

30 015 37350

LM

Frac Job #1 06-16-09 (meant for whole well, ended up only fracing toe)

Depth Interval	Amount and Type of Material Used
<u>Stage 1</u> 12990-13334	133,038 total gals, 1,228 gals of 15% HCL acid, 20,623 gals 20# Linear gel, 111,187 gals 20# XL Borate gel. Proppant pumped was 68,348# 20/40 White Sand & 35,303# SB Excel
<u>Stage 2</u> 12537-12990	158,254 total gals, 1,620 gals of 15% HCL acid, 39,878 gals 20# Linear gel, 114,918 gals 20# XL Borate gel. Proppant pumped was 63,906# 20/40 White Sand & 16,781# SB Excel
<u>Stage 3</u> 12128-12537	120,251 total gals, 1,199 gals of 15% HCL acid, 28,476 gals 20# Linear gel, 90,577 gals 20# XL Borate gel. Proppant pumped was 62,252# 20/40 White Sand & 28,846# SB Excel
<u>Stage 4</u> 11717-12128	127,730 total gals, 894 gals of 15% HCL acid, 26,446 gals 20# Linear gel, 101,284 gals 20# XL Borate gel. Proppant pumped was 50,978# 20/40 White Sand & 37,112# SB Excel
<u>Stage 5</u> 11268-11717	130,246 total gals, 1,571 gals of 15% HCL acid, 19,851 gals 20# Linear gel, 108,824 gals 20# XL Borate gel. Proppant pumped was 66,280# 20/40 White Sand & 30,334# SB Excel
<u>Stage 6</u> 10837-11268	128,111 total gals, 1,571 gals of 15% HCL acid, 20,248 gals 20# Linear gel, 107,863 gals 20# XL Borate gel. Proppant pumped was 68,316# 20/40 White Sand & 35,802# SB Excel
<u>Stage 7</u> 10400-10837	138,063 total gals, 1,506 gals of 15% HCL acid, 26,732 gals 20# Linear gel, 111,331 gals 20# XL Borate gel. Proppant pumped was 65,941# 20/40 White Sand & 37,807# SB Excel
<u>Stage 8</u> 9965-10400	133,807 total gals, 1,563 gals of 15% HCL acid, 23,792 gals 20# Linear gel, 104,452 gals 20# XL Borate gel. Proppant pumped was 68,511# 20/40 White Sand & 37,423# SB Excel
<u>Stage 9</u> 9545-9965	146,152 total gals, 4,636 gals of 15% HCL acid, 21,951 gals 20# Linear gel, 119,566 gals 20# XL Borate gel. Proppant pumped was 64,953# 20/40 White Sand & 35,430# SB Excel
<u>Stage 10</u> 9109-9545	109,304 total gals, 0 gals of 15% HCL acid, 14,529 gals 20# Linear gel, 94,775 gals 20# XL Borate gel. Proppant pumped was 72,636# 20/40 White Sand & 13,410# SB Excel



Cimarex Energy Co.

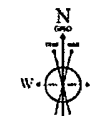
Location: Eddy County, NM
Field: (W. Shugart) Sec 31, T18S, R31E
Facility: West Shugart 31 Fed Com No. 3H

Slot: No. 3H SHL
Well: No. 3H
Wellbore: No. 3H PWB

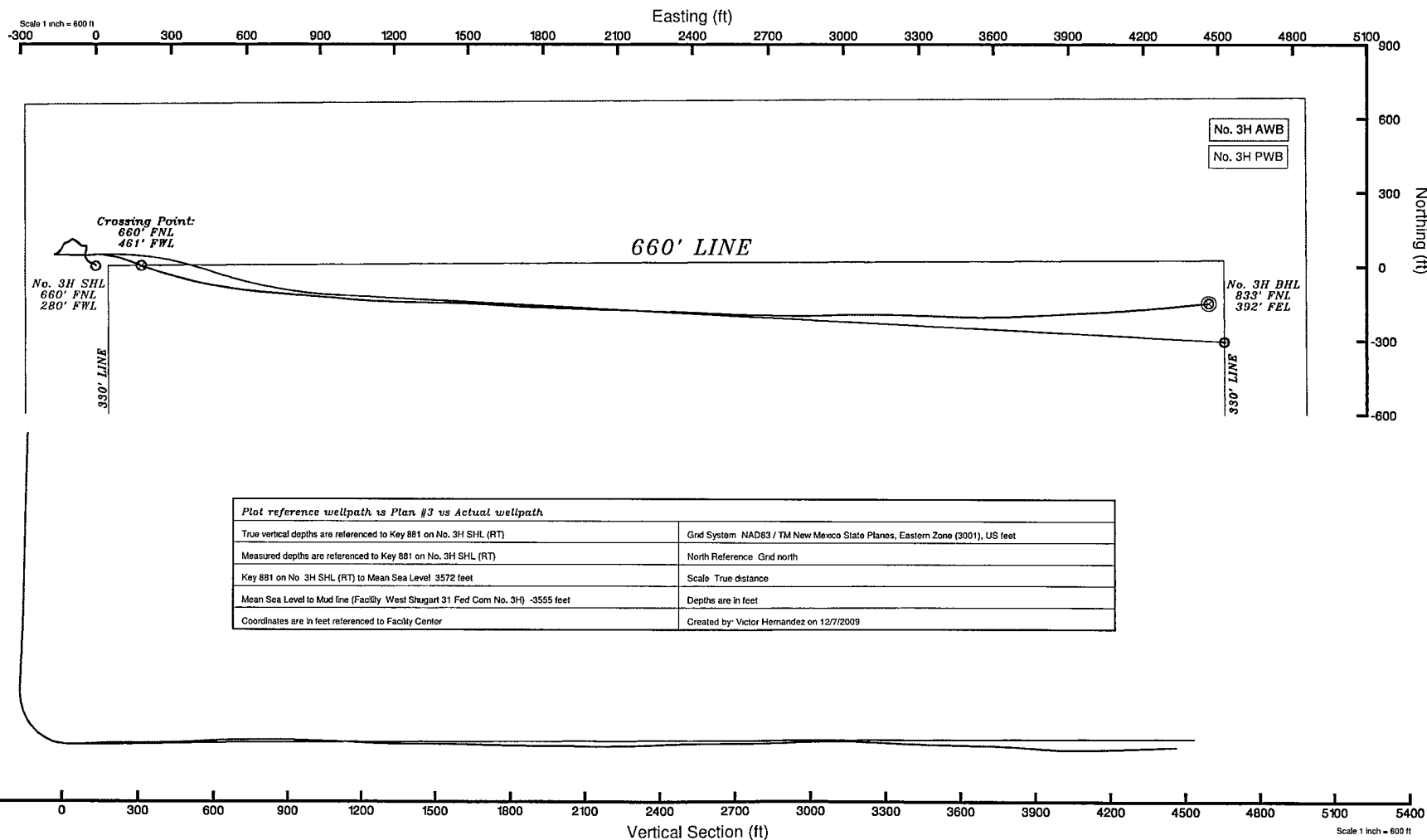


Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	8843.00	77.900	88.900	8765.01	44.43	-8.09	0.00	-11.05
Proj to Bit	8896.00	90.500	89.000	8770.36	45.40	44.53	23.77	41.39
EOT & Build to 91	9276.10	91.000	108.000	8765.34	-10.52	418.70	5.00	418.46
EOH	9326.10	91.000	108.000	8764.46	-25.97	466.24	0.00	466.93
EOT & EOD	9826.73	90.196	93.002	8759.21	-116.94	957.06	3.00	962.74
No. 3H BHL	13403.40	90.196	93.002	8747.00	-304.22	4528.80	0.00	4539.00



BQDM (1948 to 2011.0) Dip: 40.03° Field: 40.03° N
Magnetic North is 6.02 degrees East of True North (at 1/1/2009)
Grid North is 0.23 degrees East of True North
To correct azimuth from True to Grid subtract 0.23 degrees
To correct azimuth from Magnetic to Grid add 7.85 degrees
For example: if the Magnetic North Azimuth = 90 degrees, then the Grid North Azimuth = 90 + 7.85 = 97.85





Actual Wellpath Report

No. 3H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

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	0.999928	Report Generated	12/7/2009 at 10:00:01 AM
Convergence at slot	0.23° East	Database/Source file	WA_Midland/No._3H_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	669702.70	622036.00	32°42'33.566"N	103°54'57.574"W
Facility Reference Pt			669702.70	622036.00	32°42'33.566"N	103°54'57.574"W
Field Reference Pt			669702.70	622036.00	32°42'33.566"N	103°54'57.574"W

WELLPATH DATUM

Calculation method	Minimum curvature	Key 881 on No. 3H SHL (RT) to Facility Vertical Datum	17.00ft
Horizontal Reference Pt	Facility Center	Key 881 on No. 3H SHL (RT) to Mean Sea Level	3572.00ft
Vertical Reference Pt	Key 881 on No. 3H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Key 881 on No. 3H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	93.84°



Actual Wellpath Report

No. 3H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)									
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
0.00	0.000	58.430	0.00	0.00	0.00	0.00	669702.70	622036.00	0.00
82.10	0.240	58.430	82.10	0.14	0.09	0.15	669702.85	622036.09	0.29
145.90	0.450	348.170	145.90	0.18	0.41	0.21	669702.91	622036.41	0.68
209.70	1.030	331.310	209.69	-0.19	1.15	-0.12	669702.58	622037.15	0.96
273.60	1.840	327.540	273.57	-1.11	2.52	-0.94	669701.76	622038.52	1.28
337.40	2.420	308.830	337.33	-2.82	4.23	-2.54	669700.16	622040.23	1.41
401.20	2.350	303.750	401.07	-5.06	5.80	-4.68	669698.02	622041.80	0.35
465.00	2.600	293.100	464.81	-7.56	7.10	-7.10	669695.60	622043.10	0.82
528.80	2.300	287.220	528.56	-10.17	8.04	-9.65	669693.05	622044.04	0.61
592.70	2.190	290.190	592.41	-12.59	8.85	-12.02	669690.68	622044.84	0.25
656.50	2.150	293.400	656.16	-14.89	9.74	-14.27	669688.44	622045.74	0.20
719.70	2.170	293.880	719.32	-17.13	10.70	-16.45	669686.25	622046.70	0.04
783.00	2.190	295.040	782.57	-19.38	11.69	-18.64	669684.06	622047.69	0.08
846.20	2.240	297.620	845.72	-21.64	12.78	-20.83	669681.87	622048.78	0.18
909.40	2.320	297.090	908.87	-23.94	13.93	-23.06	669679.64	622049.93	0.13
972.70	2.410	299.980	972.12	-26.31	15.18	-25.35	669677.35	622051.18	0.24
1035.90	2.360	308.200	1035.27	-28.58	16.65	-27.53	669675.17	622052.65	0.55
1099.20	2.410	306.630	1098.51	-30.78	18.25	-29.62	669673.08	622054.25	0.13
1162.40	2.380	313.440	1161.66	-32.90	19.94	-31.64	669671.06	622055.94	0.45
1225.60	2.460	323.270	1224.80	-34.80	21.93	-33.40	669669.30	622057.93	0.67
1288.90	2.690	325.010	1288.04	-36.61	24.24	-35.07	669667.64	622060.24	0.38
1352.10	2.800	326.420	1351.16	-38.48	26.74	-36.77	669665.93	622062.74	0.20
1415.40	2.910	331.050	1414.38	-40.29	29.43	-38.40	669664.30	622065.43	0.40
1478.60	3.260	337.340	1477.49	-41.96	32.50	-39.87	669662.83	622068.49	0.77
1541.80	3.650	347.370	1540.58	-43.33	36.12	-41.01	669661.70	622072.12	1.14
1605.10	3.950	356.150	1603.74	-44.20	40.26	-41.59	669661.11	622076.26	1.03
1668.30	3.840	6.520	1666.79	-44.39	44.53	-41.50	669661.20	622080.53	1.13
1731.60	4.020	7.750	1729.95	-44.14	48.84	-40.96	669661.74	622084.83	0.31
1794.80	4.240	4.130	1792.98	-43.98	53.36	-40.49	669662.21	622089.36	0.54
1858.00	3.600	15.390	1856.03	-43.57	57.61	-39.80	669662.91	622093.60	1.58



Actual Wellpath Report

No. 3H AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
1921.30	3.130	11.640	1919.23	-42.94	61.22	-38.92	669663.78	622097.21	0.82
1984.50	2.620	7.000	1982.35	-42.62	64.34	-38.40	669664.31	622100.33	0.89
2047.80	2.440	5.710	2045.58	-42.50	67.12	-38.09	669664.62	622103.11	0.30
2111.00	2.160	2.410	2108.73	-42.48	69.65	-37.90	669664.80	622105.64	0.49
2174.20	1.900	355.330	2171.89	-42.67	71.88	-37.94	669664.77	622107.87	0.57
2237.50	1.740	355.160	2235.16	-42.97	73.88	-38.10	669664.60	622109.88	0.25
2300.70	1.620	350.840	2298.33	-43.32	75.72	-38.33	669664.38	622111.72	0.28
2364.00	1.720	347.360	2361.61	-43.79	77.53	-38.68	669664.03	622113.53	0.22
2427.20	1.600	333.770	2424.78	-44.50	79.25	-39.27	669663.43	622115.24	0.65
2490.40	1.260	310.040	2487.96	-45.50	80.49	-40.20	669662.51	622116.48	1.07
2553.70	1.170	285.610	2551.25	-46.70	81.11	-41.35	669661.35	622117.10	0.82
2616.90	1.100	259.430	2614.44	-47.91	81.17	-42.57	669660.13	622117.16	0.82
2680.20	0.910	258.630	2677.73	-48.99	80.96	-43.66	669659.04	622116.95	0.30
2743.40	0.810	245.470	2740.92	-49.87	80.68	-44.56	669658.14	622116.67	0.35
2806.60	0.770	236.050	2804.11	-50.59	80.25	-45.32	669657.39	622116.25	0.21
2869.90	0.640	241.390	2867.41	-51.23	79.85	-45.98	669656.72	622115.84	0.23
2933.10	0.600	252.210	2930.60	-51.83	79.58	-46.61	669656.10	622115.57	0.20
2996.40	0.610	250.660	2993.90	-52.45	79.36	-47.24	669655.46	622115.36	0.03
3059.60	0.650	269.040	3057.10	-53.12	79.25	-47.91	669654.79	622115.24	0.32
3122.80	0.680	275.490	3120.29	-53.85	79.28	-48.65	669654.06	622115.27	0.13
3186.10	0.800	279.530	3183.59	-54.67	79.38	-49.46	669653.25	622115.38	0.21
3249.30	0.780	274.700	3246.78	-55.53	79.49	-50.32	669652.38	622115.49	0.11
3312.60	0.700	280.950	3310.08	-56.35	79.60	-51.13	669651.57	622115.60	0.18
3375.80	0.680	281.940	3373.27	-57.10	79.75	-51.87	669650.83	622115.75	0.04
3439.00	0.710	285.080	3436.47	-57.86	79.93	-52.62	669650.08	622115.93	0.08
3502.30	0.680	287.520	3499.76	-58.61	80.15	-53.36	669649.35	622116.14	0.07
3565.50	0.650	291.610	3562.96	-59.31	80.39	-54.05	669648.66	622116.39	0.09
3628.80	0.680	298.700	3626.25	-60.00	80.70	-54.71	669647.99	622116.70	0.14
3692.00	0.610	295.370	3689.45	-60.65	81.03	-55.34	669647.36	622117.02	0.13
3755.20	0.550	293.500	3752.65	-61.25	81.29	-55.93	669646.78	622117.29	0.10



Actual Wellpath Report

No. 3H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)									
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
3818.50	0.530	283.360	3815.94	-61.82	81.48	-56.49	669646.21	622117.48	0.15
3881.70	0.510	274.570	3879.14	-62.39	81.57	-57.05	669645.65	622117.57	0.13
3945.00	0.440	282.730	3942.44	-62.92	81.65	-57.57	669645.13	622117.64	0.15
4008.20	0.480	298.750	4005.64	-63.40	81.83	-58.04	669644.66	622117.82	0.21
4071.40	0.470	301.150	4068.84	-63.87	82.09	-58.49	669644.21	622118.09	0.04
4134.70	0.400	304.350	4132.13	-64.29	82.35	-58.90	669643.80	622118.34	0.12
4197.90	0.460	305.160	4195.33	-64.69	82.62	-59.29	669643.42	622118.61	0.10
4261.20	0.550	316.890	4258.63	-65.13	82.99	-59.70	669643.00	622118.98	0.22
4324.40	0.680	327.980	4321.83	-65.57	83.53	-60.11	669642.59	622119.52	0.28
4387.60	0.740	329.160	4385.02	-66.03	84.20	-60.52	669642.19	622120.19	0.10
4450.90	0.850	326.010	4448.31	-66.55	84.94	-60.99	669641.71	622120.93	0.19
4514.10	0.890	322.140	4511.51	-67.16	85.71	-61.55	669641.15	622121.71	0.11
4577.40	0.900	318.360	4574.80	-67.84	86.47	-62.19	669640.52	622122.47	0.09
4640.60	0.930	314.710	4637.99	-68.58	87.20	-62.88	669639.82	622123.20	0.10
4703.80	1.350	313.630	4701.18	-69.54	88.08	-63.78	669638.92	622124.07	0.67
4767.10	1.520	310.300	4764.46	-70.79	89.14	-64.96	669637.74	622125.13	0.30
4830.30	1.550	309.350	4827.64	-72.16	90.22	-66.26	669636.44	622126.21	0.06
4893.60	1.630	312.740	4890.91	-73.56	91.37	-67.59	669635.12	622127.37	0.20
4956.80	1.980	311.540	4954.08	-75.12	92.71	-69.06	669633.64	622128.70	0.56
5020.00	1.940	309.340	5017.24	-76.86	94.11	-70.71	669632.00	622130.10	0.13
5083.30	1.820	311.080	5080.51	-78.53	95.45	-72.30	669630.41	622131.44	0.21
5146.50	1.880	311.600	5143.68	-80.15	96.80	-73.83	669628.88	622132.79	0.10
5209.80	1.860	310.950	5206.94	-81.79	98.16	-75.38	669627.33	622134.15	0.05
5273.00	1.900	308.960	5270.11	-83.46	99.49	-76.97	669625.74	622135.48	0.12
5336.20	1.830	308.300	5333.28	-85.15	100.78	-78.58	669624.13	622136.77	0.12
5399.50	1.800	305.550	5396.54	-86.83	101.98	-80.18	669622.53	622137.97	0.15
5462.70	1.830	303.820	5459.71	-88.55	103.12	-81.82	669620.88	622139.11	0.10
5526.00	1.850	302.820	5522.98	-90.32	104.24	-83.52	669619.18	622140.23	0.06
5589.20	1.790	302.430	5586.15	-92.08	105.32	-85.21	669617.49	622141.31	0.10
5652.40	1.470	300.050	5649.32	-93.67	106.25	-86.75	669615.96	622142.25	0.52



Actual Wellpath Report

No. 3H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)									
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
5715.70	1.190	292.450	5712.60	-95.02	106.91	-88.06	669614.65	622142.90	0.52
5778.90	1.040	276.120	5775.79	-96.22	107.22	-89.23	669613.47	622143.21	0.55
5842.20	1.010	270.180	5839.08	-97.35	107.29	-90.36	669612.34	622143.28	0.17
5905.40	1.140	262.990	5902.27	-98.52	107.21	-91.54	669611.16	622143.20	0.30
5968.60	1.230	254.940	5965.46	-99.78	106.96	-92.82	669609.88	622142.95	0.30
6031.90	1.240	248.890	6028.74	-101.05	106.53	-94.12	669608.59	622142.53	0.21
6095.10	1.300	244.040	6091.93	-102.29	105.97	-95.40	669607.31	622141.97	0.19
6158.40	1.580	239.530	6155.21	-103.63	105.22	-96.80	669605.91	622141.21	0.48
6221.60	1.590	249.820	6218.38	-105.15	104.47	-98.37	669604.33	622140.47	0.45
6284.80	1.680	237.710	6281.56	-106.70	103.68	-99.98	669602.73	622139.67	0.56
6348.10	1.740	233.930	6344.83	-108.19	102.61	-101.54	669601.17	622138.61	0.20
6411.30	1.700	234.610	6408.00	-109.65	101.51	-103.08	669599.63	622137.50	0.07
6474.60	1.680	236.020	6471.27	-111.11	100.44	-104.61	669598.09	622136.44	0.07
6537.80	1.720	234.540	6534.45	-112.58	99.38	-106.16	669596.55	622135.37	0.09
6601.00	1.940	239.220	6597.61	-114.19	98.28	-107.85	669594.86	622134.27	0.42
6664.30	2.310	242.880	6660.87	-116.17	97.15	-109.90	669592.81	622133.14	0.62
6727.50	2.130	245.940	6724.02	-118.30	96.09	-112.11	669590.60	622132.08	0.34
6790.80	2.180	253.860	6787.28	-120.47	95.27	-114.34	669588.37	622131.27	0.48
6854.00	2.080	247.380	6850.43	-122.62	94.50	-116.55	669586.16	622130.49	0.41
6917.20	1.640	246.890	6913.60	-124.46	93.70	-118.44	669584.27	622129.70	0.70
6980.50	1.630	240.460	6976.88	-126.02	92.90	-120.06	669582.65	622128.90	0.29
7043.70	2.100	232.080	7040.04	-127.63	91.75	-121.76	669580.95	622127.74	0.86
7107.00	1.900	226.840	7103.30	-129.21	90.32	-123.44	669579.27	622126.31	0.43
7170.20	1.810	222.200	7166.47	-130.55	88.86	-124.87	669577.84	622124.86	0.28
7233.40	2.020	221.420	7229.63	-131.84	87.29	-126.28	669576.43	622123.28	0.33
7296.70	2.280	216.530	7292.89	-133.20	85.44	-127.77	669574.94	622121.43	0.50
7359.90	2.680	209.320	7356.03	-134.52	83.14	-129.24	669573.47	622119.13	0.80
7423.20	3.170	205.880	7419.25	-135.81	80.28	-130.73	669571.98	622116.27	0.82
7486.40	3.420	207.180	7482.34	-137.21	77.03	-132.35	669570.36	622113.02	0.41
7549.60	3.500	207.540	7545.43	-138.74	73.64	-134.10	669568.61	622109.63	0.13



Actual Wellpath Report

No. 3H AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
7612.90	3.190	211.410	7608.62	-140.33	70.42	-135.91	669566.80	622106.42	0.61
7676.10	3.100	211.890	7671.73	-141.95	67.47	-137.73	669564.98	622103.47	0.15
7739.40	2.890	214.120	7734.94	-143.56	64.70	-139.53	669563.18	622100.69	0.38
7802.60	2.640	215.180	7798.07	-145.12	62.19	-141.26	669561.45	622098.18	0.40
7865.80	2.450	218.290	7861.20	-146.64	59.94	-142.94	669559.77	622095.93	0.37
7929.10	2.350	216.740	7924.45	-148.11	57.84	-144.56	669558.16	622093.83	0.19
7992.30	2.110	213.920	7987.60	-149.39	55.83	-145.98	669556.73	622091.83	0.42
8055.60	1.860	217.680	8050.86	-150.55	54.05	-147.26	669555.45	622090.05	0.45
8118.80	1.990	216.810	8114.03	-151.72	52.36	-148.54	669554.17	622088.36	0.21
8182.00	1.690	227.700	8177.19	-152.96	50.86	-149.89	669552.82	622086.85	0.73
8245.30	1.880	262.680	8240.46	-154.63	50.10	-151.61	669551.10	622086.09	1.72
8308.50	2.280	263.250	8303.62	-156.88	49.82	-153.89	669548.83	622085.81	0.63
8371.80	2.570	253.620	8366.87	-159.45	49.27	-156.50	669546.21	622085.26	0.79
8435.00	2.570	243.720	8430.00	-162.00	48.24	-159.13	669543.58	622084.24	0.70
8510.00	3.120	234.270	8504.91	-165.03	46.30	-162.29	669540.42	622082.30	0.96
8523.00	3.000	234.200	8517.89	-165.57	45.90	-162.86	669539.86	622081.90	0.92
8555.00	1.300	220.700	8549.87	-166.43	45.13	-163.77	669538.94	622081.13	5.51
8588.00	6.700	87.600	8582.80	-164.74	44.93	-162.09	669540.62	622080.93	23.17
8621.00	14.300	89.900	8615.22	-158.75	45.02	-156.08	669546.63	622081.02	23.06
8653.00	22.320	89.790	8645.58	-148.73	45.05	-146.04	669556.67	622081.04	25.06
8685.00	30.400	91.000	8674.23	-134.56	44.93	-131.84	669570.87	622080.93	25.30
8716.00	39.200	92.200	8699.66	-116.90	44.41	-114.18	669588.53	622080.41	28.47
8748.00	49.100	91.300	8722.59	-94.65	43.75	-91.92	669610.78	622079.75	31.00
8779.00	57.700	90.500	8741.06	-69.82	43.37	-67.06	669635.64	622079.37	27.82
8811.00	68.000	88.300	8755.64	-41.47	43.69	-38.63	669664.07	622079.69	32.76
8843.00	77.900	88.900	8765.01	-11.05	44.43	-8.09	669694.62	622080.43	30.99
8874.00	88.200	90.800	8768.76	19.61	44.51	22.64	669725.34	622080.51	33.78
8905.00	91.700	99.400	8768.79	50.57	41.76	53.49	669756.18	622077.75	29.95
8968.00	94.000	110.400	8765.64	112.22	25.61	114.20	669816.89	622061.61	17.82
9031.00	91.300	110.400	8762.73	172.54	3.67	173.18	669875.86	622039.67	4.29



Actual Wellpath Report

No. 3H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)									
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
9094.00	89.900	108.300	8762.07	233.24	-17.20	232.61	669935.29	622018.80	4.01
9158.00	89.900	106.400	8762.18	295.47	-36.28	293.70	669996.37	621999.72	2.97
9222.00	90.400	104.800	8762.02	358.12	-53.49	355.34	670058.01	621982.51	2.62
9285.00	91.900	102.300	8760.75	420.20	-68.25	416.56	670119.23	621967.76	4.63
9348.00	92.100	100.100	8758.55	482.64	-80.48	478.32	670180.99	621955.53	3.50
9411.00	93.000	98.600	8755.75	545.28	-90.70	540.42	670243.08	621945.31	2.77
9474.00	92.700	96.600	8752.62	608.07	-99.02	602.79	670305.44	621936.98	3.21
9538.00	91.100	94.600	8750.50	672.00	-105.26	666.44	670369.09	621930.74	4.00
9601.00	90.300	94.300	8749.73	734.99	-110.15	729.25	670431.89	621925.86	1.36
9664.00	90.900	94.800	8749.07	797.98	-115.15	792.04	670494.69	621920.86	1.24
9728.00	89.600	94.400	8748.79	861.97	-120.28	855.84	670558.47	621915.73	2.13
9791.00	87.600	94.900	8750.33	924.94	-125.39	918.61	670621.24	621910.62	3.27
9854.00	88.100	95.400	8752.69	987.88	-131.04	981.31	670683.93	621904.97	1.12
9917.00	88.200	95.100	8754.72	1050.83	-136.80	1044.01	670746.63	621899.21	0.50
9981.00	87.500	92.800	8757.12	1114.78	-141.20	1107.81	670810.43	621894.81	3.75
10044.00	87.800	92.200	8759.71	1177.71	-143.95	1170.70	670873.31	621892.06	1.06
10107.00	87.500	91.400	8762.29	1240.62	-145.93	1233.61	670936.22	621890.08	1.36
10170.00	88.500	91.000	8764.49	1303.51	-147.25	1296.56	670999.16	621888.76	1.71
10234.00	89.400	91.500	8765.66	1367.43	-148.64	1360.53	671063.13	621887.37	1.61
10297.00	89.900	91.200	8766.05	1430.37	-150.13	1423.51	671126.11	621885.88	0.93
10360.00	90.100	92.100	8766.05	1493.33	-151.94	1486.48	671189.07	621884.07	1.46
10423.00	89.400	93.100	8766.32	1556.31	-154.80	1549.42	671252.00	621881.21	1.94
10487.00	88.300	93.800	8767.61	1620.29	-158.65	1613.29	671315.87	621877.36	2.04
10550.00	88.400	93.500	8769.42	1683.27	-162.66	1676.13	671378.71	621873.35	0.50
10613.00	88.400	92.600	8771.18	1746.24	-166.01	1739.02	671441.59	621870.00	1.43
10676.00	88.600	92.500	8772.83	1809.20	-168.81	1801.94	671504.50	621867.20	0.35
10740.00	89.800	92.200	8773.72	1873.17	-171.43	1865.87	671568.44	621864.58	1.93
10803.00	89.900	91.800	8773.89	1936.14	-173.63	1928.84	671631.39	621862.38	0.65
10866.00	89.100	92.000	8774.44	1999.10	-175.72	1991.80	671694.35	621860.29	1.31
10929.00	88.300	91.400	8775.87	2062.04	-177.59	2054.75	671757.30	621858.42	1.59



Actual Wellpath Report

No. 3H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWP
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
10992.00	89.900	91.900	8776.86	2124.98	-179.40	2117.72	671820.26	621856.61	2.66
11056.00	90.400	91.600	8776.69	2188.94	-181.36	2181.69	671884.23	621854.66	0.91
11119.00	90.700	91.900	8776.08	2251.89	-183.28	2244.65	671947.19	621852.73	0.67
11182.00	92.300	91.800	8774.43	2314.83	-185.31	2307.60	672010.13	621850.70	2.54
11246.00	92.400	92.400	8771.81	2378.75	-187.66	2371.50	672074.03	621848.36	0.95
11309.00	92.200	92.200	8769.28	2441.67	-190.18	2434.40	672136.92	621845.83	0.45
11372.00	91.500	92.500	8767.25	2504.62	-192.77	2497.31	672199.83	621843.25	1.21
11436.00	90.200	92.300	8766.30	2568.59	-195.45	2561.25	672263.76	621840.57	2.06
11499.00	90.700	91.000	8765.80	2631.54	-197.26	2624.22	672326.72	621838.75	2.21
11562.00	90.300	91.300	8765.25	2694.47	-198.52	2687.20	672389.70	621837.49	0.79
11626.00	90.400	90.700	8764.86	2758.39	-199.64	2751.19	672453.69	621836.37	0.95
11689.00	91.000	90.600	8764.09	2821.28	-200.36	2814.18	672516.67	621835.66	0.97
11752.00	91.600	88.900	8762.66	2884.10	-200.08	2877.16	672579.65	621835.93	2.86
11815.00	92.200	88.100	8760.58	2946.80	-198.43	2940.11	672642.59	621837.58	1.59
11879.00	91.900	88.600	8758.29	3010.46	-196.59	3004.04	672706.52	621839.42	0.91
11942.00	91.000	89.700	8756.69	3073.23	-195.66	3067.01	672769.48	621840.36	2.26
12005.00	89.100	90.000	8756.64	3136.07	-195.49	3130.01	672832.48	621840.52	3.05
12069.00	87.600	91.000	8758.48	3199.93	-196.05	3193.98	672896.44	621839.96	2.82
12132.00	87.000	92.400	8761.45	3262.82	-197.92	3256.88	672959.33	621838.10	2.42
12195.00	86.900	91.900	8764.80	3325.70	-200.28	3319.74	673022.20	621835.74	0.81
12259.00	88.400	91.900	8767.42	3389.61	-202.40	3383.65	673086.10	621833.62	2.34
12322.00	88.400	91.800	8769.18	3452.55	-204.43	3446.59	673149.04	621831.58	0.16
12385.00	88.800	91.000	8770.72	3515.47	-205.97	3509.56	673212.00	621830.05	1.42
12448.00	88.400	89.500	8772.26	3578.32	-206.24	3572.53	673274.97	621829.77	2.46
12511.00	88.800	88.500	8773.80	3641.08	-205.14	3635.51	673337.94	621830.87	1.71
12574.00	89.200	87.700	8774.90	3703.75	-203.06	3698.46	673400.89	621832.96	1.42
12638.00	87.400	87.300	8776.80	3767.33	-200.27	3762.37	673464.79	621835.75	2.88
12701.00	86.100	86.400	8780.37	3829.76	-196.81	3825.17	673527.59	621839.20	2.51
12764.00	85.200	86.500	8785.15	3892.06	-192.92	3887.87	673590.28	621843.09	1.44
12827.00	86.700	86.900	8789.60	3954.41	-189.30	3950.60	673653.01	621846.71	2.46



Actual Wellpath Report

No. 3H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(W. Shugart) Sec 31, T18S, R31E	Wellbore	No. 3H AWB
Facility	West Shugart 31 Fed Com No. 3H		

WELLPATH DATA (218 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	DLS [°/100ft]
12891.00	89.100	87.100	8791.94	4017.91	-185.96	4014.47	673716.87	621850.06	3.76
12954.00	90.800	86.500	8792.00	4080.43	-182.44	4077.37	673779.77	621853.57	2.86
13017.00	91.200	85.900	8790.90	4142.86	-178.27	4140.22	673842.61	621857.75	1.14
13081.00	91.700	85.200	8789.28	4206.17	-173.30	4204.01	673906.39	621862.71	1.34
13144.00	92.000	84.800	8787.25	4268.39	-167.81	4266.73	673969.12	621868.20	0.79
13207.00	92.200	84.200	8784.94	4330.51	-161.78	4329.40	674031.78	621874.23	1.00
13270.00	92.000	84.200	8782.63	4392.58	-155.42	4392.04	674094.41	621880.59	0.32
13344.00	92.000	84.200	8780.05	4465.49	-147.94	4465.61	674167.98	621888.07	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 3H PBHL		8788.00	-304.22	4528.80	674231.16	621731.80	32°42'30.376"N	103°54'04.587"W	point

WELLPATH COMPOSITION

Ref Wellbore: No. 3H AWB

Ref Wellpath: No. 3H AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	8435.00	Gyrodatta relative depth - Drop gyro or Multi-shot	GYRO - <82.1 - 8435>	No. 3H AWB
8435.00	13270.00	NaviTrak (Standard)	MWD - <8510 - 13270>	No. 3H AWB
13270.00	13344.00	Blind Drilling (std)	Projection to bit	No. 3H AWB

DOWN HOLE WELL PROFILE

WELL NAME	WEST SHUGART 31 FED 3H	DATE	12/6/08
SUPERVISOR	Jeff LaRite	TOOL HAND	DAUSHERTY / SAUCEDO
PHONE #	432-208-3080	PHONE #	432-664-8392
RIG #	KEY 881	FIELD TICKET #	5934

ELEVATIONS				
GL ELEV	KB ELEV	RIG KBD	TVD	
0	15		0.00	
CASING / OPEN HOLE LAYOUT	OD (IN)	LANDED DEPTH	WEIGHT (LB/FT)	TOP OF (FTKB)
CASING DESCRIPTION	7	8470'	28	0
WINDOW DESCRIPTION				
OPEN HOLE DESCRIPTION		JUNCTION @	8470'	

DESCRIPTION

Top of curve 8540', bottom of curve 8040'.

Liner Placement Schematic

DOWNHOLE DESCRIPTION FROM BOTTOM UP

BOTTOM @	DESCRIPTION	LENGTH	ID	OD
13204.00	3-1/2" 8 rd box Pump-out Plug w/ 12pins (4800 psig) 1	0.95	0.750	4.500
13203.05	Swedge w/ 3-1/2" Pin x 4-1/2" LTC collar	0.96	2.982	4.500
13202.09	2 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 1-2	77.71	4.000	4.500
13124.38	4-1/2" LTC 11 6# P-110 Pup Jt	2.04	4.000	4.500
13122.34	Peak Hydro Pak OH Anchor 4-1/2" LTC 2	4.87	3.990	5.880
13117.47	4-1/2" 11 6# LTC P-110 Pup Jt	6.13	3.990	4.500
13111.34	3 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 3-5	118.73	4.000	4.500
12992.61	4-1/2" LTC 11 6# P-110 Pup Jt	2.06	4.000	4.500
12990.55	Peak Rot Centralizer 4-1/2" LTC	0.55	3.995	5.875
12990.00	Peak 7"x4 5" LTC Predatorli Packer1 3	3.96	3.996	5.685
12986.04	4-1/2" LTC 11 6# P-110 Pup Jt	6.14	4.000	4.500
12979.90	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 6-10	199.59	4.000	4.500
12780.31	Peak Gen II Selective Frac Sleeve 2 031" id 4	3.56	2.031	5.875
12776.75	6 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 11-16	236.33	4.000	4.500
12540.42	4-1/2" LTC 11 6# P-110 Pup Jt	2.06	4.000	4.500
12538.36	Peak Rot Centralizer 4-1/2" LTC pin x box	0.56	3.995	5.875
12537.80	Peak 7"x4 5" LTC Predatorli Packer2 5	3.96	3.996	5.685
12533.84	4-1/2" LTC 11 6# P-110 Pup Jt	6.00	4.000	4.500
12527.84	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 17-21	197.79	4.000	4.500
12330.05	Peak Gen II Selective Frac Sleeve 2 156" id 6	3.56	2.156	5.875
12326.49	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 22-26	195.59	4.000	4.500
12130.90	4-1/2" LTC 11 6# P-110 Pup Jt	2.07	3.920	4.500
12128.83	Peak Rot Centralizer 4-1/2" LTC pin x box	0.56	3.995	5.875
12128.27	Peak 7"x4 5" LTC Predatorli Packer3 7	3.96	3.996	5.685
12124.31	4-1/2" LTC 11 6# P-110 Pup Jt	6.06	3.920	4.500
12118.25	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 27-31	198.54	4.000	4.500
11921.71	Peak Gen II Selective Frac Sleeve 2 281" id 8	3.56	2.281	5.875
11918.15	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 32-36	198.60	4.000	4.500
11726.15	4-1/2" LTC 11 6# P-110 Pup Jt	2.07	4.000	4.500
11718.08	Peak Rot Centralizer 4-1/2" LTC pin x box	0.56	3.995	5.875
11717.62	Peak 7"x4 5" LTC Predatorli Packer4 9	3.96	3.996	5.685
11713.56	4-1/2" LTC 11 6# P-110 Pup Jt	6.09	4.000	4.500
11707.47	6 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 37-42	236.76	4.000	4.500
11470.71	Peak Gen II Selective Frac Sleeve 2 406" id 10	3.56	2.406	5.875
11467.15	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 43-47	195.57	4.000	4.500
11271.58	4-1/2" LTC 11 6# P-110 Pup Jt	2.06	4.000	4.500
11269.52	Peak Rot Centralizer 4-1/2" LTC pin x box	0.57	3.995	5.875
11268.95	Peak 7"x4 5" LTC Predatorli Packer5 11	3.96	3.996	5.685
11264.99	4-1/2" 11 6# P-110 Pup Jt	6.05	4.000	4.500
11258.94	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 48-52	205.86	4.000	4.500
11053.08	Peak Gen II Selective Frac Sleeve 2 531" id 12	3.58	2.531	5.875
11049.52	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 53-57	209.70	4.000	4.500
10939.82	4-1/2" LTC 11 6# P-110 Pup Jt	2.07	4.000	4.500
10937.75	Peak Rot Centralizer 4-1/2" LTC pin x box	0.57	3.995	5.875
10937.18	Peak 7"x4 5" LTC Predatorli Packer6 13	3.96	3.996	5.685
10933.22	4-1/2" LTC 11 6# P-110 Pup Jt	6.05	4.000	4.500
10827.17	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 58-62	210.74	4.000	4.500
10616.43	Peak Gen II Selective Frac Sleeve 2 781" id 14	3.56	2.781	5.875
10612.87	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 63-67	209.94	4.000	4.500
10402.93	4-1/2" LTC 11 6# P-110 Pup Jt	2.07	4.000	4.500
10400.86	Peak Rot Centralizer 4-1/2" LTC pin x box	0.57	3.995	5.875
10400.29	Peak 7"x4 5" LTC Predatorli Packer7 15	3.96	3.996	5.685
10396.33	4-1/2" LTC 11 6# P-110 Pup Jt	6.08	4.000	4.500
10390.25	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 68-72	207.50	4.000	4.500
10182.75	Peak Selective Gen II Frac Sleeve 3 031" id 16	3.56	3.031	5.875
10179.19	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 73-77	211.53	4.000	4.500
9967.66	4-1/2" LTC 11 6# P-110 Pup Jt	2.08	4.000	4.500
9965.58	Peak Rot Centralizer 4-1/2" LTC pin x box	0.57	3.995	5.875
9965.01	Peak 7"x4 5" LTC Predatorli Packer8 17	3.96	3.996	5.685
9961.05	4-1/2" LTC 11 6# P-110 Pup Jt	6.08	4.000	4.500
9954.97	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 78-82	198.39	4.000	4.500
9756.58	Peak Gen II Selective Frac Sleeve 3 281" id 18	3.56	3.281	5.875
9753.02	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 83-87	205.17	4.000	4.500
9547.95	4-1/2" LTC 11 6# P-110 Pup Jt	2.07	4.000	4.500
9545.78	Peak Rot Centralizer 4-1/2" LTC pin x box	0.58	3.995	5.875
9545.20	Peak 7"x4 5" LTC Predatorli Packer9 4-1/2" 19	3.96	3.996	5.685
9541.24	4-1/2" LTC 11 6# P-110 Pup Jt	6.05	4.000	4.500
9535.19	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 88-92	208.61	4.000	4.500
9326.58	Peak Gen II Selective Frac Sleeve 3 531" id 20	3.56	3.531	5.875
9323.02	5 Jts 4-1/2" LTC 11 60# P-110 Casing JH# 93-97	210.84	4.000	4.500
9112.18	4-1/2" LTC 11 6# P-110 Pup Jt	2.09	4.000	4.500
9110.09	Peak Rot Centralizer 4-1/2" LTC pin x box	0.57	3.995	5.875
9109.52	Peak 7"x4 5" LTC Predatorli Packer10 21	3.96	3.996	5.685
9105.56	4-1/2" LTC 11 6# P-110 Pup Jt	6.00	4.000	4.500
9099.58	X O Joint 4-1/2" BTC BOX x 4-1/2" LTC Pin	20.80	4.000	4.500
9078.76	17 Jts 4-1/2" BTC 11 6# P-110 Casing JH# 1-17	721.36	4.000	4.500
8357.40	X O 4-1/2" LTC BOX x 4-1/2" BTC Pin	0.98	4.000	4.500
8356.42	PEAK 7"x4 5" LTC Mono Pak Packer	2.84	4.000	4.500
8353.58	7" 28# STRATA PAK LINER HANGER (SEAL 8348") 22	6.46	3.996	6.000
8347.12	5 3/8" x 4" TLC Running Adapter	2.70	4.000	5.375
8344.42	PEAK TL 5 GUNGEON (3 PRONG)	2.50	4.000	4.500
8341.92	PEAK TLC RUNNING TOOL ADAPTER	0.84	1.750	4.750
8341.08	3 1/2 IF PUP JT	7.67	2.375	3.500
8333.41	264 JTS 3 1/2 IF 13 3# DRILLPIPE	8345.67	2.780	3.500
-12.26	STICKUP		0.00	
-12.26		0	0.00	
-12.26		0	0.00	
-12.26		0	0.00	

WEIGHT OF STRING	122k	TOTAL STRING LENGTH	13216.26
PUSH / PULL TEST	0	STICK-UP OFF RIG FLOOR	12.26
TOP OF CASING HANGER PACKER	8347.00	TUBING BOTTOM	13204.00

*** CONFIDENTIAL ***

NOT TO BE DISCLOSED OUTSIDE CIMAREX ENERGY CO

Total drilled
depth @ 13344'