

Results of Directional Survey

API number:	30-005-29077		
OGRID:		Operator:	CIMAREX ENERGY CO OF COLORADO
		Property:	TICONDEROGA 16 STATE COM # 2H

surface	ULSTR:	D	16	T	15S	R	31E
				375	FNL	330	FWL

BH Loc	ULSTR:	A	16	T	15S	R	31E
13142	MD	8768.2	TVD	369	FNL	4940	FWL

Top Perf/OH	ULSTR:	D	16	T	15S	R	31E
8358	MD	8356.0	TVD	390	FNL	413	FWL

Bot Perf/OH	ULSTR:	A	16	T	15S	R	31E
13142	MD	8768.2	TVD	369	FNL	4940	FWL

	MD	N/S	E/W	VD
	8350	-15.09	83.12	8348.00
TOP PERFS/OH	8358	-15.03	83.27	8356.00
	8434	-14.43	84.69	8431.98
	13044	3.49	4512.52	8765.95
BOT PERFS/OH	13142	6.21	4610.48	8768.24
	13088	4.71	4556.50	8766.98

NEXT TO LAST	13044	3.49	4512.52	8765.95
LAST READING	13088	4.71	4556.50	8766.98
TD	13142	6.21	4610.48	8768.24

Surface Location	375	FN	330	FW
Projected BHL	369	FN	4940	FW
Location of				
Top Perfs/OH	390	FN	413	FW
Bottom Perfs/OH	369	FN	4940	FW

SUMMARY of Subsurface Locations

Surface Location	D-16-15S-31E	375	FN	330	FW	Vert. Depth
Top Perfs/OH	D-16-15S-31E	390	FN	413	FW	8356.00
Bottom Perfs/OH	A-16-15S-31E	369	FN	4940	FW	8768.24
Projected TD	A-16-15S-31E	369	FN	4940	FW	8768.24



Cimarex Energy Co.

Location Chaves County, NM
Field (Ticonderoga) Sec 16, T15S, R31E
Facility Ticonderoga 16 St Com No. 2H

Slot No 2H SHL
Well No 2H
Wellbore No 2H PWB



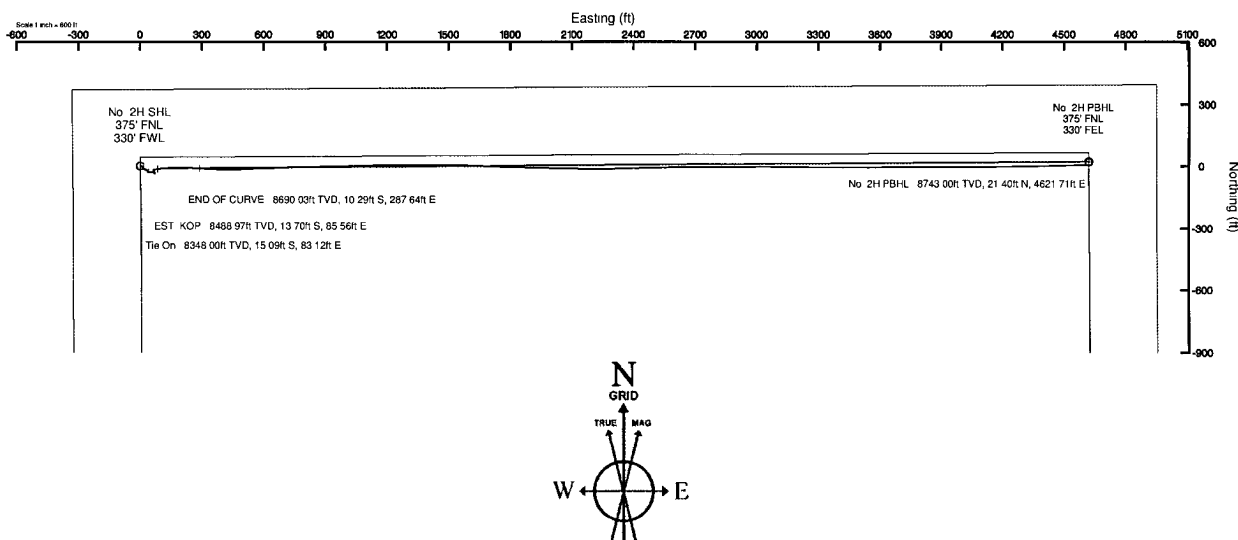
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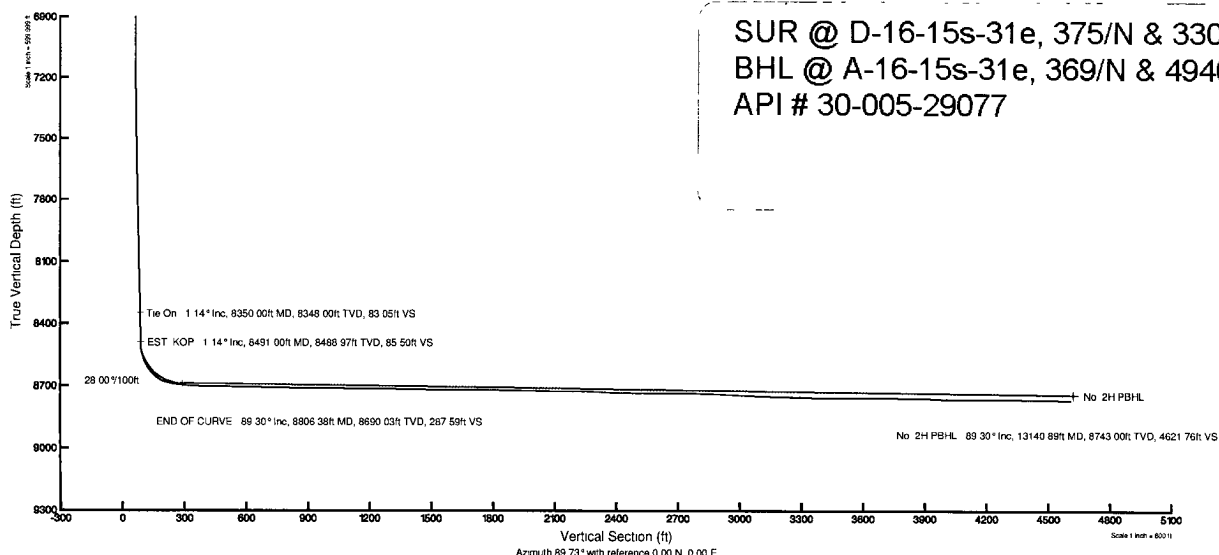
Well Profile Data

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	8350.00	1.140	60.210	8348.00	-15.09	83.12	0.00	83.05
EST KOP	8491.00	1.140	60.210	8488.97	-13.70	85.56	0.00	85.50
END OF CURVE	8806.38	89.300	89.581	8690.03	-10.29	287.64	28.00	287.59
No 2H PBHL	13140.89	89.300	89.581	8743.00	21.40	4621.71	0.00	4621.76



BGGM (1945.0 to 2011.0) Dip 60.93° Field 49243.6 nT
Magnetic North is 7.96 degrees East of True North (at 4/9/2010)
Grid North is 0.27 degrees East of True North
To correct azimuth from True to Grid subtract 0.27 degrees
To correct azimuth from Magnetic to Grid add 7.68 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.68 = 97.68

Plot reference wellpath is Plan #1 vs Actual <FINAL>	
True vertical depths are referenced to Patriot 4 on No 2H SHL (KB)	Grid System NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Patriot 4 on No 2H SHL (KB)	North Reference Grid north
Patriot 4 on No 2H SHL (KB) to Mean Sea Level 4435 feet	Scale True distance
Mean Sea Level to Mud line (Facility Ticonderoga 16 St Com No 2H) -4418 feet	Depths are in feet
Coordinates are in feet referenced to SL	Created by Victor Hernandez on 6/14/2010



SUR @ D-16-15s-31e, 375/N & 330/W
BHL @ A-16-15s-31e, 369/N & 4940/W
API # 30-005-29077

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Actual Wellpath Report

No. 2H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

REPORT SETUP INFORMATION			
Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999936	Report Generated	6/14/2010 at 11:22:28 AM
Convergence at slot	0.27° East	Database/Source file	WA_Midland/No. 2H_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[USft]	Northing[USft]	Latitude	Longitude
Slot Location	0.00	0.00	694278.30	735940.40	33°01'19.564"N	103°50'03.642"W
Facility Reference Pt			694278.30	735940.40	33°01'19.564"N	103°50'03.642"W
Field Reference Pt			694286.00	734335.70	33°01'03.686"N	103°50'03.641"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Patriot 4 on No. 2H SHL (KB) to GL	17.00ft
Horizontal Reference Pt	SL	Patriot 4 on No. 2H SHL (KB) to Mean Sea Level	4435.00ft
Vertical Reference Pt	Patriot 4 on No. 2H SHL (KB)	GL to Mud Line (Facility)	0.00ft
MD Reference Pt	Patriot 4 on No. 2H SHL (KB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	89.73°



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Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
0.00	0.000	143.190	0.00	0.00	0.00	0.00	694278.30	735940.40	33°01'19.564"N	103°50'03.642"W	0.00
100.00	0.090	143.190	100.00	0.05	-0.06	0.05	694278.35	735940.34	33°01'19.564"N	103°50'03.641"W	0.09
200.00	0.330	31.180	200.00	0.24	0.12	0.24	694278.54	735940.52	33°01'19.565"N	103°50'03.639"W	0.37
300.00	0.920	55.740	299.99	1.06	0.82	1.06	694279.36	735941.22	33°01'19.572"N	103°50'03.629"W	0.63
400.00	1.160	145.500	399.98	2.29	0.44	2.29	694280.59	735940.84	33°01'19.568"N	103°50'03.615"W	1.48
500.00	1.440	174.570	499.96	2.98	-1.65	2.98	694281.28	735938.75	33°01'19.548"N	103°50'03.607"W	0.71
557.00	1.340	63.120	556.95	3.64	-2.06	3.65	694281.95	735938.34	33°01'19.544"N	103°50'03.599"W	4.03
652.10	1.200	102.660	652.03	5.60	-1.78	5.61	694283.91	735938.62	33°01'19.546"N	103°50'03.576"W	0.91
747.10	1.280	110.660	747.00	7.56	-2.37	7.57	694285.87	735938.03	33°01'19.540"N	103°50'03.553"W	0.20
842.10	1.230	73.710	841.98	9.53	-2.46	9.55	694287.85	735937.94	33°01'19.539"N	103°50'03.530"W	0.84
937.20	1.050	210.960	937.07	10.06	-2.92	10.08	694288.38	735937.48	33°01'19.535"N	103°50'03.523"W	2.23
1032.20	0.980	191.160	1032.06	9.45	-4.46	9.47	694287.77	735935.94	33°01'19.520"N	103°50'03.531"W	0.37
1127.30	0.850	175.540	1127.15	9.34	-5.96	9.37	694287.67	735934.44	33°01'19.505"N	103°50'03.532"W	0.29
1222.30	1.250	163.080	1222.13	9.69	-7.66	9.73	694288.03	735932.74	33°01'19.488"N	103°50'03.528"W	0.48
1317.30	1.370	164.690	1317.11	10.28	-9.74	10.33	694288.63	735930.66	33°01'19.467"N	103°50'03.521"W	0.13
1412.40	1.770	150.850	1412.17	11.29	-12.12	11.34	694289.64	735928.28	33°01'19.444"N	103°50'03.509"W	0.58
1507.40	1.970	144.730	1507.12	12.93	-14.74	13.00	694291.30	735925.66	33°01'19.418"N	103°50'03.490"W	0.30
1602.50	2.240	74.870	1602.17	15.67	-15.59	15.74	694294.04	735924.82	33°01'19.409"N	103°50'03.458"W	2.55
1697.50	2.510	74.250	1697.09	19.47	-14.54	19.53	694297.83	735925.86	33°01'19.419"N	103°50'03.413"W	0.29
1792.50	3.070	134.480	1792.00	23.28	-15.75	23.35	694301.65	735924.65	33°01'19.407"N	103°50'03.368"W	2.99
1887.60	3.060	145.480	1886.96	26.52	-19.63	26.61	694304.90	735920.77	33°01'19.369"N	103°50'03.330"W	0.62
1982.60	3.230	67.230	1981.85	30.42	-20.68	30.51	694308.81	735919.72	33°01'19.358"N	103°50'03.284"W	4.18
2077.70	3.140	68.760	2076.81	35.32	-18.70	35.41	694313.71	735921.70	33°01'19.378"N	103°50'03.227"W	0.13
2172.70	3.230	247.320	2171.76	35.28	-18.79	35.37	694313.66	735921.61	33°01'19.377"N	103°50'03.227"W	6.70
2267.70	3.280	167.660	2266.65	33.37	-22.48	33.48	694311.78	735917.92	33°01'19.340"N	103°50'03.250"W	4.39
2362.80	2.970	160.210	2361.61	34.77	-27.46	34.89	694313.19	735912.94	33°01'19.291"N	103°50'03.233"W	0.54
2457.80	2.610	69.020	2456.53	37.61	-29.00	37.75	694316.04	735911.40	33°01'19.276"N	103°50'03.200"W	4.20
2552.90	2.550	68.800	2551.54	41.61	-27.46	41.74	694320.04	735912.94	33°01'19.291"N	103°50'03.153"W	0.06
2647.90	2.370	134.700	2646.46	44.98	-28.08	45.11	694323.41	735912.33	33°01'19.284"N	103°50'03.113"W	2.82
2742.60	1.740	120.870	2741.10	47.59	-30.19	47.73	694326.03	735910.21	33°01'19.263"N	103°50'03.083"W	0.84



Actual Wellpath Report

No. 2H AWP

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Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
2837.70	1.260	69.640	2836.18	49.81	-30.57	49.95	694328.25	735909.83	33°01'19.259"N	103°50'03.057"W	1.44
2932.70	1.340	67.960	2931.15	51.82	-29.79	51.96	694330.26	735910.61	33°01'19.267"N	103°50'03.033"W	0.09
3027.80	1.120	69.330	3026.23	53.73	-29.04	53.86	694332.16	735911.36	33°01'19.274"N	103°50'03.011"W	0.23
3122.80	1.100	76.990	3121.21	55.49	-28.51	55.62	694333.92	735911.89	33°01'19.280"N	103°50'02.990"W	0.16
3217.80	1.100	86.590	3216.19	57.29	-28.25	57.42	694335.71	735912.15	33°01'19.282"N	103°50'02.969"W	0.19
3312.90	1.280	99.160	3311.27	59.25	-28.37	59.38	694337.67	735912.04	33°01'19.281"N	103°50'02.946"W	0.33
3407.90	1.320	98.190	3406.25	61.38	-28.69	61.51	694339.81	735911.71	33°01'19.277"N	103°50'02.921"W	0.05
3503.00	0.940	101.510	3501.33	63.22	-29.00	63.36	694341.65	735911.40	33°01'19.274"N	103°50'02.899"W	0.41
3598.00	0.690	102.780	3596.32	64.54	-29.28	64.68	694342.97	735911.12	33°01'19.271"N	103°50'02.884"W	0.26
3693.00	0.600	111.230	3691.31	65.56	-29.59	65.70	694344.00	735910.81	33°01'19.268"N	103°50'02.872"W	0.14
3788.10	0.440	111.170	3786.41	66.37	-29.90	66.51	694344.80	735910.50	33°01'19.265"N	103°50'02.862"W	0.17
3883.10	0.360	116.790	3881.41	66.97	-30.17	67.11	694345.41	735910.23	33°01'19.263"N	103°50'02.855"W	0.09
3978.20	0.360	123.070	3976.51	67.49	-30.47	67.63	694345.92	735909.94	33°01'19.260"N	103°50'02.849"W	0.04
4073.20	0.330	132.480	4071.50	67.94	-30.81	68.08	694346.38	735909.59	33°01'19.256"N	103°50'02.844"W	0.07
4168.20	0.350	142.090	4166.50	68.32	-31.23	68.46	694346.76	735909.17	33°01'19.252"N	103°50'02.839"W	0.06
4263.30	0.420	150.210	4261.60	68.66	-31.76	68.81	694347.11	735908.64	33°01'19.247"N	103°50'02.835"W	0.09
4358.30	0.380	159.010	4356.60	68.95	-32.36	69.10	694347.39	735908.05	33°01'19.241"N	103°50'02.832"W	0.08
4453.40	0.450	157.160	4451.70	69.20	-32.99	69.36	694347.65	735907.41	33°01'19.235"N	103°50'02.829"W	0.07
4548.40	0.500	159.670	4546.69	69.49	-33.73	69.65	694347.94	735906.68	33°01'19.227"N	103°50'02.825"W	0.06
4643.40	0.410	163.500	4641.69	69.73	-34.44	69.89	694348.18	735905.96	33°01'19.220"N	103°50'02.823"W	0.10
4738.50	0.340	185.660	4736.79	69.79	-35.05	69.95	694348.25	735905.35	33°01'19.214"N	103°50'02.822"W	0.17
4833.50	0.200	226.230	4831.79	69.64	-35.44	69.81	694348.10	735904.96	33°01'19.210"N	103°50'02.824"W	0.24
4929.60	0.140	247.530	4927.89	69.41	-35.60	69.58	694347.87	735904.80	33°01'19.209"N	103°50'02.826"W	0.09
5023.60	0.250	272.290	5021.89	69.10	-35.64	69.27	694347.56	735904.76	33°01'19.208"N	103°50'02.830"W	0.14
5118.60	0.260	270.890	5116.88	68.68	-35.63	68.84	694347.14	735904.77	33°01'19.208"N	103°50'02.835"W	0.01
5213.70	0.150	321.580	5211.98	68.39	-35.53	68.55	694346.85	735904.87	33°01'19.209"N	103°50'02.838"W	0.21
5308.70	0.340	359.970	5306.98	68.31	-35.15	68.47	694346.77	735905.25	33°01'19.213"N	103°50'02.839"W	0.25
5403.80	0.210	331.480	5402.08	68.23	-34.71	68.39	694346.69	735905.69	33°01'19.218"N	103°50'02.840"W	0.19
5498.80	0.240	325.720	5497.08	68.03	-34.40	68.19	694346.49	735906.01	33°01'19.221"N	103°50'02.843"W	0.04
5593.80	0.340	336.020	5592.08	67.81	-33.97	67.97	694346.26	735906.43	33°01'19.225"N	103°50'02.845"W	0.12



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Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
5688.90	0.370	324.770	5687.18	67.52	-33.47	67.68	694345.97	735906.94	33°01'19.230"N	103°50'02.849"W	0.08
5783.90	0.460	311.580	5782.18	67.06	-32.96	67.21	694345.51	735907.44	33°01'19.235"N	103°50'02.854"W	0.14
5880.30	0.300	321.260	5878.57	66.62	-32.51	66.77	694345.06	735907.89	33°01'19.239"N	103°50'02.859"W	0.18
6005.70	0.430	311.070	6003.97	66.06	-31.94	66.21	694344.50	735908.46	33°01'19.245"N	103°50'02.866"W	0.12
6100.70	0.520	313.320	6098.97	65.48	-31.41	65.62	694343.92	735908.99	33°01'19.250"N	103°50'02.873"W	0.10
6195.80	0.530	340.070	6194.06	65.02	-30.70	65.16	694343.46	735909.70	33°01'19.257"N	103°50'02.878"W	0.26
6290.80	0.480	321.190	6289.06	64.62	-29.98	64.76	694343.06	735910.42	33°01'19.265"N	103°50'02.883"W	0.18
6385.80	0.620	345.790	6384.06	64.25	-29.17	64.39	694342.68	735911.23	33°01'19.273"N	103°50'02.887"W	0.29
6480.90	0.530	356.850	6479.15	64.10	-28.23	64.23	694342.53	735912.17	33°01'19.282"N	103°50'02.889"W	0.15
6575.90	0.610	346.520	6574.15	63.97	-27.30	64.09	694342.39	735913.10	33°01'19.291"N	103°50'02.890"W	0.14
6702.60	0.650	341.500	6700.84	63.59	-25.97	63.71	694342.00	735914.44	33°01'19.304"N	103°50'02.895"W	0.05
6797.70	0.530	343.520	6795.93	63.30	-25.03	63.41	694341.71	735915.37	33°01'19.314"N	103°50'02.898"W	0.13
6892.70	0.550	336.880	6890.93	63.00	-24.19	63.11	694341.40	735916.21	33°01'19.322"N	103°50'02.902"W	0.07
6987.80	0.630	349.940	6986.02	62.73	-23.26	62.84	694341.13	735917.14	33°01'19.331"N	103°50'02.905"W	0.16
7082.80	0.620	6.460	7081.02	62.70	-22.23	62.80	694341.10	735918.17	33°01'19.341"N	103°50'02.905"W	0.19
7177.80	0.660	12.650	7176.01	62.88	-21.19	62.98	694341.28	735919.21	33°01'19.352"N	103°50'02.903"W	0.08
7272.90	0.860	33.250	7271.11	63.40	-20.06	63.49	694341.79	735920.34	33°01'19.363"N	103°50'02.897"W	0.35
7399.60	0.990	53.410	7397.79	64.81	-18.61	64.89	694343.19	735921.79	33°01'19.377"N	103°50'02.880"W	0.27
7494.60	1.150	59.130	7492.77	66.29	-17.63	66.37	694344.67	735922.77	33°01'19.387"N	103°50'02.863"W	0.20
7589.70	1.060	71.250	7587.85	67.94	-16.86	68.02	694346.32	735923.54	33°01'19.394"N	103°50'02.844"W	0.26
7684.80	1.050	69.550	7682.94	69.60	-16.27	69.67	694347.97	735924.13	33°01'19.400"N	103°50'02.824"W	0.03
7779.80	1.100	80.270	7777.92	71.31	-15.81	71.39	694349.68	735924.59	33°01'19.404"N	103°50'02.804"W	0.22
7874.80	1.210	90.300	7872.90	73.21	-15.66	73.29	694351.58	735924.74	33°01'19.406"N	103°50'02.782"W	0.24
7969.80	1.040	92.710	7967.88	75.08	-15.71	75.15	694353.45	735924.69	33°01'19.405"N	103°50'02.760"W	0.19
8064.90	1.100	92.810	8062.97	76.85	-15.80	76.93	694355.22	735924.61	33°01'19.404"N	103°50'02.739"W	0.06
8159.90	1.450	88.170	8157.94	78.96	-15.80	79.04	694357.33	735924.60	33°01'19.404"N	103°50'02.714"W	0.38
8255.00	1.250	84.490	8253.02	81.20	-15.66	81.27	694359.57	735924.74	33°01'19.405"N	103°50'02.688"W	0.23
8350.00	1.140	60.210	8348.00	83.05	-15.09	83.12	694361.42	735925.31	33°01'19.411"N	103°50'02.666"W	0.54
8434.00	1.200	73.400	8431.98	84.63	-14.43	84.69	694362.99	735925.97	33°01'19.417"N	103°50'02.648"W	0.33
8453.00	1.600	56.200	8450.97	85.04	-14.22	85.10	694363.40	735926.18	33°01'19.419"N	103°50'02.643"W	3.03



Actual Wellpath Report

No. 2H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
8485.00	1.000	55.300	8482.97	85.64	-13.82	85.70	694364.00	735926.58	33°01'19.423"N	103°50'02.636"W	1.88
8516.00	5.700	90.500	8513.91	87.40	-13.68	87.47	694365.76	735926.73	33°01'19.425"N	103°50'02.615"W	15.86
8548.00	14.100	82.900	8545.40	92.87	-13.21	92.93	694371.23	735927.19	33°01'19.429"N	103°50'02.551"W	26.51
8580.00	21.700	81.500	8575.83	102.61	-11.85	102.67	694380.96	735928.55	33°01'19.442"N	103°50'02.436"W	23.79
8611.00	28.200	87.600	8603.93	115.62	-10.69	115.67	694393.96	735929.71	33°01'19.453"N	103°50'02.284"W	22.53
8643.00	38.700	85.400	8630.59	133.20	-9.57	133.25	694411.54	735930.83	33°01'19.463"N	103°50'02.077"W	33.03
8675.00	49.000	87.600	8653.64	155.30	-8.26	155.34	694433.63	735932.14	33°01'19.475"N	103°50'01.818"W	32.53
8706.00	60.900	90.700	8671.41	180.63	-7.93	180.67	694458.96	735932.47	33°01'19.477"N	103°50'01.520"W	39.24
8738.00	72.300	90.500	8684.10	209.95	-8.24	209.99	694488.27	735932.16	33°01'19.473"N	103°50'01.176"W	35.63
8770.00	80.200	93.000	8691.70	240.98	-9.20	241.03	694519.31	735931.20	33°01'19.462"N	103°50'00.811"W	25.83
8802.00	82.500	93.200	8696.51	272.56	-10.91	272.62	694550.90	735929.49	33°01'19.443"N	103°50'00.440"W	7.21
8834.00	85.800	92.900	8699.78	304.34	-12.60	304.40	694582.68	735927.80	33°01'19.425"N	103°50'00.067"W	10.35
8865.00	88.200	92.600	8701.40	335.25	-14.09	335.32	694613.60	735926.31	33°01'19.409"N	103°49'59.704"W	7.80
8897.00	87.900	92.200	8702.49	367.20	-15.43	367.27	694645.55	735924.97	33°01'19.394"N	103°49'59.329"W	1.56
8929.00	88.300	90.700	8703.55	399.16	-16.24	399.24	694677.52	735924.16	33°01'19.385"N	103°49'58.954"W	4.85
8960.00	89.700	89.700	8704.09	430.16	-16.34	430.24	694708.51	735924.06	33°01'19.382"N	103°49'58.590"W	5.55
8992.00	90.400	90.000	8704.06	462.16	-16.26	462.24	694740.51	735924.14	33°01'19.382"N	103°49'58.214"W	2.38
9024.00	88.300	87.300	8704.42	494.14	-15.51	494.22	694772.49	735924.89	33°01'19.388"N	103°49'57.838"W	10.69
9056.00	87.500	87.100	8705.60	526.09	-13.95	526.16	694804.43	735926.46	33°01'19.401"N	103°49'57.463"W	2.58
9087.00	88.600	87.800	8706.65	557.05	-12.57	557.11	694835.37	735927.83	33°01'19.414"N	103°49'57.099"W	4.21
9119.00	89.800	88.400	8707.10	589.03	-11.51	589.09	694867.35	735928.89	33°01'19.423"N	103°49'56.724"W	4.19
9182.00	89.500	88.100	8707.48	652.01	-9.58	652.06	694930.32	735930.82	33°01'19.439"N	103°49'55.984"W	0.67
9245.00	88.400	86.900	8708.64	714.95	-6.83	714.99	694993.24	735933.57	33°01'19.463"N	103°49'55.245"W	2.58
9309.00	88.800	88.700	8710.20	778.89	-4.38	778.92	695057.17	735936.02	33°01'19.484"N	103°49'54.494"W	2.88
9372.00	90.100	89.100	8710.81	841.88	-3.17	841.90	695120.15	735937.23	33°01'19.493"N	103°49'53.754"W	2.16
9435.00	89.800	89.000	8710.86	904.87	-2.13	904.89	695183.13	735938.27	33°01'19.501"N	103°49'53.014"W	0.50
9498.00	89.500	88.600	8711.25	967.86	-0.81	967.88	695246.11	735939.59	33°01'19.511"N	103°49'52.275"W	0.79
9562.00	89.300	88.800	8711.92	1031.85	0.65	1031.86	695310.09	735941.05	33°01'19.522"N	103°49'51.523"W	0.44
9625.00	88.900	88.100	8712.91	1094.83	2.35	1094.83	695373.05	735942.75	33°01'19.536"N	103°49'50.783"W	1.28
9689.00	89.200	88.700	8713.97	1158.80	4.14	1158.79	695437.02	735944.54	33°01'19.551"N	103°49'50.032"W	1.05



Actual Wellpath Report

No. 2H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
9752.00	89.400	89.400	8714.74	1221.79	5.18	1221.78	695500.00	735945.58	33°01'19.558"N	103°49'49.292"W	1.16
9815.00	89.600	90.000	8715.29	1284.79	5.51	1284.78	695562.99	735945.91	33°01'19.558"N	103°49'48.552"W	1.00
9879.00	89.200	89.800	8715.96	1348.78	5.62	1348.77	695626.98	735946.02	33°01'19.556"N	103°49'47.801"W	0.70
9942.00	90.000	90.900	8716.40	1411.78	5.24	1411.77	695689.97	735945.64	33°01'19.549"N	103°49'47.061"W	2.16
10005.00	89.200	90.200	8716.84	1474.77	4.63	1474.76	695752.96	735945.03	33°01'19.540"N	103°49'46.321"W	1.69
10069.00	89.400	90.600	8717.62	1538.76	4.19	1538.76	695816.95	735944.59	33°01'19.533"N	103°49'45.570"W	0.70
10132.00	90.800	92.300	8717.51	1601.73	2.59	1601.73	695879.93	735942.99	33°01'19.514"N	103°49'44.830"W	3.50
10195.00	88.800	91.500	8717.73	1664.68	0.50	1664.69	695942.88	735940.90	33°01'19.491"N	103°49'44.091"W	3.42
10258.00	89.500	92.200	8718.66	1727.63	-1.53	1727.65	696005.84	735938.87	33°01'19.467"N	103°49'43.352"W	1.57
10322.00	89.400	92.100	8719.28	1791.57	-3.93	1791.60	696069.79	735936.47	33°01'19.441"N	103°49'42.601"W	0.22
10385.00	89.200	91.800	8720.05	1854.51	-6.07	1854.56	696132.74	735934.33	33°01'19.417"N	103°49'41.861"W	0.57
10448.00	88.600	91.600	8721.26	1917.47	-7.94	1917.52	696195.70	735932.46	33°01'19.395"N	103°49'41.122"W	1.00
10512.00	88.600	91.200	8722.82	1981.42	-9.51	1981.48	696259.65	735930.89	33°01'19.377"N	103°49'40.371"W	0.62
10574.00	88.800	91.600	8724.23	2043.38	-11.02	2043.45	696321.61	735929.38	33°01'19.359"N	103°49'39.643"W	0.72
10638.00	88.500	91.100	8725.73	2107.33	-12.53	2107.41	696385.57	735927.87	33°01'19.341"N	103°49'38.892"W	0.91
10701.00	90.700	91.100	8726.17	2170.31	-13.74	2170.40	696448.55	735926.66	33°01'19.326"N	103°49'38.153"W	3.49
10764.00	89.600	89.900	8726.01	2233.30	-14.29	2233.39	696511.54	735926.11	33°01'19.317"N	103°49'37.413"W	2.58
10828.00	87.100	88.400	8727.85	2297.27	-13.34	2297.35	696575.50	735927.06	33°01'19.324"N	103°49'36.662"W	4.55
10891.00	86.300	88.300	8731.48	2360.14	-11.53	2360.22	696638.36	735928.87	33°01'19.338"N	103°49'35.923"W	1.28
10954.00	90.200	89.000	8733.40	2423.09	-10.05	2423.16	696701.30	735930.36	33°01'19.350"N	103°49'35.184"W	6.29
11018.00	88.500	88.600	8734.13	2487.07	-8.70	2487.14	696765.28	735931.70	33°01'19.360"N	103°49'34.432"W	2.73
11081.00	90.600	88.900	8734.62	2550.06	-7.33	2550.12	696828.25	735933.07	33°01'19.371"N	103°49'33.693"W	3.37
11145.00	88.900	89.300	8734.90	2614.05	-6.33	2614.11	696892.24	735934.07	33°01'19.378"N	103°49'32.941"W	2.73
11208.00	90.100	89.700	8735.45	2677.05	-5.78	2677.10	696955.23	735934.62	33°01'19.380"N	103°49'32.201"W	2.01
11272.00	90.200	90.000	8735.28	2741.05	-5.61	2741.10	697019.22	735934.79	33°01'19.379"N	103°49'31.450"W	0.49
11335.00	88.100	89.300	8736.22	2804.04	-5.22	2804.09	697082.21	735935.18	33°01'19.380"N	103°49'30.710"W	3.51
11399.00	87.600	89.300	8738.62	2867.99	-4.44	2868.04	697146.15	735935.96	33°01'19.384"N	103°49'29.959"W	0.78
11462.00	87.500	89.400	8741.31	2930.93	-3.73	2930.98	697209.09	735936.67	33°01'19.388"N	103°49'29.220"W	0.22
11525.00	86.700	89.200	8744.50	2993.85	-2.96	2993.89	697272.00	735937.44	33°01'19.393"N	103°49'28.481"W	1.31
11589.00	88.100	90.500	8747.40	3057.78	-2.79	3057.82	697335.92	735937.61	33°01'19.392"N	103°49'27.730"W	2.98



Actual Wellpath Report

No. 2H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

WELLPATH DATA (175 stations)											
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	DLS [°/100ft]
11652.00	88.100	90.600	8749.49	3120.74	-3.40	3120.79	697398.88	735937.00	33°01'19.383"N	103°49'26.990"W	0.16
11715.00	88.500	90.600	8751.36	3183.70	-4.06	3183.76	697461.84	735936.34	33°01'19.373"N	103°49'26.251"W	0.63
11778.00	88.600	91.000	8752.95	3246.67	-4.94	3246.73	697524.81	735935.46	33°01'19.361"N	103°49'25.511"W	0.65
11842.00	88.400	90.400	8754.63	3310.64	-5.72	3310.70	697588.78	735934.68	33°01'19.351"N	103°49'24.760"W	0.99
11905.00	88.700	90.000	8756.22	3373.62	-5.94	3373.68	697651.76	735934.46	33°01'19.345"N	103°49'24.020"W	0.79
11968.00	90.800	90.000	8756.50	3436.61	-5.94	3436.68	697714.75	735934.46	33°01'19.342"N	103°49'23.281"W	3.33
12032.00	90.300	89.700	8755.88	3500.61	-5.77	3500.67	697778.74	735934.63	33°01'19.341"N	103°49'22.529"W	0.91
12095.00	89.500	89.400	8755.99	3563.61	-5.27	3563.67	697841.74	735935.13	33°01'19.343"N	103°49'21.789"W	1.36
12158.00	89.700	89.900	8756.43	3626.61	-4.89	3626.67	697904.73	735935.51	33°01'19.344"N	103°49'21.049"W	0.85
12221.00	89.700	89.800	8756.76	3689.61	-4.73	3689.67	697967.72	735935.68	33°01'19.342"N	103°49'20.309"W	0.16
12285.00	89.200	89.800	8757.38	3753.60	-4.50	3753.66	698031.72	735935.90	33°01'19.341"N	103°49'19.558"W	0.78
12348.00	88.900	90.000	8758.42	3816.59	-4.39	3816.65	698094.70	735936.01	33°01'19.339"N	103°49'18.818"W	0.57
12412.00	88.900	89.900	8759.65	3880.58	-4.34	3880.64	698158.69	735936.06	33°01'19.337"N	103°49'18.066"W	0.16
12475.00	88.600	90.100	8761.03	3943.57	-4.34	3943.63	698221.67	735936.06	33°01'19.334"N	103°49'17.327"W	0.57
12539.00	89.300	90.000	8762.20	4007.55	-4.39	4007.62	698285.65	735936.01	33°01'19.330"N	103°49'16.575"W	1.10
12602.00	89.900	89.300	8762.64	4070.55	-4.01	4070.61	698348.64	735936.39	33°01'19.331"N	103°49'15.835"W	1.46
12665.00	89.800	89.300	8762.80	4133.55	-3.24	4133.61	698411.63	735937.16	33°01'19.335"N	103°49'15.096"W	0.16
12729.00	89.900	89.300	8762.97	4197.55	-2.46	4197.60	698475.63	735937.94	33°01'19.340"N	103°49'14.344"W	0.16
12792.00	89.700	89.100	8763.19	4260.54	-1.58	4260.60	698538.61	735938.82	33°01'19.346"N	103°49'13.604"W	0.45
12854.00	89.800	89.200	8763.46	4322.54	-0.66	4322.59	698600.60	735939.74	33°01'19.352"N	103°49'12.876"W	0.23
12918.00	89.300	88.800	8763.96	4386.53	0.46	4386.58	698664.59	735940.86	33°01'19.360"N	103°49'12.124"W	1.00
12980.00	89.100	88.600	8764.83	4448.52	1.87	4448.55	698726.56	735942.27	33°01'19.371"N	103°49'11.396"W	0.46
13044.00	88.900	88.500	8765.95	4512.49	3.49	4512.52	698790.53	735943.89	33°01'19.384"N	103°49'10.645"W	0.35
13088.00	88.400	88.300	8766.98	4556.47	4.71	4556.50	698834.49	735945.11	33°01'19.394"N	103°49'10.129"W	1.22
13142.00	88.400	88.300	8768.49	4610.43	6.32	4610.45	698888.45	735946.72	33°01'19.407"N	103°49'09.495"W	0.00



Actual Wellpath Report

No. 2H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Chaves County, NM	Well	No. 2H
Field	(Ticonderoga) Sec 16, T15S, R31E	Wellbore	No. 2H AWB
Facility	Ticonderoga 16 St Com No. 2H		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 2H PBHL		8744.00	21.40	4621.71	698899.70	735961.80	33°01'19.556"N	103°49'09.362"W	point

WELLPATH COMPOSITION: Ref Wellbore: No. 2H AWB Ref Wellpath: No. 2H AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	8350.00	Gyrodatta relative depth - Drop gyro or Multi-shot	GYRO <100 - 8350>	No. 2H AWB
8350.00	13088.00	NaviTrak (Standard)	MWD <8434 - 13088>	No. 2H AWB
13088.00	13142.00	Blind Drilling (std)	Projection to bit	No. 2H AWB