



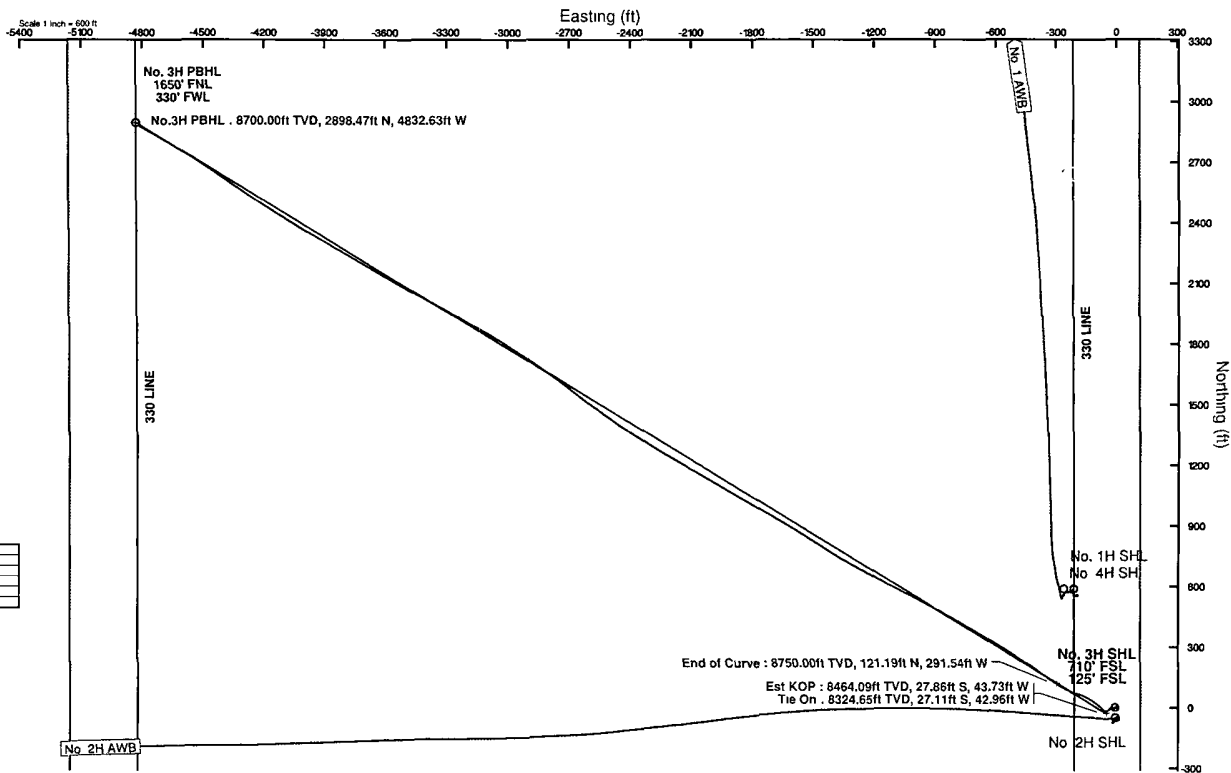
Cimarex Energy Co.

Location: Eddy County, NM
 Field: (Irwin) Sec 13, T19S, R30E
 Facility: Irwin 13 Fed Site Location

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

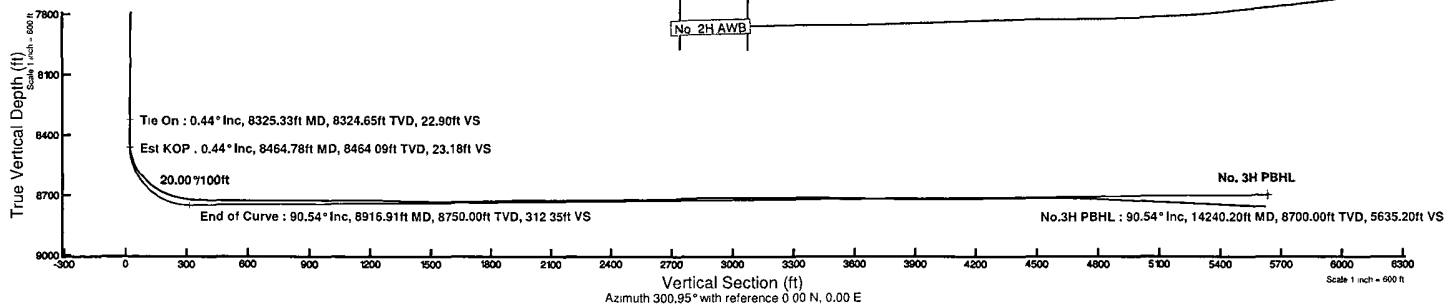


Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (%100ft)	VS (ft)
Tie On	8325.33	0.440	226.110	8324.65	-27.11	-42.96	0.00	22.90
Est KOP	8464.78	0.440	226.110	8464.09	-27.86	-43.73	0.00	23.18
End of Curve	8916.91	90.538	301.449	8750.00	121.19	-291.54	20.00	312.35
No 3H PBHL	14240.20	90.538	301.449	8700.00	2898.47	-4832.63	0.00	5635.20



BGCM (1945 0 to 2012 0) Dip 80.54° Field 48886 1 nT
 Magnetic North is 7.83 degrees East of True North (at 6/15/2011)
 Grid North is 0.22 degrees East of True North
 To correct azimuth from True to Grid subtract 0.22 degrees
 To correct azimuth from Magnetic to Grid add 7.61 degrees
 For example if the Magnetic North Azimuth = 30 degs, then the Grid North Azimuth = 30 + 7.61 = 37.61

Well reference wellpath is Plans 1	Grid System NAD83 / TM New Mexico SP Eastern Zone (3001) US feet
True vertical depths are referenced to Rig on No. 3H SHL (RKB)	North Reference Grid north
Measured depths are referenced to Rig on No. 3H SHL (RKB)	Scale True distance
Rig on No. 3H SHL (RKB) to Mean Sea Level 3445 feet	Depths are in feet
Mean Sea Level to Mud line (2) Slot No. 3H SHL 0 feet	Coordinates are in feet referenced to Slot
	Created by calphnk on 10/15/2011



30-015-38100



Actual Wellpath Report

No. 3H AWB_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

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	Calphik
Scale	0.999928	Report Generated	11/2/2011 at 8:17:57 AM
Convergence at slot	0.22° East	Database/Source file	WA_Midland/No._3H_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-588.94	207.12	669363.80	602284.70	32°39'18.138"N	103°55'02.447"W
Facility Reference Pt			669156.70	602873.60	32°39'23.973"N	103°55'04.842"W
Field Reference Pt			669156.70	602873.60	32°39'23.973"N	103°55'04.842"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Rig on No. 3H SHL (RKB) to GL	3445.00ft
Horizontal Reference Pt	Slot	Rig on No. 3H SHL (RKB) to Mean Sea Level	3445.00ft
Vertical Reference Pt	Rig on No. 3H SHL (RKB)	Rig on No. 3H SHL (RKB) to Mud Line at Slot (No. 3H SHL)	3445.00ft
MD Reference Pt	Rig on No. 3H SHL (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	300.95°



Actual Wellpath Report

No. 3H AWB_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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	160.870	0.00	0.00	0.00	0.00	669363.80	602284.70	32°39'18.138"N	103°55'02.447"W	0.00	
18.00	0.000	160.870	18.00	0.00	0.00	0.00	669363.80	602284.70	32°39'18.138"N	103°55'02.447"W	0.00	
78.13	0.450	160.870	78.13	-0.18	-0.22	0.08	669363.88	602284.48	32°39'18.136"N	103°55'02.446"W	0.75	
141.57	0.090	286.710	141.57	-0.32	-0.44	0.11	669363.91	602284.26	32°39'18.134"N	103°55'02.446"W	0.80	
205.01	0.230	261.620	205.01	-0.18	-0.45	-0.06	669363.74	602284.25	32°39'18.134"N	103°55'02.448"W	0.24	
268.45	0.200	247.210	268.45	-0.01	-0.51	-0.29	669363.51	602284.19	32°39'18.133"N	103°55'02.450"W	0.10	
331.89	0.100	342.060	331.89	0.09	-0.50	-0.41	669363.39	602284.20	32°39'18.133"N	103°55'02.452"W	0.36	
395.33	0.080	327.320	395.33	0.18	-0.41	-0.45	669363.35	602284.29	32°39'18.134"N	103°55'02.452"W	0.05	
458.77	0.080	192.530	458.77	0.20	-0.42	-0.48	669363.32	602284.28	32°39'18.134"N	103°55'02.452"W	0.23	
522.21	0.140	63.760	522.21	0.15	-0.43	-0.42	669363.38	602284.28	32°39'18.134"N	103°55'02.452"W	0.32	
585.65	0.340	80.950	585.65	-0.04	-0.36	-0.17	669363.63	602284.34	32°39'18.134"N	103°55'02.449"W	0.33	
649.09	0.180	100.040	649.09	-0.28	-0.35	0.12	669363.92	602284.35	32°39'18.135"N	103°55'02.445"W	0.28	
712.53	0.150	72.820	712.53	-0.43	-0.34	0.29	669364.09	602284.36	32°39'18.135"N	103°55'02.443"W	0.13	
775.97	0.180	64.370	775.97	-0.54	-0.27	0.46	669364.26	602284.43	32°39'18.135"N	103°55'02.441"W	0.06	
839.41	0.420	59.570	839.41	-0.70	-0.11	0.75	669364.55	602284.59	32°39'18.137"N	103°55'02.438"W	0.38	
902.85	0.190	66.860	902.84	-0.88	0.05	1.05	669364.85	602284.75	32°39'18.138"N	103°55'02.435"W	0.37	
966.29	0.400	81.580	966.28	-1.11	0.12	1.37	669365.17	602284.82	32°39'18.139"N	103°55'02.431"W	0.35	
1029.73	0.200	57.260	1029.72	-1.33	0.21	1.68	669365.48	602284.91	32°39'18.140"N	103°55'02.427"W	0.37	
1093.17	0.430	42.360	1093.16	-1.43	0.45	1.93	669365.73	602285.15	32°39'18.142"N	103°55'02.424"W	0.38	
1156.61	0.320	49.040	1156.60	-1.53	0.74	2.23	669366.02	602285.44	32°39'18.145"N	103°55'02.421"W	0.19	
1220.05	0.620	46.310	1220.04	-1.67	1.09	2.61	669366.41	602285.79	32°39'18.149"N	103°55'02.416"W	0.47	
1283.49	0.430	353.500	1283.48	-1.62	1.57	2.83	669366.63	602286.27	32°39'18.153"N	103°55'02.414"W	0.78	
1346.93	0.650	32.800	1346.91	-1.49	2.11	3.00	669366.80	602286.81	32°39'18.159"N	103°55'02.412"W	0.66	
1410.37	0.510	27.380	1410.35	-1.48	2.66	3.32	669367.12	602287.36	32°39'18.164"N	103°55'02.408"W	0.24	
1473.81	0.710	65.120	1473.79	-1.68	3.07	3.81	669367.61	602287.77	32°39'18.168"N	103°55'02.402"W	0.69	
1537.25	0.590	30.300	1537.22	-1.90	3.52	4.33	669368.13	602288.22	32°39'18.173"N	103°55'02.396"W	0.64	
1600.69	0.750	62.020	1600.66	-2.11	4.00	4.86	669368.66	602288.70	32°39'18.177"N	103°55'02.390"W	0.63	
1664.13	0.440	14.320	1664.10	-2.26	4.43	5.29	669369.09	602289.13	32°39'18.182"N	103°55'02.385"W	0.88	
1727.57	0.640	28.370	1727.53	-2.17	4.98	5.52	669369.32	602289.68	32°39'18.187"N	103°55'02.382"W	0.38	
1791.01	0.480	32.000	1790.97	-2.16	5.51	5.83	669369.62	602290.21	32°39'18.192"N	103°55'02.378"W	0.26	
1854.45	0.580	4.660	1854.41	-2.02	6.06	5.99	669369.79	602290.76	32°39'18.198"N	103°55'02.376"W	0.42	
1917.89	0.330	38.490	1917.84	-1.90	6.52	6.13	669369.93	602291.22	32°39'18.202"N	103°55'02.375"W	0.56	
1981.33	0.570	65.760	1981.28	-2.11	6.80	6.53	669370.33	602291.50	32°39'18.205"N	103°55'02.370"W	0.50	
2044.77	0.180	91.950	2044.72	-2.37	6.92	6.92	669370.72	602291.62	32°39'18.206"N	103°55'02.366"W	0.66	
2108.21	0.280	104.830	2108.16	-2.61	6.88	7.17	669370.97	602291.58	32°39'18.206"N	103°55'02.363"W	0.18	
2171.65	0.400	194.280	2171.60	-2.82	6.62	7.27	669371.06	602291.32	32°39'18.203"N	103°55'02.362"W	0.77	
2235.09	0.350	151.620	2235.04	-3.05	6.24	7.30	669371.10	602290.94	32°39'18.199"N	103°55'02.361"W	0.44	
2298.53	0.580	202.420	2298.48	-3.27	5.77	7.27	669371.07	602290.47	32°39'18.195"N	103°55'02.361"W	0.71	
2361.97	0.620	214.520	2361.91	-3.29	5.19	6.96	669370.75	602289.89	32°39'18.189"N	103°55'02.365"W	0.21	
2425.41	0.970	211.350	2425.35	-3.27	4.45	6.48	669370.28	602289.15	32°39'18.182"N	103°55'02.371"W	0.56	
2488.85	0.860	212.310	2488.78	-3.25	3.59	5.95	669369.75	602288.29	32°39'18.173"N	103°55'02.377"W	0.18	
2552.29	1.080	210.890	2552.21	-3.24	2.67	5.39	669369.19	602287.37	32°39'18.164"N	103°55'02.384"W	0.35	
2615.73	0.800	197.340	2615.64	-3.35	1.74	4.95	669368.75	602286.44	32°39'18.155"N	103°55'02.389"W	0.56	
2679.17	1.000	228.460	2679.07	-3.29	0.95	4.40	669368.20	602285.65	32°39'18.147"N	103°55'02.395"W	0.82	
2742.61	0.750	217.430	2742.51	-3.07	0.25	3.73	669367.53	602284.95	32°39'18.140"N	103°55'02.403"W	0.47	



Actual Wellpath Report

No. 3H AWB_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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
2806.05	0.870	220.660	2805.94	-2.94	-0.44	3.17	669366.97	602284.26	32°39'18.134"N	103°55'02.410"W	0.20	
2869.49	0.540	254.310	2869.38	-2.66	-0.89	2.57	669366.37	602283.81	32°39'18.129"N	103°55'02.417"W	0.81	
2932.93	0.800	209.130	2932.81	-2.47	-1.36	2.06	669365.86	602283.34	32°39'18.125"N	103°55'02.423"W	0.90	
2996.37	0.660	225.480	2996.25	-2.39	-2.00	1.59	669365.39	602282.70	32°39'18.118"N	103°55'02.428"W	0.39	
3059.81	1.000	227.880	3059.68	-2.14	-2.63	0.92	669364.72	602282.07	32°39'18.112"N	103°55'02.436"W	0.54	
3123.25	0.980	258.490	3123.11	-1.58	-3.11	-0.03	669363.77	602281.59	32°39'18.107"N	103°55'02.447"W	0.82	
3186.69	0.950	243.440	3186.54	-0.89	-3.45	-1.03	669362.77	602281.25	32°39'18.104"N	103°55'02.459"W	0.40	
3250.13	0.540	275.670	3249.98	-0.34	-3.66	-1.80	669362.00	602281.04	32°39'18.102"N	103°55'02.468"W	0.90	
3313.57	0.810	241.060	3313.41	0.16	-3.84	-2.49	669361.31	602280.86	32°39'18.100"N	103°55'02.476"W	0.75	
3377.01	0.420	285.290	3376.85	0.60	-4.00	-3.10	669360.70	602280.70	32°39'18.099"N	103°55'02.483"W	0.93	
3440.45	0.690	312.370	3440.29	1.20	-3.68	-3.61	669360.19	602281.02	32°39'18.102"N	103°55'02.489"W	0.58	
3503.89	0.460	281.950	3503.72	1.82	-3.37	-4.14	669359.66	602281.33	32°39'18.105"N	103°55'02.495"W	0.59	
3567.33	0.830	287.700	3567.16	2.51	-3.18	-4.83	669358.97	602281.52	32°39'18.107"N	103°55'02.503"W	0.59	
3630.77	0.520	280.880	3630.59	3.22	-2.98	-5.55	669358.25	602281.72	32°39'18.109"N	103°55'02.512"W	0.50	
3694.21	0.780	276.600	3694.03	3.89	-2.88	-6.26	669357.54	602281.82	32°39'18.110"N	103°55'02.520"W	0.42	
3757.65	0.550	271.940	3757.47	4.55	-2.82	-6.99	669356.81	602281.88	32°39'18.110"N	103°55'02.529"W	0.37	
3821.09	0.730	267.350	3820.90	5.15	-2.83	-7.70	669356.10	602281.87	32°39'18.110"N	103°55'02.537"W	0.29	
3884.53	0.460	293.570	3884.34	5.74	-2.74	-8.34	669355.46	602281.96	32°39'18.111"N	103°55'02.544"W	0.59	
3947.97	0.940	294.210	3947.77	6.51	-2.43	-9.05	669354.75	602282.27	32°39'18.114"N	103°55'02.553"W	0.76	
4011.41	0.710	301.850	4011.21	7.42	-2.01	-9.85	669353.95	602282.69	32°39'18.119"N	103°55'02.562"W	0.40	
4074.85	0.960	292.440	4074.64	8.34	-1.60	-10.68	669353.12	602283.10	32°39'18.123"N	103°55'02.572"W	0.45	
4138.29	0.590	295.150	4138.07	9.19	-1.26	-11.47	669352.33	602283.44	32°39'18.126"N	103°55'02.581"W	0.59	
4201.73	0.950	280.410	4201.51	10.00	-1.02	-12.28	669351.52	602283.68	32°39'18.128"N	103°55'02.590"W	0.64	
4265.17	0.570	293.060	4264.94	10.81	-0.80	-13.09	669350.71	602283.90	32°39'18.131"N	103°55'02.600"W	0.65	
4328.61	0.830	293.140	4328.38	11.58	-0.50	-13.80	669350.00	602284.20	32°39'18.134"N	103°55'02.608"W	0.41	
4392.05	0.340	303.250	4391.81	12.22	-0.22	-14.38	669349.42	602284.48	32°39'18.136"N	103°55'02.615"W	0.79	
4455.49	0.680	293.190	4455.25	12.78	0.03	-14.88	669348.92	602284.73	32°39'18.139"N	103°55'02.621"W	0.55	
4518.93	0.430	280.100	4518.69	13.38	0.22	-15.46	669348.34	602284.92	32°39'18.141"N	103°55'02.628"W	0.44	
4582.37	0.730	243.620	4582.13	13.82	0.09	-16.06	669347.74	602284.79	32°39'18.139"N	103°55'02.635"W	0.73	
4645.81	0.350	241.060	4645.56	14.13	-0.19	-16.59	669347.21	602284.51	32°39'18.137"N	103°55'02.641"W	0.60	
4709.25	0.770	239.560	4709.00	14.43	-0.50	-17.13	669346.67	602284.20	32°39'18.134"N	103°55'02.647"W	0.66	
4772.69	0.600	235.450	4772.44	14.78	-0.90	-17.77	669346.03	602283.80	32°39'18.130"N	103°55'02.655"W	0.28	
4836.13	0.220	196.650	4835.87	14.88	-1.21	-18.08	669345.72	602283.49	32°39'18.127"N	103°55'02.658"W	0.71	
4899.57	0.740	226.810	4899.31	14.97	-1.60	-18.41	669345.39	602283.10	32°39'18.123"N	103°55'02.662"W	0.88	
4963.01	1.150	244.090	4962.74	15.43	-2.16	-19.28	669344.52	602282.54	32°39'18.117"N	103°55'02.672"W	0.78	
5026.45	0.730	262.260	5026.17	16.09	-2.49	-20.26	669343.54	602282.21	32°39'18.114"N	103°55'02.684"W	0.80	
5089.89	1.100	235.990	5089.61	16.66	-2.89	-21.16	669342.64	602281.81	32°39'18.110"N	103°55'02.694"W	0.87	
5153.33	0.720	253.120	5153.04	17.19	-3.34	-22.05	669341.75	602281.36	32°39'18.106"N	103°55'02.705"W	0.73	
5216.77	1.050	225.060	5216.47	17.60	-3.87	-22.84	669340.96	602280.83	32°39'18.101"N	103°55'02.714"W	0.84	
5280.21	0.630	238.210	5279.90	17.90	-4.47	-23.55	669340.25	602280.23	32°39'18.095"N	103°55'02.722"W	0.72	
5343.65	1.090	238.840	5343.34	18.34	-4.96	-24.36	669339.44	602279.74	32°39'18.090"N	103°55'02.732"W	0.73	
5407.09	0.890	254.620	5406.77	18.96	-5.40	-25.35	669338.45	602279.30	32°39'18.086"N	103°55'02.744"W	0.53	
5470.53	1.130	251.020	5470.20	19.71	-5.74	-26.42	669337.38	602278.96	32°39'18.082"N	103°55'02.756"W	0.39	
5533.97	0.790	248.430	5533.63	20.37	-6.10	-27.42	669336.38	602278.60	32°39'18.079"N	103°55'02.768"W	0.54	
5597.41	0.940	239.100	5597.06	20.89	-6.53	-28.27	669335.53	602278.17	32°39'18.074"N	103°55'02.778"W	0.32	



Actual Wellpath Report

No. 3H AWB_ awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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
5660.85	0.590	245.730	5660.50	21.32	-6.93	-29.02	669334.79	602277.77	32°39'18.071"N	103°55'02.786"W	0.57	
5724.29	0.840	217.260	5723.93	21.55	-7.44	-29.59	669334.21	602277.26	32°39'18.066"N	103°55'02.793"W	0.67	
5787.73	0.570	227.170	5787.37	21.69	-8.02	-30.11	669333.69	602276.68	32°39'18.060"N	103°55'02.799"W	0.47	
5851.17	0.940	226.000	5850.80	21.92	-8.60	-30.71	669333.09	602276.10	32°39'18.054"N	103°55'02.806"W	0.58	
5914.61	0.710	187.430	5914.23	21.90	-9.35	-31.14	669332.66	602275.35	32°39'18.047"N	103°55'02.811"W	0.92	
5978.05	0.840	193.200	5977.67	21.60	-10.19	-31.30	669332.51	602274.51	32°39'18.038"N	103°55'02.813"W	0.24	
6041.49	0.500	198.390	6041.10	21.39	-10.91	-31.49	669332.31	602273.79	32°39'18.031"N	103°55'02.816"W	0.54	
6104.93	0.750	218.490	6104.54	21.39	-11.49	-31.83	669331.97	602273.21	32°39'18.026"N	103°55'02.820"W	0.52	
6168.37	0.340	213.540	6167.98	21.45	-11.98	-32.20	669331.61	602272.72	32°39'18.021"N	103°55'02.824"W	0.65	
6231.81	0.780	247.260	6231.41	21.72	-12.30	-32.70	669331.10	602272.40	32°39'18.018"N	103°55'02.830"W	0.84	
6295.25	0.470	262.570	6294.85	22.18	-12.50	-33.36	669330.45	602272.20	32°39'18.016"N	103°55'02.837"W	0.55	
6358.69	1.110	251.380	6358.28	22.78	-12.73	-34.20	669329.61	602271.97	32°39'18.013"N	103°55'02.847"W	1.03	
6422.13	0.920	262.070	6421.71	23.57	-13.00	-35.28	669328.52	602271.70	32°39'18.011"N	103°55'02.860"W	0.42	
6485.57	1.610	267.760	6485.14	24.72	-13.10	-36.68	669327.12	602271.60	32°39'18.010"N	103°55'02.876"W	1.10	
6549.01	1.650	276.000	6548.55	26.29	-13.04	-38.48	669325.33	602271.65	32°39'18.010"N	103°55'02.897"W	0.37	
6612.45	1.670	263.360	6611.97	27.85	-13.05	-40.30	669323.50	602271.65	32°39'18.010"N	103°55'02.919"W	0.58	
6675.89	1.690	247.880	6675.38	29.14	-13.51	-42.09	669321.71	602271.19	32°39'18.006"N	103°55'02.940"W	0.71	
6739.33	1.660	244.370	6738.79	30.21	-14.26	-43.78	669320.02	602270.44	32°39'17.999"N	103°55'02.960"W	0.17	
6802.77	1.050	238.660	6802.21	30.99	-14.96	-45.11	669318.70	602269.74	32°39'17.992"N	103°55'02.975"W	0.98	
6866.21	0.970	229.310	6865.64	31.43	-15.61	-46.01	669317.79	602269.09	32°39'17.985"N	103°55'02.986"W	0.29	
6929.65	1.470	222.650	6929.07	31.76	-16.56	-46.97	669316.83	602268.14	32°39'17.976"N	103°55'02.997"W	0.82	
6993.09	0.930	211.930	6992.50	31.94	-17.60	-47.79	669316.01	602267.10	32°39'17.966"N	103°55'03.007"W	0.92	
7056.53	0.720	190.790	7055.93	31.81	-18.43	-48.14	669315.66	602266.28	32°39'17.958"N	103°55'03.011"W	0.58	
7119.97	0.400	152.230	7119.37	31.48	-19.01	-48.11	669315.69	602265.69	32°39'17.952"N	103°55'03.010"W	0.75	
7183.41	0.450	214.740	7182.80	31.31	-19.41	-48.15	669315.65	602265.29	32°39'17.948"N	103°55'03.011"W	0.70	
7246.85	0.330	179.590	7246.24	31.23	-19.80	-48.29	669315.51	602264.90	32°39'17.944"N	103°55'03.013"W	0.41	
7310.29	0.280	241.860	7309.68	31.21	-20.06	-48.43	669315.38	602264.64	32°39'17.941"N	103°55'03.014"W	0.50	
7373.73	0.190	75.950	7373.12	31.22	-20.11	-48.46	669315.34	602264.60	32°39'17.941"N	103°55'03.015"W	0.74	
7437.17	0.420	279.150	7436.56	31.36	-20.04	-48.59	669315.21	602264.66	32°39'17.942"N	103°55'03.016"W	0.94	
7500.61	0.400	182.990	7500.00	31.47	-20.23	-48.83	669314.97	602264.47	32°39'17.940"N	103°55'03.019"W	0.96	
7564.05	0.830	142.130	7563.44	30.94	-20.81	-48.56	669315.24	602263.89	32°39'17.934"N	103°55'03.016"W	0.93	
7627.49	1.180	138.680	7626.87	29.89	-21.66	-47.85	669315.96	602263.04	32°39'17.926"N	103°55'03.007"W	0.56	
7690.93	0.840	122.830	7690.30	28.80	-22.41	-47.02	669316.78	602262.29	32°39'17.918"N	103°55'02.998"W	0.69	
7754.37	1.250	120.890	7753.73	27.65	-23.01	-46.04	669317.76	602261.69	32°39'17.912"N	103°55'02.986"W	0.65	
7817.81	0.710	128.900	7817.16	26.56	-23.62	-45.14	669318.66	602261.09	32°39'17.906"N	103°55'02.976"W	0.88	
7881.25	0.800	111.550	7880.59	25.74	-24.03	-44.42	669319.38	602260.68	32°39'17.902"N	103°55'02.967"W	0.39	
7944.69	0.950	118.720	7944.02	24.78	-24.44	-43.55	669320.25	602260.26	32°39'17.898"N	103°55'02.957"W	0.29	
8008.13	0.260	127.740	8007.46	24.11	-24.78	-42.97	669320.83	602259.92	32°39'17.894"N	103°55'02.951"W	1.09	
8071.57	0.720	146.120	8070.90	23.60	-25.20	-42.64	669321.17	602259.50	32°39'17.890"N	103°55'02.947"W	0.76	
8135.01	0.510	178.830	8134.33	23.09	-25.81	-42.41	669321.39	602258.89	32°39'17.884"N	103°55'02.944"W	0.63	
8198.45	0.450	191.820	8197.77	22.86	-26.34	-42.46	669321.35	602258.36	32°39'17.879"N	103°55'02.945"W	0.20	
8261.89	0.410	217.580	8261.21	22.81	-26.76	-42.64	669321.16	602257.94	32°39'17.875"N	103°55'02.947"W	0.31	
8325.33	0.440	226.110	8324.65	22.90	-27.11	-42.96	669320.84	602257.59	32°39'17.871"N	103°55'02.950"W	0.11	
8419.00	0.600	123.900	8418.32	22.50	-27.64	-42.81	669320.99	602257.07	32°39'17.866"N	103°55'02.949"W	0.87	
8451.00	2.000	326.200	8450.31	22.84	-27.27	-42.98	669320.82	602257.44	32°39'17.870"N	103°55'02.951"W	8.02	



Actual Wellpath Report

No. 3H AWB_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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
8483.00	8.700	318.500	8482.15	25.65	-24.99	-44.90	669318.90	602259.72	32°39'17.893"N	103°55'02.973"W	21.01	
8515.00	15.500	315.800	8513.42	32.10	-20.10	-49.49	669314.31	602264.60	32°39'17.941"N	103°55'03.027"W	21.32	
8547.00	23.200	313.600	8543.60	42.40	-12.68	-57.05	669306.76	602272.02	32°39'18.015"N	103°55'03.115"W	24.17	
8579.00	30.100	311.800	8572.18	56.45	-2.97	-67.61	669296.20	602281.73	32°39'18.111"N	103°55'03.238"W	21.71	
8610.00	37.600	309.100	8597.91	73.47	8.19	-80.76	669283.05	602292.89	32°39'18.222"N	103°55'03.391"W	24.67	
8642.00	43.400	307.600	8622.23	94.07	21.07	-97.06	669266.75	602305.76	32°39'18.350"N	103°55'03.581"W	18.38	
8674.00	50.200	303.500	8644.13	117.30	34.58	-116.05	669247.76	602319.27	32°39'18.485"N	103°55'03.803"W	23.20	
8706.00	55.600	298.500	8663.43	142.80	47.68	-137.92	669225.89	602332.37	32°39'18.615"N	103°55'04.058"W	20.97	
8738.00	61.500	292.000	8680.13	169.93	59.26	-162.60	669201.21	602343.96	32°39'18.731"N	103°55'04.346"W	25.29	
8769.00	67.600	288.400	8693.45	197.40	68.90	-188.86	669174.95	602353.60	32°39'18.827"N	103°55'04.653"W	22.29	
8801.00	73.700	289.500	8704.05	226.92	78.71	-217.40	669146.41	602363.40	32°39'18.925"N	103°55'04.986"W	19.34	
8833.00	76.900	295.000	8712.17	257.50	90.43	-246.03	669117.79	602375.12	32°39'19.042"N	103°55'05.320"W	19.40	
8865.00	80.900	301.200	8718.34	288.84	105.22	-273.71	669090.11	602389.91	32°39'19.190"N	103°55'05.643"W	22.75	
8896.00	86.500	304.500	8721.74	319.62	121.93	-299.57	669064.25	602406.62	32°39'19.356"N	103°55'05.945"W	20.93	
8928.00	87.900	304.600	8723.30	351.52	140.05	-325.90	669037.93	602424.74	32°39'19.536"N	103°55'06.252"W	4.39	
8960.00	88.000	304.500	8724.45	383.44	158.19	-352.24	669011.59	602442.88	32°39'19.717"N	103°55'06.559"W	0.44	
8992.00	88.200	304.900	8725.51	415.35	176.40	-378.53	668985.30	602461.08	32°39'19.898"N	103°55'06.866"W	1.40	
9024.00	88.400	304.200	8726.46	447.27	194.54	-404.88	668958.95	602479.22	32°39'20.079"N	103°55'07.173"W	2.27	
9055.00	89.000	304.000	8727.16	478.22	211.91	-430.54	668933.29	602496.60	32°39'20.251"N	103°55'07.473"W	2.04	
9087.00	89.200	303.500	8727.67	510.18	229.69	-457.14	668906.69	602514.37	32°39'20.428"N	103°55'07.783"W	1.68	
9151.00	89.500	303.000	8728.39	574.12	264.78	-510.66	668853.18	602549.46	32°39'20.778"N	103°55'08.407"W	0.91	
9214.00	90.300	301.800	8728.50	637.10	298.53	-563.85	668799.99	602583.21	32°39'21.114"N	103°55'09.028"W	2.29	
9278.00	90.600	300.500	8728.00	701.10	331.64	-618.62	668745.22	602616.31	32°39'21.443"N	103°55'09.667"W	2.08	
9341.00	91.100	300.900	8727.06	764.09	363.80	-672.79	668691.06	602648.47	32°39'21.764"N	103°55'10.299"W	1.02	
9405.00	91.200	300.000	8725.78	828.07	396.23	-727.95	668635.91	602680.90	32°39'22.087"N	103°55'10.943"W	1.41	
9469.00	89.500	299.700	8725.39	892.06	428.08	-783.45	668580.40	602712.75	32°39'22.404"N	103°55'11.591"W	2.70	
9532.00	89.000	299.100	8726.21	955.03	459.00	-838.34	668525.53	602743.67	32°39'22.712"N	103°55'12.231"W	1.24	
9596.00	88.900	298.500	8727.39	1018.97	489.83	-894.41	668469.46	602774.49	32°39'23.019"N	103°55'12.886"W	0.95	
9658.00	89.500	297.700	8728.25	1080.89	519.03	-949.10	668414.78	602803.69	32°39'23.310"N	103°55'13.524"W	1.61	
9721.00	90.300	297.500	8728.36	1143.78	548.22	-1004.93	668358.95	602832.88	32°39'23.601"N	103°55'14.176"W	1.31	
9785.00	89.700	297.100	8728.36	1207.65	577.57	-1061.80	668302.08	602862.23	32°39'23.894"N	103°55'14.839"W	1.13	
9849.00	89.300	297.100	8728.92	1271.50	606.72	-1118.77	668245.11	602891.38	32°39'24.184"N	103°55'15.504"W	0.62	
9912.00	89.300	298.100	8729.69	1334.39	635.91	-1174.59	668189.29	602920.56	32°39'24.475"N	103°55'16.156"W	1.59	
9976.00	89.200	299.200	8730.53	1398.33	666.59	-1230.75	668133.14	602951.24	32°39'24.781"N	103°55'16.812"W	1.73	
10039.00	88.900	298.600	8731.57	1461.28	697.03	-1285.90	668078.00	602981.68	32°39'25.084"N	103°55'17.455"W	1.06	
10103.00	89.000	300.000	8732.75	1525.24	728.35	-1341.70	668022.20	603012.99	32°39'25.396"N	103°55'18.106"W	2.19	
10166.00	89.600	301.900	8733.52	1588.23	760.74	-1395.72	667968.18	603045.39	32°39'25.719"N	103°55'18.737"W	3.16	
10229.00	90.200	302.100	8733.63	1651.22	794.13	-1449.15	667914.76	603078.77	32°39'26.051"N	103°55'19.360"W	1.00	
10293.00	91.100	302.400	8732.90	1715.20	828.28	-1503.27	667860.64	603112.92	32°39'26.391"N	103°55'19.992"W	1.48	
10357.00	91.300	302.100	8731.56	1779.17	862.42	-1557.39	667806.53	603147.06	32°39'26.731"N	103°55'20.623"W	0.56	
10420.00	92.300	300.700	8729.58	1842.14	895.23	-1611.13	667752.79	603179.86	32°39'27.058"N	103°55'21.250"W	2.73	
10483.00	92.400	300.800	8727.00	1905.08	927.41	-1665.23	667698.69	603212.04	32°39'27.378"N	103°55'21.882"W	0.22	
10547.00	91.000	300.300	8725.10	1969.05	959.93	-1720.32	667643.61	603244.56	32°39'27.702"N	103°55'22.524"W	2.32	
10610.00	88.900	299.730	8725.15	2032.04	991.44	-1774.87	667589.06	603276.07	32°39'28.016"N	103°55'23.161"W	3.45	
10674.00	89.500	300.400	8726.05	2096.02	1023.50	-1830.25	667533.68	603308.12	32°39'28.335"N	103°55'23.807"W	1.41	



Actual Wellpath Report

No. 3H AWB_awp

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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
10738.00	89.700	300.200	8726.49	2160.02	1055.79	-1885.51	667478.43	603340.41	32°39'28.657"N	103°55'24.452"W	0.44	
10801.00	90.300	300.300	8726.49	2223.01	1087.52	-1939.93	667424.02	603372.14	32°39'28.973"N	103°55'25.087"W	0.97	
10865.00	90.500	300.000	8726.05	2287.00	1119.67	-1995.27	667368.68	603404.29	32°39'29.293"N	103°55'25.733"W	0.56	
10928.00	90.400	299.500	8725.55	2349.99	1150.93	-2049.96	667313.99	603435.54	32°39'29.605"N	103°55'26.371"W	0.81	
10992.00	90.500	301.100	8725.05	2413.98	1183.22	-2105.22	667258.74	603467.83	32°39'29.926"N	103°55'27.016"W	2.50	
11056.00	90.200	299.800	8724.66	2477.98	1215.65	-2160.39	667203.57	603500.26	32°39'30.249"N	103°55'27.660"W	2.08	
11119.00	90.600	299.900	8724.22	2540.96	1247.01	-2215.03	667148.94	603531.61	32°39'30.562"N	103°55'28.298"W	0.65	
11183.00	90.700	301.200	8723.49	2604.95	1279.53	-2270.14	667093.83	603564.14	32°39'30.885"N	103°55'28.941"W	2.04	
11247.00	91.500	303.500	8722.26	2668.92	1313.77	-2324.19	667039.78	603598.37	32°39'31.226"N	103°55'29.572"W	3.80	
11310.00	91.500	302.600	8720.61	2731.85	1348.12	-2376.98	666987.00	603632.72	32°39'31.568"N	103°55'30.188"W	1.43	
11374.00	91.900	303.500	8718.72	2795.78	1383.01	-2430.60	666933.38	603667.60	32°39'31.915"N	103°55'30.813"W	1.54	
11437.00	91.100	306.000	8717.07	2858.62	1418.90	-2482.34	666881.64	603703.49	32°39'32.272"N	103°55'31.417"W	4.17	
11501.00	90.900	305.300	8715.95	2922.39	1456.20	-2534.34	666829.65	603740.79	32°39'32.643"N	103°55'32.023"W	1.14	
11564.00	90.300	306.600	8715.29	2985.15	1493.18	-2585.33	666778.66	603777.77	32°39'33.011"N	103°55'32.618"W	2.27	
11628.00	90.100	307.100	8715.07	3048.81	1531.56	-2636.55	666727.45	603816.15	32°39'33.393"N	103°55'33.215"W	0.84	
11691.00	89.700	307.400	8715.18	3111.43	1569.69	-2686.70	666677.30	603854.28	32°39'33.772"N	103°55'33.800"W	0.79	
11755.00	90.200	307.000	8715.23	3175.05	1608.39	-2737.67	666626.33	603892.97	32°39'34.157"N	103°55'34.395"W	1.00	
11818.00	90.600	305.900	8714.79	3237.76	1645.82	-2788.35	666575.66	603930.39	32°39'34.529"N	103°55'34.986"W	1.86	
11881.00	90.800	305.200	8714.02	3300.55	1682.44	-2839.60	666524.41	603967.02	32°39'34.894"N	103°55'35.584"W	1.16	
11945.00	90.200	305.100	8713.46	3364.37	1719.29	-2891.93	666472.09	604003.86	32°39'35.260"N	103°55'36.194"W	0.95	
12008.00	89.000	303.100	8713.90	3427.27	1754.60	-2944.09	666419.93	604039.17	32°39'35.612"N	103°55'36.803"W	3.70	
12072.00	88.800	302.800	8715.13	3491.22	1789.41	-2997.79	666366.24	604073.97	32°39'35.958"N	103°55'37.429"W	0.56	
12135.00	89.000	301.800	8716.34	3554.19	1823.06	-3051.03	666313.00	604107.63	32°39'36.293"N	103°55'38.050"W	1.62	
12199.00	88.600	299.900	8717.68	3618.18	1855.87	-3105.96	666258.07	604140.44	32°39'36.620"N	103°55'38.691"W	3.03	
12263.00	88.300	299.200	8719.41	3682.13	1887.43	-3161.61	666202.42	604171.99	32°39'36.934"N	103°55'39.341"W	1.19	
12326.00	88.900	300.500	8720.95	3745.10	1918.77	-3216.23	666147.80	604203.33	32°39'37.246"N	103°55'39.979"W	2.27	
12390.00	89.500	299.400	8721.85	3809.08	1950.72	-3271.68	666092.36	604235.28	32°39'37.564"N	103°55'40.626"W	1.96	
12454.00	89.900	299.100	8722.18	3873.05	1981.99	-3327.52	666036.53	604266.55	32°39'37.876"N	103°55'41.277"W	0.78	
12517.00	90.100	298.200	8722.18	3936.00	2012.20	-3382.81	665981.24	604296.75	32°39'38.177"N	103°55'41.923"W	1.46	
12581.00	90.600	298.600	8721.79	3999.94	2042.64	-3439.10	665924.95	604327.19	32°39'38.480"N	103°55'42.580"W	1.00	
12644.00	90.200	298.400	8721.35	4062.88	2072.70	-3494.47	665869.59	604357.24	32°39'38.780"N	103°55'43.226"W	0.71	
12708.00	90.900	300.200	8720.74	4126.85	2104.01	-3550.27	665813.79	604388.56	32°39'39.092"N	103°55'43.877"W	3.02	
12772.00	91.100	300.300	8719.62	4190.83	2136.25	-3605.55	665758.52	604420.79	32°39'39.413"N	103°55'44.523"W	0.35	
12835.00	90.800	301.000	8718.57	4253.82	2168.36	-3659.74	665704.33	604452.90	32°39'39.733"N	103°55'45.155"W	1.21	
12899.00	90.400	300.500	8717.90	4317.82	2201.08	-3714.74	665649.33	604485.62	32°39'40.058"N	103°55'45.797"W	1.00	
12962.00	90.700	299.600	8717.30	4380.80	2232.63	-3769.27	665594.81	604517.16	32°39'40.373"N	103°55'46.433"W	1.51	
13026.00	91.300	300.000	8716.18	4444.78	2264.43	-3824.80	665539.29	604548.96	32°39'40.689"N	103°55'47.081"W	1.13	
13089.00	90.600	300.600	8715.14	4507.77	2296.21	-3879.18	665484.90	604580.74	32°39'41.006"N	103°55'47.716"W	1.46	
13153.00	90.200	299.300	8714.69	4571.76	2328.16	-3934.63	665429.46	604612.69	32°39'41.324"N	103°55'48.363"W	2.13	
13217.00	89.200	299.500	8715.03	4635.73	2359.58	-3990.39	665373.70	604644.10	32°39'41.637"N	103°55'49.014"W	1.59	
13280.00	87.400	300.800	8716.90	4698.69	2391.21	-4044.84	665319.26	604675.73	32°39'41.952"N	103°55'49.650"W	3.52	
13334.00	87.600	302.400	8719.25	4752.64	2419.47	-4090.79	665273.31	604703.99	32°39'42.233"N	103°55'50.186"W	2.98	
13405.00	87.000	302.400	8722.60	4823.53	2457.47	-4150.67	665213.44	604741.99	32°39'42.612"N	103°55'50.885"W	0.85	
13469.00	87.300	302.300	8725.78	4887.44	2491.68	-4204.67	665159.44	604776.19	32°39'42.952"N	103°55'51.515"W	0.49	
13533.00	87.100	304.300	8728.90	4951.30	2526.77	-4258.09	665106.02	604811.28	32°39'43.301"N	103°55'52.138"W	3.14	



Actual Wellpath Report

No. 3H AWB_awp

Page 7 of 7



REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Eddy County, NM	Well	No. 3H
Field	(Irwin) Sec 13, T19S, R30E	Wellbore	No. 3H AWB
Facility	Irwin 13 Fed Site Location		

WELLPATH DATA (236 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
13596.00	86.600	304.100	8732.37	5014.11	2562.13	-4310.12	665054.00	604846.64	32°39'43.653"N	103°55'52.745"W	0.85	
13660.00	87.100	304.400	8735.88	5077.90	2598.09	-4362.94	665001.18	604882.60	32°39'44.011"N	103°55'53.361"W	0.91	
13724.00	88.100	304.400	8738.56	5141.73	2634.22	-4415.70	664948.42	604918.72	32°39'44.370"N	103°55'53.977"W	1.56	
13787.00	87.800	303.500	8740.82	5204.60	2669.38	-4467.93	664896.20	604953.88	32°39'44.720"N	103°55'54.586"W	1.50	
13851.00	87.500	303.700	8743.44	5268.48	2704.77	-4521.19	664842.94	604989.27	32°39'45.072"N	103°55'55.208"W	0.56	
13914.00	87.100	302.300	8746.41	5331.37	2739.04	-4573.97	664790.17	605023.54	32°39'45.413"N	103°55'55.823"W	2.31	
13978.00	87.700	302.200	8749.31	5395.29	2773.16	-4628.04	664736.11	605057.65	32°39'45.753"N	103°55'56.454"W	0.95	
14041.00	88.100	300.900	8751.62	5458.24	2806.10	-4681.69	664682.46	605090.59	32°39'46.081"N	103°55'57.080"W	2.16	
14105.00	87.600	299.200	8754.02	5522.18	2838.12	-4737.04	664627.11	605122.61	32°39'46.400"N	103°55'57.727"W	2.77	
14148.00	87.500	298.900	8755.86	5565.12	2858.98	-4774.60	664589.55	605143.47	32°39'46.608"N	103°55'58.165"W	0.73	
14203.00	87.500	298.900	8758.26	5620.03	2885.54	-4822.71	664541.45	605170.02	32°39'46.872"N	103°55'58.726"W	0.00	Project to Bit

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
No. 3H PBHL		8698.00	2898.47	-4832.63	664531.53	605182.96	32°39'47.000"N	103°55'58.842"W	point

WELLPATH COMPOSITION - Ref Wellbore: No. 3H AWB Ref Wellpath: No. 3H AWB_awp

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.00	8325.33	Generic gyro - northseeking (Standard)	Gyro < 14.69 - 8325.33 >	No. 3H AWB
8325.33	14203.00	NaviTrak (Standard)	MWD < 8419 - 14203 >	No. 3H AWB



A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

November 1, 2011

Cimarex Energy Company
600 N. Marienfeld St., Ste. 600
Midland, TX 79701

Attn: Carolyn Larson

Re: **Irwin 13 Fed 3H**

Please find enclosed a copy of the survey from 0' to 8,325.33' ran on the above referenced well.

If I can be of any further service, please do not hesitate to call me at 800-606-4976.

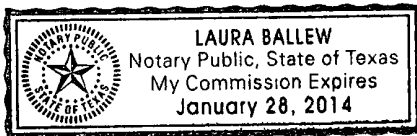
Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 2nd day of November, A.D., 2011, by Keith Havelka.

Laura Ballew
Notary Public, State of Texas





Company: Cimarex Energy

Lease/Well: Irwin 13 Fed/3H

Location: S13 T19S R30E

Rig Name: Key 884

State/County: New Mexico/Eddy

Latitude: 32.65

GRID North is 0.22 Degrees East of True North

VS-Azi: 0.00 Degrees



RKB : 18 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: irwin13fed#3h-01_ed.ut

Minimum Curvature Method

Report Date/Time: 11/1/2011 / 09:56

Vaughn Energy Services

Fort Worth, Texas

817-741-3610

Surveyor: Ray Seago

Irwin 13 Fed 3H

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
14.69	0.06	128.94	14.69	-0.01	0.01	-0.01	0.01	128.94	0.42
78.13	0.45	160.87	78.13	-0.26	0.11	-0.26	0.28	156.33	0.62
141.57	0.09	286.71	141.57	-0.48	0.15	-0.48	0.50	163.15	0.80
205.01	0.23	261.62	205.01	-0.48	-0.03	-0.48	0.48	183.87	0.24
268.45	0.20	247.21	268.45	-0.55	-0.26	-0.55	0.61	205.76	0.10
331.89	0.10	342.06	331.89	-0.54	-0.38	-0.54	0.66	215.57	0.37
395.33	0.08	327.32	395.33	-0.44	-0.43	-0.44	0.61	223.80	0.05
458.77	0.08	192.53	458.77	-0.45	-0.46	-0.45	0.64	225.65	0.25
522.21	0.14	63.76	522.21	-0.46	-0.40	-0.46	0.61	221.05	0.32
585.65	0.34	80.95	585.65	-0.40	-0.15	-0.40	0.43	200.23	0.34
649.09	0.18	100.04	649.09	-0.39	0.14	-0.39	0.41	160.33	0.29
712.53	0.15	72.82	712.53	-0.38	0.32	-0.38	0.49	140.12	0.13
775.97	0.18	64.37	775.97	-0.31	0.49	-0.31	0.58	122.38	0.06
839.41	0.42	59.57	839.40	-0.15	0.78	-0.15	0.79	100.78	0.37
902.85	0.19	66.86	902.84	0.01	1.08	0.01	1.08	89.42	0.36
966.29	0.40	81.58	966.28	0.09	1.40	0.09	1.40	86.49	0.35
1029.73	0.20	57.26	1029.72	0.18	1.71	0.18	1.72	84.10	0.37
1093.17	0.43	42.36	1093.16	0.41	1.96	0.41	2.00	78.12	0.39

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1156.61	0.32	49.04	1156.60	0.71	2.26	0.71	2.37	72.61	0.19
1220.05	0.62	46.31	1220.04	1.06	2.64	1.06	2.85	68.10	0.47
1283.49	0.43	353.50	1283.48	1.53	2.86	1.53	3.25	61.83	0.78
1346.93	0.65	32.80	1346.91	2.07	3.03	2.07	3.67	55.66	0.66
1410.37	0.51	27.38	1410.35	2.63	3.36	2.63	4.26	51.97	0.24
1473.81	0.71	65.12	1473.79	3.04	3.84	3.04	4.90	51.63	0.69
1537.25	0.59	30.30	1537.22	3.49	4.36	3.49	5.59	51.35	0.64
1600.69	0.75	62.02	1600.66	3.96	4.89	3.96	6.30	50.98	0.62
1664.13	0.44	14.32	1664.09	4.39	5.32	4.39	6.90	50.43	0.87
1727.57	0.64	28.37	1727.53	4.94	5.55	4.94	7.43	48.29	0.38
1791.01	0.48	32.00	1790.97	5.48	5.86	5.48	8.02	46.89	0.26
1854.45	0.58	4.66	1854.41	6.02	6.02	6.02	8.52	44.99	0.42
1917.89	0.33	38.49	1917.84	6.48	6.16	6.48	8.94	43.54	0.56
1981.33	0.57	65.76	1981.28	6.75	6.56	6.75	9.42	44.17	0.51
2044.77	0.18	91.95	2044.72	6.88	6.95	6.88	9.78	45.29	0.66
2108.21	0.28	104.83	2108.16	6.84	7.20	6.84	9.93	46.48	0.17
2171.65	0.40	194.28	2171.60	6.59	7.30	6.59	9.83	47.93	0.76
2235.09	0.35	151.62	2235.04	6.20	7.34	6.20	9.60	49.80	0.44
2298.53	0.58	202.42	2298.48	5.73	7.31	5.73	9.28	51.90	0.71
2361.97	0.62	214.52	2361.91	5.15	6.99	5.15	8.68	53.63	0.21
2425.41	0.97	211.35	2425.35	4.41	6.51	4.41	7.86	55.93	0.55
2488.85	0.86	212.31	2488.78	3.55	5.98	3.55	6.96	59.33	0.18
2552.29	1.08	210.89	2552.21	2.63	5.42	2.63	6.03	64.10	0.36
2615.73	0.80	197.34	2615.64	1.69	4.98	1.69	5.26	71.23	0.57
2679.17	1.00	228.46	2679.07	0.90	4.44	0.90	4.53	78.49	0.81
2742.61	0.75	217.43	2742.51	0.21	3.77	0.21	3.78	86.87	0.46
2806.05	0.87	220.66	2805.94	-0.49	3.20	-0.49	3.24	98.70	0.19
2869.49	0.54	254.31	2869.38	-0.94	2.60	-0.94	2.76	109.80	0.81
2932.93	0.80	209.13	2932.81	-1.40	2.10	-1.40	2.52	123.80	0.89
2996.37	0.66	225.48	2996.25	-2.05	1.62	-2.05	2.61	141.62	0.39
3059.81	1.00	227.88	3059.68	-2.67	0.95	-2.67	2.84	160.45	0.53
3123.25	0.98	258.49	3123.11	-3.15	0.01	-3.15	3.15	179.90	0.82
3186.69	0.95	243.44	3186.54	-3.50	-1.00	-3.50	3.64	195.93	0.40
3250.13	0.54	275.67	3249.98	-3.70	-1.77	-3.70	4.10	205.52	0.90
3313.57	0.81	241.06	3313.41	-3.89	-2.46	-3.89	4.60	212.31	0.76
3377.01	0.42	285.29	3376.85	-4.05	-3.08	-4.05	5.09	217.30	0.93
3440.45	0.69	312.37	3440.29	-3.73	-3.59	-3.73	5.17	223.93	0.58
3503.89	0.46	281.95	3503.72	-3.42	-4.12	-3.42	5.35	230.35	0.59
3567.33	0.83	287.70	3567.16	-3.22	-4.81	-3.22	5.79	236.19	0.59

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
3630.77	0.52	280.88	3630.59	-3.03	-5.53	-3.03	6.31	241.30	0.51
3694.21	0.78	276.60	3694.03	-2.93	-6.24	-2.93	6.90	244.90	0.43
3757.65	0.55	271.94	3757.47	-2.86	-6.98	-2.86	7.55	247.68	0.38
3821.09	0.73	267.35	3820.90	-2.87	-7.69	-2.87	8.21	249.51	0.30
3884.53	0.46	293.57	3884.34	-2.79	-8.32	-2.79	8.78	251.47	0.60
3947.97	0.94	294.21	3947.77	-2.48	-9.03	-2.48	9.36	254.67	0.76
4011.41	0.71	301.85	4011.21	-2.05	-9.84	-2.05	10.05	258.21	0.40
4074.85	0.96	292.44	4074.64	-1.64	-10.67	-1.64	10.79	261.24	0.45
4138.29	0.59	295.15	4138.07	-1.30	-11.45	-1.30	11.53	263.52	0.59
4201.73	0.95	280.41	4201.51	-1.07	-12.27	-1.07	12.31	265.02	0.65
4265.17	0.57	293.06	4264.94	-0.85	-13.08	-0.85	13.10	266.28	0.65
4328.61	0.83	293.14	4328.38	-0.55	-13.79	-0.55	13.80	267.74	0.41
4392.05	0.34	303.25	4391.81	-0.26	-14.37	-0.26	14.37	268.96	0.79
4455.49	0.68	293.19	4455.25	-0.01	-14.87	-0.01	14.87	269.96	0.56
4518.93	0.43	280.10	4518.69	0.18	-15.46	0.18	15.46	270.67	0.44
4582.37	0.73	243.62	4582.13	0.04	-16.05	0.04	16.05	270.15	0.73
4645.81	0.35	241.06	4645.56	-0.23	-16.59	-0.23	16.59	269.20	0.60
4709.25	0.77	239.56	4709.00	-0.54	-17.13	-0.54	17.14	268.19	0.67
4772.69	0.60	235.45	4772.43	-0.95	-17.77	-0.95	17.79	266.95	0.29
4836.13	0.22	196.65	4835.87	-1.25	-18.07	-1.25	18.12	266.05	0.71
4899.57	0.74	226.81	4899.31	-1.64	-18.41	-1.64	18.48	264.90	0.88
4963.01	1.15	244.09	4962.74	-2.20	-19.27	-2.20	19.40	263.49	0.78
5026.45	0.73	262.26	5026.17	-2.53	-20.25	-2.53	20.40	262.88	0.80
5089.89	1.10	235.99	5089.61	-2.92	-21.15	-2.92	21.35	262.13	0.86
5153.33	0.72	253.12	5153.04	-3.38	-22.03	-3.38	22.29	261.28	0.73
5216.77	1.05	225.06	5216.47	-3.90	-22.82	-3.90	23.16	260.30	0.84
5280.21	0.63	238.21	5279.90	-4.50	-23.53	-4.50	23.96	259.18	0.72
5343.65	1.09	238.84	5343.34	-4.99	-24.35	-4.99	24.85	258.41	0.72
5407.09	0.89	254.62	5406.77	-5.44	-25.34	-5.44	25.91	257.89	0.53
5470.53	1.13	251.02	5470.20	-5.77	-26.40	-5.77	27.03	257.67	0.39
5533.97	0.79	248.43	5533.63	-6.13	-27.40	-6.13	28.08	257.38	0.54
5597.41	0.94	239.10	5597.06	-6.56	-28.25	-6.56	29.01	256.92	0.32
5660.85	0.59	245.73	5660.49	-6.96	-29.00	-6.96	29.82	256.50	0.56
5724.29	0.84	217.26	5723.93	-7.47	-29.58	-7.47	30.51	255.83	0.67
5787.73	0.57	227.17	5787.37	-8.05	-30.09	-8.05	31.15	255.02	0.46
5851.17	0.94	226.00	5850.80	-8.63	-30.70	-8.63	31.89	254.29	0.59
5914.61	0.71	187.43	5914.23	-9.38	-31.13	-9.38	32.51	253.23	0.93
5978.05	0.84	193.20	5977.67	-10.23	-31.29	-10.23	32.91	251.90	0.25
6041.49	0.50	198.39	6041.10	-10.94	-31.48	-10.94	33.33	250.83	0.55

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
6104.93	0.75	218.49	6104.54	-11.53	-31.83	-11.53	33.85	250.08	0.52
6168.37	0.34	213.54	6167.98	-12.01	-32.19	-12.01	34.36	249.53	0.65
6231.81	0.78	247.26	6231.41	-12.34	-32.69	-12.34	34.94	249.32	0.85
6295.25	0.47	262.57	6294.85	-12.54	-33.35	-12.54	35.63	249.39	0.56
6358.69	1.11	251.38	6358.28	-12.77	-34.19	-12.77	36.49	249.52	1.03
6422.13	0.92	262.07	6421.71	-13.03	-35.27	-13.03	37.60	249.72	0.42
6485.57	1.61	267.76	6485.14	-13.14	-36.67	-13.14	38.95	250.28	1.10
6549.01	1.65	276.00	6548.55	-13.08	-38.46	-13.08	40.62	251.22	0.37
6612.45	1.67	263.36	6611.97	-13.09	-40.29	-13.09	42.36	252.00	0.58
6675.89	1.69	247.88	6675.38	-13.55	-42.07	-13.55	44.20	252.15	0.71
6739.33	1.66	244.37	6738.79	-14.30	-43.77	-14.30	46.04	251.91	0.17
6802.77	1.05	238.66	6802.21	-15.00	-45.09	-15.00	47.52	251.60	0.98
6866.21	0.97	229.31	6865.64	-15.65	-46.00	-15.65	48.59	251.21	0.29
6929.65	1.47	222.65	6929.07	-16.60	-46.96	-16.60	49.80	250.53	0.81
6993.09	0.93	211.93	6992.50	-17.63	-47.78	-17.63	50.93	249.74	0.92
7056.53	0.72	190.79	7055.93	-18.46	-48.13	-18.46	51.55	249.01	0.57
7119.97	0.40	152.23	7119.37	-19.05	-48.10	-19.05	51.73	248.39	0.76
7183.41	0.45	214.74	7182.80	-19.45	-48.14	-19.45	51.92	248.00	0.69
7246.85	0.33	179.59	7246.24	-19.84	-48.28	-19.84	52.19	247.66	0.41
7310.29	0.28	241.86	7309.68	-20.10	-48.41	-20.10	52.42	247.45	0.51
7373.73	0.19	75.95	7373.12	-20.15	-48.45	-20.15	52.47	247.42	0.74
7437.17	0.42	279.15	7436.56	-20.08	-48.58	-20.08	52.56	247.54	0.94
7500.61	0.40	182.99	7500.00	-20.27	-48.82	-20.27	52.86	247.45	0.97
7564.05	0.83	142.13	7563.44	-20.86	-48.55	-20.86	52.84	246.75	0.93
7627.49	1.18	138.68	7626.87	-21.71	-47.83	-21.71	52.53	245.59	0.55
7690.93	0.84	122.83	7690.30	-22.45	-47.01	-22.45	52.10	244.47	0.68
7754.37	1.25	120.89	7753.73	-23.06	-46.03	-23.06	51.48	243.39	0.64
7817.81	0.71	128.90	7817.16	-23.66	-45.12	-23.66	50.95	242.33	0.87
7881.25	0.80	111.55	7880.59	-24.08	-44.40	-24.08	50.51	241.53	0.39
7944.69	0.95	118.72	7944.02	-24.49	-43.52	-24.49	49.94	240.63	0.29
8008.13	0.26	127.74	8007.46	-24.84	-42.95	-24.84	49.61	239.96	1.10
8071.57	0.72	146.12	8070.90	-25.26	-42.61	-25.26	49.53	239.34	0.75
8135.01	0.51	178.83	8134.33	-25.87	-42.38	-25.87	49.65	238.60	0.63
8198.45	0.45	191.82	8197.77	-26.39	-42.43	-26.39	49.96	238.12	0.19
8261.89	0.41	217.58	8261.21	-26.81	-42.62	-26.81	50.35	237.82	0.31
8325.33	0.44	226.11	8324.65	-27.16	-42.93	-27.16	50.80	237.68	0.11



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