

Results of Directional Survey

API number:	30-025-39495		
OGRID:		Operator:	MACK ENERGY CORP
		Property:	GRACE MITCHELL B FEDERAL # 8

surface	ULSTR:	O	05	T 17S	R 32E
			907 FSL	1515 FEL	

BH Loc	ULSTR:	O	05	T 17S	R 32E
			979 FSL	1667 FEL	

Top Perf/OH	ULSTR:	O	05	T 17S	R 32E
		4210	981 FSL	1664 FEL	

Bot Perf/OH	ULSTR:	O	05	T 17S	R 32E
		4502	983 FSL	1662 FEL	

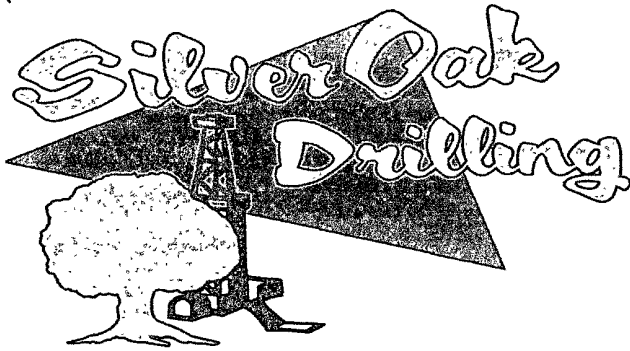
	MD	N/S	E/W	VD
	4089	73.04	-150.42	4072.71
TOP PERFS/OH	4210	73.51	-149.42	4193.70
	4248	73.66	-149.11	4231.70
	4407	75.22	-147.31	4390.68
BOT PERFS/OH	4502	76.40	-147.19	4485.67
	4566	77.20	-147.11	4549.67

NEXT TO LAST	4883	76.31	-149.85	4866.65
LAST READING	5041	75.16	-150.46	5024.65
TD	5493	71.87	-152.21	5476.65

Surface Location	907	FS	1515	FE
Projected BHL	979	FS	1667	FE
Location of				
Top Perfs/OH	981	FS	1664	FE
Bottom Perfs/OH	983	FS	1662	FE

SUMMARY of Subsurface Locations

Surface Location	O-05-17S-32E	907	FS	1515	FE	Vert. Depth
Top Perfs/OH	O-05-17S-32E	981	FS	1664	FE	4193.70
Bottom Perfs/OH	O-05-17S-32E	983	FS	1662	FE	4485.67
Projected TD	O-05-17S-32E	979	FS	1667	FE	5476.65



PO Box 1370
Artesia, NM 88211-1370
(505) 748-1288

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JUN 22 2010

HOBBSDO

May 17, 2010

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

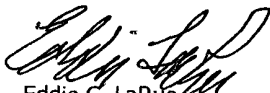
RE: Grace Mitchell B Federal #8
990' FSL & 1650' FEL
Sec. 5, T17S, R32E
Lea County, New Mexico

Dear Sir,

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

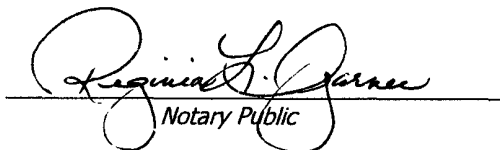
SUR: O-05-17s-32e, 907/S & 1515/E
BHL: O-05-17s-32e, 979/S & 1667/E
API # 30-025-39495

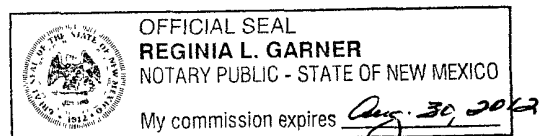
Very truly yours,


Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 17th day of May, 2010.


Regina L. Garner
Notary Public



Kz

Grace Mitchell B Fed #8

Date	Depth	Deviation	Direction	TVD
5/5/2010	194	0.40	0.00	266
5/5/2010	497	0.30	0.00	569
5/5/2010	796	0.20	0.00	0
5/6/2010	1030	0.25	0.00	0
5/7/2010	1353	0.00	0.00	0
5/7/2010	1702	0.50	0.00	0
5/7/2010	1984	1.50	0.00	2026
5/7/2010	2302	1.50	0.00	0
5/8/2010	2382	1.32	93.26	2440
5/8/2010	2407	1.23	89.66	2465
5/8/2010	2438	0.79	39.47	2496
5/8/2010	2470	1.67	0.60	2528
5/8/2010	2502	2.37	348.67	2560
5/8/2010	2534	2.99	334.25	0
5/8/2010	2565	3.34	324.06	0
5/8/2010	2597	4.13	314.84	0
5/8/2010	2629	4.75	302.75	0
5/8/2010	2661	5.19	301.65	2660
5/8/2010	2692	5.63	296.99	0
5/8/2010	2724	6.42	289.88	0
5/8/2010	2756	6.86	289.26	0
5/8/2010	2788	7.30	288.56	0
5/8/2010	2819	7.74	290.31	0
5/8/2010	2851	8.53	290.31	0
5/9/2010	2883	9.32	293.13	0
5/9/2010	2915	9.67	292.69	0
5/9/2010	2946	10.20	291.11	0
5/9/2010	2978	10.90	288.38	0
5/9/2010	3010	12.05	286.89	0
5/9/2010	3042	12.66	288.91	0
5/9/2010	3105	13.01	293.04	0
5/9/2010	3169	13.10	293.13	0
5/9/2010	3232	13.01	292.25	0
5/9/2010	3295	13.89	293.04	0
5/9/2010	3359	12.40	290.31	0
5/9/2010	3422	10.73	283.99	0
5/9/2010	3486	7.74	280.21	0
5/9/2010	3549	5.01	296.29	0
5/10/2010	3676	2.29	279.25	0
5/10/2010	3740	1.25	196.45	0
5/10/2010	3803	0.44	56.09	0
5/10/2010	3867	0.88	40.27	0
5/10/2010	3931	0.79	46.59	0
5/10/2010	4089	0.35	63.91	0
5/10/2010	4248	0.70	65.05	4231.7
5/10/2010	4407	1.06	38.60	4390.68
5/10/2010	4566	0.79	319.14	4549.67
5/11/2010	4724	0.70	233.98	4707.66
5/11/2010	4883	0.53	219.30	4866.65
5/11/2010	5041	0.44	193.81	5024.65
5/12/2010	5287	0.70	123.00	0
5/12/2010	5417	1.10	105.80	0
5/13/2010	5435	1.10	136.00	5493



An Operating Unit of Smith International, Inc.

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JUN 22 2010

HOBBSOCD

DIRECTIONAL SURVEY REPORT

MACK ENERGY

GRACE MITCHELL B FEDERAL #8

LEA COUNTY, NEW MEXICO

SUR: O-05-17s-32e, 907/S & 1515/E
BHL: O-05-17s-32e, 979/S & 1667/E
API # 30-025-39495

PREPARED BY: FRANCISCO SINISTERRA

Pathfinder Energy Services, Inc.
6213 W. Interstate 20 • Midland, TX • 79706
(432) 681-6000

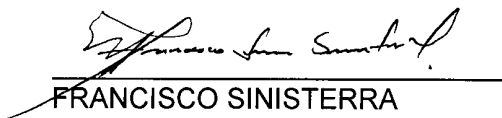
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) STEWART ROBERTSON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 05-08-10 TO 05-11-10
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
GRACE MITCHELL B FEDERAL #8
LEA COUNTY, NM
RIG: SILVEROAK # 2

9. SURVEY CERTIFIED FROM: 2382 TO 5041 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 168.03 FEET ON A BEARING OF 296.30 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 5135 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: 05/08/2010
Date Completed: 05/11/2010

MACK ENERGY
GRACE MITCHELL B FEDERAL #8
LEA COUNTY, NM
Rig:SILVER OAK 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:S. ROBERTSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.51.31.6638 N LON:103.47.4.0861 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 668541.4000 Y: 676579.1000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.57°EAST TO GRID
Vertical Section Plane: 293.00
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:4085.00' Ground To MSL

Measured Depth	5135.00	(feet)
Inclination	0.44	(deg)
Azimuth	193.81	(deg)
True Vertical Depth	5118.64	(feet)
Vertical Section	167.75	(feet)
Survey X cord	668390.75	(feet)
Survey Y cord	676653.54	(feet)
Survey Lat	32.85900224 N	(deg)
Survey Lon	103.78495770 W	(deg)
Rectangular Corr. N/S	74.46 N	(feet)
Rectangular Corr. E/W	150.63 W	(feet)
Closure Distance	168.03	(feet)
Direction of Closure	296.30	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY
GRACE MITCHELL B FEDERAL #8
LEA COUNTY, NM
Rig:SILVER OAK 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: S. ROBERTSON

Page 01/02
Tie-in Date: 05/08/2010
Date Completed: 05/11/2010

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.51.31.6638 N LON:103.47.4.0861 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 668541.4000 Y: 676579.1000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.57°EAST TO GRID
Vertical Section Plane: 293.00
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:4085.00' Ground To MSL

Survey Calculations by RX5 V6.03 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)
TIED-IN TO GYRO SURVEY @ 2369' MD.										
2369.00	1.25	98.77	2368.83	0.00	-8.67	2.84 N	10.62 E	10.99@	75.03	0.00
THE FOLLOWING SURVEYS ARE PATHFINDER MWD SURVEYS.										
2382.00	1.32	93.26	2381.83	13.00	-8.94	2.81 N	10.91 E	11.27@	75.56	1.09
2407.00	1.23	89.66	2406.82	25.00	-9.46	2.80 N	11.47 E	11.80@	76.30	0.48
2438.00	0.79	39.47	2437.82	31.00	-9.83	2.96 N	11.93 E	12.30@	76.06	3.05
2470.00	1.67	0.63	2469.81	32.00	-9.71	3.60 N	12.08 E	12.60@	73.41	3.64
2502.00	2.37	348.67	2501.79	32.00	-9.16	4.71 N	11.95 E	12.85@	68.48	2.54
2534.00	2.99	334.35	2533.75	32.00	-8.16	6.11 N	11.46 E	12.99@	61.92	2.84
2565.00	3.34	324.06	2564.71	31.00	-6.78	7.57 N	10.58 E	13.01@	54.41	2.15
2597.00	4.13	314.84	2596.64	32.00	-4.91	9.14 N	9.22 E	12.98@	45.24	3.09
2629.00	4.75	306.75	2628.54	32.00	-2.56	10.75 N	7.34 E	13.01@	34.33	2.75
2661.00	5.19	301.65	2660.42	32.00	0.16	12.30 N	5.05 E	13.29@	22.31	1.95
2692.00	5.63	296.99	2691.29	31.00	3.06	13.73 N	2.50 E	13.95@	10.31	2.00
2724.00	6.42	289.88	2723.11	32.00	6.42	15.05 N	0.58 W	15.06@	357.78	3.39
2756.00	6.86	289.26	2754.89	32.00	10.11	16.28 N	4.07 W	16.79@	345.97	1.39
2788.00	7.30	288.56	2786.65	32.00	14.04	17.56 N	7.80 W	19.22@	336.05	1.40
2819.00	7.74	290.31	2817.38	31.00	18.09	18.91 N	11.63 W	22.20@	328.42	1.60
2851.00	8.53	292.86	2849.06	32.00	22.62	20.58 N	15.83 W	25.97@	322.43	2.71
2883.00	9.32	293.13	2880.67	32.00	27.58	22.52 N	20.40 W	30.39@	317.83	2.47
2915.00	9.67	292.69	2912.24	32.00	32.86	24.58 N	25.27 W	35.25@	314.21	1.12
2946.00	10.20	291.11	2942.77	31.00	38.21	26.57 N	30.23 W	40.25@	311.32	1.92
2978.00	10.90	288.38	2974.23	32.00	44.06	28.55 N	35.74 W	45.74@	308.61	2.69
3010.00	12.05	286.89	3005.59	32.00	50.39	30.47 N	41.81 W	51.74@	306.08	3.71
3042.00	12.66	288.91	3036.85	32.00	57.21	32.58 N	48.32 W	58.28@	303.99	2.34
3105.00	13.01	293.04	3098.28	63.00	71.19	37.59 N	61.38 W	71.98@	301.48	1.56
3169.00	13.10	293.13	3160.62	64.00	85.65	43.26 N	74.68 W	86.30@	300.08	0.14

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY
GRACE MITCHELL B FEDERAL #8
LEA COUNTY, NM
RIG:SILVER OAK 2

Page 02/02

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)
3232.00	13.01	292.25	3221.99	63.00	99.88	48.75 N	87.81 W	100.43@	299.04	0.35
3295.00	13.89	293.04	3283.26	63.00	114.53	54.39 N	101.33 W	115.01@	298.23	1.43
3359.00	12.40	290.31	3345.59	64.00	129.08	59.78 N	114.85 W	129.48@	297.50	2.52
3422.00	10.73	283.99	3407.31	63.00	141.63	63.55 N	126.88 W	141.91@	296.60	3.32
3486.00	7.74	280.21	3470.47	64.00	151.72	65.76 N	136.91 W	151.88@	295.65	4.76
3549.00	5.01	296.29	3533.08	63.00	158.60	67.73 N	143.55 W	158.72@	295.26	5.14
3613.00	4.40	303.50	3596.87	64.00	163.81	70.32 N	148.10 W	163.95@	295.40	1.33
3676.00	2.29	279.15	3659.76	63.00	167.40	71.85 N	151.36 W	167.55@	295.39	3.97
3740.00	1.23	196.45	3723.73	64.00	168.57	71.40 N	152.82 W	168.67@	295.04	3.84
3803.00	0.44	56.09	3786.73	63.00	168.36	70.88 N	152.81 W	168.45@	294.89	2.53
3866.00	0.88	40.27	3849.73	63.00	168.08	71.39 N	152.30 W	168.20@	295.11	0.75
3931.00	0.79	46.59	3914.72	65.00	167.76	72.08 N	151.65 W	167.91@	295.42	0.20
4089.00	0.35	63.91	4072.71	158.00	167.00	73.04 N	150.42 W	167.22@	295.90	0.30
4248.00	0.70	65.05	4231.70	159.00	166.03	73.66 N	149.11 W	166.31@	296.29	0.22
4407.00	1.06	38.60	4390.68	159.00	164.99	75.22 N	147.31 W	165.40@	297.05	0.34
4566.00	0.79	319.14	4549.67	159.00	165.58	77.20 N	147.11 W	166.13@	297.69	0.75
4724.00	0.70	233.98	4707.66	158.00	167.05	77.46 N	148.60 W	167.58@	297.53	0.64
4883.00	0.53	219.30	4866.65	159.00	167.76	76.31 N	149.85 W	168.17@	296.99	0.14
5041.00	0.44	193.81	5024.65	158.00	167.87	75.16 N	150.46 W	168.19@	296.54	0.15
STRAIGHT-LINE PROJECTION TO BIT DEPTH @ 5135' MD.										
5135.00	0.44	193.81	5118.64	94.00	167.75	74.46 N	150.63 W	168.03@	296.30	0.00



ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MACK ENERGY		
LEASE / WELL No.:	GRACE MITCHELL B	FEDERAL #8	
WELL LOCATION:	LEA COUNTY, NEW MEXICO		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	SILVER OAK #2		
API WELL No:	30-025-39495		
JOB No:	101010411WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.57	LWD Calculated:	7.569844
Agreed Upon:		7.57	
X =	668541.400000	Feet	Y = 676579.100000
Feet		Feet	
SITE LATITUDE:	32.858795 N	SITE LONGITUDE:	103.784468 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	296.39		
KELLY BUSHING ELEVATION:	4103		
ALTITUDE:	4085	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	2369		
DRIFT ANGLE:	1.25		
DRIFT DIRECTION:	98.77		
TRUE VERTICAL DEPTH:	2368.83		
VERTICAL SECTION:	-8.67		
RECTANGULAR COORDINATE (N / S) :	2.84		
RECTANGULAR COORDINATE (E / W) :	10.62		
CLOSURE DISTANCE / DIRECTION:	10.99	75.03	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCHLUMBERGER GYRO		
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO		

WELL PLAN

KICKOFF DEPTH:	2200	TOTAL DEPTH:	6012.57
KICKOFF ANGLE:	0	MAX ANGLE:	0

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MACK ENERGY
GRACE MITCHELL B FEDERAL #8
LEA COUNTY, NEW MEXICO
Rig:SILVER OAK 2

Fri May 07 17:39:50 2010

Coordinates

Latitude: 32.858795 N (32 deg. 51 min. 31.6638 sec.)
Longitude: 103.784468 W (-103 deg. 47 min. 4.0861 sec.)
Elevation: 4103.00 feet.
Calculation Date: May/07/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.7649 degrees
Total Magnetic Field: 0.49082 gauss
Magnetic Declination: 7.867984 degrees
Horizontal Intensity: 0.239712 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.867984 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 668541.4000 feet
Y: 676579.1000 feet
True to Grid: (convergence) -0.297804 degrees
Magnetic to Grid: 7.570179 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.570179 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MACK ENERGY

Sat May 08 05:07:42 2010

Coordinates

Latitude: 32.858795 N (32 deg. 51 min. 31.6638 sec.)
Longitude: 103.784468 W (-103 deg. 47 min. 4.0861 sec.)
Elevation: 4103.00 feet.
Calculation Date: May/08/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.7649 degrees
Total Magnetic Field: 0.49081 gauss
Magnetic Declination: 7.867648 degrees
Horizontal Intensity: 0.239711 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.867648 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 668541.4000 feet
Y: 676579.1000 feet
True to Grid: (convergence) -0.297804 degrees
Magnetic to Grid: 7.569844 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.569844 Degr.