



Cimarex Energy Co., Inc.

Ward Co., Texas

Cimarex-University 18-38 #2H

Cimarex-University 18-38 #2H

Lateral

Survey: MWD Survey #1

Standard Survey Report

05 December, 2007





Black Viper Energy

Survey Report



Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well Cimarex-University 18-38 #2H
Project:	Ward Co., Texas	TVD Reference:	Rig KB @ 2812.00ft (Key Rig #92 KB Elev)
Site:	Cimarex-University 18-38 #2H	MD Reference:	Rig KB @ 2812.00ft (Key Rig #92 KB Elev)
Well:	Cimarex-University 18-38 #2H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 2003.14.1.0 Server DB

Project	Ward Co., Texas		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Texas Central 4203		

Site	Cimarex-University 18-38 #2H			
Site Position:		Northing:	715,197.40 ft	Latitude: 31° 35' 55.942 N
From:	Map	Easting:	1,070,805.16 ft	Longitude: 103° 19' 5.350 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence: -1.54 °

Well	Cimarex-University 18-38 #2H			
Well Position	+N/-S	0.00 ft	Northing:	715,197.40 ft
	+E/-W	0.00 ft	Easting:	1,070,805.16 ft
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft
			Ground Level:	2,796.00 ft

Wellbore	Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/20/2007	7.84	59.74	48,648

Design	Lateral			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 11,200.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	218.33

Survey Program	Date	12/05/2007			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	11,200.00	Gyro Survey (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s	
11,200.00	11,475.00	MWD Survey #1 (Lateral)	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)
11,200.00	0.64	207.55	11,195.39	-13.99	-31.51	30.51	0.00	0.00	0.00
11,313.00	19.70	218.50	11,306.10	-29.60	-43.77	50.36	16.88	16.87	9.69
First MWD Survey									
11,356.00	30.80	226.50	11,344.94	-42.89	-56.31	68.57	26.95	25.81	18.60
11,366.00	32.30	223.00	11,353.47	-46.61	-59.99	73.77	23.67	15.00	-35.00
11,376.00	34.80	220.10	11,361.80	-50.75	-63.65	79.28	29.69	25.00	-29.00
11,388.00	37.60	218.70	11,371.48	-56.23	-68.14	86.37	24.33	23.33	-11.67
11,398.00	40.30	219.40	11,379.26	-61.11	-72.10	92.65	27.36	27.00	7.00
11,408.00	43.10	220.30	11,386.72	-66.21	-76.37	99.30	28.63	28.00	9.00
11,418.00	45.50	221.60	11,393.88	-71.49	-80.95	106.28	25.66	24.00	13.00
11,428.00	47.80	223.00	11,400.74	-76.86	-85.84	113.53	25.15	23.00	14.00



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Site:	Cimarex-University 18-38 #2H	MD Reference:	Rig KB @ 2812.00ft (Key Rig #92 KB Elev)
Well:	Cimarex-University 18-38 #2H	North Reference:	Grid
Wellbore:	Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Lateral	Database:	EDM 2003.14.1.0 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)
11,438.00	50.40	223.40	11,407.29	-82.37	-91.01	121.06	26.18	26.00	4.00
Last MWD Survey									
11,475.00	60.02	222.00	11,428.38	-104.69	-111.58	151.32	26.18	26.00	-3.78
Proj. To Bit									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
z1	0.00	0.00	0.00	0.00	0.00	715,197.40	1,070,805.16	31° 35' 55.942 N	103° 19' 5.350 W
- survey misses by 11195.44ft at 11200.00ft MD (11195.39 TVD, -13.99 N, -31.51 E)									
- Point									
PBHL#1[CU18-38#2H]	0.00	0.00	11,398.87	-3,286.64	-2,598.03	711,910.76	1,068,207.13	31° 35' 22.735 N	103° 19' 34.357 W
- survey misses by 4038.33ft at 11475.00ft MD (11428.38 TVD, -104.69 N, -111.58 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,313.00	11,306.10	-29.60	-43.77	First MWD Survey	
11,438.00	11,407.29	-82.37	-91.01	Last MWD Survey	
11,475.00	11,428.38	-104.69	-111.58	Proj. To Bit	

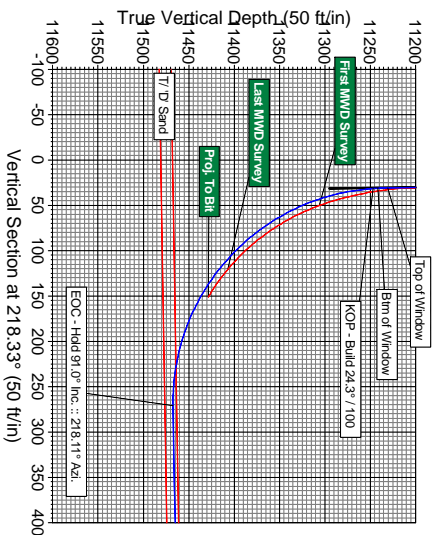
Checked By: _____ Approved By: _____ Date: _____



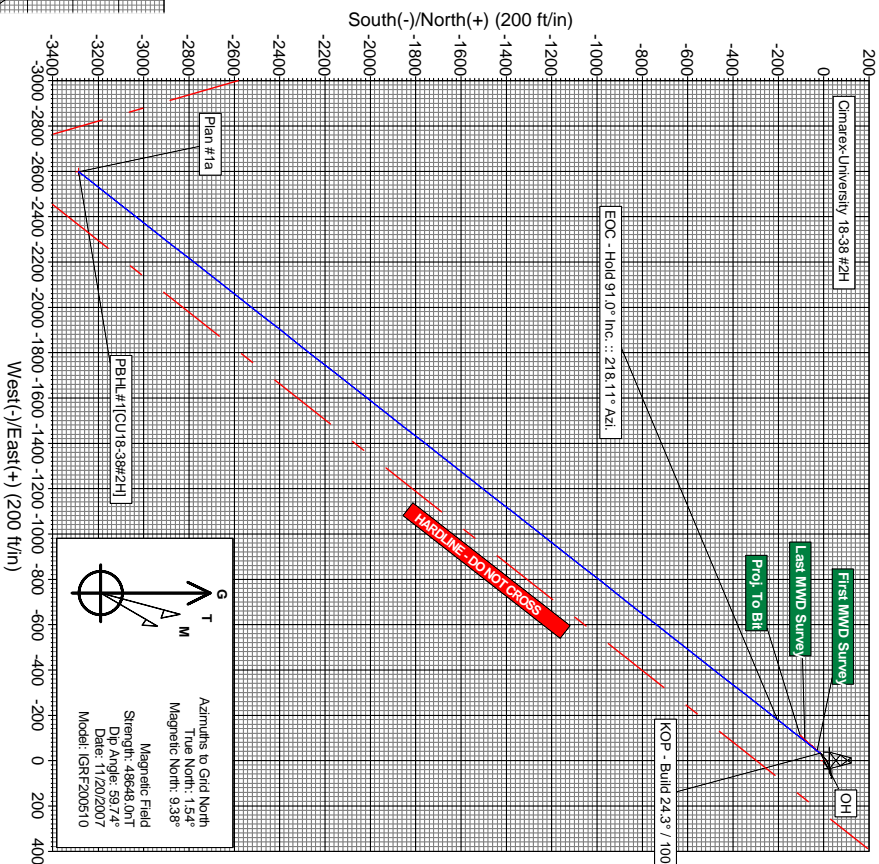
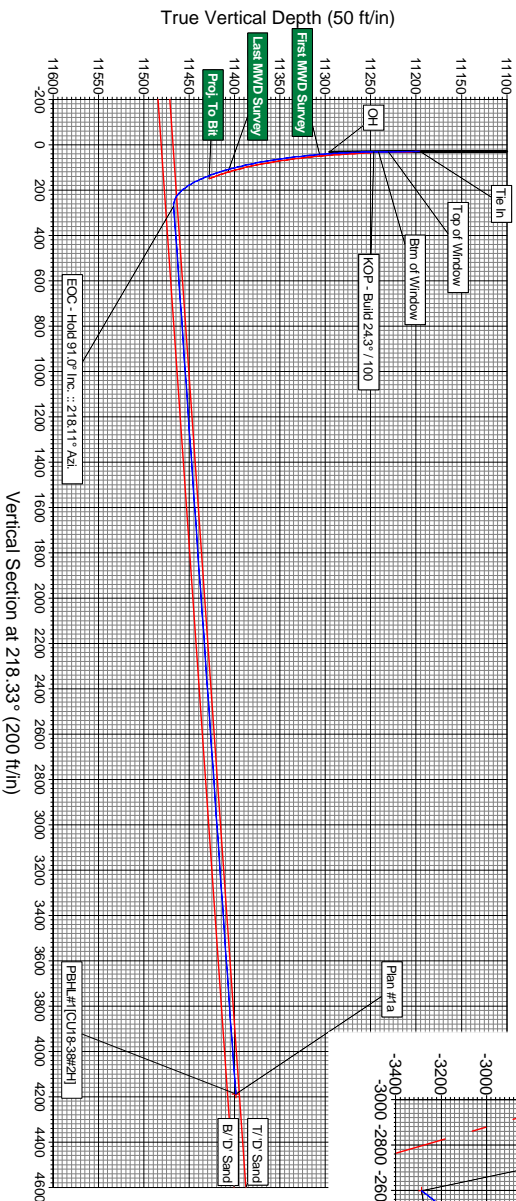
Project: Ward Co., Texas
Site: Cimarex-University 18-38 #2H
Well: Cimarex-University 18-38 #2H
Wellbore: Latera
Plan: Plan #1a (Cimarex-University 18-38 #2H/Laterra)



SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	N/S	E/W	DLg	Trace	VSec	Target	
1	11200.00	0.64	207.85	11195.39	-13.99	-31.51	0.00	0.00	30.51		
2	11235.02	0.57	207.88	11230.41	-14.35	-31.65	0.35	-128.53	30.87		
3	11246.12	3.84	218.11	11241.40	-14.69	-32.08	28.03	23.66	31.29		
4	11250.63	91.00	218.11	11467.27	-203.30	-179.84	24.30	0.00	271.01		
5	11520.63	91.00	218.11	11398.67	-326.64	-2598.03	0.00	0.00	4169.48		
6	15529.72	91.00	218.11	11398.67	-326.64	-2598.03	0.00	0.00	4169.48		



PROJECT DETAILS: Ward Co., Texas
Geodetic System: US State Plane 1827 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Zone: Texas Central 4203
Ellipsoid: Clarke 1886
System Datum: Mean Sea Level

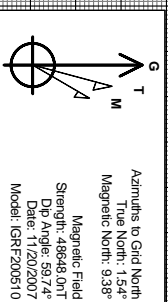


CIMAREX-UNIVERSITY 18-38 #2H

1a

Plan: Plan #1a (Cimarex-University 18-38 #2H/Laterra)
Created By: LD Burton Date: November 23, 2007

ANNOTATIONS
TVD MD Annotation
11195.39 11200.00 Tie In
11230.41 11235.02 Top of Window
11241.50 11246.12 Bin of Window
11246.49 11251.12 KOP - Build 24.3° / 100
11467.27 11610.63 EOC - Hold 91.0° Inc.: 218.11° Azi



Cimarex-University 18-38 #2H - MWD Survey #1

Company: Cimarex Energy Co., Inc.
Survey / Plan: Cimarex-University 18-38 #2H - MWD Survey #1
Wellbore Type: Horizontal
County: Ward Co., Texas
Well Name: Cimarex-University 18-38 #2H



	Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	
Reference	0	0	0	0	0	0	0	0	
Tie In	11200	0.638	207.549	11195.39	-13.99	-31.51	30.51	0	Gyro
First MWD Survey	11313	19.7	218.5	11306.1	-29.6	-43.77	50.36	16.88	
	11356	30.8	226.5	11344.94	-42.89	-56.31	68.57	26.95	
	11366	32.3	223	11353.47	-46.61	-59.99	73.77	23.67	
	11376	34.8	220.1	11361.8	-50.75	-63.65	79.28	29.69	
	11388	37.6	218.7	11371.48	-56.23	-68.14	86.37	24.33	
	11398	40.3	219.4	11379.26	-61.11	-72.1	92.65	27.36	
	11408	43.1	220.3	11386.72	-66.21	-76.37	99.3	28.63	
	11418	45.5	221.6	11393.88	-71.49	-80.95	106.28	25.66	
	11428	47.8	223	11400.74	-76.86	-85.84	113.53	25.15	
Last MWD Survey	11438	50.4	223.4	11407.29	-82.37	-91.01	121.06	26.18	
Proj. To Bit	11475	60.02	222	11428.38	-104.69	-111.58	151.32	26.18	

**All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
 Vertical depths are relative to Rig KB. Northings and Eastings are relative to Well.**

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Site and calculated along an Azimuth of 218.326° (Grid).

Coordinate System is NAD 1927 (NADCON CONUS) US State Plane 1927 (Exact solution), Texas Central 4203.

Central meridian is -100.333°.

Grid Convergence at Surface is -1.537°.

**Based upon Minimum Curvature type calculations, at a Measured Depth of 11475.00ft.,
 the Bottom Hole Displacement is 153.00ft., in the Direction of 218.326° (Grid).**

Cimarex-University 18-38 #2H - MWD Survey #1