

30 015 37311

RECEIVED

JUN 18 2010

NMOCD ARTESIA

Cimarex Energy Co.

Eddy County (NM83E)

Sec 22 - T25S - R26

Cottonwood 22 Fed #3

Wellbore #1

Survey: MWD Survey

MR

Standard Survey Report

10 November, 2009

Cimarex Energy Co.

Project Eddy County (NM83E)
Site Sec 22 - T25S - R26
Well Cottonwood 22 Fed #3
Wellbore Wellbore #1
Design Plan #3 11-109

WELL DETAILS: Cottonwood 22 Fed #3



+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
	0.0	407799.00	559962.37	32° 7' 15.975 N	104° 16' 23.418 W
SHL: 530' FNL / 360' FEL					
BHL: 2530' FNL / 380' FEL					



Azimuths to Grid North

Total Correction: 8.07°

Magnetic Field
Strength: 48685.9nT
Dip Angle: 60.03°
Date: 2009/08/10
Model: IGRF200510

WELLBORE TARGET DETAILS

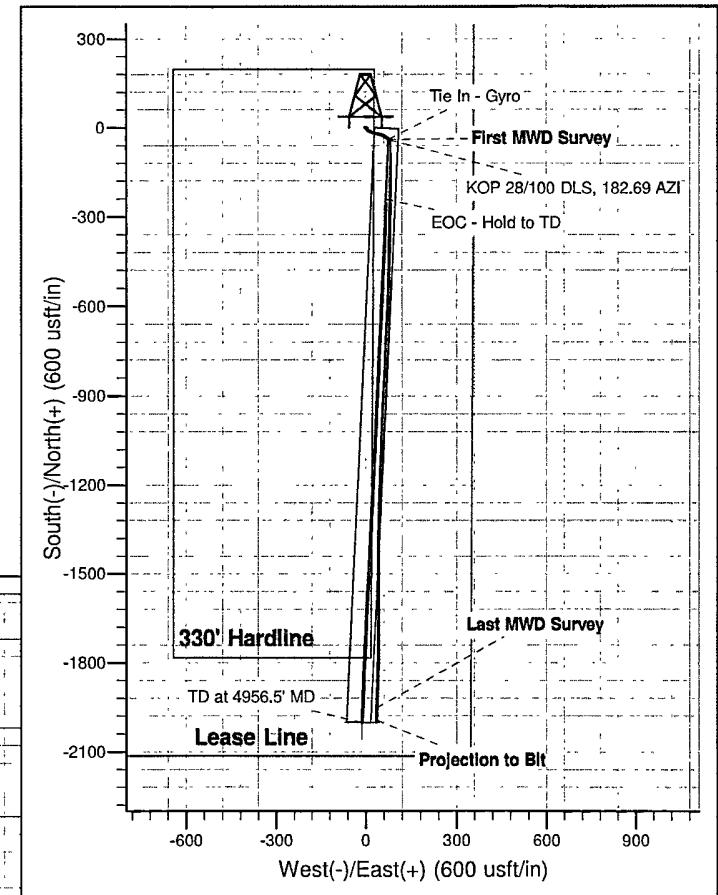
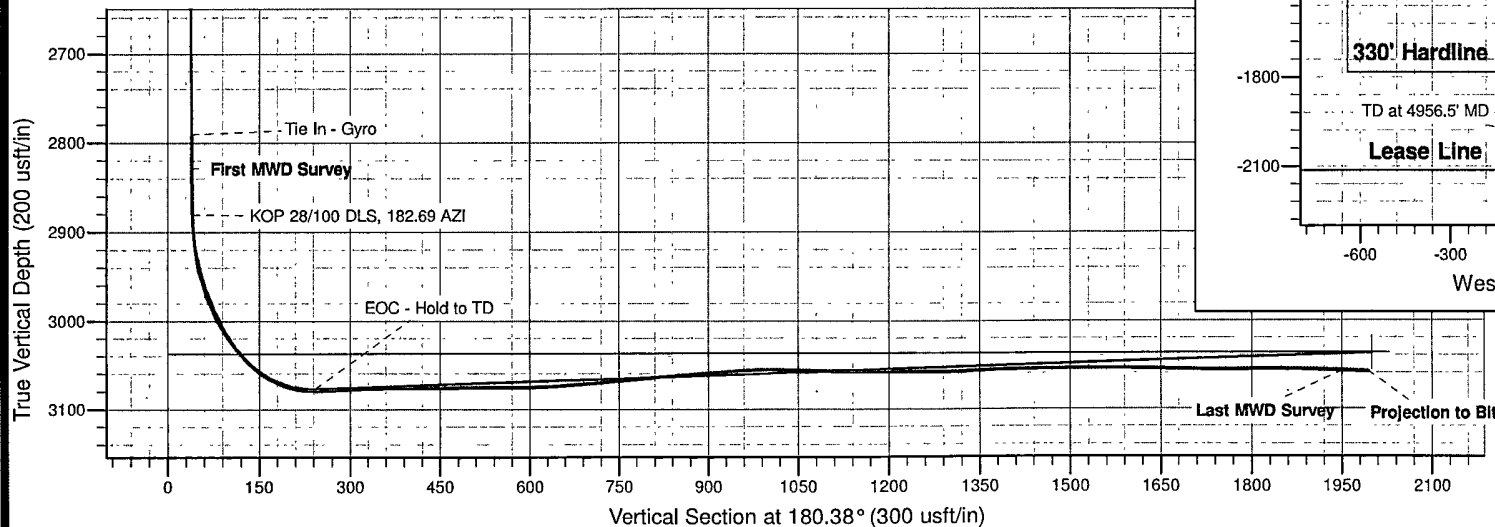
Name	TVD	+N/-S	+E/-W	Northing	Easting
Cottonwood #3 D.C.	3037.0	-2000.0	-13.3	405798.97	559949.02
Cottonwood 22 Fed #3 - BHL	3037.0	-2000.0	-13.3	405798.97	559949.02

PLAN DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
2793.0	0.70	151.60	2790.9	-39.2	76.9	0.00	0.00	38.7	
2883.0	0.70	151.60	2880.9	-40.2	77.4	0.00	0.00	39.7	
3196.9	91.31	182.69	3077.0	-242.8	69.2	28.90	31.08	242.3	
4956.5	91.30	182.69	3037.0	-2000.0	-13.3	0.00	-166.92	2000.1	Cottonwood 22 Fed #3 - BHL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
2790.9	2793.0	0.70	151.60	-39.2	76.9	38.7	0.0	Tie In - Gyro
2880.9	2883.0	0.70	151.60	-40.2	77.4	39.7	1.1	KOP 28/100 DLS, 182.69 AZI
3077.0	3196.9	91.31	182.69	-242.8	69.2	242.3	203.9	EOC - Hold to TD
3037.0	4956.5	91.30	182.69	-2000.0	-13.3	2000.1	1963.1	TD at 4956.5' MD



Great White Directional Services

Survey Report

Company:	Cimarex Energy Co	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Well:	Cottonwood 22 Fed #3	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:	Northing:	407,849.00 usft	Latitude: 32° 7' 16.470 N
From: Map	Easting:	559,962.20 usft	Longitude: 104° 16' 23.419 W
Position Uncertainty: 0.0 usft	Slot Radius: 13-3/16 "	Grid Convergence:	0.03 °

Well	Cottonwood 22 Fed #3		
Well Position	+N/-S	0.0 usft	Northing: 407,799.00 usft
	+E/-W	0.0 usft	Easting: 559,962.37 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Ground Level:	3,331.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	2009/08/10	(°) 8.10
			Dip Angle (°) 60.03
			Field Strength (nT) 48,689

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 (°) 182.69

Survey Program	Date 2009/11/10		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	2,793.0	Gyro (Wellbore #1)	MWD
2,831.0	4,948.0	MWD Survey (Wellbore #1)	MWD
			Description
			MWD - Standard
			MWD - Standard

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100ft)	(°/100ft)	(°/100ft)
2,793.0	0.70	151.60	2,790.9	-39.2	76.9	35.6	0.00	0.00	0.00
2,831.0	0.60	145.90	2,828.9	-39.6	77.1	35.9	0.31	-0.26	-15.00
First MWD Survey									
2,862.0	0.60	148.50	2,859.9	-39.9	77.3	36.2	0.09	0.00	8.39
2,894.0	4.40	166.00	2,891.8	-41.2	77.7	37.5	11.98	11.88	54.69
2,904.0	8.10	170.30	2,901.8	-42.3	77.9	38.6	37.27	37.00	43.00
2,914.0	11.40	171.60	2,911.6	-43.9	78.1	40.2	33.07	33.00	13.00
2,925.0	14.80	173.70	2,922.4	-46.4	78.5	42.7	31.21	30.91	19.09
2,955.0	24.20	177.30	2,950.6	-56.4	79.2	52.6	31.57	31.33	12.00
2,988.0	31.10	177.40	2,979.8	-71.7	79.9	67.9	20.91	20.91	0.30

Great White Directional Services

Survey Report

Company:	Cimarex Energy Co.	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Well:	Cottonwood 22 Fed #3	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)	
3,020.0	37.80	176.90	3,006.2	-89.8	80.8	85.9	20.96	20.94	-1.56	
3,052.0	47.50	178.90	3,029.7	-111.4	81.5	107.4	30.60	30.31	6.25	
3,083.0	57.20	179.80	3,048.6	-135.9	81.8	131.9	31.37	31.29	2.90	
3,115.0	67.20	179.80	3,063.5	-164.2	81.9	160.2	31.25	31.25	0.00	
3,147.0	77.10	180.40	3,073.3	-194.6	81.8	190.5	30.99	30.94	1.88	
3,181.0	87.60	181.50	3,077.8	-228.2	81.3	224.2	31.05	30.88	3.24	
3,213.0	91.50	181.20	3,078.1	-260.2	80.5	256.2	12.22	12.19	-0.94	
3,276.0	92.00	180.40	3,076.2	-323.2	79.7	319.1	1.50	0.79	-1.27	
3,339.0	89.80	180.80	3,075.2	-386.2	79.0	382.0	3.55	-3.49	0.63	
3,403.0	90.50	181.40	3,075.0	-450.2	77.8	446.0	1.44	1.09	0.94	
3,467.0	90.50	181.40	3,074.4	-514.1	76.2	510.0	0.00	0.00	0.00	
3,530.0	89.50	181.90	3,074.4	-577.1	74.4	573.0	1.77	-1.59	0.79	
3,590.0	92.20	183.10	3,073.6	-637.0	71.8	633.0	4.92	4.50	2.00	
3,653.0	93.10	182.90	3,070.6	-699.9	68.5	695.9	1.46	1.43	-0.32	
3,715.0	93.90	182.60	3,066.9	-761.7	65.5	757.8	1.38	1.29	-0.48	
3,781.0	92.70	183.10	3,063.1	-827.5	62.2	823.7	1.97	-1.82	0.76	
3,845.0	93.30	182.80	3,059.7	-891.3	58.9	887.6	1.05	0.94	-0.47	
3,908.0	92.50	182.20	3,056.5	-954.2	56.2	950.5	1.59	-1.27	-0.95	
3,971.0	89.20	182.00	3,055.6	-1,017.1	53.9	1,013.5	5.25	-5.24	-0.32	
4,034.0	88.90	182.10	3,056.6	-1,080.1	51.6	1,076.5	0.50	-0.48	0.16	
4,097.0	90.20	182.00	3,057.1	-1,143.0	49.4	1,139.5	2.07	2.06	-0.16	
4,160.0	89.90	181.90	3,057.1	-1,206.0	47.2	1,202.5	0.50	-0.48	-0.16	
4,224.0	89.60	180.90	3,057.3	-1,270.0	45.7	1,266.4	1.63	-0.47	-1.56	
4,287.0	92.30	181.40	3,056.3	-1,333.0	44.4	1,329.4	4.36	4.29	0.79	
4,351.0	90.50	181.80	3,054.7	-1,396.9	42.6	1,393.4	2.88	-2.81	0.63	
4,414.0	90.50	179.70	3,054.2	-1,459.9	41.8	1,456.3	3.33	0.00	-3.33	
4,476.0	90.70	180.00	3,053.5	-1,521.9	42.0	1,518.3	0.58	0.32	0.48	
4,540.0	89.30	180.40	3,053.5	-1,585.9	41.7	1,582.2	2.28	-2.19	0.63	
4,602.0	89.40	179.90	3,054.2	-1,647.9	41.6	1,644.1	0.82	0.16	-0.81	
4,666.0	88.80	179.20	3,055.2	-1,711.9	42.1	1,708.0	1.44	-0.94	-1.09	
4,729.0	90.80	181.90	3,055.5	-1,774.9	41.5	1,771.0	5.33	3.17	4.29	
4,792.0	89.80	181.80	3,055.1	-1,837.8	39.4	1,834.0	1.60	-1.59	-0.16	
4,855.0	89.10	181.70	3,055.7	-1,900.8	37.5	1,896.9	1.12	-1.11	-0.16	
4,907.0	88.90	181.20	3,056.7	-1,952.8	36.2	1,948.9	1.04	-0.38	-0.96	
Last MWD Survey										
4,948.0	88.90	181.20	3,057.4	-1,993.8	35.3	1,989.9	0.00	0.00	0.00	
Projection to Bit - Cottonwood #3 D.C. - Cottonwood 22 Fed #3 - BHL										

Great White Directional Services

Survey Report

Company:	Cimarex Energy Co.	Local Co-ordinate Reference:	Well Cottonwood 22 Fed #3
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 3331.0usft (Original Well Elev)
Site:	Sec 22 - T25S - R26	MD Reference:	WELL @ 3331.0usft (Original Well Elev)
Well:	Cottonwood 22 Fed #3	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,831.0	2,828.9	-39.6	77.1	First MWD Survey
4,907.0	3,056.7	-1,952.8	36.2	Last MWD Survey
4,948.0	3,057.4	-1,993.8	35.3	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____