

BGMN (1945 to 2010) Dec 60 58° Field 49108 9 nT
 Magnetic North = 9 19 degrees East of True North (at 2/15/2009)
 Grid North is 0 15 degrees East of True North
 To correct azimuth from True to Grid subtract 0 15 degrees
 To correct azimuth from Magnetic to Grid add 8 03 degrees
 Grid North = Magnetic North Azimuth - 8 03
 For example if the Magnetic North Azimuth = 90 + 8 03 = 98 03



Actual Wellpath Report

No. 2H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Eddy County, NM	Well	No. 2H
Field	(State) Sec 14, T19S, R29E	Wellbore	No. 2H AWB
Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico State Planes, Eastern Zone (3001), US feet	Software System	WellArchitect® 2.0
North Reference	Grid	User	Victor Hernandez
Scale	0.999918	Report Generated	10/27/2009 at 2:00:39 PM
Convergence at slot	0.15° East	Database/Source file	WA_Midland/No. 2H_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	627834.57	604811.25	32°39'44.488"N	104°03'08.139"W
Facility Reference Pt			627834.57	604811.25	32°39'44.488"N	104°03'08.139"W
Field Reference Pt			627834.57	604811.25	32°39'44.488"N	104°03'08.139"W

WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 2H SHL (RT) to Facility Vertical Datum	17.00ft
Horizontal Reference Pt	Facility Center	Rig on No. 2H SHL (RT) to Mean Sea Level	3335.00ft
Vertical Reference Pt	Rig on No. 2H SHL (RT)	Facility Vertical Datum to Mud Line (Facility)	0.00ft
MD Reference Pt	Rig on No. 2H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	177.73°



Actual Wellpath Report

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Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

WELLPATH DATA (105 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]
0.00	0.000	244.219	0.00	0.00	0.00	0.00	627834.57	604811.25	32°39'44.488"N	104°03'08.139"W	0.00
200.00	0.150	244.219	200.00	0.10	-0.11	-0.24	627834.33	604811.14	32°39'44.487"N	104°03'08.142"W	0.07
400.00	0.275	307.013	400.00	-0.09	0.06	-0.85	627833.72	604811.31	32°39'44.488"N	104°03'08.149"W	0.12
600.00	0.396	293.851	600.00	-0.70	0.63	-1.87	627832.70	604811.88	32°39'44.494"N	104°03'08.161"W	0.07
800.00	0.602	245.514	799.99	-0.61	0.47	-3.46	627831.11	604811.72	32°39'44.492"N	104°03'08.180"W	0.22
1000.00	0.888	196.793	999.97	1.25	-1.45	-4.86	627829.71	604809.80	32°39'44.474"N	104°03'08.196"W	0.33
1200.00	1.056	190.744	1199.94	4.51	-4.74	-5.65	627828.92	604806.51	32°39'44.441"N	104°03'08.206"W	0.10
1400.00	1.054	238.864	1399.91	7.20	-7.50	-7.57	627827.00	604803.75	32°39'44.414"N	104°03'08.228"W	0.43
1600.00	1.050	276.029	1599.88	7.82	-8.26	-10.97	627823.60	604802.99	32°39'44.406"N	104°03'08.268"W	0.34
1800.00	1.102	275.352	1799.85	7.30	-7.89	-14.71	627819.87	604803.36	32°39'44.410"N	104°03'08.312"W	0.03
2000.00	1.091	278.576	1999.81	6.69	-7.43	-18.50	627816.07	604803.83	32°39'44.415"N	104°03'08.356"W	0.03
2200.00	0.994	291.403	2199.78	5.63	-6.51	-22.00	627812.57	604804.74	32°39'44.424"N	104°03'08.397"W	0.13
2400.00	0.947	291.771	2399.75	4.26	-5.26	-25.15	627809.42	604805.99	32°39'44.436"N	104°03'08.434"W	0.02
2600.00	0.980	281.122	2599.72	3.19	-4.32	-28.36	627806.21	604806.93	32°39'44.446"N	104°03'08.471"W	0.09
2800.00	1.002	253.138	2799.69	3.24	-4.50	-31.72	627802.86	604806.75	32°39'44.444"N	104°03'08.510"W	0.24
3000.00	1.011	187.770	2999.67	5.42	-6.75	-33.63	627800.94	604804.50	32°39'44.422"N	104°03'08.533"W	0.54
3200.00	1.076	105.894	3199.64	7.74	-9.01	-32.06	627802.51	604802.24	32°39'44.399"N	104°03'08.515"W	0.68
3400.00	1.184	72.158	3399.61	7.77	-8.90	-28.29	627806.28	604802.35	32°39'44.400"N	104°03'08.470"W	0.33
3600.00	1.273	109.666	3599.56	8.04	-9.01	-24.23	627810.34	604802.24	32°39'44.399"N	104°03'08.423"W	0.40
3800.00	1.393	168.296	3799.52	11.27	-12.14	-21.64	627812.93	604799.11	32°39'44.368"N	104°03'08.393"W	0.65
4000.00	1.615	207.832	3999.45	16.11	-17.01	-22.47	627812.11	604794.24	32°39'44.320"N	104°03'08.403"W	0.52
4200.00	1.881	236.057	4199.37	20.27	-21.34	-26.51	627808.07	604789.91	32°39'44.277"N	104°03'08.450"W	0.45
4400.00	2.126	258.338	4399.25	22.60	-23.92	-32.86	627801.71	604787.33	32°39'44.252"N	104°03'08.524"W	0.41
4600.00	2.379	269.137	4599.09	23.10	-24.73	-40.64	627793.93	604786.52	32°39'44.244"N	104°03'08.615"W	0.25
4800.00	2.616	265.051	4798.90	23.22	-25.19	-49.34	627785.23	604786.06	32°39'44.240"N	104°03'08.717"W	0.15
5000.00	2.816	249.666	4998.68	24.95	-27.29	-58.50	627776.08	604783.96	32°39'44.219"N	104°03'08.824"W	0.38
5200.00	3.127	249.502	5198.41	28.18	-30.91	-68.21	627766.36	604780.35	32°39'44.184"N	104°03'08.938"W	0.16
5400.00	3.568	275.033	5398.08	29.10	-32.27	-79.52	627755.05	604778.98	32°39'44.170"N	104°03'09.070"W	0.77
5600.00	3.718	293.844	5597.68	25.45	-29.10	-91.65	627742.92	604782.15	32°39'44.202"N	104°03'09.212"W	0.60
5800.00	3.173	268.656	5797.33	22.51	-26.61	-103.12	627731.46	604784.64	32°39'44.227"N	104°03'09.346"W	0.80



Actual Wellpath Report

No. 2H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Eddy County, NM	Well	No. 2H
Field	(State) Sec 14, T19S, R29E	Wellbore	No. 2H AWB
Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

WELLPATH DATA (105 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]
6000.00	2.209	211.506	5997.14	25.63	-30.03	-110.67	627723.91	604781.22	32°39'44.193"N	104°03'09.435"W	1.35
6200.00	1.531	195.909	6197.04	31.37	-35.88	-113.41	627721.16	604775.37	32°39'44.136"N	104°03'09.467"W	0.42
6400.00	1.387	233.921	6396.98	35.25	-39.88	-116.10	627718.48	604771.37	32°39'44.096"N	104°03'09.499"W	0.48
6600.00	1.466	232.820	6596.91	38.07	-42.85	-120.10	627714.48	604768.40	32°39'44.067"N	104°03'09.545"W	0.04
6800.00	1.494	181.061	6796.85	42.13	-47.00	-122.18	627712.40	604764.25	32°39'44.026"N	104°03'09.570"W	0.65
6900.00	1.542	164.498	6896.82	44.74	-49.60	-121.85	627712.73	604761.65	32°39'44.000"N	104°03'09.566"W	0.44
6969.00	1.941	182.276	6965.79	46.81	-51.67	-121.65	627712.93	604759.59	32°39'43.980"N	104°03'09.564"W	0.97
7030.00	2.914	179.338	7026.73	49.39	-54.25	-121.67	627712.91	604757.01	32°39'43.954"N	104°03'09.564"W	1.61
7091.00	4.313	161.913	7087.61	53.15	-57.98	-120.94	627713.64	604753.28	32°39'43.917"N	104°03'09.556"W	2.89
7155.00	5.856	152.494	7151.36	58.42	-63.16	-118.69	627715.89	604748.09	32°39'43.866"N	104°03'09.530"W	2.73
7218.00	7.500	149.044	7213.93	64.93	-69.54	-115.09	627719.49	604741.72	32°39'43.803"N	104°03'09.488"W	2.68
7281.00	9.325	146.987	7276.25	72.93	-77.35	-110.19	627724.39	604733.91	32°39'43.725"N	104°03'09.431"W	2.94
7345.00	11.169	145.763	7339.23	82.64	-86.82	-103.88	627730.70	604724.44	32°39'43.631"N	104°03'09.357"W	2.90
7408.00	12.781	145.600	7400.85	93.72	-97.62	-96.51	627738.07	604713.64	32°39'43.524"N	104°03'09.271"W	2.56
7469.00	14.294	146.681	7460.16	105.89	-109.48	-88.56	627746.02	604701.78	32°39'43.407"N	104°03'09.179"W	2.51
7532.00	16.031	148.319	7520.96	120.13	-123.38	-79.72	627754.86	604687.88	32°39'43.269"N	104°03'09.076"W	2.84
7594.00	17.919	149.644	7580.26	136.00	-138.90	-70.40	627764.18	604672.37	32°39'43.115"N	104°03'08.967"W	3.11
7657.00	19.494	150.481	7639.93	153.90	-156.41	-60.32	627774.25	604654.86	32°39'42.942"N	104°03'08.850"W	2.54
7718.00	20.556	150.969	7697.24	172.51	-174.63	-50.11	627784.47	604636.64	32°39'42.761"N	104°03'08.731"W	1.76
7781.00	21.306	150.988	7756.08	192.61	-194.31	-39.19	627795.38	604616.96	32°39'42.566"N	104°03'08.604"W	1.19
7843.00	21.969	150.513	7813.71	212.98	-214.25	-28.02	627806.55	604597.01	32°39'42.368"N	104°03'08.474"W	1.11
7890.00	22.000	150.500	7857.30	228.62	-229.57	-19.36	627815.21	604581.70	32°39'42.217"N	104°03'08.373"W	0.07
7905.00	23.200	155.000	7871.14	233.85	-234.69	-16.72	627817.85	604576.58	32°39'42.166"N	104°03'08.342"W	14.03
7922.00	27.000	160.000	7886.54	240.61	-241.36	-13.99	627820.58	604569.91	32°39'42.100"N	104°03'08.310"W	25.58
7937.00	31.400	168.000	7899.63	247.71	-248.38	-12.01	627822.56	604562.89	32°39'42.030"N	104°03'08.287"W	39.15
7953.00	37.100	172.700	7912.86	256.64	-257.26	-10.53	627824.04	604554.01	32°39'41.943"N	104°03'08.270"W	39.25
7968.00	42.600	175.400	7924.37	266.23	-266.81	-9.55	627825.03	604544.46	32°39'41.848"N	104°03'08.259"W	38.43
7985.00	48.800	177.800	7936.24	278.38	-278.95	-8.84	627825.73	604532.32	32°39'41.728"N	104°03'08.251"W	37.84
8000.00	55.200	179.000	7945.47	290.20	-290.76	-8.51	627826.06	604520.51	32°39'41.611"N	104°03'08.248"W	43.13
8017.00	62.300	179.200	7954.28	304.72	-305.28	-8.29	627826.28	604505.99	32°39'41.467"N	104°03'08.246"W	41.78



Actual Wellpath Report

No. 2H AWP

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BAKER
HUGHES

INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Eddy County, NM	Well	No. 2H
Field	(State) Sec 14, T19S, R29E	Wellbore	No. 2H AWB
Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

WELLPATH DATA (105 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]
8032.00	65.900	179.400	7960.83	318.20	-318.77	-8.12	627826.45	604492.50	32°39'41.334"N	104°03'08.244"W	24.03
8053.00	66.600	178.600	7969.29	337.42	-337.99	-7.79	627826.79	604473.29	32°39'41.144"N	104°03'08.241"W	4.82
8068.00	67.900	180.000	7975.09	351.25	-351.82	-7.62	627826.95	604459.46	32°39'41.007"N	104°03'08.239"W	12.21
8085.00	68.000	183.700	7981.47	366.96	-367.57	-8.13	627826.44	604443.71	32°39'40.851"N	104°03'08.246"W	20.18
8100.00	70.900	180.300	7986.74	380.96	-381.60	-8.61	627825.96	604429.68	32°39'40.712"N	104°03'08.252"W	28.71
8116.00	74.000	179.800	7991.56	396.20	-396.85	-8.63	627825.95	604414.43	32°39'40.561"N	104°03'08.252"W	19.60
8131.00	77.000	182.000	7995.32	410.70	-411.37	-8.85	627825.72	604399.91	32°39'40.418"N	104°03'08.256"W	24.53
8148.00	80.800	179.700	7998.59	427.35	-428.05	-9.10	627825.47	604383.24	32°39'40.253"N	104°03'08.259"W	26.00
8170.00	84.800	179.800	8001.35	449.16	-449.87	-9.01	627825.57	604361.42	32°39'40.037"N	104°03'08.259"W	18.19
8195.00	90.300	180.100	8002.42	474.11	-474.84	-8.98	627825.59	604336.45	32°39'39.790"N	104°03'08.259"W	22.03
8211.00	91.100	180.100	8002.22	490.09	-490.84	-9.01	627825.56	604320.46	32°39'39.631"N	104°03'08.260"W	5.00
8243.00	90.900	179.700	8001.66	522.07	-522.83	-8.96	627825.62	604288.46	32°39'39.315"N	104°03'08.260"W	1.40
8337.00	89.000	178.800	8001.75	616.03	-616.82	-7.73	627826.85	604194.49	32°39'38.385"N	104°03'08.249"W	2.24
8400.00	88.400	178.600	8003.17	679.00	-679.78	-6.30	627828.27	604131.52	32°39'37.762"N	104°03'08.234"W	1.00
8464.00	88.300	177.100	8005.02	742.97	-743.71	-3.90	627830.67	604067.60	32°39'37.129"N	104°03'08.208"W	2.35
8527.00	89.500	178.300	8006.23	805.96	-806.65	-1.37	627833.20	604004.67	32°39'36.506"N	104°03'08.180"W	2.69
8590.00	89.200	178.400	8006.94	868.95	-869.62	0.45	627835.02	603941.71	32°39'35.883"N	104°03'08.161"W	0.50
8654.00	89.600	178.500	8007.61	932.94	-933.59	2.18	627836.75	603877.74	32°39'35.250"N	104°03'08.143"W	0.64
8780.00	88.800	177.900	8009.37	1058.93	-1059.51	6.13	627840.70	603751.83	32°39'34.004"N	104°03'08.100"W	0.79
8907.00	87.500	177.600	8013.47	1185.86	-1186.35	11.12	627845.69	603625.00	32°39'32.749"N	104°03'08.046"W	1.05
9033.00	90.100	176.400	8016.11	1311.81	-1312.13	17.71	627852.28	603499.23	32°39'31.504"N	104°03'07.973"W	2.27
9160.00	90.500	174.900	8015.44	1438.72	-1438.76	27.34	627861.91	603372.61	32°39'30.251"N	104°03'07.864"W	1.22
9287.00	91.100	172.800	8013.67	1565.40	-1565.01	40.95	627875.51	603246.37	32°39'29.002"N	104°03'07.709"W	1.72
9350.00	91.600	173.200	8012.19	1628.17	-1627.52	48.62	627883.19	603183.86	32°39'28.383"N	104°03'07.621"W	1.02
9413.00	90.300	173.400	8011.14	1690.97	-1690.08	55.97	627890.54	603121.31	32°39'27.764"N	104°03'07.537"W	2.09
9540.00	90.300	172.900	8010.48	1817.57	-1816.17	71.12	627905.68	602995.23	32°39'26.516"N	104°03'07.364"W	0.39
9666.00	90.800	172.300	8009.27	1943.05	-1941.12	87.34	627921.91	602870.30	32°39'25.279"N	104°03'07.178"W	0.62
9793.00	90.100	172.900	8008.27	2069.54	-2067.05	103.70	627938.26	602744.37	32°39'24.033"N	104°03'06.990"W	0.73
9920.00	89.400	172.700	8008.82	2196.07	-2193.05	119.62	627954.18	602618.38	32°39'22.786"N	104°03'06.808"W	0.57
9983.00	89.100	173.000	8009.65	2258.83	-2255.56	127.46	627962.02	602555.88	32°39'22.167"N	104°03'06.718"W	0.67



Actual Wellpath Report

No. 2H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Eddy County, NM	Well	No. 2H
Field	(State) Sec 14, T19S, R29E	Wellbore	No. 2H AWB
Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

WELLPATH DATA (105 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]
10015.00	88.300	172.000	8010.38	2290.69	-2287.27	131.63	627966.19	602524.17	32°39'21.853"N	104°03'06.670"W	4.00
10046.00	85.900	170.600	8011.94	2321.45	-2317.87	136.32	627970.87	602493.57	32°39'21.550"N	104°03'06.617"W	8.96
10078.00	84.900	169.900	8014.51	2353.08	-2349.31	141.72	627976.28	602462.14	32°39'21.239"N	104°03'06.554"W	3.81
10109.00	85.700	170.600	8017.05	2383.71	-2379.76	146.95	627981.51	602431.69	32°39'20.937"N	104°03'06.494"W	3.42
10141.00	87.500	170.600	8018.95	2415.41	-2411.27	152.17	627986.72	602400.18	32°39'20.626"N	104°03'06.434"W	5.62
10173.00	89.400	171.200	8019.81	2447.16	-2442.86	157.23	627991.78	602368.60	32°39'20.313"N	104°03'06.376"W	6.23
10204.00	90.300	171.300	8019.89	2477.97	-2473.50	161.94	627996.50	602337.96	32°39'20.010"N	104°03'06.322"W	2.92
10236.00	90.100	170.800	8019.78	2509.75	-2505.11	166.92	628001.48	602306.36	32°39'19.697"N	104°03'06.265"W	1.68
10300.00	89.500	170.600	8020.01	2573.27	-2568.26	177.26	628011.82	602243.20	32°39'19.072"N	104°03'06.146"W	0.99
10363.00	90.300	170.700	8020.12	2635.78	-2630.43	187.50	628022.05	602181.05	32°39'18.456"N	104°03'06.028"W	1.28
10426.00	90.300	171.000	8019.79	2698.33	-2692.62	197.52	628032.07	602118.85	32°39'17.841"N	104°03'05.913"W	0.48
10489.00	90.100	171.600	8019.57	2760.93	-2754.90	207.04	628041.60	602056.58	32°39'17.224"N	104°03'05.803"W	1.00
10552.00	88.700	171.800	8020.23	2823.58	-2817.23	216.14	628050.69	601994.25	32°39'16.607"N	104°03'05.699"W	2.24
10609.00	88.600	172.900	8021.57	2880.31	-2873.71	223.72	628058.28	601937.78	32°39'16.048"N	104°03'05.612"W	1.94
10644.00	88.600	172.900	8022.42	2915.18	-2908.43	228.05	628062.60	601903.06	32°39'15.704"N	104°03'05.562"W	0.00



Actual Wellpath Report

No. 2H AWP

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INTEQ

REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 2H SHL
Area	Eddy County, NM	Well	No. 2H
Field	(State) Sec 14, T19S, R29E	Wellbore	No. 2H AWB
Facility	State 14 Com No. 2H	Sidetrack from	No. 2 AWB at 7843.00 MD

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [srv ft]	Grid North [srv ft]	Latitude	Longitude	Shape
No. 2H PBHL		8000.00	-2921.87	115.70	627950.26	601889.62	32°39'15.574"N	104°03'06.877"W	point

WELLPATH COMPOSITION					Ref Wellbore: No. 2H AWB	Ref Wellpath: No. 2H AWP
Start MD [ft]	End MD [ft]	Positional Uncertainty Model		Log Name/Comment		Wellbore
0.00	7843.00	Unknown Tool (Standard)		Directional		No. 2 AWB
7843.00	10609.00	NaviTrak (Standard)		MWD - <7890 - 10609>		No. 2H AWB
10609.00	10644.00	Blind Drilling (std)		Projection to bit		No. 2H AWB