



Actual Wellpath Report
Cottonwood 29 32 Federal Com WCA No. 003H awp 185 - 14766 Proj: 14841
30-015-43703 Page 1 of 10

**BAKER
HUGHES**
a GE company



REFERENCE WELLPATH IDENTIFICATION			
Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch: Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

REPORT SETUP INFORMATION			
Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Tranlam
Scale	0.999909	Report Generated	2/8/2018 at 10:56:33 AM
Convergence at slot	0.02° East	Database/Source file	WA_Midland/Cottonwood 29 32_Federal Com WCA_No_003H_ awp 185 - 14766 Proj_14841 .xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	548376.30	371098.70	32°01'12.822"N	104°18'38.238"W
Facility Reference Pt			548376.30	371098.70	32°01'12.822"N	104°18'38.238"W
Field Reference Pt			165000.00	0.00	30°59'39.893"N	105°32'03.866"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig: Nabors M55 (KB) to Facility Vertical Datum	
Horizontal Reference Pt	Slot	Rig: Nabors M55 (KB) to Mean Sea Level	
Vertical Reference Pt	Rig: Nabors M55 (KB)	Rig: Nabors M55 (KB) to Ground Level at Slot (Cottonwood 29-32 Fed Com WCA No. 3H)	
MD Reference Pt	Rig: Nabors M55 (KB)	Section Origin	
Field Vertical Reference	Mean Sea Level	Section Azimuth	
			3443.00ft
			3443.00ft
			22.00ft
			N 0.00, E 0.00 ft
			179.70°

**NM OIL CONSERVATION
ARTESIA DISTRICT**

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Actual Wellpath Report

Cottonwood 29 32 Federal Com WCA No. 003H awp 185' - 14766' Proj: 14841'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch; Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations) † = interpolated/extrapolated station

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft			ft/100ft	ft/100ft	ft/100ft	
0.00†	0.000	357.280	0.00	0.00	0.00	0.00	54837.630	371098.70	32°01'12.822"N	104°18'38.238"W	0.00	0.00	0.00	
22.00	0.000	357.280	22.00	0.00	0.00	0.00	54837.630	371098.70	32°01'12.822"N	104°18'38.238"W	0.00	0.00	0.00	
185.00	0.990	357.280	184.99	-1.41	1.41	-0.07	54837.623	371100.11	32°01'12.836"N	104°18'38.239"W	0.61	0.61	-1.67	
350.00	0.490	340.460	349.98	-3.50	3.50	-0.37	54837.593	371102.20	32°01'12.867"N	104°18'38.242"W	0.33	-0.30	-10.19	
476.00	0.800	349.820	475.97	-4.67	4.67	-0.71	54837.559	371103.57	32°01'12.870"N	104°18'38.246"W	0.26	0.25	7.43	
568.00	0.920	336.020	567.96	-6.18	6.18	-1.12	54837.518	371104.88	32°01'12.883"N	104°18'38.251"W	0.26	0.13	-15.00	
665.00	0.940	326.770	664.95	-7.56	7.55	-1.87	54837.443	371106.25	32°01'12.897"N	104°18'38.260"W	0.16	0.02	-9.54	
738.00	0.920	323.430	737.94	-8.54	8.52	-2.55	54837.376	371107.22	32°01'12.906"N	104°18'38.268"W	0.08	-0.03	-4.58	
833.00	1.010	325.320	832.92	-9.84	9.83	-3.48	54837.282	371108.52	32°01'12.919"N	104°18'38.278"W	0.10	0.08	1.99	
926.00	0.770	325.600	925.91	-11.04	11.02	-4.30	54837.200	371109.71	32°01'12.931"N	104°18'38.288"W	0.26	-0.26	0.30	
1022.00	0.720	319.170	1021.90	-12.03	12.00	-5.06	54837.124	371110.70	32°01'12.941"N	104°18'38.297"W	0.10	-0.05	-6.70	
1117.00	0.990	324.630	1116.89	-13.11	13.08	-5.90	54837.041	371111.78	32°01'12.951"N	104°18'38.306"W	0.24	0.22	5.75	
1212.00	0.790	341.520	1211.88	-14.37	14.33	-6.55	54836.975	371113.03	32°01'12.964"N	104°18'38.314"W	0.30	-0.15	17.78	
1306.00	0.600	23.850	1305.88	-15.43	15.40	-6.56	54836.975	371114.10	32°01'12.974"N	104°18'38.314"W	0.57	-0.20	45.03	
1401.00	1.000	49.740	1400.87	-16.42	16.39	-5.72	54837.058	371115.09	32°01'12.984"N	104°18'38.304"W	0.56	0.42	27.25	
1496.00	0.980	57.810	1495.85	-17.38	17.36	-4.40	54837.190	371116.06	32°01'12.994"N	104°18'38.289"W	0.15	-0.02	8.49	
1591.00	0.770	43.660	1590.84	-18.27	18.25	-3.27	54837.303	371116.95	32°01'13.003"N	104°18'38.276"W	0.32	-0.07	-14.89	
1686.00	0.700	37.340	1685.84	-19.19	19.18	-2.48	54837.382	371117.87	32°01'13.012"N	104°18'38.267"W	0.11	-0.02	-6.65	
1781.00	0.590	37.100	1780.83	-20.04	20.03	-1.83	54837.447	371118.73	32°01'13.020"N	104°18'38.259"W	0.12	-0.12	-0.25	
1876.00	0.720	30.960	1875.82	-20.94	20.93	-1.23	54837.507	371119.63	32°01'13.029"N	104°18'38.252"W	0.16	0.14	-6.46	
1972.00	0.830	13.470	1971.81	-22.13	22.12	-0.76	54837.554	371120.82	32°01'13.041"N	104°18'38.247"W	0.27	0.11	-18.22	
2066.00	1.800	355.280	2065.79	-24.26	24.26	-0.72	54837.558	371122.95	32°01'13.062"N	104°18'38.246"W	1.11	1.03	-19.35	
2161.00	1.720	356.740	2160.74	-27.17	27.17	-0.88	54837.542	371125.87	32°01'13.091"N	104°18'38.248"W	0.14	-0.08	3.64	
2257.00	1.550	353.690	2256.70	-29.90	29.90	-1.05	54837.525	371128.60	32°01'13.118"N	104°18'38.250"W	0.23	-0.18	-5.26	
2351.00	1.530	350.090	2350.67	-32.41	32.40	-1.41	54837.489	371131.10	32°01'13.143"N	104°18'38.254"W	0.17	-0.02	-3.83	
2446.00	1.410	347.970	2445.64	-34.80	34.79	-1.87	54837.443	371133.49	32°01'13.166"N	104°18'38.260"W	0.14	-0.13	-2.23	
2540.00	1.180	335.490	2539.62	-36.82	36.80	-2.51	54837.379	371135.50	32°01'13.186"N	104°18'38.267"W	0.39	-0.24	-13.28	
2635.00	1.450	328.750	2634.59	-38.74	38.72	-3.54	54837.276	371137.42	32°01'13.205"N	104°18'38.279"W	0.33	0.26	-7.09	
2730.00	1.540	325.990	2729.55	-40.83	40.81	-4.88	54837.142	371139.50	32°01'13.226"N	104°18'38.295"W	0.12	0.09	-2.91	
2825.00	1.570	324.320	2824.52	-42.85	42.82	-6.35	54836.955	371141.82	32°01'13.247"N	104°18'38.312"W	0.06	0.03	-1.76	



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REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch, Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft			ft/100ft	ft/100ft	ft/100ft	
2919.00	1.590	324.080	2918.49	-45.06	45.02	-7.87	548368.43	371143.72	32°01'13.268"N	104°18'38.328"W	0.02		0.02	-0.26
3014.00	1.490	320.050	3013.45	-47.09	47.04	-9.43	548366.87	371145.73	32°01'13.287"N	104°18'38.347"W	0.16		-0.11	-4.24
3109.00	1.590	306.240	3108.42	-48.82	48.76	-11.29	548365.01	371147.46	32°01'13.305"N	104°18'38.369"W	0.40		0.11	-14.54
3204.00	1.610	299.590	3203.38	-50.27	50.20	-13.51	548362.79	371148.90	32°01'13.319"N	104°18'38.395"W	0.20		0.02	-7.00
3299.00	1.610	297.310	3298.34	-51.56	51.47	-15.86	548360.44	371150.17	32°01'13.331"N	104°18'38.422"W	0.07		0.00	-2.46
3394.00	2.100	288.010	3393.30	-52.72	52.62	-18.70	548357.60	371151.32	32°01'13.343"N	104°18'38.455"W	0.60		0.52	-9.79
3489.00	2.310	284.720	3488.22	-53.76	53.65	-22.21	548354.09	371152.34	32°01'13.353"N	104°18'38.496"W	0.26		0.22	-3.46
3584.00	2.350	286.950	3583.15	-54.84	54.70	-25.92	548350.38	371153.40	32°01'13.363"N	104°18'38.539"W	0.10		0.04	2.35
3679.00	1.670	285.770	3678.09	-55.80	55.65	-29.12	548347.19	371154.34	32°01'13.373"N	104°18'38.576"W	0.72		-0.72	-1.24
3774.00	1.310	277.700	3773.06	-56.33	56.17	-31.53	548344.78	371154.86	32°01'13.378"N	104°18'38.604"W	0.44		-0.36	-8.46
3869.00	1.140	265.400	3868.03	-56.41	56.24	-33.54	548342.76	371154.93	32°01'13.379"N	104°18'38.627"W	0.33		-0.18	-12.95
3964.00	1.210	272.170	3963.01	-56.39	56.20	-35.49	548340.82	371154.90	32°01'13.378"N	104°18'38.650"W	0.16		0.07	7.13
4059.00	1.170	259.000	4057.99	-56.25	56.05	-37.44	548338.86	371154.75	32°01'13.377"N	104°18'38.673"W	0.29		-0.04	-13.86
4154.00	1.040	256.680	4152.98	-55.87	55.67	-39.23	548337.07	371154.36	32°01'13.373"N	104°18'38.694"W	0.14		-0.14	-2.44
4249.00	1.010	243.260	4247.96	-55.31	55.09	-40.82	548335.48	371153.79	32°01'13.367"N	104°18'38.712"W	0.25		-0.03	-14.13
4344.00	1.070	240.570	4342.94	-54.50	54.28	-42.34	548333.96	371152.98	32°01'13.359"N	104°18'38.730"W	0.08		0.06	-2.83
4439.00	1.080	241.770	4433.93	-53.69	53.46	-43.84	548332.47	371152.15	32°01'13.351"N	104°18'38.747"W	0.03		0.01	1.32
4533.00	1.080	233.620	4531.91	-52.71	52.47	-45.39	548330.91	371151.17	32°01'13.341"N	104°18'38.765"W	0.16		0.00	-8.32
4628.00	0.990	235.340	4626.90	-51.72	51.48	-46.79	548329.51	371150.17	32°01'13.331"N	104°18'38.781"W	0.10		-0.09	1.81
4723.00	0.970	231.500	4721.88	-50.76	50.51	-48.09	548328.21	371149.20	32°01'13.322"N	104°18'38.796"W	0.07		-0.02	-4.04
4818.00	1.070	229.500	4816.87	-49.69	49.43	-49.40	548326.91	371148.13	32°01'13.311"N	104°18'38.812"W	0.11		0.11	-2.11
4912.00	1.260	228.860	4910.85	-48.45	48.18	-50.84	548325.46	371146.88	32°01'13.299"N	104°18'38.828"W	0.20		0.20	-0.66
5007.00	1.460	227.670	5005.82	-46.95	46.68	-52.52	548323.78	371145.38	32°01'13.284"N	104°18'38.848"W	0.21		0.21	-1.25
5100.00	1.700	229.190	5098.79	-45.27	44.98	-54.44	548321.86	371143.66	32°01'13.267"N	104°18'38.870"W	0.26		0.26	1.63
5195.00	1.910	236.860	5193.74	-43.49	43.19	-56.83	548319.47	371141.89	32°01'13.249"N	104°18'38.898"W	0.33		0.22	7.86
5294.00	1.760	240.170	5292.69	-41.84	41.53	-59.53	548316.77	371140.22	32°01'13.233"N	104°18'38.929"W	0.19		-0.15	3.53
5388.00	0.680	243.910	5386.66	-40.88	40.56	-61.28	548315.02	371139.26	32°01'13.223"N	104°18'38.950"W	1.15		-1.15	3.98
5483.00	0.390	174.160	5481.66	-40.32	40.00	-61.76	548314.55	371138.69	32°01'13.218"N	104°18'38.965"W	0.69		-0.31	-73.42
5583.00	1.110	209.260	5581.65	-39.14	38.81	-62.20	548314.11	371137.51	32°01'13.206"N	104°18'38.960"W	0.82		0.72	35.10
5678.00	1.900	214.270	5676.62	-37.04	36.71	-63.53	548312.77	371135.40	32°01'13.185"N	104°18'38.976"W	0.84		0.83	5.27



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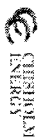


REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch, Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	US ft	US ft			ft/100ft	ft/100ft	ft/100ft	
5773.00	2.250	217.420	5771.56	-34.27	33.92	-65.55	548310.75	371132.62	32°01'13.158"N	104°18'38.999"W	0.39	0.37	3.32	
5668.00	1.850	229.730	5666.50	-31.87	31.45	-67.86	548308.45	371130.15	32°01'13.133"N	104°18'39.026"W	0.62	-0.42	12.96	
5563.00	2.030	252.330	5561.44	-30.32	29.95	-70.63	548305.68	371128.65	32°01'13.118"N	104°18'39.058"W	0.82	0.19	23.79	
6058.00	2.670	246.080	6056.38	-28.93	28.54	-74.26	548302.05	371127.24	32°01'13.105"N	104°18'39.100"W	0.72	0.67	-6.58	
6157.00	2.630	251.120	6155.26	-27.28	26.87	-78.51	548297.79	371125.57	32°01'13.088"N	104°18'39.150"W	0.24	-0.04	5.08	
6247.00	2.480	241.960	6245.17	-25.72	25.29	-82.19	548294.12	371123.89	32°01'13.072"N	104°18'39.193"W	0.48	-0.17	-10.18	
6342.00	2.560	235.580	6340.08	-23.57	23.12	-85.75	548290.56	371121.82	32°01'13.051"N	104°18'39.234"W	0.31	0.08	-6.72	
6437.00	2.850	236.770	6434.97	-21.10	20.63	-89.48	548288.83	371119.33	32°01'13.026"N	104°18'39.277"W	0.31	0.31	1.25	
6532.00	2.320	251.010	6529.87	-19.20	18.71	-93.27	548283.04	371117.41	32°01'13.007"N	104°18'39.321"W	0.87	-0.56	14.99	
6626.00	1.580	256.720	6623.82	-18.30	17.78	-96.33	548278.98	371116.49	32°01'12.988"N	104°18'39.357"W	0.81	-0.78	6.07	
6722.00	1.530	282.710	6719.79	-18.29	17.77	-98.87	548277.44	371116.47	32°01'12.988"N	104°18'39.386"W	0.73	-0.05	27.07	
6816.00	1.970	274.530	6813.74	-18.71	18.18	-101.70	548274.61	371116.87	32°01'13.002"N	104°18'39.419"W	0.54	0.47	-8.70	
6911.00	1.810	289.830	6908.69	-19.36	18.81	-104.74	548271.57	371117.51	32°01'13.008"N	104°18'39.455"W	0.56	-0.17	16.11	
7006.00	1.580	285.280	7003.65	-20.23	19.67	-107.42	548268.89	371118.37	32°01'13.017"N	104°18'39.486"W	0.28	-0.24	-4.79	
7101.00	1.990	267.610	7098.60	-20.52	19.94	-110.33	548265.98	371118.64	32°01'13.020"N	104°18'39.519"W	0.72	0.43	-18.60	
7197.00	1.740	258.730	7194.55	-20.18	19.59	-113.42	548262.89	371118.29	32°01'13.016"N	104°18'39.555"W	0.40	-0.26	-9.25	
7290.00	2.160	232.550	7287.50	-18.86	18.25	-116.20	548260.11	371116.95	32°01'13.003"N	104°18'39.588"W	1.05	0.45	-28.15	
7385.00	2.660	237.500	7382.42	-16.60	15.97	-119.48	548256.83	371114.67	32°01'12.980"N	104°18'39.626"W	0.57	0.53	5.21	
7448.00	2.380	228.210	7445.36	-14.95	14.32	-121.69	548254.62	371113.02	32°01'12.964"N	104°18'39.651"W	0.78	-0.44	-14.75	1/4 BH MWD 476' - 7448'
7474.00	2.550	231.430	7471.83	-14.24	13.60	-122.54	548253.77	371112.30	32°01'12.957"N	104°18'39.681"W	0.84	0.68	12.38	
7504.00	2.810	229.150	7501.30	-13.35	12.70	-123.62	548252.69	371111.40	32°01'12.948"N	104°18'39.674"W	0.94	0.87	-7.60	
7536.00	1.990	235.420	7533.27	-12.52	11.87	-124.67	548251.64	371110.57	32°01'12.940"N	104°18'39.686"W	2.69	-2.56	19.59	
7568.00	3.270	100.060	7565.25	-12.05	11.40	-124.23	548252.08	371110.10	32°01'12.935"N	104°18'39.681"W	15.28	4.00	-423.00	
7599.00	4.810	80.130	7596.18	-12.10	11.46	-122.08	548254.23	371110.16	32°01'12.936"N	104°18'39.656"W	6.65	4.97	-64.29	
7631.00	7.760	54.500	7627.99	-13.57	12.95	-119.00	548257.31	371111.65	32°01'12.950"N	104°18'39.620"W	12.51	9.22	-80.09	
7662.00	10.530	56.590	7658.59	-16.33	15.73	-114.93	548261.38	371114.42	32°01'12.978"N	104°18'39.573"W	9.00	8.94	6.74	
7694.00	13.220	63.220	7689.90	-19.56	18.98	-109.22	548267.09	371117.68	32°01'13.010"N	104°18'39.507"W	9.41	8.41	20.72	
7726.00	15.960	67.860	7720.87	-22.83	22.29	-101.88	548274.43	371120.99	32°01'13.043"N	104°18'39.421"W	9.30	8.56	14.50	
7757.00	19.100	68.300	7750.43	-26.26	25.77	-93.21	548283.10	371124.47	32°01'13.077"N	104°18'39.321"W	10.14	10.13	1.42	
7789.00	22.630	88.170	7780.32	-30.43	30.00	-82.63	548293.68	371128.70	32°01'13.119"N	104°18'39.198"W	11.03	11.03	-0.41	



REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch, Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft			ft/100ft	ft/100ft	°/100ft	
7820.00	25.730	71.080	7808.60	-34.77	34.40	-70.73	548305.58	371133.10	32°01'13.163"N	104°18'39.059"W	10.71	10.00	9.39	
7852.00	28.420	75.650	7837.10	-38.84	38.54	-56.77	548319.53	371137.24	32°01'13.203"N	104°18'38.897"W	10.62	8.41	14.28	
7884.00	31.430	81.590	7864.83	-41.87	41.65	-41.13	548335.17	371140.35	32°01'13.234"N	104°18'38.716"W	13.19	9.41	18.56	
7915.00	34.160	87.560	7890.90	-43.33	43.20	-24.44	548351.87	371141.90	32°01'13.250"N	104°18'38.522"W	13.64	8.81	19.26	
7947.00	37.750	88.940	7916.79	-43.80	43.77	-5.86	548370.64	371142.46	32°01'13.255"N	104°18'38.304"W	11.50	11.22	4.31	
7978.00	42.000	89.240	7940.58	-44.01	44.08	14.21	548389.51	371142.78	32°01'13.258"N	104°18'38.073"W	13.72	13.71	0.97	
8010.00	45.870	90.860	7963.62	-43.86	44.05	36.40	548412.70	371142.75	32°01'13.258"N	104°18'37.815"W	12.59	12.09	5.06	
8042.00	49.280	93.820	7985.21	-42.76	43.07	60.00	548436.29	371141.77	32°01'13.248"N	104°18'37.541"W	12.65	10.66	9.25	
8073.00	53.410	95.610	8004.57	-40.63	41.07	84.12	548460.41	371139.77	32°01'13.228"N	104°18'37.261"W	14.06	13.32	5.77	
8105.00	56.780	96.070	8022.88	-37.36	37.83	110.16	548488.45	371138.63	32°01'13.187"N	104°18'36.858"W	12.27	10.53	7.69	
8137.00	60.670	99.560	8039.49	-33.02	33.74	137.18	548513.47	371132.43	32°01'13.156"N	104°18'36.645"W	12.79	12.16	4.66	
8168.00	65.160	99.680	8053.60	-28.26	29.13	164.39	548540.67	371127.82	32°01'13.110"N	104°18'36.329"W	14.49	14.48	0.39	
8199.00	67.290	98.820	8066.10	-23.56	24.57	192.39	548568.67	371123.27	32°01'13.065"N	104°18'36.003"W	7.32	6.87	-2.77	
8231.00	67.110	99.520	8078.50	-18.71	19.87	221.51	548597.79	371118.56	32°01'13.018"N	104°18'35.665"W	2.09	-0.56	2.19	
8263.00	68.940	99.070	8090.99	-13.60	15.11	250.58	548626.88	371113.81	32°01'12.971"N	104°18'35.327"W	1.40	-0.53	-1.41	
8294.00	66.740	98.490	8103.18	-9.30	10.76	278.75	548655.03	371109.46	32°01'12.928"N	104°18'35.000"W	1.84	-0.65	-1.87	
8326.00	66.490	98.720	8115.88	-4.75	6.36	307.79	548684.06	371105.06	32°01'12.884"N	104°18'34.663"W	1.02	-0.76	0.72	
8357.00	66.550	98.600	8128.23	-0.32	2.08	335.90	548712.17	371100.78	32°01'12.842"N	104°18'34.337"W	0.40	0.19	-0.39	
8389.00	66.630	98.950	8140.95	4.31	-2.40	364.92	548741.19	371096.30	32°01'12.797"N	104°18'33.999"W	1.03	0.25	1.09	
8420.00	66.790	97.980	8153.26	8.65	-6.59	393.09	548768.35	371092.11	32°01'12.758"N	104°18'33.672"W	2.92	0.52	-3.13	
8452.00	67.090	98.870	8165.74	13.11	-10.90	422.21	548796.47	371087.80	32°01'12.713"N	104°18'33.334"W	2.73	0.94	2.78	
8484.00	67.880	102.260	8177.99	18.69	-16.33	451.27	548827.52	371082.38	32°01'12.659"N	104°18'33.997"W	10.09	2.47	10.59	
8515.00	69.150	107.190	8189.35	26.17	-23.66	479.15	548855.41	371075.04	32°01'12.587"N	104°18'32.673"W	15.35	4.10	15.90	
8547.00	71.340	109.940	8200.17	35.91	-33.25	507.69	548883.95	371065.45	32°01'12.492"N	104°18'32.341"W	10.59	6.84	8.59	
8578.00	72.650	112.020	8209.75	46.61	-43.81	535.22	548911.47	371054.90	32°01'12.397"N	104°18'32.022"W	7.65	4.23	6.71	
8609.00	73.630	115.440	8218.75	58.69	-55.75	562.37	548938.62	371042.96	32°01'12.269"N	104°18'31.706"W	11.02	3.16	11.03	
8641.00	74.440	116.920	8227.55	72.41	-69.32	589.98	548966.22	371029.39	32°01'12.135"N	104°18'31.386"W	5.12	2.53	4.63	
8673.00	74.120	121.210	8236.22	87.51	-84.28	616.90	548993.14	371014.43	32°01'11.987"N	104°18'31.073"W	12.94	-1.00	13.41	
8704.00	73.540	122.820	8244.86	103.42	-100.06	642.14	549018.38	370998.65	32°01'11.830"N	104°18'30.780"W	5.33	-1.87	5.19	
8736.00	73.400	127.310	8253.97	121.17	-117.66	667.24	549043.48	370981.03	32°01'11.656"N	104°18'30.488"W	13.46	-0.44	14.03	

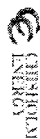


REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch; Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft			ft/100ft	ft/100ft	ft/100ft	
8767.00	74.210	130.800	8262.61	140.05	-136.44	690.36	549066.59	370962.28	32°01'11.47"N	104°18'30.220"W	11.12	2.61	11.28	
8799.00	74.500	134.800	8271.25	161.10	-157.37	712.96	549089.19	370964.35	32°01'11.263"N	104°18'29.958"W	12.07	0.91	12.50	
8830.00	73.430	136.280	8279.81	182.47	-178.63	733.83	549110.06	370920.08	32°01'11.053"N	104°18'29.715"W	5.74	-3.45	4.77	
8862.00	74.140	140.120	8288.75	205.48	-201.53	754.30	549130.53	370897.18	32°01'10.826"N	104°18'29.477"W	11.73	2.22	12.00	
8893.00	74.520	142.160	8297.12	228.82	-224.78	771.20	549149.28	370873.95	32°01'10.596"N	104°18'29.280"W	6.45	1.23	6.58	
8925.00	76.170	145.920	8305.22	253.97	-249.83	791.03	549167.43	370848.89	32°01'10.348"N	104°18'29.049"W	12.48	5.16	11.75	
8957.00	77.070	148.890	8312.63	280.28	-276.06	807.97	549184.19	370822.67	32°01'10.088"N	104°18'28.854"W	9.46	2.81	9.28	
8988.00	77.600	152.250	8319.43	306.70	-302.40	822.82	549199.05	370766.33	32°01'09.828"N	104°18'28.682"W	10.71	1.71	10.84	
9020.00	78.490	154.670	8326.06	334.78	-330.40	836.81	549213.03	370768.33	32°01'09.551"N	104°18'28.519"W	7.90	2.78	7.56	
9052.00	79.750	157.570	8332.10	363.57	-359.13	849.53	549225.75	370739.60	32°01'08.266"N	104°18'28.372"W	9.73	3.94	9.06	
9083.00	82.710	160.750	8336.82	392.26	-387.76	860.42	549236.64	370710.98	32°01'08.983"N	104°18'28.245"W	13.93	9.55	10.28	
9115.00	83.170	164.470	8340.76	422.61	-418.06	869.91	549246.13	370660.68	32°01'08.683"N	104°18'28.135"W	11.63	1.44	11.62	
9146.00	85.320	167.800	8343.87	452.59	-448.00	877.30	549253.52	370650.74	32°01'08.387"N	104°18'28.050"W	12.74	6.94	10.74	
9178.00	85.800	170.880	8346.35	483.97	-479.35	883.20	549259.42	370619.40	32°01'08.077"N	104°18'27.981"W	9.71	1.50	9.63	
9208.00	86.170	173.780	8348.52	514.63	-509.99	887.33	549263.54	370588.76	32°01'07.773"N	104°18'27.933"W	9.41	1.15	9.35	
9241.00	86.820	177.870	8350.47	546.49	-541.84	889.65	549266.87	370556.91	32°01'07.458"N	104°18'27.906"W	12.92	2.03	12.78	
9273.00	89.540	180.470	8351.49	578.47	-573.82	890.11	549266.33	370524.94	32°01'07.142"N	104°18'27.901"W	11.76	8.50	8.13	
9305.00	90.930	181.430	8351.36	610.46	-605.81	889.58	549265.80	370492.95	32°01'06.825"N	104°18'27.907"W	5.28	4.34	3.00	
9336.00	91.390	181.610	8350.73	641.44	-636.79	888.76	549264.98	370461.97	32°01'06.519"N	104°18'27.917"W	1.59	1.48	0.58	
9368.00	91.850	181.800	8349.83	673.40	-668.78	887.78	549264.00	370430.00	32°01'06.202"N	104°18'27.928"W	1.70	1.44	0.91	
9399.00	91.790	181.490	8348.84	704.37	-699.74	886.87	549263.08	370399.03	32°01'05.896"N	104°18'27.939"W	1.34	-0.18	-1.32	
9464.00	92.070	181.520	8346.65	769.30	-764.68	885.16	549261.38	370334.10	32°01'05.253"N	104°18'27.959"W	0.43	0.43	0.05	
9558.00	92.100	182.020	8343.23	863.18	-858.57	882.26	549258.48	370240.21	32°01'04.324"N	104°18'27.993"W	0.53	0.03	0.53	
9653.00	90.250	179.780	8341.29	958.13	-953.53	880.77	549256.98	370145.26	32°01'03.384"N	104°18'28.011"W	3.06	-1.95	-2.36	
9747.00	90.480	179.570	8340.68	1062.12	-1047.52	881.30	549257.52	370051.27	32°01'02.454"N	104°18'28.005"W	0.34	0.26	-0.22	
9842.00	91.230	180.070	8339.25	1147.11	-1142.51	881.60	549257.82	369956.30	32°01'01.514"N	104°18'28.002"W	0.94	0.78	0.53	
9936.00	92.800	180.200	8335.95	1241.05	-1236.45	881.38	549257.60	369862.37	32°01'00.585"N	104°18'28.004"W	1.68	1.67	0.14	
10031.00	93.300	179.520	8330.89	1335.91	-1331.31	881.61	549257.83	369767.51	32°00'59.646"N	104°18'28.002"W	0.89	0.53	-0.72	
10126.00	93.090	178.740	8325.60	1430.76	-1426.15	883.05	549259.27	369672.68	32°00'58.708"N	104°18'27.985"W	0.85	-0.22	-0.82	
10221.00	94.840	177.780	8318.95	1525.49	-1520.87	885.93	549262.14	369577.97	32°00'57.770"N	104°18'27.952"W	2.19	1.93	-1.01	



Actual Wellpath Report

Cottonwood 29 32 Federal Com WCA No. 003H awp 185' - 14766' Proj: 14841'



a GE company

REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch, Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft			ft/100ft	ft/100ft	ft/100ft	
10316.00	94.850	177.220	8310.84	1620.07	-1615.44	890.05	549266.27	369483.41	32°00'56.834"N	104°18'27.905"W	0.59	-0.09	-0.59	
10411.00	96.210	179.290	8301.68	1714.58	-1709.94	892.94	549269.15	369388.92	32°00'55.899"N	104°18'27.871"W	2.60	1.43	2.18	
10506.00	96.150	178.740	8291.46	1809.03	-1804.38	894.56	549270.78	369294.49	32°00'54.965"N	104°18'27.853"W	0.58	-0.06	-0.58	
10601.00	94.510	180.680	8282.63	1903.62	-1898.96	895.04	549271.25	369199.92	32°00'54.029"N	104°18'27.848"W	2.67	-1.73	2.04	
10696.00	94.720	180.220	8274.99	1998.39	-1893.64	894.28	549270.51	369105.24	32°00'53.092"N	104°18'27.856"W	0.53	0.22	-0.48	
10791.00	95.590	180.550	8266.45	2092.91	-2088.26	893.66	549269.87	369010.64	32°00'52.156"N	104°18'27.864"W	0.98	0.92	0.35	
10886.00	92.530	181.050	8259.73	2187.64	-2183.00	892.33	549268.55	368915.90	32°00'51.218"N	104°18'27.880"W	3.26	-3.22	0.53	
10980.00	89.540	180.490	8258.03	2281.60	-2276.96	891.07	549267.29	368821.95	32°00'50.288"N	104°18'27.895"W	3.24	-3.18	-0.60	
11076.00	89.690	179.980	8258.67	2377.59	-2372.96	890.68	549266.89	368725.96	32°00'49.338"N	104°18'27.899"W	0.55	0.16	-0.53	
11171.00	89.660	180.180	8259.21	2472.58	-2467.86	890.54	549266.76	368630.97	32°00'48.388"N	104°18'27.901"W	0.21	-0.03	0.21	
11265.00	90.340	180.080	8259.21	2566.58	-2561.96	890.33	549266.55	368536.98	32°00'47.468"N	104°18'27.904"W	0.73	0.72	-0.11	
11359.00	91.660	181.170	8257.57	2660.55	-2655.93	889.31	549265.52	368443.01	32°00'46.538"N	104°18'27.916"W	1.82	1.40	1.16	
11454.00	91.420	181.450	8255.02	2755.48	-2750.87	887.13	549263.35	368348.08	32°00'45.599"N	104°18'27.942"W	0.39	-0.25	0.29	
11548.00	89.040	181.100	8254.64	2849.44	-2844.84	885.04	549261.26	368254.12	32°00'44.669"N	104°18'27.966"W	2.56	-2.53	-0.37	
11643.00	88.800	181.170	8256.43	2944.39	-2939.81	883.16	549259.38	368159.17	32°00'43.728"N	104°18'27.988"W	0.26	-0.25	0.07	
11738.00	90.030	179.450	8257.40	3039.38	-3034.80	882.65	549258.87	368064.19	32°00'42.789"N	104°18'27.995"W	2.23	1.29	-1.81	
11833.00	91.570	178.350	8256.08	3134.35	-3129.77	884.47	549260.69	367969.23	32°00'41.849"N	104°18'27.974"W	1.99	1.62	-1.16	
11928.00	91.480	177.640	8253.55	3229.28	-3224.67	887.79	549264.01	367874.33	32°00'40.910"N	104°18'27.935"W	0.75	-0.09	-0.75	
12022.00	92.810	177.930	8250.03	3323.16	-3318.53	891.42	549267.64	367780.47	32°00'39.982"N	104°18'27.893"W	1.45	1.41	0.31	
12117.00	93.640	178.180	8244.69	3417.82	-3413.33	894.64	549270.86	367685.66	32°00'38.043"N	104°18'27.856"W	0.91	0.87	0.26	
12211.00	90.620	178.750	8241.19	3511.87	-3507.22	897.16	549273.38	367591.81	32°00'38.114"N	104°18'27.827"W	3.27	-3.21	0.61	
12306.00	92.040	178.840	8238.99	3606.83	-3602.17	899.16	549275.37	367496.86	32°00'37.175"N	104°18'27.804"W	1.50	1.49	0.09	
12399.00	92.810	178.940	8235.05	3699.73	-3695.07	900.96	549277.17	367403.98	32°00'36.256"N	104°18'27.784"W	0.83	0.83	0.11	
12493.00	89.660	179.460	8233.03	3793.70	-3789.02	902.27	549278.48	367310.03	32°00'35.326"N	104°18'27.769"W	3.40	-3.35	0.55	
12588.00	89.720	179.410	8233.54	3888.66	-3884.02	903.20	549279.42	367215.04	32°00'34.386"N	104°18'27.758"W	0.08	0.08	-0.05	
12682.00	90.180	179.780	8233.62	3982.69	-3978.02	903.87	549280.08	367121.05	32°00'33.456"N	104°18'27.751"W	0.63	0.49	0.39	
12777.00	90.340	180.060	8233.19	4077.69	-4073.01	904.00	549280.22	367026.06	32°00'32.516"N	104°18'27.749"W	0.34	0.17	0.29	
12871.00	90.590	179.890	8232.43	4171.69	-4167.01	904.04	549280.26	366932.08	32°00'31.585"N	104°18'27.749"W	0.32	0.27	-0.18	
12966.00	90.680	180.210	8231.38	4266.68	-4262.01	903.96	549280.18	366837.09	32°00'30.645"N	104°18'27.750"W	0.35	0.08	0.34	
13061.00	81.230	179.810	8229.79	4361.87	-4356.99	903.94	549280.16	366742.11	32°00'29.705"N	104°18'27.751"W	0.72	0.58	-0.42	



Actual Wellpath Report

Cottonwood 29 32 Federal Com WCA No. 003H awp 185° - 14766° Proj: 14841°



a GE company

REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch; Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

WELLPATH DATA (199 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	US ft	US ft			ft/100ft	ft/100ft	ft/100ft	
13156.00	91.630	179.540	8227.42	4456.64	-4451.96	904.48	549280.70	366847.15	32°00'28.766"N	104°18'27.745"W	0.51	0.42	-0.28	
13251.00	91.410	179.220	8224.90	4551.60	-4546.92	905.51	549281.73	366552.20	32°00'27.826"N	104°18'27.733"W	0.41	-0.23	-0.34	
13345.00	92.040	179.890	8222.07	4645.56	-4640.87	906.24	549282.46	366458.26	32°00'26.896"N	104°18'27.725"W	0.98	0.67	0.71	
13440.00	91.630	177.920	8219.03	4740.49	-4735.80	908.05	549284.27	366363.34	32°00'25.957"N	104°18'27.704"W	2.12	-0.43	-2.07	
13534.00	91.980	178.980	8216.07	4834.42	-4829.72	910.60	549285.81	366269.43	32°00'25.028"N	104°18'27.675"W	1.19	0.37	1.13	
13629.00	91.330	178.050	8213.33	4929.36	-4924.65	913.06	549289.27	366174.51	32°00'24.086"N	104°18'27.647"W	1.19	-0.68	-0.96	
13724.00	92.190	177.880	8210.41	5024.27	-5019.54	916.43	549292.64	366079.62	32°00'23.149"N	104°18'27.608"W	0.92	0.91	-0.18	
13817.00	92.010	178.580	8207.00	5117.18	-5112.44	919.30	549295.51	365986.74	32°00'22.230"N	104°18'27.575"W	0.78	-0.19	0.75	
13912.00	91.910	176.770	8203.75	5212.06	-5207.30	923.15	549299.36	365891.89	32°00'21.291"N	104°18'27.530"W	1.91	-0.11	-1.91	
14007.00	91.970	176.800	8200.53	5306.89	-5302.10	928.39	549304.61	365797.08	32°00'20.353"N	104°18'27.470"W	0.15	0.06	0.14	
14102.00	92.160	176.730	8197.11	5401.70	-5396.89	933.67	549309.88	365702.31	32°00'19.415"N	104°18'27.409"W	0.27	0.20	-0.18	
14197.00	92.100	176.600	8193.58	5496.51	-5491.66	939.19	549315.40	365607.55	32°00'18.477"N	104°18'27.345"W	0.15	-0.06	-0.14	
14292.00	92.250	177.050	8189.97	5591.32	-5586.45	944.45	549320.66	365512.77	32°00'17.539"N	104°18'27.284"W	0.50	0.16	0.47	
14387.00	92.620	177.030	8185.94	5686.13	-5681.24	949.35	549325.56	365417.99	32°00'16.601"N	104°18'27.227"W	0.39	0.39	-0.02	
14482.00	92.930	176.970	8181.34	5780.91	-5775.96	954.31	549330.53	365323.24	32°00'15.664"N	104°18'27.170"W	0.33	0.33	-0.06	
14577.00	92.690	177.080	8176.68	5875.69	-5870.75	959.24	549335.45	365228.49	32°00'14.726"N	104°18'27.113"W	0.28	-0.25	0.12	
14671.00	91.540	177.990	8173.21	5969.56	-5964.60	963.28	549339.49	365134.65	32°00'13.797"N	104°18'27.066"W	1.56	-1.22	0.97	
14766.00	91.700	178.460	8170.53	6064.49	-6059.52	968.22	549342.43	365039.75	32°00'12.858"N	104°18'27.032"W	0.52	0.17	0.498	3/4 BH MWD 7474' - 14766'
14841.00	91.700	178.460	8168.30	6139.44	-6134.46	968.24	549344.45	364954.81	32°00'12.116"N	104°18'27.009"W	0.00	0.00	0.00	Projection to TD: 14841'



Actual Wellpath Report

Cottonwood 29 32 Federal Com WCA No. 003H awp 185' - 14766' Proj: 14841'



REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch; Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Cottonwood 29-32 WCA No. 3H PBHL rev 6	8167.86	-6993.05	896.48	549272.70	364106.30	32°00'03.620"N	104°18'27.845"W	point
Cottonwood 29-32 WCA No. 3H LP rev 1	8393.00	-499.45	862.98	549239.20	370599.30	32°01'07.878"N	104°18'28.216"W	point

WELLPATH COMPOSITION - Ref Wellbore: Cottonwood 29-32 Fed Com WCA No. 3H Ref Wellpath: Cottonwood 29 32 Federal Com WCA No. 003H awp 185' - 14766' Proj: 14841'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
22.00	350.00	BH Generic gyro - northseeking (Standard)	Imported MS gyro survey from 185' - 350'	Cottonwood 29-32 Fed Com WCA No. 3H
350.00	7448.00	BH NavTrak (Standard)	12 1/4 BH MWD 476' - 7448'	Cottonwood 29-32 Fed Com WCA No. 3H
7448.00	14766.00	BH NavTrak (Standard)	8 3/4 BH MWD 7474' - 14766'	Cottonwood 29-32 Fed Com WCA No. 3H
14766.00	14841.00	Blind Drilling (std)	Projection to bit	Cottonwood 29-32 Fed Com WCA No. 3H



Actual Wellpath Report

Cottonwood 29 32 Federal Com WCA No. 003H awp 185' - 14766' Proj: 14841'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Chisholm Energy	Slot	Cottonwood 29-32 Fed Com WCA No. 3H
Area	Eddy County, NM	Well	Cottonwood 29 32 Federal Com WCA No. 003H
Field	Welch; Bone Spring Eddy County, NM NAD83	Wellbore	Cottonwood 29-32 Fed Com WCA No. 3H
Facility	Cottonwood 29-32 Fed Com WCA No. 3H		

COMMENTS

Wellpath general comments

Well: Cottonwood 29 32 Federal Com WCA No. 003H
Field: Welch; Bone Spring
Rig: Nabors M55
Location: Eddy Co., NM
API: 30-015-43703-00
Latitude: 32° 01' 12.822" N
Longitude: 104° 18' 38.238" W
DF Elevation: 3443 feet
Elev. GL: 3421 feet
Proposed Direction: 179.70°
PBHL: 14841 feet
Duration: 12/31/2017-1/30/2018
FSE's: O. Lizarazo
SO#: 8944823
12 1/4 BH MWD 476' - 7448'
8 3/4 BH MWD 7474' - 14766'
Projection to TD: 14841'