

PATRIOT DRILLING, LLC

30-005-29122

OPERATOR: Cimarex Energy Co.
WELL/LEASE: Hancock 19 State Com # 4 H
COUNTY: Chaves Co., New Mexico
Sec. 19, T15S, R31E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
485	3/4	4,969	1/2
845	1	5,352	1/2
1,194	1	5,729	1/2
1,479	1/2	5,920	1/4
1,828	1/2	6,364	3/4
2,304	1/4	6,840	1
2,748	1/4	7,157	3/4
3,223	1/2	7,665	1/4
3,699	1/2	8,141	1/2
4,199	1/4	8,641	3/4
4,683	3/4	9,025	3/4

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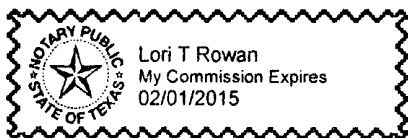
Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 28th day of February, 2011 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling,

My Commission Expires: 02/01/2015

Lori T. Rowan
Notary Public for Ector Co., Texas





Cimarex Energy Co.

Location: Chaves County, NM
Field: (Hancock) Sec 19, T13S, R31E
Facility: Hancock 19 St. Cor. No. 4H

Slot: No. 4H SHL
Well: No. 4H
Wellbore: No. 4H PWB



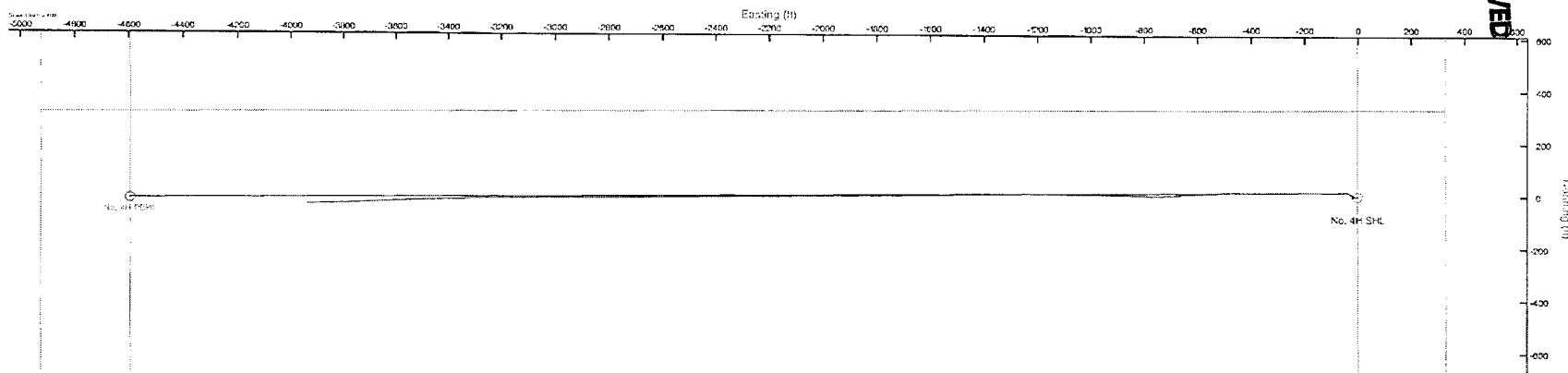
INTEQ

Well Profile Data								
Design Comment	MD (ft)	Incl (°)	Az (°)	TYD (ft)	Local N (ft)	Local E (ft)	DLS (7100ft)	VS (ft)
Tie On (Gyro)	8438.90	0.420	109.190	8438.58	15.99	-43.37	0.00	42.30
Est KOP	8505.00	0.420	109.190	8504.67	15.83	-42.92	0.00	42.85
End of Curve	8830.04	90.616	269.557	8710.70	13.72	-249.73	29.00	249.67
No. 4H PBHL	13173.41	90.616	269.557	8664.00	-19.85	-4592.71	0.00	4592.76

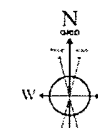
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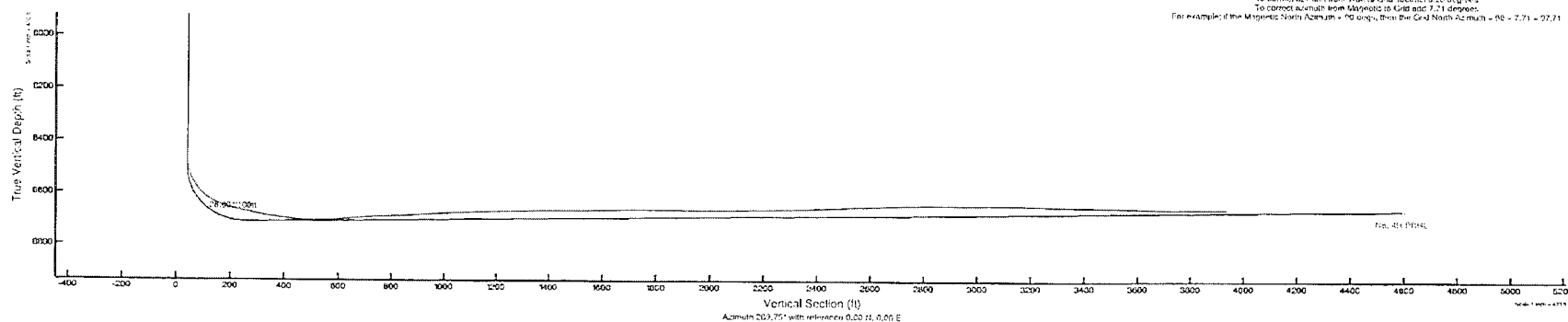
HOBS OCD



Plot reference depth is (ft): 1	End Curve (KOP) is (ft): New Mexico State Plane, NAD 83 (NAD 83)
Tie On (Gyro) depth is (ft): No. 4H (24) (ft):	North Reference (ft): 0.00
Measured depth is (ft): No. 4H (24) (ft):	Local True distance
Depth No. 4H (24) (ft): No. 4H (24) (ft):	Depth is (ft):
Mount First Line to Mount Line (ft): No. 4H (24) (ft):	Depth is (ft):
Coordinates are in feet referenced to GCS	Created by software on 11/17/2011



EGOM (1945.0 to 2011.0) Dip: 00.91° Field: 49237.2 ft
Magnetic North is 7.97 degrees East of True North (at 3/18/2010)
Grid North is 0.24 degrees East of True North
To correct azimuth from True to Grid add 0.24 degrees
To correct azimuth from Magnetic to Grid add 7.71 degrees
(For example if the Magnetic North Azimuth = 90 degrees, then the Grid North Azimuth = 90 + 7.71 = 97.71)





Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWB
Facility	Hancock 19 St Com No. 4H		

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	Gomeoscr
Scale	0.999934	Report Generated	1/17/2011 at 7:36:22 AM
Convergence at slot	0.26° East	Database/Source file	WA Midland/No. 4H_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	688351.80	730353.10	33°00'24.554"N	103°51'13.548"W
Facility Reference Pt			688351.80	730353.10	33°00'24.554"N	103°51'13.548"W
Field Reference Pt			683769.40	727691.90	32°59'58.426"N	103°52'07.498"W

WELL IDENTIFICATION

Calculation method	Minimum curvature	Rig on No. 4H SHL (RT) to GL	21.00ft
Horizontal Reference Pt	Slot	Rig on No. 4H SHL (RT) to Mean Sea Level	4455.00ft
Vertical Reference Pt	Rig on No. 4H SHL (RT)	GL to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 4H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	269.75°



Actual Wellpath Report

No. 4H AWP

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REFERENCE WELL PATH INFORMATION

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Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWP
Facility	Hancock 19 St Com No. 4H		

WELLPATH DATA (167 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]	Comments
0.00	0.000	273.780	0.00	0.00	0.00	0.00	688351.80	730353.10	33°00'24.554"N	103°51'13.548"W	0.00	
100.00	0.670	273.780	100.00	0.58	0.04	-0.58	688351.22	730353.14	33°00'24.554"N	103°51'13.555"W	0.67	
200.00	0.680	264.690	199.99	1.76	0.02	-1.76	688350.04	730353.12	33°00'24.554"N	103°51'13.569"W	0.11	
347.60	1.110	255.750	347.57	4.02	-0.41	-4.02	688347.78	730352.69	33°00'24.550"N	103°51'13.595"W	0.31	
436.70	0.910	262.080	436.66	5.56	-0.72	-5.55	688346.25	730352.38	33°00'24.547"N	103°51'13.613"W	0.26	
525.00	0.940	262.560	524.95	6.97	-0.91	-6.97	688344.84	730352.19	33°00'24.545"N	103°51'13.630"W	0.04	
614.00	0.750	275.620	613.94	8.27	-0.95	-8.27	688343.53	730352.15	33°00'24.545"N	103°51'13.645"W	0.30	
703.20	0.960	279.000	703.13	9.59	-0.77	-9.59	688342.21	730352.33	33°00'24.547"N	103°51'13.661"W	0.24	
794.40	0.700	281.950	794.32	10.89	-0.54	-10.89	688340.91	730352.56	33°00'24.549"N	103°51'13.676"W	0.29	
826.00	0.750	275.500	825.92	11.28	-0.48	-11.28	688340.52	730352.62	33°00'24.550"N	103°51'13.681"W	0.30	
921.30	0.710	273.090	921.21	12.49	-0.39	-12.49	688339.31	730352.71	33°00'24.550"N	103°51'13.695"W	0.05	
1016.50	0.730	276.510	1016.40	13.69	-0.29	-13.68	688338.12	730352.81	33°00'24.552"N	103°51'13.709"W	0.05	
1111.80	0.660	273.840	1111.69	14.84	-0.18	-14.84	688336.97	730352.92	33°00'24.553"N	103°51'13.722"W	0.08	
1206.80	0.640	274.930	1206.69	15.91	-0.10	-15.91	688335.89	730353.00	33°00'24.553"N	103°51'13.735"W	0.02	
1302.00	0.600	279.340	1301.88	16.93	0.03	-16.93	688334.87	730353.13	33°00'24.555"N	103°51'13.747"W	0.07	
1397.10	0.510	246.760	1396.98	17.81	-0.06	-17.81	688333.99	730353.04	33°00'24.554"N	103°51'13.757"W	0.34	
1492.20	0.500	228.920	1492.07	18.52	-0.50	-18.51	688333.29	730352.60	33°00'24.550"N	103°51'13.765"W	0.17	
1587.30	0.640	230.720	1587.17	19.24	-1.11	-19.24	688332.56	730351.99	33°00'24.544"N	103°51'13.774"W	0.15	
1682.50	0.610	240.890	1682.36	20.10	-1.69	-20.09	688331.71	730351.41	33°00'24.538"N	103°51'13.784"W	0.12	
1777.60	0.700	239.790	1777.46	21.05	-2.23	-21.04	688330.77	730350.87	33°00'24.533"N	103°51'13.795"W	0.10	
1872.80	0.560	228.360	1872.65	21.90	-2.83	-21.89	688329.92	730350.27	33°00'24.527"N	103°51'13.805"W	0.20	
1967.80	0.220	214.410	1967.65	22.35	-3.29	-22.34	688329.47	730349.81	33°00'24.522"N	103°51'13.811"W	0.37	
2063.00	0.040	170.050	2062.85	22.45	-3.47	-22.43	688329.37	730349.63	33°00'24.520"N	103°51'13.812"W	0.20	
2158.10	0.270	71.160	2157.95	22.23	-3.43	-22.22	688329.59	730349.67	33°00'24.521"N	103°51'13.809"W	0.29	
2253.10	0.310	56.040	2252.95	21.80	-3.22	-21.79	688330.01	730349.88	33°00'24.523"N	103°51'13.804"W	0.09	
2348.20	0.320	50.120	2348.05	21.39	-2.90	-21.37	688330.43	730350.20	33°00'24.526"N	103°51'13.799"W	0.04	
2443.30	0.320	48.460	2443.14	20.98	-2.56	-20.97	688330.83	730350.54	33°00'24.529"N	103°51'13.794"W	0.01	
2538.40	0.300	46.400	2538.24	20.60	-2.21	-20.59	688331.21	730350.89	33°00'24.533"N	103°51'13.790"W	0.02	
2633.60	0.360	39.040	2633.44	20.23	-1.81	-20.22	688331.58	730351.29	33°00'24.537"N	103°51'13.786"W	0.08	
2728.90	0.340	35.700	2728.74	19.87	-1.34	-19.87	688331.93	730351.76	33°00'24.541"N	103°51'13.781"W	0.03	
2824.30	0.320	37.400	2824.14	19.55	-0.90	-19.54	688332.26	730352.20	33°00'24.546"N	103°51'13.778"W	0.02	
2918.40	0.260	38.730	2918.24	19.25	-0.53	-19.25	688332.55	730352.57	33°00'24.549"N	103°51'13.774"W	0.06	
3013.60	0.230	49.720	3013.44	18.97	-0.24	-18.97	688332.83	730352.86	33°00'24.552"N	103°51'13.771"W	0.06	
3108.80	0.210	43.180	3108.64	18.70	0.02	-18.70	688333.10	730353.12	33°00'24.555"N	103°51'13.768"W	0.03	
3203.90	0.200	36.940	3203.73	18.48	0.28	-18.48	688333.32	730353.38	33°00'24.557"N	103°51'13.765"W	0.03	
3298.90	0.190	18.810	3298.73	18.33	0.56	-18.33	688333.47	730353.66	33°00'24.560"N	103°51'13.763"W	0.07	
3394.10	0.230	34.000	3393.93	18.17	0.86	-18.18	688333.63	730353.96	33°00'24.563"N	103°51'13.761"W	0.07	
3489.40	0.230	3.490	3489.23	18.05	1.21	-18.06	688333.74	730354.31	33°00'24.567"N	103°51'13.760"W	0.13	
3584.80	0.300	358.800	3584.63	18.04	1.66	-18.05	688333.75	730354.76	33°00'24.571"N	103°51'13.760"W	0.08	
3679.90	0.340	348.990	3679.73	18.10	2.18	-18.11	688333.69	730355.28	33°00'24.576"N	103°51'13.761"W	0.07	
3775.10	0.290	347.080	3774.93	18.21	2.69	-18.22	688333.58	730355.79	33°00'24.581"N	103°51'13.762"W	0.05	
3870.20	0.230	347.070	3870.03	18.30	3.11	-18.31	688333.49	730356.21	33°00'24.585"N	103°51'13.763"W	0.06	
3965.40	0.180	337.710	3965.23	18.40	3.44	-18.41	688333.39	730356.54	33°00'24.589"N	103°51'13.764"W	0.06	
4060.70	0.140	343.710	4060.53	18.49	3.69	-18.50	688333.30	730356.79	33°00'24.591"N	103°51'13.765"W	0.05	
4156.00	0.170	327.080	4155.83	18.60	3.92	-18.61	688333.19	730357.02	33°00'24.593"N	103°51'13.766"W	0.06	



Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION

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Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWP
Facility	Hancock 19 St Com No. 4H		

WELLPATH DATA (167 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]	Comments
4251.10	0.170	327.940	4250.93	18.75	4.16	-18.76	688333.04	730357.26	33°00'24.596"N	103°51'13.768"W	0.00	
4346.30	0.230	306.550	4346.13	18.97	4.39	-18.99	688332.81	730357.49	33°00'24.598"N	103°51'13.771"W	0.10	
4441.50	0.240	293.630	4441.32	19.31	4.58	-19.33	688332.47	730357.68	33°00'24.600"N	103°51'13.775"W	0.06	
4536.80	0.310	282.470	4536.62	19.74	4.72	-19.76	688332.04	730357.82	33°00'24.601"N	103°51'13.780"W	0.09	
4631.90	0.330	292.550	4631.72	20.25	4.88	-20.27	688331.53	730357.98	33°00'24.603"N	103°51'13.786"W	0.06	
4727.30	0.470	295.880	4727.12	20.85	5.16	-20.87	688330.93	730358.26	33°00'24.606"N	103°51'13.793"W	0.15	
4822.40	0.540	294.840	4822.22	21.61	5.52	-21.63	688330.17	730358.61	33°00'24.609"N	103°51'13.802"W	0.07	
4917.80	0.500	296.560	4917.61	22.39	5.89	-22.41	688329.39	730358.99	33°00'24.613"N	103°51'13.811"W	0.05	
5013.00	0.580	290.240	5012.81	23.21	6.24	-23.23	688328.57	730359.34	33°00'24.617"N	103°51'13.821"W	0.10	
5108.10	0.610	288.220	5107.90	24.14	6.57	-24.17	688327.63	730359.67	33°00'24.620"N	103°51'13.831"W	0.04	
5203.30	0.480	290.200	5203.10	24.99	6.86	-25.02	688326.78	730359.96	33°00'24.623"N	103°51'13.842"W	0.14	
5298.10	0.540	298.020	5297.89	25.76	7.21	-25.79	688326.01	730360.31	33°00'24.626"N	103°51'13.851"W	0.10	
5393.30	0.490	306.320	5393.09	26.48	7.66	-26.51	688325.29	730360.76	33°00'24.631"N	103°51'13.859"W	0.09	
5488.40	0.500	317.350	5488.19	27.09	8.21	-27.12	688324.68	730361.31	33°00'24.636"N	103°51'13.866"W	0.10	
5583.60	0.470	319.020	5583.38	27.62	8.81	-27.66	688324.14	730361.91	33°00'24.642"N	103°51'13.872"W	0.03	
5678.70	0.390	316.500	5678.48	28.10	9.34	-28.14	688323.66	730362.44	33°00'24.647"N	103°51'13.878"W	0.09	
5773.90	0.450	309.600	5773.68	28.61	9.81	-28.65	688323.15	730362.91	33°00'24.652"N	103°51'13.884"W	0.08	
5869.20	0.490	305.890	5868.98	29.22	10.29	-29.27	688322.53	730363.39	33°00'24.657"N	103°51'13.891"W	0.05	
5964.40	0.610	293.070	5964.17	30.02	10.73	-30.06	688321.74	730363.83	33°00'24.661"N	103°51'13.901"W	0.18	
6059.40	0.630	298.710	6059.17	30.94	11.17	-30.99	688320.81	730364.27	33°00'24.666"N	103°51'13.911"W	0.07	
6154.80	0.600	294.720	6154.56	31.85	11.64	-31.90	688319.90	730364.73	33°00'24.670"N	103°51'13.922"W	0.05	
6249.80	0.570	290.740	6249.55	32.74	12.01	-32.80	688319.01	730365.11	33°00'24.674"N	103°51'13.933"W	0.05	
6345.10	0.580	292.050	6344.85	33.63	12.36	-33.69	688318.12	730365.46	33°00'24.678"N	103°51'13.943"W	0.02	
6440.40	0.600	299.380	6440.15	34.51	12.79	-34.57	688317.23	730365.89	33°00'24.682"N	103°51'13.953"W	0.08	
6535.70	0.590	304.580	6535.44	35.35	13.31	-35.41	688316.40	730366.41	33°00'24.687"N	103°51'13.963"W	0.06	
6630.60	0.580	299.520	6630.34	36.17	13.82	-36.23	688315.58	730366.92	33°00'24.692"N	103°51'13.973"W	0.06	
6726.00	0.660	295.980	6725.73	37.08	14.30	-37.14	688314.66	730367.40	33°00'24.697"N	103°51'13.983"W	0.09	
6821.30	0.650	290.140	6821.02	38.08	14.73	-38.14	688313.66	730367.83	33°00'24.701"N	103°51'13.995"W	0.07	
6916.50	0.620	283.770	6916.22	39.08	15.04	-39.15	688312.65	730368.14	33°00'24.704"N	103°51'14.007"W	0.08	
7011.50	0.660	282.050	7011.21	40.12	15.27	-40.18	688311.62	730368.37	33°00'24.707"N	103°51'14.019"W	0.05	
7106.60	0.670	283.290	7106.31	41.19	15.52	-41.26	688310.54	730368.61	33°00'24.709"N	103°51'14.032"W	0.02	
7201.70	0.700	285.620	7201.40	42.29	15.80	-42.36	688309.44	730368.90	33°00'24.712"N	103°51'14.045"W	0.04	
7296.90	0.600	281.450	7296.59	43.34	16.06	-43.41	688308.39	730369.15	33°00'24.715"N	103°51'14.057"W	0.12	
7392.20	0.520	280.020	7391.89	44.25	16.23	-44.32	688307.48	730369.33	33°00'24.716"N	103°51'14.068"W	0.09	
7487.40	0.370	290.640	7487.08	44.97	16.41	-45.04	688306.77	730369.51	33°00'24.718"N	103°51'14.076"W	0.18	
7582.40	0.170	297.190	7582.08	45.38	16.59	-45.45	688306.35	730369.68	33°00'24.720"N	103°51'14.081"W	0.21	
7677.50	0.070	310.180	7677.18	45.55	16.69	-45.62	688306.18	730369.79	33°00'24.721"N	103°51'14.083"W	0.11	
7772.70	0.110	271.950	7772.38	45.68	16.73	-45.76	688306.05	730369.83	33°00'24.721"N	103°51'14.084"W	0.07	
7867.80	0.030	135.810	7867.48	45.76	16.71	-45.83	688305.97	730369.81	33°00'24.721"N	103°51'14.085"W	0.14	
7962.90	0.100	113.610	7962.58	45.66	16.66	-45.74	688306.07	730369.76	33°00'24.721"N	103°51'14.084"W	0.08	
8058.00	0.140	107.320	8057.68	45.48	16.59	-45.55	688306.25	730369.69	33°00'24.720"N	103°51'14.082"W	0.04	
8153.30	0.260	107.320	8152.98	45.16	16.50	-45.23	688306.57	730369.59	33°00'24.719"N	103°51'14.078"W	0.13	
8248.40	0.380	106.200	8248.08	44.65	16.34	-44.72	688307.08	730369.44	33°00'24.717"N	103°51'14.072"W	0.13	
8343.60	0.440	102.110	8343.28	43.99	16.18	-44.06	688307.74	730369.28	33°00'24.716"N	103°51'14.065"W	0.07	
8438.90	0.420	109.190	8438.58	43.30	15.99	-43.37	688308.43	730369.09	33°00'24.714"N	103°51'14.057"W	0.06	



Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWB
Facility	Hancock 19 St Com No. 4H		

WELLPATH DATA (167 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]	Comments
8472.00	1.100	234.600	8471.67	43.45	15.76	-43.52	688308.28	730368.86	33°00'24.712"N	103°51'14.058"W	4.19	
8505.00	10.300	265.500	8504.48	46.66	15.35	-46.73	688305.08	730368.45	33°00'24.708"N	103°51'14.096"W	28.40	
8536.00	20.400	267.100	8534.33	54.84	14.86	-54.91	688296.90	730367.95	33°00'24.703"N	103°51'14.192"W	32.61	
8568.00	29.800	266.500	8563.28	68.38	14.09	-68.44	688283.36	730367.18	33°00'24.696"N	103°51'14.351"W	29.39	
8600.00	38.900	269.000	8589.67	86.40	13.42	-86.46	688265.34	730366.52	33°00'24.690"N	103°51'14.563"W	28.77	
8632.00	48.900	270.700	8612.70	108.56	13.40	-108.62	688243.18	730366.49	33°00'24.691"N	103°51'14.823"W	31.46	
8663.00	58.400	271.900	8631.06	133.49	13.98	-133.55	688218.25	730367.08	33°00'24.698"N	103°51'15.116"W	30.80	
8695.00	68.300	270.700	8645.39	162.05	14.61	-162.11	688189.70	730367.71	33°00'24.706"N	103°51'15.451"W	31.12	
8727.00	74.400	271.100	8655.62	192.35	15.09	-192.41	688159.40	730368.19	33°00'24.712"N	103°51'15.807"W	19.10	
8759.00	75.800	270.900	8663.85	223.26	15.63	-223.33	688128.48	730368.73	33°00'24.718"N	103°51'16.170"W	4.42	
8790.00	76.800	270.100	8671.19	253.38	15.89	-253.45	688098.37	730368.99	33°00'24.722"N	103°51'16.523"W	4.09	
8822.00	78.500	269.500	8678.03	284.63	15.78	-284.71	688067.11	730368.88	33°00'24.723"N	103°51'16.890"W	5.62	
8854.00	79.500	269.300	8684.14	316.05	15.45	-316.12	688035.71	730368.55	33°00'24.721"N	103°51'17.259"W	3.18	
8885.00	81.200	269.400	8689.34	346.61	15.11	-346.67	688005.15	730368.21	33°00'24.719"N	103°51'17.618"W	5.49	
8917.00	82.300	269.400	8693.93	378.27	14.78	-378.34	687973.49	730367.87	33°00'24.717"N	103°51'17.990"W	3.44	
8948.00	83.200	268.700	8697.84	409.02	14.27	-409.09	687942.74	730367.36	33°00'24.713"N	103°51'18.351"W	3.67	
8980.00	85.300	268.800	8701.05	440.85	13.57	-440.92	687910.91	730366.67	33°00'24.708"N	103°51'18.725"W	6.57	
9012.00	87.300	268.400	8703.11	472.78	12.79	-472.84	687878.99	730365.89	33°00'24.702"N	103°51'19.100"W	6.37	
9043.00	89.600	267.300	8703.95	503.75	11.63	-503.80	687848.03	730364.73	33°00'24.691"N	103°51'19.463"W	8.22	
9075.00	90.400	267.000	8703.95	535.72	10.04	-535.76	687816.07	730363.14	33°00'24.677"N	103°51'19.839"W	2.67	
9106.00	93.500	267.200	8702.89	566.66	8.47	-566.70	687785.14	730361.57	33°00'24.663"N	103°51'20.202"W	10.02	
9138.00	94.500	267.000	8700.66	598.55	6.85	-598.58	687753.26	730359.95	33°00'24.649"N	103°51'20.576"W	3.19	
9169.00	94.300	267.000	8698.28	629.42	5.24	-629.45	687722.39	730358.34	33°00'24.634"N	103°51'20.939"W	0.65	
9201.00	94.400	267.000	8695.86	661.29	3.57	-661.31	687690.53	730356.67	33°00'24.619"N	103°51'21.313"W	0.31	
9233.00	94.400	266.900	8693.40	693.16	1.87	-693.17	687658.67	730354.97	33°00'24.603"N	103°51'21.687"W	0.31	
9264.00	93.000	268.400	8691.40	724.07	0.60	-724.08	687627.77	730353.70	33°00'24.592"N	103°51'22.050"W	6.61	
9296.00	92.000	270.200	8690.00	756.04	0.21	-756.05	687595.80	730353.31	33°00'24.590"N	103°51'22.426"W	6.43	
9328.00	91.900	271.000	8688.92	788.02	0.55	-788.03	687563.83	730353.65	33°00'24.595"N	103°51'22.801"W	2.52	
9359.00	91.700	271.500	8687.94	818.99	1.22	-819.00	687532.85	730354.32	33°00'24.603"N	103°51'23.165"W	1.74	
9391.00	92.500	271.600	8686.77	850.95	2.09	-850.97	687500.89	730355.19	33°00'24.613"N	103°51'23.540"W	2.52	
9423.00	93.500	271.100	8685.09	882.90	2.84	-882.92	687468.94	730355.94	33°00'24.622"N	103°51'23.915"W	3.49	
9454.00	93.200	270.700	8683.28	913.84	3.33	-913.86	687438.00	730356.43	33°00'24.628"N	103°51'24.279"W	1.61	
9518.00	92.800	270.700	8679.93	977.74	4.11	-977.77	687374.10	730357.21	33°00'24.638"N	103°51'25.029"W	0.62	
9613.00	92.300	270.400	8675.71	1072.64	5.02	-1072.67	687279.20	730358.12	33°00'24.652"N	103°51'26.143"W	0.61	
9708.00	91.900	270.900	8672.23	1167.56	6.09	-1167.60	687184.28	730359.19	33°00'24.667"N	103°51'27.258"W	0.67	
9803.00	91.200	269.800	8669.66	1262.52	6.67	-1262.56	687089.33	730359.77	33°00'24.677"N	103°51'28.373"W	1.37	
9897.00	91.300	268.900	8667.61	1356.49	5.61	-1356.53	686995.36	730358.71	33°00'24.670"N	103°51'29.477"W	0.96	
9993.00	89.600	268.800	8666.85	1452.48	3.68	-1452.50	686899.39	730356.78	33°00'24.655"N	103°51'30.604"W	1.77	
10087.00	90.800	269.000	8666.52	1546.46	1.88	-1546.49	686805.42	730354.98	33°00'24.642"N	103°51'31.707"W	1.29	
10150.00	91.100	269.200	8665.48	1609.45	0.89	-1609.47	686742.44	730353.99	33°00'24.635"N	103°51'32.447"W	0.57	
10213.00	90.900	269.300	8664.38	1672.44	0.06	-1672.45	686679.46	730353.16	33°00'24.629"N	103°51'33.186"W	0.35	
10277.00	90.200	269.900	8663.77	1736.43	-0.38	-1736.45	686615.47	730352.72	33°00'24.628"N	103°51'33.938"W	1.44	
10340.00	89.500	269.700	8663.93	1799.43	-0.60	-1799.45	686552.48	730352.50	33°00'24.628"N	103°51'34.678"W	1.16	
10403.00	89.300	269.100	8664.59	1862.43	-1.26	-1862.44	686489.49	730351.84	33°00'24.625"N	103°51'35.417"W	1.00	
10467.00	89.200	268.900	8665.43	1926.42	-2.38	-1926.42	686425.51	730350.72	33°00'24.617"N	103°51'36.169"W	0.35	



Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWP
Facility	Hancock 19 St Com No. 4H		

WELLPATH DATA (167 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]	Comments
10530.00	90.500	269.400	8665.59	1989.41	-3.31	-1989.42	686362.52	730349.79	33°00'24.610"N	103°51'36.909"W	2.21	
10593.00	90.000	269.300	8665.32	2052.41	-4.03	-2052.41	686299.53	730349.07	33°00'24.606"N	103°51'37.648"W	0.81	
10656.00	90.800	269.200	8664.88	2115.41	-4.85	-2115.40	686236.54	730348.25	33°00'24.600"N	103°51'38.388"W	1.28	
10719.00	91.100	268.700	8663.83	2178.39	-6.01	-2178.38	686173.56	730347.09	33°00'24.592"N	103°51'39.128"W	0.93	
10782.00	91.000	269.600	8662.68	2241.38	-6.94	-2241.37	686110.59	730346.16	33°00'24.585"N	103°51'39.867"W	1.44	
10846.00	90.900	269.900	8661.62	2305.37	-7.22	-2305.36	686046.60	730345.88	33°00'24.585"N	103°51'40.619"W	0.49	
10909.00	92.000	269.300	8660.02	2368.34	-7.66	-2368.33	685983.63	730345.44	33°00'24.584"N	103°51'41.358"W	1.99	
10972.00	92.500	269.200	8657.55	2431.29	-8.49	-2431.28	685920.69	730344.62	33°00'24.579"N	103°51'42.097"W	0.81	
11035.00	92.200	268.800	8654.97	2494.23	-9.58	-2494.22	685857.75	730343.52	33°00'24.571"N	103°51'42.836"W	0.79	
11099.00	91.900	268.900	8652.68	2558.19	-10.87	-2558.16	685793.81	730342.23	33°00'24.561"N	103°51'43.587"W	0.49	
11162.00	92.100	269.200	8650.48	2621.14	-11.91	-2621.12	685730.86	730341.19	33°00'24.553"N	103°51'44.327"W	0.57	
11225.00	91.600	269.600	8648.45	2684.11	-12.57	-2684.08	685667.90	730340.53	33°00'24.549"N	103°51'45.066"W	1.02	
11288.00	91.700	269.200	8646.63	2747.08	-13.23	-2747.05	685604.94	730339.87	33°00'24.546"N	103°51'45.805"W	0.65	
11352.00	90.900	269.900	8645.18	2811.06	-13.73	-2811.03	685540.96	730339.37	33°00'24.543"N	103°51'46.557"W	1.66	
11415.00	89.300	270.000	8645.07	2874.06	-13.79	-2874.03	685477.97	730339.31	33°00'24.546"N	103°51'47.296"W	2.54	
11478.00	89.700	269.800	8645.62	2937.06	-13.90	-2937.03	685414.98	730339.20	33°00'24.547"N	103°51'48.036"W	0.71	
11541.00	90.000	269.600	8645.78	3000.06	-14.23	-3000.02	685351.98	730338.87	33°00'24.547"N	103°51'48.776"W	0.57	
11605.00	90.500	269.100	8645.50	3064.05	-14.95	-3064.02	685287.99	730338.15	33°00'24.543"N	103°51'49.527"W	1.10	
11668.00	89.100	269.300	8645.72	3127.05	-15.83	-3127.01	685225.00	730337.27	33°00'24.537"N	103°51'50.267"W	2.24	
11731.00	88.500	269.500	8647.04	3190.03	-16.49	-3189.99	685162.02	730336.61	33°00'24.533"N	103°51'51.007"W	1.00	
11795.00	87.900	269.400	8649.05	3254.00	-17.11	-3253.96	685098.06	730335.99	33°00'24.530"N	103°51'51.758"W	0.95	
11858.00	88.700	268.400	8650.92	3316.97	-18.32	-3316.92	685035.11	730334.79	33°00'24.520"N	103°51'52.497"W	2.03	
11921.00	89.000	268.500	8652.19	3379.94	-20.02	-3379.88	684972.15	730333.08	33°00'24.506"N	103°51'53.237"W	0.50	
11984.00	89.100	268.100	8653.23	3442.91	-21.89	-3442.85	684909.19	730331.21	33°00'24.491"N	103°51'53.976"W	0.65	
12047.00	88.800	267.900	8654.39	3505.87	-24.09	-3505.80	684846.24	730329.02	33°00'24.472"N	103°51'54.715"W	0.57	
12111.00	88.800	268.200	8655.73	3569.83	-26.26	-3569.75	684782.30	730326.84	33°00'24.453"N	103°51'55.466"W	0.47	
12174.00	88.400	267.400	8657.27	3632.77	-28.68	-3632.68	684719.37	730324.42	33°00'24.432"N	103°51'56.206"W	1.42	
12238.00	89.000	267.100	8658.72	3696.69	-31.75	-3696.59	684655.46	730321.35	33°00'24.404"N	103°51'56.956"W	1.05	
12301.00	90.500	267.600	8658.99	3759.63	-34.66	-3759.52	684592.54	730318.44	33°00'24.378"N	103°51'57.695"W	2.51	
12364.00	90.300	268.300	8658.55	3822.60	-36.92	-3822.48	684529.58	730316.19	33°00'24.359"N	103°51'58.435"W	1.16	
12428.00	89.600	268.300	8658.61	3886.58	-38.82	-3886.45	684465.62	730314.29	33°00'24.343"N	103°51'59.186"W	1.09	
12480.00	89.600	268.300	8658.97	3938.56	-40.36	-3938.42	684413.64	730312.74	33°00'24.330"N	103°51'59.796"W	0.00	Proj to Bit



Actual Wellpath Report

No. 4H AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 4H SHL
Area	Chaves County, NM	Well	No. 4H
Field	(Hancock) Sec 19, T15S, R31E	Wellbore	No. 4H AWB
Facility	Hancock 19 St Com No. 4H		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 4H PBHL		8664.00	-19.85	-4592.71	683759.40	730333.25	33°00'24.561"N	103°52'07.478"W	point

WELLPATH COMPOSITION

Ref Wellbore: No. 4H AWB Ref Wellpath: No. 4H AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	8438.90	Generic gyro - northseeking (Standard)	Gyro	No. 4H AWB
8438.90	12480.00	NaviTrak (Standard)	MWD	No. 4H AWB