

NOBLE ENERGY, INC

Location: COLORADO Slot: SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)
Field: WELD COUNTY (NOBLE NAD 83 GRID) Well: HARPER A21-669
Facility: SEC.21-T06N-R64W Wellbore: HARPER A21-669 PWB

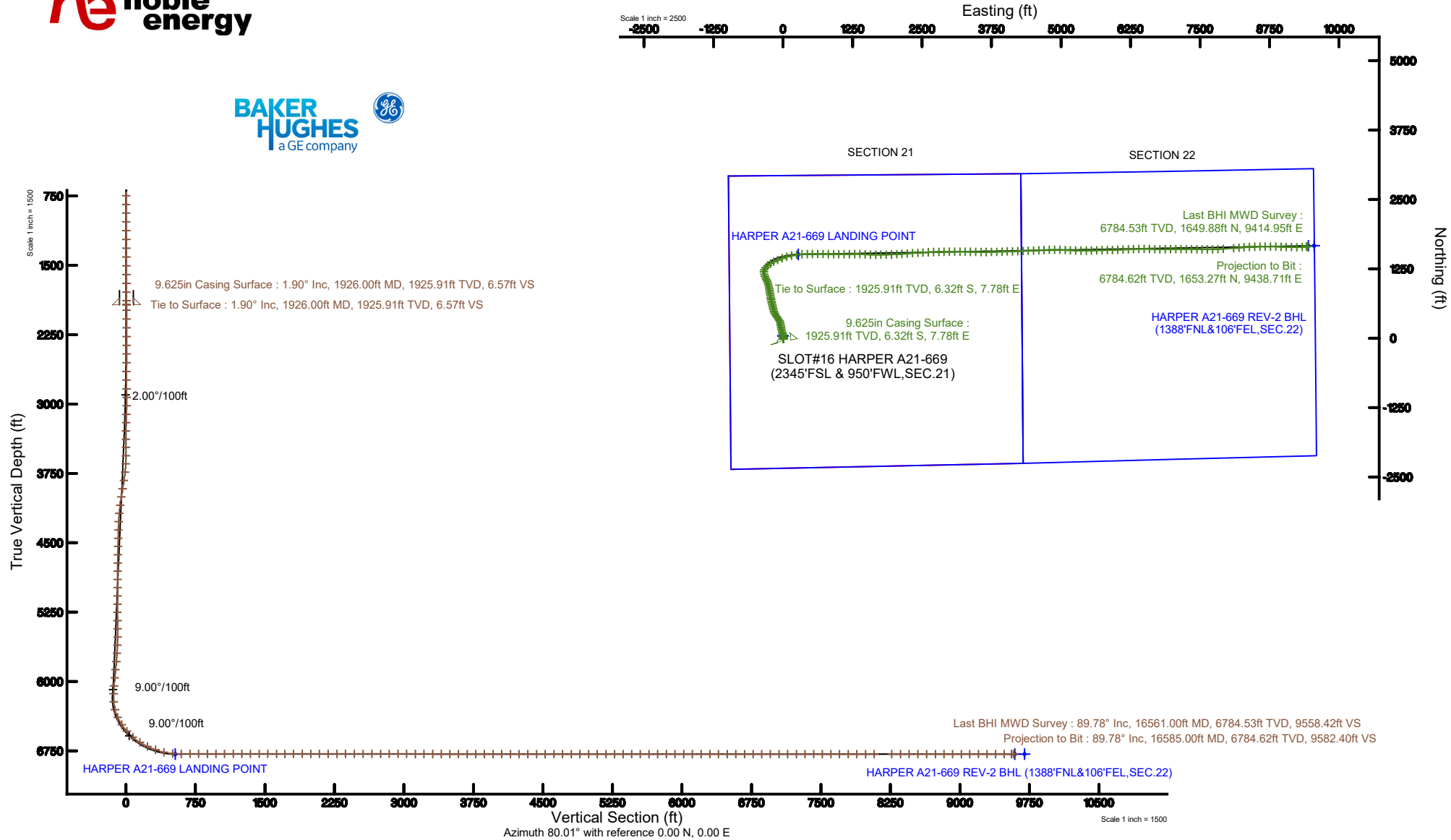
Plot reference wellpath is HARPER A21-669 (REV-B.0) PWB	Grid System: NAD83 / Lambert Colorado SP, Northern Zone (501), US feet
True vertical depths are referenced to RIG (30'KB) (RKB)	North Reference: Grid north
Measured depths are referenced to RIG (30'KB) (RKB)	Scale: True distance
RIG (30'KB) (RKB) to Mean Sea Level: 4773 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: SLOT#16 HARPER A21-669 (2345'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#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)	1492.61	-110.41	3261196.349	1415695.442	40°28'14.484"N	104°33'40.212"W
RIG (30'KB) (RKB) to Ground level (At Slot: SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21))					4773ft	
Mean Sea Level to Ground level (At Slot: SLOT#16 HARPER A21-669 (2345'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	16716.37	OWSG MWD rev2	OWSG MWD rev2 + IFR1 + Multi-Station Correction		HARPER A21-669 PWB



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-669
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 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 10:24:41 AM
Convergence at slot	0.61° East	Database/Source file	WellArchitectDB/HARPER_A21-669_AWP.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	1492.61	-110.41	3261196.35	1415695.44	40°28'14.484"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#16 HARPER A21-669 (2345'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	80.06°

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (177 stations)										
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00	0.000	356.850	0.00	0.00	0.00	0.00	40°28'14.484"N	104°33'40.212"W	0.00	
84.00	0.210	356.850	84.00	0.02	0.15	-0.01	40°28'14.486"N	104°33'40.212"W	0.25	
179.00	0.260	63.330	179.00	0.25	0.42	0.17	40°28'14.488"N	104°33'40.210"W	0.27	
273.00	0.340	82.480	273.00	0.73	0.56	0.64	40°28'14.489"N	104°33'40.204"W	0.14	
368.00	0.550	74.530	367.99	1.46	0.72	1.36	40°28'14.491"N	104°33'40.194"W	0.23	
462.00	0.440	92.340	461.99	2.27	0.82	2.16	40°28'14.492"N	104°33'40.184"W	0.20	
557.00	0.280	145.960	556.99	2.72	0.61	2.65	40°28'14.490"N	104°33'40.178"W	0.37	
652.00	0.240	242.410	651.99	2.62	0.33	2.60	40°28'14.487"N	104°33'40.178"W	0.41	
747.00	0.090	201.050	746.99	2.39	0.17	2.40	40°28'14.485"N	104°33'40.181"W	0.19	
842.00	0.510	163.280	841.99	2.41	-0.31	2.50	40°28'14.481"N	104°33'40.180"W	0.47	
936.00	0.520	91.760	935.98	2.87	-0.72	3.04	40°28'14.477"N	104°33'40.173"W	0.64	
1031.00	0.830	138.950	1030.98	3.65	-1.25	3.93	40°28'14.471"N	104°33'40.161"W	0.64	
1126.00	0.150	154.010	1125.97	4.04	-1.88	4.43	40°28'14.465"N	104°33'40.155"W	0.72	
1221.00	0.320	82.950	1220.97	4.34	-1.96	4.75	40°28'14.464"N	104°33'40.151"W	0.32	
1316.00	0.160	116.820	1315.97	4.71	-1.99	5.13	40°28'14.464"N	104°33'40.146"W	0.22	
1410.00	0.230	90.150	1409.97	5.00	-2.05	5.44	40°28'14.463"N	104°33'40.142"W	0.12	
1505.00	0.570	51.060	1504.97	5.60	-1.75	6.00	40°28'14.466"N	104°33'40.135"W	0.44	
1600.00	0.300	85.100	1599.97	6.26	-1.44	6.61	40°28'14.469"N	104°33'40.127"W	0.38	
1695.00	0.380	184.630	1694.97	6.43	-1.73	6.83	40°28'14.466"N	104°33'40.124"W	0.55	
1790.00	1.020	179.520	1789.96	6.21	-2.89	6.81	40°28'14.455"N	104°33'40.124"W	0.68	
1884.00	1.750	160.260	1883.93	6.32	-5.08	7.31	40°28'14.433"N	104°33'40.118"W	0.91	
1926.00	1.900	157.980	1925.91	6.58	-6.32	7.78	40°28'14.421"N	104°33'40.112"W	0.40	Tie to Surface
1986.00	1.680	143.950	1985.88	7.17	-7.96	8.67	40°28'14.404"N	104°33'40.101"W	0.81	
2081.00	0.320	306.080	2080.87	7.60	-8.93	9.28	40°28'14.395"N	104°33'40.093"W	2.09	
2175.00	0.230	331.710	2174.87	7.36	-8.61	8.98	40°28'14.398"N	104°33'40.097"W	0.16	
2270.00	0.330	204.550	2269.87	7.14	-8.69	8.77	40°28'14.397"N	104°33'40.100"W	0.53	
2365.00	0.210	80.480	2364.87	7.16	-8.91	8.83	40°28'14.395"N	104°33'40.099"W	0.51	
2459.00	0.740	346.140	2458.86	7.29	-8.29	8.86	40°28'14.401"N	104°33'40.099"W	0.83	
2554.00	4.240	341.400	2553.76	6.72	-4.36	7.59	40°28'14.440"N	104°33'40.114"W	3.69	
2649.00	6.970	345.270	2648.30	5.71	4.54	5.00	40°28'14.528"N	104°33'40.147"W	2.90	

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Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (177 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
2743.00	9.180	351.120	2741.36	5.37	17.47	2.39	40°28'14.656"N	104°33'40.179"W	2.51	
2838.00	11.020	355.160	2834.89	6.32	34.00	0.46	40°28'14.820"N	104°33'40.201"W	2.07	
2933.00	14.510	353.840	2927.52	7.91	54.89	-1.59	40°28'15.027"N	104°33'40.225"W	3.69	
3028.00	15.440	344.460	3019.31	7.46	78.91	-6.25	40°28'15.264"N	104°33'40.282"W	2.73	
3123.00	17.110	344.420	3110.50	4.85	104.56	-13.39	40°28'15.519"N	104°33'40.371"W	1.76	
3217.00	19.510	345.990	3199.73	2.37	133.11	-20.91	40°28'15.801"N	104°33'40.464"W	2.61	
3312.00	18.090	347.170	3289.66	0.50	162.88	-28.02	40°28'16.096"N	104°33'40.552"W	1.55	
3407.00	19.160	349.240	3379.69	-0.47	192.58	-34.21	40°28'16.390"N	104°33'40.628"W	1.32	
3502.00	19.630	350.270	3469.30	-0.64	223.63	-39.82	40°28'16.698"N	104°33'40.697"W	0.61	
3597.00	19.710	351.330	3558.75	-0.23	255.19	-44.93	40°28'17.010"N	104°33'40.758"W	0.38	
3691.00	19.900	343.940	3647.21	-1.58	286.24	-51.75	40°28'17.318"N	104°33'40.842"W	2.67	
3786.00	19.970	328.810	3736.58	-9.20	315.67	-64.63	40°28'17.610"N	104°33'41.005"W	5.42	
3881.00	19.880	324.620	3825.89	-22.02	342.72	-82.38	40°28'17.879"N	104°33'41.231"W	1.51	
3976.00	19.990	323.050	3915.20	-36.33	368.87	-101.50	40°28'18.139"N	104°33'41.475"W	0.58	
4071.00	19.930	324.890	4004.50	-50.60	395.09	-120.57	40°28'18.400"N	104°33'41.718"W	0.66	
4165.00	19.790	329.540	4092.91	-62.99	421.92	-137.85	40°28'18.667"N	104°33'41.938"W	1.69	
4260.00	19.680	335.780	4182.34	-72.58	450.37	-152.57	40°28'18.950"N	104°33'42.124"W	2.22	
4355.00	19.730	342.180	4271.79	-78.73	480.23	-164.04	40°28'19.246"N	104°33'42.269"W	2.27	
4450.00	19.790	346.870	4361.20	-81.82	511.16	-172.60	40°28'19.553"N	104°33'42.375"W	1.67	
4545.00	19.960	348.090	4450.54	-83.28	542.69	-179.60	40°28'19.865"N	104°33'42.461"W	0.47	
4639.00	19.900	346.450	4538.91	-84.84	573.94	-186.66	40°28'20.175"N	104°33'42.548"W	0.60	
4734.00	19.700	345.820	4628.30	-87.04	605.18	-194.37	40°28'20.484"N	104°33'42.644"W	0.31	
4829.00	19.820	347.560	4717.70	-88.93	636.43	-201.76	40°28'20.794"N	104°33'42.735"W	0.63	
4924.00	19.720	347.620	4807.11	-90.32	667.81	-208.67	40°28'21.104"N	104°33'42.820"W	0.11	
5019.00	19.790	350.060	4896.52	-91.00	699.31	-214.88	40°28'21.416"N	104°33'42.896"W	0.87	
5113.00	19.820	351.000	4984.96	-90.75	730.72	-220.12	40°28'21.727"N	104°33'42.960"W	0.34	
5208.00	20.130	348.620	5074.24	-90.90	762.66	-225.87	40°28'22.043"N	104°33'43.030"W	0.92	
5303.00	19.880	348.750	5163.51	-91.68	794.53	-232.24	40°28'22.359"N	104°33'43.108"W	0.27	
5397.00	20.080	350.430	5251.85	-91.94	826.11	-238.04	40°28'22.672"N	104°33'43.179"W	0.65	
5492.00	20.730	351.600	5340.89	-91.39	858.83	-243.21	40°28'22.995"N	104°33'43.241"W	0.81	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL, SEC.21)
Area	COLORADO	Well	HARPER A21-669
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWP
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (177 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
5587.00	21.300	350.650	5429.57	-90.76	892.49	-248.47	40°28'23.329"N	104°33'43.305"W	0.70	
5682.00	21.030	347.740	5518.17	-91.28	926.17	-254.89	40°28'23.662"N	104°33'43.383"W	1.14	
5776.00	21.150	344.730	5605.87	-93.54	959.01	-262.94	40°28'23.987"N	104°33'43.483"W	1.16	
5871.00	21.240	341.370	5694.45	-97.73	991.85	-272.95	40°28'24.313"N	104°33'43.608"W	1.28	
5966.00	20.810	337.110	5783.13	-104.12	1023.71	-285.01	40°28'24.629"N	104°33'43.759"W	1.67	
6060.00	21.120	335.070	5870.91	-112.24	1054.45	-298.65	40°28'24.934"N	104°33'43.932"W	0.84	
6155.00	21.010	333.970	5959.56	-121.39	1085.27	-313.34	40°28'25.240"N	104°33'44.118"W	0.43	
6250.00	22.410	339.120	6047.83	-129.55	1117.50	-327.27	40°28'25.560"N	104°33'44.293"W	2.49	
6344.00	27.190	346.410	6133.15	-134.33	1155.14	-338.71	40°28'25.933"N	104°33'44.436"W	6.03	
6439.00	25.680	359.060	6218.29	-132.49	1196.86	-344.15	40°28'26.346"N	104°33'44.501"W	6.13	
6533.00	22.990	21.750	6304.12	-119.64	1234.36	-337.67	40°28'26.716"N	104°33'44.412"W	10.28	
6628.00	33.570	38.780	6387.79	-90.02	1272.24	-314.24	40°28'27.088"N	104°33'44.104"W	13.91	
6723.00	36.120	51.130	6465.85	-45.72	1310.34	-275.93	40°28'27.460"N	104°33'43.603"W	7.88	
6817.00	43.320	58.470	6538.14	8.61	1344.65	-226.78	40°28'27.794"N	104°33'42.962"W	9.13	
6912.00	51.180	63.520	6602.60	74.52	1378.26	-165.76	40°28'28.120"N	104°33'42.168"W	9.14	
7007.00	58.660	67.580	6657.18	149.73	1410.29	-95.01	40°28'28.429"N	104°33'41.248"W	8.61	
7102.00	64.790	71.130	6702.17	231.89	1439.70	-16.75	40°28'28.711"N	104°33'40.232"W	7.24	
7196.00	69.850	72.400	6738.40	317.69	1466.81	65.60	40°28'28.971"N	104°33'39.162"W	5.53	
7291.00	77.490	78.370	6765.12	408.45	1489.69	153.73	40°28'29.188"N	104°33'38.019"W	10.05	
7386.00	86.330	83.810	6778.48	502.35	1504.19	246.53	40°28'29.321"N	104°33'36.816"W	10.89	
7480.00	89.880	87.410	6781.59	595.83	1511.38	340.17	40°28'29.382"N	104°33'35.603"W	5.38	
7575.00	89.910	88.120	6781.77	689.97	1515.08	435.10	40°28'29.409"N	104°33'34.375"W	0.75	
7670.00	89.970	88.800	6781.87	783.96	1517.64	530.06	40°28'29.424"N	104°33'33.146"W	0.72	
7765.00	89.970	90.270	6781.92	877.66	1518.41	625.06	40°28'29.422"N	104°33'31.916"W	1.55	
7859.00	89.940	91.190	6781.99	970.03	1517.21	719.05	40°28'29.400"N	104°33'30.700"W	0.98	
7954.00	90.000	91.250	6782.04	1063.24	1515.19	814.03	40°28'29.370"N	104°33'29.472"W	0.09	
8049.00	90.000	90.730	6782.04	1156.52	1513.55	909.01	40°28'29.344"N	104°33'28.243"W	0.55	
8144.00	89.970	90.320	6782.06	1249.94	1512.68	1004.01	40°28'29.325"N	104°33'27.014"W	0.43	
8238.00	89.970	89.360	6782.11	1342.57	1512.94	1098.01	40°28'29.318"N	104°33'25.798"W	1.02	
8333.00	90.030	89.520	6782.11	1436.30	1513.87	1193.00	40°28'29.317"N	104°33'24.568"W	0.18	

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WELLPATH DATA (177 stations)

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8428.00	89.850	88.370	6782.21	1530.16	1515.62	1287.99	40°28'29.325"N	104°33'23.339"W	1.23	
8523.00	89.970	91.470	6782.36	1623.75	1515.75	1382.97	40°28'29.316"N	104°33'22.110"W	3.27	
8617.00	90.000	94.590	6782.39	1715.34	1510.78	1476.83	40°28'29.257"N	104°33'20.896"W	3.32	
8712.00	89.970	92.490	6782.41	1807.72	1504.91	1571.64	40°28'29.189"N	104°33'19.670"W	2.21	
8807.00	90.000	89.910	6782.44	1900.93	1502.93	1666.62	40°28'29.159"N	104°33'18.442"W	2.72	
8901.00	89.910	88.900	6782.51	1993.68	1503.90	1760.61	40°28'29.159"N	104°33'17.226"W	1.08	
8996.00	90.000	89.260	6782.58	2087.50	1505.43	1855.60	40°28'29.164"N	104°33'15.996"W	0.39	
9091.00	90.060	88.720	6782.53	2181.35	1507.10	1950.58	40°28'29.171"N	104°33'14.767"W	0.57	
9186.00	89.880	85.880	6782.58	2275.59	1511.58	2045.47	40°28'29.205"N	104°33'13.539"W	3.00	
9280.00	90.090	85.130	6782.61	2369.16	1518.94	2139.18	40°28'29.268"N	104°33'12.325"W	0.83	
9375.00	89.910	85.890	6782.61	2463.73	1526.38	2233.88	40°28'29.331"N	104°33'11.099"W	0.82	
9470.00	90.000	86.520	6782.68	2558.19	1532.67	2328.68	40°28'29.384"N	104°33'09.871"W	0.67	
9565.00	89.940	87.110	6782.73	2652.53	1537.95	2423.53	40°28'29.426"N	104°33'08.643"W	0.62	
9660.00	89.940	86.600	6782.83	2746.86	1543.16	2518.38	40°28'29.467"N	104°33'07.415"W	0.54	
9754.00	90.000	87.080	6782.88	2840.21	1548.34	2612.24	40°28'29.508"N	104°33'06.200"W	0.51	
9849.00	89.910	88.120	6782.96	2934.38	1552.32	2707.16	40°28'29.538"N	104°33'04.971"W	1.10	
9944.00	89.940	88.690	6783.08	3028.38	1554.96	2802.12	40°28'29.554"N	104°33'03.742"W	0.60	
10039.00	89.880	88.990	6783.23	3122.27	1556.88	2897.10	40°28'29.563"N	104°33'02.513"W	0.32	
10133.00	90.000	88.690	6783.33	3215.17	1558.79	2991.08	40°28'29.572"N	104°33'01.297"W	0.34	
10228.00	89.880	89.710	6783.43	3308.96	1560.11	3086.07	40°28'29.575"N	104°33'00.068"W	1.08	
10323.00	89.820	90.600	6783.68	3402.49	1559.86	3181.07	40°28'29.562"N	104°32'58.839"W	0.94	
10418.00	90.000	91.360	6783.83	3495.77	1558.23	3276.05	40°28'29.536"N	104°32'57.610"W	0.82	
10512.00	89.910	90.860	6783.90	3588.03	1556.41	3370.04	40°28'29.508"N	104°32'56.394"W	0.54	
10607.00	90.060	91.680	6783.92	3681.22	1554.31	3465.01	40°28'29.477"N	104°32'55.165"W	0.88	
10702.00	89.910	90.780	6783.95	3774.42	1552.27	3559.99	40°28'29.447"N	104°32'53.937"W	0.96	
10796.00	90.060	89.340	6783.97	3866.99	1552.17	3653.99	40°28'29.436"N	104°32'52.721"W	1.54	
10891.00	89.880	88.980	6784.02	3960.79	1553.56	3748.98	40°28'29.440"N	104°32'51.491"W	0.42	
10986.00	89.940	88.330	6784.17	4054.73	1555.79	3843.95	40°28'29.452"N	104°32'50.262"W	0.69	
11081.00	89.910	87.600	6784.30	4148.83	1559.16	3938.89	40°28'29.475"N	104°32'49.033"W	0.77	
11175.00	90.000	88.820	6784.37	4241.88	1562.10	4032.84	40°28'29.494"N	104°32'47.817"W	1.30	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-669
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWP
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (177 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
11270.00	89.880	88.630	6784.47	4335.79	1564.21	4127.82	40°28'29.505"N	104°32'46.588"W	0.24	
11365.00	89.970	88.020	6784.60	4429.81	1566.99	4222.78	40°28'29.522"N	104°32'45.359"W	0.65	
11459.00	89.940	87.830	6784.67	4522.92	1570.39	4316.71	40°28'29.546"N	104°32'44.143"W	0.20	
11554.00	90.030	86.960	6784.69	4617.15	1574.71	4411.61	40°28'29.578"N	104°32'42.914"W	0.92	
11649.00	90.000	86.780	6784.67	4711.48	1579.90	4506.47	40°28'29.619"N	104°32'41.686"W	0.19	
11743.00	89.970	87.580	6784.69	4804.75	1584.52	4600.36	40°28'29.655"N	104°32'40.471"W	0.85	
11838.00	89.940	87.990	6784.77	4898.89	1588.20	4695.29	40°28'29.681"N	104°32'39.242"W	0.43	
11933.00	90.000	88.900	6784.82	4992.88	1590.77	4790.25	40°28'29.697"N	104°32'38.013"W	0.96	
12027.00	90.060	89.390	6784.77	5085.70	1592.18	4884.24	40°28'29.700"N	104°32'36.797"W	0.53	
12122.00	89.880	91.460	6784.82	5179.14	1591.47	4979.23	40°28'29.683"N	104°32'35.568"W	2.19	
12217.00	89.970	92.770	6784.94	5272.05	1587.97	5074.17	40°28'29.639"N	104°32'34.340"W	1.38	
12312.00	90.000	92.620	6784.97	5364.75	1583.50	5169.06	40°28'29.584"N	104°32'33.113"W	0.16	
12407.00	90.000	91.660	6784.97	5457.65	1579.95	5263.99	40°28'29.539"N	104°32'31.885"W	1.01	
12502.00	89.970	90.600	6784.99	5550.88	1578.08	5358.97	40°28'29.510"N	104°32'30.656"W	1.12	
12596.00	89.910	89.680	6785.09	5643.43	1577.85	5452.97	40°28'29.498"N	104°32'29.440"W	0.98	
12691.00	89.880	88.300	6785.27	5737.28	1579.52	5547.95	40°28'29.505"N	104°32'28.211"W	1.45	
12786.00	90.000	87.760	6785.36	5831.36	1582.79	5642.90	40°28'29.527"N	104°32'26.982"W	0.58	
12881.00	90.090	88.920	6785.29	5925.37	1585.54	5737.86	40°28'29.544"N	104°32'25.753"W	1.22	
12975.00	90.120	88.670	6785.12	6018.28	1587.52	5831.84	40°28'29.553"N	104°32'24.536"W	0.27	
13070.00	90.150	89.090	6784.89	6112.16	1589.37	5926.82	40°28'29.561"N	104°32'23.307"W	0.44	
13165.00	90.030	88.150	6784.74	6206.10	1591.66	6021.79	40°28'29.574"N	104°32'22.078"W	1.00	
13260.00	90.030	87.510	6784.70	6300.23	1595.26	6116.72	40°28'29.599"N	104°32'20.849"W	0.67	
13355.00	90.120	87.030	6784.57	6394.48	1599.78	6211.61	40°28'29.634"N	104°32'19.621"W	0.51	
13449.00	90.000	87.670	6784.47	6487.72	1604.13	6305.51	40°28'29.667"N	104°32'18.405"W	0.69	
13544.00	90.000	88.000	6784.47	6581.84	1607.72	6400.44	40°28'29.692"N	104°32'17.176"W	0.35	
13639.00	90.030	89.870	6784.45	6675.70	1609.48	6495.42	40°28'29.699"N	104°32'15.947"W	1.97	
13734.00	89.940	92.190	6784.47	6768.96	1607.78	6590.40	40°28'29.672"N	104°32'14.719"W	2.44	
13829.00	90.030	92.200	6784.50	6861.84	1604.14	6685.33	40°28'29.626"N	104°32'13.491"W	0.10	
13923.00	89.780	90.440	6784.65	6954.03	1601.97	6779.30	40°28'29.595"N	104°32'12.275"W	1.89	
14018.00	89.940	89.250	6784.89	7047.65	1602.23	6874.30	40°28'29.587"N	104°32'11.046"W	1.26	

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY, INC	Slot	SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-669
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWB
Facility	SEC.21-T06N-R64W		

WELLPATH DATA (177 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Latitude	Longitude	DLS [°/100ft]	Comments
14113.00	89.940	88.950	6784.98	7141.47	1603.72	6969.29	40°28'29.591"N	104°32'09.817"W	0.32	
14208.00	89.970	89.080	6785.06	7235.31	1605.36	7064.27	40°28'29.597"N	104°32'08.588"W	0.14	
14302.00	89.850	90.300	6785.21	7327.99	1605.86	7158.27	40°28'29.592"N	104°32'07.371"W	1.30	
14397.00	89.940	90.460	6785.38	7421.45	1605.23	7253.27	40°28'29.576"N	104°32'06.142"W	0.19	
14492.00	90.090	91.060	6785.36	7514.80	1603.97	7348.26	40°28'29.553"N	104°32'04.913"W	0.65	
14586.00	90.120	91.490	6785.18	7607.01	1601.88	7442.23	40°28'29.522"N	104°32'03.698"W	0.46	
14681.00	90.150	90.690	6784.96	7700.25	1600.08	7537.22	40°28'29.494"N	104°32'02.469"W	0.84	
14776.00	90.060	89.440	6784.79	7793.81	1599.97	7632.21	40°28'29.483"N	104°32'01.240"W	1.32	
14871.00	90.180	88.930	6784.59	7887.61	1601.32	7727.20	40°28'29.486"N	104°32'00.010"W	0.55	
14965.00	90.060	87.190	6784.39	7980.69	1604.50	7821.15	40°28'29.507"N	104°31'58.794"W	1.86	
15060.00	89.850	86.280	6784.46	8075.04	1609.91	7915.99	40°28'29.551"N	104°31'57.567"W	0.98	
15250.00	89.910	86.210	6784.86	8263.94	1622.35	8105.58	40°28'29.653"N	104°31'55.112"W	0.05	
15345.00	90.000	85.700	6784.94	8358.44	1629.06	8200.35	40°28'29.709"N	104°31'53.885"W	0.55	
15439.00	90.120	85.310	6784.84	8452.01	1636.42	8294.06	40°28'29.772"N	104°31'52.671"W	0.43	
15534.00	90.060	85.840	6784.69	8546.57	1643.75	8388.77	40°28'29.834"N	104°31'51.444"W	0.56	
15629.00	90.000	88.790	6784.64	8640.80	1648.20	8483.66	40°28'29.868"N	104°31'50.216"W	3.11	
15724.00	90.000	89.100	6784.64	8734.67	1649.95	8578.64	40°28'29.875"N	104°31'48.987"W	0.33	
15818.00	90.090	88.800	6784.57	8827.54	1651.67	8672.63	40°28'29.882"N	104°31'47.771"W	0.33	
15913.00	90.030	90.900	6784.47	8921.15	1651.92	8767.62	40°28'29.874"N	104°31'46.541"W	2.21	
16008.00	89.970	91.850	6784.47	9014.30	1649.64	8862.59	40°28'29.841"N	104°31'45.313"W	1.00	
16102.00	90.000	92.020	6784.49	9106.29	1646.47	8956.54	40°28'29.800"N	104°31'44.098"W	0.18	
16197.00	90.060	91.480	6784.44	9199.32	1643.57	9051.49	40°28'29.761"N	104°31'42.870"W	0.57	
16292.00	90.090	91.640	6784.32	9292.42	1640.98	9146.46	40°28'29.725"N	104°31'41.641"W	0.17	
16387.00	90.030	90.480	6784.22	9385.67	1639.22	9241.44	40°28'29.697"N	104°31'40.412"W	1.22	
16481.00	89.880	86.450	6784.29	9478.65	1641.74	9335.39	40°28'29.712"N	104°31'39.197"W	4.29	
16561.00	89.780	81.870	6784.53	9558.42	1649.88	9414.95	40°28'29.784"N	104°31'38.166"W	5.73	Last BHI MWD Survey
16585.00	89.780	81.870	6784.62	9582.41	1653.27	9438.71	40°28'29.815"N	104°31'37.858"W	0.00	Projection to Bit

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY, INC	Slot	SLOT#16 HARPER A21-669 (2345'FSL & 950'FWL,SEC.21)
Area	COLORADO	Well	HARPER A21-669
Field	WELD COUNTY (NOBLE NAD 83 GRID)	Wellbore	HARPER A21-669 AWB
Facility	SEC.21-T06N-R64W		

HOLE & CASING SECTIONS - Ref Wellbore: HARPER A21-669 AWB Ref Wellpath: HARPER A21-669 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	1926.00	1896.00	30.00	1925.91	0.02	0.00	-6.32	7.78
9.625in Casing Surface	30.00	1926.00	1896.00	30.00	1925.91	0.02	0.00	-6.32	7.78
8.5in Open Hole	1926.00	16585.00	14659.00	1925.91	6784.62	-6.32	7.78	1653.27	9438.71

WELLPATH COMPOSITION - Ref Wellbore: HARPER A21-669 AWB Ref Wellpath: HARPER A21-669 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	1926.00	Gyrodata standard - Drop gyro or Multi-shot	GyroData Surface Surveys <84'-1926'>	HARPER A21-669 AWB
1926.00	16561.00	OWSG MWD rev2 + IFR1 + Multi-Station Correction	BHGE/ATC 8.5" Hole OWSG MWD rev2+IFR+MSA <1986'-16561'>	HARPER A21-669 AWB
16561.00	16585.00	Blind Drilling (std)	Projection to bit	HARPER A21-669 AWB