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APR 25 2008
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Mack Energy

Eddy County

Rams State Com #1H

Rams State Com #1H

Original Hole

Plan: Plan #1

Pathfinder Survey Report

24 April, 2008

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Azimuths to Grid North
True North: -0.13°
Magnetic North: 8.11°

Magnetic Field
Strength: 49311.95nT
Dip Angle: 60.83°
Date: 4/24/2008
Model: IGRF200510

**Magnetic Field
Strength: 49311.9snT
Dip Angle: 60.83°
Date: 4/24/2008
Model: IGRF200510**

PATHFINDER

ENERGY SERVICES

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

WELL DETAILS: Rams State Com #1H
Ground Elevation . 3653.00
RKB Elevation: EST RKB @ 3672.00
Rig Name:

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	897439.400	575735.700	32° 55' 1.540 N	104° 5' 11.518 W	

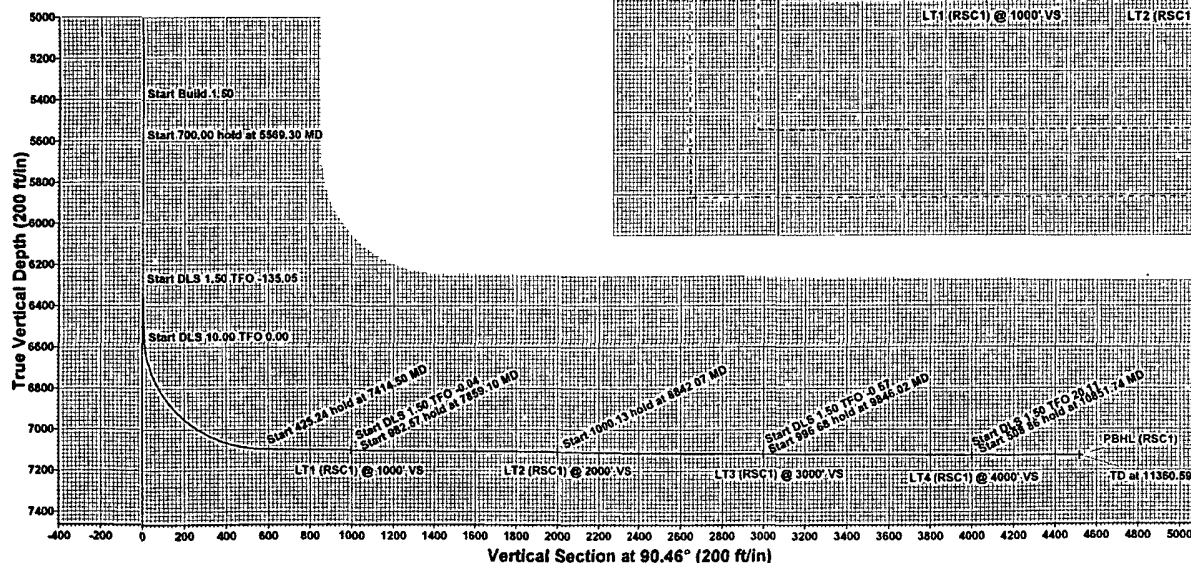
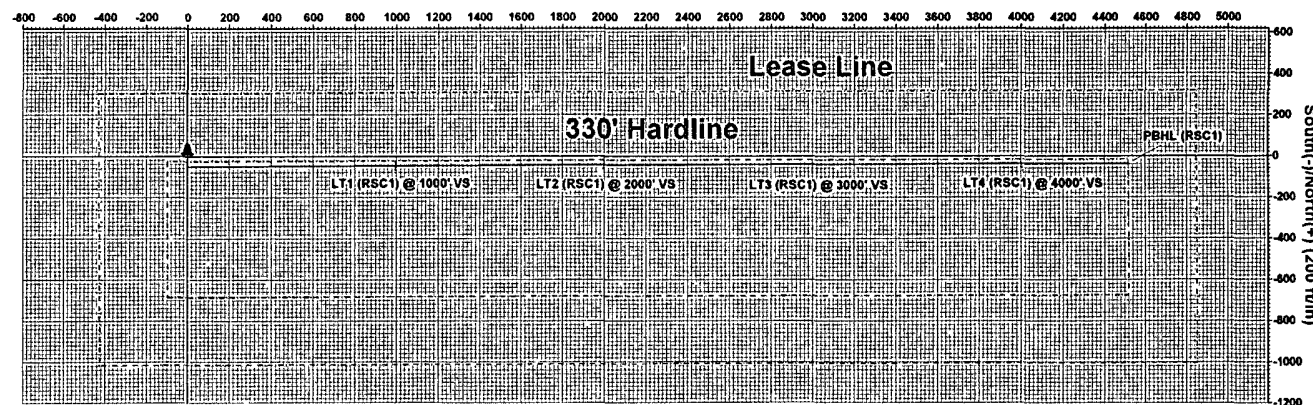
SECTION DETAILS

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	5369.30	0.00	0.00	5369.30	0.00	0.00	0.00	0.00	0.00	
3	5569.30	0.00	180.00	5569.21	-5.23	0.00	1.50	180.00	0.04	
4	6269.30	0.00	180.00	6268.25	-41.87	0.00	0.00	0.00	0.00	
5	6552.50	3.00	89.83	6551.19	-49.26	7.41	1.50	-135.05	7.81	
6	7414.50	89.29	89.83	7094.10	-47.59	571.58	10.00	0.00	597.95	
7	7839.74	89.29	89.83	7109.00	-46.33	986.71	0.00	0.00	1016.48	LT1 (RSC1) @ 1000' VS
8	7815.10	89.49	89.83	7016.26	-46.27	1016.14	1.50	-0.04	1016.48	
9	8841.67	89.49	89.83	7109.00	-43.35	1998.67	0.00	0.00	1998.95	LT2 (RSC1) @ 2000' VS
10	8842.07	89.48	89.83	7109.00	-43.35	1998.07	1.50	173.12	1999.35	
11	9842.20	89.48	89.83	7118.00	-40.39	2999.15	0.00	0.00	2999.38	LT3 (RSC1) @ 3000' VS
12	9846.02	89.54	89.83	7118.00	-40.38	3002.97	1.50	-0.57	3003.20	
13	10561.70	89.54	89.83	7126.00	-37.42	4008.62	0.00	0.00	4008.82	LT4 (RSC1) @ 4000' VS
14	10551.74	89.67	89.88	7126.00	-37.42	4008.65	1.50	20.11	4008.82	
15	11350.59	89.67	89.88	7126.00	-36.30	4517.50	0.00	0.00	4517.65	PBHL (RSC1)

WELLBORE TARGET DETAILS

Name	TVD	+N/S	+E/W	Shape
LT1 (RSC1) @ 1000' VS	7100.00	-46.33	996.78	Point
LT2 (RSC1) @ 2000' VS	7109.00	-41.35	1998.67	Point
LT3 (RSC1) @ 3000' VS	7118.00	-40.39	2999.15	Point
LT4 (RSC1) @ 4000' VS	7126.00	-37.42	3999.62	Point
PBHL (RSC1)	7129.00	-36.30	4517.50	Point

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



Project: Eddy County
Site: Rams State Com #1H
Well: Rams State Com #1H
Wellbore: Original Hole
Plan: Plan #1 (Rams State Com #1H/Original Hole)

Plan, Plan #1 (Rams State Com #1H/Original Note)

Created By: Mark Freeman Date: 12:49, April 24 2009

Checked: _____ Date: _____

WHS

Pathfinder Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Rams State Com #1H
Project:	Eddy County	TVD Reference:	EST RKB @ 3672.00ft
Site:	Rams State Com #1H	MD Reference:	EST RKB @ 3672.00ft
Well:	Rams State Com #1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM, 2003.16 Single User Db

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	Rams State Com #1H				
Site Position:		Northing:	697,439.400 ft	Latitude:	32° 55' 1.540 N
From:	Map	Easting:	575,735.700 ft	Longitude:	104° 5' 11.518 W
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.13 °

Well	Rams State Com #1H					
Well Position	+N/-S	0.00 ft	Northing:	697,439.400 ft	Latitude:	32° 55' 1.540 N
	+E/-W	0.00 ft	Easting:	575,735.700 ft	Longitude:	104° 5' 11.518 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,653.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	4/24/2008	8.24	60.83	49,312

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	90.46

Survey Tool Program		Date 4/24/2008		
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
0.00	11,360.59	Plan #1 (Original Hole)	MWD	MWD - Standard

Planned Survey:								
MD	Inc	Azi	TVD	N/S	E/W	V. Sec	DLeg	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	

WHS

Pathfinder Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Rams State Com #1H
Project:	Eddy County	TVD Reference:	EST RKB @ 3672.00ft
Site:	Rams State Com #1H	MD Reference:	EST RKB @ 3672.00ft
Well:	Rams State Com #1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Planned Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	
5,369.30	0.00	0.00	5,369.30	0.00	0.00	0.00	0.00	
5,400.00	0.46	180.00	5,400.00	-0.12	0.00	0.00	1.50	

WHS

Pathfinder Survey Report

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Well:	Rams State Com #1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Planned Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
5,500.00	1.96	180.00	5,499.97	-2.24	0.00	0.02	1.50	
5,569.30	3.00	180.00	5,569.21	-5.23	0.00	0.04	1.50	
5,600.00	3.00	180.00	5,599.87	-6.84	0.00	0.05	0.00	
5,700.00	3.00	180.00	5,699.73	-12.08	0.00	0.10	0.00	
5,800.00	3.00	180.00	5,799.59	-17.31	0.00	0.14	0.00	
5,900.00	3.00	180.00	5,899.46	-22.54	0.00	0.18	0.00	
6,000.00	3.00	180.00	5,999.32	-27.78	0.00	0.22	0.00	
6,100.00	3.00	180.00	6,099.18	-33.01	0.00	0.27	0.00	
6,200.00	3.00	180.00	6,199.04	-38.24	0.00	0.31	0.00	
6,269.30	3.00	180.00	6,268.25	-41.87	0.00	0.34	0.00	
6,300.00	2.69	173.06	6,298.91	-43.39	0.09	0.44	1.50	
6,400.00	2.13	139.33	6,398.83	-47.13	1.58	1.96	1.50	
6,500.00	2.51	102.67	6,498.75	-49.01	4.92	5.31	1.50	
6,552.50	3.00	89.83	6,551.19	-49.26	7.41	7.81	1.50	
6,600.00	7.75	89.83	6,598.47	-49.25	11.86	12.26	10.00	
6,650.00	12.75	89.83	6,647.65	-49.22	20.76	21.15	10.00	
6,700.00	17.75	89.83	6,695.88	-49.18	33.90	34.30	10.00	
6,750.00	22.75	89.83	6,742.77	-49.13	51.21	51.60	10.00	
6,800.00	27.75	89.83	6,787.98	-49.07	72.53	72.92	10.00	
6,850.00	32.75	89.83	6,831.16	-48.99	97.71	98.10	10.00	
6,900.00	37.75	89.83	6,871.98	-48.91	126.56	126.94	10.00	
6,950.00	42.75	89.83	6,910.13	-48.81	158.85	159.24	10.00	
7,000.00	47.75	89.83	6,945.32	-48.71	194.35	194.74	10.00	
7,050.00	52.75	89.83	6,977.28	-48.59	232.78	233.16	10.00	
7,100.00	57.75	89.83	7,005.77	-48.47	273.85	274.23	10.00	
7,150.00	62.75	89.83	7,030.57	-48.34	317.25	317.62	10.00	
7,200.00	67.75	89.83	7,051.50	-48.21	362.64	363.01	10.00	
7,250.00	72.75	89.83	7,068.39	-48.07	409.68	410.05	10.00	
7,300.00	77.75	89.83	7,081.11	-47.93	458.02	458.39	10.00	
7,350.00	82.75	89.83	7,089.58	-47.78	507.28	507.65	10.00	
7,400.00	87.75	89.83	7,093.72	-47.63	557.09	557.46	10.00	
7,414.50	89.20	89.83	7,094.10	-47.59	571.58	571.95	10.00	
7,500.00	89.20	89.83	7,095.30	-47.33	657.08	657.44	0.00	
7,600.00	89.20	89.83	7,096.69	-47.04	757.07	757.42	0.00	
7,700.00	89.20	89.83	7,098.09	-46.74	857.06	857.41	0.00	
7,800.00	89.20	89.83	7,099.49	-46.44	957.05	957.39	0.00	
7,839.74	89.20	89.83	7,100.04	-46.33	996.78	997.12	0.00	
7,859.10	89.49	89.83	7,100.26	-46.27	1,016.14	1,016.48	1.50	
7,900.00	89.49	89.83	7,100.63	-46.15	1,057.04	1,057.38	0.00	
8,000.00	89.49	89.83	7,101.52	-45.85	1,157.04	1,157.37	0.00	
8,100.00	89.49	89.83	7,102.40	-45.55	1,257.03	1,257.36	0.00	
8,200.00	89.49	89.83	7,103.29	-45.26	1,357.03	1,357.35	0.00	
8,300.00	89.49	89.83	7,104.18	-44.96	1,457.02	1,457.34	0.00	
8,400.00	89.49	89.83	7,105.07	-44.66	1,557.02	1,557.33	0.00	

WHS

Pathfinder Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Rams State Com #1H
Project:	Eddy County	TVD Reference:	EST. RKB @ 3672.00ft
Site:	Rams State Com #1H	MD Reference:	EST. RKB @ 3672.00ft
Well:	Rams State Com #1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.16 Single User Db

Planned Survey								
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	
8,500.00	89.49	89.83	7,105.96	-44.37	1,657.01	1,657.32	0.00	
8,600.00	89.49	89.83	7,106.85	-44.07	1,757.01	1,757.31	0.00	
8,700.00	89.49	89.83	7,107.74	-43.77	1,857.01	1,857.30	0.00	
8,800.00	89.49	89.83	7,108.63	-43.47	1,957.00	1,957.29	0.00	
8,841.67	89.49	89.83	7,109.00	-43.35	1,998.67	1,998.95	0.00	
8,842.07	89.48	89.83	7,109.00	-43.35	1,999.07	1,999.35	1.50	
8,900.00	89.48	89.83	7,109.52	-43.18	2,057.00	2,057.28	0.00	
9,000.00	89.48	89.83	7,110.42	-42.88	2,156.99	2,157.27	0.00	
9,100.00	89.48	89.83	7,111.32	-42.59	2,256.99	2,257.26	0.00	
9,200.00	89.48	89.83	7,112.22	-42.29	2,356.98	2,357.25	0.00	
9,300.00	89.48	89.83	7,113.12	-41.99	2,456.98	2,457.24	0.00	
9,400.00	89.48	89.83	7,114.02	-41.70	2,556.97	2,557.23	0.00	
9,500.00	89.48	89.83	7,114.92	-41.40	2,656.97	2,657.22	0.00	
9,600.00	89.48	89.83	7,115.82	-41.11	2,756.97	2,757.21	0.00	
9,700.00	89.48	89.83	7,116.72	-40.81	2,856.96	2,857.20	0.00	
9,800.00	89.48	89.83	7,117.62	-40.51	2,956.96	2,957.19	0.00	
9,842.20	89.48	89.83	7,118.00	-40.39	2,999.15	2,999.38	0.00	
9,846.02	89.54	89.83	7,118.03	-40.38	3,002.97	3,003.20	1.50	
9,900.00	89.54	89.83	7,118.46	-40.22	3,056.95	3,057.18	0.00	
10,000.00	89.54	89.83	7,119.26	-39.92	3,156.95	3,157.17	0.00	
10,100.00	89.54	89.83	7,120.06	-39.62	3,256.94	3,257.16	0.00	
10,200.00	89.54	89.83	7,120.86	-39.33	3,356.94	3,357.15	0.00	
10,300.00	89.54	89.83	7,121.66	-39.03	3,456.94	3,457.14	0.00	
10,400.00	89.54	89.83	7,122.46	-38.73	3,556.93	3,557.13	0.00	
10,500.00	89.54	89.83	7,123.26	-38.44	3,656.93	3,657.12	0.00	
10,600.00	89.54	89.83	7,124.06	-38.14	3,756.93	3,757.11	0.00	
10,700.00	89.54	89.83	7,124.86	-37.84	3,856.92	3,857.10	0.00	
10,800.00	89.54	89.83	7,125.66	-37.55	3,956.92	3,957.09	0.00	
10,842.70	89.54	89.83	7,126.00	-37.42	3,999.62	3,999.79	0.00	
10,851.74	89.67	89.88	7,126.06	-37.40	4,008.65	4,008.82	1.50	
10,900.00	89.67	89.88	7,126.34	-37.29	4,056.92	4,057.09	0.00	
11,000.00	89.67	89.88	7,126.92	-37.08	4,156.91	4,157.08	0.00	
11,100.00	89.67	89.88	7,127.50	-36.86	4,256.91	4,257.07	0.00	
11,200.00	89.67	89.88	7,128.07	-36.65	4,356.91	4,357.06	0.00	
11,300.00	89.67	89.88	7,128.65	-36.43	4,456.91	4,457.06	0.00	
11,360.59	89.67	89.88	7,129.00	-36.30	4,517.50	4,517.65	0.00	

WHS

Pathfinder Survey Report

Company:	Mack Energy	Local Co-ordinate Reference:	Well Rams State Com #1H
Project:	Eddy County	TVD Reference:	EST RKB @ 3672.00ft
Site:	Rams State Com #1H	MD Reference:	EST RKB @ 3672.00ft
Well:	Rams State Com #1H	North Reference:	Grid
Wellbore:	Original Hole	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
LT2 (RSC1) @ 2000' - plan hits target - Point	0.00	0.00	7,109.00	-43.35	1,998.67	697,396.050	577,734.370	32° 55' 1.064 N	104° 4' 48.072 W
PBHL (RSC1) - plan hits target - Point	0.00	0.00	7,129.00	-36.30	4,517.50	697,403.100	580,253.200	32° 55' 1.073 N	104° 4' 18.523 W
LT4 (RSC1) @ 4000' - plan hits target - Point	0.00	0.00	7,126.00	-37.42	3,999.62	697,401.980	579,735.320	32° 55' 1.075 N	104° 4' 24.599 W
LT1 (RSC1) @ 1000' - plan hits target - Point	0.00	0.00	7,100.00	-46.33	996.78	697,393.070	576,732.480	32° 55' 1.059 N	104° 4' 59.826 W
LT3 (RSC1) @ 3000' - plan hits target - Point	0.00	0.00	7,118.00	-40.39	2,999.15	697,399.010	578,734.850	32° 55' 1.070 N	104° 4' 36.335 W

Checked By: _____	Approved By: _____	Date: _____
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