

Results of Directional Survey

DD

API number:	30-025-40339		
OGRID:		Operator:	MACK ENERGY CORP
		Property:	BROOK FEDERAL # 4

surface	ULSTR:	A	30	T 17S	R 32E
				750 FNL	1120 FEL

BH Loc	ULSTR:	A	30	T 17S	R 32E
10134	MD	10117.2	TVD	508 FNL	1005 FEL

Top Perf/OH	ULSTR:	A	30	T 17S	R 32E
9480	MD	9463.9	TVD	517 FNL	980 FEL

Bot Perf/OH	ULSTR:	A	30	T 17S	R 32E
9510	MD	9493.9	TVD	517 FNL	980 FEL

	MD	N/S	E/W	VD
	9453	232.42	140.17	9436.89
TOP PERFS/OH	9480	232.61	140.04	9463.89
	9549	233.10	139.70	9532.89
	9453	232.42	140.17	9436.89
BOT PERFS/OH	9510	232.82	139.89	9493.89
	9549	233.10	139.70	9532.89

NEXT TO LAST	9739	234.40	135.28	9722.82
LAST READING	9835	236.36	130.43	9818.67
TD	10134	242.46	115.32	10117.20

Surface Location	750 FN	1120 FE
Projected BHL	508 FN	1005 FE
Location of		
Top Perfs/OH	517 FN	980 FE
Bottom Perfs/OH	517 FN	980 FE

SUMMARY of Subsurface Locations

Surface Location	A-30-17S-32E	750 FN	1120 FE	Vert. Depth
Top Perfs/OH	A-30-17S-32E	517 FN	980 FE	9463.89
Bottom Perfs/OH	A-30-17S-32E	517 FN	980 FE	9493.89
Projected TD	A-30-17S-32E	508 FN	1005 FE	10117.20

JUL 25 2012



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

May 16, 2012

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

RE: Brook Federal #4
990' FNL & 990' FEL
Sec. 30, T17S, R32E
Lea County, New Mexico

Dear Sir,

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

SUR: A-30-17s-32e, 750/N & 1120/E
BHL: A-30-17s-32e, 508/N & 1005/E
API # 30-025-40339

Very truly yours,

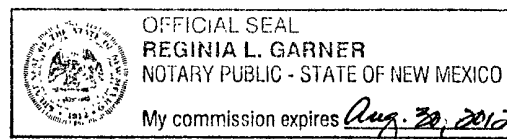
A handwritten signature in black ink, appearing to read "Eddie C. LaRue".

Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 16th day of May, 2012.

A handwritten signature in black ink, appearing to read "Regina L. Garner".

Notary Public

Brook Federal #4

Date	Depth	Deviation	Direction	TVD
4/13/2012	149	0.30		
4/14/2012	285	0.50	33.70	
4/14/2012	443	0.40	0.90	
4/14/2012	623	0.10	13.70	
4/14/2012	733	0.20	101.70	
4/16/2012	780	0.44	114.40	
4/16/2012	870	0.90	342.57	
4/16/2012	965	0.90	47.60	
4/16/2012	1156	0.18	122.31	
4/16/2012	1346	0.18	204.75	
4/16/2012	1441	0.18	357.51	
4/17/2012	1632	0.97	51.91	1631.98
4/17/2012	1727	1.58	57.62	1726.95
4/17/2012	1822	1.85	58.50	1821.91
4/17/2012	1949	1.32	61.14	
4/17/2012	2077	1.14	40.75	
4/19/2012	2187	1.32	42.86	2186.79
4/19/2012	2282	0.97	192.89	2281.78
4/19/2012	2346	2.02	158.96	
4/19/2012	2409	4.04	159.49	
4/19/2012	2473	5.89	155.09	
4/19/2012	2759	6.24	152.19	
4/19/2012	2853	4.57	145.60	
4/19/2012	2917	5.45	148.41	2914.04
4/19/2012	3044	7.65	155.09	3040.23
4/19/2012	3234	6.24	162.63	3228.83
4/20/2012	3425	6.86	153.78	3418.46
4/20/2012	3520	6.42	156.06	3512.82
4/20/2012	3615	6.42	150.00	3607.22
4/20/2012	3710	6.60	148.68	3701.65
4/20/2012	3806	6.42	147.56	3797.07
4/20/2012	3501	3.09	144.46	3891.53
4/20/2012	3906	7.39	153.95	
4/20/2012	4095	7.30	154.65	
4/20/2012	4187	7.12	155.27	
4/20/2012	4567	5.45	165.11	4552.25
4/20/2012	4757	3.87	150.35	4741.48
4/20/2012	4852	2.20	146.39	4836.34
4/21/2012	5042	35.00	159.31	5026.32
4/21/2012	5138	0.26	226.81	5122.32
4/21/2012	5519	0.44	109.23	5503.31
4/21/2012	5709	0.62	145.78	5693.30
4/22/2012	6900	0.79	141.58	5884.00

Date	Depth	Deviation	Direction	TVD
4/22/2012	6280	0.44	69.81	
4/22/2012	6471	0.44	22.77	6455.25
4/22/2012	6661	1.76	22.51	6645.21
4/23/2012	6756	0.26	52.25	6740.00
4/23/2012	6852	0.35	323.86	6836.00
4/23/2012	6946	0.35	355.57	6930.19
4/24/2012	7137	0.18	15.79	
4/24/2012	7232	0.35	341.60	
4/24/2012	7327	0.44	320.53	
4/25/2012	7485	0.79	323.05	7469.18
4/25/2012	7580	1.23	338.43	7564.16
4/26/2012	7676	0.79	321.56	
4/26/2012	7768	1.06	309.78	7752.14
4/27/2012	7904	1.20		
4/27/2012	8031	0.80		
4/29/2012	8214	1.32	12.89	8198.05
4/29/2012	8311	0.44	8.93	8295.00
4/29/2012	8405	0.70	16.75	8389.00
4/30/2012	8501	1.14	22.99	8485.00
4/30/2012	8596	0.35	113.87	8580.01
5/1/2012	8691	1.14	176.01	8675.00
5/1/2012	8786	1.06	184.19	8769.90
5/2/2012	8882	0.88	176.10	8865.00
5/3/2012	8977	0.97	166.78	8960.96
5/3/2012	9073	1.14	175.75	9056.94
5/3/2012	9168	1.32	183.31	9151.00
5/4/2012	9263	0.79	156.15	9246.00
5/4/2012	9453	0.44	175.74	
5/4/2012	9549	0.70	238.29	9532.89
5/5/2012	8644	0.97	291.88	9627.88
5/5/2012	9739	3.08	245.03	9722.00
5/5/2012	9835	9.17	250.38	9818.00
5/6/2012	9935	2.40		
5/7/2012	10099	3.50		



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

HOBBS OCD

JUL 20 2012

RECEIVED

MACK ENERGY

BROOK FEDERAL #4

LEA COUNTY, NEW MEXICO

SUR: A-30-17s-32e, 750/N & 1120/E
BHL: A-30-17s-32e, 508/N & 1005/E
API # 30-025-40339

PREPARED BY: JUAN ALCOCER

Pathfinder

6213 WCH 112
Midland, Texas 79706
Tel (432)687-1647
Fax (432)687-1544



DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) HUEY SANDIFER
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 4-16-12 TO 5-06-12
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
BROOK FEDERAL #4
LEA COUNTY, NM
RIG: SILVER OAK 2
9. SURVEY CERTIFIED FROM: 780 TO 9,835 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 269.10 FEET ON A BEARING OF 152.29 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 9,937 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


JUAN ALCOCER
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 04/15/2012
Date Completed: 05/06/2012

MACK ENERGY CORPORATION
BROOK FEDERAL #4 / API# 30-025-40339
LEA COUNTY, NM
Rig: Silver Oak 2
PathFinder Office Supervisor: Juan Alcocer
PathFinder Field Engineers: Cody Bundick
Huey Sandifer

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.48.38.6036 N LON: 103.48.1.1984 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 663758.0000 Y: 659064.9000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.34° EAST TO GRID
Vertical Section Plane: 151.26
Survey Vert. Reference: 17.50' Rotary Table To Ground
Altitude: 3907.00' Ground To MSL

Measured Depth	9937.00	(feet)
Inclination	3.17	(deg)
Azimuth	250.38	(deg)
True Vertical Depth	9920.52	(feet)
Vertical Section	269.06	(feet)
Survey X cord	663883.06	(feet)
Survey Y cord	658826.54	(feet)
Survey Lat	32.81006635 N	(deg)
Survey Lon	103.79992978 W	(deg)
Rectangular Corr. N/S	238.25 S	(feet)
Rectangular Corr. E/W	125.11 E	(feet)
Closure Distance	269.10	(feet)
Direction of Closure	152.29	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BROOK FEDERAL #4 / API# 30-025-40339
LEA COUNTY, NM
Rig: Silver Oak 2
PathFinder Office Supervisor: Juan Alcocer
PathFinder Field Engineers: Cody Bundick
Huey Sandifer

Page 01/04
Tie-in Date: 04/15/2012
Date Completed: 05/06/2012

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.48.38.6036 N LON: 103.48.1.1984 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 663758.0000 Y: 659064.9000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.34° EAST TO GRID
Vertical Section Plane: 151.26
Survey Vert. Reference: 17.50' Rotary Table To Ground
Altitude: 3907.00' Ground To MSL

Survey Calculations by RX4 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)
THE FOLLOWING ARE TELEDIFT SURVEYS.										
149.00	0.30	34.70	149.00	0.00	-0.17	0.32 N	0.22 E	0.39@	34.66	0.00
285.00	0.50	33.70	285.00	136.00	-0.61	1.10 N	0.75 E	1.33@	34.24	0.15
443.00	0.40	8.70	442.99	158.00	-1.36	2.22 N	1.22 E	2.53@	28.71	0.14
623.00	0.10	13.70	622.99	180.00	-1.98	3.00 N	1.35 E	3.29@	24.25	0.17
**	TIE-IN TO TELEDIFT SURVEYS AT 733' MD.									
733.00	0.20	101.70	732.99	110.00	-1.92	3.05 N	1.56 E	3.43@	27.09	0.20
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
780.00	0.44	114.40	779.99	47.00	-1.73	2.96 N	1.80 E	3.47@	31.38	0.53
870.00	0.09	342.57	869.99	90.00	-1.52	2.88 N	2.10 E	3.57@	36.04	0.56
965.00	0.09	47.60	964.99	95.00	-1.61	3.00 N	2.13 E	3.68@	35.34	0.10
1156.00	0.18	122.31	1155.99	191.00	-1.38	2.95 N	2.50 E	3.86@	40.27	0.09
1346.00	0.18	204.75	1345.99	190.00	-0.94	2.52 N	2.62 E	3.63@	46.20	0.12
1441.00	0.18	357.51	1440.99	95.00	-0.99	2.53 N	2.55 E	3.59@	45.28	0.37
1632.00	0.97	51.91	1631.98	191.00	-1.52	3.83 N	3.81 E	5.40@	44.90	0.46
1727.00	1.58	57.62	1726.95	95.00	-1.73	5.02 N	5.55 E	7.49@	47.86	0.65
1822.00	1.85	58.50	1821.91	95.00	-1.89	6.53 N	7.97 E	10.30@	50.67	0.29
1867.00	2.20	61.93	1866.88	45.00	-1.92	7.31 N	9.35 E	11.87@	51.96	0.82
1949.00	1.32	61.14	1948.84	82.00	-1.90	8.51 N	11.56 E	14.36@	53.65	1.07
2077.00	1.14	40.75	2076.81	128.00	-2.35	10.18 N	13.69 E	17.06@	53.34	0.37
2187.00	1.32	42.86	2186.79	110.00	-3.13	11.94 N	15.26 E	19.38@	51.96	0.17
2282.00	0.97	192.89	2281.78	95.00	-2.88	11.96 N	15.83 E	19.84@	52.92	2.33
2346.00	2.02	158.96	2345.76	64.00	-1.35	10.38 N	16.11 E	19.16@	57.21	2.08
2409.00	4.04	159.49	2408.67	63.00	1.94	7.26 N	17.29 E	18.75@	67.21	3.21
2473.00	5.89	155.09	2472.42	64.00	7.45	2.17 N	19.46 E	19.58@	83.63	2.95

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
BROOK FEDERAL #4 / API# 30-025-40339
LEA COUNTY, NM
RIG: Silver Oak 2

Page 02/04

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)	(deg)	(deg)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(deg)	(dg/100ft)
2568.00	7.12	152.90	2566.81	95.00	18.20	7.49 S	24.20 E	25.33@	107.20	1.32
2663.00	5.63	152.37	2661.22	95.00	28.74	16.86 S	29.04 E	33.58@	120.14	1.57
2759.00	6.24	152.19	2756.71	96.00	38.67	25.65 S	33.66 E	42.31@	127.31	0.64
2853.00	4.57	145.60	2850.29	94.00	47.50	33.25 S	38.16 E	50.61@	131.07	1.89
2917.00	5.45	148.41	2914.04	64.00	53.08	37.95 S	41.19 E	56.00@	132.65	1.43
2980.00	6.33	147.01	2976.71	63.00	59.53	43.41 S	44.65 E	62.27@	134.19	1.41
3044.00	7.65	155.09	3040.23	64.00	67.30	50.23 S	48.36 E	69.73@	136.09	2.57
3139.00	6.95	152.99	3134.46	95.00	79.35	61.09 S	53.64 E	81.29@	138.72	0.79
3234.00	6.24	152.63	3228.83	95.00	90.26	70.79 S	58.62 E	91.91@	140.37	0.75
3329.00	7.21	157.47	3323.18	95.00	101.35	80.89 S	63.28 E	102.70@	141.96	1.18
3425.00	6.86	153.78	3418.46	96.00	113.06	91.59 S	68.12 E	114.15@	143.36	0.60
3520.00	6.42	156.06	3512.82	95.00	124.03	101.54 S	72.78 E	124.93@	144.37	0.54
3615.00	6.42	150.08	3607.22	95.00	134.63	111.00 S	77.59 E	135.42@	145.05	0.70
3710.00	6.16	148.68	3701.65	95.00	145.03	119.95 S	82.88 E	145.80@	145.36	0.32
3806.00	6.42	147.36	3797.07	96.00	155.53	128.87 S	88.46 E	156.31@	145.53	0.31
3901.00	5.89	144.46	3891.53	95.00	165.67	137.31 S	94.16 E	166.49@	145.56	0.65
3996.00	7.39	153.95	3985.89	95.00	176.61	146.77 S	99.67 E	177.41@	145.82	1.95
4092.00	7.30	154.65	4081.10	96.00	188.87	157.83 S	104.99 E	189.56@	146.37	0.13
4187.00	7.12	155.27	4175.35	95.00	200.77	168.63 S	110.04 E	201.36@	146.87	0.21
4282.00	7.30	168.37	4269.61	95.00	212.41	179.89 S	113.72 E	212.82@	147.70	1.74
4377.00	7.83	166.52	4363.78	95.00	224.42	192.09 S	116.45 E	224.63@	148.78	0.61
4472.00	7.83	167.22	4457.89	95.00	236.89	204.70 S	119.39 E	236.97@	149.75	0.10
4567.00	5.45	165.11	4552.25	95.00	247.49	215.37 S	121.98 E	247.51@	150.47	2.52
4662.00	5.63	164.15	4646.81	95.00	256.41	224.21 S	124.41 E	256.42@	150.98	0.21
4757.00	3.87	150.35	4741.48	95.00	264.16	231.48 S	127.27 E	264.16@	151.20	2.20
4852.00	2.20	146.39	4836.34	95.00	269.18	235.79 S	129.86 E	269.18@	151.16	1.77
4947.00	0.09	145.51	4931.32	95.00	271.07	237.37 S	130.92 E	271.08@	151.12	2.22

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
 BROOK FEDERAL #4 / API# 30-025-40339
 LEA COUNTY, NM
 RIG: Silver Oak 2

Page 03/04

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS
						(ft)	(ft)	(ft)	(deg)	(dg/100ft)
5042.00	0.35	159.31	5026.32	95.00	271.44	237.70 S	131.06 E	271.44@	151.13	0.28
5138.00	0.26	226.81	5122.32	96.00	271.78	238.12 S	131.01 E	271.78@	151.18	0.36
5328.00	0.35	144.53	5312.31	190.00	272.46	238.89 S	131.03 E	272.46@	151.26	0.21
5519.00	0.44	109.23	5503.31	191.00	273.59	239.61 S	132.06 E	273.59@	151.14	0.13
5709.00	0.62	145.78	5693.30	190.00	275.15	240.70 S	133.33 E	275.16@	151.02	0.20
5900.00	0.79	141.58	5884.29	191.00	277.48	242.58 S	134.73 E	277.48@	150.95	0.09
6090.00	0.88	141.80	6074.27	190.00	280.21	244.76 S	136.44 E	280.22@	150.86	0.05
6280.00	0.44	69.81	6264.26	190.00	281.76	245.65 S	138.03 E	281.77@	150.67	0.45
6471.00	0.44	22.77	6455.25	191.00	281.41	244.72 S	139.00 E	281.44@	150.40	0.18
6661.00	1.76	22.51	6645.21	190.00	279.13	241.35 S	140.40 E	279.22@	149.81	0.70
6756.00	0.26	52.25	6740.19	95.00	278.18	239.87 S	141.13 E	278.31@	149.53	1.62
6852.00	0.35	323.86	6836.19	96.00	277.86	239.50 S	141.13 E	277.99@	149.49	0.45
6946.00	0.35	355.57	6930.19	94.00	277.31	238.99 S	140.94 E	277.45@	149.47	0.20
7039.00	0.18	8.14	7023.19	93.00	276.94	238.56 S	140.94 E	277.08@	149.43	0.19
7137.00	0.18	15.79	7121.19	98.00	276.70	238.26 S	141.00 E	276.85@	149.38	0.02
7232.00	0.35	341.60	7216.19	95.00	276.31	237.84 S	140.95 E	276.47@	149.35	0.24
7327.00	0.44	320.59	7311.19	95.00	275.67	237.28 S	140.63 E	275.82@	149.35	0.18
7485.00	0.79	323.05	7469.18	158.00	273.99	235.94 S	139.59 E	274.14@	149.39	0.22
7580.00	1.23	338.43	7564.16	95.00	272.33	234.47 S	138.82 E	272.48@	149.37	0.54
7676.00	0.79	321.56	7660.15	96.00	270.66	232.99 S	138.03 E	270.81@	149.36	0.55
7768.00	1.06	309.78	7752.14	92.00	269.24	231.95 S	136.98 E	269.38@	149.44	0.36
7928.00	1.14	3.31	7912.11	160.00	266.52	229.42 S	135.93 E	266.66@	149.35	0.62
8119.00	1.23	9.72	8103.07	191.00	263.30	225.50 S	136.39 E	263.54@	148.83	0.08
8214.00	1.32	12.89	8198.05	95.00	261.68	223.43 S	136.81 E	261.98@	148.52	0.12
8311.00	0.44	8.93	8295.03	97.00	260.55	221.97 S	137.11 E	260.90@	148.30	0.91
8405.00	0.70	16.75	8389.03	94.00	259.87	221.06 S	137.33 E	260.25@	148.15	0.29
8501.00	1.14	22.99	8485.02	96.00	258.86	219.62 S	137.88 E	259.31@	147.88	0.47

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORPORATION
 BROOK FEDERAL #4 / API# 30-025-40339
 LEA COUNTY, NM
 RIG:Silver Oak 2

Page 04/04

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS
						(ft)	(ft)	(ft)	(deg)	(dg/100ft)
8596.00	0.35	113.87	8580.01	95.00	258.51	218.87 S	138.51 E	259.02@	147.67	1.26
8691.00	1.14	176.01	8675.00	95.00	259.60	219.93 S	138.84 E	260.09@	147.74	1.08
8786.00	1.06	184.19	8769.99	95.00	261.19	221.75 S	138.84 E	261.63@	147.95	0.19
8882.00	0.88	176.10	8865.97	96.00	262.61	223.37 S	138.83 E	263.00@	148.14	0.24
8977.00	0.97	166.78	8960.96	95.00	264.04	224.88 S	139.06 E	264.41@	148.27	0.18
9073.00	1.14	175.75	9056.94	96.00	265.70	226.63 S	139.32 E	266.02@	148.42	0.25
9168.00	1.32	183.31	9151.92	95.00	267.48	228.66 S	139.32 E	267.76@	148.65	0.25
9263.00	0.79	156.15	9246.90	95.00	269.06	230.35 S	139.53 E	269.31@	148.80	0.75
9358.00	0.70	162.21	9341.90	95.00	270.29	231.50 S	139.97 E	270.53@	148.84	0.13
9453.00	0.44	175.74	9436.89	95.00	271.19	232.42 S	140.17 E	271.42@	148.91	0.31
9549.00	0.70	238.29	9532.89	96.00	271.55	233.10 S	139.70 E	271.75@	149.06	0.66
9644.00	0.97	271.88	9627.88	95.00	271.17	233.37 S	138.40 E	271.33@	149.33	0.58
9739.00	3.08	245.63	9722.82	95.00	270.57	234.40 S	135.28 E	270.63@	150.01	2.37
9835.00	3.17	250.38	9818.67	96.00	269.95	236.36 S	130.43 E	269.95@	151.11	0.28
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 9937'MD.										
9937.00	3.17	250.38	9920.52	102.00	269.06	238.25 S	125.11 E	269.10@	152.29	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 Corporation		
LEASE / WELL No.:	Brook Federal	4H	
WELL LOCATION:	Lea County, NM		
COUNTY / STATE / COUNTRY:	Lea	New Mexico	USA
RIG:	Silver Oak 2		
API WELL No:	30-025-40339		
JOB No:	12MLD0170		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	Pathfinder		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.33	LWD Calculated:	7.345
		Agreed Upon:	7.345
X =	663758.000000	Feet	Y = 659064.900000
			Feet
SITE LATITUDE:	32.810723	SITE LONGITUDE:	-103.800333
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☒	ZONE:	New Mexico East
PROPOSED DRIFT DIRECTION:	151.26		
KELLY BUSHING ELEVATION:	17.5		
ALTITUDE:	3924.5	Feet	WATER DEPTH: N/A
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	733		
DRIFT ANGLE:	0.2		
DRIFT DIRECTION:	101.7		
TRUE VERTICAL DEPTH:	732.99		
VERTICAL SECTION:	-1.92		
RECTANGULAR COORDINATE (N / S) :	3.05		
RECTANGULAR COORDINATE (E / W) :	1.56		
CLOSURE DISTANCE / DIRECTION:	3.43	27.09	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	TELEDRIFT		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

KICKOFF DEPTH:	2200	TOTAL DEPTH:	10414.3
KICKOFF ANGLE:	0	MAX ANGLE:	6.27

PES Engineers: _____ Cody Bundick

**Signature of both field engineers required if applicable

Directional Driller: _____ Monnie Prater

DATE: 15-Apr-2012



SURVEY REPORT

Page 1 of 1

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 7.12
Report created using job file: MackEnergy-12APR12
Report saved on 16 Apr 2012 03:57
Depth in feet

WELL NAME Brook Barrel #4
NORTH CORRECTION 7.7°
JOB ID MackEnergy
COMPANY Mack Energy
CONTRACTOR Silver Oak #2
START DATE 12 APR 12
API #

LOCATION Brook Barrel #4
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	12-Apr-12	13:11	00.0	0.0
0001	149.0	13-Apr-12	19:59	00.3	34.7
0005	285.0	13-Apr-12	23:59	00.5	33.7
0011	443.0	14-Apr-12	07:08	00.4	8.7
0018	623.0	14-Apr-12	13:14	00.1	13.7
0023	733.0	14-Apr-12	19:57	00.2	101.7

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

Mack Energy Corporation
Brook Federal #4
Lea County, NM
Rig: Silver Oak 2

Thu Apr 12 16:32:33 2012

Coordinates

Latitude: 32.810723 N (32 deg. 48 min. 38.6036 sec.)
Longitude: 103.800333 W (-103 deg. 48 min. 1.1984 sec.)
Elevation: 3924.50 feet.
Calculation Date: Apr/12/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6694 degrees
Total Magnetic Field: 0.48858 gauss
Magnetic Declination: 7.634339 degrees
Horizontal Intensity: 0.239331 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.634339 Degs

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 663758.0000 feet
Y: 659064.9000 feet
True to Grid: (convergence) -0.288821 degrees
Magnetic to Grid: 7.345518 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.345518 Degs.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

FIELD CALCULATIONS

MACK ENERGY CORPORATION
BROOK FEDERAL #4 / API# 30-025-40339
LEA COUNTY
Rig: Silver Oak 2

Tue May 08 16:39:10 2012

Coordinates

Latitude: 32.810723 N (32 deg. 48 min. 38.6036 sec.)
Longitude: 103.800333 W (-103 deg. 48 min. 1.1984 sec.)
Elevation: 3924.50 feet.
Calculation Date: Apr/15/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.6692 degrees
Total Magnetic Field: 0.48857 gauss
Magnetic Declination: 7.633326 degrees
Horizontal Intensity: 0.239329 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.633326 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 663758.0000 feet
Y: 659064.9000 feet
True to Grid: (convergence) -0.288821 degrees
Magnetic to Grid: 7.344505 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.344505 Degr.