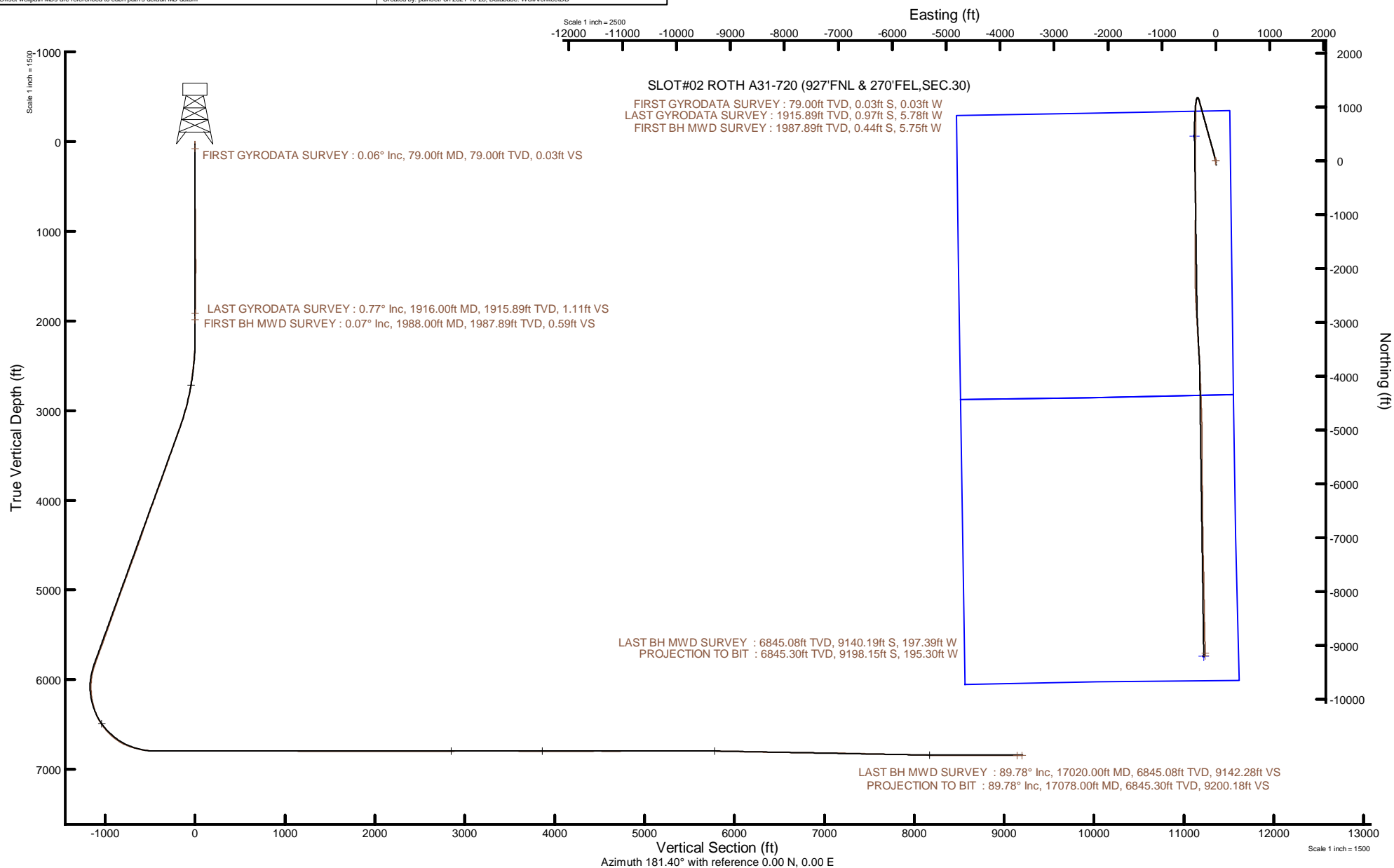


Location:	COLORADO	Slot:	SLOT#02 ROTH A31-720 (927°FNL & 270°FEL, SEC.30)
Field:	WELD COUNTY (NOBLE NAD 83 GRID)	Well:	ROTH A31-720
Facility:	SEC.30-T06N-R64W	Wellbore:	ROTH A31-720 PWB
Plot reference wellpath is ROTH A31-720 PWP Rev-A.0		Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	
True vertical depths are referenced to H&P 517 (30') (KB)		North Reference: Grid north	
Reference wellpath measured depths are referenced to H&P 517 (30') (KB)		Scale: True distance	
H&P 517 (30') (KB) to Mean Sea Level: 4728 feet		Coordinates are in feet referenced to Slot	
Mean Sea Level to Mud line (At Slot: SLOT#02 ROTH A31-720 (927°FNL & 270°FEL, SEC.30)): 0 feet		Depths are in feet	
Offset wellpath MDs are referenced to each path's default MD datum		Created by: painsett on 2021-10-28; Database: WellArchitectIDB	



## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

## REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Painsetr
Scale	0.999964	Report Generated	10/28/2021 at 11:17:57 AM
Convergence at slot	0.59° East	Database	WellArchitectDB

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	91.08	-0.94	3254695.24	1412341.28	40.4616700°	-104.5846600°
Facility Reference Pt			3254696.18	1412250.21	40.4614200°	-104.5846600°
Field Reference Pt			3000000.00	4454105.15	48.7761986°	-105.5000000°

## WELLPATH DATUM

Calculation method	Minimum curvature	H&P 517 (30') (KB) to Facility Vertical Datum	4728.00ft
Horizontal Reference Pt	Slot	H&P 517 (30') (KB) to Mean Sea Level	4728.00ft
Vertical Reference Pt	H&P 517 (30') (KB)	H&P 517 (30') (KB) to Mud Line at Slot (SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30))	4728.00ft
MD Reference Pt	H&P 517 (30') (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	181.40°

## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

## WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS °/100ft	Comments
0.00	0.000	229.040	0.00	0.00	0.00	0.00	3254695.24	1412341.28	40.4616700	-104.5846600	0.00	
79.00	0.060	229.040	79.00	0.03	-0.03	-0.03	3254695.21	1412341.26	40.4616699	-104.5846601	0.08	FIRST GYRODATA SURVEY
173.00	0.060	39.770	173.00	0.02	-0.02	-0.04	3254695.20	1412341.26	40.4616699	-104.5846601	0.13	
264.00	0.230	89.060	264.00	-0.02	0.02	0.18	3254695.41	1412341.30	40.4616700	-104.5846594	0.22	
327.00	0.300	116.700	327.00	0.04	-0.05	0.45	3254695.69	1412341.23	40.4616698	-104.5846584	0.23	
421.00	0.290	106.160	421.00	0.21	-0.23	0.90	3254696.14	1412341.05	40.4616693	-104.5846568	0.06	
516.00	0.290	92.310	516.00	0.27	-0.31	1.37	3254696.61	1412340.98	40.4616691	-104.5846551	0.07	
610.00	0.100	260.170	610.00	0.29	-0.33	1.53	3254696.76	1412340.95	40.4616690	-104.5846545	0.41	
705.00	0.520	163.460	704.99	0.72	-0.76	1.57	3254696.81	1412340.53	40.4616679	-104.5846544	0.57	
800.00	0.560	186.610	799.99	1.59	-1.63	1.64	3254696.88	1412339.65	40.4616655	-104.5846542	0.23	
894.00	0.490	164.800	893.99	2.43	-2.48	1.69	3254696.93	1412338.81	40.4616632	-104.5846540	0.22	
989.00	0.560	170.110	988.98	3.28	-3.33	1.88	3254697.11	1412337.96	40.4616608	-104.5846534	0.09	
1083.00	0.500	173.690	1082.98	4.14	-4.19	2.00	3254697.24	1412337.10	40.4616585	-104.5846530	0.07	
1178.00	0.690	207.120	1177.97	5.06	-5.11	1.78	3254697.02	1412336.18	40.4616559	-104.5846538	0.41	
1272.00	0.540	227.580	1271.97	5.88	-5.91	1.20	3254696.44	1412335.37	40.4616537	-104.5846559	0.28	
1367.00	0.570	267.510	1366.96	6.22	-6.23	0.40	3254695.64	1412335.05	40.4616529	-104.5846588	0.40	
1462.00	0.870	282.290	1461.96	6.12	-6.10	-0.78	3254694.46	1412335.18	40.4616533	-104.5846630	0.37	
1556.00	0.970	282.370	1555.94	5.83	-5.78	-2.25	3254692.98	1412335.51	40.4616542	-104.5846683	0.11	
1651.00	0.880	304.870	1650.93	5.28	-5.19	-3.64	3254691.60	1412336.10	40.4616559	-104.5846733	0.39	
1745.00	1.230	327.720	1744.92	4.04	-3.92	-4.77	3254690.47	1412337.36	40.4616594	-104.5846773	0.58	
1840.00	1.110	343.090	1839.90	2.32	-2.18	-5.58	3254689.66	1412339.10	40.4616642	-104.5846801	0.35	
1916.00	0.770	1.490	1915.89	1.11	-0.97	-5.78	3254689.46	1412340.32	40.4616675	-104.5846808	0.59	LAST GYRODATA SURVEY
1988.00	0.070	33.880	1987.89	0.59	-0.44	-5.75	3254689.49	1412340.84	40.4616689	-104.5846807	0.99	FIRST BH MWD SURVEY
2083.00	0.070	96.930	2082.89	0.54	-0.40	-5.66	3254689.58	1412340.88	40.4616691	-104.5846803	0.08	
2178.00	0.000	97.010	2177.89	0.55	-0.41	-5.60	3254689.64	1412340.87	40.4616690	-104.5846801	0.07	
2272.00	2.190	350.620	2271.86	-1.22	1.36	-5.89	3254689.35	1412342.65	40.4616739	-104.5846811	2.33	
2367.00	4.380	348.240	2366.70	-6.53	6.70	-6.93	3254688.31	1412347.99	40.4616886	-104.5846846	2.31	
2461.00	5.710	344.830	2460.33	-14.51	14.73	-8.88	3254686.36	1412356.02	40.4617107	-104.5846914	1.45	
2556.00	6.450	345.300	2554.80	-24.17	24.45	-11.47	3254683.77	1412365.74	40.4617374	-104.5847003	0.78	
2650.00	8.080	345.160	2648.04	-35.58	35.95	-14.50	3254680.73	1412377.23	40.4617691	-104.5847108	1.73	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2745.00	9.580	344.990	2741.91	-49.58	50.04	-18.26	3254676.98	1412391.32	40.4618079	-104.5847238	1.58	
2840.00	12.760	345.100	2835.10	-67.23	67.82	-23.01	3254672.23	1412409.10	40.4618568	-104.5847402	3.35	
2934.00	14.620	344.340	2926.43	-88.54	89.27	-28.88	3254666.36	1412430.55	40.4619158	-104.5847605	1.99	
3029.00	16.470	344.370	3017.95	-112.88	113.79	-35.75	3254659.49	1412455.07	40.4619833	-104.5847842	1.95	
3123.00	19.930	344.890	3107.23	-140.99	142.10	-43.51	3254651.73	1412483.38	40.4620612	-104.5848111	3.68	
3217.00	19.990	346.190	3195.59	-171.85	173.17	-51.53	3254643.72	1412514.44	40.4621468	-104.5848387	0.48	
3312.00	20.230	345.600	3284.79	-203.33	204.84	-59.49	3254635.75	1412546.12	40.4622339	-104.5848662	0.33	
3406.00	20.310	343.170	3372.97	-234.46	236.20	-68.25	3254626.99	1412577.48	40.4623202	-104.5848965	0.90	
3501.00	20.040	346.240	3462.15	-265.83	267.79	-76.90	3254618.34	1412609.07	40.4624072	-104.5849264	1.15	
3595.00	19.480	345.420	3550.61	-296.44	298.61	-84.67	3254610.57	1412639.88	40.4624920	-104.5849532	0.66	
3690.00	20.580	343.090	3639.87	-327.52	329.91	-93.52	3254601.72	1412671.18	40.4625782	-104.5849838	1.43	
3784.00	20.780	343.950	3727.81	-359.11	361.74	-102.93	3254592.31	1412703.01	40.4626658	-104.5850165	0.39	
3878.00	20.580	343.080	3815.75	-390.70	393.58	-112.35	3254582.89	1412734.84	40.4627534	-104.5850491	0.39	
3973.00	20.810	345.710	3904.63	-422.80	425.90	-121.38	3254573.87	1412767.17	40.4628424	-104.5850804	1.01	
4068.00	20.950	343.660	3993.39	-455.22	458.55	-130.32	3254564.92	1412799.82	40.4629323	-104.5851113	0.78	
4162.00	20.750	344.820	4081.23	-487.19	490.75	-139.41	3254555.84	1412832.02	40.4630209	-104.5851428	0.49	
4257.00	20.760	344.610	4170.07	-519.44	523.23	-148.28	3254546.96	1412864.49	40.4631103	-104.5851735	0.08	
4351.00	20.160	344.010	4258.14	-550.84	554.86	-157.17	3254538.08	1412896.12	40.4631974	-104.5852042	0.68	
4446.00	18.570	350.890	4347.77	-581.34	585.54	-164.07	3254531.17	1412926.80	40.4632818	-104.5852279	2.92	
4540.00	20.880	343.020	4436.27	-611.97	616.35	-171.34	3254523.91	1412957.61	40.4633666	-104.5852528	3.74	
4635.00	20.780	345.330	4525.06	-644.23	648.84	-180.55	3254514.70	1412990.10	40.4634560	-104.5852847	0.87	
4730.00	20.850	345.110	4613.86	-676.65	681.49	-189.16	3254506.08	1413022.74	40.4635458	-104.5853145	0.11	
4824.00	20.980	344.900	4701.66	-708.84	713.90	-197.84	3254497.40	1413055.16	40.4636351	-104.5853445	0.16	
4919.00	20.810	344.070	4790.42	-741.25	746.55	-206.91	3254488.34	1413087.80	40.4637249	-104.5853758	0.36	
5013.00	20.720	344.520	4878.31	-773.10	778.63	-215.93	3254479.32	1413119.88	40.4638132	-104.5854071	0.19	
5108.00	20.990	342.870	4967.09	-805.32	811.08	-225.42	3254469.82	1413152.34	40.4639026	-104.5854400	0.68	
5202.00	20.690	345.130	5054.94	-837.22	843.22	-234.64	3254460.60	1413184.47	40.4639911	-104.5854719	0.91	
5297.00	19.830	344.950	5144.06	-868.79	875.00	-243.14	3254452.11	1413216.26	40.4640785	-104.5855013	0.91	
5392.00	20.370	344.850	5233.27	-900.09	906.52	-251.64	3254443.61	1413247.77	40.4641653	-104.5855307	0.57	
5486.00	20.620	344.770	5321.32	-931.63	938.29	-260.26	3254434.98	1413279.53	40.4642527	-104.5855605	0.27	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5581.00	20.560	344.700	5410.26	-963.63	970.52	-269.06	3254426.19	1413311.76	40.4643414	-104.5855909	0.07	
5675.00	20.570	344.800	5498.27	-995.27	1002.37	-277.75	3254417.50	1413343.62	40.4644291	-104.5856209	0.04	
5769.00	20.570	344.110	5586.27	-1026.86	1034.19	-286.60	3254408.65	1413375.44	40.4645167	-104.5856516	0.26	
5864.00	20.440	344.280	5675.25	-1058.65	1066.21	-295.66	3254399.59	1413407.45	40.4646048	-104.5856829	0.15	
5958.00	20.540	344.530	5763.31	-1090.12	1097.90	-304.51	3254390.74	1413439.15	40.4646921	-104.5857136	0.14	
6053.00	20.470	341.810	5852.29	-1121.71	1129.75	-314.14	3254381.11	1413470.99	40.4647797	-104.5857470	1.01	
6147.00	12.370	329.950	5942.40	-1145.83	1154.13	-324.33	3254370.92	1413495.37	40.4648469	-104.5857827	9.28	
6242.00	7.920	294.650	6035.98	-1157.11	1165.68	-335.39	3254359.86	1413506.92	40.4648790	-104.5858220	7.84	
6337.00	7.850	245.790	6130.18	-1156.89	1165.75	-347.27	3254347.98	1413506.99	40.4648795	-104.5858647	6.85	
6431.00	10.970	205.340	6223.00	-1145.93	1155.02	-356.96	3254338.29	1413496.26	40.4648503	-104.5858999	7.57	
6526.00	16.620	186.040	6315.27	-1124.10	1133.31	-362.27	3254332.98	1413474.55	40.4647909	-104.5859198	7.59	
6621.00	24.500	186.050	6404.15	-1090.87	1100.16	-365.78	3254329.47	1413441.40	40.4647000	-104.5859337	8.29	
6715.00	32.930	185.050	6486.52	-1045.86	1055.25	-370.09	3254325.16	1413396.49	40.4645768	-104.5859508	8.98	
6810.00	40.220	181.060	6562.77	-989.34	998.77	-372.93	3254322.32	1413340.02	40.4644219	-104.5859631	8.07	
6905.00	49.230	180.610	6630.20	-922.56	932.00	-373.89	3254321.37	1413273.25	40.4642387	-104.5859690	9.49	
6999.00	57.210	180.980	6686.43	-847.34	856.78	-374.94	3254320.31	1413198.03	40.4640322	-104.5859756	8.50	
7094.00	67.440	180.470	6730.50	-763.32	772.77	-375.99	3254319.26	1413114.02	40.4638017	-104.5859825	10.78	
7188.00	74.030	180.050	6761.50	-674.65	684.08	-376.39	3254318.87	1413025.34	40.4635583	-104.5859872	7.02	
7282.00	80.040	180.060	6782.58	-583.12	592.52	-376.47	3254318.78	1412933.78	40.4633070	-104.5859909	6.39	
7377.00	87.350	180.750	6793.00	-488.77	498.16	-377.14	3254318.11	1412839.42	40.4630480	-104.5859968	7.73	
7472.00	89.690	180.590	6795.46	-393.82	403.20	-378.25	3254317.00	1412744.47	40.4627874	-104.5860043	2.47	
7566.00	89.970	180.850	6795.73	-299.82	309.21	-379.44	3254315.82	1412650.48	40.4625294	-104.5860120	0.41	
7661.00	90.060	180.390	6795.71	-204.83	214.22	-380.46	3254314.79	1412555.49	40.4622687	-104.5860193	0.49	
7755.00	90.000	179.500	6795.66	-110.86	120.22	-380.37	3254314.88	1412461.50	40.4620107	-104.5860224	0.95	
7850.00	89.880	180.280	6795.76	-15.90	25.22	-380.19	3254315.06	1412366.50	40.4617500	-104.5860253	0.83	
7944.00	90.220	180.970	6795.68	78.09	-68.77	-381.22	3254314.04	1412272.51	40.4614920	-104.5860324	0.82	
8039.00	90.060	180.510	6795.45	173.09	-163.77	-382.44	3254312.81	1412177.52	40.4612313	-104.5860404	0.51	
8134.00	89.910	179.510	6795.47	268.06	-258.76	-382.46	3254312.79	1412082.53	40.4609706	-104.5860439	1.06	
8229.00	89.910	179.100	6795.62	362.99	-353.76	-381.31	3254313.95	1411987.54	40.4607098	-104.5860433	0.43	
8418.00	90.190	179.230	6795.45	551.85	-542.74	-378.55	3254316.70	1411798.57	40.4601911	-104.5860404	0.16	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8513.00	90.060	179.530	6795.25	646.79	-637.73	-377.53	3254317.73	1411703.58	40.4599303	-104.5860402	0.34	
8702.00	89.970	178.620	6795.20	835.63	-826.70	-374.47	3254320.78	1411514.61	40.4594115	-104.5860363	0.48	
8796.00	89.880	181.250	6795.32	929.59	-920.70	-374.37	3254320.89	1411420.62	40.4591535	-104.5860394	2.80	
8890.00	89.660	181.110	6795.70	1023.59	-1014.67	-376.30	3254318.95	1411326.65	40.4588957	-104.5860498	0.28	
8985.00	89.880	181.360	6796.08	1118.59	-1109.65	-378.35	3254316.90	1411231.67	40.4586350	-104.5860607	0.35	
9080.00	89.170	181.480	6796.87	1213.58	-1204.62	-380.70	3254314.55	1411136.71	40.4583744	-104.5860727	0.76	
9174.00	90.370	181.630	6797.24	1307.58	-1298.58	-383.26	3254312.00	1411042.75	40.4581166	-104.5860853	1.29	
9269.00	90.030	180.970	6796.91	1402.58	-1393.56	-385.41	3254309.84	1410947.78	40.4578560	-104.5860966	0.78	
9363.00	90.180	179.210	6796.74	1496.55	-1487.55	-385.56	3254309.69	1410853.79	40.4575980	-104.5861006	1.88	
9457.00	89.850	179.560	6796.72	1590.49	-1581.55	-384.55	3254310.70	1410759.80	40.4573400	-104.5861004	0.51	
9552.00	89.600	179.560	6797.17	1685.44	-1676.54	-383.82	3254311.43	1410664.81	40.4570792	-104.5861013	0.26	
9646.00	89.850	179.370	6797.62	1779.39	-1770.54	-382.94	3254312.31	1410570.81	40.4568212	-104.5861017	0.33	
9741.00	89.750	179.640	6797.96	1874.33	-1865.53	-382.12	3254313.13	1410475.82	40.4565604	-104.5861022	0.30	
9835.00	89.630	179.500	6798.46	1968.28	-1959.53	-381.42	3254313.84	1410381.83	40.4563024	-104.5861032	0.20	
9930.00	89.540	179.350	6799.15	2063.23	-2054.52	-380.46	3254314.79	1410286.84	40.4560417	-104.5861033	0.18	
10024.00	90.000	179.690	6799.53	2157.17	-2148.52	-379.68	3254315.58	1410192.85	40.4557837	-104.5861039	0.61	
10119.00	90.490	179.810	6799.12	2252.13	-2243.51	-379.26	3254315.99	1410097.86	40.4555229	-104.5861060	0.53	
10214.00	90.430	179.640	6798.36	2347.09	-2338.51	-378.80	3254316.45	1410002.86	40.4552622	-104.5861078	0.19	
10308.00	90.180	178.520	6797.86	2441.01	-2432.50	-377.30	3254317.96	1409908.88	40.4550041	-104.5861059	1.22	
10403.00	89.910	178.310	6797.79	2535.88	-2527.46	-374.67	3254320.59	1409813.92	40.4547434	-104.5861000	0.36	
10498.00	90.430	176.670	6797.50	2630.65	-2622.36	-370.51	3254324.75	1409719.02	40.4544828	-104.5860885	1.81	
10592.00	90.250	176.850	6796.95	2724.34	-2716.21	-365.20	3254330.06	1409625.18	40.4542251	-104.5860729	0.27	
10687.00	90.250	176.470	6796.53	2819.02	-2811.05	-359.66	3254335.59	1409530.34	40.4539646	-104.5860565	0.40	
10781.00	90.460	176.590	6795.95	2912.68	-2904.88	-353.97	3254341.28	1409436.52	40.4537069	-104.5860396	0.26	
10876.00	90.250	176.600	6795.36	3007.34	-2999.71	-348.33	3254346.92	1409341.69	40.4534465	-104.5860228	0.22	
10971.00	89.750	177.450	6795.36	3102.06	-3094.58	-343.40	3254351.85	1409246.83	40.4531860	-104.5860086	1.04	
11065.00	90.120	176.660	6795.47	3195.79	-3188.45	-338.57	3254356.68	1409152.95	40.4529282	-104.5859947	0.93	
11160.00	90.030	176.790	6795.34	3290.47	-3283.30	-333.14	3254362.11	1409058.11	40.4526677	-104.5859788	0.17	
11254.00	89.910	176.580	6795.39	3384.15	-3377.14	-327.71	3254367.55	1408964.27	40.4524100	-104.5859627	0.26	
11349.00	89.850	175.660	6795.59	3478.75	-3471.92	-321.28	3254373.97	1408869.50	40.4521496	-104.5859431	0.97	

### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11444.00	89.630	175.380	6796.02	3573.25	-3566.63	-313.86	3254381.39	1408774.79	40.4518895	-104.5859200	0.37	
11538.00	89.660	175.670	6796.60	3666.75	-3660.34	-306.52	3254388.73	1408681.08	40.4516320	-104.5858971	0.31	
11633.00	89.690	178.010	6797.14	3761.44	-3755.19	-301.29	3254393.96	1408586.24	40.4513716	-104.5858818	2.46	
11727.00	89.910	177.850	6797.47	3855.27	-3849.13	-297.89	3254397.36	1408492.31	40.4511136	-104.5858731	0.29	
11822.00	89.820	177.700	6797.69	3950.08	-3944.05	-294.20	3254401.05	1408397.38	40.4508530	-104.5858633	0.18	
11916.00	90.220	177.630	6797.66	4043.88	-4037.98	-290.37	3254404.88	1408303.46	40.4505951	-104.5858530	0.43	
12011.00	90.090	178.180	6797.40	4138.70	-4132.91	-286.90	3254408.35	1408208.53	40.4503344	-104.5858441	0.59	
12105.00	90.430	178.110	6796.98	4232.55	-4226.86	-283.86	3254411.39	1408114.59	40.4500765	-104.5858366	0.37	
12199.00	89.970	177.750	6796.65	4326.37	-4320.80	-280.46	3254414.79	1408020.65	40.4498185	-104.5858279	0.62	
12294.00	90.490	178.300	6796.27	4421.21	-4415.74	-277.19	3254418.06	1407925.71	40.4495578	-104.5858197	0.80	
12389.00	89.720	177.790	6796.09	4516.04	-4510.68	-273.95	3254421.30	1407830.77	40.4492972	-104.5858115	0.97	
12483.00	89.750	177.550	6796.53	4609.84	-4604.61	-270.13	3254425.12	1407736.86	40.4490393	-104.5858013	0.26	
12577.00	90.490	178.310	6796.33	4703.67	-4698.54	-266.73	3254428.52	1407642.92	40.4487813	-104.5857926	1.13	
12672.00	90.280	178.000	6795.69	4798.51	-4793.49	-263.67	3254431.58	1407547.98	40.4485206	-104.5857851	0.39	
12766.00	90.090	177.680	6795.39	4892.33	-4887.42	-260.13	3254435.12	1407454.05	40.4482627	-104.5857758	0.40	
12861.00	90.250	178.600	6795.11	4987.17	-4982.37	-257.05	3254438.20	1407359.10	40.4480020	-104.5857683	0.98	
12956.00	90.150	179.920	6794.78	5082.10	-5077.36	-255.82	3254439.43	1407264.12	40.4477413	-104.5857674	1.39	
13050.00	90.180	179.790	6794.51	5176.07	-5171.36	-255.58	3254439.67	1407170.12	40.4474833	-104.5857700	0.14	
13144.00	89.880	180.000	6794.46	5270.04	-5265.36	-255.41	3254439.84	1407076.13	40.4472252	-104.5857729	0.39	
13239.00	91.420	180.310	6793.38	5365.01	-5360.35	-255.67	3254439.58	1406981.14	40.4469645	-104.5857773	1.65	
13333.00	89.820	179.800	6792.36	5458.97	-5454.34	-255.76	3254439.49	1406887.15	40.4467066	-104.5857811	1.79	
13427.00	90.250	179.770	6792.31	5552.93	-5548.34	-255.40	3254439.84	1406793.16	40.4464485	-104.5857833	0.46	
13522.00	88.860	179.890	6793.04	5647.89	-5643.34	-255.12	3254440.13	1406698.17	40.4461878	-104.5857859	1.47	
13616.00	88.800	179.930	6794.96	5741.84	-5737.32	-254.97	3254440.27	1406604.19	40.4459298	-104.5857888	0.08	
13711.00	88.950	179.750	6796.83	5836.79	-5832.30	-254.71	3254440.54	1406509.21	40.4456691	-104.5857914	0.25	
13805.00	88.920	179.660	6798.57	5930.73	-5926.28	-254.22	3254441.02	1406415.23	40.4454112	-104.5857931	0.10	
13900.00	88.920	179.610	6800.37	6025.67	-6021.26	-253.62	3254441.63	1406320.25	40.4451505	-104.5857945	0.05	
13994.00	88.650	179.560	6802.36	6119.60	-6115.24	-252.94	3254442.31	1406226.28	40.4448925	-104.5857955	0.29	
14089.00	88.920	179.770	6804.37	6214.53	-6210.21	-252.38	3254442.86	1406131.31	40.4446318	-104.5857970	0.36	
14184.00	88.980	179.060	6806.11	6309.46	-6305.19	-251.41	3254443.83	1406036.33	40.4443711	-104.5857970	0.75	



### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
14278.00	89.110	179.600	6807.68	6403.38	-6399.17	-250.32	3254444.93	1405942.36	40.4441131	-104.5857966	0.59	
14373.00	89.010	179.200	6809.24	6498.31	-6494.15	-249.32	3254445.93	1405847.38	40.4438524	-104.5857965	0.43	
14468.00	89.170	179.450	6810.75	6593.24	-6589.14	-248.20	3254447.05	1405752.40	40.4435916	-104.5857960	0.31	
14562.00	89.050	179.100	6812.21	6687.16	-6683.12	-247.01	3254448.24	1405658.42	40.4433336	-104.5857952	0.39	
14657.00	88.860	179.030	6813.94	6782.07	-6778.09	-245.46	3254449.79	1405563.46	40.4430729	-104.5857932	0.21	
14751.00	88.980	178.890	6815.71	6875.96	-6872.06	-243.76	3254451.49	1405469.49	40.4428150	-104.5857905	0.20	
14846.00	89.260	179.210	6817.17	6970.87	-6967.03	-242.18	3254453.07	1405374.52	40.4425542	-104.5857884	0.45	
14940.00	89.140	179.040	6818.48	7064.79	-7061.01	-240.75	3254454.50	1405280.54	40.4422962	-104.5857867	0.22	
15035.00	89.140	179.460	6819.91	7159.71	-7155.99	-239.50	3254455.75	1405185.57	40.4420355	-104.5857858	0.44	
15130.00	88.950	179.170	6821.49	7254.64	-7250.97	-238.37	3254456.88	1405090.59	40.4417748	-104.5857852	0.36	
15224.00	88.460	178.770	6823.62	7348.53	-7344.93	-236.68	3254458.57	1404996.63	40.4415168	-104.5857826	0.67	
15318.00	88.710	178.490	6825.94	7442.39	-7438.88	-234.43	3254460.82	1404902.69	40.4412589	-104.5857780	0.40	
15413.00	89.140	179.060	6827.72	7537.27	-7533.84	-232.40	3254462.85	1404807.74	40.4409982	-104.5857742	0.75	
15508.00	88.180	176.760	6829.94	7632.06	-7628.74	-228.94	3254466.31	1404712.84	40.4407376	-104.5857653	2.62	
15602.00	89.720	181.060	6831.67	7725.93	-7722.68	-227.15	3254468.10	1404618.90	40.4404797	-104.5857624	4.86	
15697.00	88.740	178.900	6832.94	7820.89	-7817.67	-227.12	3254468.13	1404523.92	40.4402190	-104.5857658	2.50	
15791.00	88.710	179.030	6835.03	7914.78	-7911.63	-225.42	3254469.83	1404429.96	40.4399611	-104.5857632	0.14	
15886.00	88.090	178.710	6837.69	8009.65	-8006.57	-223.55	3254471.70	1404335.02	40.4397004	-104.5857600	0.73	
15980.00	88.770	178.620	6840.26	8103.50	-8100.51	-221.36	3254473.89	1404241.08	40.4394425	-104.5857556	0.73	
16075.00	88.710	178.730	6842.35	8198.37	-8195.46	-219.16	3254476.08	1404146.14	40.4391819	-104.5857512	0.13	
16169.00	89.780	179.130	6843.59	8292.28	-8289.44	-217.41	3254477.84	1404052.17	40.4389239	-104.5857484	1.22	
16264.00	90.150	178.960	6843.65	8387.19	-8384.42	-215.82	3254479.42	1403957.18	40.4386631	-104.5857462	0.43	
16358.00	89.880	178.760	6843.62	8481.10	-8478.41	-213.95	3254481.29	1403863.20	40.4384051	-104.5857430	0.36	
16453.00	89.940	178.630	6843.77	8576.00	-8573.38	-211.79	3254483.46	1403768.23	40.4381444	-104.5857387	0.15	
16548.00	89.780	178.670	6844.00	8670.89	-8668.35	-209.55	3254485.69	1403673.26	40.4378836	-104.5857342	0.17	
16643.00	90.000	178.820	6844.19	8765.78	-8763.33	-207.47	3254487.78	1403578.29	40.4376229	-104.5857302	0.28	
16737.00	89.880	178.470	6844.29	8859.67	-8857.30	-205.25	3254490.00	1403484.32	40.4373649	-104.5857257	0.39	
16831.00	89.600	178.520	6844.71	8953.55	-8951.27	-202.78	3254492.47	1403390.36	40.4371069	-104.5857203	0.30	
16926.00	90.090	178.500	6844.97	9048.43	-9046.24	-200.31	3254494.94	1403295.39	40.4368462	-104.5857150	0.52	
17020.00	89.780	177.940	6845.08	9142.28	-9140.19	-197.39	3254497.86	1403201.44	40.4365882	-104.5857080	0.68	LAST BH MWD SURVEY



### REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

### WELLPATH DATA (181 stations) † = interpolated, ‡ = extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
17078.00†	89.780	177.940	6845.30	9200.18	-9198.15	-195.30	3254499.94	1403143.48	40.4364291	-104.5857026	0.00	PROJECTION TO BIT

### TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.30-T06N-R64W	25.00	1385.56	-2829.44	3251865.91	1413726.79	40.4655527	-104.5947767	polygon
2D Polygon: dimensions not calculated								
SEC.31-T06N-R64W	25.00	1385.56	-2829.44	3251865.91	1413726.79	40.4655527	-104.5947767	polygon
2D Polygon: dimensions not calculated								
ROTH A31-720 TPZ REV-1(460'FNL & 660'FEL,SEC.30)	6795.00	460.37	-396.20	3254299.05	1412801.63	40.4629448	-104.5860667	point
ROTH A31-720 BHL REV-1 (460'FSL & 650'FEL,SEC.31)	6841.00	-9199.36	-225.43	3254469.82	1403142.27	40.4364266	-104.5858109	point

### WELLPATH COMPOSITION - Ref Wellbore: ROTH A31-720 AWB Ref Wellpath: ROTH A31-720 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
0.00	1916.00	Gyrodata 2015 - GC+DROP+COND	Gyrodata 2015 - GC+DROP+COND 13-1/2" <79 - 1916>	ROTH A31-720 AWB	10/5/2021
1916.00	17078.00	OWSG MWD rev2 (MS+IFR1)	OWSG MWD rev2 (MS+IFR1) 8-1/2" <1988 - 17020>	ROTH A31-720 AWB	10/12/2021

## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Well	ROTH A31-720
Field	WELD COUNTY (NOBLE NAD 83 GRID)	API	0512351329
Facility	SEC.30-T06N-R64W	Wellbore	ROTH A31-720 AWB
Slot	SLOT#02 ROTH A31-720 (927'FNL & 270'FEL,SEC.30)		

## WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
79.00	0.060	229.040	79.00	FIRST GYRODATA SURVEY
1916.00	0.770	1.490	1915.89	LAST GYRODATA SURVEY
1988.00	0.070	33.880	1987.89	FIRST BH MWD SURVEY
17020.00	89.780	177.940	6845.08	LAST BH MWD SURVEY
17078.00	89.780	177.940	6845.30	PROJECTION TO BIT