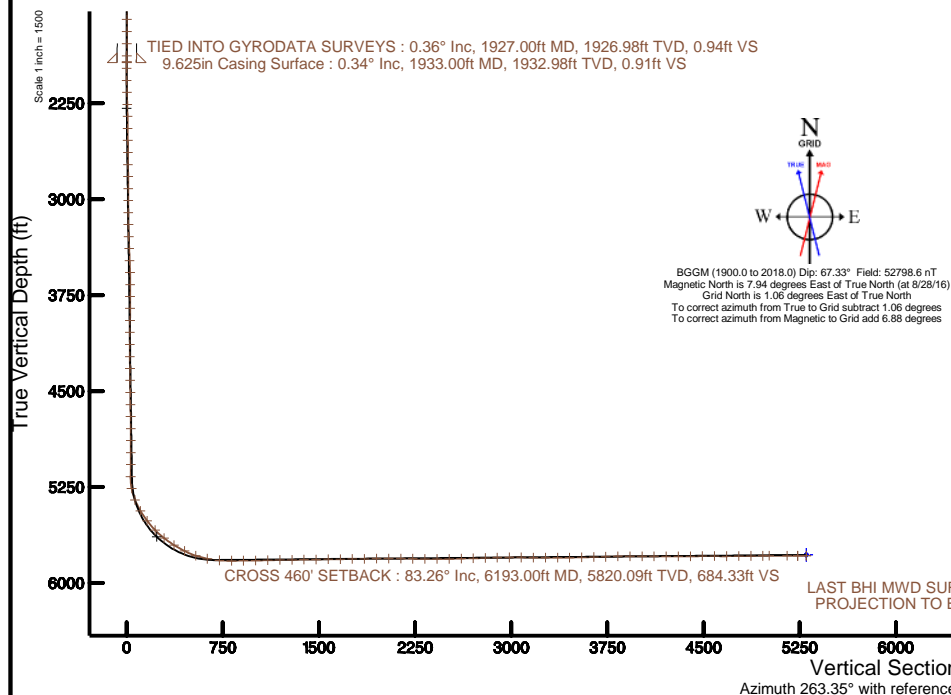


NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: HARPER LD21-655
Facility: SEC.22-T09N-R58W Wellbore: HARPER LD21-655 PWB

Plot reference wellpath is HARPER LD21-655 (REV-B.0, B-MARL NIO) PWP	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to H&P 517 (30KB) (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to H&P 517 (30KB) (RKB)	North Reference: Grid north
H&P 517 (30KB) (RKB) to Mean Sea Level: 4807 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)): 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: cookdian on 2016-09-23
	Database: WA_DEN_Denver_Defn



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWP
Facility	SEC.22-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	Cookdanm
Scale	0.999993	Report Generated	9/23/16 at 12:00:11 PM
Convergence at slot	1.07° East	Database/Source file	WA_DEN_Denver_Defn/HARPER_LD21-655_AWP.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	2968.89	-1033.49	3454901.02	1516291.47	40°44'20.580"N	103°51'30.096"W
Facility Reference Pt			3455934.50	1513322.61	40°43'51.060"N	103°51'17.388"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	4807.00ft
Horizontal Reference Pt	Slot	H&P 517 (30'KB) (RKB) to Mean Sea Level	4807.00ft
Vertical Reference Pt	H&P 517 (30'KB) (RKB)	H&P 517 (30'KB) (RKB) to Mud Line at Slot (SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22))	4807.00ft
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	263.35°

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

WELLPATH DATA (97 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
1927.00	0.360	124.050	1926.98	0.94	-5.17	-0.34	0.73	TIED INTO GYRODATA SURVEYS
1977.00	0.360	55.600	1976.98	0.68	-5.17	-0.08	0.81	
2072.00	1.650	186.250	2071.96	0.72	-6.36	0.01	2.00	
2166.00	3.770	193.740	2165.85	2.10	-10.71	-0.87	2.28	
2261.00	6.380	188.220	2260.47	4.55	-18.97	-2.36	2.79	
2355.00	7.700	179.230	2353.77	6.53	-30.43	-3.03	1.83	
2450.00	6.510	177.520	2448.03	7.58	-42.18	-2.71	1.27	
2544.00	6.580	179.840	2541.42	8.57	-52.89	-2.46	0.29	
2639.00	6.610	179.080	2635.79	9.74	-63.80	-2.36	0.10	
2733.00	6.590	177.640	2729.17	10.68	-74.60	-2.05	0.18	
2828.00	6.350	176.570	2823.57	11.38	-85.29	-1.51	0.28	
2922.00	6.950	176.960	2916.93	12.04	-96.16	-0.90	0.64	
3017.00	6.730	174.140	3011.26	12.48	-107.43	-0.03	0.42	
3112.00	6.310	172.640	3105.64	12.49	-118.15	1.21	0.48	
3206.00	5.850	184.710	3199.12	13.37	-128.05	1.48	1.44	
3301.00	7.000	190.500	3293.52	16.03	-138.56	0.03	1.39	
3395.00	7.030	191.150	3386.82	19.48	-149.84	-2.13	0.09	
3490.00	8.600	189.330	3480.93	23.21	-162.55	-4.41	1.67	
3584.00	9.920	180.270	3573.71	26.12	-177.59	-5.58	2.09	
3679.00	8.910	171.060	3667.43	26.82	-193.04	-4.48	1.91	
3773.00	8.580	172.320	3760.34	26.40	-207.18	-2.41	0.41	
3868.00	8.030	172.780	3854.34	26.21	-220.78	-0.63	0.58	
3963.00	7.510	172.280	3948.47	26.03	-233.52	1.04	0.55	
4057.00	7.220	171.170	4041.70	25.69	-245.44	2.77	0.34	
4152.00	6.880	171.440	4135.98	25.27	-256.97	4.53	0.36	
4247.00	7.770	177.200	4230.20	25.52	-269.01	5.70	1.21	
4341.00	7.230	177.850	4323.40	26.41	-281.27	6.23	0.58	
4435.00	6.860	179.500	4416.69	27.47	-292.79	6.50	0.45	
4530.00	6.530	182.150	4511.04	28.91	-303.86	6.35	0.48	
4625.00	7.050	179.220	4605.37	30.33	-315.09	6.22	0.66	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

WELLPATH DATA (97 stations) † = interpolated/extrapolated station								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
4719.00	7.280	176.660	4698.64	31.27	-326.80	6.65	0.42	
4814.00	6.600	175.950	4792.94	31.86	-338.26	7.38	0.72	
4908.00	7.210	173.040	4886.26	32.08	-349.50	8.48	0.75	
5003.00	6.640	171.990	4980.57	31.92	-360.86	9.97	0.61	
5097.00	6.200	170.800	5073.98	31.56	-371.25	11.54	0.49	
5192.00	5.590	169.460	5168.48	31.02	-380.86	13.20	0.66	
5286.00	13.060	223.690	5261.31	38.91	-393.08	6.69	11.46	
5381.00	22.640	251.690	5351.79	65.19	-406.64	-18.19	13.28	
5476.00	31.260	263.800	5436.45	107.86	-415.07	-60.16	10.72	
5570.00	36.760	267.320	5514.35	160.35	-419.02	-112.55	6.21	
5665.00	44.150	265.610	5586.59	221.86	-422.89	-174.02	7.87	
5759.00	52.350	261.630	5649.14	291.90	-430.83	-243.62	9.27	
5854.00	57.860	261.740	5703.47	369.76	-442.09	-320.69	5.80	
5948.00	62.700	264.010	5750.06	451.36	-452.17	-401.66	5.56	
6043.00	72.020	267.790	5786.60	538.83	-458.34	-489.01	10.47	
6137.00	77.950	267.940	5810.94	629.29	-461.71	-579.70	6.31	
6193.00†	83.255	268.314	5820.09	684.33	-463.52	-634.89	9.50	CROSS 460' SETBACK
6232.00	86.950	268.570	5823.41	723.03	-464.57	-673.73	9.50	
6327.00	90.180	268.160	5825.79	817.62	-467.28	-768.65	3.43	
6421.00	90.430	267.870	5825.29	911.31	-470.54	-862.59	0.41	
6516.00	91.020	267.650	5824.09	1006.02	-474.25	-957.51	0.66	
6610.00	91.540	266.560	5821.99	1099.79	-479.00	-1051.37	1.28	
6705.00	90.680	266.750	5820.15	1194.61	-484.54	-1146.19	0.93	
6800.00	90.960	266.130	5818.79	1289.46	-490.44	-1240.99	0.72	
6894.00	90.430	267.130	5817.65	1383.30	-495.96	-1334.82	1.20	
6989.00	91.200	266.830	5816.30	1478.10	-500.97	-1429.68	0.87	
7083.00	90.340	267.510	5815.04	1571.88	-505.61	-1523.55	1.17	
7178.00	91.230	266.990	5813.73	1666.65	-510.17	-1618.43	1.08	
7272.00	90.340	267.850	5812.45	1760.40	-514.40	-1712.33	1.32	
7367.00	91.390	268.170	5811.01	1855.08	-517.70	-1807.26	1.16	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

WELLPATH DATA (97 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
7462.00	89.850	267.980	5809.98	1949.74	-520.89	-1902.20	1.63	
7556.00	89.970	266.490	5810.13	2043.52	-525.42	-1996.09	1.59	
7651.00	90.220	265.300	5809.97	2138.43	-532.22	-2090.84	1.28	
7745.00	89.230	267.140	5810.43	2232.30	-538.42	-2184.63	2.22	
7840.00	89.320	266.610	5811.63	2327.12	-543.60	-2279.48	0.57	
7935.00	89.880	266.340	5812.29	2421.97	-549.44	-2374.30	0.65	
8029.00	90.890	269.690	5811.66	2515.64	-552.69	-2468.22	3.72	
8124.00	92.310	269.910	5809.01	2610.00	-553.02	-2563.18	1.51	
8218.00	90.590	270.790	5806.63	2703.27	-552.45	-2657.15	2.06	
8313.00	91.850	271.230	5804.61	2797.39	-550.78	-2752.11	1.40	
8408.00	90.830	270.890	5802.38	2891.51	-549.02	-2847.07	1.13	
8502.00	91.290	270.300	5800.65	2984.74	-548.04	-2941.04	0.80	
8597.00	89.080	270.160	5800.34	3079.05	-547.66	-3036.04	2.33	
8692.00	89.350	269.540	5801.64	3173.43	-547.91	-3131.03	0.71	
8786.00	89.350	269.210	5802.71	3266.90	-548.94	-3225.01	0.35	
8881.00	90.770	269.550	5802.61	3361.37	-549.96	-3320.01	1.54	
8975.00	90.990	269.080	5801.16	3454.85	-551.09	-3413.99	0.55	
9070.00	91.360	268.200	5799.22	3549.42	-553.34	-3508.94	1.00	
9165.00	90.800	269.370	5797.42	3643.98	-555.36	-3603.90	1.37	
9259.00	91.570	268.800	5795.48	3737.48	-556.86	-3697.87	1.02	
9354.00	91.850	268.160	5792.65	3832.06	-559.37	-3792.79	0.74	
9448.00	89.380	267.190	5791.64	3925.78	-563.19	-3886.70	2.82	
9543.00	89.850	267.070	5792.28	4020.57	-567.94	-3981.58	0.51	
9637.00	89.850	266.980	5792.52	4114.37	-572.82	-4075.45	0.10	
9732.00	89.940	266.670	5792.70	4209.20	-578.08	-4170.30	0.34	
9826.00	90.770	266.380	5792.11	4303.05	-583.78	-4264.13	0.94	
9921.00	90.340	267.880	5791.19	4397.84	-588.54	-4359.00	1.64	
10015.00	90.960	267.660	5790.13	4491.55	-592.20	-4452.93	0.70	
10110.00	89.080	266.460	5790.09	4586.34	-597.07	-4547.79	2.35	
10205.00	90.250	267.640	5790.65	4681.14	-601.96	-4642.66	1.75	

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

WELLPATH DATA (97 stations)								
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]	Comments
10299.00	91.140	267.380	5789.51	4774.89	-606.04	-4736.57	0.99	
10394.00	90.280	268.550	5788.33	4869.57	-609.41	-4831.50	1.53	
10488.00	90.370	268.100	5787.80	4963.21	-612.16	-4925.45	0.49	
10538.00	90.680	266.900	5787.34	5013.08	-614.34	-4975.40	2.48	
10678.00	89.170	267.230	5787.52	5152.78	-621.51	-5115.22	1.10	
10761.00	90.400	267.130	5787.83	5235.59	-625.59	-5198.11	1.49	LAST BHI MWD SURVEY
10828.00	90.400	267.130	5787.37	5302.44	-628.95	-5265.03	0.00	PROJECTION TO BIT

HOLE & CASING SECTIONS - Ref Wellbore: HARPER LD21-655 AWB Ref Wellpath: HARPER LD21-655 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]
9.625in Casing Surface	0.00	1933.00	1933.00	0.00	1932.98	0.00	0.00	-5.19	-0.31
8.5in Open Hole	1933.00	10828.00	8895.00	1932.98	5787.37	-5.19	-0.31	-628.95	-5265.03

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SEC.21-T09N-R58W	0.00	0.00	0.00	3454901.02	1516291.47	40°44'20.580"N	103°51'30.096"W	polygon
SEC.21-T09N-R58W SW CORNER	0.00	-3636.43	-5532.26	3449368.81	1512655.08	40°43'45.660"N	103°52'42.816"W	point
HARPER LD21-655 BHL ON PLAT REV-2 (2310'FNL & 330'FWL, SEC.21)	5780.57	-614.38	-5266.00	3449635.07	1515677.10	40°44'15.468"N	103°52'38.640"W	point
HARPER LD21-655 BHL ON PLAT REV-1 (2310'FNL & 330'FWL, SEC.21)	5780.58	-614.38	-5266.00	3449635.07	1515677.10	40°44'15.468"N	103°52'38.640"W	point
HARPER LD21-655 LANDING POINT REV-1 (2310'FNL & 330'FEL, SEC.21)	5809.40	-489.00	-660.00	3454241.03	1515802.48	40°44'15.870"N	103°51'38.786"W	point
HARPER LD21-655 LANDING POINT REV-2 (2310'FNL & 330'FEL, SEC.21)	5821.78	-488.56	-636.00	3454265.03	1515802.92	40°44'15.870"N	103°51'38.474"W	point
SEC.21-T09N-R58W HARDLINES (330' SETBACKS)	5827.00	0.00	0.00	3454901.02	1516291.47	40°44'20.580"N	103°51'30.096"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: HARPER LD21-655 AWB Ref Wellpath: HARPER LD21-655 AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1927.00	Approximation of GYD GC+DROP+OH	13 1/2" GYRODATA SURFACE SURVEYS <78 - 1927>	HARPER LD21-655 AWB
1927.00	10761.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	8 1/2" BHI MWD AUTOTRAK CURVE MONOBORE (MSA CORRECTED) <1927 - 10761>	HARPER LD21-655 AWB
10761.00	10828.00	Blind Drilling (std)	Projection to bit	HARPER LD21-655 AWB

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#07 HARPER LD21-655 (1821'FNL & 330'FWL, SEC.22)
Area	COLORADO	Well	HARPER LD21-655
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER LD21-655 AWB
Facility	SEC.22-T09N-R58W		

WELLPATH COMMENTS				
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
1927.00	0.360	124.050	1926.98	TIED INTO GYRODATA SURVEYS
6193.00	83.255	268.314	5820.09	CROSS 460' SETBACK
10761.00	90.400	267.130	5787.83	LAST BHI MWD SURVEY
10828.00	90.400	267.130	5787.37	PROJECTION TO BIT