



DIRECTIONAL SURVEY REPORT

MACK ENERGY

OILERS FEDERAL #2

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

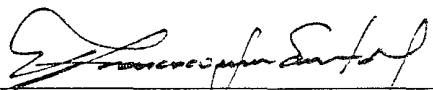
Pathfinder Energy Services, Inc.
6213 W. County Road 112 • Midland, TX • 79706
(432)681-6000

DIRECTIONAL SURVEY COMPANY REPORT

1. NAME OF SURVEYING COMPANY. PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) MATT SHIPP
B) MARTY SCHMIDT
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 4/3/08 TO 4/14/08
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL

MACK ENERGY
OILERS FEDERAL #2
EDDY COUNTY, NM
RIG. SILVER OAK #7
9. SURVEY CERTIFIED FROM: 7110 TO 9196 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 2362 67 FEET ON A BEARING OF 269 25 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 9274 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

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Tie-in Date: 04/03/2008
Date Completed: 04/14/2008

MACK ENERGY GROUP, INC.
OILERS FEDERAL #2
EDDY COUNTY, NEW MEXICO
Rig:SILVER OAK #7
PathFinder Office Supervisor: CODY MEBANE
PathFinder Field Engineers:MATT SHIPP

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.56.6.6372 N LON:104.4.18.5196 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 580237.0632 Y: 704028.9058
North Aligned To:TRUE NORTH
Total Magnetic Correction: 8.10° EAST TO TRUE
Vertical Section Plane: 269.51
Survey Vert. Reference:3716.50' Kelly Bushing To Ground
Altitude:3699.00' Ground To MSL

Measured Depth	9274.00	(feet)
Inclination	95.41	(deg)
Azimuth	269.16	(deg)
True Vertical Depth	7034.59	(feet)
Vertical Section	2362.64	(feet)
Survey X cord	577874.72	(feet)
Survey Y cord	703997.77	(feet)
Survey Lat	32.93510730 N	(deg)
Survey Lon	104.07951093 W	(deg)
Rectangular Corr. N/S	31.01 S	(feet)
Rectangular Corr. E/W	2362.46 W	(feet)
Closure Distance	2362.67	(feet)
Direction of Closure	269.25	(deg)
Dogleg Severity	0.00	(deg/100ft)

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EDDY COUNTY, NEW MEXICO
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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)
TIE-IN PROVIDED BY SCIENTIFIC GYRO AT 7069'MD.										
7069.00	48.67	258.94	7011.23	7069.00	196.04	54.01 S	195.59 W	202.91@	254.56	0.69
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
7110.00	49.86	262.57	7037.99	41.00	226.74	58.99 S	226.25 W	233.81@	255.39	7.31
7132.00	52.41	263.94	7051.79	22.00	243.77	61.00 S	243.25 W	250.79@	255.92	12.56
7142.00	53.55	264.06	7057.81	10.00	251.71	61.83 S	251.20 W	258.69@	256.17	11.44
7173.00	58.39	265.69	7075.16	31.00	277.31	64.12 S	276.78 W	284.10@	256.96	16.21
7204.00	62.87	266.87	7090.36	31.00	304.28	65.86 S	303.73 W	310.79@	257.76	14.83
7235.00	68.24	268.81	7103.18	31.00	332.48	66.92 S	331.92 W	338.59@	258.60	18.23
7266.00	73.69	269.88	7113.29	31.00	361.77	67.25 S	361.21 W	367.41@	259.45	17.88
7296.00	79.40	271.10	7120.27	30.00	390.93	66.99 S	390.37 W	396.08@	260.26	19.44
7327.00	83.54	271.28	7124.87	31.00	421.57	66.36 S	421.01 W	426.21@	261.04	13.37
7359.00	86.17	271.29	7127.74	32.00	453.42	65.64 S	452.87 W	457.61@	261.75	8.22
7390.00	88.81	271.83	7129.09	31.00	484.37	64.80 S	483.83 W	488.15@	262.37	8.69
7421.00	88.99	271.64	7129.69	31.00	515.34	63.86 S	514.81 W	518.76@	262.93	0.84
7452.00	88.72	271.84	7130.31	31.00	546.31	62.92 S	545.79 W	549.40@	263.42	1.08
7483.00	88.29	271.65	7131.12	31.00	577.27	61.98 S	576.76 W	580.09@	263.87	1.52
7515.00	88.20	271.79	7132.10	32.00	609.24	61.02 S	608.74 W	611.79@	264.28	0.52
7546.00	89.87	272.42	7132.62	31.00	640.20	59.88 S	639.71 W	642.51@	264.65	5.76
7577.00	91.98	273.55	7132.12	31.00	671.13	58.26 S	670.66 W	673.19@	265.03	7.72
7608.00	92.95	273.68	7130.78	31.00	702.03	56.31 S	701.57 W	703.83@	265.41	3.16
7639.00	93.39	273.42	7129.07	31.00	732.90	54.39 S	732.46 W	734.48@	265.75	1.65
7670.00	93.30	273.36	7127.26	31.00	763.78	52.56 S	763.36 W	765.16@	266.06	0.35
7702.00	91.63	273.28	7125.88	32.00	795.68	50.71 S	795.27 W	796.89@	266.35	5.23
7733.00	90.13	273.16	7125.41	31.00	826.61	48.97 S	826.22 W	827.67@	266.61	4.85

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY GROUP, INC.
OILERS FEDERAL #2
EDDY COUNTY, NEW MEXICO
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)
7764.00	89.69	273.14	7125.46	31.00	857.54	47.27 S	857.17 W	858.47@	266.84	1.42
7795.00	89.34	273.00	7125.72	31.00	888.48	45.61 S	888.13 W	889.30@	267.06	1.22
7826.00	89.25	273.07	7126.10	31.00	919.42	43.97 S	919.08 W	920.13@	267.26	0.37
7857.00	90.57	273.22	7126.15	31.00	950.36	42.27 S	950.03 W	950.97@	267.45	4.29
7889.00	90.57	273.01	7125.83	32.00	982.29	40.53 S	981.98 W	982.82@	267.64	0.66
7920.00	90.40	272.92	7125.57	31.00	1013.24	38.92 S	1012.94 W	1013.69@	267.80	0.62
7951.00	90.13	272.80	7125.43	31.00	1044.18	37.38 S	1043.90 W	1044.57@	267.95	0.95
7982.00	90.13	272.57	7125.36	31.00	1075.14	35.92 S	1074.87 W	1075.47@	268.09	0.74
8013.00	90.75	272.47	7125.12	31.00	1106.09	34.56 S	1105.84 W	1106.38@	268.21	2.03
8044.00	90.57	272.55	7124.76	31.00	1137.05	33.20 S	1136.81 W	1137.29@	268.33	0.64
8075.00	92.42	272.90	7123.95	31.00	1167.99	31.73 S	1167.76 W	1168.19@	268.44	6.07
8106.00	93.03	273.06	7122.48	31.00	1198.89	30.12 S	1198.68 W	1199.06@	268.56	2.03
8138.00	93.03	272.86	7120.79	32.00	1230.79	28.47 S	1230.59 W	1230.92@	268.67	0.62
8169.00	92.95	272.76	7119.17	31.00	1261.70	26.95 S	1261.51 W	1261.80@	268.78	0.41
8200.00	92.68	272.62	7117.65	31.00	1292.61	25.50 S	1292.44 W	1292.69@	268.87	0.98
8231.00	91.10	271.19	7116.62	31.00	1323.57	24.47 S	1323.41 W	1323.63@	268.94	6.87
8262.00	90.84	270.93	7116.10	31.00	1354.55	23.90 S	1354.40 W	1354.61@	268.99	1.19
8293.00	90.57	270.66	7115.72	31.00	1385.54	23.47 S	1385.39 W	1385.59@	269.03	1.23
8324.00	90.40	270.35	7115.46	31.00	1416.54	23.19 S	1416.39 W	1416.58@	269.06	1.14
8355.00	90.92	269.63	7115.10	31.00	1447.53	23.20 S	1447.39 W	1447.57@	269.08	2.86
8386.00	91.01	269.01	7114.58	31.00	1478.53	23.57 S	1478.38 W	1478.57@	269.09	2.02
8418.00	90.92	268.75	7114.04	32.00	1510.52	24.19 S	1510.37 W	1510.56@	269.08	0.86
8449.00	92.07	268.19	7113.23	31.00	1541.50	25.02 S	1541.35 W	1541.55@	269.07	4.13
8480.00	92.86	268.79	7111.90	31.00	1572.47	25.84 S	1572.31 W	1572.52@	269.06	3.20
8511.00	94.62	269.63	7109.87	31.00	1603.40	26.26 S	1603.24 W	1603.45@	269.06	6.29
8542.00	95.50	269.72	7107.14	31.00	1634.28	26.44 S	1634.12 W	1634.33@	269.07	2.85
8574.00	95.50	269.86	7104.07	32.00	1666.13	26.55 S	1665.97 W	1666.18@	269.09	0.43
8605.00	95.32	269.64	7101.15	31.00	1697.00	26.69 S	1696.83 W	1697.04@	269.10	0.92
8636.00	95.23	269.72	7098.30	31.00	1727.86	26.86 S	1727.70 W	1727.91@	269.11	0.39
8667.00	95.14	269.86	7095.50	31.00	1758.74	26.98 S	1758.57 W	1758.78@	269.12	0.54

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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)
8698.00	95.06	269.81	7092.74	31.00	1789.61	27.06 S	1789.45 W	1789.65@	269.13	0.30
8729.00	94.79	269.68	7090.08	31.00	1820.50	27.20 S	1820.33 W	1820.54@	269.14	0.97
8760.00	94.97	269.90	7087.44	31.00	1851.39	27.31 S	1851.22 W	1851.42@	269.15	0.92
8791.00	96.02	269.89	7084.48	31.00	1882.24	27.37 S	1882.08 W	1882.28@	269.17	3.39
8822.00	95.94	269.92	7081.25	31.00	1913.07	27.42 S	1912.91 W	1913.10@	269.18	0.28
8853.00	95.94	269.79	7078.04	31.00	1943.91	27.50 S	1943.74 W	1943.94@	269.19	0.42
8885.00	96.46	269.88	7074.58	32.00	1975.72	27.59 S	1975.55 W	1975.75@	269.20	1.65
8916.00	96.55	269.88	7071.07	31.00	2006.52	27.66 S	2006.35 W	2006.55@	269.21	0.29
8947.00	96.29	269.81	7067.60	31.00	2037.32	27.74 S	2037.16 W	2037.35@	269.22	0.87
8978.00	96.20	269.94	7064.23	31.00	2068.14	27.81 S	2067.98 W	2068.16@	269.23	0.51
9009.00	96.11	269.67	7060.91	31.00	2098.96	27.91 S	2098.80 W	2098.98@	269.24	0.91
9040.00	96.38	269.65	7057.54	31.00	2129.78	28.09 S	2129.61 W	2129.80@	269.24	0.87
9071.00	96.11	269.39	7054.16	31.00	2160.59	28.35 S	2160.43 W	2160.61@	269.25	1.20
9103.00	95.94	269.39	7050.80	32.00	2192.41	28.69 S	2192.25 W	2192.44@	269.25	0.53
9134.00	95.41	269.28	7047.74	31.00	2223.26	29.05 S	2223.10 W	2223.28@	269.25	1.75
9165.00	95.32	269.26	7044.84	31.00	2254.13	29.44 S	2253.96 W	2254.15@	269.25	0.30
9196.00	95.41	269.16	7041.94	31.00	2284.99	29.87 S	2284.82 W	2285.01@	269.25	0.43
STRAIGHT LINE PROJECTION TO BIT AT 9274'MD.										
9274.00	95.41	269.16	7034.59	78.00	2362.64	31.01 S	2362.46 W	2362.67@	269.25	0.00

FINDER

ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MACK Energy		
LEASE / WELL No.:	Oiler Fed	#2	
WELL LOCATION:	Wildcat Wolfcamp		
COUNTY / STATE / COUNTRY:	Eddy	NM	USA
RIG:	SilverOak #7		
API WELL No:	30-015-35994		
JOB No:	101007305WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	Pathfinder Energy Services		

WELL SITE INFORMATION

MAGNETIC DECLINATION:			
On Wall Plat:	8.1	LWD Calculated:	8.1
		Agreed Upon:	8.1
X =	580237.200000	Feet	Y = 704028.800000
			Feet
SITE LATITUDE:	32.935177N	SITE LONGITUDE:	104.071811W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	New Mexico East
PROPOSED DRIFT DIRECTION:	269.38		
KELLY BUSHING ELEVATION:	3716.5		
ALTITUDE:	3699	Feet	WATER DEPTH:
			Feet

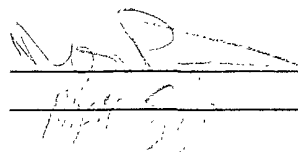
TIE-IN SURVEY

MEASURED DEPTH:	7069		
DRIFT ANGLE:	48.67		
DRIFT DIRECTION:	258.94		
TRUE VERTICAL DEPTH:	7011.23		
VERTICAL SECTION:	-54.01		
RECTANGULAR COORDINATE (N / S):	54.01S		
RECTANGULAR COORDINATE (E / W):	195.59W		
CLOSURE DISTANCE / DIRECTION:	202.91		254.56
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING CONTROLS		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH 7132	TOTAL DEPTH: 11000
KICKOFF ANGLE: 48	MAX ANGLE: 91

PES Engineers



**Signature of both field engineers required if applicable

Directional Driller

DATE