

Results of Directional Survey

DD

API number:	30-025-40920		
OGRID:		Operator:	MACK ENERGY CORP
		Property:	CAP STATE # 1

surface	ULSTR:	J	18	T 18S	R 34E
				2260 FSL	1425 FEL

BH Loc	ULSTR:	J	18	T 18S	R 34E
10720 MD		10688.4	TVD	2286 FSL	1698 FEL

Top Perf/OH	ULSTR:	J	18	T 18S	R 34E
8979 MD		8947.6	TVD	2282 FSL	1686 FEL

Bot Perf/OH	ULSTR:	J	18	T 18S	R 34E
9104 MD		9072.6	TVD	2280 FSL	1687 FEL

	MD	N/S	E/W	VD
	8916	22.07	-260.34	8884.59
TOP PERFS/OH	8979	21.52	-260.95	8947.58
	9010	21.25	-261.25	8978.58
	9010	21.25	-261.25	8978.58
BOT PERFS/OH	9104	20.48	-262.31	9072.57
	9104	20.48	-262.31	9072.57

NEXT TO LAST	10618	26.17	-272.50	10586.42
LAST READING	10720	26.17	-272.50	10688.42
TD	10720	26.17	-272.50	10688.42

Surface Location	2260	FS	1425	FE
Projected BHL	2286	FS	1698	FE
Location of				
Top Perfs/OH	2282	FS	1686	FE
Bottom Perfs/OH	2280	FS	1687	FE

SUMMARY of Subsurface Locations

Surface Location	J-18-18S-34E	2260	FS	1425	FE	Vert. Depth
Top Perfs/OH	J-18-18S-34E	2282	FS	1686	FE	8947.58
Bottom Perfs/OH	J-18-18S-34E	2280	FS	1687	FE	9072.57
Projected TD	J-18-18S-34E	2286	FS	1698	FE	10688.42

NOV 13 2013



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

August 19, 2013

Mack Energy Corporation
PO Box 960
Artesia, NM 88211-0960

RE: Cap State #1
2310' FSL & 1650' FEL
Sec. 18, T18S, R34E
Lea County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

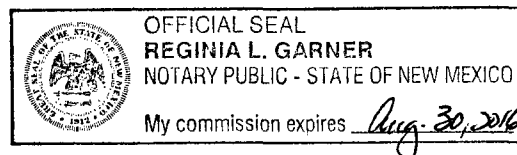
A handwritten signature in cursive script, appearing to read "Chris Graham".

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 19th day of August, 2013.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public

SCANNED

CAP STATE #1

Date	Depth	Deviation	Direction	TVD	Horiz
7/31/2013	199	0.60	0.00	0.00	0.00
7/31/2013	375	0.70	0.00	0.00	0.00
7/31/2013	460	0.20	0.00	0.00	0.00
8/2/2013	548	38.00	89.70	0.00	0.00
8/2/2013	712	1.30	60.80	0.00	0.00
8/2/2013	801	1.40	78.80	0.00	0.00
8/2/2013	965	1.10	60.30	0.00	0.00
8/2/2013	1053	0.80	56.60	0.00	0.00
8/2/2013	1148	0.50	89.50	0.00	0.00
8/2/2013	1243	1.10	90.90	0.00	0.00
8/2/2013	1337	1.00	104.40	0.00	0.00
8/2/2013	1432	1.00	91.90	0.00	0.00
8/2/2013	1520	1.20	89.80	0.00	0.00
8/2/2013	1620	1.30	101.40	0.00	0.00
8/2/2013	1714	1.00	78.30	0.00	0.00
8/3/2013	1808	1.00	71.40	0.00	0.00
8/3/2013	1902	1.40	94.80	0.00	0.00
8/3/2013	1995	2.10	85.30	0.00	0.00
8/3/2013	2088	2.60	97.10	0.00	0.00
8/3/2013	2182	1.80	109.90	0.00	0.00
8/3/2013	2275	1.50	138.40	0.00	0.00
8/3/2013	2369	1.60	139.70	0.00	0.00
8/3/2013	2462	1.10	139.40	0.00	0.00
8/3/2013	2556	0.20	346.90	0.00	0.00
8/3/2013	2649	0.70	349.00	0.00	0.00
8/3/2013	2743	1.50	23.10	0.00	0.00
8/3/2013	2837	2.10	14.20	0.00	0.00
8/3/2013	2931	2.60	5.50	0.00	0.00
8/3/2013	3025	3.30	3.80	0.00	0.00
8/4/2013	3149	2.60	7.20	0.00	0.00
8/5/2013	3203	2.60	10.80	0.00	0.00
8/5/2013	3297	2.50	329.00	0.00	0.00
8/6/2013	3390	4.40	300.20	0.00	0.00
8/6/2013	3484	7.60	283.50	0.00	0.00
8/6/2013	3579	11.70	274.30	0.00	0.00
8/6/2013	4141	11.80	264.60	0.00	0.00
8/6/2013	4234	11.90	269.90	0.00	0.00
8/6/2013	4328	12.40	267.40	0.00	0.00
8/6/2013	4423	11.50	267.30	0.00	0.00
8/6/2013	4516	12.70	267.10	0.00	0.00
8/7/2013	4702	10.90	265.90	0.00	0.00
8/7/2013	4796	9.00	262.30	0.00	0.00
8/7/2013	4889	6.50	255.60	0.00	0.00

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Date	Depth	Deviation	Direction	TVD	Horiz
8/7/2013	4983	4.50	239.90	0.00	0.00
8/7/2013	5076	1.70	208.90	0.00	0.00
8/7/2013	5170	1.10	193.60	0.00	0.00
8/7/2013	5263	1.10	193.30	0.00	0.00
8/7/2013	5356	0.90	193.40	0.00	0.00
8/7/2013	5450	0.90	199.70	0.00	0.00
8/7/2013	5543	0.90	205.50	0.00	0.00
8/8/2013	6197	1.90	8.30	0.00	0.00
8/8/2013	6290	1.90	358.40	0.00	0.00
8/8/2013	6383	2.50	339.10	0.00	0.00
8/8/2013	6477	2.10	333.70	0.00	0.00
8/8/2013	6670	0.80	212.90	0.00	0.00
8/8/2013	6764	0.50	231.30	0.00	0.00
8/8/2013	6857	0.70	241.90	0.00	0.00
8/8/2013	6950	0.60	244.50	0.00	0.00
8/8/2013	7044	0.60	253.60	0.00	0.00
8/9/2013	7137	0.40	277.20	0.00	0.00
8/9/2013	7231	0.60	153.90	0.00	0.00
8/9/2013	7324	1.00	146.10	0.00	0.00
8/9/2013	7418	1.00	0.00	0.00	0.00
8/9/2013	7511	0.90	138.10	0.00	0.00
8/9/2013	7605	0.90	116.40	0.00	0.00
8/10/2013	8071	1.30	340.60	0.00	0.00
8/10/2013	8165	1.50	332.60	0.00	0.00
8/10/2013	8258	1.50	317.80	0.00	0.00
8/11/2013	8539	0.30	328.50	0.00	0.00
8/11/2013	8632	0.10	162.80	0.00	0.00
8/12/2013	9010	0.80	231.10	0.00	0.00
8/13/2013	9204	0.80	236.90	0.00	0.00
8/13/2013	9294	0.80	344.40	0.00	0.00
8/13/2013	9388	1.10	276.30	0.00	0.00
8/13/2013	9483	1.70	282.10	0.00	0.00
8/13/2013	9518	1.10	295.80	0.00	0.00
8/13/2013	9673	1.50	290.70	0.00	0.00
8/13/2013	9767	0.30	67.00	0.00	0.00
8/14/2013	10146	0.70	320.30	0.00	0.00
8/14/2013	10240	0.60	6.50	0.00	0.00
8/14/2013	10335	0.50	349.30	0.00	0.00
8/14/2013	10429	0.40	27.60	0.00	0.00
8/14/2013	10524	0.40	2.40	0.00	0.00
8/15/2013	10618	0.20	319.00	0.00	0.00
8/15/2013	10672	0.00	170.10	0.00	0.00

EOF

SCANNED

Job Number: 13-0007
 Company: Mack Energy
 Lease/Well: Cap State #1
 Location: Hobbs
 Rig Name: Silver Oak 1
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: New Mexico
 Declination: ☐
 Grid: ☐
 File name: C:\DOCUME~1\XPMUSER\DESKTOP\13-0007\0007.SVY
 Date/Time: 15-Aug-13 / 04:20
 Curve Name: Surveys

SCANNED

Scientific Drilling

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 275.25
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

RECEIVED
 OCT 04 2013
 MOSES OCB

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
405.00	.00	.00	405.00	-405.00	.00	.00	.00	.00	.00	.00
548.00	.80	89.70	548.00	-548.00	.01	1.00	-.99	1.00	89.70	.56
635.00	1.00	50.10	634.99	-634.99	.50	2.19	-2.13	2.24	77.24	.73
712.00	1.30	60.80	711.97	-711.97	1.35	3.47	-3.33	3.72	68.68	.48
801.00	1.40	78.80	800.95	-800.95	2.06	5.41	-5.20	5.79	69.20	.49
864.00	1.50	70.50	863.93	-863.93	2.48	6.95	-6.69	7.38	70.34	.37
965.00	1.10	60.30	964.90	-964.90	3.40	9.03	-8.69	9.65	69.36	.46
1053.00	.80	56.60	1052.89	-1052.89	4.16	10.28	-9.86	11.09	67.97	.35
1148.00	.50	89.50	1147.88	-1147.88	4.53	11.25	-10.79	12.13	68.07	.49
1243.00	1.10	90.90	1242.87	-1242.87	4.52	12.58	-12.11	13.36	70.24	.63
1337.00	1.00	104.40	1336.86	-1336.86	4.30	14.27	-13.82	14.91	73.24	.28
1432.00	1.00	91.90	1431.84	-1431.84	4.07	15.90	-15.46	16.41	75.66	.23
1526.00	1.20	89.80	1525.82	-1525.82	4.04	17.71	-17.26	18.16	77.14	.22

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
1620.00	1.20	101.40	1619.80	-1619.80	3.85	19.66	-19.22	20.03	78.92	.26
1714.00	1.00	78.30	1713.79	-1713.79	3.82	21.42	-20.99	21.76	79.88	.51
1808.00	1.00	71.40	1807.77	-1807.77	4.25	23.01	-22.52	23.39	79.53	.13
1902.00	1.40	94.80	1901.75	-1901.75	4.42	24.93	-24.42	25.32	79.95	.66
1995.00	2.10	85.30	1994.71	-1994.71	4.46	27.76	-27.23	28.11	80.87	.81
2088.00	2.60	92.10	2087.63	-2087.63	4.52	31.56	-31.02	31.89	81.85	.61
2182.00	1.80	109.40	2181.56	-2181.56	3.95	35.09	-34.58	35.31	83.57	1.10
2275.00	1.50	138.40	2274.52	-2274.52	2.56	37.27	-36.88	37.36	86.07	.94
2369.00	1.60	139.70	2368.49	-2368.49	.64	38.94	-38.72	38.94	89.06	.11
2462.00	1.10	139.40	2461.46	-2461.46	-1.03	40.36	-40.28	40.37	91.46	.54
2555.00	.20	346.90	2554.46	-2554.46	-1.55	40.90	-40.87	40.93	92.17	1.38
2649.00	.70	349.00	2648.46	-2648.46	-.83	40.76	-40.66	40.77	91.16	.53
2743.00	1.50	23.10	2742.44	-2742.44	.87	41.13	-40.88	41.14	88.79	1.06
2837.00	2.10	14.20	2836.39	-2836.39	3.67	42.03	-41.52	42.19	85.01	.70
2931.00	2.60	5.50	2930.31	-2930.31	7.46	42.66	-41.80	43.31	80.08	.65
3025.00	3.30	3.80	3024.19	-3024.19	12.28	43.05	-41.74	44.76	74.07	.75
Tie In From MWD Surveys - 12.25 Hole										
3148.00	2.60	7.20	3147.02	-3147.02	18.58	43.63	-41.75	47.42	66.93	.59
3203.00	2.60	10.80	3201.97	-3201.97	21.05	44.02	-41.91	48.79	64.45	.30
3297.00	2.50	329.00	3295.88	-3295.88	24.90	43.36	-40.90	50.00	60.14	1.94
3390.00	4.40	300.20	3388.72	-3388.72	28.43	39.23	-36.47	48.45	54.07	2.70
3484.00	7.60	283.50	3482.20	-3482.20	31.70	30.07	-27.04	43.69	43.49	3.84
3579.00	11.70	274.30	3575.84	-3575.84	33.89	14.35	-11.19	36.80	22.95	4.60
3673.00	12.80	269.50	3667.70	-3667.70	34.51	-5.57	8.70	34.96	350.84	1.59
3767.00	12.10	268.80	3759.49	-3759.49	34.22	-25.83	28.85	42.87	322.95	.76
3861.00	11.70	268.90	3851.47	-3851.47	33.83	-45.21	48.12	56.46	306.80	.43
3954.00	12.70	265.20	3942.37	-3942.37	32.79	-64.83	67.55	72.65	296.83	1.36
4048.00	11.80	264.50	4034.22	-4034.22	31.00	-84.69	87.17	90.19	290.11	.97
4141.00	11.80	264.60	4125.26	-4125.26	29.20	-103.62	105.86	107.66	285.74	.02
4234.00	11.90	269.90	4216.28	-4216.28	28.29	-122.68	124.75	125.90	282.98	1.17
4328.00	12.40	267.40	4308.17	-4308.17	27.81	-142.45	144.40	145.14	281.05	.77
4422.00	11.50	267.30	4400.14	-4400.14	26.91	-161.89	163.68	164.12	279.44	.96

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
4516.00	12.70	267.10	4492.05	-4492.05	25.95	-181.57	183.19	183.42	278.13	1.28
4609.00	11.70	267.00	4582.95	-4582.95	24.94	-201.20	202.64	202.74	277.07	1.08
4702.00	10.90	265.90	4674.14	-4674.14	23.81	-219.39	220.65	220.68	276.20	.89
4796.00	9.00	262.30	4766.72	-4766.72	22.19	-235.54	236.58	236.58	275.38	2.13
4889.00	6.50	255.60	4858.87	-4858.87	19.91	-247.85	248.63	248.65	274.59	2.85
4983.00	4.50	239.90	4952.44	-4952.44	16.74	-256.20	256.65	256.74	273.74	2.64
5076.00	1.70	208.90	5045.30	-5045.30	13.70	-260.02	260.18	260.38	273.02	3.40
5170.00	1.10	193.60	5139.27	-5139.27	11.60	-260.91	260.87	261.16	272.55	.75
5263.00	1.10	193.30	5232.25	-5232.25	9.86	-261.32	261.13	261.51	272.16	.01
5356.00	.90	193.40	5325.24	-5325.24	8.29	-261.70	261.36	261.83	271.81	.22
5450.00	.90	199.70	5419.23	-5419.23	6.87	-262.12	261.64	262.21	271.50	.11
5543.00	.90	205.50	5512.21	-5512.21	5.53	-262.68	262.08	262.73	271.21	.10
5637.00	1.10	67.90	5606.21	-5606.21	5.20	-262.16	261.53	262.21	271.14	1.99
5730.00	1.50	66.40	5699.18	-5699.18	6.02	-260.22	259.67	260.28	271.33	.43
5823.00	1.30	72.30	5792.16	-5792.16	6.83	-258.09	257.64	258.19	271.52	.26
5917.00	1.20	71.00	5886.13	-5886.13	7.47	-256.15	255.76	256.26	271.67	.11
6010.00	1.80	10.40	5979.11	-5979.11	9.23	-254.96	254.74	255.13	272.07	1.72
6103.00	1.80	13.50	6072.06	-6072.06	12.08	-254.36	254.40	254.65	272.72	.10
6197.00	1.90	8.30	6166.01	-6166.01	15.06	-253.79	254.10	254.24	273.40	.21
6290.00	1.90	358.40	6258.96	-6258.96	18.13	-253.61	254.21	254.26	274.09	.35
6383.00	2.50	339.10	6351.89	-6351.89	21.57	-254.38	255.28	255.29	274.85	1.02
6447.00	2.10	333.70	6415.84	-6415.84	23.92	-255.39	256.51	256.51	275.35	.71
6577.00	.90	214.00	6545.81	-6545.81	25.21	-257.02	258.25	258.25	275.60	2.05
6670.00	.80	212.90	6638.80	-6638.80	24.06	-257.78	258.90	258.90	275.33	.11
6764.00	.50	231.30	6732.80	-6732.80	23.25	-258.46	259.50	259.50	275.14	.38
6857.00	.70	241.90	6825.79	-6825.79	22.73	-259.28	260.27	260.27	275.01	.25
6950.00	.60	244.50	6918.79	-6918.79	22.25	-260.22	261.16	261.17	274.89	.11
7044.00	.60	253.60	7012.78	-7012.78	21.90	-261.13	262.04	262.05	274.79	.10
7137.00	.40	277.20	7105.78	-7105.78	21.81	-261.92	262.82	262.83	274.76	.30
7231.00	.60	153.90	7199.78	-7199.78	21.40	-262.03	262.89	262.90	274.67	.94
7324.00	1.00	146.10	7292.77	-7292.77	20.29	-261.36	262.13	262.15	274.44	.44
7418.00	1.00	145.50	7386.75	-7386.75	18.94	-260.44	261.08	261.13	274.16	.01
7511.00	.90	138.10	7479.74	-7479.74	17.72	-259.50	260.03	260.10	273.91	.17
7605.00	.90	116.40	7573.73	-7573.73	16.85	-258.34	258.80	258.89	273.73	.36

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
7698.00	1.20	97.40	7666.71	-7666.71	16.40	-256.72	257.14	257.24	273.65	.49
7791.00	.80	193.50	7759.70	-7759.70	15.64	-255.91	256.26	256.38	273.50	1.63
7885.00	.70	181.50	7853.70	-7853.70	14.43	-256.07	256.32	256.48	273.22	.20
7978.00	.50	354.50	7946.69	-7946.69	14.26	-256.13	256.36	256.53	273.49	1.29
8071.00	1.30	340.60	8039.68	-8039.68	15.66	-256.52	256.87	257.00	273.49	.89
8165.00	1.50	332.60	8133.65	-8133.65	17.76	-257.44	257.98	258.05	273.95	.30
8258.00	1.50	317.80	8226.62	-8226.62	19.74	-258.82	259.54	259.57	274.36	.42
8352.00	.60	31.10	8320.61	-8320.61	21.08	-259.39	260.23	260.24	274.65	1.54
8445.00	.90	3.00	8413.60	-8413.60	22.22	-259.10	260.05	260.05	274.90	.50
8539.00	.30	328.50	8507.59	-8507.59	23.17	-259.19	260.22	260.22	275.11	.72
8632.00	.10	162.80	8600.59	-8600.59	23.30	-259.29	260.34	260.34	275.13	.43
8727.00	.20	222.80	8695.59	-8695.59	23.10	-259.38	260.41	260.41	275.09	.18
8821.00	.40	221.80	8789.59	-8789.59	22.73	-259.71	260.70	260.70	275.00	.21
8916.00	.70	224.60	8884.59	-8884.59	22.07	-260.34	261.27	261.27	274.85	.32
9010.00	.80	231.10	8978.58	-8978.58	21.25	-261.25	262.10	262.12	274.65	.14
9104.00	.80	236.90	9072.57	-9072.57	20.48	-262.31	263.09	263.11	274.46	.09
9199.00	.80	245.00	9167.56	-9167.56	19.84	-263.47	264.18	264.22	274.31	.12
9294.00	.80	255.50	9262.55	-9262.55	19.39	-264.71	265.38	265.42	274.19	.15
9388.00	1.10	276.30	9356.54	-9356.54	19.33	-266.24	266.90	266.95	274.15	.48
9483.00	1.70	282.10	9451.51	-9451.51	19.72	-268.53	269.21	269.25	274.20	.65
9578.00	1.10	295.80	9546.48	-9546.48	20.42	-270.73	271.46	271.50	274.31	.72
9673.00	1.50	290.70	9641.46	-9641.46	21.25	-272.71	273.51	273.54	274.46	.44
9767.00	.30	67.00	9735.45	-9735.45	21.78	-273.64	274.48	274.50	274.55	1.84
9862.00	.50	100.90	9830.45	-9830.45	21.80	-273.00	273.85	273.87	274.57	.32
9957.00	.40	71.80	9925.44	-9925.44	21.83	-272.28	273.13	273.15	274.58	.26
10051.00	.20	344.20	10019.44	-10019.44	22.09	-272.01	272.89	272.91	274.64	.47
10146.00	.70	320.30	10114.44	-10114.44	22.69	-272.43	273.36	273.37	274.76	.55
10240.00	.60	6.50	10208.43	-10208.43	23.62	-272.74	273.76	273.76	274.95	.55
10335.00	.50	349.30	10303.43	-10303.43	24.53	-272.76	273.86	273.86	275.14	.20
10429.00	.40	27.60	10397.43	-10397.43	25.22	-272.68	273.85	273.85	275.28	.33
10524.00	.40	2.40	10492.42	-10492.42	25.84	-272.52	273.74	273.74	275.42	.18
10618.00	.00	170.10	10586.42	-10586.42	26.17	-272.50	273.75	273.76	275.49	.43
SLPTB 3.6' North and 21.8' West of Plan										
10720.00	.00	170.10	10688.42	-10688.42	26.17	-272.50	273.75	273.76	275.49	.00