



Cimarex Energy Co., Inc.

Eddy Co., New Mexico

Adrianne 6 Federal #1

Adrianne 6 Federal #1

S-Well #1

Survey: MWD Survey #1

Standard Survey Report

06 February, 2006





Black Viper Energy Services
Survey Report



Company	Cimarex Energy Co., Inc.	Local Co-ordinate Reference	Well Adrienne 6 Federal #1
Project	Eddy Co. New Mexico	TVD Reference	WELL @ 0.00ft (Original Well Elev)
Site	Adrienne 6 Federal #1	MD Reference	WELL @ 0.00ft (Original Well Elev)
Well	Adrienne 6 Federal #1	North Reference	Grd
Wellbore	S-Well #1	Survey Calculation Method	Minimum Curvature
Design	S-Well #1	Database	EDM 2003.11 Server Db

Project	Eddy Co. New Mexico		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Ground Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Adrienne 6 Federal #1			
Site Position:		Northing:	424,019.40 ft	Latitude: 32° 09' 56.678" N
From: Map		Easting:	499,534.90 ft	Longitude: 104° 20' 05.423" W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence: 0.00 °

Well	Adrienne 6 Federal #1			
Well Position	+N/-S	0.00 ft	Northing:	424,019.40 ft
	+E/-W	0.00 ft	Easting:	499,534.90 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,454.00 ft	Ground Level: 0.00 ft

Wellbore	S-Well #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	1/11/2006	8.56	60.12	49,072

Design	S-Well #1			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 6,950.00
Vertical Section	Depth From (TVD)	N/S (ft)	E/W (ft)	Direction (°)
	0.00	0.00	0.00	195.26

Survey Program	Date: 2/6/2006			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	6,950.00	Gyro Survey #1 (OH)	GM	Gyro Multi-Shot
7,016.00	10,730.00	MWD Survey #1 (S-Well #1)	MWD	Standard MWD
10,926.00	12,250.00	SS Survey #1 (S-Well #1)	S.S.	Single Shot Survey

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	N/S (ft)	E/W (ft)	Vertical Section (ft)	Depth Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,950.00	1.97	196.12	6,947.05	-102.44	24.89	92.29	0.00	0.00	0.00	
7,016.00	1.80	184.40	7,013.01	-104.57	24.49	94.44	0.64	-0.26	-17.76	
First MWD Survey										
7,048.00	1.90	194.00	7,045.00	-105.58	24.32	95.46	1.02	0.31	30.00	
7,079.00	2.20	195.30	7,075.98	-106.65	24.04	96.57	0.98	0.97	4.19	
7,111.00	2.50	194.90	7,107.95	-107.92	23.70	97.88	0.94	0.94	-1.25	
7,143.00	3.30	193.30	7,139.91	-109.49	23.31	99.50	2.51	2.50	-5.00	
7,174.00	4.30	193.10	7,170.84	-111.49	22.84	101.55	3.23	3.23	-0.65	
7,206.00	5.20	194.50	7,202.73	-114.06	22.21	104.20	2.84	2.81	4.38	
7,238.00	5.50	194.90	7,234.59	-116.95	21.45	107.19	0.94	0.94	1.25	
7,269.00	6.10	197.80	7,265.43	-119.95	20.56	110.32	2.15	1.94	9.35	



Black Viper Energy Services

Survey Report



Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well: Adrienne 6 Federal #1
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 0.00ft (Original Well Elev)
Site:	Adrienne 6 Federal #1	MD Reference:	WELL @ 0.00ft (Original Well Elev)
Well:	Adrienne 6 Federal #1	North Reference:	Grid
Wellbore:	S-Well #1	Survey Calculation Method:	Minimum Curvature
Design:	S-Well #1	Database:	EDM 2003.11 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)	
7,301.00	6.80	194.50	7,297.23	-123.41	19.57	113.91	2.47	2.19	-10.31	
7,333.00	7.50	197.40	7,328.98	-127.23	18.47	117.89	2.46	2.19	9.06	
7,364.00	7.90	201.20	7,359.70	-131.15	17.09	122.03	2.09	1.29	12.26	
7,396.00	8.40	200.90	7,391.38	-135.39	15.47	126.55	1.57	1.56	-0.94	
7,427.00	9.50	198.30	7,422.00	-139.93	13.85	131.35	3.78	3.55	-8.39	
7,459.00	10.60	196.90	7,453.51	-145.25	12.17	136.93	3.52	3.44	-4.38	
7,490.00	11.10	197.50	7,483.95	-150.83	10.44	142.76	1.65	1.61	1.94	
7,522.00	11.60	199.40	7,515.33	-156.80	8.45	149.05	1.95	1.56	5.94	
7,553.00	12.50	201.10	7,545.64	-162.87	6.21	155.50	3.12	2.90	5.48	
7,585.00	12.90	202.10	7,576.86	-169.41	3.62	162.49	1.43	1.25	3.13	
7,617.00	12.60	201.70	7,608.07	-175.96	0.98	169.50	0.98	-0.94	-1.25	
7,649.00	12.00	203.60	7,639.34	-182.25	-1.64	176.26	2.26	-1.88	5.94	
7,681.00	11.70	203.90	7,670.66	-188.27	-4.29	182.76	0.96	-0.94	0.94	
7,713.00	12.00	205.20	7,701.97	-194.24	-7.02	189.25	1.25	0.94	4.06	
7,745.00	12.10	204.90	7,733.27	-200.30	-9.85	195.83	0.37	0.31	-0.94	
7,777.00	12.20	204.40	7,764.55	-206.42	-12.66	202.48	0.45	0.31	-1.56	
7,809.00	12.10	204.40	7,795.84	-212.55	-15.44	209.12	0.31	-0.31	0.00	
7,841.00	11.90	203.00	7,827.14	-218.64	-18.11	215.71	1.10	-0.63	-4.38	
7,873.00	11.60	201.80	7,858.47	-224.67	-20.60	222.17	1.21	-0.94	-3.75	
7,905.00	11.80	199.80	7,889.80	-230.73	-22.90	228.63	1.41	0.63	-6.25	
7,937.00	11.80	199.60	7,921.12	-236.89	-25.11	235.15	0.13	0.00	-0.63	
7,969.00	12.40	199.60	7,952.41	-243.21	-27.36	241.84	1.88	1.88	0.00	
8,001.00	12.30	201.10	7,983.67	-249.63	-29.74	248.66	1.05	-0.31	4.69	
8,033.00	12.00	200.50	8,014.96	-255.93	-32.13	255.36	1.02	-0.94	-1.88	
8,065.00	12.00	201.10	8,046.26	-262.15	-34.49	261.98	0.39	0.00	1.88	
8,097.00	12.10	201.40	8,077.55	-268.37	-36.91	268.63	0.37	0.31	0.94	
8,129.00	12.60	201.90	8,108.81	-274.73	-39.44	275.43	1.60	1.56	1.56	
8,161.00	12.60	203.30	8,140.04	-281.18	-42.12	282.35	0.95	0.00	4.38	
8,193.00	12.60	203.90	8,171.27	-287.57	-44.91	289.26	0.41	0.00	1.88	
8,225.00	12.40	205.00	8,202.51	-293.88	-47.78	296.09	0.97	-0.63	3.44	
8,258.00	12.20	205.20	8,234.75	-300.24	-50.76	303.02	0.62	-0.61	0.61	
8,290.00	12.10	205.10	8,266.04	-306.34	-53.62	309.66	0.32	-0.31	-0.31	
8,322.00	12.40	203.90	8,297.31	-312.52	-56.44	316.36	1.23	0.94	-3.75	
8,354.00	12.50	204.10	8,328.56	-318.82	-59.25	323.18	0.34	0.31	0.63	
8,386.00	12.30	204.60	8,359.81	-325.08	-62.08	329.96	0.71	-0.63	1.56	
8,418.00	12.20	205.40	8,391.08	-331.24	-64.95	336.65	0.62	-0.31	2.50	
8,450.00	11.90	204.60	8,422.38	-337.29	-67.77	343.24	1.07	-0.94	-2.50	
8,482.00	11.70	203.00	8,453.70	-343.28	-70.41	349.71	1.20	-0.63	-5.00	
8,514.00	11.70	202.80	8,485.03	-349.25	-72.94	356.14	0.13	0.00	-0.63	
8,546.00	11.90	202.70	8,516.36	-355.29	-75.47	362.63	0.63	0.63	-0.31	
8,578.00	11.60	203.90	8,547.69	-361.27	-78.05	369.08	1.21	-0.94	3.75	
8,610.00	11.30	203.70	8,579.05	-367.09	-80.61	375.36	0.95	-0.94	-0.63	
8,642.00	11.20	202.50	8,610.44	-372.83	-83.06	381.54	0.80	-0.31	-3.75	
8,674.00	10.90	200.40	8,641.84	-378.53	-85.30	387.64	1.57	-0.94	-8.56	
8,706.00	10.60	199.60	8,673.28	-384.14	-87.34	393.59	1.05	-0.94	-2.50	
8,738.00	10.90	200.70	8,704.72	-389.75	-89.40	399.54	1.14	0.94	3.44	
8,770.00	10.80	200.40	8,736.15	-395.39	-91.52	405.53	0.36	-0.31	-0.94	
8,802.00	11.20	198.50	8,767.56	-401.14	-93.55	411.62	1.69	1.25	-5.94	
8,833.00	11.30	198.70	8,797.96	-406.88	-95.48	417.66	0.35	0.32	0.65	
8,865.00	11.10	199.60	8,829.36	-412.75	-97.51	423.86	0.83	-0.63	2.81	
8,896.00	10.80	201.80	8,859.79	-418.26	-99.59	429.72	1.66	-0.97	7.10	
8,928.00	10.80	198.40	8,891.22	-423.88	-101.65	435.69	1.99	0.00	-10.63	
8,959.00	10.60	194.00	8,921.69	-429.41	-103.26	441.45	2.71	-0.65	-14.19	
8,991.00	10.40	196.20	8,953.15	-435.04	-104.78	447.28	1.40	-0.63	6.88	
9,022.00	10.70	196.40	8,983.63	-440.48	-106.37	452.95	0.97	0.97	0.65	



Black Viper Energy Services

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Site	Adrienne 6 Federal #1	MD Reference	WELL @ 0.00ft (Original Well Elev)
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Wellbore	S-Well #1	Survey Calculation Method	Minimum Curvature
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Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	NI/S (ft)	EA/W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,054.00	10.50	194.80	9,015.08	-446.15	-107.95	458.84	1.11	-0.63	-5.00	
9,085.00	11.50	192.60	9,045.51	-451.90	-109.35	464.75	3.50	3.23	-7.10	
9,117.00	12.30	190.60	9,076.82	-458.36	-110.67	471.33	2.81	2.50	-6.25	
9,149.00	12.20	193.90	9,108.09	-465.00	-112.11	478.11	2.21	-0.31	10.31	
9,180.00	11.80	197.90	9,138.42	-471.19	-113.87	484.55	2.98	-1.29	12.90	
9,212.00	11.40	197.50	9,169.76	-477.32	-115.83	490.98	1.28	-1.25	-1.25	
9,244.00	11.30	198.20	9,201.14	-483.32	-117.76	497.27	0.53	-0.31	2.19	
9,275.00	11.80	198.90	9,231.51	-489.20	-119.74	503.47	1.68	1.61	2.26	
9,307.00	11.20	198.10	9,262.87	-495.25	-121.76	509.84	1.94	-1.88	-2.50	
9,338.00	11.00	198.50	9,293.29	-500.92	-123.63	515.80	0.69	-0.65	1.29	
9,370.00	10.80	199.00	9,324.71	-506.65	-125.58	521.84	0.69	-0.63	1.56	
9,401.00	10.60	200.40	9,355.17	-512.06	-127.52	527.57	1.06	-0.65	4.52	
9,433.00	10.40	201.80	9,386.64	-517.50	-129.62	533.37	1.01	-0.63	4.38	
9,464.00	9.40	205.60	9,417.17	-522.39	-131.75	538.64	3.85	-3.23	12.26	
9,496.00	8.50	206.10	9,448.78	-526.87	-133.92	543.54	2.82	-2.81	1.56	
9,528.00	7.50	205.60	9,480.47	-530.87	-135.86	547.92	3.13	-3.13	-1.56	
9,559.00	7.70	207.20	9,511.20	-534.55	-137.69	551.94	0.94	0.65	5.16	
9,591.00	7.10	208.60	9,542.93	-538.19	-139.61	555.96	1.96	-1.88	4.38	
9,622.00	5.90	211.20	9,573.73	-541.23	-141.36	559.36	3.98	-3.87	8.39	
9,654.00	5.30	214.00	9,605.58	-543.87	-143.03	562.34	2.06	-1.88	8.75	
9,685.00	4.30	218.40	9,636.47	-545.96	-144.56	564.76	3.44	-3.23	14.19	
9,717.00	3.30	214.90	9,668.40	-547.66	-145.83	566.73	3.21	-3.13	-10.94	
9,749.00	2.90	220.00	9,700.35	-549.03	-146.88	568.33	1.52	-1.25	15.94	
9,780.00	2.50	216.80	9,731.32	-550.18	-147.79	569.67	1.38	-1.29	-10.32	
9,812.00	2.00	212.00	9,763.29	-551.21	-148.50	570.86	1.67	-1.56	-15.00	
9,844.00	1.60	220.60	9,795.28	-552.02	-149.09	571.80	1.50	-1.25	26.88	
9,876.00	1.40	207.90	9,827.27	-552.71	-149.56	572.58	1.21	-0.63	-39.69	
9,939.00	1.50	209.80	9,890.25	-554.10	-150.33	574.13	0.18	0.16	3.02	
10,002.00	1.50	226.20	9,953.23	-555.39	-151.33	575.64	0.68	0.00	26.03	
10,065.00	1.00	230.40	10,016.21	-556.31	-152.35	576.79	0.81	-0.79	6.67	
10,129.00	1.10	208.90	10,080.20	-557.20	-153.08	577.85	0.63	0.16	-33.59	
10,192.00	1.50	215.10	10,143.18	-558.41	-153.85	579.21	0.67	0.63	9.84	
10,255.00	1.50	237.40	10,206.16	-559.53	-155.02	580.60	0.92	0.00	35.40	
10,318.00	1.40	242.00	10,269.14	-560.33	-156.39	581.74	0.24	-0.16	7.30	
10,382.00	0.90	246.50	10,333.13	-560.90	-157.54	582.59	0.79	-0.78	7.03	
10,455.00	1.10	238.90	10,406.12	-561.49	-158.67	583.45	0.33	0.27	-10.41	
10,508.00	1.20	250.60	10,459.11	-561.94	-159.63	584.14	0.48	0.19	22.08	
10,572.00	0.90	238.50	10,523.10	-562.42	-160.69	584.88	0.58	-0.47	-18.91	
10,603.00	0.80	237.40	10,554.09	-562.67	-161.08	585.22	0.33	-0.32	-3.55	
10,730.00	0.80	265.30	10,681.08	-563.22	-162.71	586.18	0.30	0.00	21.97	
Last MWD Survey										



Black Vper Energy Services
Survey Report



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Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 0.00ft (Original Well Elev)
Site:	Adrienne 6 Federal #1	MD Reference:	WELL @ 0.00ft (Original Well Elev)
Well:	Adrienne 6 Federal #1	North Reference:	Grid
Wellbore:	S-Well #1	Survey Calculation Method:	Minimum Curvature
Design:	S-Well #1	Database:	EDM 2003.11 Server Db

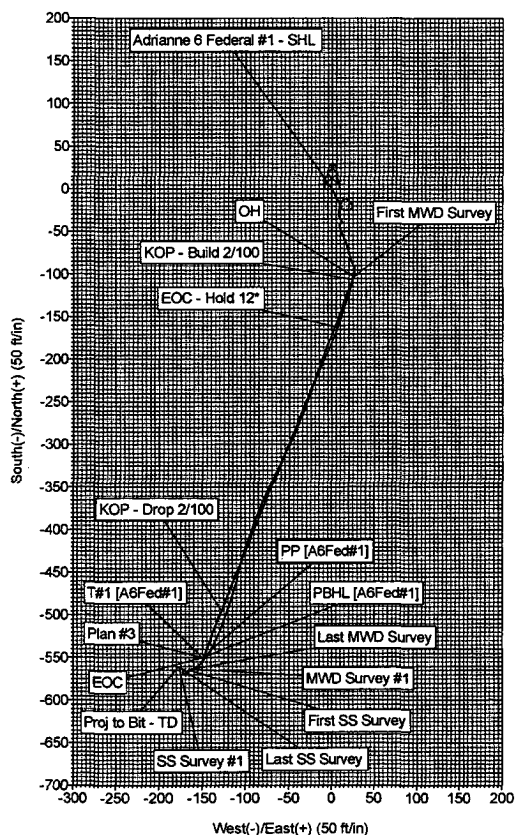
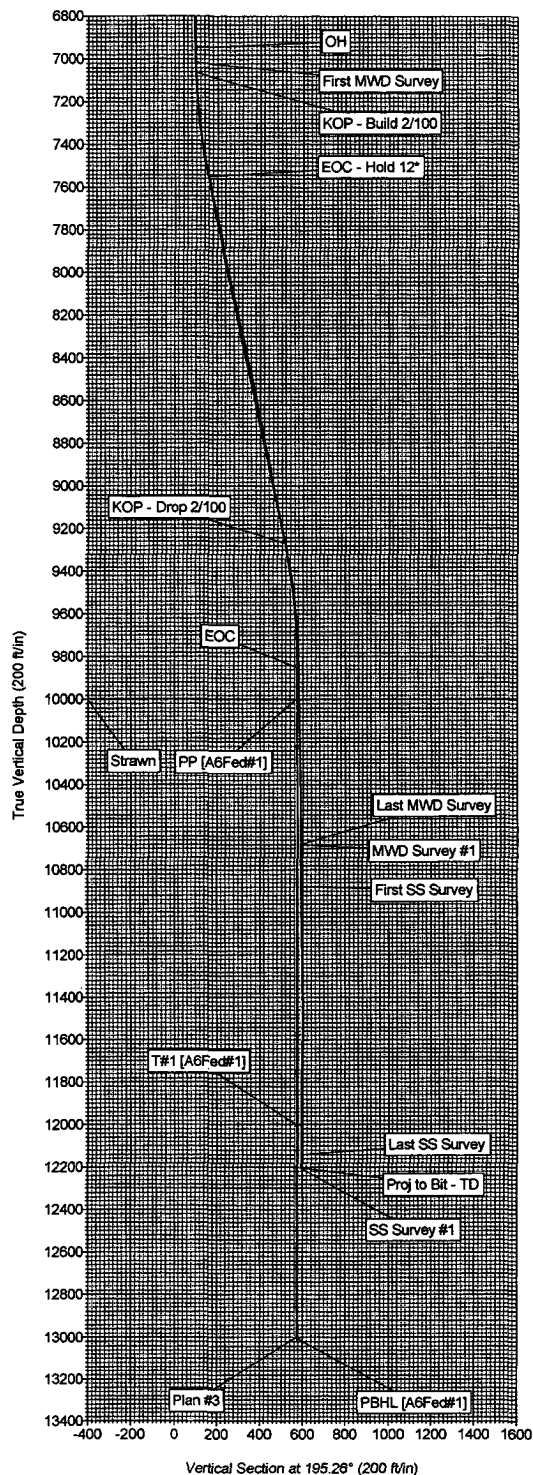
Targets:										
Target Name	Shape	Miss	Target Dip Angle (°)	Dip Dir (°)	TVD (ft)	N-S (ft)	E-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude
PP [A6Fed#1]			0.00	0.00	10,000.00	-550.00	-150.00	423,469.40	499,384.90	32° 09' 51.235" N 104° 20' 07.168" W
- survey misses by 6.47ft at 10034.79ft MD (10000.00 TVD, -56.11 N, 152.12 E)										
- Point										
T#1 [A6Fed#1]			0.00	0.00	12,000.00	-550.00	-150.00	423,469.40	499,384.90	32° 09' 51.235" N 104° 20' 07.168" W
- survey misses by 1319.05ft at 10730.00ft MD (10681.08 TVD, -56.322 N, -1.71 E)										
- Point										
PBHL [A6Fed#1]			0.00	0.00	13,000.00	-550.00	-150.00	423,469.40	499,384.90	32° 09' 51.235" N 104° 20' 07.168" W
- survey misses by 2318.99ft at 10730.00ft MD (10681.08 TVD, -56.322 N, -1.71 E)										
- Point										

Survey Annotations:				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates (ft)		Comment
		N-S	E-W	
7,016.00	7,013.01	-104.57	24.49	First MWD Survey
10,730.00	10,681.08	-563.22	-162.71	Last MWD Survey

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy Co., New Mexico
 Site: Adrienne 6 Federal #1
 Well: Adrienne 6 Federal #1
 Wellbore: S-Well #1
 Plan: Plan #3



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6950.00	1.97	196.12	6947.05	-102.44	24.89	0.00	0.00	92.29	
2	7065.00	1.97	196.12	7061.98	-106.24	23.79	0.00	0.00	96.24	
3	7555.46	11.77	201.48	7548.33	-161.02	3.08	2.00	6.42	154.53	
4	9309.70	11.77	201.48	9265.69	-493.96	-127.95	0.00	0.00	510.22	
5	9898.14	0.00	0.00	9850.00	-550.00	-150.00	2.00	180.00	570.09	
6	12048.14	0.00	0.00	12000.00	-550.00	-150.00	0.00	0.00	570.09	T#1 [A6Fed#1]
7	13048.14	0.00	0.00	13000.00	-550.00	-150.00	0.00	0.00	570.09	PBHL [A6Fed#1]

ANNOTATIONS

TVD	MD	Annotation
7061.98	7065.00	KOP - Build 2/100
7548.33	7555.46	EOC - Hold 12"
9265.69	9309.70	KOP - Drop 2/100
9850.00	9898.14	EOC



Azimuths to Grid North
 True North: 0.00°
 Magnetic North: 8.56°

Magnetic Field
 Strength: 49072.3nT
 Dip Angle: 60.12°
 Date: 1/11/2008
 Model: IGRF200510

Plan: Plan #3 (Adrienne 6 Federal #1/S-Well #1)

Created By: John Hattberg Date: 08/03/2005