

Results of Directional Survey

API number:	30-025-40041		
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO
		Property:	QUAIL RIDGE 32 STATE # 4H

surface	ULSTR:	P	32	T 19S	R 34E
				990 FSL	330 FEL

BH Loc	ULSTR:	M	32	T 19S	R 34E
13358	MD	8765.5	TVD	631 FSL	4935 FEL
					345 FWL

Top Perf/OH	ULSTR:	P	32	T 19S	R 34E
8858	MD	8793.3	TVD	970 FSL	455 FEL

Bot Perf/OH	ULSTR:	M	32	T 19S	R 34E
13288	MD	8766.9	TVD	635 FSL	4865 FEL
					415 FWL

	MD	N/S	E/W	VD
	8849	-19.40	-116.94	8789.5
TOP PERFS/OH	8858	-19.82	-125.07	8793.32
	8881	-20.89	-145.86	8803.07
	13272	-354.00	-4519.40	8767.26
BOT PERFS/OH	13288	-354.98	-4535.37	8766.93
	13298	-355.59	-4545.35	8766.73

NEXT TO LAST	13298	-355.59	-4545.35	8766.73
LAST READING	13353	-358.85	-4600.24	8765.58
TD	13358	-359.15	-4605.23	8765.48

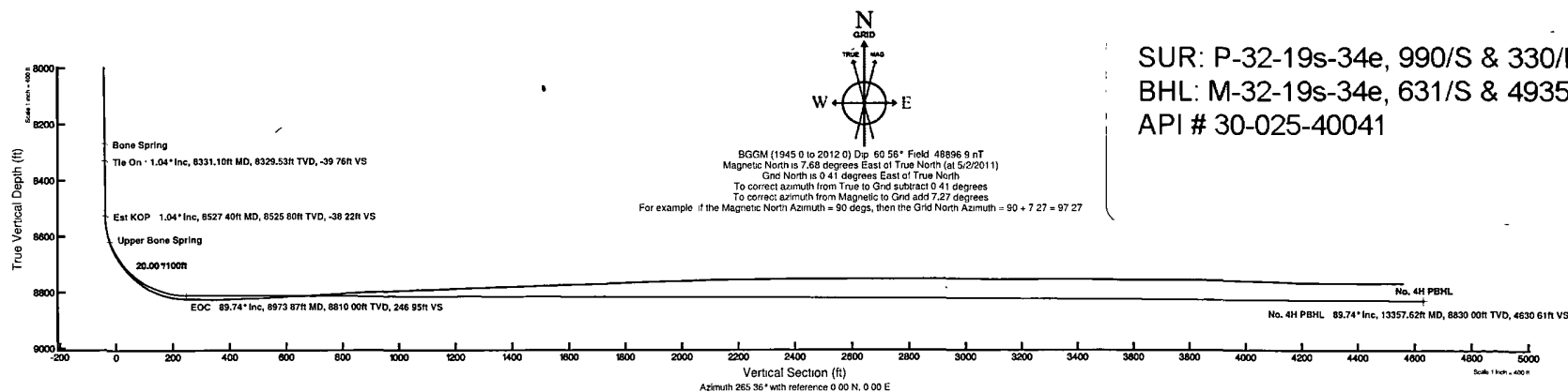
Surface Location	990	FS	330	FE
Projected BHL	631	FS	4935	FE
Location of				
Top Perfs/OH	970	FS	455	FE
Bottom Perfs/OH	635	FS	4865	FE

SUMMARY of Subsurface Locations

Surface Location	P-32-19S-34E	990	FS	330	FE	Vert. Depth
Top Perfs/OH	P-32-19S-34E	970	FS	455	FE	8793.32
Bottom Perfs/OH	M-32-19S-34E	635	FS	4865	FE	8766.93
Projected TD	M-32-19S-34E	631	FS	4935	FE	8765.48

JAN 11 2012

SUR: P-32-19s-34e, 990/S & 330/E
BHL: M-32-19s-34e, 631/S & 4935/E
API # 30-025-40041





Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWB
Facility	Quail Ridge 32 State No. 4H		

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Gentbry
Scale	0.999972	Report Generated	5/18/2011 at 7:40:56 AM
Convergence at slot	0.41° East	Database/Source file	WA Midland/No. 4H_AWB.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	774890.60	587267.20	32°36'43.770"N	103°34'29.402"W
Facility Reference Pt			774890.60	587267.20	32°36'43.770"N	103°34'29.402"W
Field Reference Pt			774883.50	587927.10	32°36'50.300"N	103°34'29.430"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 4H SHL (KB) to GL	18.00ft
Horizontal Reference Pt	Slot	Rig on No. 4H SHL (KB) to Mean Sea Level	3678.00ft
Vertical Reference Pt	Rig on No. 4H SHL (KB)	Rig on No. 4H SHL (KB) to Mud Line at Slot (No. 4H SHL)	18.00ft
MD Reference Pt	Rig on No. 4H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	265.36°



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Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWP
Facility	Quail Ridge 32 State No. 4H		

WELLPATH DATA (182 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
0.00†	0.000	288.400	0.00	0.00	0.00	0.00	774890.60	587267.20	32°36'43.770"N	103°34'29.402"W	0.00	
18.00	0.000	288.400	18.00	0.00	0.00	0.00	774890.60	587267.20	32°36'43.770"N	103°34'29.402"W	0.00	
52.80	0.180	288.400	52.80	0.05	0.02	-0.05	774890.55	587267.22	32°36'43.770"N	103°34'29.402"W	0.52	
143.40	0.330	298.410	143.40	0.40	0.19	-0.42	774890.18	587267.39	32°36'43.772"N	103°34'29.407"W	0.17	
232.20	0.550	293.170	232.20	0.99	0.48	-1.03	774889.57	587267.68	32°36'43.775"N	103°34'29.414"W	0.25	
322.20	0.090	302.290	322.19	1.43	0.68	-1.49	774889.11	587267.88	32°36'43.777"N	103°34'29.419"W	0.51	
411.10	0.130	259.000	411.09	1.59	0.70	-1.65	774888.95	587267.90	32°36'43.777"N	103°34'29.421"W	0.10	
501.10	0.370	249.010	501.09	1.97	0.58	-2.02	774888.58	587267.78	32°36'43.776"N	103°34'29.425"W	0.27	
589.10	0.130	228.840	589.09	2.32	0.41	-2.36	774888.24	587267.61	32°36'43.774"N	103°34'29.429"W	0.29	
684.70	0.430	263.460	684.69	2.76	0.30	-2.80	774887.80	587267.50	32°36'43.773"N	103°34'29.434"W	0.35	
780.30	0.220	263.440	780.29	3.31	0.24	-3.34	774887.26	587267.44	32°36'43.773"N	103°34'29.441"W	0.22	
875.90	0.240	212.680	875.89	3.61	0.05	-3.63	774886.97	587267.25	32°36'43.771"N	103°34'29.444"W	0.21	
971.50	0.360	209.450	971.49	3.90	-0.38	-3.88	774886.72	587266.82	32°36'43.767"N	103°34'29.447"W	0.13	
1067.10	0.030	63.170	1067.09	4.05	-0.63	-4.01	774886.59	587266.57	32°36'43.764"N	103°34'29.449"W	0.40	
1162.60	0.340	229.070	1162.59	4.25	-0.81	-4.20	774886.40	587266.39	32°36'43.762"N	103°34'29.451"W	0.39	
1258.20	0.250	202.050	1258.19	4.57	-1.19	-4.49	774886.11	587266.01	32°36'43.759"N	103°34'29.454"W	0.17	
1353.80	0.530	226.650	1353.78	5.01	-1.68	-4.89	774885.71	587265.52	32°36'43.754"N	103°34'29.459"W	0.33	
1449.40	0.640	225.980	1449.38	5.77	-2.36	-5.60	774885.00	587264.84	32°36'43.747"N	103°34'29.467"W	0.12	
1545.00	0.760	230.980	1544.97	6.71	-3.13	-6.47	774884.13	587264.07	32°36'43.740"N	103°34'29.478"W	0.14	
1640.50	0.570	251.170	1640.46	7.69	-3.68	-7.42	774883.18	587263.52	32°36'43.734"N	103°34'29.489"W	0.31	
1736.10	0.450	67.320	1736.06	7.79	-3.69	-7.52	774883.08	587263.51	32°36'43.734"N	103°34'29.490"W	1.07	
1831.70	0.470	14.420	1831.66	7.31	-3.16	-7.08	774883.52	587264.04	32°36'43.739"N	103°34'29.485"W	0.43	
1927.30	0.210	79.180	1927.26	7.01	-2.75	-6.81	774883.79	587264.45	32°36'43.743"N	103°34'29.482"W	0.44	
2022.80	0.360	70.050	2022.76	6.54	-2.62	-6.35	774884.25	587264.58	32°36'43.745"N	103°34'29.476"W	0.16	
2118.40	0.400	83.470	2118.36	5.92	-2.48	-5.74	774884.86	587264.72	32°36'43.746"N	103°34'29.469"W	0.10	
2214.00	0.450	86.990	2213.95	5.21	-2.42	-5.03	774885.57	587264.78	32°36'43.747"N	103°34'29.461"W	0.06	
2309.60	0.450	88.460	2309.55	4.46	-2.39	-4.28	774886.32	587264.81	32°36'43.747"N	103°34'29.452"W	0.01	
2405.20	0.470	89.240	2405.15	3.69	-2.37	-3.51	774887.09	587264.83	32°36'43.747"N	103°34'29.443"W	0.02	
2500.80	0.490	87.730	2500.74	2.90	-2.35	-2.71	774887.89	587264.85	32°36'43.747"N	103°34'29.434"W	0.02	
2596.30	0.830	88.840	2596.24	1.80	-2.32	-1.61	774888.99	587264.88	32°36'43.747"N	103°34'29.421"W	0.36	
2691.90	1.650	80.590	2691.81	-0.27	-2.08	0.44	774891.04	587265.12	32°36'43.750"N	103°34'29.397"W	0.88	
2787.50	2.350	79.410	2787.36	-3.59	-1.50	3.72	774894.32	587265.70	32°36'43.755"N	103°34'29.358"W	0.73	
2883.10	2.760	73.090	2882.86	-7.79	-0.47	7.85	774898.45	587266.73	32°36'43.765"N	103°34'29.310"W	0.52	
2978.70	2.890	71.730	2978.34	-12.38	0.96	12.34	774902.94	587268.16	32°36'43.779"N	103°34'29.257"W	0.15	
3074.20	3.440	63.040	3073.70	-17.37	3.01	17.18	774907.78	587270.21	32°36'43.799"N	103°34'29.201"W	0.76	
3169.80	3.410	62.320	3169.13	-22.64	5.63	22.25	774912.85	587272.83	32°36'43.824"N	103°34'29.141"W	0.05	
3265.40	1.940	89.400	3264.62	-26.87	6.97	26.39	774916.99	587274.17	32°36'43.837"N	103°34'29.093"W	1.99	
3361.00	1.630	126.390	3360.18	-29.51	6.18	29.10	774919.70	587273.38	32°36'43.829"N	103°34'29.061"W	1.22	
3456.60	1.950	147.590	3455.74	-31.29	4.00	31.07	774921.67	587271.20	32°36'43.808"N	103°34'29.038"W	0.76	
3552.10	2.180	166.790	3551.17	-32.32	0.86	32.36	774922.95	587268.06	32°36'43.776"N	103°34'29.023"W	0.76	
3647.70	2.800	176.600	3646.68	-32.54	-3.24	32.91	774923.51	587263.96	32°36'43.736"N	103°34'29.017"W	0.78	
3743.30	2.600	175.830	3742.18	-32.47	-7.73	33.21	774923.80	587259.47	32°36'43.691"N	103°34'29.014"W	0.21	
3838.90	2.240	172.320	3837.69	-32.55	-11.75	33.61	774924.21	587255.45	32°36'43.652"N	103°34'29.010"W	0.41	
3934.40	2.040	169.970	3933.13	-32.81	-15.27	34.16	774924.76	587251.93	32°36'43.617"N	103°34'29.004"W	0.23	
4030.00	1.570	174.520	4028.68	-32.99	-18.25	34.58	774925.18	587248.95	32°36'43.587"N	103°34'28.999"W	0.51	



Actual Wellpath Report

No. 4H AWP

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**BAKER
HUGHES**

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWP
Facility	Quail Ridge 32 State No. 4H		

WELLPATH DATA (182 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
4125.60	1.070	168.950	4124.25	-33.11	-20.43	34.88	774925.47	587246.77	32°36'43.566"N	103°34'28.996"W	0.54	
4221.20	0.880	170.660	4219.84	-33.27	-22.03	35.17	774925.76	587245.17	32°36'43.550"N	103°34'28.992"W	0.20	
4316.80	0.600	153.410	4315.43	-33.52	-23.20	35.51	774926.11	587244.00	32°36'43.538"N	103°34'28.989"W	0.37	
4412.40	0.520	133.920	4411.03	-33.99	-23.95	36.05	774926.64	587243.25	32°36'43.531"N	103°34'28.982"W	0.21	
4507.90	0.450	92.560	4506.52	-34.65	-24.27	36.73	774927.33	587242.93	32°36'43.527"N	103°34'28.974"W	0.37	
4603.50	0.690	82.350	4602.12	-35.60	-24.21	37.68	774928.28	587242.99	32°36'43.528"N	103°34'28.963"W	0.27	
4699.10	0.460	70.280	4697.71	-36.54	-24.00	38.61	774929.21	587243.20	32°36'43.530"N	103°34'28.952"W	0.27	
4794.70	0.370	85.780	4793.31	-37.22	-23.85	39.28	774929.88	587243.35	32°36'43.531"N	103°34'28.945"W	0.15	
4890.30	0.230	25.600	4888.91	-37.63	-23.66	39.67	774930.27	587243.54	32°36'43.533"N	103°34'28.940"W	0.34	
4985.80	0.160	87.880	4984.41	-37.86	-23.48	39.89	774930.48	587243.72	32°36'43.535"N	103°34'28.937"W	0.22	
5081.40	0.370	79.000	5080.01	-38.30	-23.41	40.32	774930.92	587243.79	32°36'43.536"N	103°34'28.932"W	0.22	
5177.00	0.380	58.730	5175.61	-38.89	-23.19	40.90	774931.49	587244.01	32°36'43.538"N	103°34'28.926"W	0.14	
5272.60	0.460	57.280	5271.20	-39.51	-22.82	41.49	774932.09	587244.38	32°36'43.541"N	103°34'28.919"W	0.08	
5368.10	0.330	33.610	5366.70	-40.02	-22.38	41.96	774932.56	587244.82	32°36'43.546"N	103°34'28.913"W	0.22	
5463.70	0.260	41.180	5462.30	-40.34	-21.99	42.26	774932.86	587245.21	32°36'43.550"N	103°34'28.910"W	0.08	
5559.30	0.280	32.720	5557.90	-40.64	-21.63	42.53	774933.13	587245.57	32°36'43.553"N	103°34'28.906"W	0.05	
5654.90	0.470	19.020	5653.50	-40.94	-21.06	42.78	774933.38	587246.14	32°36'43.559"N	103°34'28.903"W	0.22	
5750.50	0.360	13.710	5749.10	-41.19	-20.40	42.98	774933.58	587246.80	32°36'43.565"N	103°34'28.901"W	0.12	
5846.10	0.270	44.000	5844.69	-41.46	-19.95	43.21	774933.81	587247.25	32°36'43.570"N	103°34'28.898"W	0.19	
5941.60	0.280	64.470	5940.19	-41.84	-19.68	43.58	774934.18	587247.52	32°36'43.572"N	103°34'28.894"W	0.10	
6037.20	0.500	92.430	6035.79	-42.47	-19.60	44.20	774934.80	587247.60	32°36'43.573"N	103°34'28.887"W	0.30	
6132.80	0.430	86.610	6131.39	-43.25	-19.60	44.98	774935.58	587247.60	32°36'43.573"N	103°34'28.878"W	0.09	
6228.40	0.570	83.970	6226.98	-44.08	-19.53	45.81	774936.41	587247.67	32°36'43.574"N	103°34'28.868"W	0.15	
6323.90	0.560	79.790	6322.48	-45.02	-19.39	46.74	774937.34	587247.81	32°36'43.575"N	103°34'28.857"W	0.04	
6419.50	0.660	95.710	6418.07	-46.03	-19.37	47.75	774938.35	587247.83	32°36'43.575"N	103°34'28.845"W	0.20	
6515.10	0.780	104.250	6513.67	-47.18	-19.58	48.93	774939.53	587247.62	32°36'43.573"N	103°34'28.831"W	0.17	
6610.70	0.740	105.410	6609.26	-48.38	-19.90	50.15	774940.75	587247.30	32°36'43.570"N	103°34'28.817"W	0.04	
6706.30	0.630	117.210	6704.85	-49.41	-20.31	51.22	774941.81	587246.89	32°36'43.566"N	103°34'28.805"W	0.19	
6801.90	0.630	129.760	6800.45	-50.23	-20.89	52.09	774942.69	587246.31	32°36'43.560"N	103°34'28.795"W	0.14	
6897.40	0.590	152.960	6895.94	-50.79	-21.66	52.71	774943.31	587245.54	32°36'43.552"N	103°34'28.787"W	0.26	
6993.00	0.680	171.260	6991.53	-51.02	-22.66	53.02	774943.62	587244.54	32°36'43.542"N	103°34'28.784"W	0.23	
7088.60	0.790	182.240	7087.13	-50.98	-23.88	53.09	774943.68	587243.32	32°36'43.530"N	103°34'28.783"W	0.19	
7184.20	0.850	178.780	7182.72	-50.86	-25.25	53.07	774943.67	587241.96	32°36'43.517"N	103°34'28.783"W	0.08	
7279.80	0.540	192.280	7278.31	-50.69	-26.39	52.99	774943.59	587240.81	32°36'43.505"N	103°34'28.784"W	0.36	
7375.30	0.440	232.070	7373.81	-50.25	-27.06	52.61	774943.21	587240.14	32°36'43.499"N	103°34'28.789"W	0.36	
7470.90	0.520	251.760	7469.40	-49.52	-27.42	51.91	774942.51	587239.78	32°36'43.495"N	103°34'28.797"W	0.19	
7566.50	0.520	264.580	7565.00	-48.66	-27.60	51.06	774941.66	587239.60	32°36'43.493"N	103°34'28.807"W	0.12	
7662.10	0.650	280.530	7660.59	-47.71	-27.54	50.10	774940.70	587239.66	32°36'43.494"N	103°34'28.818"W	0.22	
7757.60	0.760	271.090	7756.09	-46.55	-27.43	48.93	774939.53	587239.77	32°36'43.495"N	103°34'28.832"W	0.17	
7853.20	1.010	279.140	7851.68	-45.11	-27.28	47.47	774938.07	587239.92	32°36'43.497"N	103°34'28.849"W	0.29	
7948.80	0.860	276.480	7947.26	-43.58	-27.07	45.92	774936.52	587240.13	32°36'43.499"N	103°34'28.867"W	0.16	
8044.40	0.640	280.400	8042.85	-42.36	-26.89	44.68	774935.28	587240.31	32°36'43.501"N	103°34'28.882"W	0.24	
8140.00	0.670	308.610	8138.45	-41.44	-26.45	43.72	774934.32	587240.76	32°36'43.505"N	103°34'28.893"W	0.34	
8235.50	0.800	313.090	8233.94	-40.59	-25.64	42.80	774933.40	587241.56	32°36'43.513"N	103°34'28.904"W	0.15	
8331.10	1.040	329.760	8329.53	-39.76	-24.44	41.87	774932.47	587242.76	32°36'43.525"N	103°34'28.914"W	0.37	



Actual Wellpath Report

No. 4H AWP

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BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWB
Facility	Quail Ridge 32 State No. 4H		

WELLPATH DATA (182 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
8339.00	1.200	330.500	8337.43	-39.70	-24.30	41.80	774932.40	587242.90	32°36'43.527"N	103°34'28.915"W	2.03	
8434.00	1.400	333.200	8432.40	-38.84	-22.40	40.78	774931.38	587244.80	32°36'43.546"N	103°34'28.927"W	0.22	
8498.00	1.100	0.100	8496.39	-38.60	-21.09	40.43	774931.03	587246.11	32°36'43.559"N	103°34'28.931"W	1.02	
8530.00	1.800	307.400	8528.38	-38.25	-20.48	40.03	774930.63	587246.72	32°36'43.565"N	103°34'28.935"W	4.47	
8562.00	7.300	278.300	8560.27	-35.89	-19.88	37.62	774928.22	587247.32	32°36'43.571"N	103°34'28.964"W	18.10	
8594.00	13.100	277.500	8591.75	-30.36	-19.11	32.01	774922.61	587248.09	32°36'43.579"N	103°34'29.029"W	18.13	
8624.00	19.000	278.500	8620.57	-22.27	-17.94	23.80	774914.40	587249.26	32°36'43.591"N	103°34'29.125"W	19.69	
8657.00	25.600	278.100	8651.08	-10.07	-16.14	11.42	774902.02	587251.06	32°36'43.610"N	103°34'29.270"W	20.01	
8689.00	31.100	273.600	8679.24	4.86	-14.65	-3.69	774886.91	587252.55	32°36'43.625"N	103°34'29.446"W	18.43	
8721.00	36.800	269.400	8705.77	22.62	-14.23	-21.54	774869.06	587252.97	32°36'43.631"N	103°34'29.655"W	19.25	
8753.00	42.700	266.200	8730.37	43.05	-15.05	-41.97	774848.63	587252.15	32°36'43.624"N	103°34'29.894"W	19.51	
8785.00	48.700	266.400	8752.71	65.94	-16.52	-64.81	774825.79	587250.68	32°36'43.611"N	103°34'30.161"W	18.76	
8817.00	54.500	266.900	8772.58	91.00	-17.98	-89.84	774800.76	587249.22	32°36'43.599"N	103°34'30.453"W	18.17	
8849.00	61.600	267.100	8789.50	118.12	-19.40	-116.94	774773.67	587247.80	32°36'43.586"N	103°34'30.770"W	22.19	
8881.00	68.200	267.000	8803.07	147.07	-20.89	-145.86	774744.74	587246.31	32°36'43.574"N	103°34'31.109"W	20.63	
8910.00	74.100	266.900	8812.43	174.49	-22.35	-173.25	774717.35	587244.85	32°36'43.561"N	103°34'31.429"W	20.35	
8935.00	79.500	267.000	8818.14	198.81	-23.65	-197.55	774693.06	587243.55	32°36'43.550"N	103°34'31.713"W	21.60	
8944.00	81.600	267.000	8819.62	207.69	-24.11	-206.41	774684.19	587243.09	32°36'43.546"N	103°34'31.817"W	23.33	
8976.00	87.800	268.000	8822.57	239.51	-25.50	-238.23	774652.38	587241.70	32°36'43.535"N	103°34'32.189"W	19.62	
9008.00	88.800	268.200	8823.52	271.46	-26.56	-270.20	774620.41	587240.64	32°36'43.526"N	103°34'32.563"W	3.19	
9040.00	89.100	267.600	8824.11	303.43	-27.73	-302.17	774588.44	587239.47	32°36'43.517"N	103°34'32.937"W	2.10	
9072.00	89.700	267.400	8824.44	335.40	-29.13	-334.14	774556.47	587238.07	32°36'43.506"N	103°34'33.310"W	1.98	
9104.00	90.300	266.900	8824.44	367.39	-30.72	-366.10	774524.51	587236.48	32°36'43.492"N	103°34'33.684"W	2.44	
9135.00	91.400	266.500	8823.98	398.37	-32.50	-397.04	774493.57	587234.70	32°36'43.477"N	103°34'34.046"W	3.78	
9167.00	92.000	266.200	8823.03	430.35	-34.54	-428.97	774461.65	587232.66	32°36'43.459"N	103°34'34.419"W	2.10	
9199.00	92.100	266.100	8821.89	462.33	-36.69	-460.87	774429.74	587230.51	32°36'43.440"N	103°34'34.793"W	0.44	
9263.00	92.500	266.400	8819.32	526.27	-40.87	-524.68	774365.93	587226.33	32°36'43.403"N	103°34'35.539"W	0.78	
9327.00	93.000	266.500	8816.25	590.19	-44.83	-588.49	774302.13	587222.37	32°36'43.368"N	103°34'36.285"W	0.80	
9391.00	92.900	266.300	8812.95	654.09	-48.84	-652.28	774238.34	587218.36	32°36'43.333"N	103°34'37.031"W	0.35	
9454.00	93.400	266.200	8809.49	716.99	-52.96	-715.05	774175.58	587214.25	32°36'43.297"N	103°34'37.765"W	0.81	
9518.00	93.700	266.300	8805.53	780.86	-57.13	-778.79	774111.84	587210.07	32°36'43.260"N	103°34'38.511"W	0.49	
9582.00	93.300	266.000	8801.62	844.73	-61.42	-842.52	774048.10	587205.78	32°36'43.222"N	103°34'39.256"W	0.78	
9645.00	92.200	264.500	8798.60	907.66	-66.63	-905.23	773985.40	587200.57	32°36'43.175"N	103°34'39.990"W	2.95	
9709.00	92.800	264.400	8795.81	971.59	-72.82	-968.87	773921.76	587194.38	32°36'43.118"N	103°34'40.734"W	0.95	
9773.00	92.400	263.400	8792.90	1035.50	-79.61	-1032.44	773858.19	587187.59	32°36'43.055"N	103°34'41.478"W	1.68	
9836.00	91.700	263.500	8790.65	1098.42	-86.79	-1094.99	773795.64	587180.41	32°36'42.989"N	103°34'42.210"W	1.12	
9900.00	92.000	263.600	8788.58	1162.36	-93.98	-1158.55	773732.08	587173.22	32°36'42.922"N	103°34'42.953"W	0.49	
9964.00	91.900	264.400	8786.41	1226.30	-100.67	-1222.16	773668.47	587166.54	32°36'42.860"N	103°34'43.698"W	1.26	
10027.00	91.900	264.200	8784.32	1289.26	-106.92	-1284.82	773605.82	587160.28	32°36'42.803"N	103°34'44.431"W	0.32	
10091.00	91.600	263.300	8782.36	1353.20	-113.88	-1348.41	773542.23	587153.32	32°36'42.738"N	103°34'45.174"W	1.48	
10154.00	91.500	263.300	8780.66	1416.14	-121.23	-1410.95	773479.69	587145.97	32°36'42.670"N	103°34'45.906"W	0.16	
10218.00	92.500	263.300	8778.43	1480.06	-128.69	-1474.48	773416.17	587138.51	32°36'42.601"N	103°34'46.650"W	1.56	
10281.00	92.100	264.200	8775.90	1542.98	-135.55	-1537.05	773353.59	587131.66	32°36'42.537"N	103°34'47.382"W	1.56	
10345.00	91.200	264.300	8774.05	1606.94	-141.96	-1600.70	773289.95	587125.25	32°36'42.478"N	103°34'48.126"W	1.41	
10408.00	91.500	264.500	8772.57	1669.91	-148.10	-1663.38	773227.27	587119.10	32°36'42.422"N	103°34'48.859"W	0.57	



Actual Wellpath Report

No. 4H AWP

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BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWB
Facility	Quail Ridge 32 State No. 4H		

WELLPATH DATA (182 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
10472.00	91.900	264.200	8770.67	1733.88	-154.40	-1727.05	773163.61	587112.81	32°36'42.364"N	103°34'49.604"W	0.78	
10536.00	92.400	265.200	8768.27	1797.82	-160.31	-1790.73	773099.93	587106.90	32°36'42.310"N	103°34'50.349"W	1.75	
10599.00	92.100	265.000	8765.80	1860.78	-165.68	-1853.45	773037.21	587101.52	32°36'42.261"N	103°34'51.083"W	0.57	
10663.00	91.900	265.900	8763.56	1924.74	-170.76	-1917.21	772973.45	587096.45	32°36'42.215"N	103°34'51.829"W	1.44	
10726.00	91.100	265.600	8761.91	1987.71	-175.43	-1980.01	772910.65	587091.78	32°36'42.174"N	103°34'52.563"W	1.36	
10790.00	91.700	265.900	8760.35	2051.69	-180.17	-2043.82	772846.85	587087.04	32°36'42.131"N	103°34'53.309"W	1.05	
10854.00	91.600	266.000	8758.51	2115.66	-184.69	-2107.63	772783.04	587082.52	32°36'42.091"N	103°34'54.056"W	0.22	
10917.00	91.100	266.000	8757.02	2178.64	-189.08	-2170.46	772720.21	587078.13	32°36'42.052"N	103°34'54.791"W	0.79	
10981.00	90.400	265.800	8756.19	2242.63	-193.65	-2234.29	772656.38	587073.55	32°36'42.011"N	103°34'55.537"W	1.14	
11044.00	91.100	266.200	8755.36	2305.62	-198.05	-2297.13	772593.54	587069.16	32°36'41.972"N	103°34'56.272"W	1.28	
11108.00	91.300	266.500	8754.02	2369.60	-202.12	-2360.98	772529.69	587065.08	32°36'41.936"N	103°34'57.019"W	0.56	
11171.00	89.400	266.000	8753.64	2432.59	-206.24	-2423.85	772466.83	587060.96	32°36'41.900"N	103°34'57.754"W	3.12	
11235.00	90.100	266.200	8753.92	2496.58	-210.59	-2487.70	772402.98	587056.61	32°36'41.861"N	103°34'58.501"W	1.14	
11298.00	90.500	266.400	8753.59	2559.57	-214.66	-2550.56	772340.11	587052.55	32°36'41.825"N	103°34'59.236"W	0.71	
11362.00	90.900	266.200	8752.80	2623.56	-218.79	-2614.43	772276.25	587048.42	32°36'41.789"N	103°34'59.983"W	0.70	
11426.00	90.400	265.600	8752.08	2687.55	-223.37	-2678.26	772212.42	587043.84	32°36'41.748"N	103°35'00.730"W	1.22	
11490.00	89.500	265.900	8752.13	2751.55	-228.11	-2742.08	772148.60	587039.10	32°36'41.706"N	103°35'01.476"W	1.48	
11553.00	89.800	265.900	8752.52	2814.54	-232.61	-2804.92	772085.77	587034.59	32°36'41.665"N	103°35'02.211"W	0.48	
11617.00	89.800	265.900	8752.74	2878.54	-237.19	-2868.75	772021.93	587030.02	32°36'41.625"N	103°35'02.958"W	0.00	
11681.00	89.500	265.900	8753.13	2942.54	-241.76	-2932.59	771958.10	587025.44	32°36'41.584"N	103°35'03.705"W	0.47	
11744.00	89.900	266.200	8753.46	3005.53	-246.10	-2995.44	771895.25	587021.10	32°36'41.545"N	103°35'04.440"W	0.79	
11808.00	89.400	266.100	8753.85	3069.52	-250.40	-3059.29	771831.40	587016.81	32°36'41.507"N	103°35'05.186"W	0.80	
11871.00	89.700	266.000	8754.35	3132.52	-254.74	-3122.14	771768.55	587012.47	32°36'41.469"N	103°35'05.922"W	0.50	
11935.00	90.000	265.900	8754.52	3196.51	-259.26	-3185.98	771704.72	587007.95	32°36'41.428"N	103°35'06.668"W	0.49	
11999.00	90.700	266.200	8754.13	3260.51	-263.67	-3249.83	771640.87	587003.54	32°36'41.389"N	103°35'07.415"W	1.19	
12063.00	90.500	266.600	8753.46	3324.49	-267.69	-3313.70	771577.00	586999.52	32°36'41.354"N	103°35'08.162"W	0.70	
12127.00	89.600	266.500	8753.40	3388.48	-271.54	-3377.58	771513.12	586995.67	32°36'41.320"N	103°35'08.909"W	1.41	
12191.00	89.300	266.000	8754.01	3452.47	-275.72	-3441.44	771449.26	586991.48	32°36'41.283"N	103°35'09.656"W	0.91	
12255.00	89.000	265.400	8754.96	3516.46	-280.52	-3505.25	771385.45	586986.69	32°36'41.240"N	103°35'10.402"W	1.05	
12319.00	89.700	265.300	8755.69	3580.45	-285.71	-3569.04	771321.67	586981.50	32°36'41.193"N	103°35'11.148"W	1.10	
12383.00	89.900	265.300	8755.91	3644.45	-290.95	-3632.82	771257.89	586976.25	32°36'41.146"N	103°35'11.895"W	0.31	
12446.00	90.600	265.400	8755.64	3707.45	-296.06	-3695.61	771195.10	586971.15	32°36'41.100"N	103°35'12.629"W	1.12	
12510.00	89.900	265.500	8755.36	3771.45	-301.14	-3759.41	771131.30	586966.07	32°36'41.054"N	103°35'13.375"W	1.10	
12574.00	89.200	265.900	8755.86	3835.45	-305.94	-3823.23	771067.49	586961.27	32°36'41.011"N	103°35'14.122"W	1.26	
12638.00	88.400	266.300	8757.20	3899.43	-310.29	-3887.06	771003.65	586956.92	32°36'40.972"N	103°35'14.868"W	1.40	
12702.00	88.200	266.300	8759.10	3963.39	-314.42	-3950.90	770939.82	586952.79	32°36'40.936"N	103°35'15.615"W	0.31	
12766.00	88.800	266.400	8760.78	4027.36	-318.49	-4014.75	770875.97	586948.72	32°36'40.900"N	103°35'16.362"W	0.95	
12830.00	88.200	266.100	8762.45	4091.33	-322.68	-4078.59	770812.13	586944.53	32°36'40.863"N	103°35'17.108"W	1.05	
12893.00	88.000	265.600	8764.54	4154.29	-327.23	-4141.39	770749.33	586939.98	32°36'40.822"N	103°35'17.843"W	0.85	
12957.00	89.100	265.900	8766.16	4218.27	-331.97	-4205.19	770685.53	586935.24	32°36'40.780"N	103°35'18.589"W	1.78	
13021.00	89.400	265.700	8767.00	4282.26	-336.66	-4269.02	770621.71	586930.55	32°36'40.738"N	103°35'19.336"W	0.56	
13085.00	89.400	265.600	8767.67	4346.26	-341.51	-4332.83	770557.90	586925.70	32°36'40.694"N	103°35'20.082"W	0.16	
13146.00	89.800	266.200	8768.09	4407.25	-345.88	-4393.67	770497.06	586921.34	32°36'40.655"N	103°35'20.794"W	1.18	
13208.00	90.300	266.300	8768.04	4469.24	-349.93	-4455.54	770435.20	586917.28	32°36'40.619"N	103°35'21.517"W	0.82	
13272.00	91.100	266.400	8767.26	4533.23	-354.00	-4519.40	770371.33	586913.21	32°36'40.583"N	103°35'22.264"W	1.26	



Actual Wellpath Report

No. 4H AWP
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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Lea County, NM	Well	No. 4H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 4H AWB
Facility	Quail Ridge 32 State No. 4H		

WELLPATH DATA (182 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
13298.00	91.200	266.600	8766.73	4559.22	-355.59	-4545.35	770345.39	586911.62	32°36'40.570"N	103°35'22.567"W	0.86	
13353.00	91.200	266.600	8765.58	4614.19	-358.85	-4600.24	770290.50	586908.36	32°36'40.541"N	103°35'23.209"W	0.00	Projection to Bit

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
No. 4H PBHL		8830.00	-374.48	-4615.44	770275.30	586892.73	32°36'40.388"N	103°35'23.388"W	point

WELLPATH COMPOSITION - Ref Wellbore: No. 4H AWB - Ref Wellpath: No. 4H AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	8331.10	Generic gyro - northseeking (Standard)	Gyro	No. 4H AWB
8331.10	13353.00	NaviTrak (Standard)	MWD	No. 4H AWB