

Cimarex Energy Co.

Eddy County (NM83E)

Sec 22 - T25S - R26

Cottonwood Draw 22 Fed #5

Wellbore #1

Survey: MWD Survey

30-015-37431

Standard Survey Report

11 January, 2010

Cimarex Energy Co.

Project: Eddy County (NM83E)
 Site: Sec 22 - T25S - R26
 Wellbore: Cottonwood Draw 22 Fed #5
 Design: Plan #3

WELL DETAILS: Cottonwood Draw 22 Fed #5



Longitude
 104° 16' 21.672 W

Latitude
 32° 7' 15.956 N

Easting
 560112.51

North
 407797.19

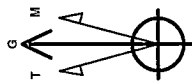
+N/-S
 0.0

+E/-W
 0.0

SHL: 530' FNL / 210' FEL
 BHL: 330' FSL / 380' FEL

Azimuths to Grid North
 Total Correction: 8.04°

Magnetic Field
 Strength: 0.25 Gauss
 Dip Angle: 60.02°
 Date: 2009/11/05
 Model: IGRF200510



WELLBORE TARGET DETAILS

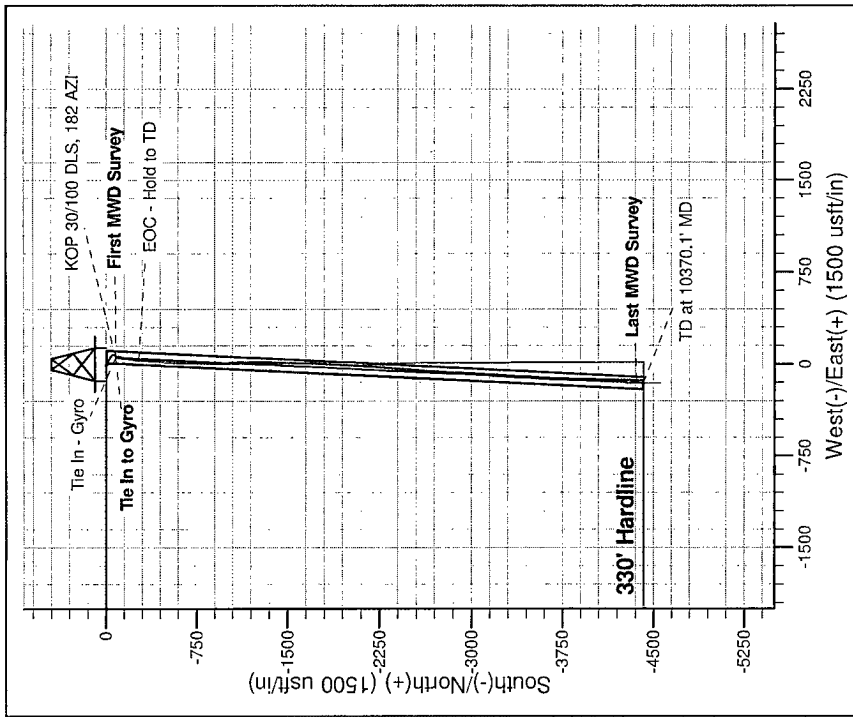
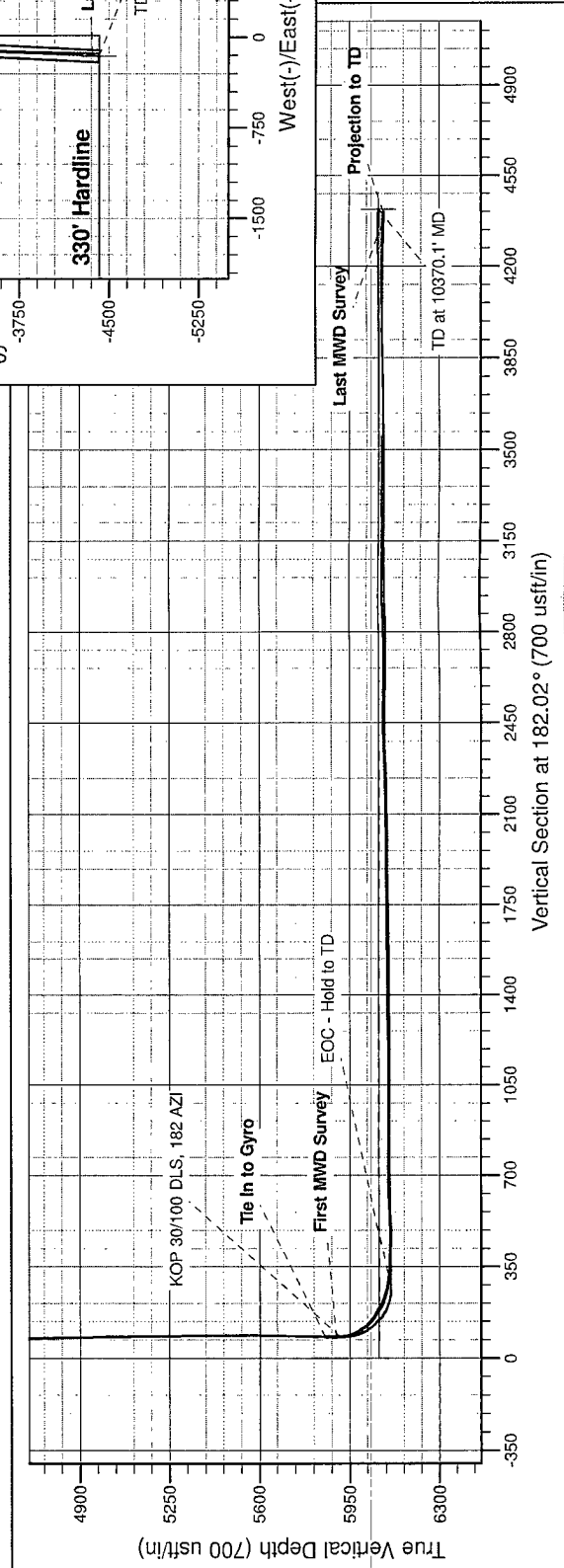
Name	TVD	+N/-S	+E/-W	North	Easting
Cottonwood #5	6063.0	-4416.1	-155.5	403381.11	559957.04
Drilling Corridor Cottonwood #5	6063.0	-4416.1	-155.5	403381.11	559957.04

PLAN DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
5858.0	0.97	338.71	5854.6	-82.7	57.9	0.00	0.00	80.6	
5918.0	0.97	338.71	5914.6	-81.8	57.5	0.00	0.00	79.7	
6223.8	90.63	182.80	6109.0	-275.0	46.7	29.92	-155.90	273.2	
10370.1	90.64	182.79	6063.0	-4416.1	-155.5	0.00	-40.84	4418.8	Cottonwood #5

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
5854.6	5858.0	0.97	338.71	-82.7	57.9	80.6	0.0	Tie In - Gyro
5914.6	5918.0	0.97	338.71	-81.8	57.5	79.7	1.0	KOP 30/100 DLS, 182 AZI
6109.0	6223.8	90.62	182.80	-275.0	46.7	273.2	194.7	EOC - Hold to TD
6063.0	10370.0	90.64	182.79	-4416.0	-155.5	4418.7	4340.6	TD at 10370.1' MD



Great White Directional Services

Survey Report

Company:	Cimarex Energy Co.	Local Co-ordinate Reference:	Well Cottonwood Draw 22 Fed #5
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Cottonwood Draw 22 Fed #5	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Eddy County (NM83E)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 22 - T25S - R26		
Site Position:	From: Map	Northing:	407,849.00 usft
		Easting:	559,962.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 7' 16.470 N
		Longitude:	104° 16' 23.419 W
		Grid Convergence:	0.03 °

Well	Cottonwood Draw 22 Fed #5		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 7' 15.956 N
		Longitude:	104° 16' 21.672 W
		Ground Level:	0.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	2009/11/05	8.08
			Dip Angle
			(°)
			60.02
			Field Strength
			(nT)
			48,691

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			182.02

Survey Program	Date 2010/01/11		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	5,858.0	Gryo (Wellbore #1)	MWD
5,900.0	10,340.0	MWD Survey (Wellbore #1)	MWD
			Description
			MWD - Standard
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100ft)	(°/100ft)	(°/100ft)	
5,858.0	0.97	338.71	5,854.6	-82.7	57.9	80.6	0.00	0.00	0.00	
Tie In to Gryo										
5,900.0	0.80	290.20	5,896.6	-82.3	57.5	80.2	1.77	-0.40	-115.50	
First MWD Survey										
5,932.0	9.10	168.00	5,928.5	-84.7	57.8	82.6	29.84	25.94	-381.88	
5,964.0	20.80	186.60	5,959.3	-92.8	57.7	90.7	39.07	36.56	58.13	
5,995.0	30.20	188.40	5,987.3	-106.0	55.9	104.0	30.42	30.32	5.81	
6,027.0	40.20	189.70	6,013.4	-124.2	53.0	122.3	31.34	31.25	4.06	
6,059.0	49.50	189.20	6,036.1	-146.5	49.3	144.6	29.08	29.06	-1.56	

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Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Cottonwood Draw 22 Fed #5	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,090.0	59.50	190.30	6,054.0	-171.3	45.0	169.6	32.39	32.26	3.55	
6,122.0	65.20	189.70	6,068.9	-199.2	40.1	197.7	17.89	17.81	-1.88	
6,154.0	70.80	187.40	6,080.9	-228.5	35.7	227.1	18.72	17.50	-7.19	
6,185.0	76.30	183.60	6,089.6	-258.1	32.9	256.8	21.28	17.74	-12.26	
6,217.0	80.40	181.70	6,096.1	-289.4	31.4	288.1	14.07	12.81	-5.94	
6,249.0	83.00	181.90	6,100.7	-321.1	30.4	319.8	8.15	8.13	0.63	
6,280.0	85.60	183.60	6,103.8	-351.9	28.9	350.6	10.01	8.39	5.48	
6,313.0	88.60	185.10	6,105.5	-384.7	26.4	383.6	10.16	9.09	4.55	
6,345.0	88.50	184.00	6,106.3	-416.6	23.9	415.5	3.45	-0.31	-3.44	
6,375.0	87.90	183.50	6,107.2	-446.5	21.9	445.5	2.60	-2.00	-1.67	
6,408.0	91.10	182.50	6,107.5	-479.5	20.2	478.5	10.16	9.70	-3.03	
6,440.0	93.40	182.30	6,106.3	-511.4	18.9	510.4	7.21	7.19	-0.63	
6,472.0	93.40	182.00	6,104.4	-543.3	17.7	542.4	0.94	0.00	-0.94	
6,503.0	93.50	181.90	6,102.5	-574.3	16.6	573.3	0.46	0.32	-0.32	
6,567.0	92.30	182.10	6,099.3	-638.2	14.4	637.2	1.90	-1.88	0.31	
6,630.0	90.10	182.40	6,097.9	-701.1	11.9	700.2	3.52	-3.49	0.48	
6,693.0	88.90	182.40	6,098.5	-764.0	9.3	763.2	1.90	-1.90	0.00	
6,757.0	89.50	181.10	6,099.4	-828.0	7.3	827.2	2.24	0.94	-2.03	
6,820.0	89.10	180.90	6,100.2	-891.0	6.2	890.2	0.71	-0.63	-0.32	
6,883.0	90.20	179.30	6,100.5	-954.0	6.1	953.2	3.08	1.75	-2.54	
6,947.0	89.10	178.50	6,100.9	-1,018.0	7.3	1,017.1	2.13	-1.72	-1.25	
7,010.0	90.10	178.40	6,101.4	-1,080.9	9.0	1,079.9	1.60	1.59	-0.16	
7,105.0	90.70	178.30	6,100.7	-1,175.9	11.8	1,174.7	0.64	0.63	-0.11	
7,200.0	90.30	178.90	6,099.9	-1,270.9	14.1	1,269.6	0.76	-0.42	0.63	
7,295.0	90.30	180.60	6,099.4	-1,365.9	14.5	1,364.5	1.79	0.00	1.79	
7,390.0	90.60	181.90	6,098.6	-1,460.8	12.4	1,459.5	1.40	0.32	1.37	
7,485.0	89.10	181.90	6,098.9	-1,555.8	9.3	1,554.5	1.58	-1.58	0.00	
7,581.0	91.50	180.20	6,098.4	-1,651.7	7.5	1,650.4	3.06	2.50	-1.77	
7,676.0	92.20	182.80	6,095.3	-1,746.6	5.1	1,745.4	2.83	0.74	2.74	
7,771.0	91.10	183.10	6,092.6	-1,841.5	0.2	1,840.3	1.20	-1.16	0.32	
7,867.0	89.90	183.20	6,091.7	-1,937.3	-5.1	1,936.3	1.25	-1.25	0.10	
7,962.0	90.70	183.00	6,091.2	-2,032.2	-10.2	2,031.3	0.87	0.84	-0.21	
8,056.0	91.10	183.60	6,089.8	-2,126.0	-15.7	2,125.3	0.77	0.43	0.64	
8,151.0	91.40	184.80	6,087.7	-2,220.7	-22.6	2,220.2	1.30	0.32	1.26	
8,246.0	91.70	185.20	6,085.1	-2,315.3	-30.9	2,315.0	0.53	0.32	0.42	
8,341.0	91.60	184.90	6,082.4	-2,409.9	-39.2	2,409.8	0.33	-0.11	-0.32	
8,437.0	89.40	185.50	6,081.5	-2,505.5	-47.9	2,505.7	2.38	-2.29	0.63	
8,532.0	88.60	184.30	6,083.2	-2,600.2	-56.1	2,600.5	1.52	-0.84	-1.26	
8,627.0	89.40	184.00	6,084.9	-2,694.9	-62.9	2,695.4	0.90	0.84	-0.32	
8,722.0	89.70	182.90	6,085.6	-2,789.7	-68.7	2,790.4	1.20	0.32	-1.16	
8,817.0	91.60	182.40	6,084.5	-2,884.6	-73.0	2,885.4	2.07	2.00	-0.53	
8,912.0	91.30	184.00	6,082.1	-2,979.4	-78.3	2,980.3	1.71	-0.32	1.68	
9,007.0	90.90	183.80	6,080.3	-3,074.2	-84.8	3,075.3	0.47	-0.42	-0.21	

Great White Directional Services

Survey Report

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Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Cottonwood Draw 22 Fed #5	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,102.0	90.20	183.70	6,079.4	-3,169.0	-91.0	3,170.2	0.74	-0.74	-0.11
9,197.0	91.60	183.70	6,077.9	-3,263.8	-97.1	3,265.2	1.47	1.47	0.00
9,291.0	90.30	183.10	6,076.3	-3,357.6	-102.7	3,359.1	1.52	-1.38	-0.64
9,386.0	89.20	183.10	6,076.8	-3,452.5	-107.9	3,454.1	1.16	-1.16	0.00
9,482.0	90.50	183.50	6,077.0	-3,548.3	-113.4	3,550.1	1.42	1.35	0.42
9,577.0	91.20	183.10	6,075.6	-3,643.1	-118.9	3,645.0	0.85	0.74	-0.42
9,672.0	89.70	181.90	6,074.9	-3,738.0	-123.0	3,740.0	2.02	-1.58	-1.26
9,767.0	91.50	180.90	6,073.9	-3,833.0	-125.3	3,835.0	2.17	1.89	-1.05
9,862.0	90.10	180.70	6,072.5	-3,928.0	-126.6	3,930.0	1.49	-1.47	-0.21
9,957.0	89.30	180.70	6,073.0	-4,023.0	-127.8	4,025.0	0.84	-0.84	0.00
10,053.0	90.10	181.40	6,073.5	-4,118.9	-129.6	4,120.9	1.11	0.83	0.73
10,148.0	88.40	180.40	6,074.8	-4,213.9	-131.1	4,215.9	2.08	-1.79	-1.05
10,243.0	88.80	180.90	6,077.1	-4,308.9	-132.1	4,310.9	0.67	0.42	0.53
10,297.0	87.60	180.80	6,078.8	-4,362.8	-132.9	4,364.8	2.23	-2.22	-0.19
Last MWD Survey									
10,340.0	87.60	180.80	6,080.6	-4,405.8	-133.5	4,407.8	0.00	0.00	0.00
Projection to TD - Drilling Corridor Cottonwood #5 - Cottonwood #5									

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,858.0	5,854.6	-82.7	57.9	Tie In to Gyro	
5,900.0	5,896.6	-82.3	57.5	First MWD Survey	
10,297.0	6,078.8	-4,362.8	-132.9	Last MWD Survey	
10,340.0	6,080.6	-4,405.8	-133.5	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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