

Results of Directional Survey

LATERAL 02

API number:	30-025-27417		
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO
		Property:	STATE HH # 1H

surface	ULSTR:	H	36	T	19S	R	32E
				1980	FNL	660	FEL

BH Loc	ULSTR:	E	36	T	19S	R	32E
13668	MD	9899.3	TVD	2104	FNL	4678	FEL
						602	FWL

Top Perf/OH	ULSTR:	H	36	T	19S	R	32E
10100	MD	9966.9	TVD	2078	FNL	1118	FEL

Bot Perf/OH	ULSTR:	E	36	T	19S	R	32E
13600	MD	9900.8	TVD	2102	FNL	670	FWL
						4610	FEL

	MD	N/S	E/W	VD
	10077	-95.58	-435.48	9960.83
TOP PERFS/OH	10100	-98.01	-457.53	9966.86
	10108	-98.85	-465.20	9968.96
	13563	-120.26	-3912.89	9901.24
BOT PERFS/OH	13600	-121.75	-3949.86	9900.79
	13627	-122.83	-3976.83	9900.46

NEXT TO LAST	13627	-122.83	-3976.83	9900.46
LAST READING	13668	-124.19	-4017.79	9899.25
TD	13668	-124.19	-4017.79	9899.25

Surface Location	1980	FN	660	FE
Projected BHL	2104	FN	4678	FE
Location of				
Top Perfs/OH	2078	FN	1118	FE
Bottom Perfs/OH	2102	FN	4610	FE

SUMMARY of Subsurface Locations

Surface Location	H-36-19S-32E	1980	FN	660	FE	Vert. Depth
Top Perfs/OH	H-36-19S-32E	2078	FN	1118	FE	9966.86
Bottom Perfs/OH	E-36-19S-32E	2102	FN	4610	FE	9900.79
Projected TD	E-36-19S-32E	2104	FN	4678	FE	9899.25

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End of Well Report

Cimarex Energy Co.

Lea County, New Mexico

State HH No. 1H

Key 881

SUR: H-36-19s-32e, 1980/N & 660/E
BHL: E-36019s032e, 2104/N & 4678/E
API # 30-025-27417

Well Specifications

Well Name: State HH No. 1H
Start Date: 11/15/2011
Client: Cimarex Energy Co.
Rig Name: Key 881
County: Lea County, New Mexico
Field: (State HH) Sec 36, T19S, R32E

Well Location:

NAD 83 / TM New Mexico SP, Eastern Zone (3001)

Grid Coordinates

Easting = 732254.50
Northing = 589323.90

Geographical Coordinates

Latitude: 32°37'06.856"N
Longitude: 103°42'47.716"W

RKB: 3,601 ft above M.S.L.

Date TD Reached: 12/31/2011

Final Depth MD: 13,668' ft

Final Depth TVD: 9,899.25' ft



Cimarex Energy Co.

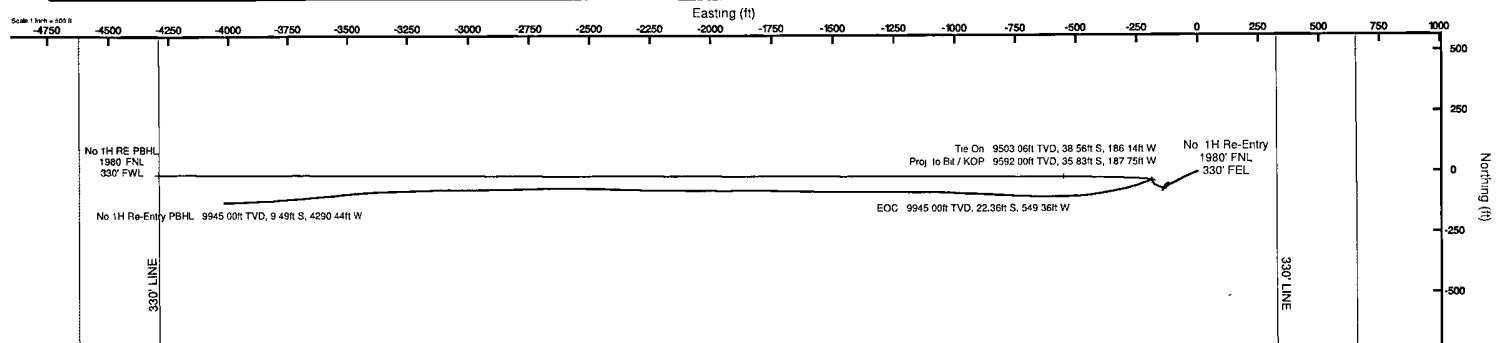
Location Lea County, NM
Field (State HH) Sec 36, T19S, R32E
Facility State HH No. 1H

Slot No 1H Re-Entry
Well No 1H RE
Wellbore No 1H RE PWB

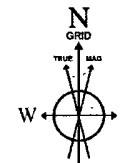


Well Profile Data

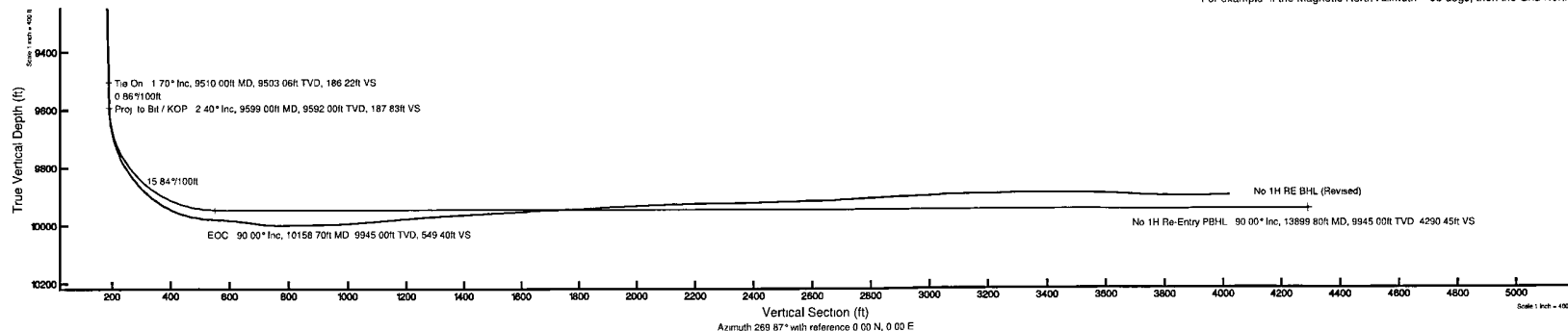
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	9510.00	1.700	334.400	9503.06	-38.56	-186.14	0.00	186.22
Proj. to Bit / KOP	9599.00	2.400	325.900	9592.00	-35.83	-187.75	0.86	187.83
EOC	10158.70	90.000	270.197	9945.00	-22.36	-549.36	15.84	549.40
No.1H Re-Entry PBHL	13899.80	90.000	270.197	9945.00	-9.49	-4290.44	0.00	4290.45



Plot reference wellpath is Plan #1	
True vertical depths are referenced to Rig on No. 1H 2nd RE (RT)	Grid System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H 2nd RE (RT)	North Reference Grid north
Rig on No. 1H 2nd RE (RT) to Mean Sea Level 3601 feet	Scale True distance
Mean Sea Level to Mud line (At Slot No. 1H Re-Entry) 0 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by genibry on 12/4/2011



BGGM (1945.0 to 2012.0) Dip 60.53° Field 48853.6 nT
Magnetic North is 7.68 degrees East of True North (at 11/8/2011)
Grid North is 0.33 degrees East of True North
To correct azimuth from True to Grid subtract 0.33 degrees
To correct azimuth from Magnetic to Grid add 7.34 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.34 = 97.34





Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

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	0.999951	Report Generated	1/2/2012 at 10:14:45 AM
Convergence at slot	0.33° East	Database/Source file	WA Midland/No. 1H_RE.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	1.00	732254.50	589323.90	32°37'06.856"N	103°42'47.716"W
Facility Reference Pt			732253.50	589323.90	32°37'06.856"N	103°42'47.727"W
Field Reference Pt			730941.22	588045.42	32°36'54.281"N	103°43'03.157"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H 2nd RE (RT) to GL	3601.00ft
Horizontal Reference Pt	Slot	Rig on No. 1H 2nd RE (RT) to Mean Sea Level	3601.00ft
Vertical Reference Pt	Rig on No. 1H 2nd RE (RT)	Rig on No. 1H 2nd RE (RT) to Mud Line at Slot (No. 1H Re-Entry)	3601.00ft
MD Reference Pt	Rig on No. 1H 2nd RE (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	268.23°



Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

WELLPATH DATA (192 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	248.870	0.00	0.00	0.00	0.00	732254.50	589323.90	32°37'06.856"N	103°42'47.716"W	0.00	
23.00	0.000	248.870	23.00	0.00	0.00	0.00	732254.50	589323.90	32°37'06.856"N	103°42'47.716"W	0.00	
100.00	0.540	248.870	100.00	0.34	-0.13	-0.34	732254.16	589323.77	32°37'06.855"N	103°42'47.720"W	0.70	
200.00	0.570	252.340	199.99	1.27	-0.45	-1.25	732253.25	589323.45	32°37'06.852"N	103°42'47.730"W	0.05	
300.00	0.790	243.260	299.99	2.37	-0.91	-2.34	732252.16	589322.99	32°37'06.847"N	103°42'47.743"W	0.24	
400.00	1.090	243.700	399.97	3.86	-1.64	-3.81	732250.69	589322.26	32°37'06.840"N	103°42'47.760"W	0.30	
500.00	1.620	245.920	499.95	6.03	-2.64	-5.95	732248.55	589321.26	32°37'06.831"N	103°42'47.785"W	0.53	
600.00	2.230	245.640	599.89	9.14	-4.02	-9.02	732245.48	589319.88	32°37'06.817"N	103°42'47.821"W	0.61	
700.00	2.780	244.910	699.79	13.16	-5.85	-12.98	732241.52	589318.05	32°37'06.799"N	103°42'47.868"W	0.55	
800.00	3.320	245.460	799.65	18.06	-8.08	-17.82	732236.69	589315.82	32°37'06.777"N	103°42'47.924"W	0.54	
900.00	3.580	248.660	899.47	23.67	-10.42	-23.36	732231.14	589313.48	32°37'06.755"N	103°42'47.989"W	0.32	
1000.00	3.690	248.440	999.27	29.64	-12.74	-29.26	732225.24	589311.16	32°37'06.732"N	103°42'48.059"W	0.11	
1100.00	3.810	247.050	1099.05	35.76	-15.22	-35.31	732219.19	589308.68	32°37'06.708"N	103°42'48.130"W	0.15	
1200.00	4.040	245.350	1198.82	42.11	-17.98	-41.57	732212.93	589305.92	32°37'06.681"N	103°42'48.203"W	0.26	
1300.00	4.340	244.970	1298.55	48.83	-21.05	-48.20	732206.30	589302.85	32°37'06.651"N	103°42'48.281"W	0.30	
1400.00	3.800	242.830	1398.30	55.30	-24.17	-54.58	732199.93	589299.73	32°37'06.620"N	103°42'48.355"W	0.56	
1500.00	3.550	242.090	1498.09	61.07	-27.13	-60.26	732194.24	589296.77	32°37'06.591"N	103°42'48.422"W	0.25	
1600.00	3.470	242.370	1597.91	66.57	-29.98	-65.68	732188.82	589293.92	32°37'06.563"N	103°42'48.486"W	0.08	
1700.00	3.520	242.950	1697.72	72.07	-32.78	-71.09	732183.41	589291.12	32°37'06.536"N	103°42'48.549"W	0.06	
1800.00	3.390	242.180	1797.54	77.50	-35.56	-76.44	732178.06	589288.34	32°37'06.509"N	103°42'48.612"W	0.14	
1900.00	3.070	241.590	1897.38	82.55	-38.21	-81.41	732173.09	589285.69	32°37'06.483"N	103°42'48.670"W	0.32	
2000.00	3.250	242.740	1997.23	87.51	-40.78	-86.29	732168.22	589283.12	32°37'06.458"N	103°42'48.727"W	0.19	
2100.00	3.220	240.830	2097.07	92.56	-43.45	-91.26	732163.24	589280.45	32°37'06.432"N	103°42'48.786"W	0.11	
2200.00	3.030	243.720	2196.92	97.46	-45.99	-96.08	732158.42	589277.91	32°37'06.407"N	103°42'48.842"W	0.25	
2300.00	2.540	244.880	2296.80	101.90	-48.10	-100.46	732154.05	589275.80	32°37'06.386"N	103°42'48.893"W	0.49	
2400.00	2.430	248.130	2396.71	105.92	-49.83	-104.43	732150.07	589274.07	32°37'06.369"N	103°42'48.940"W	0.18	
2500.00	2.040	249.450	2496.63	109.60	-51.25	-108.07	732146.44	589272.66	32°37'06.356"N	103°42'48.983"W	0.39	
2600.00	1.940	248.170	2596.57	112.87	-52.50	-111.30	732143.20	589271.40	32°37'06.343"N	103°42'49.021"W	0.11	
2700.00	1.610	250.030	2696.52	115.80	-53.61	-114.20	732140.31	589270.29	32°37'06.332"N	103°42'49.054"W	0.33	
2800.00	1.590	247.430	2796.48	118.43	-54.62	-116.80	732137.71	589269.28	32°37'06.323"N	103°42'49.085"W	0.08	
2900.00	1.380	254.100	2896.45	120.89	-55.48	-119.24	732135.27	589268.42	32°37'06.314"N	103°42'49.113"W	0.27	
3000.00	1.300	255.830	2996.42	123.17	-56.09	-121.49	732133.01	589267.81	32°37'06.308"N	103°42'49.140"W	0.09	
3100.00	1.270	262.050	3096.40	125.38	-56.52	-123.69	732130.81	589267.38	32°37'06.304"N	103°42'49.166"W	0.14	
3200.00	1.330	262.520	3196.37	127.64	-56.83	-125.94	732128.57	589267.08	32°37'06.301"N	103°42'49.192"W	0.06	
3300.00	1.270	261.360	3296.35	129.89	-57.14	-128.19	732126.32	589266.76	32°37'06.298"N	103°42'49.218"W	0.07	
3400.00	1.340	261.980	3396.32	132.15	-57.47	-130.44	732124.07	589266.43	32°37'06.295"N	103°42'49.245"W	0.07	
3500.00	1.460	227.180	3496.29	134.28	-58.50	-132.53	732121.97	589265.40	32°37'06.285"N	103°42'49.269"W	0.85	
3600.00	1.540	206.050	3596.26	135.86	-60.58	-134.06	732120.45	589263.33	32°37'06.265"N	103°42'49.287"W	0.56	
3700.00	1.470	209.050	3696.22	137.15	-62.91	-135.27	732119.24	589261.00	32°37'06.242"N	103°42'49.301"W	0.11	
3800.00	1.210	238.200	3796.20	138.72	-64.58	-136.79	732117.72	589259.32	32°37'06.225"N	103°42'49.319"W	0.72	
3900.00	0.660	265.090	3896.18	140.21	-65.19	-138.26	732116.25	589258.71	32°37'06.219"N	103°42'49.337"W	0.69	
4000.00	1.200	39.370	3996.18	140.09	-64.43	-138.17	732116.34	589259.47	32°37'06.227"N	103°42'49.335"W	1.73	
4100.00	1.070	50.090	4096.16	138.67	-63.02	-136.79	732117.72	589260.88	32°37'06.241"N	103°42'49.319"W	0.25	
4200.00	1.330	37.020	4196.14	137.21	-61.49	-135.37	732119.13	589262.41	32°37'06.256"N	103°42'49.303"W	0.38	
4300.00	1.880	31.080	4296.10	135.59	-59.16	-133.83	732120.68	589264.74	32°37'06.279"N	103°42'49.284"W	0.57	



Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

WELLPATH DATA (192 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
4400.00	1.830	31.740	4396.04	133.82	-56.40	-132.14	732122.36	589267.50	32°37'06.306"N	103°42'49.264"W	0.05	
4500.00	1.910	52.810	4495.99	131.58	-54.03	-129.98	732124.53	589269.87	32°37'06.329"N	103°42'49.239"W	0.69	
4600.00	1.700	52.610	4595.94	129.02	-52.13	-127.47	732127.04	589271.78	32°37'06.348"N	103°42'49.209"W	0.21	
4700.00	1.490	54.690	4695.90	126.73	-50.47	-125.23	732129.28	589273.43	32°37'06.364"N	103°42'49.183"W	0.22	
4800.00	0.650	40.410	4795.89	125.26	-49.29	-123.80	732130.71	589274.61	32°37'06.376"N	103°42'49.166"W	0.87	
4900.00	0.250	72.250	4895.88	124.67	-48.79	-123.23	732131.28	589275.11	32°37'06.381"N	103°42'49.160"W	0.46	
5000.00	0.390	144.560	4995.88	124.28	-49.00	-122.82	732131.69	589274.90	32°37'06.379"N	103°42'49.155"W	0.39	
5100.00	0.390	144.580	5095.88	123.90	-49.56	-122.43	732132.08	589274.34	32°37'06.373"N	103°42'49.150"W	0.00	
5200.00	0.460	142.620	5195.88	123.48	-50.15	-121.98	732132.52	589273.75	32°37'06.367"N	103°42'49.145"W	0.07	
5300.00	0.410	143.900	5295.87	123.04	-50.76	-121.53	732132.98	589273.14	32°37'06.361"N	103°42'49.140"W	0.05	
5400.00	0.370	155.110	5395.87	122.71	-51.34	-121.18	732133.32	589272.56	32°37'06.355"N	103°42'49.136"W	0.09	
5500.00	0.330	170.480	5495.87	122.55	-51.92	-121.00	732133.51	589271.98	32°37'06.350"N	103°42'49.134"W	0.10	
5600.00	0.370	181.750	5595.87	122.53	-52.53	-120.96	732133.54	589271.37	32°37'06.344"N	103°42'49.133"W	0.08	
5700.00	0.450	195.440	5695.86	122.66	-53.23	-121.08	732133.43	589270.67	32°37'06.337"N	103°42'49.135"W	0.13	
5800.00	0.510	194.610	5795.86	122.91	-54.04	-121.29	732133.21	589269.86	32°37'06.329"N	103°42'49.137"W	0.06	
5900.00	0.520	200.330	5895.86	123.20	-54.89	-121.56	732132.94	589269.01	32°37'06.320"N	103°42'49.141"W	0.05	
6000.00	0.570	210.720	5995.85	123.64	-55.75	-121.98	732132.53	589268.16	32°37'06.312"N	103°42'49.146"W	0.11	
6100.00	0.750	209.190	6095.85	124.24	-56.75	-122.55	732131.96	589267.16	32°37'06.302"N	103°42'49.152"W	0.18	
6200.00	0.840	209.670	6195.84	124.96	-57.96	-123.23	732131.28	589265.95	32°37'06.290"N	103°42'49.160"W	0.09	
6300.00	0.820	204.560	6295.83	125.66	-59.24	-123.89	732130.62	589264.66	32°37'06.277"N	103°42'49.168"W	0.08	
6400.00	0.840	213.380	6395.82	126.40	-60.51	-124.59	732129.92	589263.40	32°37'06.265"N	103°42'49.176"W	0.13	
6500.00	0.840	218.090	6495.80	127.29	-61.69	-125.45	732129.06	589262.21	32°37'06.253"N	103°42'49.187"W	0.07	
6600.00	0.890	222.450	6595.79	128.30	-62.84	-126.42	732128.08	589261.06	32°37'06.242"N	103°42'49.198"W	0.08	
6700.00	0.880	226.150	6695.78	129.42	-63.95	-127.50	732127.01	589259.95	32°37'06.231"N	103°42'49.211"W	0.06	
6800.00	0.830	231.270	6795.77	130.56	-64.93	-128.62	732125.89	589258.97	32°37'06.221"N	103°42'49.224"W	0.09	
6900.00	0.940	232.810	6895.76	131.81	-65.88	-129.84	732124.67	589258.02	32°37'06.212"N	103°42'49.238"W	0.11	
7000.00	0.830	231.510	6995.75	133.06	-66.83	-131.06	732123.45	589257.07	32°37'06.203"N	103°42'49.252"W	0.11	
7100.00	0.890	236.930	7095.73	134.31	-67.70	-132.28	732122.23	589256.20	32°37'06.194"N	103°42'49.267"W	0.10	
7200.00	0.830	233.470	7195.72	135.56	-68.56	-133.51	732121.00	589255.34	32°37'06.186"N	103°42'49.281"W	0.08	
7300.00	0.840	237.060	7295.71	136.79	-69.39	-134.71	732119.80	589254.51	32°37'06.178"N	103°42'49.295"W	0.05	
7400.00	0.940	231.850	7395.70	138.07	-70.29	-135.97	732118.54	589253.61	32°37'06.169"N	103°42'49.310"W	0.13	
7500.00	0.870	239.260	7495.69	139.40	-71.19	-137.26	732117.24	589252.71	32°37'06.160"N	103°42'49.325"W	0.14	
7600.00	0.760	242.950	7595.68	140.66	-71.88	-138.51	732116.00	589252.02	32°37'06.153"N	103°42'49.340"W	0.12	
7700.00	0.890	239.640	7695.67	141.94	-72.57	-139.77	732114.74	589251.33	32°37'06.146"N	103°42'49.355"W	0.14	
7800.00	0.680	237.000	7795.66	143.13	-73.29	-140.94	732113.57	589250.61	32°37'06.139"N	103°42'49.368"W	0.21	
7900.00	0.580	232.350	7895.65	144.05	-73.92	-141.83	732112.67	589249.98	32°37'06.133"N	103°42'49.379"W	0.11	
8000.00	0.610	226.470	7995.65	144.86	-74.60	-142.62	732111.89	589249.31	32°37'06.126"N	103°42'49.388"W	0.07	
8100.00	0.840	221.120	8095.64	145.75	-75.52	-143.49	732111.02	589248.39	32°37'06.117"N	103°42'49.398"W	0.24	
8200.00	0.820	224.930	8195.63	146.77	-76.57	-144.48	732110.03	589247.33	32°37'06.107"N	103°42'49.410"W	0.06	
8300.00	0.890	213.440	8295.62	147.74	-77.73	-145.41	732109.10	589246.17	32°37'06.096"N	103°42'49.421"W	0.18	
8400.00	0.930	209.380	8395.60	148.61	-79.08	-146.24	732108.27	589244.82	32°37'06.082"N	103°42'49.431"W	0.08	
8509.00	0.100	246.500	8504.60	149.16	-79.89	-146.76	732107.75	589244.01	32°37'06.074"N	103°42'49.437"W	0.78	
8538.00	3.000	82.800	8533.59	148.42	-79.81	-146.03	732108.48	589244.10	32°37'06.075"N	103°42'49.428"W	10.68	
8569.00	3.300	55.100	8564.54	146.87	-79.20	-144.49	732110.02	589244.71	32°37'06.081"N	103°42'49.410"W	4.95	
8599.00	3.700	44.500	8594.49	145.45	-78.01	-143.10	732111.40	589245.89	32°37'06.093"N	103°42'49.394"W	2.53	



Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

WELLPATH DATA (192 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
8631.00	3.900	10.600	8626.42	144.47	-76.21	-142.18	732112.33	589247.70	32°37'06.111"N	103°42'49.383"W	6.95	
8663.00	4.200	354.000	8658.34	144.32	-73.97	-142.10	732112.40	589249.93	32°37'06.133"N	103°42'49.382"W	3.77	
8694.00	3.200	352.900	8689.28	144.48	-71.98	-142.33	732112.18	589251.92	32°37'06.152"N	103°42'49.385"W	3.23	
8725.00	4.000	323.500	8720.22	145.18	-70.25	-143.08	732111.43	589253.65	32°37'06.169"N	103°42'49.393"W	6.40	
8757.00	3.900	314.200	8752.14	146.57	-68.60	-144.52	732109.99	589255.30	32°37'06.186"N	103°42'49.410"W	2.02	
8816.00	4.700	293.700	8810.98	150.15	-66.23	-148.17	732106.33	589257.67	32°37'06.210"N	103°42'49.453"W	2.91	
8848.00	4.900	282.400	8842.87	152.66	-65.41	-150.71	732103.80	589258.50	32°37'06.218"N	103°42'49.482"W	3.01	
8880.00	5.800	290.000	8874.73	155.49	-64.56	-153.56	732100.94	589259.34	32°37'06.226"N	103°42'49.515"W	3.57	
8943.00	5.200	295.000	8937.44	160.99	-62.27	-159.14	732095.37	589261.64	32°37'06.249"N	103°42'49.580"W	1.22	
9007.00	5.000	294.400	9001.18	166.08	-59.89	-164.31	732090.20	589264.01	32°37'06.273"N	103°42'49.641"W	0.32	
9071.00	4.800	291.800	9064.95	171.04	-57.74	-169.34	732085.17	589266.16	32°37'06.295"N	103°42'49.699"W	0.47	
9133.00	5.200	297.000	9126.71	175.88	-55.50	-174.25	732080.26	589268.40	32°37'06.317"N	103°42'49.757"W	0.97	
9197.00	4.800	320.500	9190.48	180.06	-52.12	-178.54	732075.97	589271.78	32°37'06.351"N	103°42'49.807"W	3.24	
9260.00	3.700	346.200	9253.31	182.10	-48.11	-180.70	732073.81	589275.79	32°37'06.391"N	103°42'49.832"W	3.45	
9323.00	2.000	328.500	9316.23	183.07	-45.20	-181.76	732072.75	589278.70	32°37'06.420"N	103°42'49.844"W	3.01	
9385.00	3.100	319.500	9378.17	184.65	-43.00	-183.41	732071.10	589280.90	32°37'06.441"N	103°42'49.863"W	1.88	
9448.00	2.400	332.200	9441.10	186.30	-40.54	-185.13	732069.38	589283.36	32°37'06.466"N	103°42'49.883"W	1.47	
9510.00	1.700	334.400	9503.06	187.24	-38.56	-186.14	732068.37	589285.34	32°37'06.486"N	103°42'49.894"W	1.14	
9558.00	2.400	325.900	9551.02	188.06	-37.09	-187.01	732067.50	589286.81	32°37'06.500"N	103°42'49.905"W	1.59	
9599.00	2.400	325.900	9591.99	188.98	-35.67	-187.97	732066.54	589288.24	32°37'06.514"N	103°42'49.916"W	0.00	
9603.00	0.500	234.700	9595.99	189.04	-35.61	-188.03	732066.48	589288.29	32°37'06.515"N	103°42'49.916"W	61.54	
9634.00	5.100	247.800	9626.94	190.45	-36.21	-189.42	732065.09	589287.70	32°37'06.509"N	103°42'49.933"W	14.89	
9666.00	9.800	254.100	9658.66	194.42	-37.49	-193.36	732061.15	589286.41	32°37'06.497"N	103°42'49.979"W	14.89	
9698.00	14.000	254.000	9689.97	200.82	-39.30	-199.70	732054.81	589284.60	32°37'06.479"N	103°42'50.053"W	13.13	
9730.00	18.500	252.100	9720.68	209.45	-41.93	-208.26	732046.25	589281.97	32°37'06.453"N	103°42'50.153"W	14.16	
9761.00	24.200	246.900	9749.55	220.10	-45.94	-218.79	732035.72	589277.96	32°37'06.414"N	103°42'50.277"W	19.36	
9793.00	28.600	246.200	9778.20	233.32	-51.61	-231.84	732022.67	589272.29	32°37'06.359"N	103°42'50.430"W	13.78	
9823.00	31.800	252.500	9804.13	247.59	-56.88	-245.95	732008.56	589267.02	32°37'06.308"N	103°42'50.595"W	15.00	
9855.00	36.800	256.200	9830.56	265.10	-61.71	-263.31	731991.20	589262.19	32°37'06.261"N	103°42'50.798"W	16.92	
9887.00	41.600	255.800	9855.35	284.85	-66.60	-282.93	731971.58	589257.30	32°37'06.214"N	103°42'51.028"W	15.02	
9919.00	46.700	255.800	9878.31	306.61	-72.07	-304.53	731949.98	589251.83	32°37'06.161"N	103°42'51.281"W	15.94	
9950.00	50.300	260.400	9898.85	329.46	-76.83	-327.24	731927.28	589247.07	32°37'06.115"N	103°42'51.547"W	16.07	
9982.00	54.300	258.500	9918.42	354.47	-81.48	-352.12	731902.39	589242.43	32°37'06.070"N	103°42'51.838"W	13.35	
10013.00	60.200	259.100	9935.18	380.18	-86.53	-377.69	731876.83	589237.37	32°37'06.022"N	103°42'52.137"W	19.10	
10045.00	66.400	262.000	9949.55	408.50	-91.20	-405.87	731848.65	589232.70	32°37'05.977"N	103°42'52.467"W	21.00	
10077.00	72.300	261.200	9960.83	438.23	-95.58	-435.48	731819.04	589228.32	32°37'05.936"N	103°42'52.814"W	18.59	
10108.00	77.300	266.200	9968.96	468.03	-98.85	-465.20	731789.32	589225.06	32°37'05.905"N	103°42'53.161"W	22.41	
10139.00	82.800	267.100	9974.32	498.54	-100.63	-495.67	731758.86	589223.28	32°37'05.889"N	103°42'53.517"W	17.97	
10171.00	86.300	268.400	9977.36	530.39	-101.88	-527.49	731727.03	589222.03	32°37'05.879"N	103°42'53.890"W	11.66	
10203.00	86.100	270.100	9979.48	562.31	-102.29	-559.42	731695.11	589221.61	32°37'05.876"N	103°42'54.263"W	5.34	
10235.00	86.100	270.100	9981.65	594.22	-102.24	-591.35	731663.18	589221.67	32°37'05.879"N	103°42'54.636"W	0.00	
10267.00	84.200	269.400	9984.36	626.09	-102.38	-623.23	731631.30	589221.53	32°37'05.879"N	103°42'55.009"W	6.32	
10298.00	81.300	270.700	9988.27	656.83	-102.35	-653.98	731600.56	589221.55	32°37'05.881"N	103°42'55.368"W	10.24	
10330.00	80.500	271.200	9993.33	688.39	-101.83	-685.57	731568.97	589222.08	32°37'05.888"N	103°42'55.738"W	2.94	
10362.00	84.800	271.400	9997.43	720.07	-101.11	-717.29	731537.25	589222.80	32°37'05.897"N	103°42'56.109"W	13.45	



Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

WELLPATH DATA (192 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
10394.00	89.200	273.100	9999.10	751.94	-99.85	-749.21	731505.32	589224.05	32°37'05.912"N	103°42'56.482"W	14.74	
10426.00	90.700	273.200	9999.13	783.82	-98.09	-781.16	731473.38	589225.81	32°37'05.931"N	103°42'56.855"W	4.70	
10457.00	90.900	272.900	9998.70	814.71	-96.45	-812.12	731442.42	589227.46	32°37'05.949"N	103°42'57.217"W	1.16	
10489.00	90.300	272.900	9998.36	846.60	-94.83	-844.07	731410.47	589229.08	32°37'05.967"N	103°42'57.590"W	1.87	
10521.00	91.500	272.300	9997.86	878.50	-93.38	-876.04	731378.51	589230.53	32°37'05.983"N	103°42'57.964"W	4.19	
10553.00	91.300	272.400	9997.08	910.41	-92.06	-908.00	731346.55	589231.84	32°37'05.998"N	103°42'58.338"W	0.70	
10585.00	90.600	271.900	9996.55	942.33	-90.86	-939.97	731314.58	589233.04	32°37'06.011"N	103°42'58.711"W	2.69	
10616.00	92.300	272.300	9995.76	973.25	-89.73	-970.94	731283.61	589234.18	32°37'06.024"N	103°42'59.073"W	5.63	
10648.00	94.200	273.100	9993.95	1005.10	-88.22	-1002.85	731251.70	589235.68	32°37'06.041"N	103°42'59.446"W	6.44	
10678.00	94.100	272.600	9991.78	1034.92	-86.74	-1032.74	731221.82	589237.17	32°37'06.058"N	103°42'59.796"W	1.70	
10742.00	94.600	271.400	9986.92	1098.60	-84.51	-1096.51	731158.04	589239.40	32°37'06.083"N	103°43'00.541"W	2.03	
10774.00	95.000	270.800	9984.24	1130.45	-83.90	-1128.39	731126.16	589240.01	32°37'06.091"N	103°43'00.914"W	2.25	
10804.00	95.300	270.200	9981.55	1160.30	-83.63	-1158.27	731096.29	589240.27	32°37'06.095"N	103°43'01.263"W	2.23	
10868.00	93.900	270.400	9976.42	1224.05	-83.30	-1222.06	731032.50	589240.60	32°37'06.102"N	103°43'02.009"W	2.21	
10932.00	94.500	269.800	9971.73	1287.85	-83.19	-1285.89	730968.68	589240.72	32°37'06.107"N	103°43'02.755"W	1.32	
10995.00	93.100	270.500	9967.56	1350.67	-83.02	-1348.75	730905.82	589240.88	32°37'06.112"N	103°43'03.490"W	2.48	
11057.00	93.200	269.800	9964.15	1412.54	-82.86	-1410.66	730843.92	589241.04	32°37'06.118"N	103°43'04.214"W	1.14	
11121.00	93.200	271.000	9960.58	1476.40	-82.42	-1474.55	730780.02	589241.49	32°37'06.126"N	103°43'04.961"W	1.87	
11183.00	93.200	270.800	9957.11	1538.23	-81.44	-1536.45	730718.13	589242.46	32°37'06.139"N	103°43'05.684"W	0.32	
11244.00	93.400	270.700	9953.60	1599.07	-80.65	-1597.34	730657.24	589243.26	32°37'06.150"N	103°43'06.396"W	0.37	
11307.00	93.400	270.800	9949.87	1661.90	-79.82	-1660.23	730594.36	589244.08	32°37'06.162"N	103°43'07.131"W	0.16	
11371.00	92.100	271.600	9946.80	1725.74	-78.48	-1724.14	730530.45	589245.42	32°37'06.179"N	103°43'07.878"W	2.38	
11434.00	92.400	270.500	9944.32	1788.61	-77.33	-1787.08	730467.52	589246.57	32°37'06.194"N	103°43'08.614"W	1.81	
11497.00	92.900	269.800	9941.41	1851.51	-77.17	-1850.01	730404.59	589246.74	32°37'06.199"N	103°43'09.350"W	1.36	
11561.00	93.600	269.200	9937.78	1915.39	-77.72	-1913.90	730340.70	589246.18	32°37'06.197"N	103°43'10.097"W	1.44	
11623.00	92.000	270.700	9934.75	1977.28	-77.78	-1975.82	730278.78	589246.13	32°37'06.200"N	103°43'10.821"W	3.54	
11685.00	93.000	271.000	9932.05	2039.16	-76.86	-2037.76	730216.85	589247.05	32°37'06.213"N	103°43'11.545"W	1.68	
11749.00	91.900	270.600	9929.31	2103.03	-75.97	-2101.69	730152.92	589247.94	32°37'06.225"N	103°43'12.292"W	1.83	
11811.00	91.900	270.800	9927.26	2164.94	-75.21	-2163.65	730090.96	589248.70	32°37'06.236"N	103°43'13.017"W	0.32	
11875.00	91.100	270.800	9925.58	2228.86	-74.32	-2227.62	730026.99	589249.59	32°37'06.249"N	103°43'13.764"W	1.25	
11938.00	90.400	270.800	9924.76	2291.79	-73.44	-2290.61	729964.01	589250.47	32°37'06.261"N	103°43'14.501"W	1.11	
12001.00	91.100	272.200	9923.93	2354.68	-71.79	-2353.58	729901.04	589252.12	32°37'06.281"N	103°43'15.237"W	2.48	
12064.00	91.900	272.000	9922.28	2417.51	-69.48	-2416.52	729838.11	589254.42	32°37'06.307"N	103°43'15.972"W	1.31	
12128.00	91.800	271.300	9920.22	2481.36	-67.64	-2480.46	729774.17	589256.27	32°37'06.329"N	103°43'16.720"W	1.10	
12190.00	91.300	270.900	9918.54	2543.26	-66.45	-2542.42	729712.21	589257.46	32°37'06.345"N	103°43'17.444"W	1.03	
12254.00	91.400	270.200	9917.03	2607.19	-65.83	-2606.40	729648.23	589258.07	32°37'06.354"N	103°43'18.192"W	1.10	
12318.00	92.400	269.100	9914.91	2671.14	-66.22	-2670.36	729584.27	589257.68	32°37'06.354"N	103°43'18.940"W	2.32	
12382.00	93.700	268.200	9911.51	2735.04	-67.73	-2734.25	729520.39	589256.17	32°37'06.343"N	103°43'19.687"W	2.47	
12445.00	92.900	269.200	9907.88	2797.93	-69.16	-2797.13	729457.51	589254.75	32°37'06.332"N	103°43'20.422"W	2.03	
12509.00	93.100	268.800	9904.53	2861.84	-70.27	-2861.03	729393.61	589253.63	32°37'06.325"N	103°43'21.169"W	0.70	
12573.00	91.400	269.800	9902.02	2925.78	-71.05	-2924.98	729329.67	589252.85	32°37'06.321"N	103°43'21.917"W	3.08	
12636.00	92.500	270.100	9899.87	2988.71	-71.11	-2987.94	729266.71	589252.80	32°37'06.324"N	103°43'22.653"W	1.81	
12699.00	93.500	269.700	9896.58	3051.60	-71.22	-3050.85	729203.80	589252.69	32°37'06.326"N	103°43'23.389"W	1.71	
12761.00	91.200	268.200	9894.03	3113.53	-72.35	-3112.78	729141.88	589251.55	32°37'06.319"N	103°43'24.113"W	4.43	
12825.00	90.700	268.500	9892.97	3177.52	-74.20	-3176.75	729077.91	589249.71	32°37'06.304"N	103°43'24.861"W	0.91	



Actual Wellpath Report

No. 1H RE AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H Re-Entry
Area	Lea County, NM	Well	No. 1H RE
Field	(State HH) Sec 36, T19S, R32E	Wellbore	No. 1H RE
Facility	State HH No. 1H		

WELLPATH DATA (192 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
12889.00	90.900	268.200	9892.08	3241.52	-76.04	-3240.72	729013.95	589247.87	32°37'06.289"N	103°43'25.609"W	0.56	
12949.00	90.700	268.400	9891.24	3301.51	-77.82	-3300.68	728953.99	589246.09	32°37'06.275"N	103°43'26.310"W	0.47	
13122.00	89.900	265.200	9890.33	3474.43	-87.47	-3473.39	728781.29	589236.43	32°37'06.190"N	103°43'28.330"W	1.91	
13185.00	88.900	263.900	9890.99	3537.30	-93.46	-3536.10	728718.58	589230.45	32°37'06.134"N	103°43'29.063"W	2.60	
13248.00	88.300	265.300	9892.53	3600.15	-99.38	-3598.80	728655.89	589224.52	32°37'06.079"N	103°43'29.797"W	2.42	
13310.00	87.000	265.300	9895.08	3662.01	-104.46	-3660.53	728594.15	589219.45	32°37'06.032"N	103°43'30.519"W	2.10	
13374.00	87.600	265.400	9898.09	3725.86	-109.64	-3724.25	728530.44	589214.26	32°37'05.984"N	103°43'31.264"W	0.95	
13438.00	88.600	266.000	9900.21	3789.76	-114.44	-3788.04	728466.66	589209.47	32°37'05.941"N	103°43'32.010"W	1.82	
13500.00	89.900	268.000	9901.02	3851.74	-117.68	-3849.94	728404.76	589206.22	32°37'05.912"N	103°43'32.734"W	3.85	
13563.00	89.700	267.300	9901.24	3914.74	-120.26	-3912.89	728341.81	589203.64	32°37'05.890"N	103°43'33.470"W	1.16	
13627.00	91.700	268.100	9900.46	3978.72	-122.83	-3976.83	728277.88	589201.07	32°37'05.868"N	103°43'34.218"W	3.37	
13668.00	91.700	268.100	9899.25	4019.71	-124.19	-4017.79	728236.92	589199.71	32°37'05.857"N	103°43'34.697"W	0.00	Proj to Bit

HOLE & CASING SECTIONS - Ref Wellbore: No. 1H RE Ref Wellpath: No. 1H RE 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]
17.5in Open Hole	23.00	1373.00	1350.00	23.00	1371.36	0.00	0.00	-23.34	-52.95
13.375in Casing Surface	23.00	1373.00	1350.00	23.00	1371.36	0.00	0.00	-23.34	-52.95
12.25in Open Hole	1373.00	5123.00	3750.00	1371.36	5118.88	-23.34	-52.95	-49.69	-122.33
9.625in Casing Intermediate	23.00	5123.00	5100.00	23.00	5118.88	0.00	0.00	-49.69	-122.33
7.875in Open Hole	5123.00	8523.00	3400.00	5118.88	8518.60	-49.69	-122.33	-79.88	-146.60
3.5in Casing Production	23.00	8523.00	8500.00	23.00	8518.60	0.00	0.00	-79.88	-146.60

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
No 1H RE BHL (Revised)		9945.00	-9.48	-4290.44	727964.28	589314.42	32°37'07.007"N	103°43'37.877"W	point

WELLPATH COMPOSITION - Ref Wellbore: No. 1H RE Ref Wellpath: No. 1H RE AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
23.00	8400.00	Generic gyro - northseeking (Standard)	Gyro	No. 1H RE
8400.00	13668.00	NaviTrak (Standard)	No.1H RE MWD NaviTrak <8509-13668>	No. 1H RE