

Results of Directional Survey

API number:	30-025-27241		
OGRID:		Operator:	MACK ENERGY CORP
		Property:	BULL BAT STATE # 1H

surface	ULSTR:	M	02	T 15S	R 32E
				660 FSL	660 FWL

BH Loc	ULSTR:	P	02	T 15S	R 32E
12850	MD	9374.7	TVD	715 FSL	4935 FWL

Top Perf/OH	ULSTR:	N	02	T 15S	R 32E
9455	MD	9038.2	TVD	657 FSL	1561 FWL

Bot Perf/OH	ULSTR:	P	02	T 15S	R 32E
12345	MD	9342.3	TVD	710 FSL	4431 FWL

	MD	N/S	E/W	VD
	9444	-3.47	890.41	9037.59
TOP PERFS/OH	9455	-3.13	901.39	9038.18
	9476	-2.49	922.35	9039.31
	12287	49.93	3713.48	9338.71
BOT PERFS/OH	12345	50.19	3771.37	9342.28
	12383	50.36	3809.29	9344.62

NEXT TO LAST	12767	54.10	4192.41	9370.18
LAST READING	12792	54.49	4217.37	9371.55
TD	12850	55.39	4275.28	9374.73

Surface Location	660 FS	660 FW
Projected BHL	715 FS	4935 FW
Location of		
Top Perfs/OH	657 FS	1561 FW
Bottom Perfs/OH	710 FS	4431 FW

SUMMARY of Subsurface Locations

Surface Location	M-02-15S-32E	660 FS	660 FW	Vert. Depth
Top Perfs/OH	N-02-15S-32E	657 FS	1561 FW	9038.18
Bottom Perfs/OH	P-02-15S-32E	710 FS	4431 FW	9342.28
Projected TD	P-02-15S-32E	715 FS	4935 FW	9374.73



An Operating Unit of Smith International, Inc.

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DIRECTIONAL SURVEY REPORT

MACK ENERGY

BULL BAT STATE #1H

LEA COUNTY, NEW MEXICO

SUR @ M-2-15s-32e, 660/S & 660/W
BHL @ P-2-15s-32e, 715/S & 4935/W
API # 30-025-27241

PREPARED BY: FRANCISCO SINISTERRA

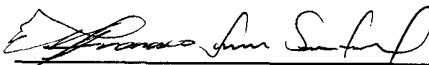
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JAMES CLOUD
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 10-03-10 TO 11-05-10
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
BULL BAT STATE #1H
LEA COUNTY, NM
RIG: SILVER OAK #2

9. SURVEY CERTIFIED FROM: 4137 TO 12792 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4275.63 FEET ON A BEARING OF 89.26 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 12850 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 10/02/2010
Date Completed: 11/05/2010

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
Rig:SILVER OAK 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:JAMES CLOUD
LOREN FLEMING
JOHN OVERTON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:33.2.25.0526 N LON:103.41.39.3695 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 695838.9000 Y: 742767.3000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.44° EAST TO GRID
Vertical Section Plane: 89.79
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:4279.00' Ground To MSL

Measured Depth	12850.00	(feet)
Inclination	86.86	(deg)
Azimuth	88.96	(deg)
True Vertical Depth	9374.73	(feet)
Vertical Section	4275.45	(feet)
Survey X cord	700114.17	(feet)
Survey Y cord	742822.84	(feet)
Survey Lat	33.04037280 N	(deg)
Survey Lon	103.68031783 W	(deg)
Rectangular Corr. N/S	55.54 N	(feet)
Rectangular Corr. E/W	4275.27 E	(feet)
Closure Distance	4275.63	(feet)
Direction of Closure	89.26	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Page 01/07

Tie-in Date: 10/02/2010

Date Completed: 11/05/2010

MACK ENERGY CORPORATION

BULL BAT STATE #1

LEA COUNTY, NM

Rig:SILVER OAK 2

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: JAMES CLOUD

LOREN FLEMING

JOHN OVERTON

PETE SENDEJO

STEVE BIBB

RAFAEL DONARUMMA

Survey Calculations by RX5 V6.03B using Minimum Curvature

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:33.2.25.0526 N LON:103.41.39.3695 W

GRID Reference:NAD27 new mexico east Transverse Mercator

Ref GRID Coor: X: 695838.9000 Y: 742767.3000

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.44° EAST TO GRID

Vertical Section Plane: 89.79

Survey Vert. Reference: 18.00' Kelly Bushing To Ground

Altitude:4279.00' Ground To MSL

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)
THE FOLLOWING ARE SCIENTIFIC GYRO MWD SURVEYS.										
0.00	0.00	0.00	0.00	0.00	0.00	0.00 S	0.00 E	0.00@	172.22	0.00
100.00	0.21	160.88	100.00	100.00	0.06	0.18 S	0.06 E	0.19@	161.12	0.21
200.00	0.15	121.90	200.00	100.00	0.23	0.42 S	0.23 E	0.48@	151.08	0.13
300.00	0.17	144.26	300.00	100.00	0.43	0.61 S	0.43 E	0.75@	144.81	0.06
400.00	0.24	132.43	400.00	100.00	0.67	0.87 S	0.67 E	1.10@	142.39	0.08
500.00	0.25	148.02	500.00	100.00	0.94	1.20 S	0.94 E	1.52@	141.83	0.07
600.00	0.33	159.08	600.00	100.00	1.15	1.65 S	1.16 E	2.02@	144.93	0.10
700.00	0.24	207.06	700.00	100.00	1.16	2.11 S	1.17 E	2.41@	151.02	0.25
800.00	0.08	255.69	800.00	100.00	1.00	2.31 S	1.00 E	2.52@	156.51	0.20
900.00	0.03	308.40	900.00	100.00	0.91	2.31 S	0.92 E	2.49@	158.39	0.07
1000.00	0.12	120.59	1000.00	100.00	0.98	2.35 S	0.99 E	2.55@	157.24	0.15
1100.00	0.25	164.11	1100.00	100.00	1.13	2.61 S	1.14 E	2.85@	156.51	0.18
1200.00	0.31	196.97	1200.00	100.00	1.10	3.08 S	1.12 E	3.28@	160.08	0.17
1300.00	0.33	207.95	1300.00	100.00	0.89	3.59 S	0.90 E	3.70@	165.91	0.06
1400.00	0.12	196.22	1400.00	100.00	0.72	3.95 S	0.74 E	4.02@	169.42	0.21
1500.00	0.52	203.23	1499.99	100.00	0.51	4.47 S	0.53 E	4.50@	173.24	0.40
1600.00	0.30	239.32	1599.99	100.00	0.11	5.02 S	0.13 E	5.02@	178.57	0.33
1700.00	0.19	203.65	1699.99	100.00	-0.19	5.30 S	0.17 W	5.30@	181.80	0.18
1800.00	0.29	239.07	1799.99	100.00	-0.47	5.58 S	0.45 W	5.60@	184.61	0.17
1900.00	0.14	350.77	1899.99	100.00	-0.71	5.59 S	0.69 W	5.64@	187.00	0.36
2000.00	0.98	39.14	1999.98	100.00	-0.18	4.81 S	0.17 W	4.81@	181.98	0.89
2100.00	1.97	48.28	2099.95	100.00	1.65	3.00 S	1.66 E	3.43@	151.11	1.01
2200.00	2.45	58.49	2199.87	100.00	4.76	0.74 S	4.76 E	4.82@	98.85	0.62
2300.00	2.40	58.93	2299.79	100.00	8.38	1.46 N	8.38 E	8.50@	80.14	0.05
2400.00	2.70	56.87	2399.69	100.00	12.16	3.82 N	12.14 E	12.73@	72.52	0.31

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

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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)
2500.00	1.92	63.70	2499.60	100.00	15.64	5.85 N	15.62 E	16.68@	69.45	0.83
2600.00	1.38	62.42	2599.56	100.00	18.21	7.15 N	18.19 E	19.54@	68.53	0.54
2700.00	1.00	55.03	2699.54	100.00	20.00	8.21 N	19.97 E	21.59@	67.65	0.41
2800.00	0.69	52.79	2799.53	100.00	21.20	9.08 N	21.16 E	23.03@	66.79	0.31
2900.00	0.60	67.82	2899.52	100.00	22.16	9.64 N	22.13 E	24.14@	66.47	0.19
3000.00	0.41	37.74	2999.52	100.00	22.87	10.12 N	22.83 E	24.97@	66.10	0.32
3100.00	0.22	349.71	3099.52	100.00	23.06	10.59 N	23.02 E	25.34@	65.29	0.31
3200.00	0.18	90.07	3199.52	100.00	23.18	10.78 N	23.14 E	25.53@	65.02	0.31
3300.00	0.11	326.93	3299.52	100.00	23.28	10.86 N	23.24 E	25.66@	64.96	0.26
3400.00	0.12	293.71	3399.52	100.00	23.14	10.98 N	23.10 E	25.57@	64.57	0.07
3500.00	0.17	156.29	3499.52	100.00	23.10	10.89 N	23.06 E	25.50@	64.73	0.27
3600.00	0.16	255.34	3599.52	100.00	23.02	10.72 N	22.98 E	25.36@	65.00	0.25
3700.00	0.20	273.47	3699.52	100.00	22.71	10.69 N	22.67 E	25.07@	64.76	0.07
3800.00	0.17	266.66	3799.52	100.00	22.39	10.69 N	22.35 E	24.78@	64.43	0.04
3900.00	0.29	266.03	3899.52	100.00	21.99	10.67 N	21.95 E	24.41@	64.08	0.12
4000.00	0.38	239.44	3999.51	100.00	21.45	10.48 N	21.41 E	23.84@	63.92	0.18
** TIED INTO SCIENTIFIC GYRO @ 4100' MD.										
4100.00	0.60	246.03	4099.51	100.00	20.69	10.10 N	20.65 E	22.99@	63.94	0.23
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
4137.00	0.79	244.92	4136.51	37.00	20.28	9.91 N	20.24 E	22.54@	63.91	0.52
4169.00	0.18	247.28	4168.51	32.00	20.03	9.80 N	20.00 E	22.27@	63.89	1.91
4200.00	1.06	95.17	4199.50	31.00	20.27	9.76 N	20.24 E	22.47@	64.26	3.94
4232.00	3.96	92.07	4231.47	32.00	21.67	9.69 N	21.64 E	23.71@	65.88	9.07
4264.00	7.30	95.49	4263.31	32.00	24.80	9.45 N	24.76 E	26.51@	69.10	10.49
4296.00	7.83	94.93	4295.03	32.00	28.99	9.07 N	28.96 E	30.35@	72.61	1.67
4327.00	7.74	93.99	4325.75	31.00	33.18	8.75 N	33.15 E	34.28@	75.22	0.50

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

Page 03/07

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)
4422.00	6.60	88.92	4420.00	95.00	45.02	8.40 N	44.99 E	45.77@	79.42	1.37
4518.00	6.42	88.88	4515.38	96.00	55.90	8.61 N	55.87 E	56.53@	81.24	0.19
4613.00	6.24	90.34	4609.81	95.00	66.37	8.69 N	66.34 E	66.91@	82.54	0.25
4708.00	6.16	90.06	4704.25	95.00	76.63	8.65 N	76.60 E	77.09@	83.56	0.09
4803.00	5.89	86.02	4798.73	95.00	86.59	8.98 N	86.56 E	87.03@	84.08	0.53
4899.00	6.16	94.00	4894.20	96.00	96.65	8.97 N	96.61 E	97.03@	84.70	0.92
4994.00	6.16	104.82	4988.65	95.00	106.65	7.31 N	106.63 E	106.88@	86.08	1.22
5089.00	6.16	105.80	5083.10	95.00	116.47	4.61 N	116.46 E	116.55@	87.73	0.11
5184.00	5.80	93.45	5177.59	95.00	126.16	2.94 N	126.15 E	126.19@	88.67	1.40
5280.00	5.89	94.87	5273.09	96.00	135.91	2.23 N	135.90 E	135.92@	89.06	0.18
5375.00	5.72	92.99	5367.60	95.00	145.49	1.57 N	145.49 E	145.50@	89.38	0.27
5470.00	5.54	92.54	5462.15	95.00	154.80	1.12 N	154.80 E	154.80@	89.59	0.20
5565.00	5.28	93.17	5556.72	95.00	163.74	0.67 N	163.74 E	163.74@	89.76	0.28
5661.00	4.66	92.11	5652.36	96.00	172.05	0.28 N	172.05 E	172.05@	89.91	0.65
5756.00	3.96	91.26	5747.09	95.00	179.19	0.07 N	179.19 E	179.19@	89.98	0.74
5851.00	3.43	83.82	5841.89	95.00	185.29	0.30 N	185.29 E	185.29@	89.91	0.75
5946.00	2.81	85.39	5936.75	95.00	190.44	0.80 N	190.44 E	190.44@	89.76	0.66
6041.00	2.46	83.72	6031.65	95.00	194.79	1.21 N	194.79 E	194.79@	89.65	0.38
6136.00	2.20	86.86	6126.57	95.00	198.64	1.53 N	198.63 E	198.64@	89.56	0.31
6231.00	1.76	74.13	6221.52	95.00	201.86	2.03 N	201.86 E	201.87@	89.42	0.65
6326.00	1.49	80.41	6316.48	95.00	204.49	2.63 N	204.48 E	204.50@	89.26	0.34
6421.00	1.49	67.32	6411.45	95.00	206.85	3.32 N	206.84 E	206.86@	89.08	0.36
6516.00	0.18	151.18	6506.44	95.00	208.06	3.66 N	208.05 E	208.08@	88.99	1.56
6612.00	0.18	319.96	6602.44	96.00	208.04	3.64 N	208.02 E	208.06@	89.00	0.37
6707.00	0.26	308.00	6697.44	95.00	207.77	3.89 N	207.76 E	207.79@	88.93	0.10
6803.00	0.35	320.47	6793.43	96.00	207.41	4.25 N	207.40 E	207.44@	88.83	0.12

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

Page 04/07

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)
6867.00	0.35	308.28	6857.43	64.00	207.14	4.52 N	207.12 E	207.17@	88.75	0.12
6940.00	0.44	12.19	6930.43	73.00	207.02	4.94 N	207.01 E	207.06@	88.63	0.58
7035.00	0.44	6.30	7025.43	95.00	207.14	5.65 N	207.12 E	207.20@	88.44	0.05
7131.00	0.62	321.65	7121.42	96.00	206.86	6.43 N	206.84 E	206.94@	88.22	0.45
7194.00	0.70	289.39	7184.42	63.00	206.29	6.82 N	206.27 E	206.38@	88.11	0.60
7289.00	0.79	292.82	7279.41	95.00	205.14	7.27 N	205.12 E	205.24@	87.97	0.11
7385.00	0.53	267.07	7375.41	96.00	204.09	7.50 N	204.06 E	204.20@	87.89	0.41
7480.00	0.09	322.62	7470.41	95.00	203.60	7.54 N	203.58 E	203.72@	87.88	0.51
7575.00	0.18	66.68	7565.40	95.00	203.70	7.66 N	203.67 E	203.81@	87.85	0.23
7639.00	0.26	288.16	7629.40	64.00	203.65	7.74 N	203.62 E	203.77@	87.82	0.64
7734.00	0.26	26.16	7724.40	95.00	203.54	8.00 N	203.51 E	203.67@	87.75	0.41
7828.00	0.44	103.42	7818.40	94.00	203.99	8.11 N	203.96 E	204.12@	87.72	0.49
7925.00	0.53	93.75	7915.40	97.00	204.80	8.00 N	204.77 E	204.93@	87.76	0.13
8020.00	0.26	134.44	8010.40	95.00	205.39	7.82 N	205.36 E	205.51@	87.82	0.39
8115.00	0.35	192.98	8105.40	95.00	205.48	7.38 N	205.45 E	205.58@	87.94	0.32
8211.00	0.44	219.08	8201.39	96.00	205.18	6.81 N	205.15 E	205.26@	88.10	0.21
8306.00	0.44	218.11	8296.39	95.00	204.72	6.24 N	204.70 E	204.79@	88.25	0.01
8338.00	0.70	197.72	8328.39	32.00	204.58	5.96 N	204.56 E	204.65@	88.33	1.02
8370.00	1.23	164.15	8360.39	32.00	204.61	5.44 N	204.60 E	204.67@	88.48	2.36
8401.00	3.25	124.16	8391.36	31.00	205.43	4.63 N	205.41 E	205.47@	88.71	7.87
8433.00	6.16	111.15	8423.25	32.00	207.78	3.50 N	207.77 E	207.80@	89.04	9.63
8465.00	9.32	105.44	8454.96	32.00	211.87	2.19 N	211.87 E	211.88@	89.41	10.15
8497.00	11.78	105.26	8486.41	32.00	217.52	0.64 N	217.52 E	217.52@	89.83	7.69
8529.00	12.84	104.82	8517.68	32.00	224.10	1.13 S	224.10 E	224.11@	90.29	3.33
8560.00	13.98	103.24	8547.83	31.00	231.07	2.87 S	231.08 E	231.10@	90.71	3.86
8592.00	16.36	102.80	8578.71	32.00	239.22	4.75 S	239.24 E	239.29@	91.14	7.45

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

Page 05/07

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)
8624.00	18.99	102.80	8609.20	32.00	248.69	6.90 S	248.71 E	248.81@	91.59	8.22
8656.00	22.25	98.67	8639.15	32.00	259.75	8.97 S	259.78 E	259.94@	91.98	11.15
8687.00	25.41	97.00	8667.50	31.00	272.15	10.67 S	272.19 E	272.40@	92.24	10.42
8719.00	28.05	95.77	8696.08	32.00	286.44	12.26 S	286.49 E	286.75@	92.45	8.43
8751.00	31.48	92.87	8723.85	32.00	302.28	13.44 S	302.33 E	302.63@	92.54	11.62
8782.00	35.09	92.25	8749.77	31.00	319.27	14.19 S	319.32 E	319.64@	92.54	11.70
8814.00	39.13	90.94	8775.28	32.00	338.56	14.72 S	338.62 E	338.93@	92.49	12.86
8869.00	42.42	91.78	8816.92	55.00	374.46	15.58 S	374.52 E	374.84@	92.38	6.06
8901.00	44.60	91.00	8840.13	32.00	396.48	16.11 S	396.54 E	396.87@	92.33	7.02
8933.00	49.49	89.63	8861.93	32.00	419.89	16.23 S	419.95 E	420.27@	92.21	15.60
8997.00	57.45	86.83	8900.00	64.00	471.25	14.58 S	471.31 E	471.53@	91.77	12.92
9029.00	57.35	86.97	8917.24	32.00	498.17	13.12 S	498.22 E	498.40@	91.51	0.48
9061.00	58.46	87.12	8934.24	32.00	525.25	11.72 S	525.30 E	525.43@	91.28	3.49
9125.00	65.97	87.31	8964.06	64.00	581.77	8.98 S	581.81 E	581.88@	90.88	11.74
9157.00	68.77	86.94	8976.37	32.00	611.27	7.49 S	611.31 E	611.35@	90.70	8.82
9189.00	71.03	87.50	8987.36	32.00	641.29	6.04 S	641.32 E	641.35@	90.54	7.25
9221.00	72.66	88.07	8997.34	32.00	671.68	4.86 S	671.70 E	671.72@	90.41	5.37
9253.00	74.01	89.00	9006.51	32.00	702.33	4.08 S	702.35 E	702.36@	90.33	5.05
9285.00	76.89	90.21	9014.55	32.00	733.30	3.87 S	733.32 E	733.33@	90.30	9.72
9317.00	78.80	90.50	9021.29	32.00	764.58	4.06 S	764.60 E	764.61@	90.30	6.03
9349.00	79.71	90.10	9027.25	32.00	796.02	4.23 S	796.04 E	796.05@	90.30	3.10
9381.00	83.22	90.09	9032.00	32.00	827.66	4.28 S	827.68 E	827.69@	90.30	10.97
9412.00	84.95	89.20	9035.20	31.00	858.49	4.09 S	858.51 E	858.52@	90.27	6.27
9444.00	86.47	88.57	9037.59	32.00	890.39	3.47 S	890.41 E	890.42@	90.22	5.14
9476.00	87.37	87.93	9039.31	32.00	922.34	2.49 S	922.35 E	922.35@	90.15	3.45
9508.00	87.37	88.27	9040.78	32.00	954.29	1.43 S	954.30 E	954.30@	90.09	1.06

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

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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)
9540.00	86.36	88.12	9042.53	32.00	986.23	0.43 S	986.24 E	986.24@	90.02	3.19
9572.00	86.13	88.28	9044.62	32.00	1018.15	0.58 N	1018.15 E	1018.15@	89.97	0.87
9604.00	85.24	89.79	9047.03	32.00	1050.05	1.12 N	1050.05 E	1050.05@	89.94	5.47
9636.00	85.29	89.52	9049.67	32.00	1081.94	1.31 N	1081.94 E	1081.95@	89.93	0.86
9699.00	85.68	89.82	9054.63	63.00	1144.75	1.67 N	1144.75 E	1144.75@	89.92	0.78
9732.00	85.35	89.45	9057.21	33.00	1177.64	1.88 N	1177.65 E	1177.65@	89.91	1.50
9827.00	85.30	89.91	9064.96	95.00	1272.33	2.41 N	1272.33 E	1272.33@	89.89	0.49
9859.00	85.01	89.95	9067.66	32.00	1304.21	2.45 N	1304.21 E	1304.22@	89.89	0.92
9955.00	86.08	91.10	9075.12	96.00	1399.91	1.57 N	1399.92 E	1399.92@	89.94	1.63
9987.00	84.96	91.01	9077.62	32.00	1431.81	0.98 N	1431.81 E	1431.81@	89.96	3.51
10082.00	79.31	89.85	9090.61	95.00	1525.87	0.27 N	1525.88 E	1525.88@	89.99	6.07
10178.00	78.74	90.39	9108.89	96.00	1620.11	0.07 N	1620.12 E	1620.12@	90.00	0.81
10274.00	79.32	89.84	9127.16	96.00	1714.35	0.12 S	1714.37 E	1714.37@	90.00	0.83
10370.00	79.20	90.02	9145.05	96.00	1808.67	0.00 S	1808.68 E	1808.68@	90.00	0.22
10466.00	80.61	89.30	9161.87	96.00	1903.18	0.56 N	1903.19 E	1903.19@	89.98	1.64
10562.00	80.11	89.86	9177.95	96.00	1997.82	1.25 N	1997.83 E	1997.83@	89.96	0.78
10658.00	82.14	88.93	9192.76	96.00	2092.67	2.26 N	2092.67 E	2092.67@	89.94	2.32
10753.00	88.04	89.91	9200.89	95.00	2187.27	3.21 N	2187.28 E	2187.28@	89.92	6.30
10849.00	87.09	88.65	9204.97	96.00	2283.18	4.42 N	2283.18 E	2283.18@	89.89	1.64
10945.00	87.76	88.74	9209.28	96.00	2379.06	6.60 N	2379.06 E	2379.07@	89.84	0.70
11040.00	86.81	89.78	9213.78	95.00	2473.95	7.83 N	2473.94 E	2473.95@	89.82	1.48
11137.00	84.62	89.35	9221.03	97.00	2570.67	8.56 N	2570.66 E	2570.67@	89.81	2.30
11232.00	82.81	88.43	9231.43	95.00	2665.09	10.39 N	2665.07 E	2665.09@	89.78	2.13
11328.00	83.27	87.98	9243.06	96.00	2760.34	13.37 N	2760.31 E	2760.34@	89.72	0.67
11424.00	82.64	87.67	9254.83	96.00	2855.56	16.99 N	2855.52 E	2855.57@	89.66	0.73
11520.00	82.59	87.53	9267.17	96.00	2950.69	20.98 N	2950.64 E	2950.71@	89.59	0.15

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BULL BAT STATE #1
LEA COUNTY, NM
RIG:SILVER OAK 2

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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)
11616.00	82.82	87.93	9279.36	96.00	3045.86	24.75 N	3045.79 E	3045.89@	89.53	0.48
11712.00	83.38	87.54	9290.90	96.00	3141.10	28.51 N	3141.02 E	3141.14@	89.48	0.71
11808.00	84.11	87.16	9301.35	96.00	3236.44	32.93 N	3236.34 E	3236.51@	89.42	0.86
11904.00	84.06	87.25	9311.25	96.00	3331.83	37.58 N	3331.72 E	3331.93@	89.35	0.11
11999.00	85.74	87.60	9319.69	95.00	3426.37	41.83 N	3426.24 E	3426.50@	89.30	1.81
12097.00	86.30	87.70	9326.49	98.00	3524.07	45.84 N	3523.92 E	3524.22@	89.25	0.58
12191.00	86.47	88.95	9332.42	94.00	3617.85	48.58 N	3617.69 E	3618.02@	89.23	1.34
12287.00	86.02	89.44	9338.71	96.00	3713.64	49.93 N	3713.48 E	3713.81@	89.23	0.69
12383.00	86.92	90.04	9344.62	96.00	3809.45	50.36 N	3809.29 E	3809.63@	89.24	1.13
12479.00	85.85	89.36	9350.67	96.00	3905.26	50.87 N	3905.10 E	3905.43@	89.25	1.32
12575.00	85.69	89.55	9357.75	96.00	4000.99	51.78 N	4000.83 E	4001.17@	89.26	0.26
12671.00	86.30	89.20	9364.46	96.00	4096.76	52.82 N	4096.59 E	4096.93@	89.26	0.73
12767.00	86.86	89.27	9370.18	96.00	4192.58	54.10 N	4192.41 E	4192.76@	89.26	0.59
12792.00	86.86	88.96	9371.55	25.00	4217.54	54.49 N	4217.37 E	4217.72@	89.26	1.24
THE FOLLOWING IS A STRAIGHT LINE PROJECTION TO BIT DEPTH @ 12850'MD.										
12850.00	86.86	88.96	9374.73	58.00	4275.45	55.54 N	4275.27 E	4275.63@	89.26	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.



ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MACK ENERGY		
LEASE / WELL No.:	BULL BAT STATE	#1H	
WELL LOCATION:	LEA COUNTY, NM		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	SILVER OAK #2		
API WELL No:	30-025-27241		
JOB No:	700000411-GC-WT		
P.O. / AFE No.	1396.001		
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.44	LWD Calculated:	7.44
		Agreed Upon:	7.44
X =	695838.900000	Feet	Y = 742767.300000
			Feet
SITE LATITUDE:	33.040292 N	SITE LONGITUDE:	103.694269 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	89.79		
KELLY BUSHING ELEVATION:	30'		
ALTITUDE:	4279	Feet	WATER DEPTH: NA
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	4100'		
DRIFT ANGLE:	0.6		
DRIFT DIRECTION:	246.03		
TRUE VERTICAL DEPTH:	4099.51		
VERTICAL SECTION:	20.69		
RECTANGULAR COORDINATE (N / S) :	10.1		
RECTANGULAR COORDINATE (E / W) :	20.65		
CLOSURE DISTANCE / DIRECTION:	22.99	63.94	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	TOTAL DEPTH:
KICKOFF ANGLE:	MAX ANGLE:

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____

Gyroscopic Survey Report for:
MACK ENERGY

Well Location: LEA COUNTY, NEW MEXICO
Well Name: BULL BAT STATE #1H
Rig Name: SILVER OAK #2
Survey Date: 10/1/2010
Latitude: 33.04 deg
North Reference: Grid North
Grid Correction: -0.35 deg
Depth Reference: RKB
Calculation Method: Minimum Curvature
Section (VS) Ref: 0.00N (ft), 0.00E (ft), 89.78Azim (deg)
Definitive Survey: FINAL OUTFRAN SURVEY
Operator: A.MADRID

Measured Depth [ft]	Vertical Section [ft]	Inclination [deg]	Azimuth [deg]	True Vertical Depth
[ft]	Dog Leg	Severity [deg/100ft]	Northing (Latitude) [ft]	Easting (Departure)
[ft]			Closure Distance [ft]	Closure Angle [deg]
0.00	0.00	0.00	0.00	0.00
100.00	0.21	160.88	0.06	0.18
200.00	0.15	121.90	0.23	0.47
300.00	0.17	144.26	0.43	0.74
400.00	0.24	132.43	0.67	1.09
500.00	0.25	148.02	0.93	1.51
600.00	0.33	159.08	1.15	2.01
700.00	0.24	207.06	1.15	2.40
800.00	0.08	255.69	0.99	2.51
900.00	0.03	308.40	0.90	2.47
1000.00	0.12	120.59	0.97	2.53
1100.00	0.25	164.11	1.12	2.84
1200.00	0.31	196.97	1.10	3.27
1300.00	0.33	207.95	0.88	3.70
1400.00	0.12	196.22	0.71	4.02
1500.00	0.52	203.23	0.51	4.50
1600.00	0.30	239.32	0.10	5.02
1700.00	0.19	203.65	-0.19	5.30
1800.00	0.29	239.07	-0.47	5.60
1900.00	0.14	350.77	-0.71	5.63
2000.00	0.98	39.14	-0.18	4.81
2100.00	1.97	48.28	1.65	3.43
2200.00	2.45	58.49	4.76	4.82
2300.00	2.40	58.93	8.39	8.51
2400.00	2.70	56.87	12.16	12.74
2500.00	1.92	63.70	15.65	16.69
2600.00	1.38	62.42	18.22	19.55
2700.00	1.00	55.03	20.01	21.60
2800.00	0.69	52.79	21.21	23.04
2900.00	0.60	67.82	22.18	24.15
3000.00	0.41	37.74	22.89	24.99
3100.00	0.22	349.71	23.07	25.36
3200.00	0.18	90.07	23.20	25.55
3300.00	0.11	326.93	23.31	25.68
3400.00	0.12	293.71	23.16	25.60
3500.00	0.17	156.29	23.12	25.52
3600.00	0.16	255.34	23.04	25.38
3700.00	0.20	273.47	22.73	25.09
3800.00	0.17	266.66	22.40	24.79
3900.00	0.29	266.03	22.00	24.42
4000.00	0.38	239.44	21.47	23.86
4100.00	0.60	246.03	20.70	23.00

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MACK ENERGY
BULL BAT STATE #1H
LEA COUNTY, NEW MEXICO
Rig:SILVER OAK 2

Wed Sep 29 09:48:16 2010

Coordinates

Latitude: 33.040292 N (33 deg. 2 min. 25.0526 sec.)
Longitude: 103.694269 W (-103 deg. 41 min. 39.3695 sec.)
Elevation: 4297.00 feet.
Calculation Date: Sep/29/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.9374 degrees
Total Magnetic Field: 0.49160 gauss
Magnetic Declination: 7.791465 degrees
Horizontal Intensity: 0.238800 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.791465 Degs

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 695838.9000 feet
Y: 742767.3000 feet
True to Grid: (convergence) -0.348446 degrees
Magnetic to Grid: 7.443019 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.443019 Degs.