



Devon Energy

Lea Co., New Mexico (Nad 83)

Cockburn Fed #4H

Cockburn Fed #4H

Lateral #1

Plan: Design #1

Standard Survey Report

09 June, 2010

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CUDD Drilling & Measurement Services

Survey Report



Company:	Devon Energy	Local Co-ordinate Reference:	Site Cockburn Fed #4H
Project:	Lea Co., New Mexico (Nad 83)	TVD Reference:	WELL @ 3973.00ft (Original Well Elev)
Site:	Cockburn Fed #4H	MD Reference:	WELL @ 3973.00ft (Original Well Elev)
Well:	Cockburn Fed #4H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	EDM 2003.21 Single User Db

Project:	Lea Co., New Mexico (Nad 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Cockburn Fed #4H, Sec 10, T-18S, R-33E		
Site Position:	Map	Northings:	639,685.67 ft
From:		Easting:	750,463.47 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 45' 24.066 N
		Longitude:	103° 39' 11.045 W
		Grid Convergence:	0.37 °

Well	Cockburn Fed #4H					
Well Position	+N/-S	0.00 ft	Northing:	639,685.67 ft	Latitude:	32° 45' 24.066 N
	+E/-W	0.00 ft	Easting:	750,463.47 ft	Longitude:	103° 39' 11.045 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	3,973.00 ft	Ground Level:	3,955.00 ft

Wellbore:	Lateral #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	06/09/10	7.77	60.71	49,058

Design:	Design #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	0.00	

Survey Tool Program:	Date 06/09/10				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,600.00	Design #1 (Lateral #1)	NS-GYRO-MS	North sensing gyrocompassing m/s	
8,600.00	12,983.26	Design #1 (Lateral #1)	CUDD MWD	MWD - Standard CUDD MWD	

Planned 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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,548.00	0.00	0.00	1,548.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler Dol.										
1,778.00	0.00	0.00	1,778.00	0.00	0.00	0.00	0.00	0.00	0.00	
Salado Salt										
2,899.00	0.00	0.00	2,899.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tansil Dol										
3,008.00	0.00	0.00	3,008.00	0.00	0.00	0.00	0.00	0.00	0.00	
Yates SS										
3,490.00	0.00	0.00	3,490.00	0.00	0.00	0.00	0.00	0.00	0.00	
Seven Rivers										



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Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
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Planned 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)	
4,250.00	0.00	0.00	4,250.00	0.00	0.00	0.00	0.00	0.00	0.00	
Queen SS										
4,318.00	0.00	0.00	4,318.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grayburg										
5,059.00	0.00	0.00	5,059.00	0.00	0.00	0.00	0.00	0.00	0.00	
Cherry Canyon										
5,982.00	0.00	0.00	5,982.00	0.00	0.00	0.00	0.00	0.00	0.00	
Brushy Canyon										
6,879.00	0.00	0.00	6,879.00	0.00	0.00	0.00	0.00	0.00	0.00	
1st BS LM										
8,271.00	0.00	0.00	8,271.00	0.00	0.00	0.00	0.00	0.00	0.00	
1st BS SS										
8,549.00	0.00	0.00	8,549.00	0.00	0.00	0.00	0.00	0.00	0.00	
2nd BS LM										
8,690.56	0.00	0.00	8,690.56	0.00	0.00	0.00	0.00	0.00	0.00	
KOP - Build 10°/100'										
8,904.65	21.41	0.00	8,899.71	39.54	0.00	39.54	10.00	10.00	0.00	
2nd BS SS										
9,623.76	93.32	0.00	9,262.56	606.14	0.00	606.14	10.00	10.00	0.00	
EOC - Hold i:93.32° @ A:0.00°										
12,983.26	93.32	0.00	9,068.00	3,960.00	0.00	3,960.00	0.00	0.00	0.00	
PBHL - TD (CF#4H)										

Design 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										
PBHL - TD (CF#4H)	0.00	0.00	9,068.00	3,960.00	0.00	643,645.66	750,463.47	32° 46' 3.249 N		103° 39' 10.747 W
- plan hits target center										
- Point										



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Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,548.00	1,548.00	Rustler Dol.		-3.32		
1,778.00	1,778.00	Salado Salt		-3.32		
2,899.00	2,899.00	Tansil Dol		-3.32		
3,008.00	3,008.00	Yates SS		-3.32		
3,490.00	3,490.00	Seven Rivers		-3.32		
4,250.00	4,250.00	Queen SS		-3.32		
4,318.00	4,318.00	Grayburg		-3.32		
5,059.00	5,059.00	Cherry Canyon		-3.32		
5,982.00	5,982.00	Brushy Canyon		-3.32		
6,879.00	6,879.00	1st BS LM		-3.32		
8,271.00	8,271.00	1st BS SS		-3.32		
8,549.00	8,549.00	2nd BS LM		-3.32		
8,904.65	8,902.00	2nd BS SS		-3.32		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
8,690.56	8,690.56	0.00	0.00	KOP - Bul;d 10"/100'	
9,623.76	9,262.56	606.14	0.00	EOC - Hold 1:93 32* @ A:0.00*	

Checked By: _____	Approved By: _____	Date: _____
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