

30-025-40376



HOBBS OCD

DEC 19 2011

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Mack Energy

Lea County

Diamond Rock State

#1

OH

Plan: Plan #1

Pathfinder X & Y Report

14 December, 2011

PATHFINDER®

A Schlumberger Company

DEC 19 2011



Pathfinder
Pathfinder X & Y Report

PATHFINDER
A Schlumberger Company

Company: Mack Energy
Project: Lea County
Site: Diamond Rock State
Well: #1
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #1
TVD Reference: KB = 17.5 @ 3956.5usft (Original Well Elev)
MD Reference: KB = 17.5 @ 3956.5usft (Original Well Elev)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Lea County		
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	Diamond Rock State		
Site Position:		Northing:	648,175.400 usft
From:	Map	Easting:	768,308.700 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 46' 43.980 N
		Longitude:	103° 27' 37.298 W
		Grid Convergence:	0.47 "

Well	#1		
Well Position	+N/-S 0.0 usft	Northing:	648,175.400 usft
	+E/-W 0.0 usft	Easting:	768,308.700 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 46' 43.980 N
		Longitude:	103° 27' 37.298 W
		Ground Level:	3,939.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/14/2011	7.50	60.73	48,946

Design	Plan #1			
Audit Notes:				
Version:		Phase:	PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	312.94

Survey Tool Program	Date 12/14/2011			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	7,509.6	Plan #1 (OH)	MWD	MWD - Standard



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Database: EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	-3,956.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
100.0	0.00	0.00	100.0	-3,856.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
200.0	0.00	0.00	200.0	-3,756.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
300.0	0.00	0.00	300.0	-3,656.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
400.0	0.00	0.00	400.0	-3,556.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
500.0	0.00	0.00	500.0	-3,456.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
600.0	0.00	0.00	600.0	-3,356.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
700.0	0.00	0.00	700.0	-3,256.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
800.0	0.00	0.00	800.0	-3,156.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
900.0	0.00	0.00	900.0	-3,056.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,000.0	0.00	0.00	1,000.0	-2,956.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,100.0	0.00	0.00	1,100.0	-2,856.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,200.0	0.00	0.00	1,200.0	-2,756.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,300.0	0.00	0.00	1,300.0	-2,656.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,400.0	0.00	0.00	1,400.0	-2,556.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,500.0	0.00	0.00	1,500.0	-2,456.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,600.0	0.00	0.00	1,600.0	-2,356.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,700.0	0.00	0.00	1,700.0	-2,256.5	0.0	0.0	0.0	0.00	648,175.40	768,308.70
1,800.0	2.00	312.94	1,800.0	-2,156.5	1.2	-1.3	1.7	2.00	648,176.59	768,307.42
1,900.0	4.00	312.94	1,899.8	-2,056.7	4.8	-5.1	7.0	2.00	648,180.15	768,303.59
1,932.6	4.65	312.94	1,932.4	-2,024.1	6.4	-6.9	9.4	2.00	648,181.83	768,301.79
2,000.0	4.65	312.94	1,999.5	-1,957.0	10.2	-10.9	14.9	0.00	648,185.55	768,297.79
2,100.0	4.65	312.94	2,099.2	-1,857.3	15.7	-16.9	23.0	0.00	648,191.08	768,291.85
2,200.0	4.65	312.94	2,198.9	-1,757.6	21.2	-22.8	31.1	0.00	648,196.60	768,285.91
2,300.0	4.65	312.94	2,298.5	-1,658.0	26.7	-28.7	39.2	0.00	648,202.13	768,279.97
2,400.0	4.65	312.94	2,398.2	-1,558.3	32.3	-34.7	47.4	0.00	648,207.66	768,274.03
2,500.0	4.65	312.94	2,497.9	-1,458.6	37.8	-40.6	55.5	0.00	648,213.18	768,268.09



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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2,600.0	4.65	312.94	2,597.5	-1,359.0	43.3	-46.5	63.6	0.00	648,218.71	768,262.16
2,700.0	4.65	312.94	2,697.2	-1,259.3	48.8	-52.5	71.7	0.00	648,224.23	768,256.22
2,800.0	4.65	312.94	2,796.9	-1,159.6	54.4	-58.4	79.8	0.00	648,229.76	768,250.28
2,900.0	4.65	312.94	2,896.6	-1,059.9	59.9	-64.4	87.9	0.00	648,235.28	768,244.34
3,000.0	4.65	312.94	2,996.2	-960.3	65.4	-70.3	96.0	0.00	648,240.81	768,238.40
3,100.0	4.65	312.94	3,095.9	-860.6	70.9	-76.2	104.1	0.00	648,246.33	768,232.46
3,200.0	4.65	312.94	3,195.6	-760.9	76.5	-82.2	112.2	0.00	648,251.86	768,226.52
3,300.0	4.65	312.94	3,295.2	-661.3	82.0	-88.1	120.4	0.00	648,257.39	768,220.58
3,400.0	4.65	312.94	3,394.9	-561.6	87.5	-94.1	128.5	0.00	648,262.91	768,214.64
3,500.0	4.65	312.94	3,494.6	-461.9	93.0	-100.0	136.6	0.00	648,268.44	768,208.71
3,600.0	4.65	312.94	3,594.2	-362.3	98.6	-105.9	144.7	0.00	648,273.96	768,202.77
3,700.0	4.65	312.94	3,693.9	-262.6	104.1	-111.9	152.8	0.00	648,279.49	768,196.83
3,800.0	4.65	312.94	3,793.6	-162.9	109.6	-117.8	160.9	0.00	648,285.01	768,190.89
3,900.0	4.65	312.94	3,893.3	-63.2	115.1	-123.7	169.0	0.00	648,290.54	768,184.95
4,000.0	4.65	312.94	3,992.9	36.4	120.7	-129.7	177.1	0.00	648,296.07	768,179.01
4,100.0	4.65	312.94	4,092.6	136.1	126.2	-135.6	185.3	0.00	648,301.59	768,173.07
4,200.0	4.65	312.94	4,192.3	235.8	131.7	-141.6	193.4	0.00	648,307.12	768,167.13
4,300.0	4.65	312.94	4,291.9	335.4	137.2	-147.5	201.5	0.00	648,312.64	768,161.20
4,400.0	4.65	312.94	4,391.6	435.1	142.8	-153.4	209.6	0.00	648,318.17	768,155.26
4,500.0	4.65	312.94	4,491.3	534.8	148.3	-159.4	217.7	0.00	648,323.69	768,149.32
4,600.0	4.65	312.94	4,591.0	634.5	153.8	-165.3	225.8	0.00	648,329.22	768,143.38
4,676.9	4.65	312.94	4,667.6	711.1	158.1	-169.9	232.1	0.00	648,333.47	768,138.81
4,700.0	4.19	312.94	4,690.6	734.1	159.3	-171.2	233.8	2.00	648,334.68	768,137.51
4,800.0	2.19	312.94	4,790.5	834.0	163.1	-175.3	239.4	2.00	648,338.47	768,133.43
4,909.6	0.00	0.00	4,900.0	943.5	164.5	-176.8	241.5	2.00	648,339.90	768,131.90
5,000.0	0.00	0.00	4,990.4	1,033.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90
5,100.0	0.00	0.00	5,090.4	1,133.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90



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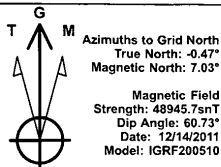
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Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
5,200.0	0.00	0.00	5,190.4	1,233.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,300.0	0.00	0.00	5,290.4	1,333.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,400.0	0.00	0.00	5,390.4	1,433.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,500.0	0.00	0.00	5,490.4	1,533.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,600.0	0.00	0.00	5,590.4	1,633.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,700.0	0.00	0.00	5,690.4	1,733.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,800.0	0.00	0.00	5,790.4	1,833.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
5,900.0	0.00	0.00	5,890.4	1,933.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,000.0	0.00	0.00	5,990.4	2,033.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,100.0	0.00	0.00	6,090.4	2,133.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,200.0	0.00	0.00	6,190.4	2,233.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,300.0	0.00	0.00	6,290.4	2,333.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,400.0	0.00	0.00	6,390.4	2,433.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,500.0	0.00	0.00	6,490.4	2,533.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,600.0	0.00	0.00	6,590.4	2,633.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,700.0	0.00	0.00	6,690.4	2,733.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,800.0	0.00	0.00	6,790.4	2,833.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
6,900.0	0.00	0.00	6,890.4	2,933.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,000.0	0.00	0.00	6,990.4	3,033.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,100.0	0.00	0.00	7,090.4	3,133.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,200.0	0.00	0.00	7,190.4	3,233.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,300.0	0.00	0.00	7,290.4	3,333.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,400.0	0.00	0.00	7,390.4	3,433.9	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	
7,509.6	0.00	0.00	7,500.0	3,543.5	164.5	-176.8	241.5	0.00	648,339.90	768,131.90	

Checked By: _____ Approved By: _____ Date: _____

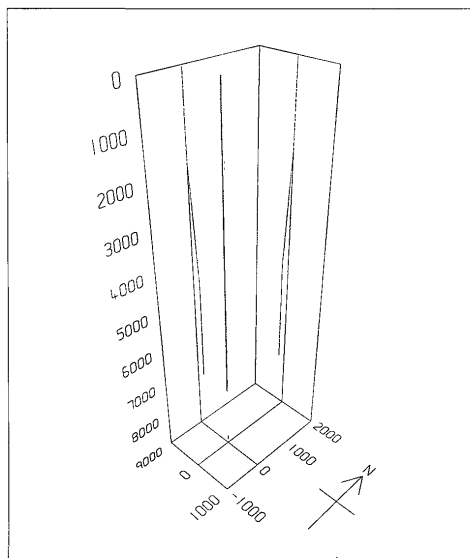
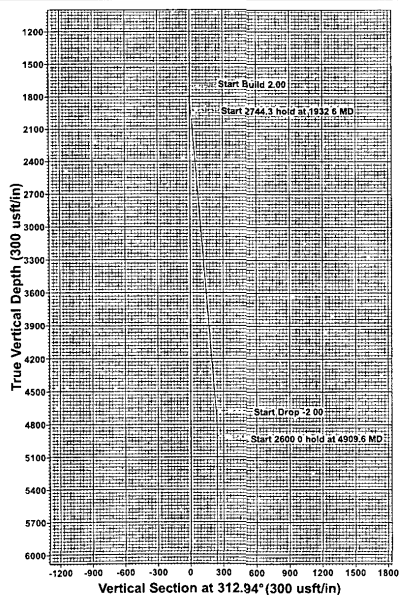
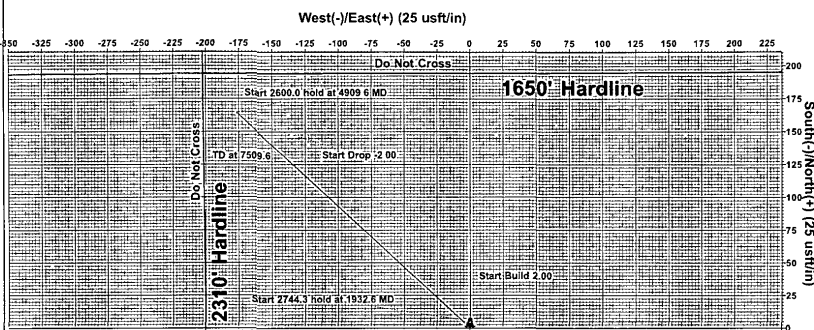


PATHFINDER®

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Project: Lea County
Site: Diamond Rock State
Well: #1
Wellbore: OH
Plan: Plan #1 (#1/OH)

PROJECT DETAILS: Lea County
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
Local North: Grid



WELL DETAILS: #1						
Ground Elevation 3939.0						
RKB Elevation KB = 17.5 @ 3956.5usft (Original Well Elev)						
Rig Name Original Well Elev						
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	648175.400	768309.700	32°46'43.980 N	103°27'37.298 W	

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
2	1700.0	0.00	0.00	1700.0	0.0	0.0	0.00	0.00	0.0
3	1932.6	4.65	312.94	1932.4	6.4	-6.9	2.00	312.94	9.4
4	4676.9	4.65	312.94	4667.6	159.1	-169.9	0.00	0.00	232.1
5	4909.6	0.00	0.00	4900.0	164.5	-176.8	2.00	180.00	241.5
6	7509.6	0.00	0.00	7500.0	164.5	-176.8	0.00	0.00	241.5 BHL (DR State #1)

DESIGN TARGET DETAILS					
Name	TVD	+N-S	+E-W	Northing	Easting
BHL (DR State #1)	7500.0	164.5	-176.8	648339.900	768131.900

Plan: Plan #1 (#1/OH)				Wellbore
Created By	Michael Trout	Date	17.15, December 14 2011	Original Plan Elev
Checked		Date		Plan #1