



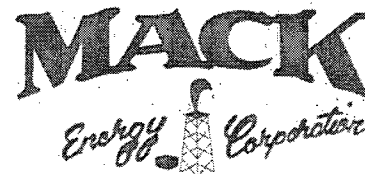
Mack Energy Corp

Lea County
Cap State #1
State #1
#1

Plan: Plan #1

MEC Survey Report

15 January, 2013



30-025-40920



MEC
MEC Survey Report



Company: Mack Energy Corp
Project: Lea County
Site: Cap State #1
Well: State #1
Wellbore: #1
Design: Plan #1

Local Co-ordinate Reference: Site Cap State #1
TVD Reference: WELL @ 4091.7usft (Original Well Elev)
MD Reference: WELL @ 4091.7usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project: Lea County

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Cap State #1

Site Position:	From: Map	Northing:	636,167.18 usft	Latitude:	32° 44' 45.184 N
		Easting:	768,093.33 usft	Longitude:	103° 27' 40.979 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 "

Well: State #1

Well Position	+N/-S	0.0 usft	Northing:	636,167.18 usft	Latitude:	32° 44' 45.184 N
	+E/-W	0.0 usft	Easting:	768,093.33 usft	Longitude:	103° 27' 40.979 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,074.2 usft

Wellbore: #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	1/15/2013	7.37	60.68	48,819

Design: Plan #1

Audit Notes:

Version: Phase: PROTOTYPE Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	275.25

Survey Tool Program Date: 1/15/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	10,819.8	Plan #1 (#1)		



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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northings (usft)	Easting (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33



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Database: EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
3,250.0	0.00	0.00	3,250.0	0.0	0.0	0.0	0.00	636,167.18	768,093.33
3,300.0	2.00	275.25	3,300.0	0.1	-0.9	0.9	4.00	636,167.26	768,092.46
3,400.0	6.00	275.25	3,399.7	0.7	-7.8	7.8	4.00	636,167.90	768,085.52
3,486.7	9.47	275.25	3,485.6	1.8	-19.4	19.5	4.00	636,168.97	768,073.90
3,500.0	9.47	275.25	3,498.7	2.0	-21.6	21.7	0.00	636,169.17	768,071.72
3,600.0	9.47	275.25	3,597.4	3.5	-38.0	38.1	0.00	636,170.67	768,055.34
3,700.0	9.47	275.25	3,696.0	5.0	-54.4	54.6	0.00	636,172.18	768,038.96
3,800.0	9.47	275.25	3,794.7	6.5	-70.7	71.0	0.00	636,173.69	768,022.58
3,900.0	9.47	275.25	3,893.3	8.0	-87.1	87.5	0.00	636,175.19	768,006.20
4,000.0	9.47	275.25	3,991.9	9.5	-103.5	103.9	0.00	636,176.70	767,989.83
4,100.0	9.47	275.25	4,090.6	11.0	-119.9	120.4	0.00	636,178.20	767,973.45
4,200.0	9.47	275.25	4,189.2	12.5	-136.3	136.8	0.00	636,179.71	767,957.07
4,300.0	9.47	275.25	4,287.8	14.0	-152.6	153.3	0.00	636,181.22	767,940.69
4,400.0	9.47	275.25	4,386.5	15.5	-169.0	169.7	0.00	636,182.72	767,924.31
4,500.0	9.47	275.25	4,485.1	17.0	-185.4	186.2	0.00	636,184.23	767,907.93
4,600.0	9.47	275.25	4,583.8	18.6	-201.8	202.6	0.00	636,185.74	767,891.55
4,700.0	9.47	275.25	4,682.4	20.1	-218.2	219.1	0.00	636,187.24	767,875.17
4,783.1	9.47	275.25	4,764.4	21.3	-231.8	232.8	0.00	636,188.49	767,861.56
4,800.0	8.79	275.25	4,781.1	21.6	-234.4	235.4	4.00	636,188.74	767,858.89
4,900.0	4.79	275.25	4,880.3	22.6	-246.2	247.3	4.00	636,189.82	767,847.12
5,000.0	0.79	275.25	4,980.2	23.1	-251.1	252.1	4.00	636,190.27	767,842.27



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MD Reference:
North Reference:
Survey Calculation Method:
Database:
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WELL @ 4091.7usft (Original Well Elev)
WELL @ 4091.7usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
5,019.8	0.00	0.00	5,000.0	23.1	-251.2	252.3	4.00	636,190.28	767,842.13
5,100.0	0.00	0.00	5,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,200.0	0.00	0.00	5,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,300.0	0.00	0.00	5,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,400.0	0.00	0.00	5,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,500.0	0.00	0.00	5,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,600.0	0.00	0.00	5,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,700.0	0.00	0.00	5,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,800.0	0.00	0.00	5,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
5,900.0	0.00	0.00	5,880.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,000.0	0.00	0.00	5,980.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,100.0	0.00	0.00	6,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,200.0	0.00	0.00	6,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,300.0	0.00	0.00	6,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,400.0	0.00	0.00	6,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,500.0	0.00	0.00	6,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,600.0	0.00	0.00	6,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,700.0	0.00	0.00	6,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,800.0	0.00	0.00	6,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
6,900.0	0.00	0.00	6,880.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,000.0	0.00	0.00	6,980.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,100.0	0.00	0.00	7,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,200.0	0.00	0.00	7,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,300.0	0.00	0.00	7,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,400.0	0.00	0.00	7,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,500.0	0.00	0.00	7,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,600.0	0.00	0.00	7,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13



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Wellbore: #1
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Survey Calculation Method:
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WELL @ 4091.7usft (Original Well Elev)
WELL @ 4091.7usft (Original Well Elev)
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7,700.0	0.00	0.00	7,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,800.0	0.00	0.00	7,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
7,900.0	0.00	0.00	7,880.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,000.0	0.00	0.00	7,980.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,100.0	0.00	0.00	8,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,200.0	0.00	0.00	8,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,300.0	0.00	0.00	8,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,400.0	0.00	0.00	8,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,500.0	0.00	0.00	8,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,600.0	0.00	0.00	8,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,700.0	0.00	0.00	8,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,800.0	0.00	0.00	8,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
8,900.0	0.00	0.00	8,880.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,000.0	0.00	0.00	8,980.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,100.0	0.00	0.00	9,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,200.0	0.00	0.00	9,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,300.0	0.00	0.00	9,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,400.0	0.00	0.00	9,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,500.0	0.00	0.00	9,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,600.0	0.00	0.00	9,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,700.0	0.00	0.00	9,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,800.0	0.00	0.00	9,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
9,900.0	0.00	0.00	9,880.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,000.0	0.00	0.00	9,980.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,100.0	0.00	0.00	10,080.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,200.0	0.00	0.00	10,180.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,300.0	0.00	0.00	10,280.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13



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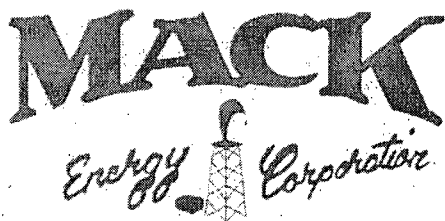
Local Co-ordinate Reference:
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WELL @ 4091.7usft (Original Well Elev)
WELL @ 4091.7usft (Original Well Elev)
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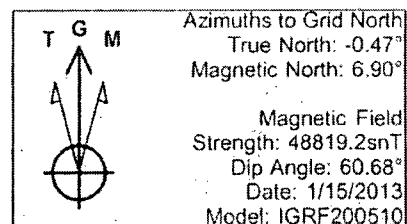
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
10,400.0	0.00	0.00	10,380.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,500.0	0.00	0.00	10,480.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,600.0	0.00	0.00	10,580.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,700.0	0.00	0.00	10,680.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,800.0	0.00	0.00	10,780.2	23.1	-251.2	252.3	0.00	636,190.28	767,842.13
10,819.8	0.00	0.00	10,800.0	23.1	-251.2	252.3	0.00	636,190.28	767,842.13

Checked By: _____ Approved By: _____ Date: _____

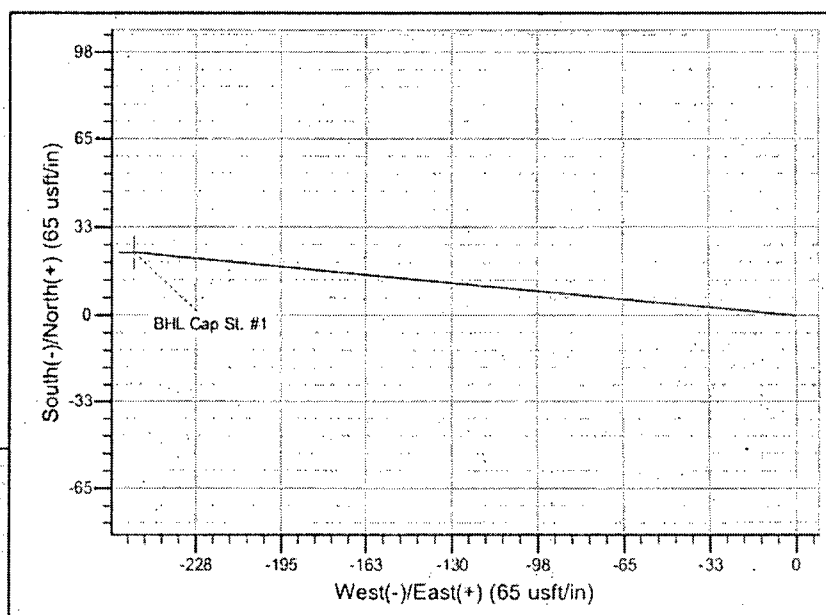
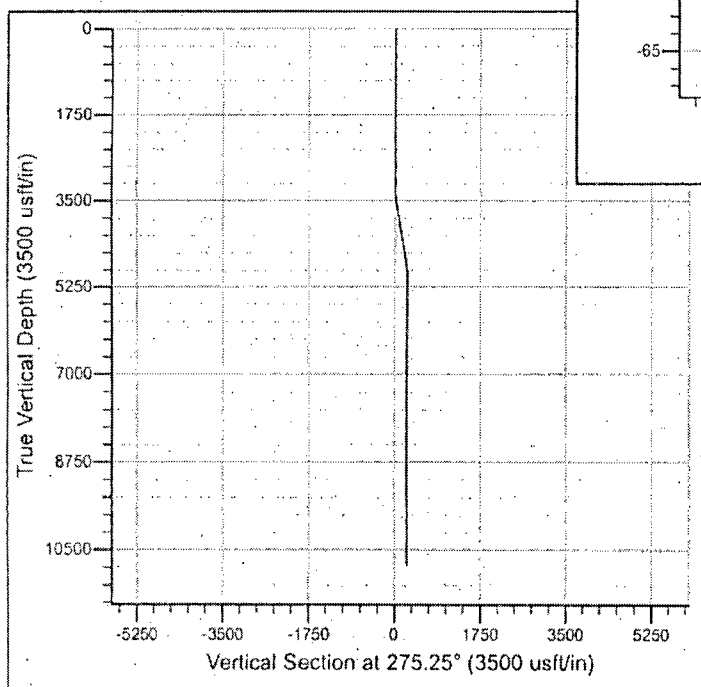


SITE DETAILS: Cap State #1	
Site Centre Northing:	636167.18
Easting:	768093.33
Positional Uncertainty:	0.0
Convergence:	0.47
Local North:	Grid



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	3250.0	0.00	0.00	3250.0	0.0	0.0	0.00	0.00	0.0	
3	3486.7	9.47	275.25	3485.6	1.8	-19.4	4.00	275.25	19.5	
4	4783.1	9.47	275.25	4764.4	21.3	-231.8	0.00	0.00	232.8	
5	5019.8	0.00	0.00	5000.0	23.1	-251.2	4.00	180.00	252.3	
6	10819.8	0.00	0.00	10800.0	23.1	-251.2	0.00	0.00	252.3	BHL Cap St. #1

DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Cap St. #1	10800.0	23.1	-251.2	636190.28	767842.13	$32^\circ 44' 45.43$	$103^\circ 27' 43.918$ W	Point
plan hits target center								



2310 FSL and 1650 FEL are hard lines. We can be south, west, or southwest of these hard lines but not north, east, or northeast. From the BHL the well is 25' North of the south hard line and 25' west of the east hard line.