

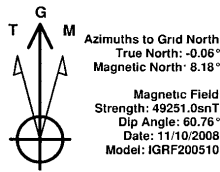
30-05-36751 S

Mack Energy
Eddy County
Snowball State Com #1
Snowball State Com
OH

Plan: Plan #1

Patfinder X & Y Survey Report

10 November, 2008



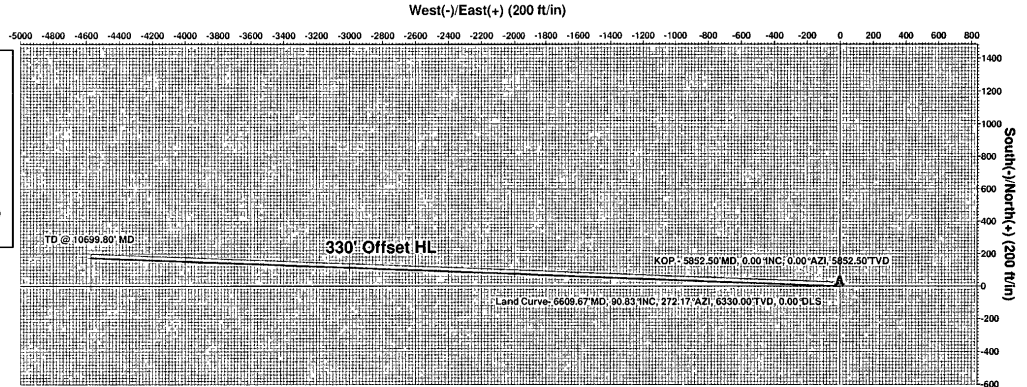
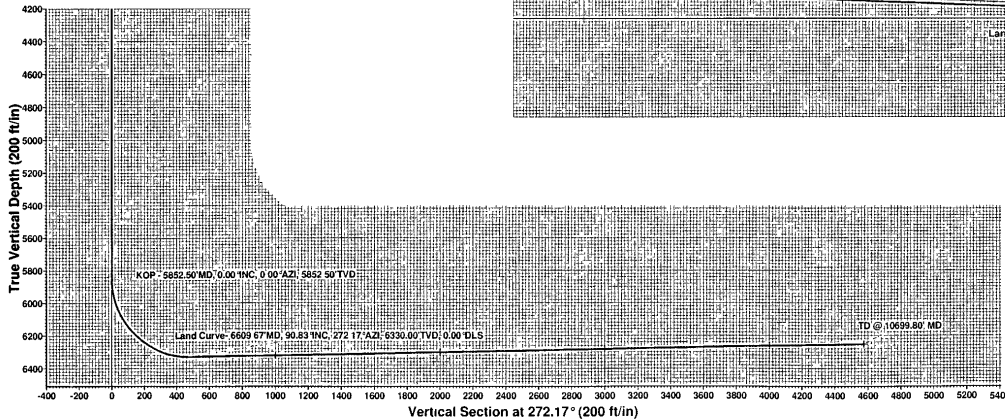
WELL DETAILS: Snowball State Com
Ground Elevation: 3470.00
RKB Elevation: WELL @ 3468.00ft (RKB= 18')
Rig Name: RKB= 18'

+N-S: 0.00 +E-W: 0.00 Northing: 665434.100 Easting: 533409.100 Latitude: 32° 53' 3.451 N Longitude: 104° 13' 28.210 W

Name	TVD	+N-S	+E-W	Shape
PBHL (Snowball #1)	6253.00	173.30	-4570.70	Point
Target 4 (Snowball)	6263.00	151.56	-3997.41	Point
Target 3 (Snowball)	6283.00	113.66	-2997.97	Point
Target 2 (Snowball)	6303.00	75.77	-1998.80	Point
Target 1 (Snowball)	6322.50	37.87	-999.31	Point

Project: Eddy County
Site: Snowball State Com #1
Well: Snowball State Com
Wellbore: OH
Plan: Plan #1 (Snowball State Com/OH)

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLG	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5852.50	0.00	0.00	5852.50	0.00	0.00	0.00	0.00	0.00	
3	6609.55	90.83	272.17	6330.00	18.34	-484.12	12.00	272.17	484.47	
4	6661.23	90.83	272.17	6329.25	20.30	-535.76	0.01	8.05	536.15	
5	7125.17	90.83	272.17	6322.50	37.87	-999.31	0.00	0.00	1000.03	Target 1 (Snowball)
6	7134.65	91.12	272.17	6322.34	38.23	-1008.79	3.00	0.22	1009.51	
7	8125.56	91.12	272.17	6303.00	75.77	-1998.80	0.00	0.00	2000.24	Target 2 (Snowball)
8	8209.43	91.15	272.17	6301.34	78.05	-2082.59	0.03	0.24	2064.08	
9	9125.65	91.15	272.17	6283.00	113.66	-2997.97	0.00	0.00	3000.12	Target 3 (Snowball)
10	9151.16	91.15	272.17	6282.49	114.63	-3023.46	0.00	0.00	3025.63	
11	10126.01	91.15	272.17	6263.00	151.56	-3997.41	0.00	0.00	4000.28	Target 4 (Snowball)
12	10130.98	91.00	272.17	6262.91	151.75	-4002.38	3.00	-180.00	4005.25	
13	10699.80	91.00	272.17	6253.00	173.30	-4570.70	0.00	0.00	4573.98	PBHL (Snowball #1)



PROJECT DETAILS: Eddy 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 (Snowball State Com/OH)

Created By: Aaron Pullin Date: 11.32, November 10 2008

Checked: _____ Date: _____

Pathfinder Energy Services
 Pathfinder X & Y Survey Report

Company: Mack Energy Project: Eddy County Site: Snowball State Com #1 Well: Snowball State Com Wellbore: OH Design: Plan #1	Local Co-ordinate Reference: Well Snowball State Com TVD Reference: WELL @ 3488.00ft (RKB= 18') MD Reference: WELL @ 3488.00ft (RKB= 18') North Reference: Grid Survey Calculation Method: Minimum Curvature Database: EDM 2003.16 Single User Db
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Project Eddy 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 Snowball State Com #1			
Site Position:	Northing: 685,434.100 ft	Latitude: 32° 53' 3.451 N	
From: Map	Easting: 533,409.100 ft	Longitude: 104° 13' 28.210 W	
Position Uncertainty: 0.00 ft	Slot Radius: "	Grid Convergence: 0.06 °	

Well Snowball State Com			
Well Position	Northing: 685,434.100 ft	Latitude: 32° 53' 3.451 N	
+N/-S 0.00 ft	Easting: 533,409.100 ft	Longitude: 104° 13' 28.210 W	
+E/-W 0.00 ft	Wellhead Elevation: ft	Ground Level: 3,470.00ft	
Position Uncertainty 0.00 ft			

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/10/2008	8.24	60.76	49,251

Design Plan #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	272.17

Survey Tool Program Date 11/10/2008				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	10,699.77	Plan #1 (OH)	MWD	MWD - Standard

Pathfinder Energy Services
Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	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)
0.00	0.00	0.00	0.00	-3,488.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
100.00	0.00	0.00	100.00	-3,388.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
200.00	0.00	0.00	200.00	-3,288.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
300.00	0.00	0.00	300.00	-3,188.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
400.00	0.00	0.00	400.00	-3,088.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
500.00	0.00	0.00	500.00	-2,988.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
600.00	0.00	0.00	600.00	-2,888.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
700.00	0.00	0.00	700.00	-2,788.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
800.00	0.00	0.00	800.00	-2,688.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
900.00	0.00	0.00	900.00	-2,588.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,000.00	0.00	0.00	1,000.00	-2,488.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,100.00	0.00	0.00	1,100.00	-2,388.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,200.00	0.00	0.00	1,200.00	-2,288.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,300.00	0.00	0.00	1,300.00	-2,188.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,400.00	0.00	0.00	1,400.00	-2,088.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,500.00	0.00	0.00	1,500.00	-1,988.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,600.00	0.00	0.00	1,600.00	-1,888.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,700.00	0.00	0.00	1,700.00	-1,788.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,800.00	0.00	0.00	1,800.00	-1,688.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
1,900.00	0.00	0.00	1,900.00	-1,588.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,000.00	0.00	0.00	2,000.00	-1,488.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,100.00	0.00	0.00	2,100.00	-1,388.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,200.00	0.00	0.00	2,200.00	-1,288.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,300.00	0.00	0.00	2,300.00	-1,188.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,400.00	0.00	0.00	2,400.00	-1,088.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,500.00	0.00	0.00	2,500.00	-988.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,600.00	0.00	0.00	2,600.00	-888.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10

Pathfinder Energy Services
Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	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	-788.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,800.00	0.00	0.00	2,800.00	-688.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
2,900.00	0.00	0.00	2,900.00	-588.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,000.00	0.00	0.00	3,000.00	-488.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,100.00	0.00	0.00	3,100.00	-388.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,200.00	0.00	0.00	3,200.00	-288.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,300.00	0.00	0.00	3,300.00	-188.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,400.00	0.00	0.00	3,400.00	-88.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,500.00	0.00	0.00	3,500.00	12.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,600.00	0.00	0.00	3,600.00	112.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,700.00	0.00	0.00	3,700.00	212.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,800.00	0.00	0.00	3,800.00	312.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
3,900.00	0.00	0.00	3,900.00	412.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,000.00	0.00	0.00	4,000.00	512.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,100.00	0.00	0.00	4,100.00	612.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,200.00	0.00	0.00	4,200.00	712.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,300.00	0.00	0.00	4,300.00	812.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,400.00	0.00	0.00	4,400.00	912.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,500.00	0.00	0.00	4,500.00	1,012.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,600.00	0.00	0.00	4,600.00	1,112.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,700.00	0.00	0.00	4,700.00	1,212.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,800.00	0.00	0.00	4,800.00	1,312.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
4,900.00	0.00	0.00	4,900.00	1,412.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,000.00	0.00	0.00	5,000.00	1,512.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,100.00	0.00	0.00	5,100.00	1,612.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,200.00	0.00	0.00	5,200.00	1,712.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,300.00	0.00	0.00	5,300.00	1,812.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10

Pathfinder Energy Services
Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	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)
5,400.00	0.00	0.00	5,400.00	1,912.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,500.00	0.00	0.00	5,500.00	2,012.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,600.00	0.00	0.00	5,600.00	2,112.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,700.00	0.00	0.00	5,700.00	2,212.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,800.00	0.00	0.00	5,800.00	2,312.00	0.00	0.00	0.00	0.00	685,434.10	533,409.10
5,852.50	0.00	0.00	5,852.50	2,364.50	0.00	0.00	0.00	0.00	685,434.10	533,409.10
KOP - 5852.50' MD, 0.00° INC, 0.00° AZI, 5852.50' TVD										
5,875.00	2.70	272.17	5,874.99	2,386.99	0.02	-0.53	0.53	12.00	685,434.12	533,408.57
5,900.00	5.70	272.17	5,899.92	2,411.92	0.09	-2.36	2.36	12.00	685,434.19	533,406.74
5,925.00	8.70	272.17	5,924.72	2,436.72	0.21	-5.49	5.49	12.00	685,434.31	533,403.61
5,950.00	11.70	272.17	5,949.32	2,461.32	0.38	-9.91	9.92	12.00	685,434.48	533,399.19
5,975.00	14.70	272.17	5,973.66	2,485.66	0.59	-15.61	15.63	12.00	685,434.69	533,393.49
6,000.00	17.70	272.17	5,997.67	2,509.67	0.86	-22.58	22.60	12.00	685,434.96	533,386.52
6,025.00	20.70	272.17	6,021.27	2,533.27	1.17	-30.80	30.82	12.00	685,435.27	533,378.30
6,050.00	23.70	272.17	6,044.42	2,556.42	1.52	-40.23	40.26	12.00	685,435.62	533,368.87
6,075.00	26.70	272.17	6,067.04	2,579.04	1.93	-50.87	50.90	12.00	685,436.03	533,358.23
6,100.00	29.69	272.17	6,089.07	2,601.07	2.37	-62.67	62.71	12.00	685,436.47	533,346.43
6,125.00	32.69	272.17	6,110.45	2,622.45	2.86	-75.61	75.66	12.00	685,436.96	533,333.49
6,150.00	35.69	272.17	6,131.13	2,643.13	3.40	-89.64	89.71	12.00	685,437.50	533,319.46
6,175.00	38.69	272.17	6,151.04	2,663.04	3.97	-104.74	104.82	12.00	685,438.07	533,304.36
6,200.00	41.69	272.17	6,170.13	2,682.13	4.58	-120.86	120.95	12.00	685,438.68	533,288.24
6,225.00	44.69	272.17	6,188.36	2,700.36	5.23	-137.96	138.06	12.00	685,439.33	533,271.14
6,250.00	47.69	272.17	6,205.66	2,717.66	5.91	-155.99	156.10	12.00	685,440.01	533,253.11
6,275.00	50.69	272.17	6,222.00	2,734.00	6.63	-174.90	175.02	12.00	685,440.73	533,234.20
6,300.00	53.69	272.17	6,237.32	2,749.32	7.37	-194.63	194.77	12.00	685,441.47	533,214.47
6,325.00	56.69	272.17	6,251.59	2,763.59	8.15	-215.14	215.29	12.00	685,442.25	533,193.96
6,350.00	59.69	272.17	6,264.77	2,776.77	8.96	-236.37	236.54	12.00	685,443.06	533,172.73

Pathfinder Energy Services
Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
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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)
6,375.00	62.69	272.17	6,276.82	2,788.82	9.79	-258.25	258.44	12.00	685,443.89	533,150.85
6,400.00	65.69	272.17	6,287.70	2,799.70	10.64	-280.74	280.94	12.00	685,444.74	533,128.36
6,425.00	68.69	272.17	6,297.39	2,809.39	11.51	-303.77	303.98	12.00	685,445.61	533,105.33
6,450.00	71.69	272.17	6,305.86	2,817.86	12.40	-327.27	327.50	12.00	685,446.50	533,081.83
6,475.00	74.69	272.17	6,313.10	2,825.10	13.31	-351.18	351.43	12.00	685,447.41	533,057.92
6,500.00	77.69	272.17	6,319.06	2,831.06	14.23	-375.44	375.70	12.00	685,448.33	533,033.66
6,525.00	80.69	272.17	6,323.75	2,835.75	15.16	-399.97	400.26	12.00	685,449.26	533,009.13
6,550.00	83.69	272.17	6,327.15	2,839.15	16.09	-424.72	425.02	12.00	685,450.19	532,984.38
6,575.00	86.68	272.17	6,329.25	2,841.25	17.04	-449.61	449.93	12.00	685,451.14	532,959.49
6,600.00	89.68	272.17	6,330.04	2,842.04	17.98	-474.58	474.92	12.00	685,452.08	532,934.52
6,609.55	90.83	272.17	6,330.00	2,842.00	18.34	-484.12	484.47	12.00	685,452.44	532,924.98
6,609.67	90.83	272.17	6,330.00	2,842.00	18.35	-484.24	484.58	0.00	685,452.45	532,924.86
Land Curve- 6609.67°MD, 90.83°INC, 272.17°AZI, 6330.00°TVD, 0.00°DLS										
6,700.00	90.83	272.17	6,328.69	2,840.69	21.77	-574.49	574.91	0.00	685,455.87	532,834.61
6,800.00	90.83	272.17	6,327.24	2,839.24	25.55	-674.41	674.90	0.00	685,459.65	532,734.69
6,900.00	90.83	272.17	6,325.79	2,837.79	29.34	-774.33	774.89	0.00	685,463.44	532,634.77
7,000.00	90.83	272.17	6,324.34	2,836.34	33.13	-874.25	874.87	0.00	685,467.23	532,534.85
7,100.00	90.83	272.17	6,322.90	2,834.90	36.91	-974.17	974.86	0.00	685,471.01	532,434.93
7,125.17	90.83	272.17	6,322.50	2,834.50	37.87	-999.31	1,000.03	0.00	685,471.97	532,409.79
Target 1 (Snowball)										
7,134.78	91.12	272.17	6,322.34	2,834.34	38.23	-1,008.91	1,009.64	3.00	685,472.33	532,400.19
7,200.00	91.12	272.17	6,321.06	2,833.06	40.70	-1,074.08	1,074.85	0.00	685,474.80	532,335.02
7,300.00	91.12	272.17	6,319.11	2,831.11	44.49	-1,173.99	1,174.83	0.00	685,478.59	532,235.11
7,400.00	91.12	272.17	6,317.16	2,829.16	48.28	-1,273.89	1,274.81	0.00	685,482.38	532,135.21
7,500.00	91.12	272.17	6,315.21	2,827.21	52.07	-1,373.80	1,374.79	0.00	685,486.17	532,035.30
7,600.00	91.12	272.17	6,313.26	2,825.26	55.86	-1,473.71	1,474.77	0.00	685,489.96	531,935.39
7,700.00	91.12	272.17	6,311.31	2,823.31	59.65	-1,573.62	1,574.75	0.00	685,493.75	531,835.48

Pathfinder Energy Services

Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	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)	
7,800.00	91.12	272.17	6,309.35	2,821.35	63.44	-1,673.53	1,674.73	0.00	685,497.54	531,735.57	
7,900.00	91.12	272.17	6,307.40	2,819.40	67.22	-1,773.44	1,774.71	0.00	685,501.32	531,635.66	
8,000.00	91.12	272.17	6,305.45	2,817.45	71.01	-1,873.35	1,874.70	0.00	685,505.11	531,535.75	
8,100.00	91.12	272.17	6,303.50	2,815.50	74.80	-1,973.26	1,974.68	0.00	685,508.90	531,435.84	
8,125.56	91.12	272.17	6,303.00	2,815.00	75.77	-1,998.80	2,000.24	0.00	685,509.87	531,410.30	
Target 2 (Snowball)											
8,209.32	91.15	272.17	6,301.34	2,813.34	78.94	-2,082.48	2,083.97	0.03	685,513.04	531,326.62	
8,300.00	91.15	272.17	6,299.53	2,811.53	82.38	-2,173.08	2,174.64	0.00	685,516.48	531,236.02	
8,400.00	91.15	272.17	6,297.53	2,809.53	86.17	-2,272.98	2,274.62	0.00	685,520.27	531,136.12	
8,500.00	91.15	272.17	6,295.53	2,807.53	89.96	-2,372.89	2,374.60	0.00	685,524.06	531,036.21	
8,600.00	91.15	272.17	6,293.52	2,805.52	93.74	-2,472.80	2,474.58	0.00	685,527.84	530,936.30	
8,700.00	91.15	272.17	6,291.52	2,803.52	97.53	-2,572.71	2,574.56	0.00	685,531.63	530,836.39	
8,800.00	91.15	272.17	6,289.52	2,801.52	101.32	-2,672.62	2,674.54	0.00	685,535.42	530,736.48	
8,900.00	91.15	272.17	6,287.52	2,799.52	105.11	-2,772.52	2,774.52	0.00	685,539.21	530,636.58	
9,000.00	91.15	272.17	6,285.52	2,797.52	108.90	-2,872.43	2,874.50	0.00	685,543.00	530,536.67	
9,100.00	91.15	272.17	6,283.51	2,795.51	112.69	-2,972.34	2,974.48	0.00	685,546.79	530,436.76	
9,125.65	91.15	272.17	6,283.00	2,795.00	113.66	-2,997.97	3,000.12	0.00	685,547.76	530,411.13	
Target 3 (Snowball)											
9,151.11	91.15	272.17	6,282.49	2,794.49	114.62	-3,023.41	3,025.58	0.00	685,548.72	530,385.69	
9,200.00	91.15	272.17	6,281.51	2,793.51	116.48	-3,072.25	3,074.46	0.00	685,550.58	530,336.85	
9,300.00	91.15	272.17	6,279.51	2,791.51	120.27	-3,172.16	3,174.44	0.00	685,554.37	530,236.94	
9,400.00	91.15	272.17	6,277.51	2,789.51	124.05	-3,272.07	3,274.42	0.00	685,558.15	530,137.03	
9,500.00	91.15	272.17	6,275.51	2,787.51	127.84	-3,371.97	3,374.40	0.00	685,561.94	530,037.13	
9,600.00	91.15	272.17	6,273.50	2,785.50	131.63	-3,471.88	3,474.38	0.00	685,565.73	529,937.22	
9,700.00	91.15	272.17	6,271.50	2,783.50	135.42	-3,571.79	3,574.36	0.00	685,569.52	529,837.31	
9,800.00	91.15	272.17	6,269.50	2,781.50	139.21	-3,671.70	3,674.34	0.00	685,573.31	529,737.40	
9,900.00	91.15	272.17	6,267.50	2,779.50	143.00	-3,771.61	3,774.32	0.00	685,577.10	529,637.49	

Pathfinder Energy Services
Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	North Reference:	Grd
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)	
10,000.00	91.15	272.17	6,265.50	2,777.50	146.79	-3,871.51	3,874.30	0.00	685,580.89	529,537.59	
10,100.00	91.15	272.17	6,263.49	2,775.49	150.57	-3,971.42	3,974.28	0.00	685,584.67	529,437.68	
10,126.01	91.15	272.17	6,263.00	2,775.00	151.56	-3,997.41	4,000.28	0.00	685,585.66	529,411.69	
Target 4 (Snowball)											
10,130.98	91.00	272.17	6,262.91	2,774.91	151.75	-4,002.38	4,005.25	3.00	685,585.85	529,406.72	
10,200.00	91.00	272.17	6,261.70	2,773.70	154.36	-4,071.33	4,074.26	0.00	685,588.46	529,337.77	
10,300.00	91.00	272.17	6,259.96	2,771.96	158.15	-4,171.25	4,174.24	0.00	685,592.25	529,237.85	
10,400.00	91.00	272.17	6,258.22	2,770.22	161.94	-4,271.16	4,274.23	0.00	685,596.04	529,137.94	
10,500.00	91.00	272.17	6,256.48	2,768.48	165.73	-4,371.07	4,374.21	0.00	685,599.83	529,038.03	
10,600.00	91.00	272.17	6,254.74	2,766.74	169.52	-4,470.99	4,474.20	0.00	685,603.62	528,938.11	
10,699.80	91.00	272.17	6,253.00	2,765.00	173.30	-4,570.70	4,573.98	0.00	685,607.40	528,838.40	
TD @ 10699.80' MD - PBHL (Snowball #1)											

Pathfinder Energy Services

Patfinder X & Y Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Snowball State Com
Project:	Eddy County	TVD Reference:	WELL @ 3488.00ft (RKB= 18')
Site:	Snowball State Com #1	MD Reference:	WELL @ 3488.00ft (RKB= 18')
Well:	Snowball State Com	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
Target 1 (Snowball) - plan hits target - Point	0.00	0.00	6,322.50	37.87	-999.31	685,471.970	532,409.790	32° 53' 3.836 N	104° 13' 39.929 W
Target 2 (Snowball) - plan hits target - Point	0.00	0.00	6,303.00	75.77	-1,998.80	685,509.870	531,410.300	32° 53' 4.220 N	104° 13' 51.649 W
Target 3 (Snowball) - plan hits target - Point	0.00	0.00	6,283.00	113.66	-2,997.97	685,547.760	530,411.130	32° 53' 4.605 N	104° 14' 3.366 W
PBHL (Snowball #1) - plan hits target - Point	0.00	0.00	6,253.00	173.30	-4,570.70	685,607.400	528,838.400	32° 53' 5.209 N	104° 14' 21.809 W
Target 4 (Snowball) - plan hits target - Point	0.00	0.00	6,263.00	151.56	-3,997.41	685,585.660	529,411.690	32° 53' 4.989 N	104° 14' 15.086 W

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,852.50	5,852.50	0.00	0.00	KOP - 5852.50'MD, 0.00°INC, 0.00°AZI, 5852.50'TVD
6,609.67	6,330.00	18.35	-484.24	Land Curve- 6609.67'MD, 90.83°INC, 272.17°AZI, 6330.00'TVD, 0.00°I
10,699.80	6,253.00	37.87	-999.31	TD @ 10699.80' MD

Checked By: _____	Approved By: _____	Date: _____
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