W	0.83	
10397.00	90.340	358.640	5895.42	4246.43	4220.82	-471.69	40°44'30.683"N	103°54'16.443"W	0.39	
10491.00	90.430	359.340	5894.79	4340.16	4314.81	-473.34	40°44'31.612"N	103°54'16.443"W	0.75	



# Actual Wellpath Report

RILEY LD19-738 AWP

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

## WELLPATH DATA (96 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
10586.00	90.520	358.670	5894.00	4434.88	4409.79	-474.99	40°44'32.551"N	103°54'16.442"W	0.71	
10681.00	90.620	359.170	5893.06	4529.61	4504.77	-476.78	40°44'33.489"N	103°54'16.443"W	0.54	
10775.00	90.520	359.760	5892.12	4623.27	4598.76	-477.66	40°44'34.418"N	103°54'16.433"W	0.64	
10870.00	90.340	0.870	5891.41	4717.80	4693.75	-477.14	40°44'35.357"N	103°54'16.404"W	1.18	
10926.00	90.430	1.360	5891.04	4773.44	4749.74	-476.05	40°44'35.909"N	103°54'16.376"W	0.89	Last BHI MWD Survey
10950.00	90.430	1.360	5890.85	4797.28	4773.73	-475.48	40°44'36.146"N	103°54'16.363"W	0.00	Projection to Bit

## HOLE & CASING SECTIONS - Ref Wellbore: RILEY LD19-738 AWB Ref Wellpath: RILEY LD19-738 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	1953.00	1923.00	30.00	1952.95	0.02	0.02	-6.37	4.11
9.625in Casing Surface	30.00	1953.00	1923.00	30.00	1952.95	0.02	0.02	-6.37	4.11
8.5in Open Hole	1953.00	10950.00	8997.00	1952.95	5890.85	-6.37	4.11	4773.73	-475.48



# Actual Wellpath Report

RILEY LD19-738 AWP

Page 6 of 7



## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

## TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
RILEY LD19-715 SECTION 09	0.00	1.34	74.81	3442626.32	1512860.64	40°43'48.900"N	103°54'10.332"W	polygon
RILEY DL19-738 TOP OF NIO (176'FSL&1851'FEL,SEC.9)	5755.00	-203.59	-318.71	3442232.80	1512655.71	40°43'46.945"N	103°54'15.491"W	point
RILEY DL19-738 Cross 300' Hardline (300'&1866'FEL,SEC.9)	5845.58	-86.46	-332.94	3442218.57	1512772.84	40°43'48.105"N	103°54'15.648"W	point
RILEY DL19-738 REV-1 BHL (140'FNL&1880'FEL,SEC.9)	5889.00	4787.34	-449.27	3442102.24	1517646.59	40°44'36.276"N	103°54'16.020"W	point
RILEY LD19-715 HARDLINE (300'From E/S/W&200'FNL)	5900.00	1.34	74.81	3442626.32	1512860.64	40°43'48.900"N	103°54'10.332"W	polygon
RILEY DL19-738 Landing Point (604'FSL&1883'FEL,SEC.9)	5928.85	224.07	-350.63	3442200.88	1513083.37	40°43'51.176"N	103°54'15.805"W	point

## WELLPATH COMPOSITION - Ref Wellbore: RILEY LD19-738 AWB Ref Wellpath: RILEY LD19-738 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1938.00	Gyrodata standard - Drop gyro or Multi-shot	Gyrodata Surface Surveys <79'-1938'>	RILEY LD19-738 AWB
1938.00	10926.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BHI/OWSG 8.5" Hole <1979'-10926'>	RILEY LD19-738 AWB
10926.00	10950.00	Blind Drilling (std)	Projection to bit	RILEY LD19-738 AWB





# Actual Wellpath Report

RILEY LD19-738 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#03 RILEY LD19-738(380'FSL&1532'FEL,SEC.19)
Area	COLORADO	Well	RILEY LD19-738
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	RILEY LD19-738 AWB
Facility	SEC.19-T09N-R58W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1938.00	1.430	178.690	1937.95	Tied to Surface Surveys
6068.00	64.298	8.004	5914.53	Crossed 300' Setback
10926.00	90.430	1.360	5891.04	Last BHI MWD Survey
10950.00	90.430	1.360	5890.85	Projection to Bit