

CIMAREX

Cimarex Energy Co.

Location Eddy County, NM
Field (Chaparral) Sec 32, T19S, R29E
Facility Chaparral State No 21

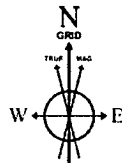
Slot No 21 SHL
Well No 21
Wellbore No 21 PWB



15-39955

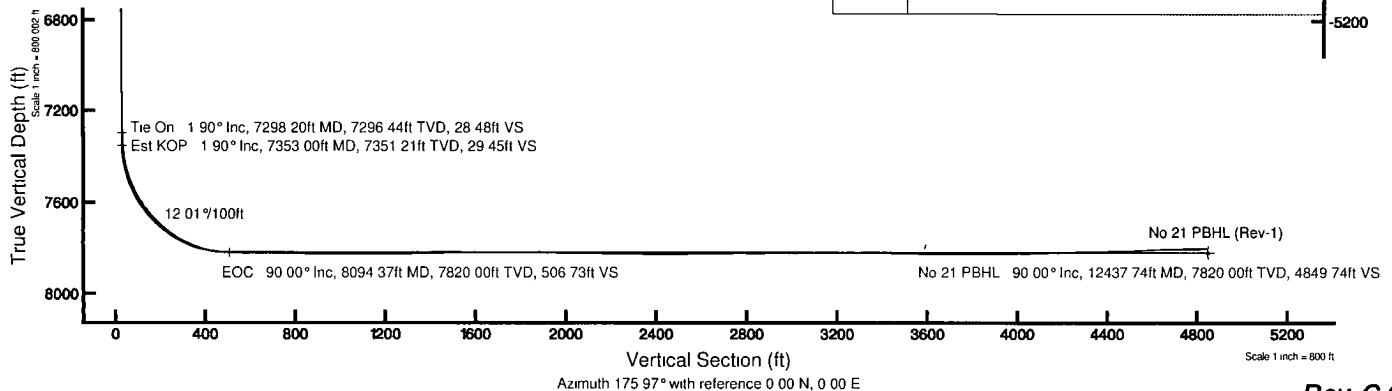
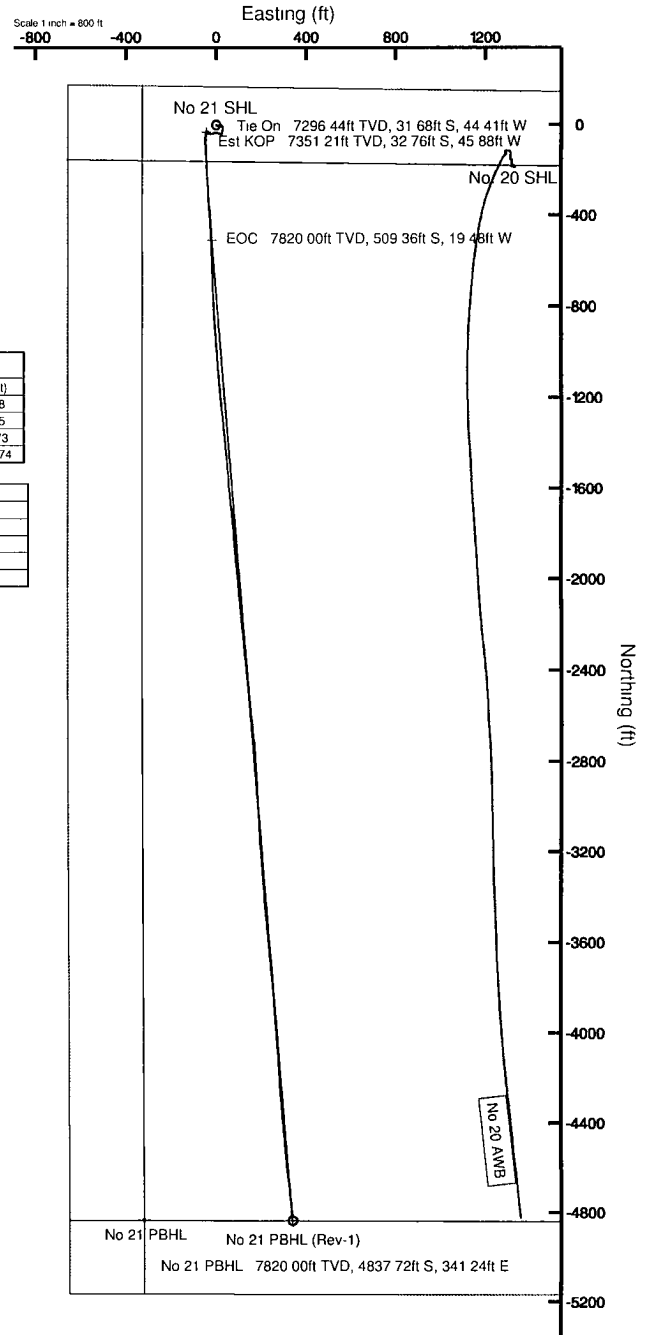
Well Profile Data							
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	7298.20	1.900	233.820	7296.44	-31.66	-44.41	28.48
Est KOP	7353.00	1.900	233.820	7351.21	-32.76	-45.88	29.45
EOC	8094.37	90.000	175.236	7820.00	-509.36	-19.48	506.73
No 21 PBHL	12437.74	90.000	175.236	7820.00	-4837.72	341.24	4849.74

Plot reference wellpath is Rev-C 0	
True vertical depths are referenced to Key 881 (RT)	Grid System NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet
Measured depths are referenced to Key 881 (RT)	North Reference Grid north
Key 881 (RT) to Mean Sea Level 3332 feet	Scale True distance
Mean Sea Level to Mud line (At Slot No 21 SHL) -3312 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by gentry on 6/30/2012



BGGM (1945.0 to 2013.0) Dip 60.42° Field 48745.2 nT
Magnetic North is 7.87 degrees East of True North (at 1/16/2012)
Grid North is 0.12 degrees East of True North
To correct azimuth from True to Grid subtract 0.12 degrees
To correct azimuth from Magnetic to Grid add 7.75 degrees
For example if the Magnetic North Azimuth = 90 degs, then the Grid North Azimuth = 90 + 7.75 = 97.75

not signed or certified



Rev-C.0



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

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	Harrkol
Scale	0.999915	Report Generated	7/12/2012 at 11:05:05 AM
Convergence at slot	0.12° East	Database/Source file	WA Midland/No.21_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	612115.60	590922.10	32°37'27.424"N	104°06'12.373"W
Facility Reference Pt			612115.60	590922.10	32°37'27.424"N	104°06'12.373"W
Field Reference Pt			613435.50	590743.60	32°37'25.630"N	104°05'56.944"W

WELLPATH DATUM

Calculation method	Minimum curvature	Key 881 (RT) to Facility Vertical Datum	20.00ft
Horizontal Reference Pt	Slot	Key 881 (RT) to Mean Sea Level	3332.00ft
Vertical Reference Pt	Key 881 (RT)	Key 881 (RT) to Mud Line at Slot (No.21 SHL)	20.00ft
MD Reference Pt	Key 881 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	175.97°



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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

WELLPATH DATA (208 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
0.00	0.000	158.300	0.00	0.00	0.00	0.00	612115.60	590922.10	32°37'27.424"N	104°06'12.373"W	0.00	
61.50	0.540	158.300	61.50	0.28	-0.27	0.11	612115.71	590921.83	32°37'27.422"N	104°06'12.372"W	0.88	
125.00	0.500	148.960	125.00	0.81	-0.78	0.36	612115.96	590921.32	32°37'27.417"N	104°06'12.369"W	0.15	
188.50	0.630	138.840	188.49	1.33	-1.28	0.73	612116.33	590920.82	32°37'27.412"N	104°06'12.365"W	0.26	
252.00	0.810	133.820	251.99	1.94	-1.86	1.29	612116.89	590920.24	32°37'27.406"N	104°06'12.358"W	0.30	
315.40	1.010	121.950	315.38	2.61	-2.46	2.08	612117.68	590919.64	32°37'27.400"N	104°06'12.349"W	0.43	
378.90	1.090	115.950	378.87	3.24	-3.02	3.10	612118.70	590919.08	32°37'27.394"N	104°06'12.337"W	0.21	
442.40	1.120	110.930	442.36	3.80	-3.51	4.23	612119.82	590918.59	32°37'27.390"N	104°06'12.324"W	0.16	
505.90	1.040	108.390	505.85	4.28	-3.91	5.35	612120.95	590918.19	32°37'27.386"N	104°06'12.311"W	0.15	
569.40	1.370	104.150	569.33	4.74	-4.28	6.63	612122.23	590917.82	32°37'27.382"N	104°06'12.296"W	0.54	
632.80	1.680	100.460	632.71	5.21	-4.64	8.28	612123.88	590917.46	32°37'27.378"N	104°06'12.277"W	0.51	
696.30	1.920	93.920	696.18	5.59	-4.88	10.26	612125.86	590917.22	32°37'27.376"N	104°06'12.253"W	0.50	
759.80	2.070	92.890	759.64	5.87	-5.01	12.47	612128.07	590917.09	32°37'27.375"N	104°06'12.228"W	0.24	
823.30	2.250	101.890	823.10	6.35	-5.32	14.83	612130.43	590916.78	32°37'27.371"N	104°06'12.200"W	0.60	
886.80	2.290	90.980	886.55	6.81	-5.60	17.32	612132.92	590916.50	32°37'27.369"N	104°06'12.171"W	0.68	
950.20	2.490	81.120	949.89	6.80	-5.41	19.95	612135.55	590916.69	32°37'27.370"N	104°06'12.140"W	0.72	
1013.70	2.280	78.830	1013.34	6.53	-4.95	22.55	612138.15	590917.15	32°37'27.375"N	104°06'12.110"W	0.36	
1077.20	1.590	96.040	1076.80	6.52	-4.80	24.66	612140.26	590917.30	32°37'27.376"N	104°06'12.085"W	1.41	
1140.70	1.120	119.910	1140.28	7.02	-5.20	26.08	612141.68	590916.90	32°37'27.372"N	104°06'12.069"W	1.14	
1204.20	0.920	136.680	1203.77	7.77	-5.88	26.97	612142.56	590916.22	32°37'27.366"N	104°06'12.058"W	0.56	
1267.60	1.110	166.200	1267.16	8.77	-6.85	27.46	612143.06	590915.25	32°37'27.356"N	104°06'12.052"W	0.87	
1331.10	1.260	164.210	1330.65	10.05	-8.12	27.80	612143.40	590913.98	32°37'27.343"N	104°06'12.048"W	0.24	
1394.60	1.280	163.730	1394.13	11.43	-9.47	28.19	612143.78	590912.63	32°37'27.330"N	104°06'12.044"W	0.04	
1458.10	1.330	178.430	1457.62	12.86	-10.89	28.41	612144.00	590911.21	32°37'27.316"N	104°06'12.041"W	0.53	
1521.60	1.410	172.480	1521.10	14.38	-12.40	28.53	612144.13	590909.70	32°37'27.301"N	104°06'12.040"W	0.26	
1585.00	1.340	179.540	1584.48	15.90	-13.91	28.64	612144.23	590908.19	32°37'27.286"N	104°06'12.039"W	0.29	
1648.50	1.230	179.380	1647.96	17.32	-15.34	28.65	612144.25	590906.76	32°37'27.272"N	104°06'12.039"W	0.17	
1712.00	1.160	179.360	1711.45	18.64	-16.66	28.66	612144.26	590905.44	32°37'27.259"N	104°06'12.039"W	0.11	
1775.50	1.170	182.740	1774.94	19.92	-17.95	28.64	612144.24	590904.15	32°37'27.246"N	104°06'12.039"W	0.11	
1839.00	1.480	167.870	1838.42	21.38	-19.40	28.78	612144.38	590902.70	32°37'27.232"N	104°06'12.037"W	0.73	
1902.40	1.570	174.780	1901.80	23.06	-21.07	29.03	612144.63	590901.03	32°37'27.215"N	104°06'12.034"W	0.32	
1965.90	1.570	176.500	1965.27	24.80	-22.80	29.17	612144.76	590899.30	32°37'27.198"N	104°06'12.033"W	0.07	
2092.90	1.470	248.180	2092.24	27.04	-25.14	27.76	612143.36	590896.96	32°37'27.175"N	104°06'12.049"W	1.40	
2156.40	1.240	178.300	2155.73	27.97	-26.13	27.02	612142.62	590895.97	32°37'27.165"N	104°06'12.058"W	2.46	
2219.80	0.880	187.160	2219.12	29.13	-27.30	26.98	612142.58	590894.80	32°37'27.154"N	104°06'12.059"W	0.62	
2283.30	0.780	201.390	2282.61	30.00	-28.19	26.76	612142.36	590893.91	32°37'27.145"N	104°06'12.061"W	0.36	
2346.80	0.850	213.490	2346.10	30.77	-28.98	26.35	612141.94	590893.12	32°37'27.137"N	104°06'12.066"W	0.29	
2410.30	0.760	203.640	2409.60	31.51	-29.76	25.92	612141.52	590892.34	32°37'27.129"N	104°06'12.071"W	0.26	
2473.80	0.700	218.360	2473.09	32.17	-30.45	25.51	612141.11	590891.65	32°37'27.123"N	104°06'12.076"W	0.31	
2537.20	0.750	206.730	2536.49	32.82	-31.13	25.08	612140.68	590890.98	32°37'27.116"N	104°06'12.081"W	0.24	
2600.70	0.840	181.200	2599.98	33.64	-31.96	24.89	612140.48	590890.14	32°37'27.108"N	104°06'12.083"W	0.57	
2664.20	1.170	161.320	2663.47	34.73	-33.04	25.08	612140.68	590889.06	32°37'27.097"N	104°06'12.081"W	0.75	
2727.70	1.040	175.090	2726.96	35.93	-34.23	25.34	612140.94	590887.87	32°37'27.085"N	104°06'12.078"W	0.46	
2791.20	0.970	202.800	2790.45	36.99	-35.30	25.18	612140.78	590886.80	32°37'27.075"N	104°06'12.080"W	0.77	
2854.60	0.880	197.440	2853.84	37.92	-36.26	24.83	612140.42	590885.84	32°37'27.065"N	104°06'12.084"W	0.20	



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

WELLPATH DATA (208 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
2981.60	0.750	203.220	2980.83	39.56	-37.96	24.21	612139.80	590884.15	32°37'27.048"N	104°06'12.091"W	0.12	
3045.10	0.510	217.820	3044.32	40.14	-38.56	23.87	612139.47	590883.54	32°37'27.042"N	104°06'12.095"W	0.45	
3108.60	0.430	240.910	3107.82	40.46	-38.90	23.49	612139.09	590883.20	32°37'27.039"N	104°06'12.100"W	0.32	
3172.00	0.440	231.010	3171.22	40.70	-39.17	23.09	612138.69	590882.94	32°37'27.036"N	104°06'12.104"W	0.12	
3235.50	0.560	218.290	3234.72	41.06	-39.57	22.71	612138.31	590882.54	32°37'27.032"N	104°06'12.109"W	0.26	
3299.00	0.580	260.660	3298.22	41.33	-39.86	22.20	612137.80	590882.24	32°37'27.029"N	104°06'12.115"W	0.64	
3362.50	0.670	265.930	3361.71	41.36	-39.95	21.51	612137.11	590882.16	32°37'27.029"N	104°06'12.123"W	0.17	
3426.00	0.630	280.820	3425.21	41.27	-39.91	20.80	612136.40	590882.20	32°37'27.029"N	104°06'12.131"W	0.27	
3489.40	0.530	281.690	3488.60	41.10	-39.78	20.17	612135.77	590882.32	32°37'27.030"N	104°06'12.138"W	0.16	
3552.90	0.680	267.740	3552.10	41.01	-39.74	19.51	612135.11	590882.37	32°37'27.031"N	104°06'12.146"W	0.33	
3616.40	0.890	278.480	3615.59	40.89	-39.68	18.64	612134.24	590882.42	32°37'27.031"N	104°06'12.156"W	0.40	
3679.90	1.110	269.110	3679.09	40.75	-39.62	17.54	612133.14	590882.49	32°37'27.032"N	104°06'12.169"W	0.43	
3743.40	1.070	274.460	3742.57	40.63	-39.58	16.33	612131.93	590882.52	32°37'27.032"N	104°06'12.183"W	0.17	
3806.80	1.170	283.860	3805.96	40.34	-39.38	15.12	612130.71	590882.72	32°37'27.034"N	104°06'12.198"W	0.33	
3870.30	1.390	292.030	3869.45	39.81	-38.93	13.77	612129.37	590883.17	32°37'27.039"N	104°06'12.213"W	0.45	
3933.80	1.260	290.760	3932.93	39.18	-38.40	12.40	612128.00	590883.71	32°37'27.044"N	104°06'12.229"W	0.21	
3997.30	1.060	298.340	3996.42	38.57	-37.87	11.24	612126.83	590884.23	32°37'27.049"N	104°06'12.243"W	0.40	
4060.80	1.120	301.510	4059.90	37.89	-37.27	10.19	612125.79	590884.83	32°37'27.055"N	104°06'12.255"W	0.13	
4124.20	1.080	290.480	4123.29	37.29	-36.74	9.10	612124.70	590885.37	32°37'27.061"N	104°06'12.268"W	0.34	
4187.70	0.870	294.670	4186.78	36.81	-36.33	8.10	612123.70	590885.78	32°37'27.065"N	104°06'12.279"W	0.35	
4251.20	0.830	288.490	4250.28	36.40	-35.98	7.23	612122.83	590886.13	32°37'27.068"N	104°06'12.290"W	0.16	
4314.70	1.010	293.600	4313.77	35.96	-35.61	6.28	612121.88	590886.49	32°37'27.072"N	104°06'12.301"W	0.31	
4378.20	1.060	294.940	4377.26	35.42	-35.14	5.23	612120.83	590886.97	32°37'27.077"N	104°06'12.313"W	0.09	
4441.60	0.990	285.480	4440.65	34.95	-34.74	4.17	612119.77	590887.36	32°37'27.081"N	104°06'12.325"W	0.29	
4505.10	1.060	272.990	4504.14	34.70	-34.57	3.06	612118.66	590887.54	32°37'27.082"N	104°06'12.338"W	0.37	
4568.60	1.160	265.770	4567.63	34.63	-34.58	1.83	612117.43	590887.52	32°37'27.082"N	104°06'12.353"W	0.27	
4632.10	1.260	272.110	4631.11	34.55	-34.60	0.49	612116.09	590887.50	32°37'27.082"N	104°06'12.368"W	0.26	
4695.60	1.250	272.180	4694.60	34.40	-34.55	-0.90	612114.70	590887.55	32°37'27.083"N	104°06'12.385"W	0.02	
4759.00	1.300	107.390	4757.99	34.59	-34.74	-0.90	612114.70	590887.36	32°37'27.081"N	104°06'12.385"W	3.99	
4822.50	1.480	260.670	4821.48	34.93	-35.09	-1.02	612114.58	590887.01	32°37'27.077"N	104°06'12.386"W	4.26	
4886.00	1.520	251.600	4884.96	35.22	-35.49	-2.63	612112.97	590886.61	32°37'27.073"N	104°06'12.405"W	0.38	
4949.50	1.500	252.760	4948.44	35.61	-36.00	-4.22	612111.38	590886.10	32°37'27.068"N	104°06'12.424"W	0.06	
5013.00	1.620	322.120	5011.92	35.06	-35.54	-5.57	612110.03	590886.56	32°37'27.073"N	104°06'12.439"W	2.80	
5076.40	1.650	253.440	5075.30	34.51	-35.09	-7.00	612108.61	590887.01	32°37'27.077"N	104°06'12.456"W	2.91	
5139.90	1.780	252.460	5138.77	34.94	-35.65	-8.81	612106.79	590886.45	32°37'27.072"N	104°06'12.477"W	0.21	
5203.40	1.760	255.070	5202.24	35.35	-36.20	-10.69	612104.91	590885.91	32°37'27.066"N	104°06'12.499"W	0.13	
5266.90	1.680	249.980	5265.71	35.80	-36.77	-12.51	612103.09	590885.34	32°37'27.061"N	104°06'12.521"W	0.27	
5330.40	1.800	244.080	5329.18	36.42	-37.52	-14.28	612101.32	590884.58	32°37'27.053"N	104°06'12.541"W	0.34	
5393.80	1.800	242.290	5392.55	37.19	-38.42	-16.06	612099.54	590883.68	32°37'27.045"N	104°06'12.562"W	0.09	
5457.30	1.680	248.720	5456.02	37.87	-39.22	-17.81	612097.79	590882.88	32°37'27.037"N	104°06'12.583"W	0.36	
5520.80	1.750	247.620	5519.50	38.45	-39.93	-19.57	612096.03	590882.18	32°37'27.030"N	104°06'12.603"W	0.12	
5584.30	1.930	259.260	5582.96	38.88	-40.50	-21.52	612094.08	590881.61	32°37'27.024"N	104°06'12.626"W	0.65	
5647.80	2.140	254.050	5646.42	39.25	-41.02	-23.71	612091.89	590881.08	32°37'27.019"N	104°06'12.652"W	0.44	
5711.20	2.070	271.280	5709.78	39.39	-41.32	-25.99	612089.61	590880.78	32°37'27.016"N	104°06'12.678"W	1.00	
5774.70	1.990	285.210	5773.24	38.92	-41.01	-28.21	612087.40	590881.10	32°37'27.019"N	104°06'12.704"W	0.79	



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

WELLPATH DATA (208 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
5838.20	1.870	291.170	5836.71	38.12	-40.34	-30.24	612085.37	590881.76	32°37'27.026"N	104°06'12.728"W	0.37	
5901.70	1.790	292.970	5900.17	37.22	-39.58	-32.11	612083.49	590882.52	32°37'27.033"N	104°06'12.750"W	0.16	
5965.20	1.610	281.390	5963.65	36.54	-39.02	-33.90	612081.70	590883.08	32°37'27.039"N	104°06'12.771"W	0.61	
6028.60	1.460	296.740	6027.02	35.89	-38.48	-35.50	612080.11	590883.62	32°37'27.044"N	104°06'12.789"W	0.69	
6092.10	1.150	309.280	6090.51	35.04	-37.71	-36.71	612078.89	590884.39	32°37'27.052"N	104°06'12.804"W	0.66	
6155.60	0.820	316.970	6154.00	34.25	-36.98	-37.52	612078.09	590885.13	32°37'27.059"N	104°06'12.813"W	0.56	
6219.10	0.840	333.710	6217.49	33.46	-36.23	-38.03	612077.57	590885.88	32°37'27.067"N	104°06'12.819"W	0.38	
6282.60	0.820	346.560	6280.98	32.58	-35.37	-38.34	612077.26	590886.74	32°37'27.075"N	104°06'12.823"W	0.29	
6346.00	0.890	351.890	6344.38	31.64	-34.44	-38.52	612077.08	590887.66	32°37'27.084"N	104°06'12.825"W	0.17	
6409.50	1.030	347.040	6407.87	30.59	-33.39	-38.72	612076.89	590888.71	32°37'27.095"N	104°06'12.827"W	0.25	
6473.00	1.150	350.130	6471.36	29.39	-32.21	-38.95	612076.65	590889.89	32°37'27.107"N	104°06'12.830"W	0.21	
6536.50	1.070	350.440	6534.84	28.17	-31.00	-39.16	612076.44	590891.10	32°37'27.119"N	104°06'12.832"W	0.13	
6600.00	0.950	349.680	6598.33	27.05	-29.90	-39.35	612076.25	590892.21	32°37'27.129"N	104°06'12.834"W	0.19	
6663.40	0.700	345.620	6661.73	26.15	-29.00	-39.54	612076.06	590893.10	32°37'27.138"N	104°06'12.836"W	0.40	
6726.90	0.420	356.100	6725.23	25.54	-28.40	-39.66	612075.95	590893.71	32°37'27.144"N	104°06'12.838"W	0.47	
6790.40	0.170	26.360	6788.72	25.22	-28.08	-39.63	612075.97	590894.02	32°37'27.147"N	104°06'12.837"W	0.45	
6853.90	0.080	33.210	6852.22	25.10	-27.96	-39.56	612076.04	590894.14	32°37'27.149"N	104°06'12.837"W	0.14	
6917.40	0.130	334.040	6915.72	25.00	-27.86	-39.57	612076.03	590894.25	32°37'27.150"N	104°06'12.837"W	0.18	
6980.80	0.140	313.190	6979.12	24.88	-27.74	-39.66	612075.94	590894.36	32°37'27.151"N	104°06'12.838"W	0.08	
7044.30	0.340	231.270	7042.62	24.93	-27.80	-39.86	612075.74	590894.30	32°37'27.150"N	104°06'12.840"W	0.55	
7107.80	0.920	223.250	7106.12	25.38	-28.29	-40.36	612075.24	590893.81	32°37'27.145"N	104°06'12.846"W	0.92	
7171.30	1.460	227.790	7169.61	26.23	-29.21	-41.31	612074.30	590892.90	32°37'27.136"N	104°06'12.857"W	0.86	
7234.80	1.910	231.630	7233.08	27.32	-30.41	-42.74	612072.87	590891.70	32°37'27.124"N	104°06'12.874"W	0.73	
7298.20	1.900	233.820	7296.44	28.48	-31.68	-44.41	612071.19	590890.42	32°37'27.112"N	104°06'12.893"W	0.12	
7331.00	2.600	218.100	7329.22	29.32	-32.59	-45.31	612070.29	590889.51	32°37'27.103"N	104°06'12.904"W	2.83	
7365.00	4.300	199.900	7361.16	30.96	-34.29	-46.17	612069.44	590887.81	32°37'27.086"N	104°06'12.914"W	6.26	
7393.00	7.700	193.200	7392.98	34.10	-37.51	-47.07	612068.54	590884.60	32°37'27.054"N	104°06'12.925"W	10.83	
7427.00	11.500	189.400	7424.53	39.25	-42.74	-48.08	612067.53	590879.36	32°37'27.003"N	104°06'12.937"W	12.03	
7459.00	15.600	187.000	7455.63	46.58	-50.16	-49.12	612066.48	590871.94	32°37'26.929"N	104°06'12.949"W	12.93	
7491.00	19.300	184.900	7486.15	56.03	-59.71	-50.10	612065.51	590862.40	32°37'26.835"N	104°06'12.961"W	11.73	
7522.00	23.000	179.000	7515.06	67.15	-70.87	-50.43	612065.17	590851.24	32°37'26.724"N	104°06'12.965"W	13.76	
7554.00	26.300	175.400	7544.14	80.48	-84.19	-49.75	612065.85	590837.92	32°37'26.592"N	104°06'12.957"W	11.33	
7586.00	30.100	174.600	7572.34	95.60	-99.25	-48.43	612067.18	590822.86	32°37'26.443"N	104°06'12.942"W	11.93	
7618.00	33.600	175.800	7599.52	112.48	-116.08	-47.02	612068.58	590806.03	32°37'26.277"N	104°06'12.926"W	11.11	
7650.00	37.500	177.500	7625.55	131.08	-134.65	-45.95	612069.65	590787.47	32°37'26.093"N	104°06'12.914"W	12.57	
7682.00	41.500	177.500	7650.24	151.42	-154.98	-45.06	612070.54	590767.14	32°37'25.892"N	104°06'12.904"W	12.50	
7714.00	44.700	177.100	7673.60	173.28	-176.81	-44.03	612071.57	590745.30	32°37'25.676"N	104°06'12.893"W	10.04	
7745.00	47.900	175.800	7695.01	195.69	-199.18	-42.64	612072.97	590722.94	32°37'25.455"N	104°06'12.877"W	10.76	
7777.00	51.200	176.100	7715.77	220.03	-223.47	-40.92	612074.68	590698.65	32°37'25.214"N	104°06'12.857"W	10.34	
7809.00	55.000	176.500	7734.98	245.62	-249.00	-39.27	612076.33	590673.12	32°37'24.962"N	104°06'12.839"W	11.92	
7841.00	58.800	176.700	7752.45	272.42	-275.75	-37.68	612077.92	590646.37	32°37'24.697"N	104°06'12.821"W	11.89	
7873.00	62.700	177.000	7768.09	300.33	-303.63	-36.15	612079.45	590618.50	32°37'24.421"N	104°06'12.804"W	12.21	
7904.00	66.400	177.000	7781.41	328.31	-331.57	-34.68	612080.92	590590.56	32°37'24.144"N	104°06'12.787"W	11.94	
7936.00	70.300	175.900	7793.21	358.05	-361.25	-32.84	612082.76	590560.88	32°37'23.851"N	104°06'12.766"W	12.60	
7968.00	74.100	175.600	7802.99	388.51	-391.63	-30.58	612085.02	590530.50	32°37'23.550"N	104°06'12.741"W	11.91	



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

WELLPATH DATA (208 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
7999.00	78.100	175.600	7810.44	418.59	-421.63	-28.27	612087.33	590500.51	32°37'23.253"N	104°06'12.715"W	12.90	
8031.00	82.100	176.600	7815.94	450.11	-453.07	-26.13	612089.47	590469.07	32°37'22.942"N	104°06'12.690"W	12.87	
8064.00	86.200	177.300	7819.30	482.93	-485.85	-24.38	612091.22	590436.30	32°37'22.618"N	104°06'12.671"W	12.60	
8096.00	89.000	177.700	7820.64	514.88	-517.79	-22.99	612092.61	590404.36	32°37'22.302"N	104°06'12.655"W	8.84	
8128.00	89.100	177.800	7821.17	546.86	-549.76	-21.73	612093.87	590372.39	32°37'21.985"N	104°06'12.641"W	0.44	
8191.00	89.300	177.900	7822.05	609.82	-612.71	-19.37	612096.23	590309.45	32°37'21.362"N	104°06'12.615"W	0.35	
8254.00	89.600	178.000	7822.65	672.78	-675.66	-17.12	612098.48	590246.50	32°37'20.739"N	104°06'12.591"W	0.50	
8318.00	89.100	177.400	7823.38	736.75	-739.61	-14.55	612101.05	590182.56	32°37'20.107"N	104°06'12.562"W	1.22	
8382.00	89.700	177.000	7824.05	800.73	-803.53	-11.42	612104.18	590118.64	32°37'19.474"N	104°06'12.527"W	1.13	
8445.00	89.500	176.200	7824.49	863.72	-866.41	-7.69	612107.91	590055.76	32°37'18.852"N	104°06'12.485"W	1.31	
8508.00	89.600	175.800	7824.98	926.72	-929.26	-3.29	612112.31	589992.92	32°37'18.230"N	104°06'12.435"W	0.65	
8571.00	90.000	175.300	7825.20	989.72	-992.07	1.60	612117.20	589930.12	32°37'17.608"N	104°06'12.380"W	1.02	
8635.00	90.300	175.500	7825.04	1053.72	-1055.86	6.73	612122.33	589866.33	32°37'16.977"N	104°06'12.321"W	0.56	
8698.00	89.900	175.100	7824.93	1116.71	-1118.65	11.89	612127.49	589803.55	32°37'16.356"N	104°06'12.263"W	0.90	
8762.00	90.000	174.700	7824.98	1180.70	-1182.39	17.58	612133.18	589739.81	32°37'15.725"N	104°06'12.198"W	0.64	
8824.00	90.200	174.000	7824.87	1242.68	-1244.09	23.68	612139.28	589678.12	32°37'15.114"N	104°06'12.128"W	1.17	
8887.00	90.700	173.900	7824.38	1305.63	-1306.74	30.32	612145.92	589615.47	32°37'14.494"N	104°06'12.052"W	0.81	
8951.00	91.300	174.400	7823.26	1369.59	-1370.40	36.85	612152.44	589551.82	32°37'13.864"N	104°06'11.977"W	1.22	
9014.00	91.000	174.100	7822.00	1432.55	-1433.07	43.16	612158.75	589489.16	32°37'13.244"N	104°06'11.905"W	0.67	
9078.00	91.000	175.000	7820.88	1496.52	-1496.77	49.23	612164.83	589425.46	32°37'12.614"N	104°06'11.836"W	1.41	
9141.00	90.800	175.300	7819.89	1559.51	-1559.53	54.56	612170.15	589362.70	32°37'11.992"N	104°06'11.775"W	0.57	
9205.00	90.100	174.200	7819.39	1623.49	-1623.26	60.42	612176.01	589298.98	32°37'11.362"N	104°06'11.708"W	2.04	
9268.00	90.100	174.200	7819.28	1686.46	-1685.94	66.78	612182.38	589236.31	32°37'10.741"N	104°06'11.635"W	0.00	
9332.00	89.900	174.500	7819.28	1750.43	-1749.63	73.08	612188.68	589172.62	32°37'10.111"N	104°06'11.563"W	0.56	
9395.00	89.600	175.000	7819.55	1813.42	-1812.36	78.85	612194.44	589109.90	32°37'09.490"N	104°06'11.497"W	0.93	
9459.00	89.100	175.100	7820.28	1877.41	-1876.12	84.37	612199.96	589046.14	32°37'08.859"N	104°06'11.434"W	0.80	
9522.00	89.100	174.600	7821.27	1940.39	-1938.86	90.02	612205.62	588983.41	32°37'08.238"N	104°06'11.370"W	0.79	
9586.00	89.000	174.500	7822.33	2004.36	-2002.56	96.10	612211.69	588919.72	32°37'07.608"N	104°06'11.300"W	0.22	
9649.00	89.300	174.400	7823.27	2067.33	-2065.26	102.19	612217.78	588857.02	32°37'06.988"N	104°06'11.231"W	0.50	
9713.00	89.500	174.800	7823.94	2131.31	-2128.97	108.22	612223.81	588793.32	32°37'06.357"N	104°06'11.162"W	0.70	
9777.00	89.500	174.600	7824.49	2195.29	-2192.69	114.13	612229.72	588729.60	32°37'05.726"N	104°06'11.094"W	0.31	
9841.00	89.700	174.100	7824.94	2259.26	-2256.38	120.43	612236.02	588665.92	32°37'05.096"N	104°06'11.022"W	0.84	
9904.00	89.500	173.900	7825.38	2322.22	-2319.03	127.01	612242.60	588603.27	32°37'04.476"N	104°06'10.947"W	0.45	
9968.00	89.500	174.200	7825.94	2386.18	-2382.69	133.65	612249.24	588539.62	32°37'03.846"N	104°06'10.871"W	0.47	
10032.00	90.300	174.300	7826.05	2450.16	-2446.36	140.06	612255.65	588475.95	32°37'03.216"N	104°06'10.798"W	1.26	
10095.00	90.300	174.200	7825.72	2513.13	-2509.05	146.37	612261.96	588413.27	32°37'02.596"N	104°06'10.726"W	0.16	
10159.00	90.900	173.600	7825.05	2577.08	-2572.68	153.17	612268.76	588349.64	32°37'01.966"N	104°06'10.648"W	1.33	
10223.00	90.900	173.200	7824.05	2641.01	-2636.25	160.53	612276.11	588286.08	32°37'01.337"N	104°06'10.563"W	0.62	
10286.00	90.700	174.000	7823.17	2703.95	-2698.85	167.55	612283.13	588223.49	32°37'00.717"N	104°06'10.483"W	1.31	
10350.00	89.800	175.600	7822.89	2767.93	-2762.58	173.35	612288.93	588159.76	32°37'00.086"N	104°06'10.417"W	2.87	
10414.00	90.000	176.300	7823.00	2831.93	-2826.42	177.87	612293.45	588095.93	32°36'59.455"N	104°06'10.365"W	1.14	
10477.00	90.100	176.400	7822.94	2894.93	-2889.29	181.88	612297.46	588033.06	32°36'58.832"N	104°06'10.320"W	0.22	
10541.00	90.700	177.200	7822.50	2958.92	-2953.19	185.45	612301.04	587969.17	32°36'58.200"N	104°06'10.280"W	1.56	
10604.00	90.900	176.500	7821.62	3021.91	-3016.09	188.91	612304.50	587906.27	32°36'57.578"N	104°06'10.241"W	1.16	
10668.00	91.200	177.000	7820.41	3085.89	-3079.98	192.54	612308.12	587842.39	32°36'56.945"N	104°06'10.200"W	0.91	



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

WELLPATH DATA (208 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
10732.00	90.000	176.100	7819.77	3149.88	-3143.85	196.39	612311.97	587778.52	32°36'56.313"N	104°06'10.157"W	2.34	
10795.00	89.800	175.800	7819.88	3212.88	-3206.70	200.84	612316.42	587715.68	32°36'55.691"N	104°06'10.106"W	0.57	
10858.00	89.800	175.500	7820.10	3275.88	-3269.51	205.62	612321.20	587652.87	32°36'55.070"N	104°06'10.052"W	0.48	
10922.00	89.800	176.000	7820.33	3339.88	-3333.34	210.36	612325.94	587589.05	32°36'54.438"N	104°06'09.998"W	0.78	
10986.00	89.200	175.500	7820.89	3403.87	-3397.16	215.11	612330.69	587525.24	32°36'53.807"N	104°06'09.944"W	1.22	
11049.00	89.000	174.900	7821.88	3466.86	-3459.93	220.38	612335.96	587462.47	32°36'53.185"N	104°06'09.884"W	1.00	
11113.00	88.200	174.400	7823.44	3530.82	-3523.63	226.34	612341.92	587398.78	32°36'52.555"N	104°06'09.816"W	1.47	
11177.00	89.100	174.300	7824.95	3594.78	-3587.30	232.64	612348.22	587335.11	32°36'51.925"N	104°06'09.744"W	1.41	
11240.00	89.200	174.600	7825.88	3657.75	-3650.00	238.73	612354.31	587272.42	32°36'51.304"N	104°06'09.675"W	0.50	
11304.00	89.900	174.600	7826.38	3721.73	-3713.71	244.76	612360.33	587208.71	32°36'50.674"N	104°06'09.606"W	1.09	
11368.00	90.100	175.100	7826.38	3785.72	-3777.46	250.50	612366.08	587144.97	32°36'50.043"N	104°06'09.540"W	0.84	
11431.00	89.900	175.200	7826.38	3848.71	-3840.23	255.83	612371.41	587082.21	32°36'49.422"N	104°06'09.480"W	0.35	
11495.00	91.000	175.700	7825.88	3912.71	-3904.02	260.90	612376.48	587018.42	32°36'48.790"N	104°06'09.422"W	1.89	
11558.00	91.400	175.900	7824.56	3975.69	-3966.84	265.52	612381.09	586955.60	32°36'48.169"N	104°06'09.370"W	0.71	
11621.00	91.400	175.700	7823.02	4038.67	-4029.65	270.13	612385.71	586892.80	32°36'47.547"N	104°06'09.317"W	0.32	
11685.00	92.300	176.200	7820.96	4102.64	-4093.46	274.65	612390.22	586829.00	32°36'46.916"N	104°06'09.266"W	1.61	
11748.00	91.100	176.000	7819.09	4165.61	-4156.28	278.93	612394.51	586766.18	32°36'46.294"N	104°06'09.218"W	1.93	
11812.00	90.900	176.300	7817.97	4229.60	-4220.13	283.23	612398.80	586702.34	32°36'45.662"N	104°06'09.169"W	0.56	
11875.00	90.800	175.900	7817.04	4292.59	-4282.98	287.51	612403.09	586639.50	32°36'45.040"N	104°06'09.120"W	0.65	
11939.00	91.500	175.300	7815.75	4356.58	-4346.78	292.42	612408.00	586575.70	32°36'44.409"N	104°06'09.065"W	1.44	
12002.00	91.700	175.100	7813.99	4419.55	-4409.53	297.69	612413.26	586512.95	32°36'43.788"N	104°06'09.005"W	0.45	
12066.00	92.100	174.600	7811.87	4483.50	-4473.24	303.43	612419.01	586449.25	32°36'43.157"N	104°06'08.939"W	1.00	
12130.00	92.200	174.500	7809.47	4547.44	-4536.90	309.51	612425.08	586385.59	32°36'42.527"N	104°06'08.870"W	0.22	
12193.00	92.800	174.200	7806.72	4610.35	-4599.54	315.70	612431.28	586322.96	32°36'41.908"N	104°06'08.799"W	1.06	
12257.00	91.700	173.300	7804.21	4674.25	-4663.10	322.66	612438.24	586259.40	32°36'41.278"N	104°06'08.719"W	2.22	
12319.00	91.000	173.200	7802.75	4736.16	-4724.66	329.95	612445.52	586197.85	32°36'40.669"N	104°06'08.636"W	1.14	
12378.00	90.800	173.500	7801.82	4795.09	-4783.25	336.78	612452.35	586139.26	32°36'40.089"N	104°06'08.557"W	0.61	
12423.00	90.800	173.500	7801.19	4840.05	-4827.96	341.88	612457.45	586094.56	32°36'39.647"N	104°06'08.499"W	0.00	Projection to bit



Actual Wellpath Report

No.21 AWP

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REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No.21 SHL
Area	Eddy County, NM	Well	No.21
Field	(Chaparral) Sec 32,T19S, R29E	Wellbore	No.21 AWB
Facility	Chaparral State No.21		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
No.21 PBHL		7820.00	-4836.32	-318.93	611796.70	586086.20	32°36'39.578"N	104°06'16.224"W	point
No.21 PBHL (Rev-1)		7820.00	-4837.72	341.23	612456.80	586084.80	32°36'39.550"N	104°06'08.507"W	point

WELLPATH COMPOSITION - Ref Wellbore: No.21 AWB - Ref Wellpath: No.21 AWP				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	7298.20	Generic gyro - northseeking (Standard)	Gyro Data Gyro <61.5-7298.2>	No.21 AWB
7298.20	12378.00	NaviTrak (Standard)	BHI MWD NaviTrak <7331-XXXX>	No.21 AWB
12378.00	12423.00	Blind Drilling (std)	Projection to bit	No.21 AWB