

RECEIVED
AUG 10 2010
NMOCD ARTESIA

30-015-37101

PathFinder Energy Services, Inc.

Page 01/07
Tie-in Date: 01/25/2010
Date Completed: 02/07/2010

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
Rig: JW #2

PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: JEFF HULL PRITHWISH DAS
MIKE ROSTEET
JOHN OVERTON

Survey Report

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.54.50.4684 N LON: 104.9.11.6649 W
Reference: NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 596603.3450 Y: 696301.7570
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.97° EAST TO GRID
Vertical Section Plane: 83.74
Survey Vert. Reference: 18.00' Rotary Table To Ground
Altitude: 3734.00' Ground To MSL

Survey Calculations by RX5 V6.02B using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular (ft)	Offsets (ft)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)
THE FOLLOWING ARE SCIENTIFIC GYRO SURVEYS.									
100.00	0.32	117.10	100.00	0.00	0.24	0.13 S	0.25 E	0.28@ 117.11	0.00
200.00	0.48	116.59	199.99	100.00	0.82	0.44 S	0.87 E	0.98@ 116.88	0.16
300.00	0.60	112.64	299.99	100.00	1.63	0.83 S	1.73 E	1.92@ 115.66	0.13
400.00	0.61	101.58	399.98	100.00	2.60	1.14 S	2.74 E	2.96@ 112.63	0.12
500.00	0.65	104.07	499.98	100.00	3.63	1.39 S	3.81 E	4.05@ 109.99	0.05
600.00	0.78	100.94	599.97	100.00	4.82	1.65 S	5.03 E	5.29@ 108.20	0.14
700.00	0.56	99.19	699.96	100.00	5.94	1.86 S	6.18 E	6.45@ 106.75	0.22
800.00	0.43	100.57	799.96	100.00	6.77	2.01 S	7.03 E	7.31@ 105.93	0.13
900.00	0.44	97.58	899.96	100.00	7.50	2.13 S	7.78 E	8.06@ 105.29	0.02
1000.00	0.38	100.80	999.95	100.00	8.19	2.24 S	8.48 E	8.78@ 104.78	0.06
1100.00	0.20	89.87	1099.95	100.00	8.68	2.30 S	8.98 E	9.27@ 104.36	0.19
1200.00	0.08	119.29	1199.95	100.00	8.91	2.33 S	9.22 E	9.51@ 104.21	0.14
1300.00	0.07	100.14	1299.95	100.00	9.03	2.38 S	9.34 E	9.64@ 104.29	0.03
1400.00	0.18	219.77	1399.95	100.00	8.97	2.51 S	9.30 E	9.63@ 105.11	0.22
1500.00	0.18	220.25	1499.95	100.00	8.74	2.75 S	9.10 E	9.51@ 106.82	0.00
1600.00	0.10	185.10	1599.95	100.00	8.61	2.96 S	8.99 E	9.46@ 108.21	0.11
1700.00	0.27	272.13	1699.95	100.00	8.36	3.04 S	8.75 E	9.26@ 109.14	0.28
1800.00	0.58	258.79	1799.95	100.00	7.63	3.13 S	8.01 E	8.60@ 111.31	0.32
1900.00	0.48	246.94	1899.94	100.00	6.72	3.39 S	7.13 E	7.90@ 115.41	0.15
2000.00	0.53	257.80	1999.94	100.00	5.86	3.65 S	6.30 E	7.28@ 120.11	0.11
2100.00	0.57	263.20	2099.93	100.00	4.90	3.81 S	5.35 E	6.57@ 125.44	0.06
2200.00	0.53	272.60	2199.93	100.00	3.95	3.84 S	4.39 E	5.84@ 131.19	0.10
2300.00	0.42	269.36	2299.93	100.00	3.13	3.83 S	3.56 E	5.23@ 137.04	0.11
2400.00	0.36	286.57	2399.92	100.00	2.47	3.74 S	2.90 E	4.73@ 142.25	0.13
2500.00	0.40	282.54	2499.92	100.00	1.85	3.58 S	2.26 E	4.23@ 147.77	0.05
2600.00	0.26	241.06	2599.92	100.00	1.31	3.61 S	1.72 E	4.00@ 154.58	0.27

Accepted for record - NMOCD

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 02/07

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	0.07	145.09	2699.92	100.00	1.13	3.77 S	1.55 E	4.08@	157.62	0.28
2800.00	0.14	94.82	2799.92	100.00	1.28	3.83 S	1.71 E	4.20@	155.96	0.11
2900.00	0.07	111.42	2899.92	100.00	1.46	3.86 S	1.89 E	4.30@	153.96	0.08
3000.00	0.09	63.27	2999.92	100.00	1.58	3.85 S	2.02 E	4.35@	152.38	0.07
3100.00	0.04	120.71	3099.92	100.00	1.68	3.83 S	2.12 E	4.38@	151.11	0.08
3200.00	0.13	72.92	3199.92	100.00	1.82	3.82 S	2.25 E	4.43@	149.45	0.11
3300.00	0.14	80.18	3299.92	100.00	2.06	3.76 S	2.48 E	4.51@	146.59	0.02
3400.00	0.04	106.37	3399.92	100.00	2.21	3.75 S	2.64 E	4.59@	144.91	0.10
3500.00	0.07	180.97	3499.92	100.00	2.24	3.82 S	2.67 E	4.66@	145.09	0.07
3600.00	0.35	275.34	3599.92	100.00	1.93	3.86 S	2.36 E	4.52@	148.50	0.36
3700.00	0.34	283.35	3699.92	100.00	1.35	3.76 S	1.77 E	4.16@	154.78	0.05
3800.00	0.36	259.37	3799.91	100.00	0.76	3.75 S	1.17 E	3.93@	162.62	0.15
3900.00	0.37	250.68	3899.91	100.00	0.13	3.91 S	0.56 E	3.95@	171.86	0.06
4000.00	0.36	259.19	3999.91	100.00	-0.50	4.08 S	0.05 W	4.08@	180.75	0.06
4100.00	0.27	248.88	4099.91	100.00	-1.04	4.22 S	0.58 W	4.26@	187.84	0.11
4200.00	0.28	221.37	4199.91	100.00	-1.45	4.49 S	0.96 W	4.59@	192.10	0.13
4300.00	0.09	207.57	4299.91	100.00	-1.67	4.74 S	1.16 W	4.88@	193.75	0.19
4400.00	0.11	143.55	4399.91	100.00	-1.67	4.89 S	1.14 W	5.02@	193.12	0.11
4500.00	0.13	158.44	4499.91	100.00	-1.59	5.07 S	1.04 W	5.18@	191.60	0.04
4600.00	0.10	187.40	4599.91	100.00	-1.58	5.27 S	1.01 W	5.36@	190.87	0.06
4700.00	0.13	307.67	4699.91	100.00	-1.68	5.28 S	1.11 W	5.40@	191.89	0.20
4800.00	0.17	286.29	4799.91	100.00	-1.90	5.17 S	1.34 W	5.34@	194.57	0.07
4900.00	0.30	308.20	4899.91	100.00	-2.22	4.97 S	1.69 W	5.25@	198.81	0.16
5000.00	0.40	312.76	4999.90	100.00	-2.64	4.57 S	2.15 W	5.05@	205.24	0.10
5100.00	0.32	321.82	5099.90	100.00	-3.02	4.11 S	2.58 W	4.86@	212.13	0.10
5200.00	0.25	282.97	5199.90	100.00	-3.37	3.84 S	2.97 W	4.86@	217.67	0.20
5300.00	0.33	274.61	5299.90	100.00	-3.86	3.77 S	3.47 W	5.12@	222.59	0.09
5400.00	0.39	264.11	5399.90	100.00	-4.48	3.78 S	4.09 W	5.58@	227.25	0.09
5500.00	0.16	235.62	5499.90	100.00	-4.95	3.90 S	4.55 W	5.99@	229.40	0.26

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 03/07

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)
5600.00	0.18	319.54	5599.90	100.00	-5.16	3.86 S	4.76 W	6.13@	231.01	0.23
5700.00	0.29	356.83	5699.89	100.00	-5.23	3.49 S	4.88 W	6.00@	234.47	0.18
5800.00	0.28	352.20	5799.89	100.00	-5.22	2.99 S	4.93 W	5.76@	238.75	0.02
5900.00	0.28	344.48	5899.89	100.00	-5.27	2.51 S	5.03 W	5.62@	243.43	0.04
6000.00	0.29	357.47	5999.89	100.00	-5.29	2.03 S	5.10 W	5.49@	248.36	0.06
** TIED INTO SCIENTIFIC GYRO SURVEY AT 6100'MD.										
6100.00	0.32	56.97	6099.89	100.00	-5.03	1.62 S	4.88 W	5.14@	251.64	0.30
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6181.00	0.53	93.93	6180.89	81.00	-4.46	1.52 S	4.32 W	4.58@	250.57	0.41
6213.00	1.58	91.03	6212.88	32.00	-3.87	1.54 S	3.73 W	4.03@	247.55	3.28
6244.00	5.45	91.55	6243.82	31.00	-1.99	1.59 S	1.83 W	2.42@	229.02	12.48
6276.00	10.73	90.85	6275.49	32.00	2.47	1.67 S	2.67 E	3.15@	122.05	16.50
6308.00	15.92	89.01	6306.62	32.00	9.81	1.64 S	10.04 E	10.18@	99.28	16.27
6339.00	20.05	87.95	6336.10	31.00	19.34	1.38 S	19.61 E	19.66@	94.02	13.36
6371.00	22.51	86.90	6365.91	32.00	30.93	0.85 S	31.21 E	31.22@	91.56	7.78
6402.00	24.80	85.93	6394.30	31.00	43.36	0.07 S	43.62 E	43.62@	90.09	7.49
6434.00	28.40	85.23	6422.91	32.00	57.67	1.04 N	57.91 E	57.91@	88.97	11.29
6466.00	32.01	86.37	6450.56	32.00	73.76	2.21 N	73.96 E	73.99@	88.29	11.42
6498.00	35.61	85.67	6477.15	32.00	91.55	3.45 N	91.72 E	91.78@	87.84	11.31
6529.00	38.95	85.31	6501.81	31.00	110.31	4.93 N	110.43 E	110.54@	87.44	10.80
6561.00	42.38	85.84	6526.08	32.00	131.15	6.54 N	131.22 E	131.38@	87.15	10.77
6593.00	44.76	86.81	6549.26	32.00	153.18	7.95 N	153.23 E	153.44@	87.03	7.73
6625.00	47.57	86.81	6571.42	32.00	176.23	9.23 N	176.27 E	176.52@	87.00	8.78
6656.00	50.91	85.75	6591.66	31.00	199.68	10.76 N	199.70 E	199.99@	86.92	11.08
6688.00	54.78	84.61	6610.99	32.00	225.17	12.91 N	225.11 E	225.48@	86.72	12.42
6720.00	56.98	84.87	6628.93	32.00	251.66	15.34 N	251.49 E	251.96@	86.51	6.91
6751.00	60.41	84.08	6645.04	31.00	278.14	17.89 N	277.85 E	278.42@	86.32	11.28
6783.00	64.28	83.64	6659.89	32.00	306.48	20.92 N	306.02 E	306.74@	86.09	12.15
6815.00	67.97	83.82	6672.84	32.00	335.74	24.12 N	335.10 E	335.97@	85.88	11.54
6846.00	71.49	84.08	6683.58	31.00	364.81	27.18 N	364.02 E	365.03@	85.73	11.38

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 04/07

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)
6878.00	74.83	83.73	6692.85	32.00	395.43	30.43 N	394.47 E	395.64@	85.59	10.49
6910.00	78.08	83.12	6700.34	32.00	426.54	33.99 N	425.37 E	426.73@	85.43	10.32
6941.00	79.93	83.64	6706.25	31.00	456.97	37.50 N	455.60 E	457.14@	85.29	6.19
6973.00	81.95	83.64	6711.29	32.00	488.57	41.00 N	487.00 E	488.72@	85.19	6.31
7005.00	85.03	82.94	6714.92	32.00	520.36	44.72 N	518.57 E	520.50@	85.07	9.87
7037.00	86.70	83.12	6717.23	32.00	552.27	48.59 N	550.25 E	552.39@	84.95	5.25
7068.00	88.20	83.03	6718.60	31.00	583.24	52.32 N	581.00 E	583.35@	84.85	4.85
7100.00	89.69	83.03	6719.19	32.00	615.23	56.21 N	612.75 E	615.33@	84.76	4.66
7131.00	91.45	82.76	6718.89	31.00	646.22	60.04 N	643.51 E	646.31@	84.67	5.74
7163.00	91.71	82.59	6718.00	32.00	678.20	64.12 N	675.24 E	678.28@	84.58	0.97
7195.00	90.57	81.97	6717.37	32.00	710.19	68.42 N	706.94 E	710.24@	84.47	4.06
7228.00	89.25	81.54	6717.42	33.00	743.17	73.15 N	739.60 E	743.21@	84.35	4.21
7259.00	88.37	82.16	6718.06	31.00	774.14	77.54 N	770.28 E	774.17@	84.25	3.47
7291.00	88.37	81.72	6718.97	32.00	806.11	82.03 N	801.95 E	806.13@	84.16	1.37
7323.00	88.64	81.33	6719.81	32.00	838.08	86.74 N	833.59 E	838.09@	84.06	1.48
7355.00	87.14	81.53	6720.99	32.00	870.03	91.51 N	865.21 E	870.04@	83.96	4.73
7386.00	86.17	81.46	6722.79	31.00	900.95	96.08 N	895.82 E	900.95@	83.88	3.14
7418.00	85.56	81.59	6725.10	32.00	932.84	100.79 N	927.38 E	932.85@	83.80	1.95
7450.00	86.53	81.88	6727.31	32.00	964.75	105.38 N	958.98 E	964.75@	83.73	3.16
7482.00	87.32	82.06	6729.03	32.00	996.69	109.84 N	990.62 E	996.69@	83.67	2.53
7514.00	88.02	82.38	6730.33	32.00	1028.65	114.17 N	1022.30 E	1028.65@	83.63	2.40
7545.00	88.81	82.66	6731.18	31.00	1059.63	118.20 N	1053.02 E	1059.63@	83.60	2.70
7577.00	89.16	82.11	6731.75	32.00	1091.62	122.44 N	1084.73 E	1091.62@	83.56	2.04
7609.00	89.25	82.39	6732.19	32.00	1123.60	126.76 N	1116.44 E	1123.61@	83.52	0.92
7641.00	89.25	82.57	6732.61	32.00	1155.59	130.95 N	1148.16 E	1155.60@	83.49	0.56
7673.00	89.43	82.99	6732.98	32.00	1187.59	134.97 N	1179.90 E	1187.60@	83.47	1.43
7705.00	89.43	82.93	6733.30	32.00	1219.58	138.89 N	1211.66 E	1219.59@	83.46	0.19
7737.00	89.43	83.29	6733.62	32.00	1251.58	142.73 N	1243.43 E	1251.59@	83.45	1.12
7769.00	90.13	84.11	6733.74	32.00	1283.58	146.24 N	1275.23 E	1283.59@	83.46	3.37

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 05/07

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)
7800.00	90.31	83.51	6733.62	31.00	1314.58	149.58 N	1306.05 E	1314.59@	83.47	2.02
7832.00	90.66	83.74	6733.35	32.00	1346.57	153.13 N	1337.85 E	1346.59@	83.47	1.31
7864.00	91.01	83.34	6732.89	32.00	1378.57	156.73 N	1369.65 E	1378.59@	83.47	1.66
7896.00	91.10	83.38	6732.30	32.00	1410.56	160.43 N	1401.43 E	1410.58@	83.47	0.31
7928.00	91.19	83.32	6731.66	32.00	1442.56	164.14 N	1433.21 E	1442.57@	83.47	0.34
7960.00	91.19	82.70	6730.99	32.00	1474.55	168.03 N	1464.96 E	1474.57@	83.46	1.94
7992.00	90.92	82.31	6730.40	32.00	1506.54	172.21 N	1496.68 E	1506.56@	83.44	1.48
8024.00	90.92	82.09	6729.89	32.00	1538.52	176.55 N	1528.38 E	1538.54@	83.41	0.69
8056.00	90.92	81.99	6729.38	32.00	1570.50	180.98 N	1560.07 E	1570.53@	83.38	0.31
8087.00	90.66	82.04	6728.95	31.00	1601.48	185.28 N	1590.77 E	1601.52@	83.36	0.85
8119.00	89.78	81.99	6728.83	32.00	1633.47	189.73 N	1622.45 E	1633.51@	83.33	2.75
8151.00	89.96	81.79	6728.90	32.00	1665.45	194.24 N	1654.13 E	1665.50@	83.30	0.84
8183.00	88.90	79.56	6729.22	32.00	1697.40	199.43 N	1685.71 E	1697.46@	83.25	7.72
8215.00	88.37	77.23	6729.98	32.00	1729.25	205.86 N	1717.04 E	1729.34@	83.16	7.47
8247.00	87.41	75.59	6731.16	32.00	1760.97	213.38 N	1748.12 E	1761.10@	83.04	5.94
8279.00	87.76	75.86	6732.51	32.00	1792.63	221.26 N	1779.11 E	1792.81@	82.91	1.38
8310.00	87.14	76.80	6733.88	31.00	1823.34	228.58 N	1809.20 E	1823.58@	82.80	3.63
8342.00	86.44	77.43	6735.68	32.00	1855.07	235.70 N	1840.34 E	1855.38@	82.70	2.94
8374.00	85.47	78.94	6737.93	32.00	1886.84	242.24 N	1871.59 E	1887.20@	82.63	5.60
8406.00	85.03	79.79	6740.58	32.00	1918.64	248.13 N	1902.93 E	1919.04@	82.57	2.98
8437.00	83.98	80.44	6743.55	31.00	1949.43	253.42 N	1933.33 E	1949.87@	82.53	3.98
8469.00	83.89	82.00	6746.93	32.00	1981.22	258.28 N	1964.78 E	1981.68@	82.51	4.86
8501.00	83.98	82.84	6750.31	32.00	2013.03	262.48 N	1996.32 E	2013.50@	82.51	2.62
8532.00	83.98	83.42	6753.57	31.00	2043.86	266.16 N	2026.92 E	2044.33@	82.52	1.86
8564.00	84.42	83.76	6756.80	32.00	2075.70	269.72 N	2058.56 E	2076.16@	82.54	1.73
8596.00	84.86	85.14	6759.79	32.00	2107.55	272.80 N	2090.27 E	2108.00@	82.56	4.51
8628.00	84.42	84.74	6762.78	32.00	2139.41	275.61 N	2122.01 E	2139.83@	82.60	1.85
8660.00	84.24	84.66	6765.94	32.00	2171.25	278.55 N	2153.72 E	2171.65@	82.63	0.61
8691.00	84.24	84.90	6769.05	31.00	2202.09	281.36 N	2184.43 E	2202.48@	82.66	0.77

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 06/07

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)
8723.00	84.50	85.13	6772.19	32.00	2233.92	284.12 N	2216.16 E	2234.29@	82.69	1.08
8755.00	84.24	85.28	6775.33	32.00	2265.76	286.79 N	2247.89 E	2266.11@	82.73	0.94
8786.00	84.33	85.17	6778.42	31.00	2296.59	289.35 N	2278.63 E	2296.93@	82.76	0.46
8818.00	83.98	85.18	6781.67	32.00	2328.42	292.03 N	2310.35 E	2328.73@	82.80	1.09
8850.00	83.98	85.28	6785.03	32.00	2360.23	294.68 N	2342.06 E	2360.53@	82.83	0.31
8882.00	83.54	85.51	6788.51	32.00	2392.03	297.23 N	2373.77 E	2392.31@	82.86	1.55
8913.00	83.54	85.43	6792.00	31.00	2422.82	299.67 N	2404.48 E	2423.08@	82.90	0.26
8945.00	83.62	85.14	6795.58	32.00	2454.60	302.28 N	2436.17 E	2454.85@	82.93	0.93
8977.00	85.03	84.55	6798.74	32.00	2486.44	305.14 N	2467.88 E	2486.68@	82.95	4.77
9007.00	85.03	84.62	6801.34	30.00	2516.32	307.96 N	2497.64 E	2516.55@	82.97	0.23
9039.00	85.38	84.88	6804.01	32.00	2548.21	310.88 N	2529.39 E	2548.42@	82.99	1.36
9071.00	87.58	85.70	6805.98	32.00	2580.13	313.50 N	2561.22 E	2580.34@	83.02	7.33
9103.00	89.34	86.20	6806.84	32.00	2612.10	315.76 N	2593.13 E	2612.28@	83.06	5.72
9135.00	91.28	86.41	6806.66	32.00	2644.06	317.82 N	2625.06 E	2644.23@	83.10	6.10
9166.00	91.28	86.50	6805.97	31.00	2675.02	319.74 N	2655.99 E	2675.17@	83.14	0.29
9198.00	90.84	87.06	6805.38	32.00	2706.97	321.54 N	2687.94 E	2707.10@	83.18	2.22
9229.00	88.81	86.89	6805.48	31.00	2737.92	323.17 N	2718.89 E	2738.03@	83.22	6.57
9261.00	88.64	86.96	6806.19	32.00	2769.86	324.89 N	2750.84 E	2769.96@	83.26	0.57
9293.00	88.81	87.31	6806.90	32.00	2801.80	326.49 N	2782.79 E	2801.88@	83.31	1.22
9325.00	88.99	87.49	6807.51	32.00	2833.73	327.94 N	2814.75 E	2833.79@	83.35	0.79
9357.00	89.25	87.40	6808.00	32.00	2865.65	329.36 N	2846.71 E	2865.70@	83.40	0.86
9388.00	88.99	87.46	6808.48	31.00	2896.59	330.75 N	2877.68 E	2896.63@	83.44	0.86
9420.00	88.81	87.82	6809.10	32.00	2928.51	332.07 N	2909.65 E	2928.53@	83.49	1.26
9452.00	88.72	87.69	6809.79	32.00	2960.42	333.32 N	2941.61 E	2960.44@	83.54	0.49
9484.00	88.72	87.49	6810.50	32.00	2992.34	334.67 N	2973.58 E	2992.35@	83.58	0.63
9516.00	89.08	86.48	6811.11	32.00	3024.28	336.35 N	3005.53 E	3024.29@	83.61	3.35
9548.00	88.81	86.38	6811.70	32.00	3056.24	338.34 N	3037.46 E	3056.25@	83.64	0.90
9579.00	89.34	86.44	6812.20	31.00	3087.20	340.29 N	3068.39 E	3087.21@	83.67	1.72
9611.00	90.57	86.96	6812.23	32.00	3119.16	342.13 N	3100.34 E	3119.16@	83.70	4.17

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING L.L.C.
MOOSE 23 FEDERAL #2H
EDDY COUNTY, NM
RIG:JW #2

Page 07/07

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)
9643.00	90.40	86.96	6811.96	32.00	3151.11	343.82 N	3132.29 E	3151.11@	83.74	0.53
9675.00	90.40	86.66	6811.74	32.00	3183.06	345.61 N	3164.24 E	3183.06@	83.77	0.94
9707.00	90.48	86.48	6811.49	32.00	3215.02	347.52 N	3196.19 E	3215.02@	83.79	0.61
9739.00	90.48	85.89	6811.22	32.00	3246.99	349.65 N	3228.11 E	3247.00@	83.82	1.84
9771.00	90.13	85.55	6811.05	32.00	3278.97	352.04 N	3260.02 E	3278.98@	83.84	1.52
9803.00	89.34	84.62	6811.20	32.00	3310.96	354.78 N	3291.91 E	3310.97@	83.85	3.81
9835.00	89.87	84.44	6811.42	32.00	3342.96	357.83 N	3323.76 E	3342.97@	83.86	1.75
9866.00	90.31	84.20	6811.37	31.00	3373.96	360.90 N	3354.61 E	3373.96@	83.86	1.62
9898.00	88.90	83.23	6811.59	32.00	3405.95	364.40 N	3386.41 E	3405.96@	83.86	5.35
9930.00	88.02	82.35	6812.45	32.00	3437.94	368.41 N	3418.15 E	3437.94@	83.85	3.89
9962.00	87.58	81.95	6813.68	32.00	3469.90	372.78 N	3449.82 E	3469.91@	83.83	1.86
9994.00	87.76	82.98	6814.98	32.00	3501.87	376.97 N	3481.52 E	3501.87@	83.82	3.27
10025.00	88.11	84.04	6816.10	31.00	3532.85	380.48 N	3512.30 E	3532.85@	83.82	3.60
10057.00	87.85	84.14	6817.23	32.00	3564.83	383.77 N	3544.11 E	3564.83@	83.82	0.87
10089.00	87.93	84.14	6818.40	32.00	3596.80	387.03 N	3575.92 E	3596.81@	83.82	0.25
10121.00	88.55	84.38	6819.39	32.00	3628.79	390.23 N	3607.75 E	3628.79@	83.83	2.08
10153.00	88.37	83.92	6820.25	32.00	3660.77	393.49 N	3639.57 E	3660.78@	83.83	1.54
10185.00	86.70	84.06	6821.62	32.00	3692.74	396.84 N	3671.36 E	3692.75@	83.83	5.24
10217.00	85.65	83.74	6823.76	32.00	3724.67	400.23 N	3703.11 E	3724.68@	83.83	3.43
10249.00	84.94	83.69	6826.38	32.00	3756.56	403.72 N	3734.81 E	3756.57@	83.83	2.22
10281.00	84.24	84.44	6829.40	32.00	3788.42	407.02 N	3766.50 E	3788.42@	83.83	3.20
10312.00	82.39	85.34	6833.01	31.00	3819.20	409.76 N	3797.16 E	3819.21@	83.84	6.63
10335.00	83.36	85.05	6835.86	23.00	3842.02	411.67 N	3819.90 E	3842.02@	83.85	4.40
STRAIGHT LINE PROJECTION TO BIT AT 10410' MD.										
10410.00	83.36	85.05	6844.53	75.00	3916.49	418.10 N	3894.12 E	3916.50@	83.87	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.