

Plot reference wellpath is Plan #4	
True vertical depths are referenced to Rig on No. 1H (RT)	Grid System NAD27 / TM New Mexico State Planes, Eastern Zone (3001), US feet
Measured depths are referenced to Rig on No. 1H (RT)	North Reference Grid north
Rig on No. 1H (RT) to Mean Sea Level 3545 feet	Scale True distance
Mean Sea Level to Mud line (Facility West Shugart 31 Fed No 1H) -3528 feet	Depths are in feet
Coordinates are in feet referenced to Facility Center	Created by Victor Hernandez on 5/28/2009



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

REPORT SETUP INFORMATION

Projection System	NAD27 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999928	Report Generated	5/28/2009 at 8:13:47 AM
Convergence at slot	0.23° East	Database/Source file	WA_Midland/No._1H_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	629903.00	619141.60	32°42'05.066"N	103°54'39.743"W
Facility Reference Pt			629903.00	619141.60	32°42'05.066"N	103°54'39.743"W
Field Reference Pt			629903.00	619141.60	32°42'05.066"N	103°54'39.743"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H (RT) to Facility Vertical Datum	17.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 1H (RT) to Mean Sea Level	3545.00ft
Vertical Reference Pt	Rig on No. 1H (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 1H (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	117.03°



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
0.00	0.000	106.330	0.00	0.00	0.00	0.00	0.00
100.00	0.590	106.330	100.00	0.51	-0.14	0.49	0.59
200.00	0.680	104.570	199.99	1.59	-0.44	1.56	0.09
300.00	0.610	108.660	299.99	2.70	-0.76	2.64	0.08
400.00	0.440	94.520	399.98	3.58	-0.96	3.53	0.24
500.00	0.460	85.640	499.98	4.28	-0.96	4.31	0.07
600.00	0.470	86.950	599.98	4.97	-0.91	5.12	0.01
700.00	0.590	87.370	699.97	5.78	-0.86	6.05	0.12
800.00	0.690	91.520	799.96	6.77	-0.85	7.16	0.11
900.00	0.670	80.280	899.96	7.78	-0.77	8.34	0.13
1000.00	0.650	74.690	999.95	8.67	-0.52	9.46	0.07
1100.00	0.650	79.510	1099.94	9.54	-0.27	10.57	0.05
1200.00	0.680	80.240	1199.94	10.46	-0.07	11.71	0.03
1300.00	0.630	85.480	1299.93	11.40	0.08	12.84	0.08
1400.00	0.640	82.350	1399.93	12.33	0.20	13.94	0.04
1500.00	0.690	77.400	1499.92	13.26	0.40	15.09	0.08
1600.00	0.730	75.810	1599.91	14.20	0.69	16.29	0.04
1700.00	0.790	74.070	1699.90	15.18	1.04	17.57	0.06
1800.00	0.820	71.020	1799.89	16.18	1.46	18.91	0.05
1900.00	0.880	72.330	1899.88	17.23	1.92	20.32	0.06
2000.00	0.800	63.750	1999.87	18.19	2.46	21.68	0.15
2100.00	0.870	67.860	2099.86	19.10	3.06	23.01	0.09
2200.00	0.830	56.380	2199.85	19.96	3.75	24.31	0.17
2300.00	0.930	55.680	2299.84	20.70	4.61	25.59	0.10
2400.00	0.980	39.920	2399.82	21.28	5.72	26.81	0.27
2500.00	1.350	22.780	2499.80	21.38	7.46	27.81	0.50
2600.00	1.500	14.170	2599.77	21.01	9.82	28.59	0.26
2700.00	1.650	4.350	2699.73	20.16	12.52	29.02	0.31
2800.00	1.650	0.340	2799.69	18.96	15.40	29.13	0.12
2900.00	1.570	354.990	2899.65	17.58	18.20	29.02	0.17



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
3000.00	1.600	0.520	2999.62	16.23	20.96	28.92	0.16
3100.00	1.580	355.710	3099.58	14.89	23.73	28.83	0.13
3200.00	1.420	359.290	3199.54	13.60	26.35	28.71	0.19
3300.00	1.490	358.830	3299.51	12.41	28.88	28.67	0.07
3400.00	1.260	357.640	3399.48	11.26	31.28	28.59	0.23
3500.00	0.970	358.310	3499.46	10.31	33.23	28.52	0.29
3600.00	0.820	359.980	3599.45	9.58	34.79	28.50	0.15
3700.00	0.890	9.570	3699.44	9.02	36.27	28.63	0.16
3800.00	0.780	27.280	3799.43	8.79	37.64	29.07	0.28
3900.00	0.830	22.380	3899.42	8.73	38.92	29.66	0.09
4000.00	0.470	31.840	3999.41	8.71	39.93	30.15	0.37
4100.00	0.460	36.680	4099.41	8.81	40.60	30.60	0.04
4200.00	0.400	29.550	4199.41	8.89	41.23	31.02	0.08
4300.00	0.360	34.870	4299.40	8.95	41.79	31.37	0.05
4400.00	0.270	14.010	4399.40	8.94	42.28	31.60	0.14
4500.00	0.420	329.170	4499.40	8.58	42.82	31.47	0.30
4600.00	0.410	300.590	4599.40	7.91	43.32	30.98	0.21
4700.00	0.460	292.480	4699.40	7.15	43.65	30.30	0.08
4800.00	0.640	277.250	4799.39	6.23	43.88	29.37	0.23
4900.00	1.010	274.190	4899.38	4.89	44.01	27.94	0.37
5000.00	1.350	272.940	4999.36	3.00	44.14	25.89	0.34
5100.00	1.070	263.760	5099.34	1.15	44.10	23.78	0.34
5200.00	0.950	257.470	5199.32	-0.27	43.81	22.04	0.16
5300.00	0.870	255.430	5299.31	-1.48	43.44	20.50	0.09
5400.00	0.830	248.080	5399.30	-2.52	42.98	19.09	0.12
5500.00	0.790	252.020	5499.29	-3.49	42.50	17.76	0.07
5600.00	0.750	236.920	5599.28	-4.30	41.93	16.56	0.21
5700.00	0.720	222.770	5699.27	-4.80	41.11	15.59	0.18
5800.00	0.850	217.670	5799.26	-5.10	40.06	14.71	0.15
5900.00	1.040	214.850	5899.25	-5.36	38.73	13.73	0.20



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
6000.00	1.260	228.110	5999.23	-5.88	37.25	12.40	0.34
6100.00	1.240	225.510	6099.20	-6.62	35.76	10.81	0.06
6200.00	1.080	230.190	6199.18	-7.34	34.40	9.31	0.19
6300.00	0.850	224.180	6299.17	-7.93	33.26	8.07	0.25
6400.00	0.790	205.070	6399.16	-8.12	32.11	7.26	0.28
6500.00	0.890	206.460	6499.15	-8.09	30.79	6.62	0.10
6600.00	0.530	204.840	6599.14	-8.06	29.67	6.08	0.36
6700.00	0.220	285.200	6699.14	-8.23	29.30	5.70	0.54
6800.00	0.320	323.230	6799.14	-8.67	29.58	5.35	0.20
6900.00	0.290	265.090	6899.14	-9.14	29.78	4.93	0.30
7000.00	0.570	7.240	6999.13	-9.52	30.25	4.74	0.69
7052.00	1.590	30.950	7051.12	-9.56	31.12	5.15	2.10
7280.00	1.500	77.770	7279.05	-7.03	34.47	9.69	0.54
7379.00	1.600	130.870	7378.02	-4.69	33.84	12.00	1.40
7478.00	2.900	159.870	7476.94	-1.54	30.58	13.91	1.71
7572.00	5.500	171.770	7570.68	2.84	23.89	15.37	2.90
7669.00	7.500	171.770	7667.06	9.17	13.02	16.94	2.06
7765.00	9.500	172.770	7762.00	17.25	-1.04	18.84	2.09
7860.00	11.500	170.770	7855.40	27.27	-18.16	21.34	2.14
7955.00	13.200	176.270	7948.20	38.44	-38.34	23.57	2.17
8052.00	14.500	178.370	8042.38	49.90	-61.53	24.63	1.44
8149.00	16.400	177.970	8135.87	62.38	-87.35	25.46	1.96
8245.00	18.400	178.170	8227.47	76.27	-116.04	26.43	2.08
8342.00	20.000	180.870	8319.08	90.97	-147.93	26.66	1.89
8438.00	21.800	178.070	8408.76	106.84	-182.17	27.02	2.14
8536.00	23.500	178.070	8499.20	125.11	-219.89	28.29	1.73
8628.00	22.900	173.200	8583.77	143.96	-255.99	31.02	2.18
8660.00	29.700	173.000	8612.44	151.87	-270.06	32.73	21.25
8692.00	37.600	170.700	8639.05	162.10	-287.59	35.28	25.00
8724.00	47.200	169.300	8662.66	175.10	-308.81	39.04	30.14



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

WELLPATH DATA (144 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
8755.00	52.600	161.400	8682.64	190.89	-331.70	45.09	26.12
8787.00	55.100	149.100	8701.56	211.15	-355.06	55.91	31.98
8819.00	58.700	138.200	8719.07	235.07	-376.57	71.80	30.65
8851.00	64.200	129.800	8734.38	261.93	-396.02	92.03	28.74
8882.00	70.100	122.700	8746.42	290.09	-412.86	115.06	28.41
8914.00	78.600	120.600	8755.05	320.78	-429.01	141.27	27.30
8945.00	86.300	119.100	8759.12	351.45	-444.29	167.91	25.30
8977.00	87.200	117.700	8760.93	383.39	-459.48	196.01	5.20
9008.00	88.700	115.200	8762.04	414.36	-473.28	223.74	9.40
9040.00	91.900	113.400	8761.88	446.32	-486.44	252.90	11.47
9103.00	89.800	113.000	8760.94	509.17	-511.26	310.80	3.39
9166.00	89.600	110.500	8761.27	571.90	-534.60	369.31	3.98
9229.00	91.500	109.400	8760.67	634.41	-556.09	428.52	3.48
9293.00	91.100	111.200	8759.21	697.95	-578.29	488.53	2.88
9356.00	90.100	112.000	8758.55	760.66	-601.48	547.10	2.03
9419.00	89.800	112.200	8758.61	823.43	-625.18	605.47	0.57
9483.00	89.600	110.700	8758.94	887.12	-648.59	665.03	2.36
9546.00	89.100	111.200	8759.66	949.77	-671.11	723.87	1.12
9608.00	89.400	110.100	8760.47	1011.38	-692.97	781.88	1.84
9672.00	89.700	110.000	8760.97	1074.90	-714.92	842.00	0.49
9735.00	89.300	106.600	8761.52	1137.16	-734.69	901.80	5.43
9798.00	90.200	106.500	8761.80	1199.11	-752.64	962.19	1.44
9862.00	89.200	108.500	8762.13	1262.22	-771.88	1023.22	3.49
9924.00	89.500	107.800	8762.84	1323.48	-791.19	1082.13	1.23
9987.00	90.800	110.600	8762.67	1385.88	-811.91	1141.62	4.90
10050.00	91.400	109.800	8761.46	1448.42	-833.66	1200.73	1.59
10114.00	92.600	106.500	8759.23	1511.61	-853.58	1261.50	5.48
10176.00	91.000	107.800	8757.28	1572.66	-871.85	1320.71	3.32
10239.00	91.400	109.800	8755.96	1634.99	-892.15	1380.34	3.24
10303.00	90.500	115.900	8754.90	1698.78	-916.99	1439.28	9.63



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

WELLPATH DATA (144 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	DLS [°/100ft]
10367.00	89.700	107.600	8754.79	1762.45	-940.68	1498.67	13.03
10430.00	90.600	108.800	8754.62	1824.71	-960.36	1558.51	2.38
10493.00	91.600	107.100	8753.41	1886.90	-979.77	1618.43	3.13
10556.00	89.400	108.100	8752.86	1949.04	-998.82	1678.48	3.84
10619.00	88.900	109.700	8753.80	2011.40	-1019.22	1738.07	2.66
10681.00	89.300	107.600	8754.77	2072.73	-1039.05	1796.81	3.45
10744.00	89.700	110.100	8755.32	2135.08	-1059.40	1856.42	4.02
10807.00	90.300	110.400	8755.32	2197.64	-1081.20	1915.53	1.06
10870.00	90.000	108.900	8755.16	2260.12	-1102.39	1974.85	2.43
10933.00	90.100	112.300	8755.10	2322.71	-1124.55	2033.82	5.40
10996.00	88.800	110.400	8755.71	2385.40	-1147.48	2092.49	3.65
11059.00	88.100	112.600	8757.41	2448.08	-1170.56	2151.08	3.66
11123.00	88.300	112.900	8759.42	2511.87	-1195.30	2210.07	0.56
11186.00	88.900	110.900	8760.96	2574.59	-1218.79	2268.50	3.31
11249.00	89.400	110.000	8761.89	2637.17	-1240.80	2327.53	1.63
11313.00	90.000	117.700	8762.23	2701.03	-1266.66	2386.02	12.07
11374.00	88.100	111.900	8763.24	2761.94	-1292.23	2441.36	10.00
11437.00	88.600	111.600	8765.06	2824.65	-1315.56	2499.85	0.93
11500.00	87.800	111.300	8767.04	2887.32	-1338.59	2558.45	1.36
11564.00	87.700	113.300	8769.55	2951.05	-1362.86	2617.62	3.13
11627.00	88.600	110.000	8771.58	3013.73	-1386.08	2676.13	5.43
11690.00	90.100	110.000	8772.30	3076.25	-1407.63	2735.33	2.38
11721.00	90.800	109.500	8772.05	3107.00	-1418.10	2764.50	2.77
11751.00†	90.800	109.500	8771.63	3136.74	-1428.12	2792.78	0.00



Actual Wellpath Report

No. 1H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Eddy County, NM	Well	No. 1H
Field	(West Shugart) Sec 31, T18S, R31E	Wellbore	No. 1H AWB
Facility	West Shugart 31 Fed No.1H	Sidetrack from	No. 1 AWB at 8536.00 MD

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 1H PBHL		8803.00	-1445.38	2833.60	632736.40	617696.33	32°41'50.652"N	103°54'06.653"W	point

WELLPATH COMPOSITION

Ref Wellbore: No. 1H AWB

Ref Wellpath: No. 1H AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
0.00	7052.00	Gyrodata standard - Continuous gyro	GYRO	No. 1 AWB
7052.00	8536.00	ISCWSA MWD, Rev. 0 (Standard)	MWD - Dailey	No. 1 AWB
8536.00	11721.00	NaviTrak (Standard)	MWD	No. 1H AWB
11721.00	11751.00	Blind Drilling (std)	Projection to bit	No. 1H AWB