



DIRECTIONAL SURVEY REPORT

MACK ENERGY CORPORATION

GIANTS FEDERAL COM #2 ST2

EDDY COUNTY, NM

PREPARED BY: PHIL LEBLANC

March 27, 2009

MACK ENERGY CORPORATION

Mr. Matt Brewer

11352 Lovington Hwy

Box 960

Artesia, NM 88211-1288

RE: MACK ENERGY CORPORATION
GIANTS FEDERAL COM #2 ST2
EDDY COUNTY, NM
RIG: SILVER OAK #7
API Well No.: 30-015-36431
PES Job No.: 101008260-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

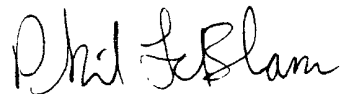
jimkrogman@mackenergycorp.com

mbrewer@mackenergycorp.com

kevingarrett@mackenergycorp.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,



Phil LeBlanc

M/LWD Service Coordinator

PathFinder Energy Services

PL:II

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JOHN OVERTON
B) DEAN NELSON
C) THOMAS BILLINGS
3. POSITION OF SAID PERSON(S): (A-C) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 02/14/09 TO 03/11/09
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
GIANTS FEDERAL COM #2 ST2
EDDY COUNTY, NM
RIG: SILVER OAK #7
API Well No.: 30-015-36431

9. SURVEY(S) CERTIFIED FROM: 5,727 TO 11,163 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4,483.21 FEET ON A BEARING OF 90.37 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 11,163 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



PHIL LEBLANC
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 02/14/2009
Date Completed: 03/11/2009

Mack Energy Corporation
Giants Federal Com #2 ST2
Eddy COUNTY, New Mexico
Rig: Silver Oak 7
PathFinder Office Supervisor: Phil LeBlanc
PathFinder Field Engineers: John Overton
Dean Nelson
Thomas Billings

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.55.53.3859 N LON: 104.6.14.6138 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 570345.9000 Y: 702666.7000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.03° EAST TO GRID
Vertical Section Plane: 89.98
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude: 3666.00' Ground To MSL

Measured Depth	11163.00	(feet)
Inclination	88.82	(deg)
Azimuth	90.86	(deg)
True Vertical Depth	7054.60	(feet)
Vertical Section	4483.10	(feet)
Survey X cord	574829.01	(feet)
Survey Y cord	702637.79	(feet)
Survey Lat	32.93138895 N	(deg)
Survey Lon	104.08944819 W	(deg)
Rectangular Corr. N/S	28.91 S	(feet)
Rectangular Corr. E/W	4483.11 E	(feet)
Closure Distance	4483.21	(feet)
Direction of Closure	90.37	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Giants Federal Com #2 ST2
Eddy COUNTY, New Mexico
Rig: Silver Oak 7
PathFinder Office Supervisor: Phil LeBlanc
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Survey Calculations by RX5 V5.11i using Minimum Curvature

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.55.53.3859 N LON: 104.6.14.6138 W
Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 570345.9000 Y: 702666.7000
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Total Magnetic Correction: 8.03° EAST TO GRID
Vertical Section Plane: 89.98
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude: 3666.00' Ground To MSL

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL		Survey Latitude (deg)	Survey Longitude (deg)	Closure		DLS
						Rectangular (ft)	Offsets (ft)			Dist (ft)	Dir (deg)	
THE FOLLOWING ARE TELEDRIFT MWD SURVEYS.												
486.00	0.80	90.08	485.99	0.00	3.39	0.01 S	3.39 E	32.93149603 N	104.10404834 W	3.39@	90.13	0.00
642.00	1.10	101.08	641.96	156.00	5.95	0.30 S	5.95 E	32.93149522 N	104.10404000 W	5.96@	92.86	0.22
827.00	1.40	98.08	826.92	185.00	9.93	0.96 S	9.93 E	32.93149338 N	104.10402703 W	9.98@	95.50	0.17
951.00	1.40	101.08	950.88	124.00	12.92	1.46 S	12.92 E	32.93149198 N	104.10401730 W	13.00@	96.45	0.06
1107.00	1.10	104.08	1106.85	156.00	16.24	2.19 S	16.24 E	32.93148995 N	104.10400648 W	16.39@	97.58	0.20
1257.00	1.10	102.08	1256.82	150.00	19.04	2.84 S	19.04 E	32.93148815 N	104.10399734 W	19.25@	98.49	0.03
1413.00	1.20	97.08	1412.79	156.00	22.13	3.36 S	22.13 E	32.93148671 N	104.10398729 W	22.38@	98.63	0.09
1574.00	2.60	53.08	1573.70	161.00	26.72	1.37 S	26.72 E	32.93149214 N	104.10397231 W	26.76@	92.94	1.20
1730.00	1.10	104.08	1729.62	156.00	31.00	0.39 N	31.00 E	32.93149696 N	104.10395834 W	31.01@	89.28	1.34
1884.00	2.40	87.08	1883.55	154.00	35.66	0.20 N	35.66 E	32.93149639 N	104.10394317 W	35.66@	89.69	0.90
2033.00	0.90	115.08	2032.49	149.00	39.83	0.14 S	39.83 E	32.93149544 N	104.10392956 W	39.83@	90.20	1.11
2191.00	1.00	115.08	2190.46	158.00	42.21	1.25 S	42.21 E	32.93149238 N	104.10392184 W	42.22@	91.70	0.06
2351.00	1.10	115.08	2350.44	160.00	44.86	2.50 S	44.86 E	32.93148894 N	104.10391319 W	44.93@	93.18	0.06
2512.00	0.70	125.08	2511.42	161.00	47.06	3.72 S	47.07 E	32.93148558 N	104.10390602 W	47.21@	94.51	0.27
2668.00	0.50	142.08	2667.41	156.00	48.26	4.80 S	48.26 E	32.93148259 N	104.10390212 W	48.50@	95.68	0.17
2888.00	0.70	117.08	2887.40	220.00	50.05	6.17 S	50.05 E	32.93147882 N	104.10389631 W	50.43@	97.03	0.15
3044.00	0.30	118.08	3043.39	156.00	51.26	6.80 S	51.26 E	32.93147709 N	104.10389237 W	51.71@	97.55	0.26
3195.00	0.50	92.08	3194.39	151.00	52.26	7.01 S	52.27 E	32.93147650 N	104.10388909 W	52.73@	97.63	0.18
3417.00	0.10	140.08	3416.38	222.00	53.36	7.19 S	53.36 E	32.93147599 N	104.10388553 W	53.84@	97.67	0.20
3573.00	0.30	140.08	3572.38	156.00	53.71	7.61 S	53.71 E	32.93147484 N	104.10388439 W	54.24@	98.06	0.13
3727.00	0.20	182.08	3726.38	154.00	53.95	8.18 S	53.96 E	32.93147325 N	104.10388359 W	54.57@	98.62	0.13
4076.00	0.00	270.08	4075.38	349.00	53.93	8.79 S	53.94 E	32.93147158 N	104.10388366 W	54.65@	99.26	0.06
4242.00	0.50	277.08	4241.38	166.00	53.21	8.70 S	53.22 E	32.93147183 N	104.10388600 W	53.92@	99.29	0.30

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Giants Federal Com #2 ST2
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 Dir (ft) (deg)		DLS (dg/100ft)
4395.00	0.30	335.08	4394.37	153.00	52.38	8.26 S	52.39 E	32.93147306 N	104.10388871 W	53.03@	98.96	0.28
4550.00	0.40	269.08	4549.37	155.00	51.67	7.90 S	51.67 E	32.93147405 N	104.10389103 W	52.27@	98.69	0.25
4705.00	0.20	24.08	4704.37	155.00	51.24	7.66 S	51.24 E	32.93147471 N	104.10389243 W	51.81@	98.50	0.33
4861.00	0.40	41.08	4860.37	156.00	51.71	7.00 S	51.71 E	32.93147652 N	104.10389090 W	52.18@	97.71	0.14
5016.00	0.10	296.08	5015.37	155.00	51.94	6.53 S	51.95 E	32.93147780 N	104.10389013 W	52.36@	97.17	0.28
5172.00	0.20	251.08	5171.37	156.00	51.56	6.56 S	51.57 E	32.93147772 N	104.10389137 W	51.98@	97.25	0.09
5322.00	0.50	267.08	5321.36	150.00	50.66	6.68 S	50.66 E	32.93147740 N	104.10389431 W	51.10@	97.51	0.21
5483.00	0.20	297.08	5482.36	161.00	49.71	6.59 S	49.71 E	32.93147766 N	104.10389741 W	50.15@	97.55	0.21
5639.00	0.00	73.08	5638.36	156.00	49.47	6.46 S	49.47 E	32.93147801 N	104.10389820 W	49.89@	97.45	0.13
** TIED INTO TELEDRIFT SURVEYS AT 5727' MD.												
5727.00	0.30	60.08	5726.36	88.00	49.67	6.35 S	49.67 E	32.93147832 N	104.10389755 W	50.07@	97.29	0.34
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.												
5738.00	0.18	100.75	5737.36	11.00	49.71	6.34 S	49.71 E	32.93147835 N	104.10389741 W	50.11@	97.27	1.83
5832.00	0.18	40.99	5831.36	94.00	49.95	6.25 S	49.95 E	32.93147858 N	104.10389662 W	50.34@	97.14	0.19
5925.00	0.26	63.96	5924.36	93.00	50.24	6.05 S	50.24 E	32.93147914 N	104.10389569 W	50.60@	96.87	0.13
6019.00	0.35	38.35	6018.36	94.00	50.61	5.73 S	50.61 E	32.93148001 N	104.10389448 W	50.93@	96.46	0.17
6112.00	0.44	98.42	6111.36	93.00	51.14	5.56 S	51.14 E	32.93148048 N	104.10389276 W	51.44@	96.21	0.43
6205.00	0.35	133.56	6204.35	93.00	51.70	5.31 S	51.70 E	32.93147979 N	104.10389094 W	52.02@	96.41	0.27
6299.00	2.02	102.78	6298.33	94.00	53.52	6.38 S	53.52 E	32.93147823 N	104.10388499 W	53.90@	96.79	1.84
6391.00	2.81	102.68	6390.25	92.00	57.30	7.23 S	57.30 E	32.93147586 N	104.10387268 W	57.76@	97.19	0.86
ST2 DEPARTS ORIGINAL WELLBORE AT 6415' MD (6415' TVD).												
6423.00	6.60	81.81	6422.14	32.00	59.89	7.14 S	59.89 E	32.93147609 N	104.10386425 W	60.31@	96.80	12.81
6454.00	10.38	79.12	6452.79	31.00	64.39	6.36 S	64.40 E	32.93147821 N	104.10384955 W	64.71@	95.64	12.26
6485.00	14.25	77.66	6483.07	31.00	70.87	5.01 S	70.87 E	32.93148186 N	104.10382845 W	71.05@	94.05	12.52
6516.00	15.65	79.17	6513.02	31.00	78.70	3.41 S	78.70 E	32.93148622 N	104.10380290 W	78.78@	92.48	4.69
6547.00	16.27	79.90	6542.83	31.00	87.09	1.87 S	87.09 E	32.93149042 N	104.10377557 W	87.11@	91.23	2.10
6579.00	18.20	80.33	6573.39	32.00	96.43	0.24 S	96.43 E	32.93149483 N	104.10374512 W	96.43@	90.14	6.04
6610.00	20.66	78.82	6602.62	31.00	106.57	1.63 N	106.57 E	32.93149992 N	104.10371206 W	106.58@	89.12	8.10
6641.00	22.95	78.81	6631.40	31.00	117.86	3.87 N	117.86 E	32.93150599 N	104.10367523 W	117.92@	88.12	7.39

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Giants Federal Com #2 ST2
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 Dir (ft) (deg)		DLS (dg/100ft)
6672.00	25.85	79.21	6659.63	31.00	130.43	6.31 N	130.43 E	32.93151262 N	104.10363424 W	130.58@	87.23	9.37
6703.00	28.67	80.08	6687.18	31.00	144.40	8.85 N	144.40 E	32.93151954 N	104.10358870 W	144.67@	86.49	9.19
6735.00	31.48	81.87	6714.87	32.00	160.24	11.36 N	160.23 E	32.93152633 N	104.10353707 W	160.64@	85.95	9.22
6766.00	34.12	84.92	6740.93	31.00	176.92	13.27 N	176.91 E	32.93153149 N	104.10348270 W	177.41@	85.71	10.04
6797.00	35.88	87.62	6766.33	31.00	194.66	14.42 N	194.65 E	32.93153454 N	104.10342488 W	195.18@	85.76	7.56
6828.00	38.51	88.90	6791.02	31.00	213.38	14.98 N	213.38 E	32.93153597 N	104.10336383 W	213.91@	85.98	8.84
6859.00	41.33	89.65	6814.79	31.00	233.27	15.23 N	233.27 E	32.93153653 N	104.10329900 W	233.77@	86.26	9.23
6890.00	44.41	90.19	6837.51	31.00	254.36	15.26 N	254.36 E	32.93153648 N	104.10323027 W	254.81@	86.57	10.01
6921.00	48.36	90.80	6858.89	31.00	276.80	15.06 N	276.80 E	32.93153580 N	104.10315715 W	277.20@	86.89	12.82
6952.00	52.32	90.34	6878.67	31.00	300.66	14.82 N	300.65 E	32.93153501 N	104.10307939 W	301.02@	87.18	12.83
6983.00	56.37	89.26	6896.74	31.00	325.84	14.92 N	325.84 E	32.93153512 N	104.10299731 W	326.18@	87.38	13.37
7014.00	60.41	87.79	6912.98	31.00	352.23	15.60 N	352.22 E	32.93153685 N	104.10291131 W	352.57@	87.46	13.64
7045.00	63.75	87.38	6927.49	31.00	379.59	16.76 N	379.59 E	32.93153986 N	104.10282212 W	379.96@	87.47	10.84
7077.00	65.33	88.09	6941.25	32.00	408.46	17.90 N	408.45 E	32.93154282 N	104.10272802 W	408.85@	87.49	5.33
7108.00	67.01	89.91	6953.78	31.00	436.81	18.39 N	436.80 E	32.93154401 N	104.10263562 W	437.19@	87.59	7.63
7139.00	69.03	91.40	6965.38	31.00	465.55	18.06 N	465.55 E	32.93154292 N	104.10254194 W	465.90@	87.78	7.89
7170.00	72.02	92.29	6975.71	31.00	494.76	17.12 N	494.75 E	32.93154015 N	104.10244675 W	495.05@	88.02	10.02
7201.00	75.27	92.16	6984.44	31.00	524.48	15.96 N	524.47 E	32.93153680 N	104.10234990 W	524.72@	88.26	10.49
7232.00	79.67	91.96	6991.16	31.00	554.71	14.88 N	554.71 E	32.93153363 N	104.10225137 W	554.91@	88.46	14.21
7275.00	85.12	90.32	6996.85	43.00	597.31	14.03 N	597.30 E	32.93153106 N	104.10211255 W	597.47@	88.65	13.23
7306.00	87.93	90.24	6998.73	31.00	628.25	13.88 N	628.24 E	32.93153045 N	104.10201171 W	628.40@	88.73	9.07
7337.00	88.21	90.55	6999.78	31.00	659.23	13.67 N	659.23 E	32.93152968 N	104.10191073 W	659.37@	88.81	1.35
7368.00	87.93	90.84	7000.82	31.00	690.21	13.29 N	690.21 E	32.93152846 N	104.10180977 W	690.33@	88.90	1.30
7399.00	87.26	90.73	7002.12	31.00	721.18	12.87 N	721.17 E	32.93152711 N	104.10170883 W	721.29@	88.98	2.19
7430.00	86.81	90.95	7003.72	31.00	752.13	12.41 N	752.13 E	32.93152567 N	104.10160795 W	752.23@	89.05	1.62
7461.00	86.47	90.95	7005.54	31.00	783.08	11.90 N	783.07 E	32.93152408 N	104.10150710 W	783.16@	89.13	1.10
7493.00	86.81	91.30	7007.42	32.00	815.02	11.27 N	815.01 E	32.93152216 N	104.10140301 W	815.09@	89.21	1.52

PathFinder Energy Services, Inc.

Survey Report

Mack Energy Corporation
Giants Federal Com #2 ST2
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 Dir (ft) (deg)		DLS (dg/100ft)
7524.00	88.88	90.64	7008.58	31.00	845.99	10.75 N	845.98 E	32.93152053 N	104.10130207 W	846.05@	89.27	7.01
7555.00	89.05	90.57	7009.14	31.00	876.98	10.42 N	876.98 E	32.93151944 N	104.10120106 W	877.04@	89.32	0.59
7585.00	88.66	90.78	7009.74	30.00	906.97	10.07 N	906.97 E	32.93151829 N	104.10110331 W	907.02@	89.36	1.48
7617.00	88.49	91.13	7010.54	32.00	938.96	9.54 N	938.95 E	32.93151663 N	104.10099907 W	939.00@	89.42	1.22
7648.00	88.60	91.15	7011.32	31.00	969.94	8.92 N	969.94 E	32.93151475 N	104.10089809 W	969.98@	89.47	0.36
7679.00	89.16	90.59	7011.93	31.00	1000.93	8.45 N	1000.93 E	32.93151327 N	104.10079709 W	1000.96@	89.52	2.55
7710.00	90.73	90.15	7011.96	31.00	1031.93	8.25 N	1031.93 E	32.93151253 N	104.10069606 W	1031.96@	89.54	5.26
7741.00	90.67	90.25	7011.58	31.00	1062.93	8.14 N	1062.92 E	32.93151204 N	104.10059503 W	1062.95@	89.56	0.38
7773.00	90.45	90.32	7011.27	32.00	1094.92	7.98 N	1094.92 E	32.93151141 N	104.10049075 W	1094.95@	89.58	0.72
7804.00	90.22	90.36	7011.09	31.00	1125.92	7.80 N	1125.92 E	32.93151072 N	104.10038972 W	1125.95@	89.60	0.75
7835.00	90.06	90.32	7011.01	31.00	1156.92	7.61 N	1156.92 E	32.93151002 N	104.10028868 W	1156.94@	89.62	0.53
7866.00	89.83	90.34	7011.04	31.00	1187.92	7.43 N	1187.92 E	32.93150934 N	104.10018765 W	1187.94@	89.64	0.75
7897.00	89.55	90.59	7011.21	31.00	1218.92	7.18 N	1218.92 E	32.93150846 N	104.10008662 W	1218.94@	89.66	1.21
7928.00	89.27	90.52	7011.53	31.00	1249.92	6.88 N	1249.91 E	32.93150745 N	104.09998560 W	1249.93@	89.68	0.93
7959.00	88.83	90.99	7012.04	31.00	1280.91	6.47 N	1280.91 E	32.93150614 N	104.09988459 W	1280.92@	89.71	2.08
7990.00	88.49	91.09	7012.77	31.00	1311.90	5.91 N	1311.89 E	32.93150440 N	104.09978360 W	1311.91@	89.74	1.14
8021.00	88.43	91.10	7013.60	31.00	1342.88	5.32 N	1342.88 E	32.93150259 N	104.09968263 W	1342.89@	89.77	0.20
8052.00	88.21	91.51	7014.51	31.00	1373.86	4.61 N	1373.86 E	32.93150046 N	104.09958167 W	1373.86@	89.81	1.50
8084.00	88.38	91.43	7015.46	32.00	1405.83	3.79 N	1405.83 E	32.93149801 N	104.09947746 W	1405.84@	89.85	0.59
8115.00	88.71	91.89	7016.25	31.00	1436.81	2.90 N	1436.81 E	32.93149535 N	104.09937650 W	1436.81@	89.88	1.82
8146.00	89.38	92.45	7016.77	31.00	1467.78	1.72 N	1467.78 E	32.93149194 N	104.09927556 W	1467.78@	89.93	2.82
8177.00	89.66	92.30	7017.03	31.00	1498.75	0.44 N	1498.75 E	32.93148822 N	104.09917463 W	1498.75@	89.98	1.03
8208.00	90.50	91.98	7016.98	31.00	1529.73	0.72 S	1529.73 E	32.93148485 N	104.09907367 W	1529.73@	90.03	2.90
8239.00	90.39	92.18	7016.74	31.00	1560.71	1.85 S	1560.71 E	32.93148156 N	104.09897272 W	1560.71@	90.07	0.74
8270.00	90.39	92.30	7016.53	31.00	1591.68	3.06 S	1591.69 E	32.93147804 N	104.09887177 W	1591.69@	90.11	0.39
8301.00	89.78	92.56	7016.48	31.00	1622.66	4.37 S	1622.66 E	32.93147424 N	104.09877083 W	1622.66@	90.15	2.14
8333.00	90.11	92.34	7016.52	32.00	1654.63	5.74 S	1654.63 E	32.93147029 N	104.09866664 W	1654.64@	90.20	1.24

PathFinder Energy Services, Inc.

Survey Report

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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)
8364.00	90.45	91.93	7016.36	31.00	1685.60	6.89 S	1685.61 E	32.93146692 N	104.09856569 W	1685.62@ 90.23	1.72
8395.00	90.45	91.82	7016.12	31.00	1716.59	7.91 S	1716.59 E	32.93146394 N	104.09846472 W	1716.61@ 90.26	0.35
8426.00	90.50	91.98	7015.86	31.00	1747.57	8.94 S	1747.57 E	32.93146093 N	104.09836375 W	1747.59@ 90.29	0.54
8457.00	90.45	92.32	7015.61	31.00	1778.54	10.10 S	1778.55 E	32.93145754 N	104.09826280 W	1778.58@ 90.33	1.11
8488.00	89.50	92.14	7015.62	31.00	1809.52	11.31 S	1809.52 E	32.93145404 N	104.09816185 W	1809.56@ 90.36	3.12
8519.00	88.88	90.31	7016.06	31.00	1840.51	11.97 S	1840.51 E	32.93145203 N	104.09806085 W	1840.55@ 90.37	6.23
8551.00	88.82	88.88	7016.70	32.00	1872.50	11.74 S	1872.50 E	32.93145245 N	104.09795658 W	1872.54@ 90.36	4.47
8582.00	88.43	88.62	7017.44	31.00	1903.48	11.07 S	1903.49 E	32.93145412 N	104.09785559 W	1903.52@ 90.33	1.51
8613.00	88.15	88.43	7018.37	31.00	1934.46	10.27 S	1934.46 E	32.93145612 N	104.09775463 W	1934.49@ 90.30	1.09
8644.00	87.93	88.18	7019.43	31.00	1965.43	9.35 S	1965.43 E	32.93145845 N	104.09765369 W	1965.45@ 90.27	1.07
8675.00	88.21	88.05	7020.47	31.00	1996.39	8.33 S	1996.40 E	32.93146106 N	104.09755276 W	1996.41@ 90.24	1.00
8706.00	89.55	87.92	7021.08	31.00	2027.37	7.24 S	2027.37 E	32.93146387 N	104.09745180 W	2027.38@ 90.20	4.34
8738.00	90.45	88.02	7021.08	32.00	2059.35	6.11 S	2059.35 E	32.93146679 N	104.09734757 W	2059.36@ 90.17	2.83
8769.00	91.23	88.40	7020.63	31.00	2090.33	5.14 S	2090.33 E	32.93146926 N	104.09724659 W	2090.34@ 90.14	2.80
8800.00	91.12	88.75	7019.99	31.00	2121.31	4.37 S	2121.32 E	32.93147118 N	104.09714560 W	2121.32@ 90.12	1.18
8831.00	90.90	88.79	7019.44	31.00	2152.30	3.70 S	2152.30 E	32.93147282 N	104.09704460 W	2152.31@ 90.10	0.72
8852.00	90.67	88.84	7019.02	31.00	2183.29	3.06 S	2183.29 E	32.93147439 N	104.09694359 W	2183.30@ 90.08	0.76
8893.00	90.50	89.01	7018.70	31.00	2214.29	2.48 S	2214.29 E	32.93147580 N	104.09684257 W	2214.29@ 90.06	0.78
8924.00	90.62	88.78	7018.40	31.00	2245.28	1.88 S	2245.28 E	32.93147725 N	104.09674156 W	2245.28@ 90.05	0.84
8955.00	90.34	88.98	7018.14	31.00	2276.27	1.28 S	2276.27 E	32.93147873 N	104.09664054 W	2276.27@ 90.03	1.11
8987.00	90.17	88.80	7018.00	32.00	2308.27	0.66 S	2308.27 E	32.93148023 N	104.09653626 W	2308.27@ 90.02	0.77
9018.00	90.11	88.53	7017.92	31.00	2339.26	0.06 N	2339.26 E	32.93148203 N	104.09643525 W	2339.26@ 90.00	0.89
9049.00	89.16	88.95	7018.12	31.00	2370.25	0.75 N	2370.25 E	32.93148371 N	104.09633423 W	2370.25@ 89.98	3.35
9080.00	88.49	89.44	7018.75	31.00	2401.24	1.18 N	2401.24 E	32.93148471 N	104.09623323 W	2401.24@ 89.97	2.68
9111.00	88.38	89.19	7019.60	31.00	2432.23	1.55 N	2432.23 E	32.93148554 N	104.09613223 W	2432.23@ 89.96	0.88
9142.00	88.15	89.07	7020.54	31.00	2463.21	2.02 N	2463.21 E	32.93148664 N	104.09603125 W	2463.21@ 89.95	0.84
9173.00	88.21	89.11	7021.52	31.00	2494.19	2.51 N	2494.19 E	32.93148780 N	104.09593028 W	2494.19@ 89.94	0.23

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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)
9204.00	88.04	89.40	7022.54	31.00	2525.17	2.92 N	2525.17 E	32.93148872 N	104.09582930 W	2525.17@	89.93	1.08
9236.00	87.87	89.51	7023.68	32.00	2557.15	3.22 N	2557.15 E	32.93148936 N	104.09572508 W	2557.15@	89.93	0.63
9267.00	87.65	89.33	7024.89	31.00	2588.12	3.53 N	2588.12 E	32.93149003 N	104.09562412 W	2588.12@	89.92	0.92
9298.00	87.59	89.05	7026.18	31.00	2619.09	3.97 N	2619.09 E	32.93149104 N	104.09552318 W	2619.10@	89.91	0.92
9329.00	87.42	89.13	7027.53	31.00	2650.06	4.46 N	2650.06 E	32.93149220 N	104.09542225 W	2650.06@	89.90	0.61
9360.00	87.43	88.95	7028.92	31.00	2681.02	4.98 N	2681.02 E	32.93149343 N	104.09532132 W	2681.03@	89.89	0.58
9391.00	87.14	89.02	7030.39	31.00	2711.99	5.53 N	2711.98 E	32.93149475 N	104.09522042 W	2711.99@	89.88	0.96
9422.00	87.82	88.65	7031.75	31.00	2742.95	6.16 N	2742.95 E	32.93149629 N	104.09511949 W	2742.95@	89.87	2.50
9453.00	88.49	88.87	7032.75	31.00	2773.93	6.83 N	2773.92 E	32.93149794 N	104.09501853 W	2773.93@	89.86	2.28
9484.00	88.77	89.20	7033.49	31.00	2804.91	7.35 N	2804.91 E	32.93149918 N	104.09491753 W	2804.92@	89.85	1.40
9516.00	88.99	89.38	7034.12	32.00	2836.90	7.75 N	2836.90 E	32.93150007 N	104.09481326 W	2836.91@	89.84	0.89
9547.00	89.22	90.16	7034.60	31.00	2867.90	7.87 N	2867.90 E	32.93150022 N	104.09471224 W	2867.91@	89.84	2.62
9578.00	89.33	89.96	7034.99	31.00	2898.90	7.84 N	2898.89 E	32.93149994 N	104.09461122 W	2898.91@	89.85	0.74
9609.00	89.16	90.27	7035.40	31.00	2929.89	7.78 N	2929.89 E	32.93149957 N	104.09451019 W	2929.90@	89.85	1.14
9640.00	88.99	90.17	7035.90	31.00	2960.89	7.66 N	2960.89 E	32.93149905 N	104.09440917 W	2960.90@	89.85	0.64
9671.00	88.66	90.22	7036.54	31.00	2991.88	7.56 N	2991.88 E	32.93149857 N	104.09430816 W	2991.89@	89.86	1.08
9702.00	88.71	90.47	7037.25	31.00	3022.87	7.37 N	3022.87 E	32.93149786 N	104.09420715 W	3022.88@	89.86	0.82
9733.00	89.33	90.91	7037.78	31.00	3053.87	7.00 N	3053.87 E	32.93149664 N	104.09410614 W	3053.87@	89.87	2.45
9765.00	89.44	91.25	7038.12	32.00	3085.86	6.39 N	3085.86 E	32.93149479 N	104.09400187 W	3085.86@	89.88	1.12
9796.00	89.38	91.63	7038.44	31.00	3116.85	5.61 N	3116.85 E	32.93149245 N	104.09390088 W	3116.85@	89.90	1.24
9827.00	89.44	91.77	7038.76	31.00	3147.83	4.69 N	3147.83 E	32.93148973 N	104.09379990 W	3147.83@	89.91	0.49
9858.00	89.27	92.16	7039.11	31.00	3178.81	3.63 N	3178.81 E	32.93148661 N	104.09369894 W	3178.81@	89.93	1.37
9889.00	88.94	92.17	7039.59	31.00	3209.79	2.46 N	3209.78 E	32.93148320 N	104.09359800 W	3209.79@	89.96	1.07
9920.00	88.49	91.95	7040.29	31.00	3240.76	1.35 N	3240.76 E	32.93147995 N	104.09349706 W	3240.76@	89.98	1.62
9951.00	88.49	91.82	7041.11	31.00	3271.73	0.33 N	3271.73 E	32.93147695 N	104.09339612 W	3271.73@	89.99	0.42
9983.00	88.27	92.34	7042.01	32.00	3303.69	0.83 S	3303.70 E	32.93147356 N	104.09329195 W	3303.70@	90.01	1.76
10014.00	88.88	91.70	7042.78	31.00	3334.66	1.93 S	3334.67 E	32.93147C36 N	104.09319102 W	3334.67@	90.03	2.85

PathFinder Energy Services, Inc.

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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)
10045.00	90.45	90.76	7042.96	31.00	3365.66	2.59 S	3365.66 E	32.93146834 N	104.09309001 W	3365.66@	90.04	5.90
10076.00	91.57	90.41	7042.42	31.00	3396.65	2.91 S	3396.65 E	32.93146728 N	104.09298900 W	3396.65@	90.05	3.78
10107.00	91.68	90.81	7041.54	31.00	3427.63	3.24 S	3427.64 E	32.93146617 N	104.09288802 W	3427.64@	90.05	1.34
10138.00	91.51	90.86	7040.68	31.00	3458.62	3.69 S	3458.62 E	32.93146474 N	104.09278704 W	3458.62@	90.06	0.57
10169.00	91.29	91.14	7039.92	31.00	3489.61	4.23 S	3489.61 E	32.93146306 N	104.09268605 W	3489.61@	90.07	1.15
10200.00	90.84	91.15	7039.34	31.00	3520.59	4.85 S	3520.59 E	32.93146116 N	104.09258506 W	3520.60@	90.08	1.45
10232.00	90.62	91.27	7038.93	32.00	3552.58	5.53 S	3552.59 E	32.93145910 N	104.09248080 W	3552.59@	90.09	0.78
10263.00	90.22	91.30	7038.71	31.00	3583.57	6.22 S	3583.58 E	32.93145700 N	104.09237980 W	3583.58@	90.10	1.29
10294.00	90.00	91.59	7038.65	31.00	3614.56	7.00 S	3614.57 E	32.93145465 N	104.09227880 W	3614.57@	90.11	1.17
10325.00	89.78	91.54	7038.71	31.00	3645.55	7.85 S	3645.56 E	32.93145213 N	104.09217781 W	3645.56@	90.12	0.73
10356.00	89.78	91.14	7038.83	31.00	3676.54	8.57 S	3676.55 E	32.93144994 N	104.09207681 W	3676.56@	90.13	1.29
10387.00	89.72	91.24	7038.96	31.00	3707.54	9.22 S	3707.54 E	32.93144798 N	104.09197580 W	3707.55@	90.14	0.38
10418.00	89.50	91.56	7039.17	31.00	3738.53	9.98 S	3738.53 E	32.93144570 N	104.09187480 W	3738.54@	90.15	1.25
10450.00	89.27	91.57	7039.52	32.00	3770.51	10.85 S	3770.51 E	32.93144310 N	104.09177056 W	3770.53@	90.16	0.72
10481.00	89.05	91.61	7039.97	31.00	3801.50	11.71 S	3801.50 E	32.93144054 N	104.09166958 W	3801.52@	90.18	0.72
10512.00	88.94	91.46	7040.51	31.00	3832.48	12.54 S	3832.48 E	32.93143806 N	104.09156860 W	3832.50@	90.19	0.60
10543.00	88.66	91.48	7041.16	31.00	3863.46	13.34 S	3863.47 E	32.93143568 N	104.09146763 W	3863.49@	90.20	0.91
10574.00	88.32	91.66	7041.98	31.00	3894.44	14.18 S	3894.44 E	32.93143315 N	104.09136667 W	3894.47@	90.21	1.24
10605.00	88.77	91.57	7042.77	31.00	3925.42	15.06 S	3925.42 E	32.93143056 N	104.09126571 W	3925.45@	90.22	1.48
10636.00	88.77	91.55	7043.43	31.00	3956.40	15.90 S	3956.40 E	32.93142804 N	104.09116475 W	3956.44@	90.23	0.06
10667.00	88.77	91.67	7044.10	31.00	3987.38	16.77 S	3987.38 E	32.93142545 N	104.09106378 W	3987.42@	90.24	0.39
10699.00	88.55	91.94	7044.85	32.00	4019.35	17.78 S	4019.36 E	32.93142248 N	104.09095958 W	4019.40@	90.25	1.09
10730.00	88.32	91.91	7045.69	31.00	4050.32	18.82 S	4050.33 E	32.93141942 N	104.09085864 W	4050.37@	90.27	0.75
10761.00	88.94	91.50	7046.43	31.00	4081.30	19.74 S	4081.31 E	32.93141669 N	104.09075769 W	4081.36@	90.28	2.40
10792.00	89.27	91.21	7046.92	31.00	4112.29	20.48 S	4112.30 E	32.93141448 N	104.09065670 W	4112.35@	90.29	1.42
10823.00	89.16	91.32	7047.34	31.00	4143.28	21.16 S	4143.28 E	32.93141241 N	104.09055570 W	4143.34@	90.29	0.50
10854.00	88.99	91.12	7047.84	31.00	4174.27	21.82 S	4174.27 E	32.93141040 N	104.09045471 W	4174.33@	90.30	0.85

PathFinder Energy Services, Inc.

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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)
10885.00	88.94	91.26	7048.40	31.00	4205.25	22.46 S	4205.26 E	32.93140843 N	104.09035372 W	4205.32@	90.31	0.48
10916.00	88.77	91.33	7049.02	31.00	4236.24	23.16 S	4236.25 E	32.93140631 N	104.09025273 W	4236.31@	90.31	0.59
10947.00	88.60	91.63	7049.73	31.00	4267.22	23.96 S	4267.23 E	32.93140391 N	104.09015176 W	4267.30@	90.32	1.11
10979.00	88.66	91.41	7050.50	32.00	4299.20	24.81 S	4299.21 E	32.93140138 N	104.09004754 W	4299.28@	90.33	0.71
11010.00	88.43	91.79	7051.29	31.00	4330.18	25.68 S	4330.19 E	32.93139880 N	104.08994659 W	4330.26@	90.34	1.43
11041.00	88.77	91.69	7052.04	31.00	4361.15	26.62 S	4361.16 E	32.93139602 N	104.08984563 W	4361.24@	90.35	1.14
11072.00	88.77	91.29	7052.71	31.00	4392.14	27.43 S	4392.15 E	32.93139361 N	104.08974466 W	4392.23@	90.36	1.29
11103.00	88.82	90.86	7053.36	31.00	4423.12	28.01 S	4423.13 E	32.93139181 N	104.08964367 W	4423.22@	90.36	1.40
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 11163' MD.												
11163.00	88.82	90.86	7054.60	60.00	4483.10	28.91 S	4483.11 E	32.93138895 N	104.08944819 W	4483.21@	90.37	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.