

Results of Directional Survey

DD

API number:	30-025-40243		
OGRID:		Operator:	MACK ENERGY CORP
		Property:	LEO STATE # 1

surface	ULSTR:	A	18	T	18S	R	35E
				330	FNL	990	FEL

BH Loc	ULSTR:	A	18	T	18S	R	35E
10615	MD	10499.8	TVD	930	FNL	357	FEL

Top Perf/OH	ULSTR:	A	18	T	18S	R	35E
9290	MD	9175.3	TVD	937	FNL	349	FEL

Bot Perf/OH	ULSTR:	A	18	T	18S	R	35E
9364	MD	9249.3	TVD	936	FNL	350	FEL

	MD	N/S	E/W	VD
	9280	-607.40	640.84	9165.26
TOP PERFS/OH	9290	-607.32	640.80	9175.26
	9342	-606.88	640.58	9227.26
	9342	-606.88	640.58	9227.26
BOT PERFS/OH	9364	-606.46	640.41	9249.26
	9405	-605.68	640.08	9290.25

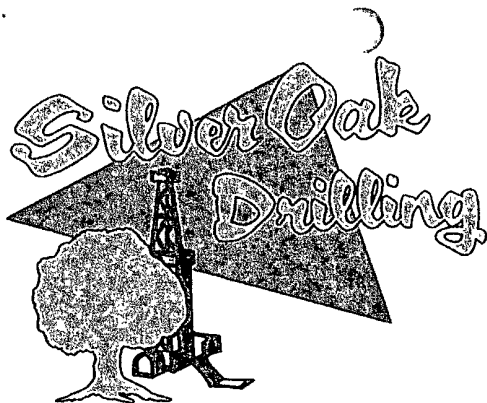
NEXT TO LAST	10568	-603.50	633.49	10452.89
LAST READING	10615	-599.96	632.81	10499.75
TD	10615	-599.96	632.81	10499.75

Surface Location	330	FN	990	FE
Projected BHL	930	FN	357	FE
Location of				
Top Perfs/OH	937	FN	349	FE
Bottom Perfs/OH	936	FN	350	FE

SUMMARY of Subsurface Locations

Surface Location	A-18-18S-35E	330	FN	990	FE	Vert. Depth
Top Perfs/OH	A-18-18S-35E	937	FN	349	FE	9175.26
Bottom Perfs/OH	A-18-18S-35E	936	FN	350	FE	9249.26
Projected TD	A-18-18S-35E	930	FN	357	FE	10499.75

APR 16 2012



HOBBS OCD

APR 09 2012

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

January 17, 2012

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

SUR: A-18-18s-35e, 330/N & 990/E
BHL: A-18-18s-35e, 930/N & 357/E
API # 30-025-40243

RE: Leo State #1
330' FNL & 990' FEL
Sec. 18, T18S, R36E
Lea County, New Mexico

Dear Sir,

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

Very truly yours,

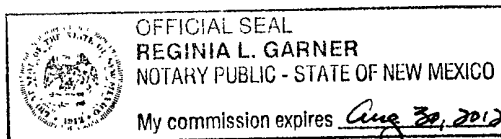
Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 17th day of January, 2012.

Notary Public

SCANNED



Leo State #1

Date	Depth	Deviation	Inclination	TVD
12/11/2011	241	1.10	74.00	
12/11/2011	417	1.20	91.00	
12/11/2011	595	1.40	69.00	
12/11/2011	774	2.60	79.00	
12/11/2011	935	4.20	86.00	
12/11/2011	1016	5.00	83.00	
12/12/2011	1138	6.20	74.00	
12/12/2011	1171	6.00	80.00	
12/12/2011	1202	5.50	88.00	
12/12/2011	1232	5.40	78.00	
12/12/2011	1263	5.00	80.00	
12/12/2011	1294	4.50	91.00	
12/12/2011	1326	4.50	84.00	
12/12/2011	1358	4.30	89.00	
12/12/2011	1389	4.00	82.00	
12/12/2011	1420	3.50	91.00	
12/12/2011	1483	3.30	82.00	
12/12/2011	1545	3.40	94.00	
12/12/2011	1556	3.70	85.00	
12/14/2011	1654	1.49	136.70	1651.22
12/14/2011	1747	3.08	73.70	1744.15
12/15/2011	1841	1.93	85.49	1838.06
12/15/2011	1934	1.93	90.36	1931.01
12/15/2011	2027	0.88	53.83	2023.98
12/15/2011	2121	0.44	239.63	1217.98
12/15/2011	2214	0.62	244.79	2210.97
12/15/2011	2308	0.79	212.42	2304.97
12/15/2011	2400	0.97	200.47	2396.96
12/15/2011	2526	1.49	233.17	2522.93
12/15/2011	2619	1.93	233.38	2615.89
12/15/2011	2712	1.06	207.70	2708.86
12/15/2011	2806	2.20	234.35	2802.82
12/15/2011	2899	1.85	205.18	2895.76
12/15/2011	2992	2.46	266.70	2988.71
12/15/2011	3085	2.11	276.28	3081.63
12/15/2011	3179	2.02	280.94	3175.57
12/15/2011	3272	2.99	273.55	3268.48
12/15/2011	3366	2.81	244.81	3362.37
12/15/2011	3459	2.55	257.65	3455.27
12/16/2011	3552	2.46	267.31	3548.14
12/16/2011	3646	2.55	242.18	3642.09
12/16/2011	3832	2.11	260.46	3847.80
12/16/2011	3926	2.46	241.21	3921.86

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Date	Depth	Deviation	Inclination	TVD
12/16/2011	4019	2.20	258.88	4014.78
12/16/2011	4112	1.76	241.56	4107.73
12/16/2011	4206	2.37	210.18	4201.67
12/16/2011	4299	1.85	299.70	4294.61
12/16/2011	4393	1.58	231.72	4388.57
12/16/2011	4486	1.14	185.14	4481.54
12/17/2011	4580	0.97	214.32	4575.53
12/17/2011	4673	0.70	195.42	4668.52
12/17/2011	4767	0.79	344.99	4762.51
12/17/2011	4798	1.06	311.08	4793.51
12/17/2011	4891	1.32	182.59	4886.50
12/17/2011	4984	0.62	207.02	4979.49
12/17/2011	5171	0.62	226.80	5166.48
12/17/2011	5357	0.09	150.77	5352.47
12/17/2011	5545	1.14	302.73	5539.46
12/17/2011	5638	0.88	337.19	5633.45
12/18/2011	5731	1.06	128.97	5726.44
12/18/2011	5825	1.32	354.94	5820.43
12/18/2012	5918	1.06	125.02	5913.42
12/19/2012	6011	1.14	93.82	6006.43
12/20/2012	6179	1.06	75.19	6174.38
12/21/2012	6229	0.88	74.13	6224.37
12/22/2012	6415	1.76	58.40	6410.32
12/23/2012	6508	1.23	315.13	6503.30
12/24/2012	6601	2.02	317.32	6596.62
12/25/2012	6694	1.49	303.88	6689.22
12/26/2012	6788	0.44	259.23	6783.20
12/27/2012	6881	0.70	263.27	6876.20
12/28/2012	6959	0.79	298.87	6954.19
12/23/2011	4860	0.62	194.37	4855.50
12/23/2011	4891	0.70	149.80	4886.51
12/23/2011	4922	0.62	246.75	4917.50
12/23/2011	4953	1.49	194.10	4948.50
12/23/2011	4984	1.41	89.60	4979.49
12/24/2011	5015	1.93	108.58	5010.49
12/24/2011	5046	3.08	113.15	5041.45
12/24/2011	5078	4.22	123.88	5073.38
12/26/2011	5115	5.45	137.50	5110.25
12/26/2011	5146	8.53	126.69	5141.02
12/26/2011	5177	9.94	137.15	5171.62
12/26/2011	5208	11.78	133.63	5202.06
12/26/2011	5240	12.84	124.14	5233.33
12/26/2011	5302	14.60	135.30	5293.57
12/26/2011	5395	14.07	134.25	5385.67
12/27/2011	5520	14.25	134.69	5504.88

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Date	Depth	Deviation	Inclination	TVD
12/27/2011	5551	12.31	135.92	5535.40
12/27/2011	5582	13.98	134.51	5565.23
12/27/2011	5675	13.37	134.69	5655.60
12/27/2011	5769	14.86	143.04	5746.77
12/27/2011	5862	13.45	133.19	5826.95
12/27/2011	5924	14.16	134.60	5897.12
12/28/2011	6012	16.88	128.45	5981.95
12/28/2011	6105	15.12	122.88	6071.35
12/28/2011	6199	13.98	131.96	6162.35
12/28/2011	6261	15.04	132.49	6222.37
12/28/2011	6354	16.53	138.12	6311.86
12/28/2011	6448	16.36	143.74	6402.02
12/28/2011	6541	14.07	143.83	6491.75
12/28/2011	6635	15.12	131.43	6582.75
12/28/2011	6697	15.04	135.04	6642.61
12/29/2011	6759	16.09	143.12	6702.34
12/29/2011	6852	17.07	127.48	6792.17
12/29/2011	6945	14.51	132.84	6882.30
12/29/2011	7039	13.81	123.88	6973.45
12/29/2011	7132	13.01	133.72	7063.93
12/29/2011	7194	13.10	130.73	7124.33
12/29/2011	7257	14.07	127.57	7185.57
12/29/2011	7319	16.09	134.69	7245.43
12/29/2011	7381	18.82	122.30	7304.59
12/30/2011	7443	17.85	135.92	7363.47
12/31/2011	7537	17.85	134.60	7452.95
12/31/2011	7630	17.32	131.35	7541.60
12/31/2011	7723	15.92	130.56	7630.72
1/2/2012	7884	16.62	128.39	7785.27
1/2/2012	7972	14.77	132.28	7869.99
1/2/2012	8065	14.42	136.42	7959.99
1/2/2012	8158	13.89	141.89	8050.17
1/2/2012	8252	12.93	144.14	8141.60
1/3/2012	8346	10.29	140.91	8233.67
1/3/2012	8377	8.71	144.75	8264.25
1/3/2012	8408	7.47	147.03	8294.94
1/3/2012	8532	6.16	123.84	8418.08
1/4/2012	8595	4.92	97.71	8480.80
1/4/2012	8657	3.52	95.30	8542.63
1/4/2012	8720	2.11	90.71	8605.55
1/4/2012	8782	1.32	33.87	8667.53
1/5/2012	8844	0.70	83.22	8729.52
1/5/2012	8906	2.11	296.34	8791.51
1/5/2012	9000	1.76	286.56	8885.45
1/5/2012	9093	3.17	319.67	8978.37

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Date	Depth	Deviation	Inclination	TVD
1/5/2012	9156	2.20	304.01	9041.30
1/6/2012	9218	1.26	316.50	9103.00
1/6/2012	9280	0.26	295.16	9165.27
1/6/2012	9342	0.88	344.88	9227.26
1/7/2012	9405	1.49	332.87	9290.15
1/7/2012	9467	1.23	97.52	9352.24
1/8/2012	9529	0.79	301.61	9414.24
1/8/2012	9592	1.58	222.42	9477.23
1/8/2012	9654	0.53	251.45	9539.22
1/8/2012	9716	0.26	224.82	9601.21
1/8/2012	9778	1.49	206.17	9663.21
1/9/2012	9841	1.58	205.17	9726.18
1/9/2012	9934	1.06	223.51	9819.15
1/9/2012	9996	0.00	95.26	9881.15
1/10/2012	10090	1.14	173.04	9975.15
1/10/2012	10183	0.97	169.89	10068.13
1/10/2012	10277	0.79	337.08	10162.13
1/11/2012	10370	1.23	334.99	10255.11
1/11/2012	10463	2.20	349.60	10348.07
1/12/2012	10568	4.40	349.11	10452.89

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PATHFINDER[®]

A Schlumberger Company

HOBBS OCD

APR 09 2012

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DIRECTIONAL SURVEY REPORT

MACK ENERGY

LEO STATE #1 – ST01

LEA COUNTY, NEW MEXICO

HOBBS OCD

APR 09 2012

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SUR: A-18-18s-35e, 330/N & 990/E
BHL: A-18-18s-35e, 930/N & 357/E
API # 30-025-40243

PREPARED BY: STEVE BIBB

Pathfinder

8013 MCOB 112
Midland Texas, 79706
Tel: (409) 687-1647
Fax: (409) 687-1544



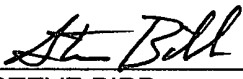
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) MICHAEL SAKAS
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 12-14-11 TO 01-12-12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MACK ENERGY
LEO STATE #1 – ST01
LEA COUNTY, NM
RIG: SILVER OAK 7

9. SURVEY CERTIFIED FROM: 1654 TO 10568 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 872.01 FEET ON A BEARING OF 133.47 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 10615 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



STEVE BIBB
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 12/13/2011
Date Completed: 01/12/2012

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
Rig:SILVER OAK 7
PathFinder Office Supervisor: STEVE BIBB
PathFinder Field Engineers:Mike Sakas

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.45.14.6220 N LON:103.29.27.7658 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 758949.1000 Y: 639068.4000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.07° EAST TO GRID
Vertical Section Plane: 134.54
Survey Vert. Reference: 17.00' Kelly Bushing To Ground
Altitude:3961.00' Ground To MSL

Measured Depth	10615.00	(feet)
Inclination	4.40	(deg)
Azimuth	349.11	(deg)
True Vertical Depth	10499.75	(feet)
Vertical Section	871.86	(feet)
Survey X cord	759581.91	(feet)
Survey Y cord	638468.44	(feet)
Survey Lat	32.75239885 N	(deg)
Survey Lon	103.48900345 W	(deg)
Rectangular Corr. N/S	599.96 S	(feet)
Rectangular Corr. E/W	632.81 E	(feet)
Closure Distance	872.01	(feet)
Direction of Closure	133.47	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP

LEO STATE #1 ST1

LEA COUNTY, NM

Rig:SILVER OAK 7

PathFinder Office Supervisor: STEVE BIBB

PathFinder Field Engineers: Mike Sakas

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.45.14.6220 N LON:103.29.27.7658 W

GRID Reference:NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 758949.1000 Y: 639068.4000

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.07° EAST TO GRID

Vertical Section Plane: 134.54

Survey Vert. Reference: 17.00' Kelly Bushing To Ground

Altitude:3961.00' Ground To MSL

Survey Calculations by RX5 V6.03E using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
0.00	0.00	0.00	-0.00	0.00	-0.00	0.00 N	0.00 W	0.00@	359.83	0.00
34.00	0.80	157.46	34.00	34.00	0.22	0.22 S	0.09 E	0.23@	157.15	2.35
241.00	1.10	74.46	240.97	207.00	2.54	1.02 S	2.56 E	2.75@	111.70	0.62
417.00	1.20	91.46	416.94	176.00	4.73	0.61 S	6.03 E	6.06@	95.80	0.20
595.00	1.40	69.46	594.89	178.00	7.00	0.10 N	9.93 E	9.93@	89.41	0.30
774.00	2.60	79.46	773.78	179.00	10.25	1.61 N	15.97 E	16.05@	84.23	0.70
935.00	4.20	86.46	934.50	161.00	16.28	2.64 N	25.44 E	25.58@	84.07	1.03
1016.00	5.00	83.46	1015.23	81.00	20.48	3.23 N	31.91 E	32.07@	84.22	1.03
1078.00	6.00	83.46	1076.95	62.00	24.21	3.91 N	37.81 E	38.02@	84.10	1.61
1138.00	6.20	74.46	1136.61	60.00	27.80	5.13 N	44.05 E	44.35@	83.36	1.63
1171.00	6.00	80.47	1169.42	33.00	29.70	5.90 N	47.47 E	47.83@	82.92	2.03
1202.00	5.50	88.46	1200.27	31.00	31.68	6.20 N	50.55 E	50.93@	83.00	3.04
1232.00	5.40	78.46	1230.13	30.00	33.47	6.52 N	53.37 E	53.77@	83.03	3.18
1263.00	5.00	80.46	1261.00	31.00	35.07	7.04 N	56.13 E	56.57@	82.85	1.42
1294.00	4.50	91.46	1291.90	31.00	36.75	7.23 N	58.68 E	59.13@	82.97	3.34
1326.00	4.50	84.46	1323.80	32.00	38.48	7.32 N	61.19 E	61.62@	83.18	1.71
1358.00	4.30	89.46	1355.71	32.00	40.13	7.45 N	63.64 E	64.07@	83.32	1.35
1389.00	4.00	82.46	1386.62	31.00	41.61	7.61 N	65.87 E	66.31@	83.41	1.90
1420.00	3.50	91.46	1417.56	31.00	42.97	7.73 N	67.89 E	68.33@	83.51	2.49
1452.00	3.30	82.46	1449.50	32.00	44.25	7.82 N	69.78 E	70.21@	83.60	1.78
1483.00	3.60	84.46	1480.45	31.00	45.42	8.03 N	71.63 E	72.08@	83.60	1.04
1545.00	3.40	94.46	1542.33	62.00	48.08	8.08 N	75.40 E	75.83@	83.89	1.03
** TIED-IN TO TELEDRIFT GYRO SURVEY @ 1556'MD										
1556.00	3.70	85.46	1553.31	11.00	48.56	8.08 N	76.08 E	76.51@	83.94	5.75
THE FOLLOWING ARE PATHFINDER MWD SURVEYS										
1654.00	1.49	136.70	1651.21	98.00	51.90	7.40 N	80.11 E	80.45@	84.72	3.06

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
RIG:SILVER OAK 7

Page 02/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
1747.00	3.08	73.70	1744.15	93.00	54.33	7.22 N	83.33 E	83.65@	85.05	2.95
1841.00	1.93	85.49	1838.06	94.00	56.60	8.06 N	87.34 E	87.71@	84.73	1.33
1934.00	1.93	90.36	1931.01	93.00	58.75	8.17 N	90.46 E	90.83@	84.84	0.18
2027.00	0.88	53.83	2023.98	93.00	59.99	8.58 N	92.61 E	93.00@	84.71	1.43
2121.00	0.44	239.63	2117.97	94.00	60.01	8.83 N	92.88 E	93.30@	84.57	1.40
2214.00	0.62	244.79	2210.97	93.00	59.74	8.43 N	92.11 E	92.50@	84.77	0.20
2308.00	0.79	212.42	2304.96	94.00	59.70	7.67 N	91.31 E	91.63@	85.20	0.45
2400.00	0.97	200.47	2396.95	92.00	60.15	6.40 N	90.69 E	90.92@	85.96	0.28
2526.00	1.49	233.17	2522.93	126.00	60.34	4.42 N	89.01 E	89.12@	87.16	0.68
2619.00	1.93	233.38	2615.88	93.00	59.92	2.76 N	86.79 E	86.83@	88.18	0.47
2712.00	1.06	207.39	2708.85	93.00	59.93	1.06 N	85.13 E	85.14@	89.28	1.16
2806.00	2.20	234.35	2802.81	94.00	59.88	0.76 S	83.27 E	83.27@	90.52	1.43
2899.00	1.85	205.18	2895.76	93.00	60.08	3.16 S	81.18 E	81.24@	92.23	1.16
2992.00	2.46	266.70	2988.70	93.00	59.23	4.63 S	78.55 E	78.68@	93.37	2.44
3085.00	2.11	276.28	3081.63	93.00	56.55	4.56 S	74.85 E	74.99@	93.49	0.56
3179.00	2.02	280.94	3175.57	94.00	53.81	4.06 S	71.50 E	71.62@	93.25	0.20
3272.00	2.99	273.55	3268.48	93.00	50.61	3.59 S	67.47 E	67.57@	93.05	1.10
3366.00	2.81	244.81	3362.36	94.00	47.97	4.42 S	62.94 E	63.10@	94.02	1.54
3459.00	2.55	257.65	3455.26	93.00	46.05	5.84 S	58.86 E	59.15@	95.66	0.70
3552.00	2.46	267.31	3548.17	93.00	43.56	6.37 S	54.84 E	55.21@	96.63	0.46
3646.00	2.55	242.18	3642.09	94.00	41.56	7.44 S	50.98 E	51.52@	98.31	1.16
3739.00	2.37	248.95	3735.00	93.00	40.14	9.10 S	47.36 E	48.22@	100.88	0.37
3832.00	2.11	260.46	3827.93	93.00	38.34	10.07 S	43.87 E	45.01@	102.93	0.56
3926.00	2.46	241.21	3921.86	94.00	36.74	11.33 S	40.40 E	41.96@	105.67	0.89
4019.00	2.20	258.88	4014.78	93.00	35.16	12.64 S	36.90 E	39.00@	108.91	0.82
4112.00	1.76	241.56	4107.73	93.00	33.74	13.66 S	33.89 E	36.54@	111.96	0.79
4206.00	2.37	210.18	4201.67	94.00	33.80	16.03 S	31.64 E	35.47@	116.87	1.34
4299.00	1.85	229.70	4294.61	93.00	34.14	18.66 S	29.53 E	34.93@	122.29	0.95

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
RIG:SILVER OAK 7

Page 03/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
4393.00	1.58	231.72	4388.56	94.00	33.84	20.45 S	27.36 E	34.15@	126.77	0.30
4486.00	1.14	185.14	4481.54	93.00	34.27	22.16 S	26.27 E	34.37@	130.16	1.23
4580.00	0.97	214.32	4575.52	94.00	35.00	23.75 S	25.74 E	35.02@	132.70	0.59
4673.00	0.70	195.42	4668.51	93.00	35.42	24.95 S	25.14 E	35.42@	134.78	0.41
4767.00	0.79	334.99	4762.51	94.00	35.09	24.92 S	24.71 E	35.09@	135.23	1.49
4798.00	1.06	311.08	4793.51	31.00	34.60	24.53 S	24.41 E	34.61@	135.15	1.50
4829.00	0.62	189.09	4824.50	31.00	34.42	24.51 S	24.16 E	34.42@	135.41	4.79
4860.00	0.62	194.37	4855.50	31.00	34.60	24.84 S	24.10 E	34.61@	135.87	0.18
4891.00	0.70	149.80	4886.50	31.00	34.86	25.16 S	24.15 E	34.88@	136.18	1.63
4922.00	0.62	246.75	4917.50	31.00	34.98	25.39 S	24.09 E	35.00@	136.51	3.19
4953.00	1.49	194.10	4948.50	31.00	35.12	25.85 S	23.84 E	35.17@	137.32	3.93
4984.00	1.41	89.60	4979.49	31.00	35.60	26.24 S	24.12 E	35.64@	137.41	7.40
5015.00	1.93	108.58	5010.48	31.00	36.34	26.40 S	25.00 E	36.36@	136.57	2.43
5046.00	3.08	113.15	5041.45	31.00	37.58	26.90 S	26.26 E	37.59@	135.69	3.76
5078.00	4.22	123.88	5073.38	32.00	39.54	27.89 S	28.03 E	39.54@	134.86	4.14
5115.00	5.45	137.50	5110.25	37.00	42.63	29.95 S	30.34 E	42.63@	134.62	4.52
5146.00	8.53	126.69	5141.02	31.00	46.38	32.41 S	33.18 E	46.38@	134.32	10.76
5177.00	9.94	137.15	5171.62	31.00	51.33	35.74 S	36.85 E	51.33@	134.13	7.05
5208.00	11.78	133.63	5202.06	31.00	57.17	39.89 S	40.96 E	57.17@	134.24	6.31
5240.00	12.84	124.14	5233.33	32.00	63.93	44.14 S	46.27 E	63.94@	133.65	7.13
5302.00	14.60	135.30	5293.57	62.00	78.53	53.56 S	57.47 E	78.56@	132.98	5.12
5395.00	14.07	134.25	5383.67	93.00	101.55	69.78 S	73.81 E	101.57@	133.39	0.63
5520.00	14.25	134.69	5504.87	125.00	132.13	91.20 S	95.63 E	132.15@	133.64	0.17
5551.00	12.31	135.92	5535.04	31.00	139.25	96.26 S	100.64 E	139.26@	133.73	6.32
5582.00	13.98	134.51	5565.23	31.00	146.30	101.26 S	105.61 E	146.31@	133.79	5.49
5675.00	13.37	134.69	5655.59	93.00	168.29	116.70 S	121.27 E	168.30@	133.90	0.66
5769.00	14.86	143.04	5746.76	94.00	191.08	133.97 S	136.24 E	191.08@	134.52	2.68
5862.00	13.45	133.19	5836.95	93.00	213.69	150.91 S	151.30 E	213.69@	134.93	3.00

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
RIG:SILVER OAK 7

Page 04/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
5924.00	14.16	134.60	5897.16	62.00	228.48	161.17 S	161.96 E	228.49@	134.86	1.27
6012.00	16.88	128.45	5981.95	88.00	251.96	176.67 S	179.63 E	251.96@	134.52	3.61
6105.00	15.12	122.82	6071.35	93.00	277.26	191.65 S	200.40 E	277.29@	133.72	2.52
6199.00	13.98	131.96	6162.34	94.00	300.61	205.89 S	219.15 E	300.69@	133.21	2.72
6261.00	15.04	132.49	6222.36	62.00	316.13	216.33 S	230.65 E	316.22@	133.16	1.72
6354.00	16.53	138.12	6311.86	93.00	341.40	234.33 S	248.38 E	341.48@	133.33	2.30
6448.00	16.36	143.74	6402.02	94.00	367.82	254.96 S	265.14 E	367.84@	133.88	1.70
6541.00	14.07	143.83	6491.75	93.00	391.90	274.65 S	279.56 E	391.90@	134.49	2.46
6635.00	15.12	131.43	6582.74	94.00	415.43	291.99 S	295.50 E	415.43@	134.66	3.50
6697.00	15.04	135.04	6642.61	62.00	431.55	303.04 S	307.25 E	431.55@	134.60	1.52
6759.00	16.09	143.12	6702.34	62.00	448.09	315.60 S	318.09 E	448.09@	134.77	3.88
6852.00	14.07	127.48	6792.17	93.00	472.06	332.80 S	334.81 E	472.07@	134.83	4.87
6945.00	14.51	132.84	6882.30	93.00	494.93	347.60 S	352.32 E	494.93@	134.61	1.50
7039.00	13.81	123.88	6973.45	94.00	517.73	361.86 S	370.27 E	517.73@	134.34	2.44
7132.00	13.01	133.72	7063.93	93.00	539.11	375.29 S	387.05 E	539.12@	134.12	2.60
7194.00	13.10	130.73	7124.33	62.00	553.09	384.69 S	397.42 E	553.11@	134.07	1.10
7257.00	14.07	127.57	7185.56	63.00	567.82	394.02 S	408.90 E	567.85@	133.94	1.94
7319.00	16.09	134.69	7245.43	62.00	583.90	404.66 S	420.99 E	583.94@	133.87	4.41
7381.00	18.82	122.30	7304.59	62.00	602.27	416.05 S	435.56 E	602.34@	133.69	7.42
7443.00	17.85	135.92	7363.47	62.00	621.55	428.23 S	450.63 E	621.65@	133.54	7.07
7537.00	17.85	134.60	7452.94	94.00	650.36	448.69 S	470.91 E	650.45@	133.62	0.43
7630.00	17.32	131.35	7541.60	93.00	678.44	467.85 S	491.45 E	678.53@	133.59	1.20
7723.00	15.92	130.56	7630.71	93.00	704.99	485.29 S	511.53 E	705.10@	133.49	1.52
7884.00	16.62	128.39	7785.27	161.00	749.91	513.95 S	546.35 E	750.10@	133.25	0.58
7972.00	14.77	132.28	7869.98	88.00	773.63	529.31 S	564.52 E	773.86@	133.16	2.42
8065.00	14.42	136.42	7959.98	93.00	797.05	545.67 S	581.27 E	797.27@	133.19	1.18
8158.00	13.89	141.89	8050.16	93.00	819.70	562.85 S	596.15 E	819.87@	133.35	1.55
8252.00	12.93	144.14	8141.60	94.00	841.26	580.25 S	609.27 E	841.37@	133.60	1.16

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
RIG:SILVER OAK 7

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8346.00	10.29	140.91	8233.67	94.00	859.97	595.29 S	620.73 E	860.04@	133.80	2.89
8377.00	8.71	144.75	8264.25	31.00	865.03	599.36 S	623.83 E	865.10@	133.85	5.49
8408.00	7.47	147.03	8294.94	31.00	869.31	602.96 S	626.28 E	869.36@	133.91	4.13
8532.00	6.16	123.84	8418.08	124.00	883.72	613.43 S	636.19 E	883.77@	133.96	2.43
8595.00	4.92	97.71	8480.79	63.00	889.21	615.68 S	641.68 E	889.28@	133.82	4.41
8657.00	3.52	95.30	8542.63	62.00	892.81	616.21 S	646.21 E	892.92@	133.64	2.28
8720.00	2.11	90.71	8605.55	63.00	895.14	616.41 S	649.30 E	895.29@	133.51	2.27
8782.00	1.32	33.87	8667.52	62.00	895.84	615.83 S	650.84 E	896.01@	133.42	2.86
8844.00	0.70	83.22	8729.51	62.00	895.94	615.19 S	651.61 E	896.13@	133.35	1.64
8906.00	2.11	296.34	8791.50	62.00	895.09	614.64 S	650.96 E	895.28@	133.36	4.39
9000.00	1.76	286.56	8885.45	94.00	892.17	613.46 S	648.03 E	892.34@	133.43	0.51
9093.00	3.17	319.66	8978.37	93.00	888.35	611.09 S	644.99 E	888.51@	133.45	2.10
9156.00	2.20	304.01	9041.30	63.00	885.43	609.09 S	642.86 E	885.59@	133.45	1.92
9218.00	1.23	316.53	9103.27	62.00	883.59	607.94 S	641.42 E	883.75@	133.46	1.67
9280.00	0.26	295.16	9165.26	62.00	882.79	607.40 S	640.84 E	882.95@	133.47	1.60
9342.00	0.88	344.88	9227.26	62.00	882.25	606.88 S	640.58 E	882.41@	133.45	1.19
9405.00	1.49	332.87	9290.25	63.00	881.06	605.68 S	640.08 E	881.22@	133.42	1.04
9467.00	1.23	97.52	9352.24	62.00	880.82	605.05 S	640.38 E	881.00@	133.38	3.89
9529.00	0.79	301.61	9414.23	62.00	880.94	604.91 S	640.67 E	881.12@	133.36	3.19
9592.00	1.58	222.42	9477.22	63.00	880.54	605.33 S	639.72 E	880.71@	133.42	2.58
9654.00	0.53	251.45	9539.21	62.00	880.45	606.05 S	638.87 E	880.59@	133.49	1.85
9716.00	0.26	224.82	9601.21	62.00	880.32	606.24 S	638.50 E	880.46@	133.52	0.52
9778.00	1.49	206.17	9663.20	62.00	880.57	607.06 S	638.04 E	880.69@	133.57	2.01
9841.00	1.58	205.17	9726.18	63.00	881.12	608.58 S	637.31 E	881.22@	133.68	0.15
9934.00	1.06	223.51	9819.15	93.00	881.56	610.37 S	636.17 E	881.63@	133.81	0.71
9996.00	0.00	95.26	9881.15	62.00	881.57	610.78 S	635.78 E	881.63@	133.85	1.71
10090.00	1.14	173.04	9975.14	94.00	882.30	611.71 S	635.89 E	882.36@	133.89	1.21
10183.00	0.97	169.86	10068.13	93.00	883.66	613.41 S	636.14 E	883.71@	133.96	0.19

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP
LEO STATE #1 ST1
LEA COUNTY, NM
RIG:SILVER OAK 7

Page 06/06

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS (dg/100ft)
						(ft)	(ft)	(ft)	(deg)	
10277.00	0.79	337.08	10162.12	94.00	883.72	613.59 S	636.03 E	883.76@	133.97	1.86
10370.00	1.23	334.99	10255.11	93.00	882.19	612.10 S	635.36 E	882.24@	133.93	0.48
10463.00	2.20	349.60	10348.07	93.00	879.79	609.44 S	634.61 E	879.86@	133.84	1.14
10568.00	4.40	349.11	10452.89	105.00	874.82	603.50 S	633.49 E	874.94@	133.61	2.10
PROJECTION TO BIT @ 10615; MD.										
10615.00	4.40	349.11	10499.75	47.00	871.86	599.96 S	632.81 E	872.01@	133.47	0.00

** The survey data at tie-in point was furnished by a recognized survey company and entered as submitted. Survey stations above the tie-in point represent recalculated data by PathFinder Energy Services, Inc. and may reflect minor changes due to rounding differences between survey programs. Only survey stations taken by qualified PathFinder personnel are subject to certification.



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MACK ENERGY CORP		
LEASE / WELL No.:	LEO STATE	#1 ST1	
WELL LOCATION:	LEA COUNTY		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	SILVER OAK DRILLING 7		
API WELL No:	30-025-40243		
JOB No:	700004572-WT-WT-ST1		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.072602	LWD Calculated:	7.072251
		Agreed Upon:	7.07
X =	758949.100000	Feet	Y = 639068.400000
			Feet
SITE LATITUDE:	32.754062	SITE LONGITUDE:	103.491046
GRID SYSTEM:	TRUE ☐ UTM ☒	LAMBERT ☒	ZONE: NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	3978.5 17.0'		
ALTITUDE:	3961	Feet	WATER DEPTH: N/A
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	1556		
DRIFT ANGLE:	3.7		
DRIFT DIRECTION:	85.46		
TRUE VERTICAL DEPTH:	1553.31		
VERTICAL SECTION:	-8.69 48.56		
RECTANGULAR COORDINATE (N / S):	-8.69 8.08		
RECTANGULAR COORDINATE (E / W):	76.01 76.08		
CLOSURE DISTANCE / DIRECTION:	76.51	83.48	
SURVEY CALCULATION METHOD:	AA ☐	MC ☐	RC ☒ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	TELEDRIFT		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

10615.00

KICKOFF DEPTH:	0	TOTAL DEPTH:	7000
KICKOFF ANGLE:	0	MAX ANGLE:	0

PES Engineers: MIKE SAKAS

**Signature of both field engineers required if applicable

Directional Driller: MONNIE PRATER

DATE: 12-Dec-2011



SURVEY REPORT

MOBBS OGD

APR 09 2012

RECEIVED

Page 1 of 2

PROSHOT MWD BY TELEDRIIFT
P.O. BOX 94395
OKLAHOMA CITY, OK 73143-4395
TEL: 405-631-4882
FAX: 405-631-8344
WWW.TELEDRIIFT.COM

ProView Version 6.00
Report created using job file: Mack Energy B Lee State #1-09DEC11
Report saved on 13 Dec 2011 21:52
Depth in feet

WELL NAME B Lee State #1
NORTH CORRECTION 0.0°
JOB ID Mack Energy B Lee State #1
COMPANY Mack Energy
CONTRACTOR Silver Oak #7
START DATE 09 DEC 11
API #
LOCATION B Lee State #1
All azimuths are referenced to true north
and corrected with the north correction above.

SURVEY #	SURVEY DEPTH	DATE	TIME	INCLINATION	AZIMUTH
Tie-in	0.0	09-Dec-11	14:46	00.0	0.0
0001	34.0	11-Dec-11	01:51	00.8	157.0
0002	241.0	11-Dec-11	06:57	01.1	74.0
0005	417.0	11-Dec-11	09:27	01.2	91.0
0006	595.0	11-Dec-11	13:58	01.4	69.0
0007	774.0	11-Dec-11	16:28	02.6	79.0
0009	935.0	11-Dec-11	19:29	04.2	86.0
0010	1016.0	11-Dec-11	20:53	05.0	83.0
0012	1078.0	11-Dec-11	23:53	06.0	83.0
0013	1138.0	12-Dec-11	04:53	06.2	74.0
0014	1171.0	12-Dec-11	06:28	06.0	80.0
0015	1202.0	12-Dec-11	07:55	05.5	88.0
0016	1232.0	12-Dec-11	09:37	05.4	78.0
0017	1263.0	12-Dec-11	11:09	05.0	80.0
0019	1294.0	12-Dec-11	12:41	04.5	91.0
0020	1326.0	12-Dec-11	14:39	04.5	84.0
0021	1358.0	12-Dec-11	16:11	04.3	89.0
0022	1389.0	12-Dec-11	17:46	04.0	82.0
0023	1420.0	12-Dec-11	19:15	03.5	91.0
0024	1452.0	12-Dec-11	20:27	03.3	82.0
0025	1483.0	12-Dec-11	21:24	03.6	84.0
0026	1545.0	12-Dec-11	22:22	03.4	94.0



SURVEY REPORT

Page 2 of 2

SURVEY #	SURVEY DEPTH	DATE	TIME	INCLINATION	AZIMUTH
0027	1556.0	12-Dec-11	23:34	03.7	85.0

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

Mack Energy Corporation
Leo State #1
Lea County, NM
Rig: Silver Oak 7

Tue Dec 06 15:21:55 2011

Coordinates

Latitude: 32.754062 N (32 deg. 45 min. 14.6220 sec.)
Longitude: 103.491046 W (-103 deg. 29 min. 27.7658 sec.)
Elevation: 3978.50 feet.
Calculation Date: Dec/06/2011

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6793 degrees
Total Magnetic Field: 0.48893 gauss
Magnetic Declination: 7.528332 degrees
Horizontal Intensity: 0.239428 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.528332 Degr.

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 758949.1000 feet
Y: 639068.4000 feet
True to Grid: (convergence) -0.455730 degrees
Magnetic to Grid: 7.072602 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.072602 Degr.

field calculation

PathFinder Energy Services, Inc. Magnetic & Grid Calculations

MACK ENERGY CORP
LEO STATE #1
VACUUM;BLINEBRY
Rig:SILVER OAK 7

Tue Dec 13 07:24:52 2011

Coordinates

Latitude: 32.754062 N (32 deg. 45 min. 14.6220 sec.)
Longitude: 103.491046 W (-103 deg. 29 min. 27.7658 sec.)
Elevation: 3978.50 feet.
Calculation Date: Dec/13/2011

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6787 degrees
Total Magnetic Field: 0.48921 gauss
Magnetic Declination: 7.527981 degrees
Horizontal Intensity: 0.239569 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.527981 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 758949.1000 feet
Y: 639068.4000 feet
True to Grid: (convergence) -0.455730 degrees
Magnetic to Grid: 7.072251 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.072251 Degr.