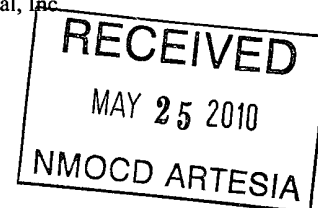




An Operating Unit of Smith International, Inc.



DIRECTIONAL SURVEY REPORT

MACK ENERGY

MADDEN FEDERAL COM #1

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

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

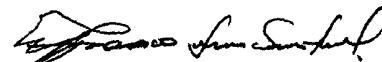
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) NICHOLAS TVRDY
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 10/24/09 TO 11/02/09
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
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
RIG: SILVEROAK # 2

9. SURVEY CERTIFIED FROM: 6043 TO 10042 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 3294.36 FEET ON A BEARING OF 269.69 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 10101 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: 10/23/2009
Date Completed: 11/02/2009

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
Rig:SILVER OAK 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:N TVRDY
J ALCOCER
C.WOOSTER

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.53.55.7345 N LON:104.5.20.3647 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 574997.0000 Y: 690787.4000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.93°EAST TO GRID
Vertical Section Plane: 269.98
Survey Vert. Reference:3632.00' Kelly Bushing To Ground
Altitude: 17.00' Ground To MSL

Measured Depth	10101.00	(feet)
Inclination	91.28	(deg)
Azimuth	269.56	(deg)
True Vertical Depth	6998.38	(feet)
Vertical Section	3294.32	(feet)
Survey X cord	571702.67	(feet)
Survey Y cord	690769.30	(feet)
Survey Lat	32.89878589 N	(deg)
Survey Lon	104.09972329 W	(deg)
Rectangular Corr. N/S	18.08 S	(feet)
Rectangular Corr. E/W	3294.31 W	(feet)
Closure Distance	3294.36	(feet)
Direction of Closure	269.69	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
Rig:SILVER OAK 2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
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Vertical Section Plane: 269.98
urvey Vert. Reference:3632.00' Kelly Bushing To Ground
Altitude: 17.00' Ground To MSL

Survey Calculations by RX5 V5.11i using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL		Closure		DLS (dg/100ft)
						Rectangular (ft)	Offsets (ft)	Dist (ft)	Dir (deg)	
THE FOLLOWING ARE SCIENTIFIC GYRO SURVEYS.										
100.00	0.58	225.01	100.00	0.00	0.39	0.35 S	0.39 W	0.52@	228.70	0.00
200.00	1.20	218.11	199.99	100.00	1.40	1.53 S	1.40 W	2.07@	222.46	0.63
300.00	1.25	217.11	299.97	100.00	2.70	3.22 S	2.70 W	4.20@	219.99	0.05
400.00	1.28	212.51	399.94	100.00	3.96	5.03 S	3.96 W	6.40@	218.20	0.11
500.00	0.98	192.86	499.92	100.00	4.75	6.81 S	4.75 W	8.30@	214.91	0.49
600.00	0.65	167.30	599.91	100.00	4.82	8.20 S	4.82 W	9.51@	210.44	0.48
700.00	0.69	161.20	699.91	100.00	4.50	9.32 S	4.50 W	10.35@	205.76	0.08
800.00	0.69	159.26	799.90	100.00	4.09	10.45 S	4.09 W	11.22@	201.37	0.02
900.00	0.59	158.02	899.89	100.00	3.69	11.49 S	3.68 W	12.07@	197.78	0.10
1000.00	0.60	159.61	999.89	100.00	3.31	12.46 S	3.31 W	12.89@	194.87	0.02
1100.00	0.62	164.82	1099.88	100.00	2.99	13.47 S	2.99 W	13.80@	192.49	0.06
1200.00	0.69	177.41	1199.87	100.00	2.82	14.60 S	2.82 W	14.87@	190.92	0.16
1300.00	0.35	190.44	1299.87	100.00	2.85	15.50 S	2.84 W	15.76@	190.40	0.36
1400.00	0.17	181.78	1399.87	100.00	2.91	15.95 S	2.90 W	16.21@	190.32	0.18
1500.00	0.22	164.74	1499.87	100.00	2.86	16.28 S	2.86 W	16.53@	189.96	0.08
1600.00	0.14	113.90	1599.87	100.00	2.70	16.52 S	2.70 W	16.73@	189.27	0.17
1700.00	0.09	187.36	1699.87	100.00	2.60	16.64 S	2.59 W	16.84@	188.86	0.14
1800.00	0.17	281.03	1799.87	100.00	2.76	16.69 S	2.75 W	16.92@	189.36	0.20
1900.00	0.13	311.64	1899.87	100.00	2.99	16.59 S	2.98 W	16.85@	190.19	0.09
2000.00	0.17	278.99	1999.87	100.00	3.22	16.49 S	3.21 W	16.80@	191.02	0.09
2100.00	0.42	268.40	2099.87	100.00	3.73	16.48 S	3.73 W	16.89@	192.74	0.25
2200.00	0.30	297.40	2199.86	100.00	4.33	16.37 S	4.32 W	16.93@	194.80	0.21
2300.00	0.49	269.61	2299.86	100.00	4.99	16.25 S	4.98 W	17.00@	197.05	0.27
2400.00	0.39	284.46	2399.86	100.00	5.75	16.17 S	5.74 W	17.16@	199.55	0.15
2500.00	0.34	266.34	2499.86	100.00	6.37	16.10 S	6.37 W	17.31@	201.57	0.13
2600.00	0.40	282.27	2599.85	100.00	7.01	16.05 S	7.00 W	17.51@	203.58	0.12

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
RIG:SILVER OAK 2

Page 02/05

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
2700.00	0.35	295.64	2699.85	100.00	7.63	15.84 S	7.62 W	17.58@	205.69	0.10
2800.00	0.44	259.03	2799.85	100.00	8.28	15.78 S	8.27 W	17.82@	207.66	0.26
2900.00	0.32	275.72	2899.85	100.00	8.93	15.83 S	8.93 W	18.17@	209.43	0.16
3000.00	0.47	285.20	2999.85	100.00	9.61	15.69 S	9.60 W	18.40@	211.46	0.16
3100.00	0.40	307.71	3099.84	100.00	10.28	15.37 S	10.27 W	18.49@	213.76	0.18
3200.00	0.26	306.60	3199.84	100.00	10.74	15.02 S	10.73 W	18.46@	215.54	0.14
3300.00	0.22	313.62	3299.84	100.00	11.06	14.75 S	11.05 W	18.43@	216.84	0.05
3400.00	0.26	49.83	3399.84	100.00	11.02	14.47 S	11.02 W	18.19@	217.28	0.36
3500.00	0.11	63.76	3499.84	100.00	10.76	14.29 S	10.76 W	17.88@	216.98	0.16
3600.00	0.27	25.71	3599.84	100.00	10.58	14.03 S	10.57 W	17.57@	216.99	0.20
3700.00	0.33	75.48	3699.84	100.00	10.19	13.75 S	10.19 W	17.11@	216.55	0.26
3800.00	0.37	73.21	3799.84	100.00	9.61	13.58 S	9.60 W	16.63@	215.26	0.04
3900.00	0.48	68.63	3899.83	100.00	8.91	13.34 S	8.90 W	16.03@	213.73	0.12
4000.00	0.28	33.46	3999.83	100.00	8.38	12.98 S	8.38 W	15.45@	212.84	0.30
4100.00	0.26	67.63	4099.83	100.00	8.04	12.69 S	8.03 W	15.02@	212.34	0.16
4200.00	0.35	45.18	4199.83	100.00	7.61	12.39 S	7.61 W	14.54@	211.55	0.15
4300.00	0.37	53.96	4299.83	100.00	7.13	11.98 S	7.13 W	13.94@	210.75	0.06
4400.00	0.48	12.33	4399.82	100.00	6.78	11.38 S	6.78 W	13.25@	210.77	0.32
4500.00	0.40	42.54	4499.82	100.00	6.46	10.72 S	6.45 W	12.51@	211.05	0.24
4600.00	0.39	15.95	4599.82	100.00	6.13	10.13 S	6.12 W	11.84@	211.15	0.18
4700.00	0.38	358.62	4699.82	100.00	6.04	9.47 S	6.04 W	11.23@	212.51	0.12
4800.00	0.33	351.50	4799.82	100.00	6.09	8.86 S	6.09 W	10.75@	214.51	0.07
4900.00	0.30	320.17	4899.81	100.00	6.30	8.37 S	6.30 W	10.48@	216.96	0.17
5000.00	0.30	345.22	4999.81	100.00	6.54	7.92 S	6.53 W	10.26@	219.53	0.13
5100.00	0.25	320.19	5099.81	100.00	6.74	7.50 S	6.74 W	10.08@	221.96	0.13
5200.00	0.41	314.54	5199.81	100.00	7.14	7.08 S	7.13 W	10.05@	225.23	0.16
5300.00	0.59	323.16	5299.81	100.00	7.70	6.41 S	7.70 W	10.02@	230.20	0.19
5400.00	0.42	323.33	5399.80	100.00	8.23	5.71 S	8.23 W	10.01@	235.24	0.17
5500.00	0.44	320.15	5499.80	100.00	8.69	5.12 S	8.69 W	10.09@	239.50	0.03

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
RIG:SILVER OAK 2

Page 03/05

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
5600.00	0.29	315.17	5599.80	100.00	9.12	4.65 S	9.11 W	10.23@	243.00	0.15
5700.00	0.29	345.02	5699.80	100.00	9.36	4.22 S	9.36 W	10.27@	245.72	0.15
5800.00	0.34	32.65	5799.79	100.00	9.27	3.73 S	9.26 W	9.99@	248.08	0.26
5900.00	0.36	56.72	5899.79	100.00	8.84	3.30 S	8.84 W	9.44@	249.50	0.15
** TIED INTO SCIENTIFIC GYRO SURVEY @ 6000' MD.										
6000.00	0.39	46.94	5999.79	100.00	8.33	2.90 S	8.33 W	8.82@	250.80	0.07
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6043.00	0.53	19.91	6042.79	43.00	8.16	2.61 S	8.16 W	8.56@	252.23	0.59
6170.00	0.53	42.03	6169.78	127.00	7.56	1.62 S	7.56 W	7.73@	257.88	0.16
6297.00	0.44	54.61	6296.78	127.00	6.77	0.91 S	6.77 W	6.83@	262.38	0.11
6424.00	0.44	56.76	6423.78	127.00	5.97	0.36 S	5.97 W	5.98@	266.58	0.01
6466.00	0.35	53.00	6465.77	42.00	5.73	0.19 S	5.73 W	5.73@	268.10	0.22
6497.00	0.35	43.88	6496.77	31.00	5.59	0.07 S	5.59 W	5.59@	269.33	0.18
6529.00	2.02	265.95	6528.77	32.00	6.08	0.03 S	6.08 W	6.08@	269.67	7.16
6561.00	5.72	265.70	6560.69	32.00	8.24	0.19 S	8.24 W	8.24@	268.65	11.56
6593.00	9.85	265.80	6592.39	32.00	12.56	0.51 S	12.56 W	12.57@	267.65	12.91
6624.00	13.28	262.51	6622.75	31.00	18.73	1.17 S	18.73 W	18.77@	266.42	11.26
6656.00	16.71	263.74	6653.66	32.00	26.95	2.15 S	26.95 W	27.04@	265.43	10.76
6688.00	19.52	264.85	6684.07	32.00	36.85	3.14 S	36.85 W	36.99@	265.14	8.85
6720.00	22.25	264.71	6713.97	32.00	48.21	4.17 S	48.21 W	48.39@	265.05	8.53
6751.00	26.12	265.03	6742.24	31.00	60.86	5.31 S	60.86 W	61.09@	265.02	12.49
6783.00	30.34	264.03	6770.43	32.00	75.92	6.76 S	75.92 W	76.22@	264.91	13.27
6815.00	32.89	264.84	6797.68	32.00	92.62	8.38 S	92.62 W	92.99@	264.83	8.08
6847.00	35.96	266.36	6824.07	32.00	110.65	9.76 S	110.65 W	111.08@	264.96	9.96
6878.00	39.04	267.80	6848.66	31.00	129.50	10.71 S	129.49 W	129.94@	265.27	10.33
6910.00	42.74	267.96	6872.85	32.00	150.43	11.49 S	150.42 W	150.86@	265.63	11.57
6942.00	47.22	267.75	6895.48	32.00	173.03	12.33 S	173.02 W	173.46@	265.92	14.01
6974.00	50.91	267.99	6916.44	32.00	197.18	13.23 S	197.18 W	197.62@	266.16	11.55
7005.00	54.34	267.45	6935.25	31.00	221.79	14.21 S	221.79 W	222.24@	266.33	11.15

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
RIG:SILVER OAK 2

Page 04/05

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)
7037.00	57.51	266.87	6953.18	32.00	248.26	15.53 S	248.26 W	248.74@	266.42	10.02
7069.00	61.03	267.76	6969.53	32.00	275.73	16.81 S	275.73 W	276.24@	266.51	11.26
7101.00	64.63	268.70	6984.14	32.00	304.19	17.69 S	304.18 W	304.69@	266.67	11.55
7132.00	68.94	269.08	6996.36	31.00	332.66	18.24 S	332.66 W	333.16@	266.86	13.95
7164.00	72.46	268.58	7006.93	32.00	362.85	18.86 S	362.85 W	363.34@	267.03	11.10
7196.00	76.24	267.24	7015.56	32.00	393.64	19.98 S	393.63 W	394.14@	267.09	12.48
7228.00	79.84	266.33	7022.19	32.00	424.89	21.74 S	424.89 W	425.44@	267.07	11.59
7259.00	83.45	265.81	7026.70	31.00	455.49	23.84 S	455.48 W	456.10@	267.00	11.76
7302.00	88.20	264.55	7029.83	43.00	498.21	27.45 S	498.20 W	498.96@	266.85	11.43
7334.00	89.43	264.76	7030.49	32.00	530.06	30.43 S	530.05 W	530.93@	266.71	3.90
7398.00	90.57	265.91	7030.49	64.00	593.85	35.63 S	593.84 W	594.91@	266.57	2.53
7461.00	91.19	267.04	7029.52	63.00	656.72	39.50 S	656.71 W	657.90@	266.56	2.05
7525.00	92.07	268.41	7027.70	64.00	720.65	42.04 S	720.63 W	721.86@	266.66	2.54
7587.00	92.59	269.22	7025.18	62.00	782.58	43.33 S	782.57 W	783.77@	266.83	1.55
7651.00	92.51	269.69	7022.33	64.00	846.52	43.93 S	846.50 W	847.64@	267.03	0.74
7683.00	92.24	269.04	7021.01	32.00	878.49	44.29 S	878.47 W	879.59@	267.11	2.20
7715.00	91.01	269.43	7020.10	32.00	910.47	44.72 S	910.45 W	911.55@	267.19	4.03
7746.00	89.60	269.75	7019.93	31.00	941.47	44.94 S	941.45 W	942.52@	267.27	4.66
7778.00	89.87	270.23	7020.08	32.00	973.47	44.94 S	973.45 W	974.49@	267.36	1.72
7810.00	90.22	269.91	7020.06	32.00	1005.47	44.90 S	1005.45 W	1006.45@	267.44	1.48
7842.00	90.40	270.31	7019.88	32.00	1037.47	44.84 S	1037.45 W	1038.42@	267.53	1.37
7873.00	90.22	270.87	7019.72	31.00	1068.46	44.52 S	1068.45 W	1069.38@	267.61	1.90
7968.00	88.81	272.12	7020.52	95.00	1163.42	42.04 S	1163.41 W	1164.17@	267.93	1.98
8064.00	89.08	272.37	7022.29	96.00	1259.33	38.28 S	1259.32 W	1259.90@	268.26	0.38
8159.00	89.78	272.75	7023.23	95.00	1354.23	34.04 S	1354.22 W	1354.65@	268.56	0.84
8254.00	90.22	273.99	7023.23	95.00	1449.06	28.46 S	1449.05 W	1449.33@	268.87	1.38
8349.00	91.10	274.10	7022.14	95.00	1543.82	21.76 S	1543.81 W	1543.96@	269.19	0.93
8445.00	91.45	272.82	7020.00	96.00	1639.61	15.96 S	1639.61 W	1639.69@	269.44	1.38
8540.00	91.80	272.47	7017.31	95.00	1734.47	11.58 S	1734.47 W	1734.51@	269.62	0.52

PathFinder Energy Services, Inc.

Survey Report

MACK ENERGY CORP.
MADDEN FEDERAL COM #1
EDDY COUNTY, NM
RIG:SILVER OAK 2

Page 05/05

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)
8635.00	89.87	270.98	7015.92	95.00	1829.41	8.72 S	1829.41 W	1829.43@	269.73	2.57
8730.00	89.60	270.71	7016.36	95.00	1924.40	7.32 S	1924.40 W	1924.41@	269.78	0.40
8825.00	91.28	272.04	7015.63	95.00	2019.36	5.04 S	2019.36 W	2019.37@	269.86	2.26
8921.00	89.52	270.93	7014.96	96.00	2115.32	2.56 S	2115.32 W	2115.32@	269.93	2.17
9016.00	90.13	271.23	7015.25	95.00	2210.30	0.76 S	2210.30 W	2210.30@	269.98	0.72
9111.00	89.69	271.45	7015.40	95.00	2305.28	1.46 N	2305.28 W	2305.28@	270.04	0.52
9206.00	91.10	271.30	7014.75	95.00	2400.24	3.74 N	2400.24 W	2400.25@	270.09	1.49
9302.00	87.93	267.07	7015.56	96.00	2496.20	2.37 N	2496.20 W	2496.20@	270.05	5.51
9397.00	88.37	266.25	7018.63	95.00	2590.99	3.16 S	2590.99 W	2590.99@	269.93	0.98
9492.00	91.10	267.85	7019.07	95.00	2685.85	8.05 S	2685.85 W	2685.86@	269.83	3.33
9587.00	93.21	269.31	7015.50	95.00	2780.75	10.40 S	2780.74 W	2780.76@	269.79	2.70
9682.00	93.12	269.01	7010.25	95.00	2875.59	11.79 S	2875.59 W	2875.61@	269.77	0.33
9778.00	93.03	269.14	7005.10	96.00	2971.44	13.34 S	2971.44 W	2971.47@	269.74	0.16
9873.00	90.66	268.85	7002.04	95.00	3066.37	15.01 S	3066.37 W	3066.40@	269.72	2.51
9968.00	90.66	269.06	7000.95	95.00	3161.35	16.74 S	3161.34 W	3161.39@	269.70	0.22
10042.00	91.28	269.56	6999.70	74.00	3235.33	17.63 S	3235.33 W	3235.37@	269.69	1.08
STRAIGHT LINE PROJECTION TO BIT @ 10101' MD.										
10101.00	91.28	269.56	6998.38	59.00	3294.32	18.08 S	3294.31 W	3294.36@	269.69	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.



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MACK ENERGY		
LEASE / WELL No.:	MADDEN FEDERAL COM	#1	
WELL LOCATION:	EDDY COUNTY, NM		
COUNTY / STATE / COUNTRY:	EDDY	NM	USA
RIG:	SILVER OAK 2		
API WELL No:	30-015-37261		
JOB No:	101009107 WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER ENERGY SERVICES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.93	LWD Calculated:	7.930802
Agreed Upon:		7.93	
X =	574997.000000	Feet	Y =
690787.400000		Feet	
SITE LATITUDE:	32.898815 N	SITE LONGITUDE:	104.088990 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	269.98		
KELLY BUSHING ELEVATION:	17		
ALTITUDE:	3832	Feet	WATER DEPTH:
		Feet	

TIE-IN SURVEY

MEASURED DEPTH:	6000		
DRIFT ANGLE:	46.94		
DRIFT DIRECTION:	0.39		
TRUE VERTICAL DEPTH:	5999.79		
VERTICAL SECTION:	8.33		
RECTANGULAR COORDINATE (N / S) :	-2.9		
RECTANGULAR COORDINATE (E / W) :	-8.33		
CLOSURE DISTANCE / DIRECTION:	8.82	250.78	
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:	6530	TOTAL DEPTH:	10115.23
KICKOFF ANGLE:	0	MAX ANGLE:	90.71

PES Engineers:

**Signature of both field engineers required if applicable

Directional Driller:

DATE: 10-24-09

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MACK ENERGY CORPORATION
MADDEN FEDERAL COM #1
EDDY CONUNTY, NEW MEXICO

Thu Oct 15 15:09:34 2009

Coordinates

Latitude: 32.898815 N (32 deg. 53 min. 55.7345 sec.)
Longitude: 104.088990 W (-104 deg. 5 min. 20.3647 sec.)
Elevation: 0.00 feet.
Calculation Date: Oct/15/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.7791 degrees
Total Magnetic Field: 0.49187 gauss
Magnetic Declination: 8.065392 degrees
Horizontal Intensity: 0.240120 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.065392 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 574997.0000 feet
Y: 690787.4000 feet
True to Grid: (convergence) -0.132717 degrees
Magnetic to Grid: 7.932675 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.932675 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MACK ENERGY CORP.
MADDEN FEDERAL COM #1

Fri Oct 23 00:17:47 2009

Coordinates

Latitude: 32.898815 N (32 deg. 53 min. 55.7345 sec.)
Longitude: 104.088990 W (-104 deg. 5 min. 20.3647 sec.)
Elevation: 3650.00 feet.
Calculation Date: Oct/15/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.7792 degrees
Total Magnetic Field: 0.49160 gauss
Magnetic Declination: 8.063519 degrees
Horizontal Intensity: 0.239985 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.063519 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 574997.0000 feet
Y: 690787.4000 feet
True to Grid: (convergence) -0.132717 degrees
Magnetic to Grid: 7.930802 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.930802 Degr.