

Cimarex Energy Co., Inc.

Eddy Co., New Mexico

White City 14 Fed #5

White City "14" Fed #5H

Lateral #1

Survey: MWD Survey #1

Standard Survey Report

27 October, 2008

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co. Inc	Local Co-ordinate Reference:	Well White City "14" Fed #5H
Project:	Eddy Co. New Mexico	TVD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Site:	White City 14 Fed #5	MD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Well:	White City "14" Fed #5H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003.14 Server Db

Project	Eddy Co., New Mexico		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site						White City 14 Fed #5					
Site Position:		Northing:		413,320.60 ft		Latitude:		32° 8' 10.588 N			
From:		Map		Easting:		563,594.50 ft		Longitude:		104° 15' 41.151 W	
Position Uncertainty:		0.00 ft		Slot Radius:		"		Grid Convergence:		0.04 °	

Well:	White City, "14" Fed #5H					
Well Position	+N/-S	0.00 ft	Northing:	413,320.60 ft	Latitude:	32° 8' 10.588 N
	+E/-W	0.00 ft	Easting:	563,594.50 ft	Longitude:	104° 15' 41.151 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	3,309.00 ft	Ground Level:	3,289.00 ft

Wellbore		Lateral #1			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/12/2008	8.20	60.06	48,778

Design:	Lateral #1				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	2,393.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	127.25	

Survey Program		Date: 10/27/2008		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	2,393.00	Gyro Survey #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
2,393.00	4,880.00	MWD Survey #1 (Lateral #1)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,393.00	1.88	83.41	2,392.14	23.24	42.41	19.69	0.00	0.00	0.00
2,670.00	1.60	78.00	2,669.01	24.57	50.71	25.50	0.12	-0.10	-1.95
First MWD Survey									
2,701.00	1.90	104.80	2,699.99	24.53	51.63	26.25	2.78	0.97	86.45
2,733.00	6.60	152.10	2,731.90	22.76	53.00	28.41	17.16	14.69	147.81
2,765.00	13.50	163.80	2,763.40	17.55	54.91	33.09	22.38	21.56	36.56
2,796.00	19.70	161.40	2,793.09	9.11	57.59	40.33	20.12	20.00	-7.74
2,828.00	25.60	161.20	2,822.61	-2.56	61.54	50.53	18.44	18.44	-0.63
2,859.00	32.30	161.30	2,849.72	-16.76	66.36	62.97	21.61	21.61	0.32
2,891.00	38.60	162.30	2,875.77	-34.38	72.14	78.24	19.77	19.69	3.13
2,922.00	44.40	164.00	2,898.98	-54.04	78.08	94.86	19.06	18.71	5.48
2,954.00	50.30	165.60	2,920.66	-76.74	84.23	113.50	18.80	18.44	5.00

Black Viper Energy

Survey Report

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Project:	Eddy Co., New Mexico	TVD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Site:	White City 14 Fed #5	MD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Well:	White City "14" Fed #5H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003 14 Server Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,986.00	56.40	167.60	2,939.75	-101.71	90.16	133.33	19.71	19.06	6.25	
3,017.00	62.30	169.80	2,955.55	-127.85	95.37	153.30	19.99	19.03	7.10	
3,049.00	69.00	173.20	2,968.74	-156.66	99.65	174.15	23.06	20.94	10.63	
3,080.00	75.30	176.60	2,978.24	-186.04	102.25	194.00	22.84	20.32	10.97	
3,112.00	77.70	180.00	2,985.71	-217.13	103.17	213.55	12.77	7.50	10.63	
3,144.00	81.40	180.10	2,991.51	-248.60	103.15	232.57	11.57	11.56	0.31	
3,175.00	83.90	181.90	2,995.48	-279.33	102.61	250.75	9.91	8.06	5.81	
3,241.00	87.90	186.10	3,000.20	-344.97	98.01	286.82	8.78	6.06	6.36	
3,272.00	88.40	185.00	3,001.20	-375.81	95.01	303.10	3.90	1.61	-3.55	
3,304.00	89.80	184.60	3,001.70	-407.70	92.34	320.27	4.55	4.38	-1.25	
3,336.00	90.70	184.80	3,001.56	-439.59	89.72	337.48	2.88	2.81	0.63	
3,368.00	90.80	184.20	3,001.14	-471.49	87.20	354.79	1.90	0.31	-1.88	
3,400.00	90.50	184.30	3,000.78	-503.40	84.83	372.22	0.99	-0.94	0.31	
3,432.00	91.30	183.90	3,000.28	-535.31	82.55	389.72	2.80	2.50	-1.25	
3,468.00	92.10	183.90	2,999.21	-571.21	80.10	409.50	2.22	2.22	0.00	
3,496.00	93.00	183.10	2,997.96	-599.13	78.39	425.04	4.30	3.21	-2.86	
3,525.00	93.40	183.50	2,996.34	-628.04	76.72	441.21	1.95	1.38	1.38	
3,557.00	91.60	184.40	2,994.95	-659.93	74.52	458.76	6.29	-5.63	2.81	
3,588.00	90.20	184.20	2,994.46	-690.84	72.20	475.61	4.56	-4.52	-0.65	
3,620.00	89.60	183.90	2,994.52	-722.76	69.94	493.14	2.10	-1.88	-0.94	
3,652.00	90.60	183.50	2,994.46	-754.69	67.87	510.82	3.37	3.13	-1.25	
3,683.00	91.60	183.80	2,993.87	-785.62	65.90	527.97	3.37	3.23	0.97	
3,715.00	92.10	183.40	2,992.83	-817.54	63.89	545.69	2.00	1.56	-1.25	
3,746.00	90.50	183.70	2,992.13	-848.47	61.97	562.89	5.25	-5.16	0.97	
3,778.00	90.30	183.90	2,991.91	-880.40	59.85	580.52	0.88	-0.63	0.63	
3,809.00	90.80	184.10	2,991.61	-911.32	57.69	597.52	1.74	1.61	0.65	
3,841.00	89.70	184.20	2,991.47	-943.24	55.37	614.99	3.45	-3.44	0.31	
3,873.00	88.30	184.60	2,992.03	-975.14	52.92	632.35	4.55	-4.38	1.25	
3,905.00	88.10	184.60	2,993.03	-1,007.02	50.35	649.60	0.63	-0.63	0.00	
3,936.00	89.10	184.60	2,993.79	-1,037.91	47.87	666.32	3.23	3.23	0.00	
3,968.00	89.80	184.20	2,994.10	-1,069.81	45.41	683.68	2.52	2.19	-1.25	
3,999.00	90.30	184.30	2,994.07	-1,100.73	43.12	700.56	1.64	1.61	0.32	
4,030.00	91.10	184.30	2,993.69	-1,131.64	40.79	717.42	2.58	2.58	0.00	
4,062.00	91.80	183.80	2,992.88	-1,163.55	38.53	734.94	2.69	2.19	-1.56	
4,093.00	92.60	183.70	2,991.69	-1,194.46	36.51	752.03	2.60	2.58	-0.32	
4,124.00	92.80	183.30	2,990.23	-1,225.37	34.62	769.24	1.44	0.65	-1.29	
4,156.00	91.70	183.20	2,988.98	-1,257.29	32.80	787.12	3.45	-3.44	-0.31	
4,188.00	91.10	182.90	2,988.19	-1,289.24	31.10	805.10	2.10	-1.88	-0.94	
4,220.00	91.50	183.30	2,987.47	-1,321.18	29.37	823.05	1.77	1.25	1.25	
4,251.00	91.00	182.90	2,986.79	-1,352.13	27.70	840.45	2.07	-1.61	-1.29	
4,283.00	90.00	183.40	2,986.51	-1,384.08	25.94	858.39	3.49	-3.13	1.56	
4,315.00	89.20	183.90	2,986.74	-1,416.01	23.90	876.10	2.95	-2.50	1.56	
4,347.00	88.00	183.30	2,987.52	-1,447.94	21.89	893.82	4.19	-3.75	-1.88	
4,378.00	87.80	181.80	2,988.65	-1,478.89	20.51	911.46	4.88	-0.65	-4.84	
4,410.00	88.60	181.90	2,989.66	-1,510.85	19.48	929.98	2.52	2.50	0.31	
4,442.00	89.90	181.70	2,990.08	-1,542.83	18.48	948.54	4.11	4.06	-0.63	
4,474.00	90.30	181.70	2,990.02	-1,574.82	17.53	967.15	1.25	1.25	0.00	
4,506.00	90.60	181.80	2,989.77	-1,606.80	16.55	985.73	0.99	0.94	0.31	
4,538.00	90.50	181.90	2,989.46	-1,638.78	15.52	1,004.26	0.44	-0.31	0.31	
4,569.00	90.40	182.20	2,989.22	-1,669.76	14.41	1,022.13	1.02	-0.32	0.97	
4,601.00	89.60	182.00	2,989.22	-1,701.74	13.23	1,040.55	2.58	-2.50	-0.63	
4,633.00	90.30	181.90	2,989.25	-1,733.72	12.15	1,059.04	2.21	2.19	-0.31	
4,664.00	91.00	181.90	2,988.90	-1,764.70	11.12	1,076.98	2.26	2.26	0.00	
4,695.00	91.90	182.50	2,988.11	-1,795.67	9.93	1,094.77	3.49	2.90	1.94	

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Survey Report

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Project:	Eddy Co., New Mexico	TVD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Site:	White City 14 Fed #5	MD Reference:	KB Elev. @ 3309.00ft (KB Elevation Unit Rig #40)
Well:	White City "14" Fed #5H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 2003.14 Server Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,727.00	92.60	182.40	2,986.85	-1,827.62	8.56	1,113.02	2.21	2.19	-0.31	
4,758.00	92.80	182.30	2,985.39	-1,858.56	7.29	1,130.74	0.72	0.65	-0.32	
4,791.00	92.80	182.50	2,983.78	-1,891.49	5.91	1,149.57	0.61	0.00	0.61	
4,822.00	93.20	182.10	2,982.16	-1,922.42	4.67	1,167.30	1.82	1.29	-1.29	
Last MWD Survey										
4,880.00	93.40	182.00	2,978.82	-1,980.29	2.60	1,200.68	0.39	0.34	-0.17	
Proj. to Bit										

Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL#2[WC14Fed#5H]		0.00	0.00	3,002.00	-1,980.06	10.47	411,340.54	563,604.97	32° 7' 50.993 N	104° 15' 41.045 W
- survey misses by 24.41ft at 4878.16ft MD (2978.93 TVD, -1978.45 N, 2.66 E)										
- Point										
PBHL#1[WC14Fed#5H]		0.00	0.00	3,012.00	-1,980.06	10.47	411,340.54	563,604.97	32° 7' 50.993 N	104° 15' 41.045 W
- survey misses by 34.01ft at 4877.58ft MD (2978.96 TVD, -1977.88 N, 2.68 E)										
- Point										
LL[WC14Fed#5H]		0.00	0.00	0.00	0.00	0.00	413,320.60	563,594.50	32° 8' 10.588 N	104° 15' 41.151 W
- survey misses by 2392.62ft at 2393.00ft MD (2392.14 TVD, 23.24 N, 42.41 E)										
- Rectangle (sides W2,640.00 H2,640.00 D0.00)										
HL[WC14Fed#5H]		0.00	0.00	0.00	0.00	0.00	413,320.60	563,594.50	32° 8' 10.588 N	104° 15' 41.151 W
- survey misses by 2392.62ft at 2393.00ft MD (2392.14 TVD, 23.24 N, 42.41 E)										
- Rectangle (sides W1,980.00 H1,980.00 D0.00)										

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,670.00	2,669.01	24.57	50.71	First MWD Survey	
4,822.00	2,982.16	-1,922.42	4.67	Last MWD Survey	
4,880.00	2,978.82	-1,980.29	2.60	Proj. to Bit	

Checked By: _____	Approved By: _____	Date: _____
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