

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: HARPER A21-674
Facility: SEC.21-T06N-R64W Wellbore: HARPER A21-674 PWB

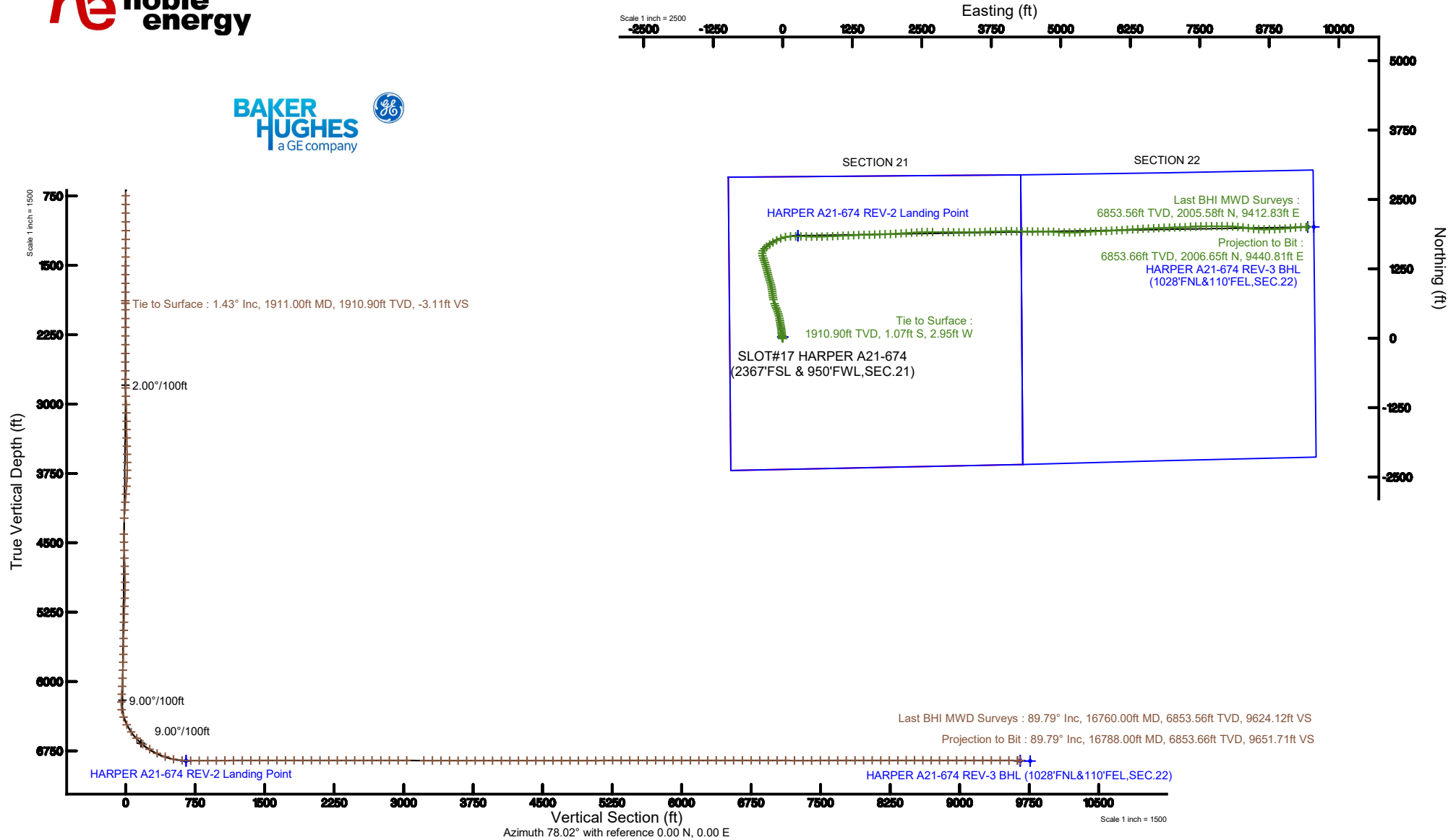
Plot reference wellpath is HARPER A21-674 (REV-C.0) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to RIG (30'KB) (RKB)	North Reference: Grid north
Measured depths are referenced to RIG (30'KB) (RKB)	Scale: True distance
RIG (30'KB) (RKB) to Mean Sea Level: 4773 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)): 0 feet	Created by: doddanna on 2019-02-28
Coordinates are in feet referenced to Slot	Database: WellArchitectDB

Location Information

Facility Name			Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SEC 21-T06N-R64W			3261306.758	1414202.887	40°27'59.724"N	104°33'38.988"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)	1514.47	-110.64	3261196.118	1415717.299	40°28'14.700"N	104°33'40.212"W
RIG (30'KB) (RKB) to Ground level (At Slot: SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21))					4773ft	
Mean Sea Level to Ground level (At Slot: SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21))					0ft	
RIG (30'KB) (RKB) to Mean Sea Level					4773ft	

Survey Program

Start MD (ft)	End MD (ft)	Tool	Model	Log Name/Comment	Wellbore
30.00	16898.46	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		HARPER A21-674 PWB



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL, SEC.21)
Area	COLORADO	Well	HARPER A21-674
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

REPORT SETUP INFORMATION			
Projection System	NAD83 / Lambert Colorado SP, Northern Zone (501), US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Doddanna
Scale	0.999964	Report Generated	2/28/2019 at 10:28:15 AM
Convergence at slot	0.61° East	Database/Source file	WellArchitectDB/HARPER_A21-674_AWP.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	1514.47	-110.64	3261196.12	1415717.30	40°28'14.700"N	104°33'40.212"W
Facility Reference Pt			3261306.76	1414202.89	40°27'59.724"N	104°33'38.988"W
Field Reference Pt			3000000.00	4454105.15	48°46'34.315"N	105°30'00.000"W

WELLPATH DATUM			
Calculation method	Minimum curvature	RIG (30'KB) (RKB) to Facility Vertical Datum	4773.00ft
Horizontal Reference Pt	Slot	RIG (30'KB) (RKB) to Mean Sea Level	4773.00ft
Vertical Reference Pt	RIG (30'KB) (RKB)	RIG (30'KB) (RKB) to Ground Level at Slot (SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL, SEC.21))	4773.00ft
MD Reference Pt	RIG (30'KB) (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	78.02°

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	260.060	0.00	0.00	0.00	0.00	40°28'14.700"N	104°33'40.212"W	0.00	
84.00	0.120	260.060	84.00	-0.09	-0.02	-0.09	40°28'14.700"N	104°33'40.213"W	0.14	
179.00	0.150	163.350	179.00	-0.18	-0.15	-0.15	40°28'14.699"N	104°33'40.214"W	0.21	
273.00	0.100	66.540	273.00	-0.09	-0.24	-0.04	40°28'14.698"N	104°33'40.213"W	0.20	
368.00	0.540	282.170	368.00	-0.41	-0.11	-0.40	40°28'14.699"N	104°33'40.217"W	0.66	
462.00	0.300	328.870	462.00	-0.90	0.19	-0.96	40°28'14.702"N	104°33'40.224"W	0.42	
557.00	0.340	334.340	556.99	-1.05	0.66	-1.21	40°28'14.707"N	104°33'40.228"W	0.05	
652.00	0.440	43.770	651.99	-0.81	1.18	-1.08	40°28'14.712"N	104°33'40.226"W	0.48	
747.00	0.800	13.580	746.99	-0.22	2.09	-0.67	40°28'14.721"N	104°33'40.220"W	0.50	
842.00	0.190	342.190	841.98	0.05	2.88	-0.57	40°28'14.729"N	104°33'40.219"W	0.68	
936.00	0.510	46.970	935.98	0.39	3.32	-0.31	40°28'14.733"N	104°33'40.216"W	0.49	
1031.00	0.630	51.550	1030.98	1.22	3.93	0.41	40°28'14.739"N	104°33'40.206"W	0.14	
1126.00	0.580	345.780	1125.97	1.67	4.72	0.70	40°28'14.747"N	104°33'40.202"W	0.69	
1221.00	0.590	317.060	1220.97	1.40	5.54	0.25	40°28'14.755"N	104°33'40.208"W	0.31	
1316.00	0.740	266.180	1315.96	0.54	5.86	-0.69	40°28'14.758"N	104°33'40.220"W	0.62	
1410.00	0.730	239.810	1409.95	-0.63	5.52	-1.82	40°28'14.755"N	104°33'40.235"W	0.36	
1505.00	0.840	206.640	1504.95	-1.64	4.59	-2.65	40°28'14.746"N	104°33'40.246"W	0.48	
1600.00	0.630	187.350	1599.94	-2.25	3.45	-3.03	40°28'14.734"N	104°33'40.251"W	0.34	
1695.00	0.420	208.290	1694.93	-2.65	2.63	-3.26	40°28'14.726"N	104°33'40.254"W	0.30	
1790.00	0.950	179.400	1789.93	-3.03	1.53	-3.42	40°28'14.716"N	104°33'40.256"W	0.65	
1884.00	1.470	167.430	1883.91	-3.17	-0.42	-3.15	40°28'14.696"N	104°33'40.253"W	0.61	
1911.00	1.430	159.070	1910.90	-3.11	-1.07	-2.95	40°28'14.690"N	104°33'40.250"W	0.80	Tie to Surface
1980.00	0.910	137.060	1979.88	-2.70	-2.28	-2.27	40°28'14.678"N	104°33'40.242"W	0.98	
2075.00	0.070	0.910	2074.88	-2.30	-2.77	-1.76	40°28'14.673"N	104°33'40.235"W	1.01	
2170.00	0.040	42.410	2169.88	-2.26	-2.69	-1.74	40°28'14.674"N	104°33'40.235"W	0.05	
2264.00	2.140	340.950	2263.86	-2.45	-1.01	-2.29	40°28'14.690"N	104°33'40.242"W	2.26	
2359.00	4.350	343.480	2358.70	-2.95	4.12	-3.89	40°28'14.741"N	104°33'40.262"W	2.33	
2454.00	6.070	344.560	2453.30	-3.54	12.42	-6.25	40°28'14.823"N	104°33'40.291"W	1.81	
2548.00	8.500	346.690	2546.54	-4.00	23.97	-9.17	40°28'14.938"N	104°33'40.327"W	2.60	
2643.00	10.850	350.560	2640.18	-3.77	39.63	-12.26	40°28'15.093"N	104°33'40.365"W	2.57	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)
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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2738.00	12.930	352.880	2733.14	-2.47	59.00	-15.04	40°28'15.285"N	104°33'40.399"W	2.25	
2833.00	14.760	353.650	2825.37	-0.39	81.57	-17.70	40°28'15.508"N	104°33'40.430"W	1.94	
2927.00	18.250	355.150	2915.49	2.61	108.15	-20.27	40°28'15.771"N	104°33'40.459"W	3.74	
3022.00	18.120	352.770	3005.74	5.68	137.62	-23.38	40°28'16.062"N	104°33'40.496"W	0.79	
3117.00	18.220	351.830	3096.01	7.89	166.98	-27.35	40°28'16.353"N	104°33'40.543"W	0.33	
3212.00	18.140	350.310	3186.27	9.46	196.26	-31.95	40°28'16.643"N	104°33'40.599"W	0.51	
3307.00	17.970	349.930	3276.59	10.54	225.27	-37.01	40°28'16.930"N	104°33'40.660"W	0.22	
3402.00	19.310	350.360	3366.60	11.67	255.18	-42.20	40°28'17.226"N	104°33'40.723"W	1.42	
3496.00	21.460	350.820	3454.71	13.14	287.48	-47.55	40°28'17.546"N	104°33'40.788"W	2.29	
3591.00	22.370	350.310	3542.84	14.71	322.46	-53.36	40°28'17.892"N	104°33'40.858"W	0.98	
3686.00	24.620	350.280	3629.96	16.21	359.79	-59.75	40°28'18.261"N	104°33'40.936"W	2.37	
3780.00	24.830	347.100	3715.35	16.66	398.33	-67.46	40°28'18.643"N	104°33'41.030"W	1.43	
3875.00	24.560	342.350	3801.67	14.38	436.59	-77.90	40°28'19.022"N	104°33'41.160"W	2.11	
3970.00	24.500	339.310	3888.10	9.45	473.83	-90.84	40°28'19.391"N	104°33'41.322"W	1.33	
4065.00	24.650	338.250	3974.49	3.10	510.66	-105.14	40°28'19.757"N	104°33'41.502"W	0.49	
4160.00	24.420	337.750	4060.92	-3.77	547.24	-119.92	40°28'20.120"N	104°33'41.689"W	0.33	
4254.00	23.960	338.640	4146.66	-10.35	583.00	-134.23	40°28'20.475"N	104°33'41.869"W	0.62	
4349.00	24.140	340.690	4233.42	-15.97	619.29	-147.68	40°28'20.835"N	104°33'42.038"W	0.90	
4539.00	24.040	349.630	4406.93	-19.85	694.05	-167.50	40°28'21.575"N	104°33'42.284"W	1.92	
4634.00	24.090	351.900	4493.67	-18.00	732.28	-173.72	40°28'21.954"N	104°33'42.359"W	0.98	
4729.00	23.980	351.430	4580.44	-15.54	770.57	-179.33	40°28'22.333"N	104°33'42.427"W	0.23	
4823.00	24.060	352.550	4666.30	-12.89	808.46	-184.66	40°28'22.708"N	104°33'42.490"W	0.49	
4918.00	24.020	352.510	4753.06	-9.85	846.83	-189.69	40°28'23.087"N	104°33'42.550"W	0.05	
5013.00	23.990	351.050	4839.84	-7.32	885.08	-195.21	40°28'23.466"N	104°33'42.617"W	0.63	
5108.00	23.990	349.000	4926.64	-5.97	923.11	-201.90	40°28'23.842"N	104°33'42.698"W	0.88	
5202.00	24.180	345.830	5012.46	-6.39	960.54	-210.26	40°28'24.213"N	104°33'42.801"W	1.39	
5297.00	24.130	341.410	5099.14	-9.37	997.81	-221.22	40°28'24.582"N	104°33'42.938"W	1.90	
5392.00	24.040	343.750	5185.88	-13.05	1034.79	-232.82	40°28'24.949"N	104°33'43.083"W	1.01	
5487.00	23.990	344.410	5272.65	-15.71	1071.97	-243.43	40°28'25.318"N	104°33'43.215"W	0.29	
5581.00	23.790	343.960	5358.60	-18.26	1108.60	-253.80	40°28'25.681"N	104°33'43.344"W	0.29	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL, SEC.21)
Area	COLORADO	Well	HARPER A21-674
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5676.00	23.230	345.610	5445.71	-20.40	1145.16	-263.75	40°28'26.043"N	104°33'43.468"W	0.91	
5771.00	23.210	346.670	5533.02	-21.64	1181.53	-272.72	40°28'26.403"N	104°33'43.579"W	0.44	
5865.00	23.880	346.640	5619.19	-22.53	1218.06	-281.39	40°28'26.765"N	104°33'43.686"W	0.71	
5960.00	24.560	345.600	5705.83	-23.83	1255.89	-290.74	40°28'27.140"N	104°33'43.802"W	0.84	
6055.00	24.370	344.020	5792.30	-26.04	1293.86	-301.05	40°28'27.516"N	104°33'43.930"W	0.72	
6149.00	24.500	343.020	5877.88	-29.09	1331.14	-312.08	40°28'27.886"N	104°33'44.068"W	0.46	
6244.00	24.420	341.260	5964.36	-33.12	1368.58	-324.14	40°28'28.257"N	104°33'44.219"W	0.77	
6339.00	24.230	340.200	6050.92	-38.09	1405.52	-337.05	40°28'28.623"N	104°33'44.381"W	0.50	
6433.00	24.080	342.220	6136.70	-42.66	1441.93	-349.44	40°28'28.984"N	104°33'44.536"W	0.89	
6528.00	29.850	341.920	6221.33	-47.13	1482.89	-362.71	40°28'29.390"N	104°33'44.702"W	6.08	
6622.00	29.350	3.830	6303.31	-43.34	1528.25	-368.45	40°28'29.839"N	104°33'44.770"W	11.47	
6717.00	30.940	23.220	6385.65	-22.87	1574.04	-357.24	40°28'30.290"N	104°33'44.619"W	10.35	
6812.00	31.760	42.470	6466.99	11.63	1615.03	-330.66	40°28'30.693"N	104°33'44.269"W	10.54	
6907.00	39.520	54.810	6544.23	59.89	1650.99	-288.96	40°28'31.044"N	104°33'43.725"W	11.10	
7001.00	45.750	56.970	6613.36	118.86	1686.61	-236.24	40°28'31.390"N	104°33'43.038"W	6.81	
7096.00	51.650	57.070	6676.03	185.46	1725.44	-176.39	40°28'31.767"N	104°33'42.258"W	6.21	
7191.00	57.460	62.160	6731.12	258.86	1764.44	-109.63	40°28'32.146"N	104°33'41.389"W	7.51	
7285.00	64.850	68.820	6776.48	339.15	1798.40	-34.76	40°28'32.474"N	104°33'40.415"W	10.01	
7380.00	70.450	77.820	6812.66	426.57	1823.44	49.31	40°28'32.712"N	104°33'39.324"W	10.55	
7475.00	76.810	87.200	6839.47	517.27	1835.18	139.53	40°28'32.819"N	104°33'38.155"W	11.59	
7569.00	87.350	91.980	6852.41	608.32	1835.79	232.47	40°28'32.815"N	104°33'36.953"W	12.29	
7664.00	90.180	90.900	6854.46	700.69	1833.41	327.41	40°28'32.782"N	104°33'35.724"W	3.19	
7759.00	90.000	90.790	6854.31	793.33	1832.01	422.40	40°28'32.758"N	104°33'34.496"W	0.22	
7854.00	90.030	91.200	6854.29	885.90	1830.36	517.38	40°28'32.731"N	104°33'33.267"W	0.43	
7949.00	90.310	90.220	6854.00	978.58	1829.18	612.37	40°28'32.710"N	104°33'32.038"W	1.07	
8043.00	90.120	88.140	6853.65	1070.80	1830.52	706.36	40°28'32.713"N	104°33'30.822"W	2.22	
8138.00	90.180	87.520	6853.40	1164.41	1834.12	801.29	40°28'32.739"N	104°33'29.593"W	0.66	
8233.00	90.030	87.470	6853.23	1258.12	1838.27	896.20	40°28'32.770"N	104°33'28.364"W	0.17	
8327.00	90.030	87.060	6853.18	1350.90	1842.76	990.09	40°28'32.804"N	104°33'27.149"W	0.44	
8422.00	90.160	87.620	6853.02	1444.64	1847.17	1084.99	40°28'32.838"N	104°33'25.920"W	0.61	

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8517.00	90.010	87.440	6852.88	1538.34	1851.26	1179.90	40°28'32.869"N	104°33'24.691"W	0.25	
8612.00	90.010	87.730	6852.86	1632.02	1855.26	1274.82	40°28'32.898"N	104°33'23.463"W	0.31	
8706.00	90.070	88.410	6852.80	1724.58	1858.43	1368.76	40°28'32.919"N	104°33'22.247"W	0.73	
8801.00	90.130	88.030	6852.63	1818.08	1861.38	1463.72	40°28'32.939"N	104°33'21.018"W	0.40	
8896.00	90.130	88.270	6852.42	1911.60	1864.45	1558.67	40°28'32.959"N	104°33'19.789"W	0.25	
8990.00	89.980	88.220	6852.33	2004.11	1867.33	1652.62	40°28'32.978"N	104°33'18.573"W	0.17	
9085.00	90.070	87.850	6852.29	2097.66	1870.58	1747.57	40°28'33.000"N	104°33'17.344"W	0.40	
9180.00	89.980	88.390	6852.24	2191.19	1873.70	1842.51	40°28'33.021"N	104°33'16.115"W	0.58	
9275.00	89.980	87.490	6852.28	2284.77	1877.12	1937.45	40°28'33.044"N	104°33'14.886"W	0.95	
9370.00	90.160	87.130	6852.16	2378.52	1881.57	2032.35	40°28'33.078"N	104°33'13.657"W	0.42	
9465.00	90.010	86.440	6852.02	2472.41	1886.90	2127.20	40°28'33.121"N	104°33'12.429"W	0.74	
9559.00	89.880	86.000	6852.11	2565.45	1893.10	2220.99	40°28'33.172"N	104°33'11.215"W	0.49	
9654.00	89.850	85.850	6852.33	2659.55	1899.85	2315.75	40°28'33.229"N	104°33'09.988"W	0.16	
9749.00	89.950	86.840	6852.50	2753.55	1905.91	2410.56	40°28'33.279"N	104°33'08.760"W	1.05	
9843.00	89.950	87.000	6852.58	2846.42	1910.96	2504.42	40°28'33.319"N	104°33'07.545"W	0.17	
9938.00	89.640	89.670	6852.92	2939.88	1913.72	2599.37	40°28'33.336"N	104°33'06.316"W	2.83	
10033.00	89.910	90.380	6853.30	3032.80	1913.68	2694.37	40°28'33.326"N	104°33'05.087"W	0.80	
10222.00	89.910	90.550	6853.59	3217.36	1912.14	2883.36	40°28'33.290"N	104°33'02.642"W	0.09	
10317.00	89.850	90.300	6853.79	3310.15	1911.44	2978.36	40°28'33.273"N	104°33'01.413"W	0.27	
10412.00	90.040	91.140	6853.88	3402.82	1910.24	3073.35	40°28'33.252"N	104°33'00.184"W	0.91	
10507.00	89.910	90.870	6853.92	3495.39	1908.58	3168.34	40°28'33.225"N	104°32'58.955"W	0.32	
10601.00	90.010	90.010	6853.99	3587.20	1907.86	3262.33	40°28'33.208"N	104°32'57.739"W	0.92	
10696.00	89.790	89.790	6854.16	3680.16	1908.02	3357.33	40°28'33.200"N	104°32'56.509"W	0.33	
10791.00	90.040	89.210	6854.30	3773.26	1908.85	3452.33	40°28'33.198"N	104°32'55.280"W	0.66	
10885.00	90.100	86.880	6854.18	3865.82	1912.06	3546.27	40°28'33.219"N	104°32'54.064"W	2.48	
10980.00	89.980	87.070	6854.11	3959.66	1917.07	3641.14	40°28'33.259"N	104°32'52.836"W	0.24	
11075.00	89.910	87.780	6854.21	4053.39	1921.34	3736.04	40°28'33.291"N	104°32'51.607"W	0.75	
11170.00	89.640	88.370	6854.58	4146.93	1924.53	3830.98	40°28'33.312"N	104°32'50.379"W	0.68	
11264.00	89.760	88.790	6855.07	4239.34	1926.86	3924.95	40°28'33.325"N	104°32'49.162"W	0.46	
11359.00	89.820	89.710	6855.42	4332.52	1928.10	4019.94	40°28'33.328"N	104°32'47.933"W	0.97	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-674
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11454.00	89.940	90.630	6855.62	4425.39	1927.82	4114.94	40°28'33.315"N	104°32'46.704"W	0.98	
11548.00	90.220	90.540	6855.49	4517.14	1926.86	4208.94	40°28'33.295"N	104°32'45.488"W	0.31	
11643.00	90.310	90.480	6855.05	4609.89	1926.01	4303.93	40°28'33.277"N	104°32'44.259"W	0.11	
11738.00	90.040	91.060	6854.76	4702.55	1924.74	4398.92	40°28'33.254"N	104°32'43.030"W	0.67	
11833.00	90.160	91.250	6854.59	4795.07	1922.82	4493.90	40°28'33.225"N	104°32'41.801"W	0.24	
11927.00	90.100	90.350	6854.38	4886.74	1921.51	4587.89	40°28'33.202"N	104°32'40.585"W	0.96	
12022.00	89.940	90.400	6854.35	4979.54	1920.89	4682.89	40°28'33.186"N	104°32'39.356"W	0.18	
12117.00	90.410	90.580	6854.06	5072.30	1920.08	4777.89	40°28'33.168"N	104°32'38.127"W	0.53	
12211.00	90.500	94.380	6853.31	5163.31	1916.01	4871.78	40°28'33.118"N	104°32'36.913"W	4.04	
12306.00	90.070	93.560	6852.84	5254.65	1909.43	4966.55	40°28'33.042"N	104°32'35.687"W	0.97	
12401.00	90.280	91.440	6852.55	5346.63	1905.29	5061.45	40°28'32.991"N	104°32'34.460"W	2.24	
12496.00	90.100	89.460	6852.23	5439.40	1904.54	5156.44	40°28'32.974"N	104°32'33.231"W	2.09	
12591.00	89.940	89.090	6852.20	5532.57	1905.75	5251.44	40°28'32.976"N	104°32'32.002"W	0.42	
12686.00	89.940	87.550	6852.30	5626.04	1908.53	5346.39	40°28'32.993"N	104°32'30.773"W	1.62	
12780.00	89.980	86.010	6852.36	5718.94	1913.81	5440.24	40°28'33.035"N	104°32'29.558"W	1.64	
12875.00	90.280	86.110	6852.15	5813.01	1920.34	5535.02	40°28'33.090"N	104°32'28.330"W	0.33	
12970.00	90.160	88.270	6851.78	5906.79	1924.99	5629.90	40°28'33.125"N	104°32'27.102"W	2.28	
13064.00	89.940	87.400	6851.70	5999.41	1928.55	5723.83	40°28'33.150"N	104°32'25.886"W	0.95	
13159.00	90.130	87.940	6851.64	6093.07	1932.41	5818.75	40°28'33.178"N	104°32'24.657"W	0.60	
13254.00	89.880	87.140	6851.63	6186.76	1936.49	5913.66	40°28'33.209"N	104°32'23.429"W	0.88	
13349.00	89.880	86.470	6851.83	6280.65	1941.78	6008.51	40°28'33.251"N	104°32'22.201"W	0.71	
13444.00	89.940	86.570	6851.98	6374.61	1947.55	6103.34	40°28'33.298"N	104°32'20.973"W	0.12	
13539.00	90.100	86.300	6851.95	6468.58	1953.45	6198.15	40°28'33.346"N	104°32'19.745"W	0.33	
13633.00	89.790	86.120	6852.04	6561.63	1959.67	6291.95	40°28'33.397"N	104°32'18.531"W	0.38	
13728.00	89.880	86.390	6852.31	6655.65	1965.87	6386.74	40°28'33.448"N	104°32'17.303"W	0.30	
13823.00	89.980	87.240	6852.43	6749.53	1971.15	6481.60	40°28'33.490"N	104°32'16.075"W	0.90	
13918.00	89.790	87.020	6852.62	6843.33	1975.91	6576.48	40°28'33.527"N	104°32'14.847"W	0.31	
14012.00	89.880	87.370	6852.89	6936.13	1980.51	6670.36	40°28'33.563"N	104°32'13.632"W	0.38	
14107.00	89.880	86.970	6853.09	7029.92	1985.20	6765.25	40°28'33.599"N	104°32'12.403"W	0.42	
14202.00	89.850	87.540	6853.31	7123.69	1989.75	6860.14	40°28'33.633"N	104°32'11.175"W	0.60	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-674
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (178 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
14297.00	89.850	87.930	6853.56	7217.33	1993.50	6955.06	40°28'33.660"N	104°32'09.946"W	0.41	
14392.00	90.070	90.020	6853.63	7310.60	1995.20	7050.04	40°28'33.667"N	104°32'08.717"W	2.21	
14486.00	90.010	88.210	6853.56	7402.84	1996.65	7144.03	40°28'33.671"N	104°32'07.500"W	1.93	
14581.00	90.160	86.470	6853.42	7496.58	2001.06	7238.92	40°28'33.705"N	104°32'06.272"W	1.84	
14676.00	90.070	86.920	6853.23	7590.49	2006.54	7333.76	40°28'33.748"N	104°32'05.044"W	0.48	
14770.00	90.010	87.400	6853.17	7683.30	2011.20	7427.65	40°28'33.784"N	104°32'03.829"W	0.51	
14865.00	90.130	88.320	6853.05	7776.90	2014.74	7522.58	40°28'33.809"N	104°32'02.600"W	0.98	
14960.00	90.040	89.190	6852.91	7870.24	2016.81	7617.56	40°28'33.819"N	104°32'01.371"W	0.92	
15055.00	90.130	89.380	6852.77	7963.41	2017.99	7712.55	40°28'33.821"N	104°32'00.141"W	0.22	
15149.00	90.130	89.700	6852.55	8055.52	2018.75	7806.54	40°28'33.818"N	104°31'58.925"W	0.34	
15244.00	90.190	90.120	6852.29	8148.48	2018.90	7901.54	40°28'33.809"N	104°31'57.696"W	0.45	
15339.00	90.280	91.750	6851.90	8241.08	2017.35	7996.53	40°28'33.784"N	104°31'56.467"W	1.72	
15434.00	90.380	94.500	6851.35	8332.79	2012.17	8091.38	40°28'33.722"N	104°31'55.240"W	2.90	
15529.00	89.940	94.640	6851.09	8423.85	2004.60	8186.07	40°28'33.637"N	104°31'54.016"W	0.49	
15623.00	89.910	96.710	6851.21	8513.42	1995.30	8279.61	40°28'33.536"N	104°31'52.807"W	2.20	
15718.00	90.010	98.500	6851.28	8602.93	1982.73	8373.77	40°28'33.401"N	104°31'51.591"W	1.89	
15813.00	89.760	97.310	6851.47	8692.26	1969.67	8467.86	40°28'33.262"N	104°31'50.375"W	1.28	
15907.00	89.910	91.970	6851.74	8782.31	1962.07	8561.52	40°28'33.177"N	104°31'49.164"W	5.68	
16002.00	89.980	89.730	6851.83	8874.93	1960.66	8656.50	40°28'33.152"N	104°31'47.935"W	2.36	
16097.00	89.880	88.880	6851.94	8968.09	1961.81	8751.50	40°28'33.154"N	104°31'46.706"W	0.90	
16192.00	89.880	87.430	6852.14	9061.61	1964.87	8846.44	40°28'33.174"N	104°31'45.477"W	1.53	
16286.00	89.910	86.950	6852.32	9154.41	1969.48	8940.33	40°28'33.209"N	104°31'44.262"W	0.51	
16381.00	89.850	85.610	6852.51	9248.42	1975.64	9035.13	40°28'33.260"N	104°31'43.034"W	1.41	
16476.00	89.880	82.920	6852.74	9342.85	1985.13	9129.64	40°28'33.343"N	104°31'41.810"W	2.83	
16571.00	89.850	85.710	6852.96	9437.27	1994.54	9224.17	40°28'33.426"N	104°31'40.585"W	2.94	
16665.00	89.820	86.530	6853.23	9530.33	2000.90	9317.95	40°28'33.479"N	104°31'39.371"W	0.87	
16760.00	89.790	87.820	6853.56	9624.12	2005.58	9412.83	40°28'33.515"N	104°31'38.143"W	1.36	Last BHI MWD Surveys
16788.00	89.790	87.820	6853.66	9651.71	2006.65	9440.81	40°28'33.522"N	104°31'37.781"W	0.00	Projection to Bit

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#17 HARPER A21-674 (2367'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-674
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-674 AWB
Facility	SEC.21-T06N-R64W		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
HARPER A21-681 SECTION 21	-1.00	21.86	-0.23	3261195.89	1415739.16	40°28'14.916"N	104°33'40.212"W	polygon
HARPER A21-681 SECTION 22	-1.00	21.86	-0.23	3261195.89	1415739.16	40°28'14.916"N	104°33'40.212"W	polygon
HARPER A21-674 REV-2 Landing Point	6854.00	1846.99	274.49	3261470.60	1417564.22	40°28'32.921"N	104°33'36.407"W	point
HARPER A21-674 REV-3 BHL (1028'FNL&110'FEL,SEC.22)	6854.00	2002.91	9443.04	3270638.80	1417720.13	40°28'33.485"N	104°31'37.752"W	point
HARPER A21-674 Landing Point	6860.00	1846.99	274.49	3261470.60	1417564.22	40°28'32.921"N	104°33'36.407"W	point
HARPER A21-674 REV-1 BHL From Plat (1030'FNL&1'FEL,SEC.22)	6860.00	2004.84	9552.47	3270748.23	1417722.06	40°28'33.492"N	104°31'36.336"W	point
HARPER A21-674 REV-2 BHL (1028'FNL&110'FEL,SEC.22)	6860.00	2002.91	9443.04	3270638.80	1417720.13	40°28'33.485"N	104°31'37.752"W	point

WELLPATH COMPOSITION - Ref Wellbore: HARPER A21-674 AWB Ref Wellpath: HARPER A21-674 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1911.00	BHI Generic gyro - northseeking (Standard)	3rd Party Surface Surveys <84'-1911'>	HARPER A21-674 AWB
1911.00	16760.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BH/ATC OWSG MWD rev2+IFR+MSA <1980'-16760'>	HARPER A21-674 AWB
16760.00	16788.00	Blind Drilling (std)	Projection to bit	HARPER A21-674 AWB