

Mack Energy

Chaves County
Sumner State #2
Sumner State #2
OH

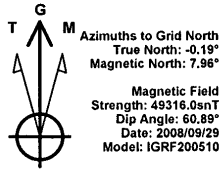
Plan: Plan #1

Pathfinder X & Y Survey Report

03 October, 2008

PATHFINDER
ENERGY SERVICES

Mack Energy Corporation



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

PATHFINDER ENERGY SERVICES

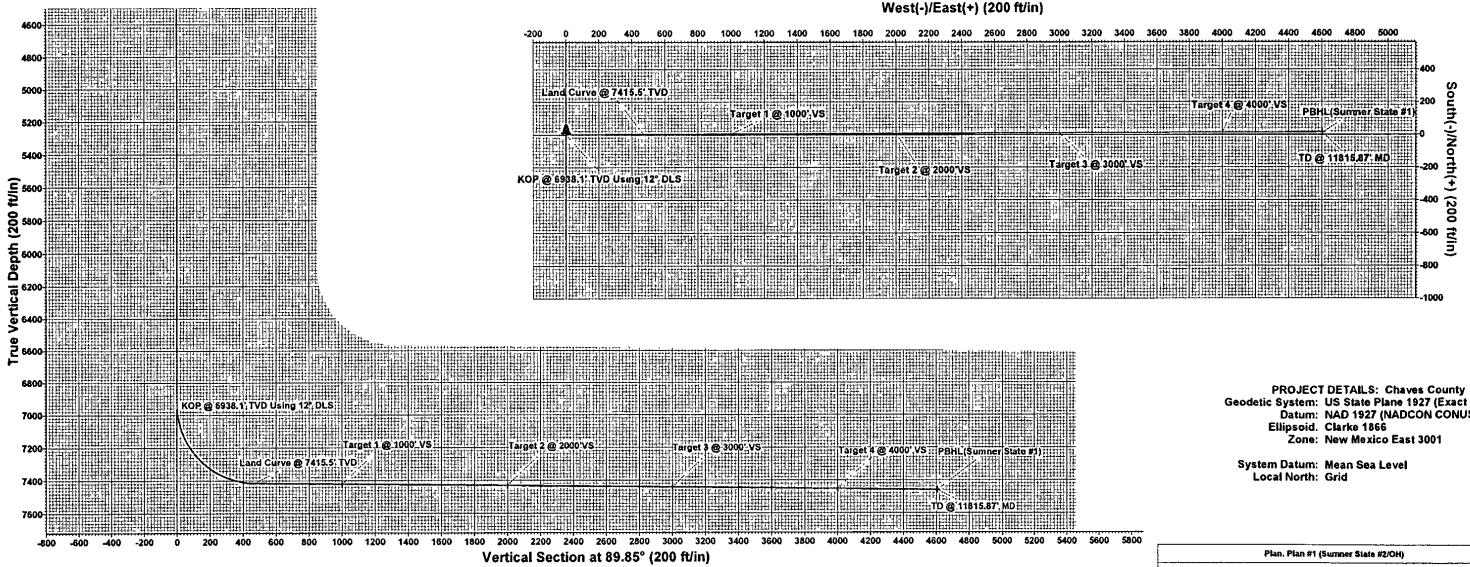
SECTION DETAILS

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	6938.10	0.00	0.00	6938.10	0.00	0.00	0.00	0.00	0.00	
3	7682.63	89.35	89.85	7415.50	1.24	472.01	12.00	89.85	472.01	
4	7700.43	89.35	89.85	7415.70	1.28	489.82	0.00	0.00	489.82	
5	8210.65	89.35	89.85	7421.50	2.62	1000.00	0.00	0.00	1000.00	Target 1 @ 1000' VS
6	8217.39	89.48	89.85	7421.57	2.64	1006.74	2.00	-0.10	1006.74	
7	9210.70	89.48	89.85	7430.50	5.24	2000.00	0.00	0.00	2000.01	Target 2 @ 2000' VS
8	9213.59	89.43	89.85	7430.53	5.25	2002.89	2.00	179.32	2002.90	
9	10210.78	89.43	89.85	7440.50	7.85	3000.00	0.00	0.00	3000.01	Target 3 @ 3000' VS
10	10215.05	89.34	89.85	7440.55	7.86	3004.30	2.00	-179.62	3004.31	
11	11210.82	89.34	89.85	7452.00	10.47	4000.00	0.00	0.00	4000.01	Target 4 @ 4000' VS
12	11215.91	89.24	89.87	7452.06	10.48	4005.09	2.00	166.22	4005.11	
13	11815.87	89.24	89.87	7460.00	11.80	4605.00	0.00	0.00	4605.02	PBHL(Sumner State #1)

WELL DETAILS: Sumner State #2

Ground Elevation: 3869.00
RKB Elevation: WELL @ 3887.00ft (RKB is 15')
Rig Name: RKB is 15'

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	719290.200	605597.500	32° 58' 36.927 N	103° 59' 20.366 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

Plan, Plan #1 (Sumner State #2/OH)

Created By: Mark Freeman Date: 16:31, September 29 2008
Checked: _____ Date: _____

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Sumner State #2
Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
Site:	Sumner State #2	MD Reference:	WELL @ 3887.00ft (RKB is 15')
Well:	Sumner 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
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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	Sumner State #2
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Site Position:		Northing:	719,290.200 ft	Latitude:	32° 58' 36.927 N
From:	Map	Easting:	605,597.500 ft	Longitude:	103° 59' 20.366 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.19 °

Well	Sumner State #2
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Well Position	+N/-S	0.00 ft	Northing:	719,290.200 ft	Latitude:	32° 58' 36.927 N
	+E/-W	0.00 ft	Easting:	605,597.500 ft	Longitude:	103° 59' 20.366 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,869.00 ft

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2008/09/29	8.15	60.89	49,316

Design	Plan #1
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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	89.85

Survey Tool Program	Date 2008/09/29
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From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	11,815.87	Plan #1 (OH)	MWD	MWD - Standard

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Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	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)
0.00	0.00	0.00	0.00	-3,887.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
100.00	0.00	0.00	100.00	-3,787.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
200.00	0.00	0.00	200.00	-3,687.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
300.00	0.00	0.00	300.00	-3,587.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
400.00	0.00	0.00	400.00	-3,487.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
500.00	0.00	0.00	500.00	-3,387.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
600.00	0.00	0.00	600.00	-3,287.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
700.00	0.00	0.00	700.00	-3,187.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
800.00	0.00	0.00	800.00	-3,087.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
900.00	0.00	0.00	900.00	-2,987.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,000.00	0.00	0.00	1,000.00	-2,887.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,100.00	0.00	0.00	1,100.00	-2,787.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,200.00	0.00	0.00	1,200.00	-2,687.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,300.00	0.00	0.00	1,300.00	-2,587.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,400.00	0.00	0.00	1,400.00	-2,487.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,500.00	0.00	0.00	1,500.00	-2,387.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,600.00	0.00	0.00	1,600.00	-2,287.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,700.00	0.00	0.00	1,700.00	-2,187.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,800.00	0.00	0.00	1,800.00	-2,087.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
1,900.00	0.00	0.00	1,900.00	-1,987.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,000.00	0.00	0.00	2,000.00	-1,887.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,100.00	0.00	0.00	2,100.00	-1,787.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,200.00	0.00	0.00	2,200.00	-1,687.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,300.00	0.00	0.00	2,300.00	-1,587.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,400.00	0.00	0.00	2,400.00	-1,487.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,500.00	0.00	0.00	2,500.00	-1,387.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,600.00	0.00	0.00	2,600.00	-1,287.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Sumner State #2
Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
Site:	Sumner State #2	MD Reference:	WELL @ 3887.00ft (RKB is 15')
Well:	Sumner 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 (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	0.00	0.00	2,700.00	-1,187.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,800.00	0.00	0.00	2,800.00	-1,087.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
2,900.00	0.00	0.00	2,900.00	-987.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,000.00	0.00	0.00	3,000.00	-887.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,100.00	0.00	0.00	3,100.00	-787.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,200.00	0.00	0.00	3,200.00	-687.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,300.00	0.00	0.00	3,300.00	-587.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,400.00	0.00	0.00	3,400.00	-487.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,500.00	0.00	0.00	3,500.00	-387.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,600.00	0.00	0.00	3,600.00	-287.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,700.00	0.00	0.00	3,700.00	-187.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,800.00	0.00	0.00	3,800.00	-87.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
3,900.00	0.00	0.00	3,900.00	13.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,000.00	0.00	0.00	4,000.00	113.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,100.00	0.00	0.00	4,100.00	213.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,200.00	0.00	0.00	4,200.00	313.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,300.00	0.00	0.00	4,300.00	413.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,400.00	0.00	0.00	4,400.00	513.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,500.00	0.00	0.00	4,500.00	613.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,600.00	0.00	0.00	4,600.00	713.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,700.00	0.00	0.00	4,700.00	813.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,800.00	0.00	0.00	4,800.00	913.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
4,900.00	0.00	0.00	4,900.00	1,013.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,000.00	0.00	0.00	5,000.00	1,113.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,100.00	0.00	0.00	5,100.00	1,213.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,200.00	0.00	0.00	5,200.00	1,313.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,300.00	0.00	0.00	5,300.00	1,413.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50

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Pathfinder X & Y Survey Report



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Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
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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)
5,400.00	0.00	0.00	5,400.00	1,513.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,500.00	0.00	0.00	5,500.00	1,613.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,600.00	0.00	0.00	5,600.00	1,713.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,700.00	0.00	0.00	5,700.00	1,813.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,800.00	0.00	0.00	5,800.00	1,913.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
5,900.00	0.00	0.00	5,900.00	2,013.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,000.00	0.00	0.00	6,000.00	2,113.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,100.00	0.00	0.00	6,100.00	2,213.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,200.00	0.00	0.00	6,200.00	2,313.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,300.00	0.00	0.00	6,300.00	2,413.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,400.00	0.00	0.00	6,400.00	2,513.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,500.00	0.00	0.00	6,500.00	2,613.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,600.00	0.00	0.00	6,600.00	2,713.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,700.00	0.00	0.00	6,700.00	2,813.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,800.00	0.00	0.00	6,800.00	2,913.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,900.00	0.00	0.00	6,900.00	3,013.00	0.00	0.00	0.00	0.00	719,290.20	605,597.50
6,938.10	0.00	0.00	6,938.10	3,051.10	0.00	0.00	0.00	0.00	719,290.20	605,597.50
KOP @ 6938.1' TVD Using 12° DLS										
6,950.00	1.43	89.85	6,950.00	3,063.00	0.00	0.15	0.15	12.00	719,290.20	605,597.65
6,975.00	4.43	89.85	6,974.96	3,087.96	0.00	1.43	1.43	12.00	719,290.20	605,598.93
7,000.00	7.43	89.85	6,999.83	3,112.83	0.01	4.01	4.01	12.00	719,290.21	605,601.51
7,025.00	10.43	89.85	7,024.52	3,137.52	0.02	7.89	7.89	12.00	719,290.22	605,605.39
7,050.00	13.43	89.85	7,048.98	3,161.98	0.03	13.05	13.05	12.00	719,290.23	605,610.55
7,075.00	16.43	89.85	7,073.13	3,186.13	0.05	19.49	19.49	12.00	719,290.25	605,616.99
7,100.00	19.43	89.85	7,096.91	3,209.91	0.07	27.19	27.19	12.00	719,290.27	605,624.69
7,125.00	22.43	89.85	7,120.26	3,233.26	0.09	36.12	36.12	12.00	719,290.29	605,633.62
7,150.00	25.43	89.85	7,143.11	3,256.11	0.12	46.26	46.26	12.00	719,290.32	605,643.76

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7,175.00	28.43	89.85	7,165.40	3,278.40	0.15	57.58	57.58	12.00	719,290.35	605,655.08
7,200.00	31.43	89.85	7,187.06	3,300.06	0.18	70.05	70.05	12.00	719,290.38	605,667.55
7,225.00	34.43	89.85	7,208.04	3,321.04	0.22	83.64	83.64	12.00	719,290.42	605,681.14
7,250.00	37.43	89.85	7,228.28	3,341.28	0.26	98.31	98.31	12.00	719,290.46	605,695.81
7,275.00	40.43	89.85	7,247.73	3,360.73	0.30	114.02	114.02	12.00	719,290.50	605,711.52
7,300.00	43.43	89.85	7,266.32	3,379.32	0.34	130.72	130.72	12.00	719,290.54	605,728.22
7,325.00	46.43	89.85	7,284.02	3,397.02	0.39	148.37	148.37	12.00	719,290.59	605,745.87
7,350.00	49.43	89.85	7,300.77	3,413.77	0.44	166.93	166.93	12.00	719,290.64	605,764.43
7,375.00	52.43	89.85	7,316.52	3,429.52	0.49	186.34	186.34	12.00	719,290.69	605,783.84
7,400.00	55.43	89.85	7,331.24	3,444.24	0.54	206.54	206.54	12.00	719,290.74	605,804.04
7,425.00	58.43	89.85	7,344.88	3,457.88	0.60	227.49	227.49	12.00	719,290.80	605,824.99
7,450.00	61.43	89.85	7,357.41	3,470.41	0.65	249.12	249.13	12.00	719,290.85	605,846.62
7,475.00	64.43	89.85	7,368.78	3,481.78	0.71	271.38	271.38	12.00	719,290.91	605,868.88
7,500.00	67.43	89.85	7,378.97	3,491.97	0.77	294.21	294.21	12.00	719,290.97	605,891.71
7,525.00	70.43	89.85	7,387.96	3,500.96	0.83	317.53	317.54	12.00	719,291.03	605,915.03
7,550.00	73.43	89.85	7,395.71	3,508.71	0.89	341.30	341.30	12.00	719,291.09	605,938.80
7,575.00	76.43	89.85	7,402.21	3,515.21	0.96	365.44	365.44	12.00	719,291.16	605,962.94
7,600.00	79.43	89.85	7,407.44	3,520.44	1.02	389.88	389.88	12.00	719,291.22	605,987.38
7,625.00	82.43	89.85	7,411.37	3,524.37	1.09	414.57	414.57	12.00	719,291.29	606,012.07
7,650.00	85.43	89.85	7,414.02	3,527.02	1.15	439.42	439.42	12.00	719,291.35	606,036.92
7,675.00	88.43	89.85	7,415.35	3,528.35	1.22	464.38	464.39	12.00	719,291.42	606,061.88
7,682.63	89.35	89.85	7,415.50	3,528.50	1.24	472.01	472.01	12.00	719,291.44	606,069.51
Land Curve @ 7415.5' TVD										
7,700.43	89.35	89.85	7,415.70	3,528.70	1.28	489.82	489.82	0.00	719,291.48	606,087.32
7,800.00	89.35	89.85	7,416.83	3,529.83	1.54	589.37	589.38	0.00	719,291.74	606,186.87
7,900.00	89.35	89.85	7,417.97	3,530.97	1.80	689.37	689.37	0.00	719,292.00	606,286.87
8,000.00	89.35	89.85	7,419.10	3,532.10	2.07	789.36	789.36	0.00	719,292.27	606,386.86

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Sumner State #2
Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
Site:	Sumner State #2	MD Reference:	WELL @ 3887.00ft (RKB is 15')
Well:	Sumner 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 (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,100.00	89.35	89.85	7,420.23	3,533.23	2.33	889.35	889.36	0.00	719,292.53	606,486.85
8,200.00	89.35	89.85	7,421.37	3,534.37	2.59	989.35	989.35	0.00	719,292.79	606,586.85
8,210.65	89.35	89.85	7,421.50	3,534.50	2.62	1,000.00	1,000.00	0.00	719,292.82	606,597.50
Target 1 @ 1000' VS										
8,217.39	89.48	89.85	7,421.57	3,534.57	2.64	1,006.74	1,006.74	2.00	719,292.84	606,604.24
8,300.00	89.48	89.85	7,422.31	3,535.31	2.85	1,089.34	1,089.35	0.00	719,293.05	606,686.84
8,400.00	89.48	89.85	7,423.21	3,536.21	3.11	1,189.34	1,189.34	0.00	719,293.31	606,786.84
8,500.00	89.48	89.85	7,424.11	3,537.11	3.38	1,289.33	1,289.34	0.00	719,293.58	606,886.83
8,600.00	89.48	89.85	7,425.01	3,538.01	3.64	1,389.33	1,389.33	0.00	719,293.84	606,986.83
8,700.00	89.48	89.85	7,425.91	3,538.91	3.90	1,489.33	1,489.33	0.00	719,294.10	607,086.83
8,800.00	89.48	89.85	7,426.81	3,539.81	4.16	1,589.32	1,589.33	0.00	719,294.36	607,186.82
8,900.00	89.48	89.85	7,427.71	3,540.71	4.43	1,689.32	1,689.32	0.00	719,294.63	607,286.82
9,000.00	89.48	89.85	7,428.61	3,541.61	4.69	1,789.31	1,789.32	0.00	719,294.89	607,386.81
9,100.00	89.48	89.85	7,429.50	3,542.50	4.95	1,889.31	1,889.31	0.00	719,295.15	607,486.81
9,200.00	89.48	89.85	7,430.40	3,543.40	5.21	1,989.30	1,989.31	0.00	719,295.41	607,586.80
9,210.70	89.48	89.85	7,430.50	3,543.50	5.24	2,000.00	2,000.01	0.00	719,295.44	607,597.50
Target 2 @ 2000' VS										
9,213.59	89.43	89.85	7,430.53	3,543.53	5.25	2,002.89	2,002.90	2.00	719,295.45	607,600.39
9,300.00	89.43	89.85	7,431.39	3,544.39	5.47	2,089.30	2,089.31	0.00	719,295.67	607,686.80
9,400.00	89.43	89.85	7,432.39	3,545.39	5.73	2,189.29	2,189.30	0.00	719,295.93	607,786.79
9,500.00	89.43	89.85	7,433.39	3,546.39	6.00	2,289.29	2,289.30	0.00	719,296.20	607,886.79
9,600.00	89.43	89.85	7,434.39	3,547.39	6.26	2,389.28	2,389.29	0.00	719,296.46	607,986.78
9,700.00	89.43	89.85	7,435.39	3,548.39	6.52	2,489.28	2,489.29	0.00	719,296.72	608,086.78
9,800.00	89.43	89.85	7,436.39	3,549.39	6.78	2,589.27	2,589.28	0.00	719,296.98	608,186.77
9,900.00	89.43	89.85	7,437.39	3,550.39	7.04	2,689.27	2,689.28	0.00	719,297.24	608,286.77
10,000.00	89.43	89.85	7,438.39	3,551.39	7.30	2,789.26	2,789.27	0.00	719,297.50	608,386.76
10,100.00	89.43	89.85	7,439.39	3,552.39	7.56	2,889.26	2,889.27	0.00	719,297.76	608,486.76

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Sumner State #2
Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
Site:	Sumner State #2	MD Reference:	WELL @ 3887.00ft (RKB is 15')
Well:	Sumner 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 (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
10,200.00	89.43	89.85	7,440.39	3,553.39	7.82	2,989.25	2,989.26	0.00	719,298.02	608,586.75
10,210.75	89.43	89.85	7,440.50	3,553.50	7.85	3,000.00	3,000.01	0.00	719,298.05	608,597.50
Target 3 @ 3000' VS										
10,215.05	89.34	89.85	7,440.55	3,553.55	7.86	3,004.30	3,004.31	2.00	719,298.06	608,601.80
10,300.00	89.34	89.85	7,441.52	3,554.52	8.08	3,089.24	3,089.25	0.00	719,298.28	608,686.74
10,400.00	89.34	89.85	7,442.67	3,555.67	8.35	3,189.24	3,189.25	0.00	719,298.55	608,786.74
10,500.00	89.34	89.85	7,443.82	3,556.82	8.61	3,289.23	3,289.24	0.00	719,298.81	608,886.73
10,600.00	89.34	89.85	7,444.97	3,557.97	8.87	3,389.22	3,389.23	0.00	719,299.07	608,986.72
10,700.00	89.34	89.85	7,446.12	3,559.12	9.13	3,489.22	3,489.23	0.00	719,299.33	609,086.72
10,800.00	89.34	89.85	7,447.27	3,560.27	9.39	3,589.21	3,589.22	0.00	719,299.59	609,186.71
10,900.00	89.34	89.85	7,448.42	3,561.42	9.66	3,689.20	3,689.21	0.00	719,299.86	609,286.70
11,000.00	89.34	89.85	7,449.58	3,562.58	9.92	3,789.19	3,789.21	0.00	719,300.12	609,386.69
11,100.00	89.34	89.85	7,450.73	3,563.73	10.18	3,889.19	3,889.20	0.00	719,300.38	609,486.69
11,200.00	89.34	89.85	7,451.88	3,564.88	10.44	3,989.18	3,989.19	0.00	719,300.64	609,586.68
11,210.82	89.34	89.85	7,452.00	3,565.00	10.47	4,000.00	4,000.01	0.00	719,300.67	609,597.50
Target 4 @ 4000' VS										
11,215.91	89.24	89.87	7,452.06	3,565.06	10.48	4,005.09	4,005.11	2.00	719,300.68	609,602.59
11,300.00	89.24	89.87	7,453.18	3,566.18	10.67	4,089.17	4,089.19	0.00	719,300.87	609,686.67
11,400.00	89.24	89.87	7,454.50	3,567.50	10.89	4,189.16	4,189.18	0.00	719,301.09	609,786.66
11,500.00	89.24	89.87	7,455.82	3,568.82	11.11	4,289.15	4,289.17	0.00	719,301.31	609,886.65
11,600.00	89.24	89.87	7,457.14	3,570.14	11.33	4,389.15	4,389.16	0.00	719,301.53	609,986.65
11,700.00	89.24	89.87	7,458.47	3,571.47	11.55	4,489.14	4,489.15	0.00	719,301.75	610,086.64
11,800.00	89.24	89.87	7,459.79	3,572.79	11.77	4,589.13	4,589.14	0.00	719,301.97	610,186.63
11,815.87	89.24	89.87	7,460.00	3,573.00	11.80	4,605.00	4,605.01	0.00	719,302.00	610,202.50
TD @ 11815.87' MD - PBHL(Sumner State #1)										

Pathfinder Energy Services
Pathfinder X & Y Survey Report



Company:	Mack Energy	Local Co-ordinate Reference:	Well Sumner State #2
Project:	Chaves County	TVD Reference:	WELL @ 3887.00ft (RKB is 15')
Site:	Sumner State #2	MD Reference:	WELL @ 3887.00ft (RKB is 15')
Well:	Sumner 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
PBHL(Sumner State # - plan hits target - Point	0.00	0.00	7,460.00	11.80	4,605.00	719,302.000	610,202.500	32° 58' 36.892 N	103° 58' 26.307 W
Target 1 @ 1000' VS - plan hits target - Point	0.00	0.00	7,421.50	2.62	1,000.00	719,292.818	606,597.500	32° 58' 36.920 N	103° 59' 8.626 W
Target 2 @ 2000'VS - plan hits target - Point	0.00	0.00	7,430.50	5.24	2,000.00	719,295.440	607,597.500	32° 58' 36.914 N	103° 58' 56.887 W
Target 4 @ 4000' VS - plan hits target - Point	0.00	0.00	7,452.00	10.47	4,000.00	719,300.670	609,597.500	32° 58' 36.899 N	103° 58' 33.409 W
Target 3 @ 3000' VS - plan hits target - Point	0.00	0.00	7,440.50	7.85	3,000.00	719,298.050	608,597.500	32° 58' 36.906 N	103° 58' 45.148 W

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,938.10	6,938.10	0.00	0.00	KOP @ 6938.1' TVD Using 12° DLS
7,682.63	7,415.50	1.24	472.01	Land Curve @ 7415.5' TVD
11,815.87	7,460.00	11.80	4,605.00	TD @ 11815.87' MD

Checked By: _____	Approved By: _____	Date: _____
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