



30-005-29085

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HOBBSOCD

Mack Energy

Chaves County

Jerry State #2

Jerry State #2

OH

Plan: Plan #1

Pathfinder X & Y Survey Report

19 March, 2009

PATHFINDER



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Mack Energy	Local Co-ordinate Reference: Well Jerry State #2
Project: Chaves County	TVD Reference: WELL @ 4420.00ft (Original Well Elev)
Site: Jerry State #2	MD Reference: WELL @ 4420.00ft (Original Well Elev)
Well: Jerry State #2	North Reference: Grid
Wellbore: OH	Survey Calculation Method: Minimum Curvature
Design: Plan #1	Database: EDM 2003.16 Single User Db

Project Chaves 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		Jerry State #2			
Site Position:		Northing:	726,054.200 ft	Latitude:	32° 59' 41.970 N
From:	Map	Easting:	653,142.500 ft	Longitude:	103° 50' 1.862 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.27 °

Well° Jerry State #2						
Well Position	+N-S	0.00 ft	Northing:	726,054.200 ft	Latitude:	32° 59' 41.970 N
	+E-W	0.00 ft	Easting:	653,142.500 ft	Longitude:	103° 50' 1.862 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,420.00 ft

Wellbore						OH									
Magnetics		Model Name		Sample Date		Declination (°)		Dip Angle (°)		Field Strength (nT)					
		IGRF200510		3/19/2009		8.02		60.92		49,295					

Design					Plan #1				
Audit Notes:									
Version:		Phase:		PLAN		Tie On Depth:		0.00	
Vertical Section:		Depth From (TVD)		+N/-S		+E/-W		Direction	
		(ft)		(ft)		(ft)		(")	
		0.00		0.00		0.00		89.74	

Survey Tool Program					Date 3/19/2009
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	13,185.09	Plan #1 (OH)	MWD	MWD - Standard	



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MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg ("/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-4,420.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
100.00	0.00	0.00	100.00	-4,320.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
200.00	0.00	0.00	200.00	-4,220.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
300.00	0.00	0.00	300.00	-4,120.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
400.00	0.00	0.00	400.00	-4,020.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
500.00	0.00	0.00	500.00	-3,920.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
600.00	0.00	0.00	600.00	-3,820.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
700.00	0.00	0.00	700.00	-3,720.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
800.00	0.00	0.00	800.00	-3,620.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
900.00	0.00	0.00	900.00	-3,520.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,000.00	0.00	0.00	1,000.00	-3,420.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,100.00	0.00	0.00	1,100.00	-3,320.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,200.00	0.00	0.00	1,200.00	-3,220.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,300.00	0.00	0.00	1,300.00	-3,120.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,400.00	0.00	0.00	1,400.00	-3,020.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,500.00	0.00	0.00	1,500.00	-2,920.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,600.00	0.00	0.00	1,600.00	-2,820.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,700.00	0.00	0.00	1,700.00	-2,720.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,800.00	0.00	0.00	1,800.00	-2,620.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
1,900.00	0.00	0.00	1,900.00	-2,520.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,000.00	0.00	0.00	2,000.00	-2,420.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,100.00	0.00	0.00	2,100.00	-2,320.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,200.00	0.00	0.00	2,200.00	-2,220.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,300.00	0.00	0.00	2,300.00	-2,120.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,400.00	0.00	0.00	2,400.00	-2,020.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,500.00	0.00	0.00	2,500.00	-1,920.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,600.00	0.00	0.00	2,600.00	-1,820.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50



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2,700.00	0.00	0.00	2,700.00	-1,720.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,800.00	0.00	0.00	2,800.00	-1,620.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
2,900.00	0.00	0.00	2,900.00	-1,520.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,000.00	0.00	0.00	3,000.00	-1,420.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,100.00	0.00	0.00	3,100.00	-1,320.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,200.00	0.00	0.00	3,200.00	-1,220.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,300.00	0.00	0.00	3,300.00	-1,120.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,400.00	0.00	0.00	3,400.00	-1,020.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,500.00	0.00	0.00	3,500.00	-920.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,600.00	0.00	0.00	3,600.00	-820.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,700.00	0.00	0.00	3,700.00	-720.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,800.00	0.00	0.00	3,800.00	-620.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
3,900.00	0.00	0.00	3,900.00	-520.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,000.00	0.00	0.00	4,000.00	-420.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,100.00	0.00	0.00	4,100.00	-320.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,200.00	0.00	0.00	4,200.00	-220.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,300.00	0.00	0.00	4,300.00	-120.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,400.00	0.00	0.00	4,400.00	-20.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,500.00	0.00	0.00	4,500.00	80.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,600.00	0.00	0.00	4,600.00	180.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,700.00	0.00	0.00	4,700.00	280.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,800.00	0.00	0.00	4,800.00	380.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
4,900.00	0.00	0.00	4,900.00	480.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,000.00	0.00	0.00	5,000.00	580.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,100.00	0.00	0.00	5,100.00	680.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,200.00	0.00	0.00	5,200.00	780.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,300.00	0.00	0.00	5,300.00	880.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50



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MD (ft)	Inc (")	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,400.00	0.00	0.00	5,400.00	980.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,500.00	0.00	0.00	5,500.00	1,080.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,600.00	0.00	0.00	5,600.00	1,180.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,700.00	0.00	0.00	5,700.00	1,280.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,800.00	0.00	0.00	5,800.00	1,380.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
5,900.00	0.00	0.00	5,900.00	1,480.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,000.00	0.00	0.00	6,000.00	1,580.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,100.00	0.00	0.00	6,100.00	1,680.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,200.00	0.00	0.00	6,200.00	1,780.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,300.00	0.00	0.00	6,300.00	1,880.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,400.00	0.00	0.00	6,400.00	1,980.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,500.00	0.00	0.00	6,500.00	2,080.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,600.00	0.00	0.00	6,600.00	2,180.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,700.00	0.00	0.00	6,700.00	2,280.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,800.00	0.00	0.00	6,800.00	2,380.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
6,900.00	0.00	0.00	6,900.00	2,480.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,000.00	0.00	0.00	7,000.00	2,580.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,100.00	0.00	0.00	7,100.00	2,680.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,200.00	0.00	0.00	7,200.00	2,780.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,300.00	0.00	0.00	7,300.00	2,880.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,400.00	0.00	0.00	7,400.00	2,980.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,500.00	0.00	0.00	7,500.00	3,080.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,600.00	0.00	0.00	7,600.00	3,180.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,700.00	0.00	0.00	7,700.00	3,280.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,800.00	0.00	0.00	7,800.00	3,380.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
7,900.00	0.00	0.00	7,900.00	3,480.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
8,000.00	0.00	0.00	8,000.00	3,580.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50



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8,100.00	0.00	0.00	8,100.00	3,680.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
8,200.00	0.00	0.00	8,200.00	3,780.00	0.00	0.00	0.00	0.00	726,054.20	653,142.50
8,280.50	0.00	0.00	8,280.50	3,860.50	0.00	0.00	0.00	0.00	726,054.20	653,142.50
KOP - 8280.50' MD, 0.00° INC, 0.00° AZI, 8280.50' TVD										
8,300.00	2.34	89.74	8,299.99	3,879.99	0.00	0.40	0.40	12.00	726,054.20	653,142.90
8,325.00	5.34	89.74	8,324.94	3,904.94	0.01	2.07	2.07	12.00	726,054.21	653,144.57
8,350.00	8.34	89.74	8,349.75	3,929.75	0.02	5.05	5.05	12.00	726,054.22	653,147.55
8,375.00	11.34	89.74	8,374.38	3,954.38	0.04	9.32	9.32	12.00	726,054.24	653,151.82
8,400.00	14.34	89.74	8,398.76	3,978.76	0.07	14.88	14.88	12.00	726,054.27	653,157.38
8,425.00	17.34	89.74	8,422.80	4,002.80	0.10	21.70	21.70	12.00	726,054.30	653,164.20
8,450.00	20.34	89.74	8,446.46	4,026.46	0.13	29.77	29.77	12.00	726,054.33	653,172.27
8,475.00	23.34	89.74	8,469.67	4,049.67	0.18	39.07	39.07	12.00	726,054.38	653,181.57
8,500.00	26.34	89.74	8,492.35	4,072.35	0.22	49.57	49.57	12.00	726,054.42	653,192.07
8,525.00	29.34	89.74	8,514.45	4,094.45	0.28	61.25	61.25	12.00	726,054.48	653,203.75
8,550.00	32.34	89.74	8,535.92	4,115.92	0.34	74.06	74.06	12.00	726,054.54	653,216.56
8,575.00	35.34	89.74	8,556.68	4,136.68	0.40	87.98	87.98	12.00	726,054.60	653,230.48
8,600.00	38.34	89.74	8,576.68	4,156.68	0.47	102.97	102.97	12.00	726,054.67	653,245.47
8,625.00	41.34	89.74	8,595.88	4,175.88	0.54	118.98	118.98	12.00	726,054.74	653,261.48
8,650.00	44.34	89.74	8,614.21	4,194.21	0.62	135.98	135.98	12.00	726,054.82	653,278.48
8,675.00	47.34	89.74	8,631.62	4,211.62	0.70	153.91	153.91	12.00	726,054.90	653,296.41
8,700.00	50.34	89.74	8,648.07	4,228.07	0.78	172.73	172.73	12.00	726,054.98	653,315.23
8,725.00	53.34	89.74	8,663.52	4,243.52	0.87	192.39	192.39	12.00	726,055.07	653,334.89
8,750.00	56.34	89.74	8,677.91	4,257.91	0.96	212.82	212.82	12.00	726,055.16	653,355.32
8,775.00	59.34	89.74	8,691.22	4,271.22	1.06	233.98	233.99	12.00	726,055.26	653,376.48
8,800.00	62.34	89.74	8,703.40	4,283.40	1.16	255.81	255.81	12.00	726,055.36	653,398.31
8,825.00	65.34	89.74	8,714.42	4,294.42	1.26	278.25	278.25	12.00	726,055.46	653,420.75
8,850.00	68.34	89.74	8,724.25	4,304.25	1.37	301.23	301.23	12.00	726,055.57	653,443.73



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8,875.00	71.34	89.74	8,732.87	4,312.87	1.47	324.70	324.70	12.00	726,055.67	653,467.20
8,900.00	74.34	89.74	8,740.24	4,320.24	1.58	348.58	348.58	12.00	726,055.78	653,491.08
8,925.00	77.34	89.74	8,746.36	4,326.36	1.69	372.82	372.82	12.00	726,055.89	653,515.32
8,950.00	80.34	89.74	8,751.19	4,331.19	1.80	397.34	397.35	12.00	726,056.00	653,539.84
8,975.00	83.34	89.74	8,754.74	4,334.74	1.91	422.09	422.09	12.00	726,056.11	653,564.59
9,000.00	86.34	89.74	8,756.99	4,336.99	2.03	446.98	446.99	12.00	726,056.23	653,589.48
9,025.00	89.34	89.74	8,757.93	4,337.93	2.14	471.96	471.96	12.00	726,056.34	653,614.46
9,030.36	89.98	89.74	8,757.96	4,337.96	2.16	477.32	477.33	12.00	726,056.36	653,619.82
EOC @ 9030.36' MD, 8757.96' TVD, 89.98° INC, 89.74° AZI, 477.32° VS										
9,100.00	89.98	89.74	8,757.98	4,337.98	2.48	546.96	546.96	0.00	726,056.68	653,689.46
9,153.04	89.98	89.74	8,758.00	4,338.00	2.72	600.00	600.01	0.00	726,056.92	653,742.50
TGT 1										
9,197.68	89.09	89.74	8,758.36	4,338.36	2.92	644.63	644.64	2.00	726,057.12	653,787.13
9,200.00	89.09	89.74	8,758.40	4,338.40	2.93	646.96	646.96	0.00	726,057.13	653,789.46
9,300.00	89.09	89.74	8,759.98	4,339.98	3.38	746.94	746.95	0.00	726,057.58	653,889.44
9,400.00	89.09	89.74	8,761.57	4,341.57	3.83	846.93	846.94	0.00	726,058.03	653,989.43
9,500.00	89.09	89.74	8,763.16	4,343.16	4.28	946.92	946.92	0.00	726,058.48	654,089.42
9,553.09	89.09	89.74	8,764.00	4,344.00	4.52	1,000.00	1,000.01	0.00	726,058.72	654,142.50
TGT 2										
9,562.10	88.91	89.74	8,764.16	4,344.16	4.56	1,009.00	1,009.01	2.00	726,058.76	654,151.50
9,600.00	88.91	89.74	8,764.88	4,344.88	4.73	1,046.90	1,046.91	0.00	726,058.93	654,189.40
9,700.00	88.91	89.74	8,766.78	4,346.78	5.18	1,146.88	1,146.89	0.00	726,059.38	654,289.38
9,800.00	88.91	89.74	8,768.68	4,348.68	5.63	1,246.86	1,246.87	0.00	726,059.83	654,389.36
9,900.00	88.91	89.74	8,770.58	4,350.58	6.08	1,346.84	1,346.86	0.00	726,060.28	654,489.34
10,000.00	88.91	89.74	8,772.48	4,352.48	6.54	1,446.82	1,446.84	0.00	726,060.74	654,589.32
10,100.00	88.91	89.74	8,774.38	4,354.38	6.99	1,546.80	1,546.82	0.00	726,061.19	654,689.30
10,200.00	88.91	89.74	8,776.28	4,356.28	7.44	1,646.78	1,646.80	0.00	726,061.64	654,789.28



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Jerry State #2
Project:	Chaves County	TVD Reference:	WELL @ 4420.00ft (Original Well Elev)
Site:	Jerry State #2	MD Reference:	WELL @ 4420.00ft (Original Well Elev)
Well:	Jerry State #2	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Planned Survey											
MD	Inc	Azi	TVD	TVDSS	N/S	E/W	V. Sec	DLeg	Northing	Easting	
(°)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(ft)	(ft)	
300.00	88.91	89.74	8,778.18	4,358.18	7.89	1,746.77	1,746.78	0.00	726,062.09	654,889.27	
10,400.00	88.91	89.74	8,780.09	4,360.09	8.34	1,846.75	1,846.77	0.00	726,062.54	654,989.25	
10,500.00	88.91	89.74	8,781.99	4,361.99	8.79	1,946.73	1,946.75	0.00	726,062.99	655,089.23	
10,553.28	88.91	89.74	8,783.00	4,363.00	9.03	2,000.00	2,000.02	0.00	726,063.23	655,142.50	
TGT 3											
10,559.07	89.03	89.74	8,783.10	4,363.10	9.06	2,005.78	2,005.80	2.00	726,063.26	655,148.28	
10,600.00	89.03	89.74	8,783.80	4,363.80	9.24	2,046.71	2,046.73	0.00	726,063.44	655,189.21	
10,700.00	89.03	89.74	8,785.50	4,365.50	9.69	2,146.69	2,146.72	0.00	726,063.89	655,289.19	
10,800.00	89.03	89.74	8,787.20	4,367.20	10.14	2,246.68	2,246.70	0.00	726,064.34	655,389.18	
10,900.00	89.03	89.74	8,788.90	4,368.90	10.59	2,346.66	2,346.69	0.00	726,064.79	655,489.16	
11,000.00	89.03	89.74	8,790.60	4,370.60	11.04	2,446.65	2,446.67	0.00	726,065.24	655,589.15	
11,100.00	89.03	89.74	8,792.30	4,372.30	11.50	2,546.63	2,546.66	0.00	726,065.70	655,689.13	
11,200.00	89.03	89.74	8,793.99	4,373.99	11.95	2,646.62	2,646.64	0.00	726,066.15	655,789.12	
11,300.00	89.03	89.74	8,795.69	4,375.69	12.40	2,746.60	2,746.63	0.00	726,066.60	655,889.10	
11,400.00	89.03	89.74	8,797.39	4,377.39	12.85	2,846.59	2,846.62	0.00	726,067.05	655,989.09	
11,500.00	89.03	89.74	8,799.09	4,379.09	13.30	2,946.57	2,946.60	0.00	726,067.50	656,089.07	
11,553.44	89.03	89.74	8,800.00	4,380.00	13.54	3,000.00	3,000.03	0.00	726,067.74	656,142.50	
TGT 4											
11,556.32	88.97	89.74	8,800.05	4,380.05	13.55	3,002.88	3,002.91	2.00	726,067.75	656,145.38	
11,600.00	88.97	89.74	8,800.84	4,380.84	13.75	3,046.55	3,046.59	0.00	726,067.95	656,189.05	
11,700.00	88.97	89.74	8,802.64	4,382.64	14.20	3,146.54	3,146.57	0.00	726,068.40	656,289.04	
11,800.00	88.97	89.74	8,804.44	4,384.44	14.65	3,246.52	3,246.55	0.00	726,068.85	656,389.02	
11,900.00	88.97	89.74	8,806.24	4,386.24	15.10	3,346.50	3,346.54	0.00	726,069.30	656,489.00	
12,000.00	88.97	89.74	8,808.04	4,388.04	15.55	3,446.49	3,446.52	0.00	726,069.75	656,588.99	
12,100.00	88.97	89.74	8,809.84	4,389.84	16.00	3,546.47	3,546.50	0.00	726,070.20	656,688.97	
12,200.00	88.97	89.74	8,811.64	4,391.64	16.46	3,646.45	3,646.49	0.00	726,070.66	656,788.95	
12,300.00	88.97	89.74	8,813.44	4,393.44	16.91	3,746.43	3,746.47	0.00	726,071.11	656,888.93	



Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company: Mack Energy
Project: Chaves County
Site: Jerry State #2
Well: Jerry State #2
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well Jerry State #2
TVD Reference: WELL @ 4420.00ft (Original Well Elev)
MD Reference: WELL @ 4420.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.16 Single User Db

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
12,400.00	88.97	89.74	8,815.24	4,395.24	17.36	3,846.42	3,846.46	0.00	726,071.56	656,988.92
12,500.00	88.97	89.74	8,817.04	4,397.04	17.81	3,946.40	3,946.44	0.00	726,072.01	657,088.90
12,553.61	88.97	89.74	8,818.00	4,398.00	18.05	4,000.00	4,000.04	0.00	726,072.25	657,142.50
TGT 5										
12,559.84	89.09	89.74	8,818.11	4,398.11	18.08	4,006.23	4,006.27	2.00	726,072.28	657,148.73
12,600.00	89.09	89.74	8,818.74	4,398.74	18.26	4,046.38	4,046.43	0.00	726,072.46	657,188.88
12,700.00	89.09	89.74	8,820.32	4,400.32	18.71	4,146.37	4,146.41	0.00	726,072.91	657,288.87
12,800.00	89.09	89.74	8,821.91	4,401.91	19.16	4,246.36	4,246.40	0.00	726,073.36	657,388.86
12,900.00	89.09	89.74	8,823.49	4,403.49	19.61	4,346.34	4,346.39	0.00	726,073.81	657,488.84
13,000.00	89.09	89.74	8,825.07	4,405.07	20.06	4,446.33	4,446.38	0.00	726,074.26	657,588.83
13,100.00	89.09	89.74	8,826.65	4,406.65	20.52	4,546.32	4,546.36	0.00	726,074.72	657,688.82
13,185.09	89.09	89.74	8,828.00	4,408.00	20.90	4,631.39	4,631.44	0.00	726,075.10	657,773.89
TD @13185.09'MD, 8828.00'TVD, 89.09°INC, 89.74°AZI, 4631.44°VS										
13,185.10	89.09	89.74	8,828.00	4,408.00	20.90	4,631.40	4,631.45	0.00	726,075.10	657,773.90
PBHL (Jerry #2)										



Pathfinder Energy Services
Pathfinder X & Y Survey Report

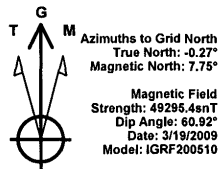


Company:	Mack Energy	Local Co-ordinate Reference:	Well Jerry State #2
Project:	Chaves County	TVD Reference:	WELL @ 4420.00ft (Original Well Elev)
Site:	Jerry State #2	MD Reference:	WELL @ 4420.00ft (Original Well Elev)
Well:	Jerry State #2	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
TGT 2 - plan hits target - Point	0.00	0.00	8,764.00	4.52	1,000.00	726,058.720	654,142.500	32° 59' 41.968 N	103° 49' 50.121 W
TGT 4 - plan hits target - Point	0.00	0.00	8,800.00	13.54	3,000.00	726,067.740	656,142.500	32° 59' 41.962 N	103° 49' 26.638 W
PBHL (Jerry #2) - plan hits target - Point	0.00	0.00	8,828.00	20.90	4,631.40	726,075.100	657,773.900	32° 59' 41.956 N	103° 49' 7.483 W
TGT 3 - plan hits target - Point	0.00	0.00	8,783.00	9.03	2,000.00	726,063.230	655,142.500	32° 59' 41.965 N	103° 49' 38.379 W
TGT 1 - plan hits target - Point	0.00	0.00	8,758.00	2.72	600.00	726,056.920	653,742.500	32° 59' 41.969 N	103° 49' 54.817 W
TGT 5 - plan hits target - Point	0.00	0.00	8,818.00	18.05	4,000.00	726,072.250	657,142.500	32° 59' 41.958 N	103° 49' 14.896 W

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,280.50	8,280.50	0.00	0.00	KOP - 8280.50'MD, 0.00°INC, 0.00°AZI, 8280.50'TVD
9,030.36	8,757.96	2.16	477.32	EOC @ 9030.36'MD, 8757.96'TVD, 89.98°INC, 89.74°AZI, 477.32'VS
13,185.09	8,828.00	2.72	600.00	TD @13185.09'MD, 8828.00'TVD, 89.09°INC, 89.74°AZI, 4631.44'VS

Checked By: _____	Approved By: _____	Date: _____
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SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	8280.50	0.00	0.00	8280.50	0.00	0.00	0.00	0.00	0.00	
3	9030.36	89.98	89.74	8757.96	2.16	477.32	12.00	89.74	477.33	TGT 1
4	9153.04	89.98	89.74	8758.00	2.72	600.00	0.00	0.00	600.01	TGT 2
5	9197.68	89.09	89.74	8758.36	2.92	644.63	2.00	179.87	644.64	TGT 3
6	9553.09	89.09	89.74	8764.00	4.52	1000.00	0.00	0.00	1000.01	TGT 4
7	9552.10	88.91	89.74	8764.16	4.56	1009.00	2.00	-178.78	1009.01	TGT 5
8	10563.28	88.91	89.74	8763.00	9.03	2000.00	0.00	0.00	2000.02	TGT 6
9	10569.07	89.03	89.74	8763.10	9.06	2005.76	2.00	0.00	2005.80	TGT 7
10	11653.44	89.03	89.74	8800.00	13.54	3000.00	0.00	0.00	3000.03	TGT 8
11	11856.32	88.97	89.74	8800.05	13.55	3002.88	2.00	-180.00	3002.91	TGT 9
12	12553.61	88.97	89.74	8818.00	18.05	4000.00	0.00	0.00	4000.04	TGT 10
13	12559.84	89.09	89.74	8818.11	18.08	4006.23	2.00	-0.10	4006.27	TGT 11
14	13185.10	89.09	89.74	8828.00	20.90	4631.40	0.00	0.00	4631.45	PBHL (Jerry #2)

WELL DETAILS: Jerry State #2

Ground Elevation: 4420.00
RKB Elevation: WELL @ 4420.00ft (Original Well Elev)
Rig Name: Original Well Elev

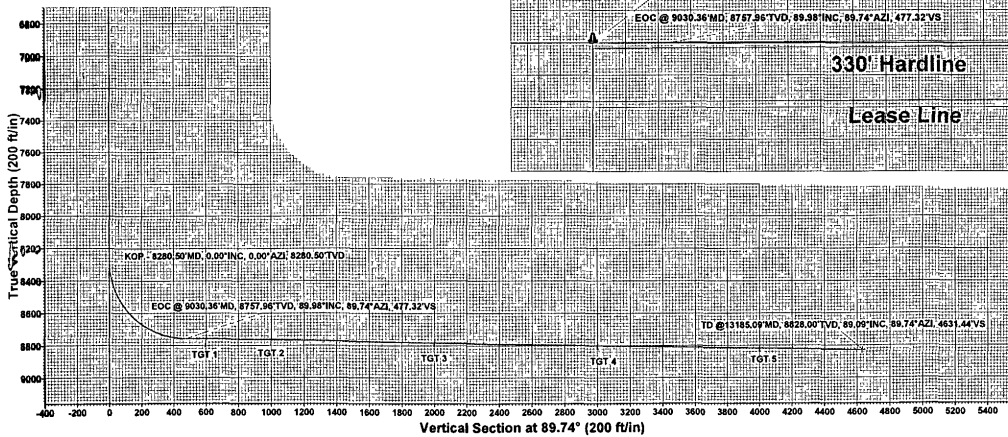
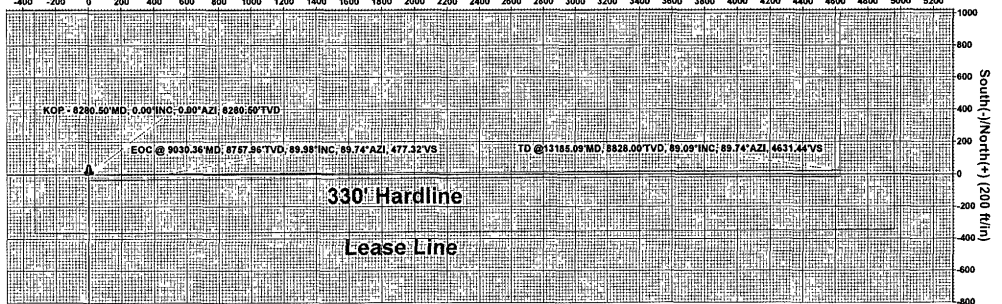
+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	726054.200	653142.500	32° 59' 41.970 N	103° 50' 1.862 W	

PROJECT DETAILS: Chaves 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

WELLBORE TARGET DETAILS

Name	TVD	+N-S	+E-W	Shape
TGT 1	8758.00	2.72	600.00	Point
TGT 2	8764.00	4.52	1000.00	Point
TGT 3	8763.00	9.03	2000.00	Point
TGT 4	8800.00	13.54	3000.00	Point
TGT 5	8818.00	18.05	4000.00	Point
PBHL (Jerry #2)	8828.00	20.90	4631.40	Point

West(-)/East(+) (200 ft/in)



Project: Chaves County
Site: Jerry State #2
Well: Jerry State #2
Wellbore: OH
Plan: Plan #1 (Jerry State #2/OH)

Plan: Plan #1 (Jerry State #2/OH)

Created By: Aaron Puhls Date: 8.21, March 19 2009

Checked: _____ Date: _____