

30.015.36449



DIRECTIONAL SURVEY REPORT

MACK ENERGY CORPORATION

TITANS FEDERAL COM #1

EDDY COUNTY, NM

PREPARED BY: PHIL LEBLANC



3329 West Pinhook Road • Lafayette, LA 70508 • Phone: 337-233-3982 or 800-377-3982 • Fax: 337-234-2988

June 8, 2009

MACK ENERGY CORPORATION
Mr. Matt Brewer
11352 Lovington Hwy
Box 960
Artesia, NM 88211-1288

RE: MACK ENERGY CORPORATION
TITANS FEDERAL COM #1
EDDY COUNTY, NM
RIG: SILVER OAK #7
API Well No.: 30-015-36449
PES Job No.: 101008494-WT-WT

Dear Mr. Brewer:

We hereby certify that the enclosed Original Field Survey Data contained in this report represents to the best of our knowledge, a true and accurate survey of the well at the time the survey was run.

DIRECTIONAL SURVEY DATA
1 – Original Directional Survey Report
1 – Email PDF to:
charless@mackenergycorp.com
leel@mackenergycorp.com
donaldarcher@mackenergycorp.com
jimkrogman@mackenergycorp.com
sli423@sutlog.com

We appreciate the opportunity to work with you and we look forward to your business support. If you have any questions, I can be reached at (337) 233-3982.

Sincerely,

A handwritten signature in black ink that reads "Phil LeBlanc".

Phil LeBlanc
M/LWD Service Coordinator
PathFinder Energy Services

PL:ll

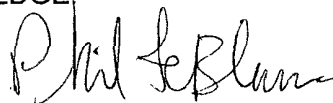
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JOHN OVERTON
B) MAGID IBRAHIM
3. POSITION OF SAID PERSON(S): (A-B) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 05/09/09 TO 05/27/09
5. STATE IN WHICH SURVEY WAS PERFORMED: EDDY COUNTY
6. LOCATION OF WELL: NEW MEXICO
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MACK ENERGY CORPORATION
TITANS FEDERAL COM #1
EDDY COUNTY, NM
RIG: SILVER OAK #7
API Well No.: 30-015-36449

9. SURVEY(S) CERTIFIED FROM: 5,952 TO 11,711 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4,914.19 FEET ON A BEARING OF 90.13 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 11,711 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



PHIL LEBLANC
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

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Tie-in Date: 05/08/2009
Date Completed: 05/27/2009

Mack Energy Corporation
Titans Federal Com #1
Eddy COUNTY, New Mexico
Rig: Silver Oak 7
PathFinder Office Supervisor: Phil LeBlanc
PathFinder Field Engineers: Magid Ibrahim
John Overton

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.55.27.2728 N LON: 104.6.18.1199 W
SRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 570052.8000 Y: 700027.1000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 89.98
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude: 3646.00' Ground To MSL

Measured Depth	11711.00	(feet)
Inclination	89.10	(deg)
Azimuth	91.05	(deg)
True Vertical Depth	7054.64	(feet)
Vertical Section	4914.17	(feet)
Survey X cord	574966.98	(feet)
Survey Y cord	700015.79	(feet)
Survey Lat	32.92418109 N	(deg)
Survey Lon	104.08901835 W	(deg)
Rectangular Corr. N/S	11.31 S	(feet)
Rectangular Corr. E/W	4914.18 E	(feet)
Closure Distance	4914.19	(feet)
Direction of Closure	90.13	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
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Eddy COUNTY, New Mexico
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Tie-in Date: 05/08/2009
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Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.55.27.2728 N LON: 104.6.18.1199 W
Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 570052.8000 Y: 700027.1000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 89.98
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude: 3646.00' 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 Rectangular Offsets (ft) (ft)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
THE FOLLOWING ARE TELEDRIFT MWD SURVEYS.												
500.00	0.70	137.10	500.01	0.00	3.31	2.75 S	3.31 E	32.92423486 N	104.10502254 W	4.30@	129.79	0.00
623.00	1.50	114.10	622.98	123.00	5.29	3.96 S	5.29 E	32.92423153 N	104.10501609 W	6.61@	126.84	0.73
835.00	1.00	96.10	834.93	212.00	9.66	5.29 S	9.66 E	32.92422785 N	104.10500185 W	11.01@	118.71	0.30
959.00	0.40	129.10	958.92	124.00	11.07	5.68 S	11.07 E	32.92422678 N	104.10499726 W	12.44@	117.16	0.56
1078.00	0.20	77.10	1077.92	119.00	11.59	5.89 S	11.60 E	32.92422618 N	104.10499555 W	13.01@	116.95	0.27
1235.00	0.50	66.10	1234.92	157.00	12.49	5.56 S	12.49 E	32.92422711 N	104.10499263 W	13.67@	113.98	0.20
1359.00	0.10	110.10	1358.92	124.00	13.08	5.37 S	13.09 E	32.92422760 N	104.10499069 W	14.15@	112.33	0.35
1488.00	0.40	89.10	1487.92	129.00	13.64	5.41 S	13.64 E	32.92422751 N	104.10498888 W	14.67@	111.62	0.24
1612.00	0.10	23.10	1611.91	124.00	14.12	5.30 S	14.12 E	32.92422780 N	104.10498733 W	15.08@	110.57	0.30
1686.00	0.40	324.10	1685.91	74.00	13.99	5.03 S	13.99 E	32.92422854 N	104.10498774 W	14.87@	109.78	0.49
1899.00	0.40	319.10	1898.91	213.00	13.07	3.87 S	13.07 E	32.92423175 N	104.10499074 W	13.63@	106.48	0.02
2055.00	0.90	285.10	2054.90	156.00	11.53	3.14 S	11.53 E	32.92423377 N	104.10499575 W	11.95@	105.22	0.39
2205.00	0.70	252.10	2204.88	150.00	9.52	3.11 S	9.52 E	32.92423385 N	104.10500230 W	10.01@	108.09	0.33
2362.00	1.40	265.10	2361.86	157.00	6.69	3.57 S	6.70 E	32.92423260 N	104.10501150 W	7.59@	118.06	0.47
2521.00	1.20	236.10	2520.82	159.00	3.38	4.66 S	3.38 E	32.92422961 N	104.10502232 W	5.76@	144.08	0.43
2677.00	1.30	253.10	2676.78	156.00	0.33	6.09 S	0.33 E	32.92422571 N	104.10503227 W	6.10@	176.90	0.24
2832.00	1.00	231.10	2831.75	155.00	-2.41	7.45 S	2.41 W	32.92422199 N	104.10504119 W	7.83@	197.89	0.34
3020.00	0.90	274.10	3019.73	188.00	-5.16	8.37 S	5.15 W	32.92421947 N	104.10505016 W	9.83@	211.61	0.37
3144.00	0.60	289.10	3143.72	124.00	-6.74	8.09 S	6.74 W	32.92422025 N	104.10505532 W	10.53@	219.79	0.29
3300.00	1.30	299.10	3299.69	156.00	-9.06	6.96 S	9.06 W	32.92422336 N	104.10506286 W	11.43@	232.44	0.46
3455.00	1.40	298.10	3454.65	155.00	-12.27	5.22 S	12.26 W	32.92422819 N	104.10507330 W	13.33@	246.96	0.07
3617.00	1.10	308.10	3616.61	162.00	-15.23	3.33 S	15.23 W	32.92423340 N	104.10508297 W	15.59@	257.69	0.23
3773.00	1.30	300.10	3772.58	156.00	-17.94	1.51 S	17.94 W	32.92423840 N	104.10509178 W	18.01@	265.18	0.17

PathFinder Energy Services, Inc.

Survey Report

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 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)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist (ft)	Dir (deg)	DLS (dg/100ft)
3929.00	1.20	303.10	3928.54	156.00	-20.84	0.27 N	20.84 W	32.92424331 N	104.10510122 W	20.84@	270.73	0.08
4084.00	0.90	293.10	4083.52	155.00	-23.32	1.63 N	23.32 W	32.92424707 N	104.10510929 W	23.38@	274.00	0.23
4240.00	1.00	281.10	4239.49	156.00	-25.78	2.37 N	25.78 W	32.92424913 N	104.10511731 W	25.89@	275.26	0.14
4396.00	0.90	277.10	4395.47	156.00	-28.34	2.79 N	28.34 W	32.92425028 N	104.10512562 W	28.47@	275.61	0.08
4551.00	0.80	294.10	4550.46	155.00	-30.53	3.38 N	30.53 W	32.92425192 N	104.10513278 W	30.72@	276.31	0.17
4707.00	1.30	308.10	4706.43	156.00	-32.92	4.91 N	32.92 W	32.92425616 N	104.10514054 W	33.28@	278.49	0.36
4856.00	1.00	316.10	4855.40	149.00	-35.15	6.89 N	35.15 W	32.92426161 N	104.10514780 W	35.82@	281.10	0.23
5014.00	1.10	290.10	5013.37	158.00	-37.53	8.41 N	37.53 W	32.92426579 N	104.10515555 W	38.46@	282.63	0.31
5167.00	1.40	302.10	5166.34	153.00	-40.49	9.91 N	40.49 W	32.92426992 N	104.10516519 W	41.69@	283.75	0.26
5330.00	1.80	276.10	5329.28	163.00	-44.72	11.24 N	44.73 W	32.92427361 N	104.10517898 W	46.12@	284.10	0.50
5486.00	1.60	302.10	5485.21	156.00	-49.00	12.65 N	49.01 W	32.92427753 N	104.10519292 W	50.61@	284.48	0.51
5641.00	0.60	268.10	5640.18	155.00	-51.65	13.78 N	51.65 W	32.92428063 N	104.10520153 W	53.46@	284.94	0.74
5791.00	0.30	295.10	5790.18	150.00	-52.79	13.92 N	52.79 W	32.92428102 N	104.10520524 W	54.60@	284.77	0.24
* TIED INTO TELEDRIFT MWD SURVEY AT 5952' MD.												
5952.00	0.60	277.00	5951.17	161.00	-54.01	14.20 N	54.01 W	32.92428181 N	104.10520921 W	55.85@	284.73	0.20
THE FOLLOWING ARE PATHFINDER MWD SURVEYS:												
6007.00	1.85	265.69	6006.16	55.00	-55.18	14.17 N	55.18 W	32.92428173 N	104.10521303 W	56.97@	284.40	2.30
6069.00	2.02	66.80	6068.14	62.00	-55.17	14.52 N	55.17 W	32.92428270 N	104.10521301 W	57.05@	284.75	6.16
6162.00	2.02	78.40	6161.09	93.00	-52.06	15.50 N	52.06 W	32.92428536 N	104.10520286 W	54.32@	286.58	0.44
6256.00	2.64	171.48	6255.04	94.00	-50.11	13.69 N	50.12 W	32.92428038 N	104.10519653 W	51.95@	285.28	3.63
6349.00	1.23	123.14	6347.99	93.00	-48.96	11.03 N	48.97 W	32.92427305 N	104.10519279 W	50.19@	282.69	2.20
6452.00	4.31	93.12	6450.86	103.00	-44.17	10.21 N	44.17 W	32.92427078 N	104.10517718 W	45.34@	283.02	3.21
6483.00	9.06	86.47	6481.64	31.00	-40.57	10.30 N	40.57 W	32.92427100 N	104.10516545 W	41.86@	284.24	15.50
6514.00	13.28	85.11	6512.04	31.00	-34.58	10.75 N	34.59 W	32.92427221 N	104.10514593 W	36.22@	287.27	13.64
6545.00	17.24	86.47	6541.94	31.00	-26.45	11.34 N	26.45 W	32.92427378 N	104.10511942 W	28.78@	293.20	12.83
6576.00	18.64	86.80	6571.44	31.00	-16.91	11.90 N	16.92 W	32.92427526 N	104.10508835 W	20.68@	305.12	4.53
6608.00	18.99	84.88	6601.73	32.00	-6.62	12.65 N	6.63 W	32.92427726 N	104.10505480 W	14.28@	332.35	2.22
6639.00	20.22	84.26	6630.93	31.00	3.73	13.63 N	3.73 E	32.92427991 N	104.10502105 W	14.13@	15.29	4.02

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Titans Federal Com #1
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)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist (ft)	Dir (deg)	DLS (dg/100ft)
6670.00	22.95	86.66	6659.75	31.00	15.10	14.52 N	15.09 E	32.92428228 N	104.10498400 W	20.95@	46.11	9.25
6701.00	25.94	89.04	6687.97	31.00	27.92	14.99 N	27.91 E	32.92428348 N	104.10494223 W	31.68@	61.76	10.15
6732.00	29.19	92.67	6715.45	31.00	42.25	14.75 N	42.25 E	32.92428274 N	104.10489552 W	44.75@	70.75	11.80
6763.00	32.98	92.80	6741.99	31.00	58.23	13.99 N	58.23 E	32.92428055 N	104.10484343 W	59.89@	76.50	12.23
6794.00	36.14	92.08	6767.52	31.00	75.80	13.24 N	75.80 E	32.92427840 N	104.10478618 W	76.95@	80.09	10.28
6825.00	39.13	93.13	6792.07	31.00	94.71	12.37 N	94.70 E	32.92427590 N	104.10472457 W	95.51@	82.56	9.86
6856.00	41.59	94.50	6815.69	31.00	114.74	11.03 N	114.73 E	32.92427210 N	104.10465931 W	115.26@	84.51	8.43
6887.00	44.67	95.01	6838.31	31.00	135.85	9.27 N	135.85 E	32.92426713 N	104.10459051 W	136.17@	86.09	10.00
6919.00	47.66	94.04	6860.47	32.00	158.86	7.46 N	158.86 E	32.92426201 N	104.10451554 W	159.03@	87.31	9.60
6950.00	51.18	92.64	6880.63	31.00	182.36	6.09 N	182.36 E	32.92425812 N	104.10443896 W	182.46@	88.09	11.86
6981.00	54.69	90.97	6899.31	31.00	207.08	5.32 N	207.08 E	32.92425585 N	104.10435841 W	207.15@	88.53	12.11
7012.00	57.68	90.88	6916.57	31.00	232.83	4.91 N	232.83 E	32.92425455 N	104.10427449 W	232.88@	88.79	9.65
7043.00	60.06	90.04	6932.59	31.00	259.36	4.70 N	259.36 E	32.92425382 N	104.10418803 W	259.40@	88.96	8.02
7074.00	64.02	89.65	6947.12	31.00	286.74	4.77 N	286.74 E	32.92425386 N	104.10409881 W	286.78@	89.05	12.82
7106.00	67.44	90.29	6960.27	32.00	315.90	4.79 N	315.90 E	32.92425372 N	104.10400375 W	315.94@	89.13	10.84
7137.00	69.82	90.61	6971.57	31.00	344.77	4.56 N	344.77 E	32.92425293 N	104.10390968 W	344.80@	89.24	7.74
7168.00	73.25	89.47	6981.39	31.00	374.17	4.54 N	374.17 E	32.92425270 N	104.10381387 W	374.19@	89.30	11.60
7199.00	77.29	89.01	6989.27	31.00	404.14	4.94 N	404.14 E	32.92425362 N	104.10371619 W	404.17@	89.30	13.11
7230.00	81.34	89.14	6995.01	31.00	434.59	5.43 N	434.59 E	32.92425479 N	104.10361695 W	434.63@	89.28	13.07
7304.00	89.38	90.05	7000.99	74.00	508.29	5.95 N	508.29 E	32.92425577 N	104.10337678 W	508.32@	89.33	10.93
7335.00	89.78	90.79	7001.22	31.00	539.29	5.72 N	539.28 E	32.92425496 N	104.10327576 W	539.31@	89.39	2.71
7366.00	89.72	90.87	7001.36	31.00	570.28	5.27 N	570.28 E	32.92425354 N	104.10317475 W	570.30@	89.47	0.32
7398.00	89.50	90.79	7001.58	32.00	602.28	4.81 N	602.28 E	32.92425207 N	104.10307048 W	602.30@	89.54	0.73
7429.00	89.10	90.97	7001.95	31.00	633.27	4.33 N	633.27 E	32.92425058 N	104.10296947 W	633.28@	89.61	1.41
7460.00	88.94	90.98	7002.48	31.00	664.26	3.81 N	664.26 E	32.92424894 N	104.10286848 W	664.27@	89.67	0.52
7491.00	88.60	91.22	7003.15	31.00	695.25	3.21 N	695.25 E	32.92424712 N	104.10276750 W	695.26@	89.74	1.34
7522.00	89.83	91.61	7003.57	31.00	726.24	2.45 N	726.24 E	32.92424483 N	104.10266652 W	726.24@	89.81	4.16

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
 Titans Federal Com #1
 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)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
7553.00	89.94	92.11	7003.64	31.00	757.22	1.44 N	757.22 E	32.92424188 N	104.10256555 W	757.22@	89.89	1.65
7585.00	89.44	92.02	7003.81	32.00	789.20	0.29 N	789.20 E	32.92423851 N	104.10246134 W	789.20@	89.98	1.59
7616.00	89.10	92.01	7004.20	31.00	820.18	0.80 S	820.18 E	32.92423533 N	104.10236039 W	820.18@	90.06	1.10
7647.00	89.50	91.26	7004.58	31.00	851.16	1.69 S	851.16 E	32.92423271 N	104.10225942 W	851.16@	90.11	2.74
7678.00	89.44	90.56	7004.87	31.00	882.15	2.18 S	882.16 E	32.92423117 N	104.10215841 W	882.16@	90.14	2.27
7709.00	90.56	89.57	7004.87	31.00	913.15	2.22 S	913.15 E	32.92423089 N	104.10205739 W	913.16@	90.14	4.82
7740.00	90.78	89.23	7004.51	31.00	944.15	1.89 S	944.15 E	32.92423160 N	104.10195637 W	944.15@	90.11	1.31
7771.00	90.67	89.34	7004.12	31.00	975.14	1.50 S	975.15 E	32.92423247 N	104.10185536 W	975.15@	90.09	0.50
7802.00	90.50	89.21	7003.80	31.00	1006.14	1.11 S	1006.14 E	32.92423336 N	104.10175434 W	1006.14@	90.06	0.69
7833.00	90.34	89.56	7003.57	31.00	1037.14	0.78 S	1037.14 E	32.92423409 N	104.10165332 W	1037.14@	90.04	1.24
7865.00	90.11	89.41	7003.45	32.00	1069.14	0.49 S	1069.14 E	32.92423469 N	104.10154904 W	1069.14@	90.03	0.86
7896.00	89.83	89.55	7003.46	31.00	1100.14	0.21 S	1100.14 E	32.92423527 N	104.10144801 W	1100.14@	90.01	1.01
7925.00	89.61	89.50	7003.60	29.00	1129.13	0.03 N	1129.13 E	32.92423576 N	104.10135351 W	1129.13@	90.00	0.78
7958.00	89.44	89.42	7003.88	33.00	1162.13	0.34 N	1162.13 E	32.92423641 N	104.10124597 W	1162.13@	89.98	0.57
7989.00	89.22	89.58	7004.24	31.00	1193.13	0.61 N	1193.13 E	32.92423697 N	104.10114495 W	1193.13@	89.97	0.88
8020.00	89.50	89.91	7004.59	31.00	1224.13	0.75 N	1224.13 E	32.92423716 N	104.10104393 W	1224.13@	89.96	1.40
8051.00	90.50	90.08	7004.59	31.00	1255.13	0.75 N	1255.13 E	32.92423698 N	104.10094290 W	1255.13@	89.97	3.27
8082.00	90.39	90.28	7004.35	31.00	1286.12	0.65 N	1286.12 E	32.92423653 N	104.10084188 W	1286.12@	89.97	0.74
8114.00	90.11	89.99	7004.21	32.00	1318.12	0.58 N	1318.12 E	32.92423612 N	104.10073759 W	1318.12@	89.97	1.26
8145.00	90.06	89.87	7004.16	31.00	1349.12	0.62 N	1349.12 E	32.92423604 N	104.10063657 W	1349.12@	89.97	0.42
8176.00	90.06	90.06	7004.13	31.00	1380.12	0.64 N	1380.12 E	32.92423590 N	104.10053554 W	1380.12@	89.97	0.61
8207.00	90.28	89.97	7004.04	31.00	1411.12	0.63 N	1411.12 E	32.92423569 N	104.10043451 W	1411.12@	89.97	0.77
8238.00	90.11	90.12	7003.93	31.00	1442.12	0.60 N	1442.12 E	32.92423544 N	104.10033349 W	1442.12@	89.98	0.73
8269.00	90.17	90.27	7003.85	31.00	1473.12	0.50 N	1473.12 E	32.92423496 N	104.10023246 W	1473.12@	89.98	0.52
3300.00	90.11	90.56	7003.78	31.00	1504.12	0.27 N	1504.12 E	32.92423416 N	104.10013144 W	1504.12@	89.99	0.96
3331.00	89.72	90.66	7003.82	31.00	1535.12	0.06 S	1535.12 E	32.92423306 N	104.10003042 W	1535.12@	90.00	1.30
3363.00	89.78	90.47	7003.96	32.00	1567.12	0.37 S	1567.12 E	32.92423200 N	104.09992614 W	1567.12@	90.01	0.62

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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)		Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)
8394.00	88.49	90.73	7004.43	31.00	1598.11	0.70 S	1598.11 E	32.92423092 N	104.09982514 W	1598.11@ 90.02	4.25
8425.00	87.82	90.95	7005.43	31.00	1629.09	1.15 S	1629.09 E	32.92422948 N	104.09972418 W	1629.09@ 90.04	2.28
8456.00	87.76	90.81	7006.63	31.00	1660.07	1.63 S	1660.07 E	32.92422798 N	104.09962324 W	1660.07@ 90.06	0.49
8487.00	87.76	90.91	7007.84	31.00	1691.04	2.09 S	1691.04 E	32.92422652 N	104.09952230 W	1691.04@ 90.07	0.32
8518.00	87.65	91.23	7009.08	31.00	1722.01	2.67 S	1722.01 E	32.92422474 N	104.09942138 W	1722.01@ 90.09	1.09
8549.00	89.05	90.71	7009.97	31.00	1752.99	3.19 S	1752.99 E	32.92422311 N	104.09932042 W	1752.99@ 90.10	4.82
8580.00	89.33	91.16	7010.41	31.00	1783.98	3.70 S	1783.98 E	32.92422153 N	104.09921941 W	1783.99@ 90.12	1.71
8612.00	89.38	91.59	7010.77	32.00	1815.97	4.47 S	1815.97 E	32.92421922 N	104.09911517 W	1815.98@ 90.14	1.35
8643.00	88.94	91.48	7011.22	31.00	1846.96	5.30 S	1846.96 E	32.92421675 N	104.09901420 W	1846.97@ 90.16	1.46
8674.00	88.94	91.79	7011.80	31.00	1877.94	6.18 S	1877.94 E	32.92421413 N	104.09891323 W	1877.95@ 90.19	1.00
8705.00	88.60	91.24	7012.46	31.00	1908.92	7.00 S	1908.92 E	32.92421169 N	104.09881227 W	1908.93@ 90.21	2.09
8736.00	88.54	91.24	7013.24	31.00	1939.90	7.67 S	1939.90 E	32.92420966 N	104.09871131 W	1939.92@ 90.23	0.19
8767.00	88.49	91.60	7014.04	31.00	1970.88	8.44 S	1970.88 E	32.92420735 N	104.09861035 W	1970.90@ 90.25	1.17
8799.00	88.38	91.70	7014.91	32.00	2002.86	9.36 S	2002.86 E	32.92420463 N	104.09850615 W	2002.88@ 90.27	0.46
8830.00	88.49	91.89	7015.76	31.00	2033.83	10.33 S	2033.83 E	32.92420177 N	104.09840522 W	2033.86@ 90.29	0.71
8861.00	88.60	91.94	7016.55	31.00	2064.80	11.37 S	2064.81 E	32.92419873 N	104.09830429 W	2064.84@ 90.32	0.39
8892.00	88.38	92.34	7017.36	31.00	2095.77	12.53 S	2095.77 E	32.92419536 N	104.09820337 W	2095.81@ 90.34	1.47
8923.00	88.10	90.44	7018.32	31.00	2126.74	13.28 S	2126.75 E	32.92419311 N	104.09810243 W	2126.79@ 90.36	6.19
8954.00	88.10	89.11	7019.34	31.00	2157.73	13.16 S	2157.73 E	32.92419325 N	104.09800146 W	2157.77@ 90.35	4.29
8985.00	88.04	89.13	7020.39	31.00	2188.70	12.68 S	2188.71 E	32.92419437 N	104.09790050 W	2188.75@ 90.33	0.20
9016.00	89.38	89.16	7021.09	31.00	2219.69	12.22 S	2219.70 E	32.92419545 N	104.09779951 W	2219.73@ 90.32	4.32
9048.00	89.78	89.28	7021.32	32.00	2251.69	11.78 S	2251.69 E	32.92419645 N	104.09769524 W	2251.72@ 90.30	1.30
9079.00	89.89	89.25	7021.41	31.00	2282.69	11.38 S	2282.69 E	32.92419735 N	104.09759421 W	2282.72@ 90.29	0.37
9110.00	90.00	89.32	7021.44	31.00	2313.68	11.00 S	2313.69 E	32.92419823 N	104.09749319 W	2313.71@ 90.27	0.42
9141.00	90.06	89.55	7021.42	31.00	2344.68	10.69 S	2344.69 E	32.92419888 N	104.09739217 W	2344.71@ 90.26	0.77
9172.00	90.06	89.61	7021.39	31.00	2375.68	10.46 S	2375.68 E	32.92419931 N	104.09729114 W	2375.71@ 90.25	0.19
9204.00	90.06	89.80	7021.36	32.00	2407.68	10.30 S	2407.68 E	32.92419957 N	104.09718685 W	2407.71@ 90.25	0.59

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9235.00	89.94	89.86	7021.36	31.00	2438.68	10.21 S	2438.68 E	32.92419963 N	104.09708583 W	2438.71@	90.24	0.43
9266.00	89.94	90.05	7021.39	31.00	2469.68	10.18 S	2469.68 E	32.92419950 N	104.09698480 W	2469.71@	90.24	0.61
9297.00	88.60	89.70	7021.78	31.00	2500.68	10.12 S	2500.68 E	32.92419950 N	104.09688378 W	2500.70@	90.23	4.47
9328.00	88.15	89.53	7022.66	31.00	2531.66	9.91 S	2531.67 E	32.92419988 N	104.09678280 W	2531.69@	90.22	1.55
9359.00	87.87	89.59	7023.74	31.00	2562.65	9.67 S	2562.65 E	32.92420034 N	104.09668183 W	2562.67@	90.22	0.92
9390.00	87.76	89.98	7024.92	31.00	2593.62	9.55 S	2593.63 E	32.92420047 N	104.09658088 W	2593.64@	90.21	1.31
9421.00	87.81	90.17	7026.12	31.00	2624.60	9.59 S	2624.60 E	32.92420017 N	104.09647993 W	2624.62@	90.21	0.63
9452.00	89.50	89.87	7026.85	31.00	2655.59	9.60 S	2655.59 E	32.92419995 N	104.09637893 W	2655.61@	90.21	5.54
9483.00	89.89	90.32	7027.01	31.00	2686.59	9.66 S	2686.59 E	32.92419961 N	104.09627791 W	2686.61@	90.21	1.92
9514.00	89.78	90.72	7027.10	31.00	2717.59	9.94 S	2717.59 E	32.92419865 N	104.09617689 W	2717.61@	90.21	1.34
9545.00	89.16	91.10	7027.39	31.00	2748.58	10.43 S	2748.58 E	32.92419710 N	104.09607588 W	2748.60@	90.22	2.35
9577.00	89.10	91.21	7027.87	32.00	2780.57	11.07 S	2780.57 E	32.92419513 N	104.09597163 W	2780.60@	90.23	0.39
9608.00	89.16	91.29	7028.35	31.00	2811.56	11.75 S	2811.56 E	32.92419308 N	104.09587065 W	2811.59@	90.24	0.32
9639.00	89.16	91.69	7028.80	31.00	2842.55	12.56 S	2842.55 E	32.92419068 N	104.09576967 W	2842.58@	90.25	1.29
9670.00	89.16	91.74	7029.25	31.00	2873.53	13.48 S	2873.53 E	32.92418793 N	104.09566870 W	2873.56@	90.27	0.16
9701.00	89.16	91.18	7029.71	31.00	2904.51	14.27 S	2904.52 E	32.92418557 N	104.09556773 W	2904.55@	90.28	1.81
9732.00	88.71	90.34	7030.29	31.00	2935.51	14.68 S	2935.51 E	32.92418425 N	104.09546673 W	2935.55@	90.29	3.07
9763.00	88.60	89.95	7031.01	31.00	2966.50	14.76 S	2966.50 E	32.92418384 N	104.09536573 W	2966.54@	90.29	1.31
9795.00	88.60	89.98	7031.79	32.00	2998.49	14.74 S	2998.49 E	32.92418370 N	104.09526148 W	2998.53@	90.28	0.09
9826.00	88.49	90.16	7032.58	31.00	3029.48	14.78 S	3029.48 E	32.92418340 N	104.09516048 W	3029.52@	90.28	0.68
9857.00	88.38	90.37	7033.43	31.00	3060.47	14.92 S	3060.47 E	32.92418281 N	104.09505950 W	3060.51@	90.28	0.76
9888.00	88.66	89.72	7034.23	31.00	3091.45	14.95 S	3091.46 E	32.92418255 N	104.09495850 W	3091.50@	90.28	2.28
9919.00	88.82	89.75	7034.91	31.00	3122.45	14.81 S	3122.45 E	32.92418276 N	104.09485750 W	3122.49@	90.27	0.53
9950.00	89.61	89.78	7035.34	31.00	3153.44	14.68 S	3153.45 E	32.92418291 N	104.09475648 W	3153.48@	90.27	2.55
9981.00	89.89	89.77	7035.47	31.00	3184.44	14.56 S	3184.45 E	32.92418305 N	104.09465546 W	3184.48@	90.26	0.90
0012.00	90.22	89.66	7035.44	31.00	3215.44	14.40 S	3215.45 E	32.92418328 N	104.09455443 W	3215.48@	90.26	1.12
0043.00	90.39	90.00	7035.28	31.00	3246.44	14.31 S	3246.45 E	32.92418334 N	104.09445340 W	3246.48@	90.25	1.23

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1074.00	90.06	89.71	7035.15	31.00	3277.44	14.23 S	3277.45 E	32.92418337 N	104.09435238 W	3277.48@	90.25	1.42
1105.00	89.50	89.43	7035.27	31.00	3308.44	14.00 S	3308.45 E	32.92418381 N	104.09425135 W	3308.47@	90.24	2.02
1136.00	88.71	89.13	7035.76	31.00	3339.43	13.61 S	3339.44 E	32.92418469 N	104.09415034 W	3339.47@	90.23	2.73
1168.00	88.60	89.01	7036.51	32.00	3371.42	13.09 S	3371.43 E	32.92418592 N	104.09404610 W	3371.45@	90.22	0.51
1199.00	88.71	89.29	7037.24	31.00	3402.41	12.63 S	3402.41 E	32.92418699 N	104.09394510 W	3402.44@	90.21	0.97
1230.00	88.83	89.29	7037.90	31.00	3433.40	12.25 S	3433.40 E	32.92418785 N	104.09384410 W	3433.43@	90.20	0.39
1261.00	88.82	89.09	7038.54	31.00	3464.39	11.81 S	3464.39 E	32.92418886 N	104.09374311 W	3464.41@	90.20	0.65
1292.00	88.71	88.81	7039.21	31.00	3495.38	11.24 S	3495.38 E	32.92419023 N	104.09364212 W	3495.40@	90.18	0.97
1323.00	88.60	88.77	7039.93	31.00	3526.36	10.59 S	3526.37 E	32.92419183 N	104.09354113 W	3526.38@	90.17	0.38
1354.00	88.66	89.01	7040.67	31.00	3557.35	9.99 S	3557.35 E	32.92419329 N	104.09344015 W	3557.37@	90.16	0.80
1385.00	89.22	88.65	7041.25	31.00	3588.34	9.35 S	3588.34 E	32.92419484 N	104.09333916 W	3588.35@	90.15	2.15
1417.00	89.44	88.82	7041.62	32.00	3620.33	8.65 S	3620.33 E	32.92419658 N	104.09323490 W	3620.34@	90.14	0.87
1448.00	89.33	88.77	7041.95	31.00	3651.32	7.99 S	3651.32 E	32.92419817 N	104.09313389 W	3651.33@	90.13	0.39
1479.00	89.33	88.85	7042.32	31.00	3682.31	7.35 S	3682.31 E	32.92419975 N	104.09303289 W	3682.32@	90.11	0.26
1510.00	89.38	89.11	7042.67	31.00	3713.30	6.80 S	3713.31 E	32.92420107 N	104.09293188 W	3713.31@	90.10	0.85
1541.00	89.27	89.37	7043.03	31.00	3744.30	6.39 S	3744.30 E	32.92420201 N	104.09283087 W	3744.31@	90.10	0.91
1572.00	89.16	89.54	7043.46	31.00	3775.29	6.09 S	3775.30 E	32.92420262 N	104.09272985 W	3775.30@	90.09	0.65
1603.00	89.38	89.46	7043.85	31.00	3806.29	5.82 S	3806.29 E	32.92420317 N	104.09262883 W	3806.30@	90.09	0.75
1634.00	89.27	89.66	7044.22	31.00	3837.29	5.58 S	3837.29 E	32.92420363 N	104.09252782 W	3837.29@	90.08	0.74
1666.00	89.22	89.80	7044.64	32.00	3869.28	5.43 S	3869.29 E	32.92420385 N	104.09242354 W	3869.29@	90.08	0.46
1697.00	89.16	89.80	7045.08	31.00	3900.28	5.33 S	3900.28 E	32.92420395 N	104.09232252 W	3900.29@	90.08	0.19
1728.00	88.94	90.06	7045.59	31.00	3931.28	5.29 S	3931.28 E	32.92420386 N	104.09222151 W	3931.28@	90.08	1.10
1759.00	88.88	89.95	7046.18	31.00	3962.27	5.29 S	3962.27 E	32.92420366 N	104.09212050 W	3962.28@	90.08	0.40
1790.00	88.82	89.93	7046.80	31.00	3993.27	5.26 S	3993.27 E	32.92420355 N	104.09201949 W	3993.27@	90.08	0.20
1821.00	88.60	90.31	7047.50	31.00	4024.26	5.32 S	4024.26 E	32.92420318 N	104.09191849 W	4024.26@	90.08	1.42
1852.00	89.27	89.91	7048.08	31.00	4055.25	5.38 S	4055.25 E	32.92420282 N	104.09181748 W	4055.26@	90.08	2.52
1883.00	89.50	89.97	7048.41	31.00	4086.25	5.35 S	4086.25 E	32.92420271 N	104.09171646 W	4086.26@	90.08	0.77

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914.00	89.55	90.22	7048.67	31.00	4117.25	5.40 S	4117.25 E	32.92420238 N	104.09161544 W	4117.25@	90.08	0.82
945.00	89.50	90.35	7048.92	31.00	4148.25	5.56 S	4148.25 E	32.92420176 N	104.09151442 W	4148.25@	90.08	0.45
976.00	89.50	90.34	7049.19	31.00	4179.25	5.74 S	4179.25 E	32.92420105 N	104.09141340 W	4179.25@	90.08	0.03
007.00	89.55	90.40	7049.45	31.00	4210.24	5.94 S	4210.25 E	32.92420030 N	104.09131238 W	4210.25@	90.08	0.25
039.00	89.27	90.27	7049.78	32.00	4242.24	6.13 S	4242.24 E	32.92419959 N	104.09120810 W	4242.25@	90.08	0.96
070.00	89.05	90.22	7050.23	31.00	4273.24	6.26 S	4273.24 E	32.92419903 N	104.09110709 W	4273.24@	90.08	0.73
101.00	89.16	90.21	7050.72	31.00	4304.23	6.38 S	4304.24 E	32.92419851 N	104.09100607 W	4304.24@	90.08	0.36
132.00	89.22	90.02	7051.16	31.00	4335.23	6.44 S	4335.23 E	32.92419814 N	104.09090505 W	4335.24@	90.09	0.64
163.00	89.38	90.17	7051.54	31.00	4366.23	6.49 S	4366.23 E	32.92419781 N	104.09080403 W	4366.24@	90.09	0.71
194.00	89.33	90.17	7051.88	31.00	4397.23	6.58 S	4397.23 E	32.92419736 N	104.09070302 W	4397.23@	90.09	0.16
225.00	89.38	90.28	7052.23	31.00	4428.22	6.71 S	4428.23 E	32.92419683 N	104.09060200 W	4428.23@	90.09	0.39
256.00	89.38	90.31	7052.57	31.00	4459.22	6.87 S	4459.22 E	32.92419619 N	104.09050098 W	4459.23@	90.09	0.10
288.00	89.89	90.10	7052.77	32.00	4491.22	6.98 S	4491.22 E	32.92419567 N	104.09039670 W	4491.23@	90.09	1.72
319.00	90.06	89.96	7052.79	31.00	4522.22	7.00 S	4522.22 E	32.92419543 N	104.09029567 W	4522.23@	90.09	0.71
350.00	90.06	89.89	7052.75	31.00	4553.22	6.96 S	4553.22 E	32.92419535 N	104.09019464 W	4553.23@	90.09	0.23
381.00	89.89	90.24	7052.77	31.00	4584.22	6.99 S	4584.22 E	32.92419505 N	104.09009362 W	4584.23@	90.09	1.26
412.00	89.83	90.32	7052.84	31.00	4615.22	7.14 S	4615.22 E	32.92419444 N	104.08999259 W	4615.23@	90.09	0.32
443.00	89.89	90.45	7052.92	31.00	4646.22	7.35 S	4646.22 E	32.92419367 N	104.08989157 W	4646.23@	90.09	0.46
474.00	90.06	90.62	7052.93	31.00	4677.22	7.64 S	4677.22 E	32.92419268 N	104.08979055 W	4677.23@	90.09	0.78
505.00	90.17	90.64	7052.87	31.00	4708.21	7.98 S	4708.22 E	32.92419155 N	104.08968953 W	4708.22@	90.10	0.36
537.00	90.22	90.81	7052.76	32.00	4740.21	8.39 S	4740.22 E	32.92419023 N	104.08958525 W	4740.22@	90.10	0.55
568.00	89.72	90.80	7052.78	31.00	4771.21	8.82 S	4771.21 E	32.92418884 N	104.08948424 W	4771.22@	90.11	1.61
599.00	89.50	90.93	7052.99	31.00	4802.20	9.29 S	4802.21 E	32.92418735 N	104.08938323 W	4802.22@	90.11	0.82
630.00	89.10	91.05	7053.37	31.00	4833.20	9.82 S	4833.20 E	32.92418568 N	104.08928223 W	4833.21@	90.12	1.35
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 11711' MD.												
1711.00	89.10	91.05	7054.64	81.00	4914.17	11.31 S	4914.18 E	32.92418109 N	104.08901835 W	4914.19@	90.13	0.00

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Titans Federal Com #1
Eddy COUNTY, New Mexico
RIG:Silver Oak 7

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**** 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.**