

PATHFINDER

30-015-37329

DIRECTIONAL SURVEY REPORT

DEVON ENERGY
MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM

PREPARED BY: MARK TRAHAN

SMITH

PATHFINDER

July 30, 2010

DEVON ENERGY
Mr. Jeff Kelley
20 N. Broadway
Oklahoma City, OK 73102-8260

RE: DEVON ENERGY
MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM
RIG: MCVAY #8
API NO.: 30-015-37329
PES FILE NO.: 601001974-GC-WT

Dear Mr. Kelley:

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
- 2 - Directional Survey Report Copies

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,



Mark Trahan
M/LWD Service Coordinator
PathFinder Energy Services

MT:ll

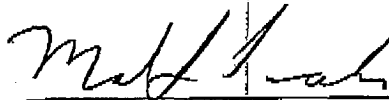
SMITH

PATHFINDERDIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JOHN OVERTON
B) BILLY RICHARD
3. POSITION OF SAID PERSON(S): (A-B) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 06/27/10 TO 07/13/10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM
RIG: MCVAY #8
API NO.: 30-015-37329
9. SURVEY CERTIFIED FROM: 5,800 TO 11,180 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4,863.65 FEET ON A BEARING OF 90.71 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A MEASURED DEPTH OF 11,180 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



MARK TRAHAN
M/LWD SERVICE COORDINATOR

SMITH

PathFinder Energy Services, Inc.

BHL Report

Page 01/01

Tie-in Date: 06/27/2010

Date Completed: 07/13/2010

DEVON ENERGY
 MARK TWAIN 5 FED COM #4H
 EDDY COUNTY, NM
 Rig: MCVAY #8
 PathFinder Office Supervisor: MARK TRAHAN
 PathFinder Field Engineers: JOHN OVERTON
 BILLY RICHARD

Survey Horiz. Reference: WELLHEAD
 Ref Coordinates: LAT: 32.52.10.6527 N LON: 104.12.23.7372 W
 GRID Reference: NAD83 new mexico east Transverse Mercator
 Ref GRID Coord: X: 580249.9690 Y: 680126.7850
 North Aligned To: GRID NORTH
 Total Magnetic Correction: 7.97° EAST TO GRID
 Vertical Section Plane: 90.82
 Survey Vert. Reference: 15.00' Kelly Bushing To Ground
 Altitude: 3613.00' Ground To MSL

Measured Depth	11180.00	(feet)
Inclination	91.10	(deg)
Azimuth	87.25	(deg)
True Vertical Depth	6570.17	(feet)
Vertical Section	4863.64	(feet)
Survey X cord	585113.24	(feet)
Survey Y cord	680066.26	(feet)
Survey Lat	32.86944234 N	(deg)
Survey Lon	104.19075408 W	(deg)
Rectangular Corr. N/S	60.53 S	(feet)
Rectangular Corr. E/W	4863.27 E	(feet)
Closure Distance	4863.65	(feet)
Direction of Closure	90.71	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Page 01/09
Tie-in Date: 06/27/2010
Date Completed: 07/13/2010

DEVON ENERGY

MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM

Rig: MCVAY #8

PathFinder Office Supervisor: MARK TRAHAN
PathFinder Field Engineers: JOHN OVERTON
BILLY RICHARD

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.52106527 N LON: 104.12237372 W
GRID Reference: NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 580249.9690 Y: 680126.7850
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.97° EAST TO GRID
Vertical Section Plane: 90.82
Survey Vert. Reference: 15.00' Kelly Bushing To Ground
Altitude: 3613.00' Ground To MSL

Survey Calculations by RX5 V6.03A using Minimum Curvature

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)	DLS (deg/100ft)
0.00	0.00	0.00	-0.00	0.00	0.03	0.05 N 0.03 E	32.86962588 N	104.20659356 W	0.05@ 33.23	0.00
THE FOLLOWING ARE SCIENTIFIC DRILLING GYRO SURVEYS.										
100.00	0.19	138.17	100.00	100.00	0.14	0.08 S 0.14 E	32.86962554 N	104.20659321 W	0.16@ 118.95	0.19
200.00	0.62	181.74	199.99	100.00	0.25	0.74 S 0.23 E	32.86962372 N	104.20659290 W	0.78@ 162.45	0.50
300.00	0.61	183.28	299.99	100.00	0.21	1.81 S 0.19 E	32.86962077 N	104.20659306 W	1.82@ 174.09	0.02
400.00	0.31	189.04	399.99	100.00	0.15	2.61 S 0.11 E	32.86961857 N	104.20659330 W	2.62@ 177.48	0.30
500.00	0.16	185.86	499.98	100.00	0.10	3.02 S 0.06 E	32.86961746 N	104.20659349 W	3.02@ 178.90	0.15
600.00	0.26	200.73	599.98	100.00	0.01	3.37 S 0.04 W	32.86961649 N	104.20659379 W	3.37@ 180.62	0.11
700.00	0.32	193.94	699.98	100.00	-0.13	3.85 S 0.18 W	32.86961516 N	104.20659428 W	3.86@ 182.73	0.07
800.00	0.36	192.88	799.98	100.00	-0.26	4.43 S 0.32 W	32.86961358 N	104.20659473 W	4.44@ 184.15	0.04
900.00	0.32	194.67	899.98	100.00	-0.39	5.01 S 0.46 W	32.86961199 N	104.20659519 W	5.03@ 185.27	0.04
1000.00	0.43	195.33	999.98	100.00	-0.55	5.64 S 0.63 W	32.86961026 N	104.20659574 W	5.67@ 186.39	0.11
1100.00	0.33	203.92	1099.97	100.00	-0.76	6.26 S 0.85 W	32.86960854 N	104.20659645 W	6.32@ 187.71	0.12
1200.00	0.38	209.76	1199.97	100.00	-1.03	6.82 S 1.13 W	32.86960703 N	104.20659737 W	6.91@ 189.41	0.06
1300.00	0.34	208.56	1299.97	100.00	-1.33	7.36 S 1.44 W	32.86960552 N	104.20659837 W	7.50@ 191.03	0.04
1400.00	0.40	204.57	1399.97	100.00	-1.61	7.94 S 1.72 W	32.86960393 N	104.20659930 W	8.13@ 192.24	0.06
1500.00	0.43	205.66	1499.97	100.00	-1.91	8.60 S 2.03 W	32.86960213 N	104.20660031 W	8.83@ 193.29	0.03
1600.00	0.31	200.03	1599.96	100.00	-2.15	9.19 S 2.29 W	32.86960050 N	104.20660114 W	9.47@ 193.97	0.13
1700.00	0.20	187.74	1699.96	100.00	-2.26	9.62 S 2.40 W	32.86959933 N	104.20660152 W	9.91@ 194.02	0.12
1800.00	0.24	191.52	1799.96	100.00	-2.32	10.00 S 2.47 W	32.86959829 N	104.20660174 W	10.30@ 193.86	0.04
1900.00	0.23	186.02	1899.96	100.00	-2.38	10.40 S 2.53 W	32.86959718 N	104.20660194 W	10.70@ 193.67	0.02
2000.00	0.26	174.14	1999.96	100.00	-2.37	10.83 S 2.53 W	32.86959601 N	104.20660194 W	11.12@ 193.14	0.06
2100.00	0.21	174.57	2099.96	100.00	-2.33	11.23 S 2.49 W	32.86959489 N	104.20660181 W	11.51@ 192.48	0.05
2200.00	0.21	162.61	2199.96	100.00	-2.25	11.59 S 2.42 W	32.86959390 N	104.20660157 W	11.84@ 191.77	0.04
2300.00	0.23	175.20	2299.96	100.00	-2.17	11.97 S 2.34 W	32.86959287 N	104.20660134 W	12.19@ 191.08	0.05
2400.00	0.26	195.95	2399.96	100.00	-2.21	12.38 S 2.39 W	32.86959172 N	104.20660149 W	12.51@ 190.92	0.09

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM
RIG:MCVAY #8

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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)	DLS (deg/100ft)
2500.00	0.24	189.47	2499.96	100.00	-2.30	12.81 S 2.49 W	32.86959056 N	104.20660181 W	13.05@ 190.98	0.03
2600.00	0.22	186.86	2599.96	100.00	-2.35	13.21 S 2.54 W	32.86958947 N	104.20660200 W	13.45@ 190.90	0.02
2700.00	0.21	171.83	2699.95	100.00	-2.35	13.58 S 2.54 W	32.86958844 N	104.20660199 W	13.81@ 190.60	0.06
2800.00	0.28	141.13	2799.95	100.00	-2.16	13.95 S 2.36 W	32.86958742 N	104.20660141 W	14.15@ 189.61	0.15
2900.00	0.25	161.30	2899.95	100.00	-1.93	14.35 S 2.14 W	32.86958633 N	104.20660058 W	14.50@ 188.47	0.10
3000.00	0.28	166.38	2999.95	100.00	-1.80	14.79 S 2.01 W	32.86958511 N	104.20660027 W	14.93@ 187.74	0.04
3100.00	0.32	152.37	3099.95	100.00	-1.60	15.26 S 1.82 W	32.86958378 N	104.20659956 W	15.38@ 186.81	0.08
3200.00	0.29	146.29	3199.95	100.00	-1.33	15.73 S 1.55 W	32.86958252 N	104.20659878 W	15.81@ 185.64	0.04
3300.00	0.56	161.79	3299.95	100.00	-1.03	16.41 S 1.26 W	32.86958066 N	104.20659783 W	16.46@ 184.39	0.29
3400.00	0.51	164.78	3399.94	100.00	-0.74	17.30 S 0.99 W	32.86957820 N	104.20659698 W	17.33@ 183.28	0.06
3500.00	0.58	171.06	3499.94	100.00	-0.53	18.23 S 0.80 W	32.86957565 N	104.20659632 W	18.25@ 182.50	0.09
3600.00	0.62	176.93	3599.93	100.00	-0.40	19.27 S 0.68 W	32.86957279 N	104.20659595 W	19.28@ 182.02	0.06
3700.00	0.63	187.51	3699.93	100.00	-0.42	20.36 S 0.71 W	32.86956981 N	104.20659606 W	20.37@ 182.00	0.13
3800.00	0.55	192.36	3799.92	100.00	-0.58	21.37 S 0.89 W	32.86956702 N	104.20659663 W	21.39@ 182.37	0.09
3900.00	0.52	204.22	3899.92	100.00	-0.86	22.25 S 1.17 W	32.86956450 N	104.20659758 W	22.28@ 183.02	0.12
4000.00	0.59	199.72	3999.91	100.00	-1.20	23.15 S 1.53 W	32.86956213 N	104.20659875 W	23.20@ 183.79	0.08
4100.00	0.61	190.63	4099.91	100.00	-1.46	24.16 S 1.81 W	32.86955936 N	104.20659954 W	24.23@ 184.28	0.10
4200.00	0.54	185.69	4199.90	100.00	-1.59	25.15 S 1.95 W	32.86955663 N	104.20660012 W	25.23@ 184.44	0.09
4300.00	0.48	171.39	4299.90	100.00	-1.56	26.03 S 1.94 W	32.86955421 N	104.20660007 W	26.11@ 184.25	0.14
4400.00	0.57	177.97	4399.89	100.00	-1.47	26.96 S 1.86 W	32.86955170 N	104.20659981 W	27.01@ 183.94	0.11
4500.00	0.52	166.27	4499.89	100.00	-1.33	27.88 S 1.73 W	32.86954912 N	104.20659941 W	27.94@ 183.55	0.12
4600.00	0.59	163.40	4599.88	100.00	-1.06	28.82 S 1.48 W	32.86954655 N	104.20659858 W	28.86@ 182.93	0.06
4700.00	0.37	180.20	4699.88	100.00	-0.91	29.63 S 1.33 W	32.86954431 N	104.20659811 W	29.66@ 182.57	0.26
4800.00	0.29	178.81	4799.88	100.00	-0.89	30.21 S 1.33 W	32.86954273 N	104.20659810 W	30.24@ 182.51	0.08
4900.00	0.35	185.43	4899.88	100.00	-0.91	30.77 S 1.35 W	32.86954120 N	104.20659818 W	30.80@ 182.51	0.07
5000.00	0.32	193.16	4999.88	100.00	-0.99	31.34 S 1.44 W	32.86953961 N	104.20659848 W	31.38@ 182.63	0.05

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM
RIG-MCVAY #8

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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)
5100.00	0.22	164.01	5099.87	100.00	-1.00	31.80 S	32.86953836 N	104.20659852 W	31.83@ 182.61	0.17
5200.00	0.31	152.19	5199.87	100.00	-0.81	32.22 S	32.86953719 N	104.20659793 W	32.25@ 182.26	0.10
5300.00	0.39	144.92	5299.87	100.00	-0.48	32.74 S	32.86953577 N	104.20659689 W	32.75@ 181.56	0.09
5400.00	0.50	132.63	5399.87	100.00	0.04	33.31 S	32.86953419 N	104.20659521 W	33.32@ 180.75	0.14
5500.00	0.88	127.04	5499.86	100.00	0.85	33.97 S	32.86953239 N	104.20659262 W	33.97@ 179.39	0.19
5600.00	0.65	129.53	5599.86	100.00	1.77	34.69 S	32.86953041 N	104.20658966 W	34.71@ 177.90	0.04
5700.00	0.69	125.86	5699.85	100.00	2.70	35.40 S	32.86952845 N	104.20658665 W	35.47@ 176.45	0.06
5800.00	0.90	103.06	5799.84	100.00	3.96	35.93 S	32.86952699 N	104.20658257 W	35.10@ 174.52	0.38
TIED INTO SCIENTIFIC DRILLING GYRO SURVEY AT 5800' MD.										
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
5822.00	0.88	105.33	5821.84	22.00	4.30	36.01 S	32.86952676 N	104.20658149 W	36.21@ 174.01	0.19
5868.00	1.06	92.30	5867.83	46.00	5.06	36.12 S	32.86952645 N	104.20657899 W	36.41@ 172.83	0.62
5899.00	1.32	99.18	5898.82	31.00	5.70	36.19 S	32.86952626 N	104.20657691 W	36.56@ 171.85	0.96
5931.00	1.58	92.96	5930.81	32.00	6.51	36.27 S	32.86952603 N	104.20657429 W	36.77@ 170.62	0.95
5963.00	2.37	91.29	5962.79	32.00	7.61	36.31 S	32.86952592 N	104.20657070 W	37.00@ 168.95	2.47
5995.00	4.40	90.42	5994.74	32.00	9.50	36.34 S	32.86952585 N	104.20656455 W	37.43@ 166.12	6.35
6027.00	7.03	93.95	6026.58	32.00	12.68	36.48 S	32.86952545 N	104.20655419 W	38.45@ 161.56	8.29
6060.00	10.20	97.27	6059.20	33.00	17.61	36.99 S	32.86952403 N	104.20653818 W	40.74@ 155.22	9.72
6092.00	13.54	99.01	6090.51	32.00	24.13	37.93 S	32.86952141 N	104.20651698 W	44.67@ 148.12	10.50
6124.00	16.88	98.18	6121.39	32.00	32.45	39.18 S	32.86951795 N	104.20648995 W	50.52@ 140.86	10.46
6156.00	20.31	96.85	6151.71	32.00	42.58	40.51 S	32.86951428 N	104.20645701 W	58.36@ 133.96	10.80
6188.00	23.39	95.92	6181.41	32.00	54.43	41.82 S	32.86951062 N	104.20641846 W	68.18@ 127.84	9.69
6220.00	26.03	95.45	6210.48	32.00	67.76	43.15 S	32.86950694 N	104.20637512 W	79.82@ 122.72	8.27
6252.00	28.49	95.02	6238.92	32.00	82.37	44.48 S	32.86950322 N	104.20632759 W	93.06@ 118.55	7.71
6284.00	30.78	94.61	6266.73	32.00	98.16	45.81 S	32.86949963 N	104.20627624 W	107.74@ 115.16	7.18
6316.00	32.80	94.77	6293.93	32.00	114.98	47.19 S	32.86949568 N	104.20622153 W	123.67@ 112.43	6.32
6348.00	34.73	94.71	6320.53	32.00	132.72	48.66 S	32.86949158 N	104.20616381 W	140.72@ 110.23	6.03

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
MARK TWAIN 5 FED COM #4H
EDDY COUNTY, NM
RIG:MCVAY #8

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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)
6379.00	36.40	94.65	6345.75	31.00	150.71	50.13 S 150.01 E	32.86948748 N	104.20610528 W	158.16@ 108.48	5.39
6411.00	38.16	94.97	6371.21	32.00	170.04	51.75 S 169.32 E	32.86948295 N	104.20604239 W	177.05@ 107.00	5.53
6443.00	40.63	95.68	6395.94	32.00	190.29	53.64 S 189.54 E	32.86947769 N	104.20597654 W	196.98@ 105.80	7.85
6473.00	43.62	95.64	6418.18	30.00	210.34	55.63 S 209.56 E	32.86947217 N	104.20591133 W	216.82@ 104.87	9.97
6505.00	46.52	95.68	6440.78	32.00	232.91	57.86 S 232.10 E	32.86946595 N	104.20583792 W	239.21@ 104.00	9.06
6538.00	49.95	95.76	6462.76	33.00	257.43	60.31 S 256.59 E	32.86945913 N	104.20575817 W	263.58@ 103.23	10.40
6570.00	53.11	94.92	6482.66	32.00	282.40	62.64 S 281.53 E	32.86945265 N	104.20567695 W	288.42@ 102.54	10.09
6601.00	56.45	94.09	6500.54	31.00	307.67	64.63 S 306.78 E	32.86944711 N	104.20559474 W	313.51@ 101.90	10.99
6632.00	59.44	93.19	6516.99	31.00	333.91	66.29 S 332.99 E	32.86944245 N	104.20550935 W	339.53@ 101.26	9.95
6664.00	62.87	91.73	6532.43	32.00	361.92	67.49 S 360.99 E	32.86943906 N	104.20541816 W	367.25@ 100.59	11.44
6696.00	66.74	90.44	6546.05	32.00	390.87	68.03 S 389.94 E	32.86943747 N	104.20532389 W	395.83@ 99.90	12.63
6728.00	69.38	89.66	6558.00	32.00	420.55	68.05 S 419.62 E	32.86943731 N	104.20522723 W	425.10@ 99.21	8.55
6760.00	72.02	89.22	6568.58	32.00	450.74	67.76 S 449.81 E	32.86943802 N	104.20512887 W	454.89@ 98.57	8.35
6792.00	74.92	88.76	6577.68	32.00	481.40	67.22 S 480.48 E	32.86943941 N	104.20502898 W	485.16@ 97.96	9.17
6824.00	77.38	88.63	6585.34	32.00	512.44	66.51 S 511.54 E	32.86944125 N	104.20492781 W	515.85@ 97.41	7.70
6856.00	80.20	88.81	6591.56	32.00	543.81	65.81 S 542.92 E	32.86944307 N	104.20482561 W	546.89@ 96.91	8.83
6888.00	82.57	89.48	6596.35	32.00	575.43	65.34 S 574.55 E	32.86944426 N	104.20472258 W	578.26@ 96.48	7.69
6920.00	84.68	89.71	6599.91	32.00	607.22	65.11 S 606.35 E	32.86944477 N	104.20461900 W	609.84@ 96.13	6.63
6952.00	87.76	89.68	6602.02	32.00	639.14	64.94 S 638.28 E	32.86944513 N	104.20451502 W	641.57@ 95.81	9.63
6983.00	90.04	90.06	6602.61	31.00	670.13	64.87 S 669.27 E	32.86944522 N	104.20441408 W	672.41@ 95.54	7.46
7008.00	90.56	88.60	6602.48	25.00	695.12	64.56 S 694.27 E	32.86944600 N	104.20433256 W	697.26@ 95.31	6.58
7041.00	90.84	89.10	6602.08	33.00	728.10	63.87 S 727.26 E	32.86944779 N	104.20422521 W	730.06@ 95.02	2.01
7073.00	91.01	89.24	6601.56	32.00	760.08	63.40 S 759.25 E	32.86944896 N	104.20412101 W	761.89@ 94.77	0.69
7105.00	90.95	89.25	6601.01	32.00	792.06	62.98 S 791.24 E	32.86945001 N	104.20401680 W	793.75@ 94.55	0.19
7137.00	90.73	89.01	6600.54	32.00	824.05	62.50 S 823.24 E	32.86945124 N	104.20391280 W	825.61@ 94.34	1.02
7169.00	90.84	89.53	6600.11	32.00	856.03	62.09 S 855.23 E	32.86945225 N	104.20380839 W	857.48@ 94.15	1.66

PathFinder Energy Services, Inc.

Survey Report

DEVON ENERGY
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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)
7201.00	91.01	89.61	6598.59	32.00	888.02	61.85 S	32.86945280 N	104.20370418 W	889.38@	0.59
7233.00	91.17	89.66	6598.98	32.00	920.01	61.64 S	32.86945325 N	104.20358998 W	921.28@	0.52
7265.00	91.12	89.88	6598.34	32.00	952.00	61.52 S	32.86945360 N	104.20349577 W	953.20@	0.71
7297.00	91.51	89.83	6597.61	32.00	983.98	61.38 S	32.86945376 N	104.20339158 W	985.12@	1.45
7329.00	91.90	89.88	6596.66	32.00	1015.96	61.24 S	32.86945403 N	104.20328740 W	1017.03@	1.45
7361.00	91.68	90.51	6595.66	32.00	1047.94	61.35 S	32.86945363 N	104.20318323 W	1048.97@	2.09
7394.00	91.57	90.13	6594.72	33.00	1080.93	61.53 S	32.86945301 N	104.20307579 W	1081.91@	1.20
7426.00	91.45	89.49	6593.88	32.00	1112.91	61.43 S	32.86945319 N	104.20297160 W	1113.84@	2.03
7458.00	91.40	89.14	6593.08	32.00	1144.89	61.05 S	32.86945413 N	104.20286741 W	1145.76@	1.10
7488.00	91.23	88.84	6592.39	30.00	1174.87	60.52 S	32.86945548 N	104.20276974 W	1175.68@	1.15
7520.00	91.06	89.00	6591.75	32.00	1206.84	59.91 S	32.86945703 N	104.20266556 W	1207.60@	0.73
7552.00	90.90	89.34	6591.21	32.00	1238.83	59.45 S	32.86945820 N	104.20256136 W	1239.53@	1.17
7583.00	90.84	89.68	6590.73	31.00	1269.81	59.19 S	32.86945882 N	104.20246040 W	1270.48@	1.11
7615.00	90.62	89.38	6590.33	32.00	1301.80	58.92 S	32.86945943 N	104.20236619 W	1302.43@	1.16
7647.00	90.62	89.60	6589.98	32.00	1333.79	58.64 S	32.86946011 N	104.20225197 W	1334.38@	0.69
7680.00	90.50	89.56	6589.68	33.00	1366.78	58.40 S	32.86946066 N	104.20214450 W	1367.34@	0.38
7712.00	90.78	90.01	6589.30	32.00	1398.78	58.28 S	32.86946088 N	104.20204028 W	1399.30@	1.66
7744.00	91.34	90.15	6588.71	32.00	1430.77	58.32 S	32.86946065 N	104.20193607 W	1431.27@	1.80
7776.00	91.90	90.70	6587.80	32.00	1462.75	58.56 S	32.86945989 N	104.20183189 W	1463.24@	2.45
7808.00	92.01	91.10	6586.71	32.00	1494.74	59.06 S	32.86945840 N	104.20172774 W	1495.21@	1.30
7839.00	91.96	91.29	6585.64	31.00	1525.72	59.71 S	32.86945651 N	104.20162686 W	1526.19@	0.63
7871.00	91.45	91.51	6584.68	32.00	1557.70	60.52 S	32.86945418 N	104.20152272 W	1558.17@	1.88
7903.00	91.12	91.52	6583.97	32.00	1589.69	61.39 S	32.86945167 N	104.20141856 W	1590.16@	1.07
7935.00	91.34	91.46	6583.28	32.00	1621.68	62.22 S	32.86944927 N	104.20131440 W	1622.15@	0.71
7967.00	91.85	91.73	6582.39	32.00	1653.66	63.11 S	32.86944671 N	104.20121026 W	1654.14@	1.80
7999.00	92.18	91.60	6581.27	32.00	1685.64	64.04 S	32.86944405 N	104.20110615 W	1686.11@	1.11

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)	Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)
8031.00	92.24	91.73	8580.03	32.00	1717.61	64.97 S 1716.86 E	32.86944139 N	104.20100205 W	1718.09@ 92.17	0.45
8053.00	92.01	91.80	8578.85	32.00	1749.59	65.96 S 1748.82 E	32.86943857 N	104.20089795 W	1750.07@ 92.16	0.75
8095.00	92.01	91.78	8577.72	32.00	1781.56	66.95 S 1780.79 E	32.86943571 N	104.20079384 W	1782.05@ 92.15	0.06
8127.00	91.96	91.42	8576.61	32.00	1813.54	67.85 S 1812.76 E	32.86943315 N	104.20068972 W	1814.03@ 92.14	1.14
8159.00	91.79	91.61	8575.57	32.00	1845.52	68.69 S 1844.73 E	32.86943071 N	104.20058560 W	1846.01@ 92.13	0.80
8192.00	92.02	92.24	8574.47	33.00	1878.50	69.80 S 1877.69 E	32.86942755 N	104.20047824 W	1878.99@ 92.13	2.03
8224.00	92.18	92.79	8573.30	32.00	1910.46	71.20 S 1909.64 E	32.86942359 N	104.20037419 W	1910.97@ 92.14	1.79
8256.00	92.41	92.95	8572.02	32.00	1942.42	72.80 S 1941.67 E	32.86941908 N	104.20027019 W	1942.94@ 92.15	0.87
8288.00	92.41	93.20	8570.67	32.00	1974.36	74.52 S 1973.50 E	32.86941425 N	104.20016521 W	1974.90@ 92.16	0.78
8320.00	92.80	92.95	8569.22	32.00	2006.30	76.23 S 2005.42 E	32.86940943 N	104.20006225 W	2006.87@ 92.18	1.45
8352.00	92.86	92.42	8567.64	32.00	2038.25	77.73 S 2037.34 E	32.86940520 N	104.19995827 W	2038.83@ 92.18	1.66
8384.00	93.14	91.78	8565.96	32.00	2070.20	78.90 S 2069.28 E	32.86940187 N	104.19985427 W	2070.78@ 92.18	2.18
8416.00	92.13	91.44	8564.49	32.00	2102.16	79.80 S 2101.23 E	32.86939929 N	104.19975020 W	2102.75@ 92.17	3.33
8448.00	91.23	90.85	8563.55	32.00	2134.14	80.44 S 2133.21 E	32.86939742 N	104.19964604 W	2134.73@ 92.16	3.36
8481.00	91.23	90.66	8562.84	33.00	2167.14	80.88 S 2166.20 E	32.86939511 N	104.19953860 W	2167.71@ 92.14	0.59
8513.00	91.90	90.60	8561.97	32.00	2199.12	81.23 S 2198.19 E	32.86939504 N	104.19943442 W	2199.69@ 92.12	2.10
8550.00	90.92	92.38	8561.06	37.00	2236.11	82.19 S 2235.16 E	32.86939226 N	104.19931409 W	2236.67@ 92.11	5.49
8582.00	89.52	92.40	8560.94	32.00	2268.10	83.52 S 2267.13 E	32.86938848 N	104.19920987 W	2268.67@ 92.11	4.37
8614.00	87.32	92.52	8561.82	32.00	2300.07	84.90 S 2289.09 E	32.86938460 N	104.19910580 W	2300.66@ 92.11	6.89
8646.00	87.14	92.36	8563.37	32.00	2332.02	86.26 S 2331.02 E	32.86938075 N	104.19900179 W	2332.62@ 92.12	0.75
8678.00	87.76	92.30	8564.79	32.00	2363.98	87.56 S 2362.96 E	32.86937706 N	104.19889776 W	2364.59@ 92.12	1.95
8710.00	88.11	92.32	8565.94	32.00	2395.94	88.85 S 2394.92 E	32.86937341 N	104.19879370 W	2396.56@ 92.12	1.09
8742.00	88.29	92.46	8566.95	32.00	2427.92	90.18 S 2426.87 E	32.86936963 N	104.19868962 W	2428.55@ 92.13	0.71
8774.00	88.37	92.18	8567.88	32.00	2459.89	91.47 S 2458.83 E	32.86936596 N	104.19858553 W	2460.53@ 92.13	0.91
8806.00	88.46	92.31	8568.77	32.00	2491.87	92.73 S 2490.80 E	32.86936240 N	104.19848143 W	2492.52@ 92.13	0.49
8838.00	88.64	92.02	8569.57	32.00	2523.85	93.94 S 2522.76 E	32.86935597 N	104.19837732 W	2524.51@ 92.13	1.07

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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)
8870.00	88.72	91.80	6570.31	32.00	2555.84	95.00 S 2554.74 E	32.86935593 N	104.19827318 W	2556.50@ 92.13	0.73
8902.00	88.90	91.63	6570.98	32.00	2587.83	95.96 S 2586.72 E	32.86935318 N	104.19818903 W	2588.50@ 92.12	0.77
8934.00	89.08	91.75	6571.54	32.00	2619.82	96.90 S 2618.70 E	32.86935048 N	104.19806487 W	2620.49@ 92.12	0.68
8966.00	89.08	91.44	6572.05	32.00	2651.81	97.79 S 2650.88 E	32.86934791 N	104.19796070 W	2652.48@ 92.11	0.97
8998.00	89.08	91.44	6572.57	32.00	2683.80	98.60 S 2682.67 E	32.86934559 N	104.19785653 W	2684.48@ 92.10	0.00
9030.00	89.08	90.97	6573.08	32.00	2715.80	99.27 S 2714.66 E	32.86934363 N	104.19775234 W	2716.47@ 92.09	1.47
9063.00	89.16	91.01	6573.59	33.00	2748.79	99.84 S 2747.65 E	32.86934195 N	104.19764489 W	2749.46@ 92.08	0.27
9095.00	89.34	91.04	6574.01	32.00	2780.79	100.41 S 2779.64 E	32.86934026 N	104.19754069 W	2781.45@ 92.07	0.57
9127.00	89.52	91.13	6574.33	32.00	2812.79	101.02 S 2811.63 E	32.86933848 N	104.19743650 W	2813.45@ 92.06	0.63
9159.00	89.69	91.74	6574.55	32.00	2844.79	101.82 S 2843.62 E	32.86933617 N	104.19733231 W	2845.44@ 92.05	1.98
9191.00	90.04	91.87	6574.62	32.00	2876.78	102.83 S 2875.60 E	32.86933328 N	104.19722814 W	2877.44@ 92.05	1.17
9223.00	90.13	91.89	6574.57	32.00	2908.78	103.88 S 2907.59 E	32.86933028 N	104.19712398 W	2909.44@ 92.05	0.29
9255.00	90.22	91.67	6574.48	32.00	2940.77	104.87 S 2939.57 E	32.86932744 N	104.19701981 W	2941.44@ 92.04	0.74
9286.00	90.31	91.50	6574.33	31.00	2971.77	105.73 S 2970.55 E	32.86932497 N	104.19691888 W	2972.44@ 92.04	0.62
9318.00	90.04	91.73	6574.24	32.00	3003.77	106.63 S 3002.55 E	32.86932238 N	104.19681470 W	3004.44@ 92.03	1.11
9350.00	88.90	91.64	6574.53	32.00	3035.76	107.57 S 3034.53 E	32.86931968 N	104.19671054 W	3036.44@ 92.03	3.57
9382.00	88.46	91.49	6575.27	32.00	3067.75	108.45 S 3066.51 E	32.86931716 N	104.19660638 W	3068.43@ 92.03	1.45
9412.00	88.72	91.58	6576.01	30.00	3097.74	109.25 S 3096.49 E	32.86931485 N	104.19650074 W	3098.42@ 92.02	0.92
9444.00	88.81	91.38	6576.70	32.00	3129.73	110.08 S 3128.47 E	32.86931246 N	104.19640458 W	3130.41@ 92.02	0.68
9477.00	88.90	91.29	6577.36	33.00	3162.72	110.84 S 3161.46 E	32.86931023 N	104.19629715 W	3163.40@ 92.01	0.39
9510.00	88.99	90.93	6577.96	33.00	3195.71	111.48 S 3194.44 E	32.86930836 N	104.19618971 W	3196.39@ 92.00	1.12
9542.00	88.72	90.60	6578.60	32.00	3227.71	111.91 S 3226.44 E	32.86930707 N	104.19608552 W	3228.38@ 91.99	1.33
9572.00	88.37	89.44	6579.37	30.00	3257.69	111.92 S 3256.43 E	32.86930593 N	104.19598784 W	3258.35@ 91.97	4.04
9604.00	88.29	89.65	6580.30	32.00	3289.67	111.67 S 3288.41 E	32.86930752 N	104.19588366 W	3290.31@ 91.94	0.70
9637.00	89.25	89.24	6581.01	33.00	3322.65	111.35 S 3321.40 E	32.86930828 N	104.19577621 W	3323.27@ 91.92	3.16
9667.00	89.78	88.96	6581.26	30.00	3352.64	110.88 S 3351.40 E	32.86930947 N	104.19567851 W	3353.23@ 91.89	2.00

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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)
9698.00	90.04	89.34	6581.31	31.00	3383.63	110.42 S 3382.39 E	32.86931062 N	104.19557755 W	3384.19@ 91.87	1.48
9729.00	90.13	89.13	6581.26	31.00	3414.61	110.00 S 3413.39 E	32.86931164 N	104.19547659 W	3415.16@ 91.85	0.74
9761.00	90.31	88.94	6581.14	32.00	3446.60	108.46 S 3445.39 E	32.86931301 N	104.19537238 W	3447.12@ 91.82	0.82
9793.00	90.40	88.78	6580.94	32.00	3478.58	108.83 S 3477.38 E	32.86931465 N	104.19526817 W	3479.08@ 91.79	0.57
9825.00	90.13	89.37	6580.79	32.00	3510.56	108.31 S 3509.37 E	32.86931595 N	104.19516397 W	3511.04@ 91.77	2.03
9857.00	89.87	89.17	6580.79	32.00	3542.55	107.90 S 3541.37 E	32.86931696 N	104.19505975 W	3543.01@ 91.75	1.03
9889.00	89.96	89.07	6580.84	32.00	3574.54	107.41 S 3573.37 E	32.86931819 N	104.19495553 W	3574.98@ 91.72	0.42
9921.00	90.13	88.90	6580.82	32.00	3606.52	106.84 S 3605.36 E	32.86931953 N	104.19485132 W	3606.95@ 91.70	0.75
9953.00	90.57	88.60	6580.62	32.00	3638.50	106.15 S 3637.35 E	32.86932144 N	104.19474712 W	3638.90@ 91.67	1.66
9984.00	90.84	89.01	6580.24	31.00	3669.48	105.50 S 3668.34 E	32.86932310 N	104.19464618 W	3669.86@ 91.85	1.58
10016.00	91.01	88.83	6579.72	32.00	3701.46	104.90 S 3700.33 E	32.86932464 N	104.19454199 W	3701.82@ 91.62	0.77
10048.00	91.10	88.96	6579.13	32.00	3733.43	104.28 S 3732.32 E	32.86932623 N	104.19443779 W	3733.78@ 91.60	0.49
10080.00	90.66	89.18	6578.64	32.00	3765.41	103.76 S 3764.32 E	32.86932754 N	104.19433359 W	3765.75@ 91.58	1.54
10112.00	90.13	89.03	6578.42	32.00	3797.40	103.26 S 3796.34 E	32.86932879 N	104.19422938 W	3797.71@ 91.56	1.72
10144.00	89.96	88.96	6578.40	32.00	3829.38	102.70 S 3828.30 E	32.86933022 N	104.19412517 W	3828.68@ 91.54	0.57
10176.00	90.04	88.53	6578.40	32.00	3861.36	102.00 S 3860.30 E	32.86933203 N	104.19402097 W	3861.64@ 91.51	1.37
10208.00	90.13	88.33	6578.35	32.00	3893.33	101.12 S 3892.29 E	32.86933433 N	104.19391678 W	3893.60@ 91.49	0.68
10240.00	89.87	88.83	6578.35	32.00	3925.31	100.33 S 3924.28 E	32.86933639 N	104.19381258 W	3925.56@ 91.46	1.76
10272.00	89.43	88.90	6578.54	32.00	3957.29	99.69 S 3956.27 E	32.86933802 N	104.19370838 W	3957.52@ 91.44	1.39
10304.00	89.43	88.45	6578.86	32.00	3989.27	98.95 S 3988.26 E	32.86933993 N	104.19360418 W	3989.49@ 91.42	1.41
10336.00	89.43	88.55	6579.18	32.00	4021.24	98.12 S 4020.25 E	32.86934212 N	104.19349999 W	4021.44@ 91.40	0.31
10368.00	89.52	88.28	6579.47	32.00	4053.21	97.23 S 4052.23 E	32.86934443 N	104.19339581 W	4053.40@ 91.37	0.89
10399.00	89.60	87.92	6579.71	31.00	4084.17	96.20 S 4083.21 E	32.86934715 N	104.19329490 W	4084.35@ 91.35	1.19
10430.00	89.69	87.81	6579.90	31.00	4115.13	95.05 S 4114.19 E	32.86935021 N	104.19319400 W	4115.29@ 91.32	0.46
10462.00	89.78	87.58	6580.05	32.00	4147.08	93.76 S 4146.17 E	32.86935353 N	104.19308985 W	4147.23@ 91.30	0.77
10494.00	89.87	87.27	6580.15	32.00	4179.03	92.32 S 4178.13 E	32.86935746 N	104.19298573 W	4179.15@ 91.27	1.01

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	Rectangular Offsets (ft)	TOTAL (ft)	Survey Latitude (deg)	Survey Longitude (deg)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)
10526.00	89.96	87.18	6580.20	32.00	4210.86	90.78 S	4210.10 E	32.86936161 N	104.19288162 W	4211.07@	0.40
10556.00	89.69	87.53	6580.29	30.00	4240.91	89.39 S	4240.06 E	32.86936530 N	104.19278401 W	4241.01@	1.47
10588.00	89.34	87.25	6580.56	32.00	4272.85	87.93 S	4272.03 E	32.86936919 N	104.19267989 W	4272.93@	1.40
10619.00	89.52	87.64	6580.87	31.00	4303.79	86.55 S	4303.00 E	32.86937287 N	104.19257902 W	4303.87@	1.38
10651.00	89.96	87.17	6581.01	32.00	4335.74	85.10 S	4334.96 E	32.86937674 N	104.19247490 W	4335.80@	2.01
10683.00	90.84	87.36	6580.79	32.00	4367.68	83.58 S	4366.93 E	32.86938082 N	104.19237079 W	4367.73@	2.81
10715.00	91.01	87.53	6580.27	32.00	4399.61	82.15 S	4398.89 E	32.86938462 N	104.19226667 W	4399.68@	0.75
10746.00	91.10	87.50	6579.70	31.00	4430.56	80.81 S	4429.86 E	32.86938820 N	104.19216581 W	4430.59@	0.31
10778.00	91.45	87.03	6578.99	32.00	4462.49	79.28 S	4461.81 E	32.86939228 N	104.19206173 W	4462.51@	1.83
10810.00	91.54	87.42	6578.16	32.00	4494.41	77.73 S	4493.76 E	32.86939642 N	104.19195765 W	4494.43@	1.25
10842.00	91.54	87.53	6577.30	32.00	4526.35	76.32 S	4525.72 E	32.86940017 N	104.19185356 W	4526.36@	0.34
10874.00	91.63	87.23	6576.41	32.00	4558.28	74.86 S	4557.67 E	32.86940408 N	104.19174948 W	4558.29@	0.98
10906.00	91.89	87.30	6575.43	32.00	4590.20	73.33 S	4589.62 E	32.86940815 N	104.19164541 W	4590.21@	0.84
10938.00	91.36	87.61	6574.52	32.00	4622.13	71.91 S	4621.58 E	32.86941194 N	104.19154133 W	4622.14@	1.92
10970.00	90.84	87.54	6573.91	32.00	4654.08	70.56 S	4653.54 E	32.86941554 N	104.19143721 W	4654.08@	1.64
11001.00	90.92	87.22	6573.43	31.00	4685.02	69.14 S	4684.51 E	32.86941932 N	104.19133635 W	4685.02@	1.06
11112.00	91.10	87.25	6571.47	111.00	4795.78	63.79 S	4795.36 E	32.86943363 N	104.19097528 W	4795.78@	0.16
11180.00	91.10	87.25	6570.17	68.00	4863.64	60.53 S	4863.27 E	32.86944234 N	104.19075408 W	4863.65@	0.00

STRAIGHT LINE PROJECTION TO BIT AT 11180' MD.

** 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.