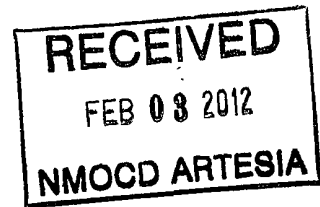




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288



30-015-39032

October 20, 2011

Cimarex Energy Co.
Attn: Jim Evans
600 N. Marienfeld, Suite 600
Midland, TX 79701

RE: Pere Marquette 18 Federal #4
600' FNL & 990' FEL
Sec. 18, T17S, R29E
Eddy County, New Mexico

Dear Sir,

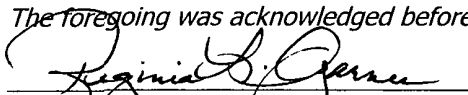
The attached is the Deviation Survey for the above captioned well.

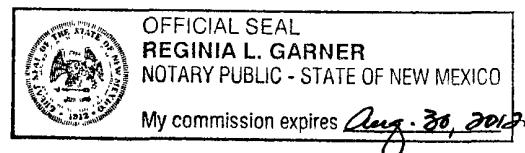
Very truly yours,


Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 20th day of October, 2011.


Regina L. Garner
Notary Public



Pason DataHub Deviation Survey

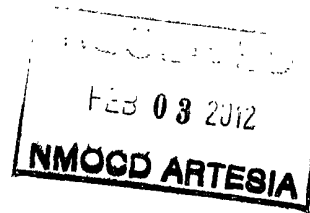
Well Dossier 1318263336 - pere marquette.18.fed #.4

#

# Date	Depth	Deviation	Direction
10/13/2011	311	1.40	0.00
10/13/2011	555	0.60	0.00
10/14/2011	839	1.10	0.00
10/14/2011	1059	1.00	0.00
10/14/2011	1279	0.80	0.00
10/14/2011	1499	0.70	0.00
10/14/2011	1750	0.80	0.00
10/14/2011	2004	0.60	0.00
10/15/2011	2158	0.40	1.30
10/15/2011	2284	4.10	359.90
10/15/2011	2379	3.60	353.10
10/15/2011	2473	5.90	1.40
10/15/2011	2567	5.70	359.80
10/15/2011	2662	5.70	356.00
10/15/2011	2756	5.40	358.90
10/15/2011	2850	6.30	353.60
10/15/2011	2945	6.50	351.20
10/15/2011	3040	6.50	352.30
10/15/2011	3134	6.70	351.30
10/16/2011	3228	6.20	354.50
10/16/2011	3323	6.30	356.70
10/16/2011	3416	6.10	355.10
10/16/2011	3511	6.10	356.30
10/16/2011	3606	5.70	354.00
10/16/2011	3700	5.60	352.10
10/16/2011	3794	5.70	350.90
10/17/2011	3888	5.60	354.80
10/17/2011	3983	5.70	356.10
10/17/2011	4078	5.70	357.50
10/17/2011	4173	5.60	358.90
10/17/2011	4268	5.60	359.40
10/17/2011	4363	5.50	1.90
10/17/2011	4458	5.20	2.20
10/17/2011	4551	5.90	5.00
10/17/2011	4645	5.90	358.80
10/17/2011	4739	5.20	359.90
10/18/2011	4807	4.50	355.00

EOF

30.015.39032



CIMAREX ENERGY

Empire
Eddy County, NM
Pere Marquette 18 Federal #4H
VH - Job #32K1011988

Survey: Actual

SDI Standard Survey Report

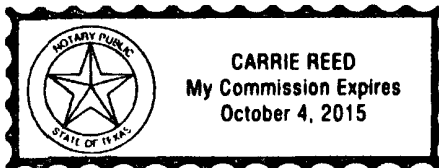
This survey is correct to the best of my knowledge and is supported by actual field data.

K. Wharton

Notarized this date 15th of November, 2011.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	CIMAREX ENERGY	Local Co-ordinate Reference:	Well Pere Marquette 18 Federal #4H
Project:	Empire	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Pere Marquette 18 Federal #4H	North Reference:	Grid
Wellbore:	VH - Job #32K1011988	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1011988	Database:	EDM-Regulatory

Project	Empire		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site		Eddy County, NM			
Site Position:		Northing:		673,477 15 usft	
From:		Easting:		570,262 08 usft	
Position Uncertainty:		Slot Radius:		0 0 usft	
Lat/Long				Latitude:	
				32° 51' 4 550 N	
				Longitude:	
				104° 6' 16 340 W	
				Grid Convergence:	
				0 12 °	

Well	Pere Marquette 18 Federal #4H, Directional (Great White)					
Well Position	+N/-S	0 0 usft	Northing:	-25,479,411 36 usft	Latitude:	39° 9' 35 142 S
	+E/-W	0 0 usft	Easting:	563,659 02 usft	Longitude:	104° 6' 31 769 W
Position Uncertainty		0 0 usft	Wellhead Elevation:	usft	Ground Level:	0 0 usft

Wellbore		VH - Job #32K1011988			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/14/2011	21 73	-47 67	35,253

Design		VH - Job #32K1011988			
Audit Notes:					
Version:		1 0	Phase:	ACTUAL	Tie On Depth: 0 0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0 0	0 0	0 0	359 83

Survey Program		Date 11/14/2011		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
116 2	2,115 9	Actual (VH - Job #32K1011988)	Keeper	Keeper Gyro

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0 0	0 00	0 00	0 0	0 0	0 0	0 00	0 0
116 2	0 43	232 66	116 2	-0 3	-0 3	232 66	0 4
176 9	0 46	252 86	176 9	-0 5	-0 8	238 05	0 9
273 4	1 05	224 62	273 4	-1 2	-1 8	235 19	2 1
365 1	1 07	218 22	365 1	-2 5	-2 9	229 09	3 8
456 9	0 65	207 00	456 9	-3 6	-3 6	225 10	5 1
548 8	0 43	159 72	548 8	-4 4	-3 8	220 39	5 8
640 8	0 67	137 89	640 8	-5 1	-3 3	212 52	6 1
732 7	0 65	114 52	732 6	-5 8	-2 4	202 99	6 2
824 4	0 64	106 23	824 3	-6 1	-1 5	193 58	6 3
917 6	0 56	99 22	917 5	-6 3	-0 5	184 75	6 4
982 6	0 90	99 21	982 5	-6 5	0 3	177 42	6 5

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	CIMAREX ENERGY	Local Co-ordinate Reference:	Well Pere Marquette 18 Federal #4H
Project:	Empire	TVD Reference:	WELL @ 0 0usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 0usft (Original Well Elev)
Well:	Pere Marquette 18 Federal #4H	North Reference:	Grid
Wellbore:	VH - Job #32K1011988	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K1011988	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,077 0	0 77	95 78	1,076 9	-6 6	1 7	166 02	6 8
1,171 4	0 69	104 23	1,171 3	-6 8	2 8	157 50	7 4
1,265 8	0 85	107 55	1,265 7	-7 2	4 1	150 61	8 3
1,360 2	0 90	106 57	1,360 1	-7 6	5 4	144 52	9 4
1,454 6	0 94	113 23	1,454 5	-8 1	6 9	139 89	10 6
1,549 0	0 99	106 03	1,548 9	-8 7	8 4	136 07	12 0
1,643 5	0 91	112 16	1,643 4	-9 2	9 8	133 03	13 4
1,737 9	0 87	110 54	1,737 7	-9 7	11 2	130 94	14 8
1,832 3	0 64	107 76	1,832 1	-10 1	12 4	129 30	16 0
1,926 7	0 29	113 68	1,926 5	-10 4	13 1	128 42	16 7
2,021 3	0 15	97 47	2,021 1	-10 5	13 4	128 00	17 0
2,115 9	0 15	97 60	2,115 7	-10 5	13 7	127 58	17 3



Scientific Drilling
Directional Drilling Operations

Project: Empire
Eddy County, NM
Well: Pere Marquette 18 Federal #4H
Wellbore: VH - Job #32K1011988
Design: VH - Job #32K1011988



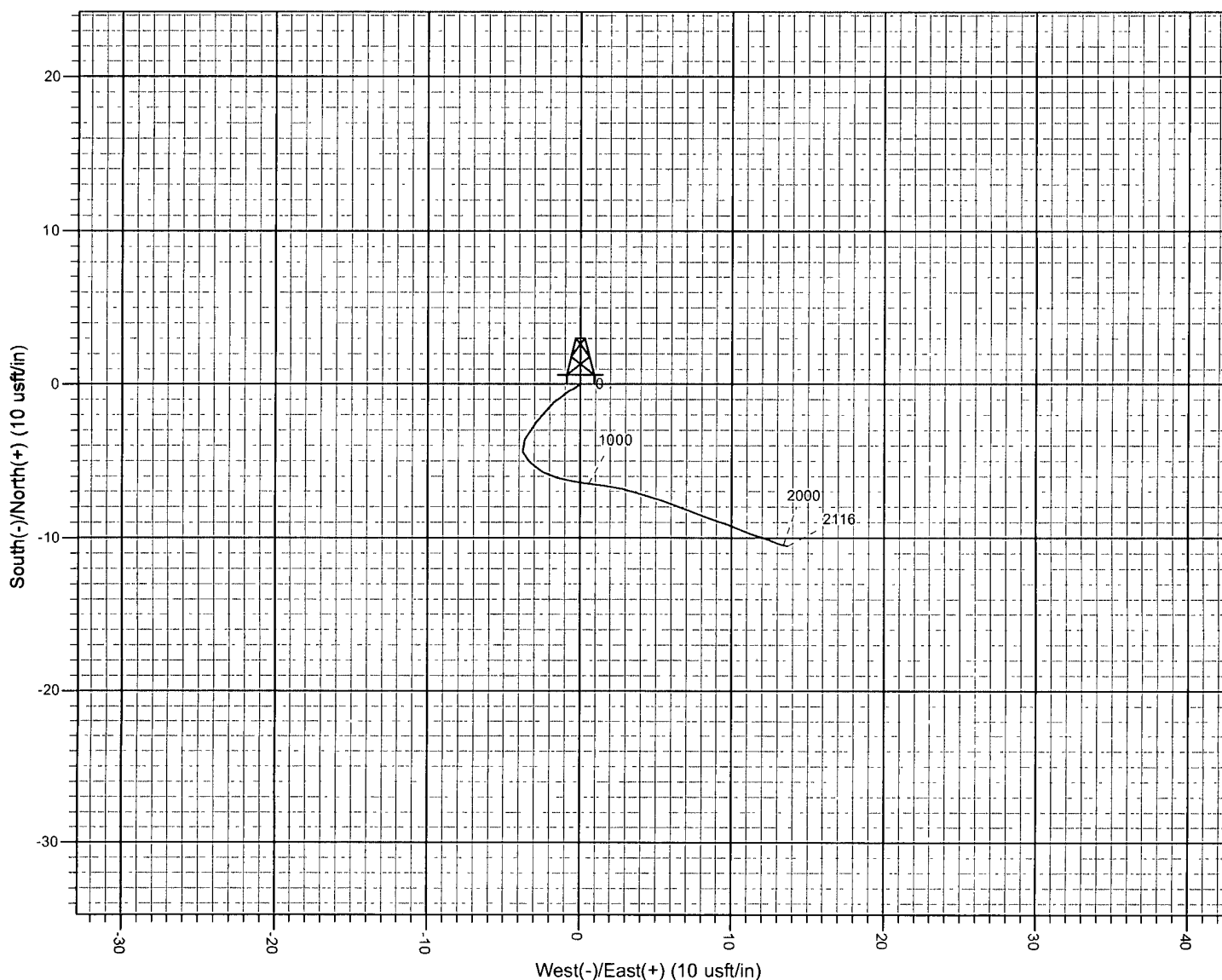
Azimuths to Grid North
True North 0 14°
Magnetic North 21 87°

Magnetic Field
Strength 35253 4snT
Dip Angle -47.67°
Date 10/14/2011
Model IGRF2010

WELL DETAILS: Pere Marquette 18 Federal #4H
WELL @ 0 0usft (Original Well Elev)

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	-25479411.36	563659.02	39° 9' 35 142 S	104° 6' 31.769 W	



PROJECT DETAILS: Empire
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

SITE DETAILS: Eddy County, NM
Site Centre Latitude: 32° 51' 4.550 N
Longitude: 104° 6' 16.340 W
Positional Uncertainty: 0.0
Convergence: 0.12
Local North: Grid

End of Well Recap FOR

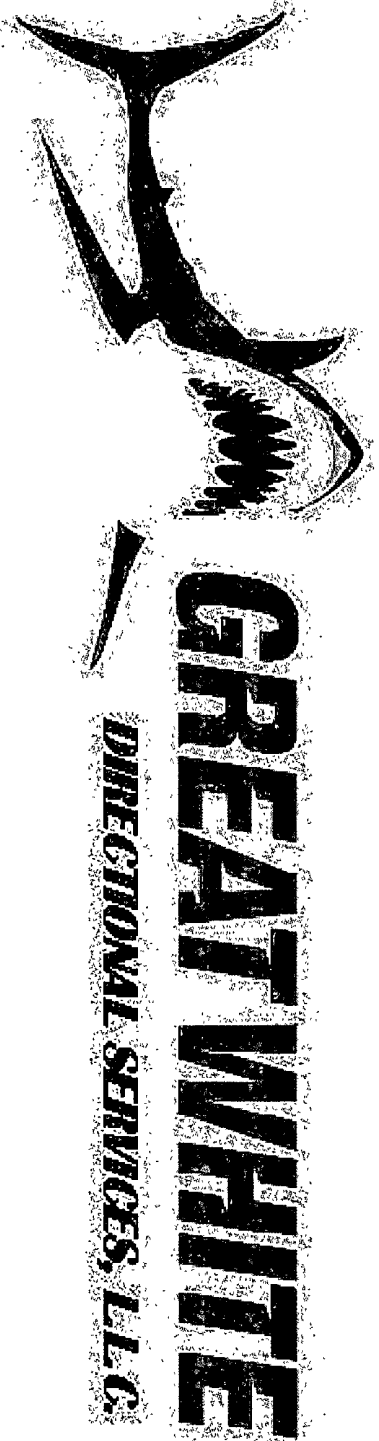
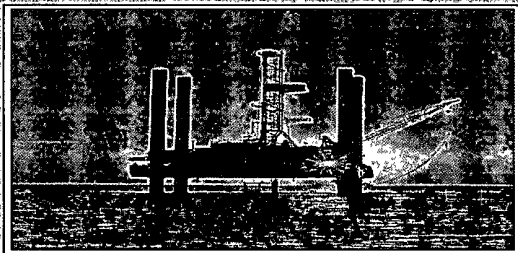
Cimarex Energy
Pere Marquette 18 Fed #4
Eddy Co., NM

Proposal No. 03273-433-21

Presented By:

Terry Morgan
Regional Manager

Miranda Morgan
Well Planner



CIMAREX

Project: Eddy County (NM83E)
 Site: Sec 18-T17S-R29E
 Well: Pere Marquette 18 Fed #4
 Wellbore: Wellbore #1
 Design: Design #1

WELL DETAILS: Pere Marquette 18 Fed #4

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0 0	0.0	669464.80	610290 50	0.0	32° 50' 24.658 N	104° 6' 31.769 W	



Azimuths to Grid North
 True North -0 12°
 Total Correction/Magnetic North 7 72°

Magnetic Field
 Strength 48922 9nT
 Dip Angle 60 66°
 Date 10/04/2011
 Model IGRF2010

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PM #4 PBHL	4850 0	269 8	-0 8	669734 64	610289 72	32° 50' 27 328 N	104° 6' 31.771 W	Circle (Radius 25 0)
	- plan hits target center							

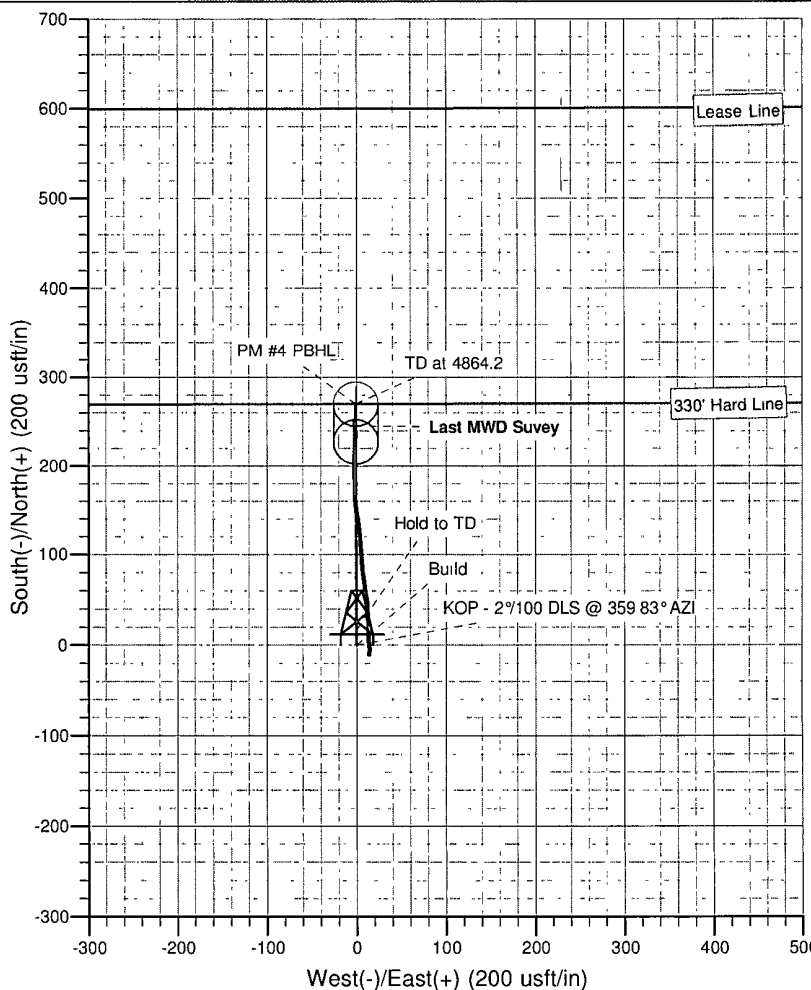
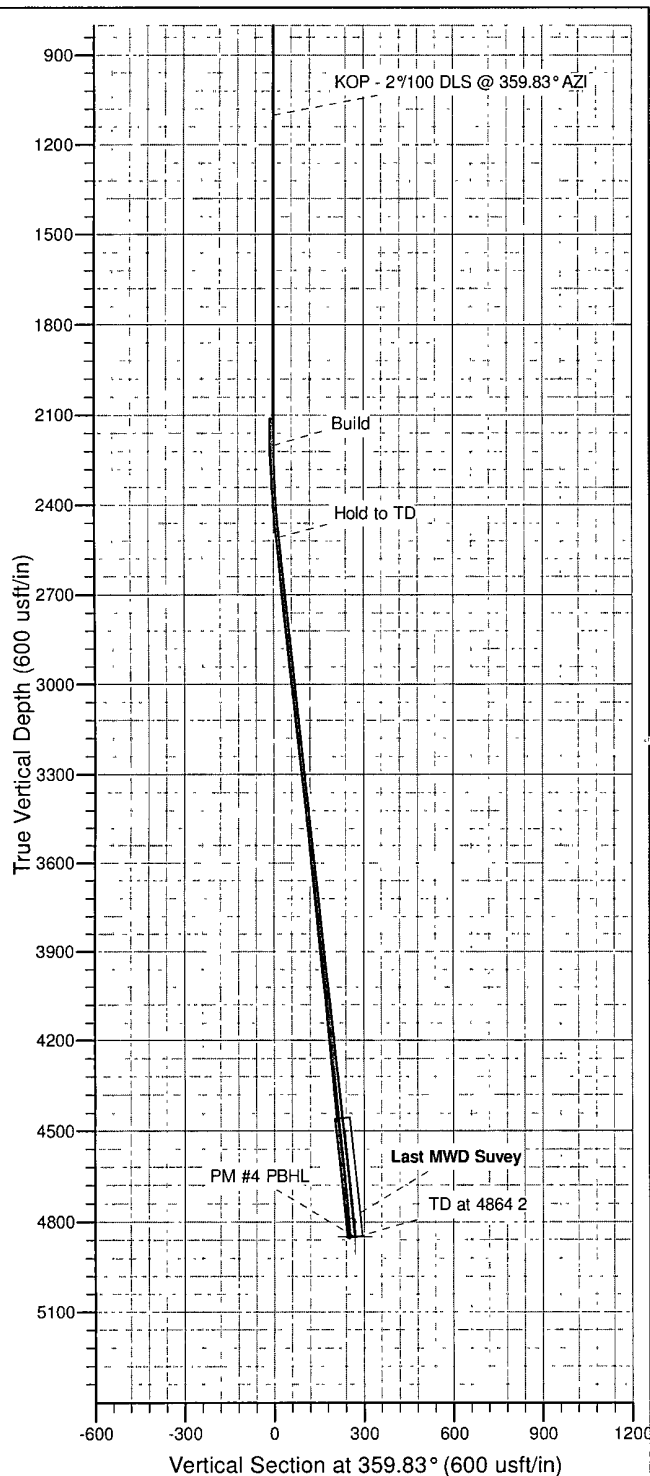
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
1100 0	0.00	0.00	1100 0	0.0	0.0	0.00	0.00	0.0	
2200 0	0.00	0.00	2200 0	0.0	0.0	0.00	0.00	0.0	
2508.6	6.17	359.83	2508.0	16.6	0.0	2.00	359.83	16.6	
4864.2	6.17	359.83	4850.0	269.8	-0.8	0.00	0.00	269.8	PM #4 PBHL

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Departure	Annotation
1100 0	1100 0	0.00	0.00	0.0	0.0	0.0	0.0	KOP - 2°/100 DLS @ 359.83° AZI
2200.0	2200.0	0.00	0.00	0.0	0.0	0.0	0.0	Build
2508.0	2508.6	6.17	359.83	16.6	0.0	16.6	16.6	Hold to TD
4850.0	4864.2	6.17	359.83	269.8	-0.8	269.8	269.8	TD at 4864.2

25' Target Radius



Cimarex Energy Co. (Midland)

Eddy County (NM83E)

Sec 18-T17S-R29E

Pere Marquette 18 Fed #4

Wellbore #1

Survey: Survey #1

Standard Survey Report

19 October, 2011

Great White Directional Services

Survey Report

Company:	Cimarex Energy Co. (Midland)	Local Co-ordinate Reference:	Well Pere Marquette 18 Fed #4
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 18-T17S-R29E	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Pere Marquette 18 Fed #4	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 18-T17S-R29E				
Site Position:		Northing:	669,464.80 usft	Latitude:	32° 50' 24.712 N
From:	Map	Easting:	607,648.10 usft	Longitude:	104° 7' 2.741 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.12 °

Well		Pere Marquette 18 Fed #4				
Well Position	+N/-S	0.0 usft	Northing:	669,464.80 usft	Latitude:	32° 50' 24.658 N
	+E/-W	0.0 usft	Easting:	610,290.50 usft	Longitude:	104° 6' 31.769 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	0.0 usft

Wellbore					
Wellbore, #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/04/11	7.85	60.66	48,923

Design:	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	359.83	

Survey Program:		Date:	10/19/11		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
2,115.9	4,864.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,115.9	0.15	97.60	2,115.7	-10.5	13.7	-10.5	0.00	0.00	0.00
2,158.0	0.40	1.30	2,157.8	-10.4	13.7	-10.4	1.05	0.59	-228.74
2,189.0	0.70	18.80	2,188.8	-10.1	13.8	-10.1	1.10	0.97	56.45
2,221.0	2.90	6.30	2,220.8	-9.1	13.9	-9.1	6.94	6.88	-39.06
2,252.0	4.20	3.50	2,251.8	-7.2	14.1	-7.2	4.23	4.19	-9.03
2,284.0	4.10	359.90	2,283.7	-4.9	14.2	-4.9	0.87	-0.31	-11.25
2,316.0	3.90	357.20	2,315.6	-2.6	14.1	-2.7	0.86	-0.63	-8.44
2,347.0	3.60	351.50	2,346.5	-0.6	13.9	-0.7	1.54	-0.97	-18.39
2,379.0	3.60	353.10	2,378.5	1.4	13.6	1.3	0.31	0.00	5.00
2,410.0	4.30	353.60	2,409.4	3.5	13.4	3.5	2.26	2.26	1.61

Great White Directional Services

Survey Report

Company:	Cimarex Energy Co. (Midland)	Local Co-ordinate Reference:	Well: Pere Marquette 18 Fed #4
Project:	Eddy County (NM83E)	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Sec 18-T17S-R29E	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Pere Marquette 18 Fed #4	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,441.0	5.30	358.20	2,440.3	6.1	13.2	6.0	3.45	3.23	14.84
2,473.0	5.90	1.40	2,472.1	9.2	13.2	9.2	2.11	1.88	10.00
2,504.0	5.80	358.80	2,503.0	12.4	13.2	12.3	0.91	-0.32	-8.39
2,567.0	5.70	359.80	2,565.7	18.7	13.1	18.6	0.22	-0.16	1.59
2,662.0	5.70	356.00	2,660.2	28.1	12.8	28.1	0.40	0.00	-4.00
2,756.0	5.40	358.90	2,753.7	37.2	12.4	37.1	0.44	-0.32	3.09
2,850.0	6.30	353.60	2,847.3	46.7	11.7	46.7	1.12	0.96	-5.64
2,945.0	6.50	351.20	2,941.7	57.2	10.3	57.2	0.35	0.21	-2.53
3,040.0	6.50	352.30	3,036.1	67.9	8.8	67.8	0.13	0.00	1.16
3,134.0	6.70	351.30	3,129.4	78.6	7.2	78.5	0.25	0.21	-1.06
3,228.0	6.20	354.50	3,222.8	89.0	5.9	89.0	0.65	-0.53	3.40
3,323.0	6.30	356.70	3,317.3	99.3	5.1	99.3	0.27	0.11	2.32
3,416.0	6.10	355.10	3,409.7	109.4	4.4	109.3	0.28	-0.22	-1.72
3,511.0	6.10	356.30	3,504.2	119.4	3.7	119.4	0.13	0.00	1.26
3,606.0	5.70	354.00	3,598.7	129.2	2.8	129.1	0.49	-0.42	-2.42
3,700.0	5.60	352.10	3,692.2	138.3	1.7	138.3	0.23	-0.11	-2.02
3,794.0	5.70	350.90	3,785.8	147.5	0.3	147.5	0.16	0.11	-1.28
3,888.0	5.60	354.80	3,879.3	156.7	-0.8	156.7	0.42	-0.11	4.15
3,983.0	5.70	356.10	3,973.9	166.0	-1.5	166.0	0.17	0.11	1.37
4,078.0	5.70	357.50	4,068.4	175.4	-2.1	175.4	0.15	0.00	1.47
4,173.0	5.60	358.90	4,162.9	184.8	-2.4	184.8	0.18	-0.11	1.47
4,268.0	5.60	359.40	4,257.5	194.0	-2.5	194.0	0.05	0.00	0.53
4,363.0	5.50	1.90	4,352.0	203.2	-2.4	203.2	0.28	-0.11	2.63
4,457.0	5.20	2.20	4,445.6	212.0	-2.1	212.0	0.32	-0.32	0.32
4,551.0	5.90	5.00	4,539.2	221.0	-1.5	221.0	0.80	0.74	2.98
4,645.0	5.90	358.80	4,632.7	230.7	-1.2	230.7	0.68	0.00	-6.60
4,739.0	5.20	359.90	4,726.2	239.8	-1.3	239.8	0.75	-0.74	1.17
4,807.0	4.50	355.00	4,794.0	245.5	-1.5	245.5	1.20	-1.03	-7.21
Last MWD Survey									
4,864.0	4.50	355.00	4,850.8	250.0	-1.9	250.0	0.00	0.00	0.00
Projection to Bit - PM #4 PBHL									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,807.0	4,794.0	245.5	-1.5	Last MWD Survey
4,864.0	4,850.8	250.0	-1.9	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____