



Well Name: JAMES RANCH UNIT #105H

Survey: FINAL SUBMITTED

Survey Date: 6/24/2009

MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.39	175.52	100.00	-0.06	-0.34	0.03	0.39	0.34	175.52
200.00	0.34	185.70	200.00	-0.12	-0.97	0.02	0.08	0.97	178.60
300.00	0.55	199.29	299.99	0.00	-1.72	-0.16	0.23	1.73	185.43
400.00	0.80	203.29	399.99	0.32	-2.81	-0.60	0.25	2.87	191.99
500.00	0.88	207.14	499.98	0.82	-4.13	-1.22	0.10	4.31	196.48
600.00	0.99	199.81	599.96	1.31	-5.63	-1.87	0.16	5.93	198.33
700.00	0.97	198.08	699.95	1.71	-7.24	-2.42	0.04	7.64	198.47
800.00	0.93	188.06	799.94	1.93	-8.85	-2.80	0.17	9.28	197.53
900.00	0.93	171.19	899.92	1.76	-10.45	-2.78	0.27	10.82	194.92
1000.00	1.05	171.10	999.91	1.33	-12.16	-2.52	0.12	12.42	191.70
1100.00	1.10	167.70	1099.89	0.81	-14.01	-2.17	0.08	14.17	188.81
1200.00	1.18	169.78	1199.87	0.24	-15.96	-1.78	0.09	16.06	186.38
1300.00	1.24	170.03	1299.85	-0.33	-18.04	-1.41	0.06	18.10	184.48
1400.00	1.18	165.33	1399.83	-0.97	-20.10	-0.97	0.12	20.12	182.75
1500.00	1.23	167.60	1499.80	-1.66	-22.14	-0.48	0.07	22.14	181.23
1600.00	1.19	164.72	1599.78	-2.36	-24.18	0.03	0.07	24.18	179.94
1700.00	1.20	166.41	1699.76	-3.07	-26.20	0.55	0.04	26.21	178.81
1800.00	1.14	172.59	1799.74	-3.63	-28.21	0.92	0.14	28.22	178.13
1900.00	1.24	162.94	1899.72	-4.27	-30.22	1.37	0.23	30.26	177.41
2000.00	1.02	159.18	1999.70	-5.08	-32.09	2.00	0.24	32.15	176.43
2100.00	0.93	165.68	2099.68	-5.76	-33.71	2.52	0.14	33.81	175.73
2200.00	1.00	157.77	2199.67	-6.44	-35.31	3.05	0.15	35.44	175.06
2300.00	0.78	172.42	2299.66	-7.00	-36.79	3.47	0.32	36.96	174.61
2400.00	0.82	176.31	2399.65	-7.27	-38.18	3.61	0.07	38.35	174.60
2500.00	0.83	197.58	2499.64	-7.23	-39.59	3.43	0.31	39.74	175.04
2600.00	0.94	195.03	2599.62	-6.94	-41.07	3.00	0.11	41.18	175.82
2700.00	0.89	196.98	2699.61	-6.65	-42.61	2.56	0.06	42.68	176.56
2800.00	0.77	194.10	2799.60	-6.40	-44.00	2.17	0.13	44.05	177.18
2900.00	1.23	147.57	2899.59	-6.96	-45.56	2.58	0.90	45.63	176.75
3000.00	2.55	136.69	2999.53	-9.30	-48.09	4.69	1.36	48.31	174.43
3100.00	2.80	135.02	3099.42	-12.86	-51.43	7.94	0.26	52.04	171.22
3200.00	2.21	132.11	3199.33	-16.30	-54.46	11.10	0.60	55.58	168.48
3300.00	2.21	131.72	3299.25	-19.41	-57.04	13.97	0.02	58.72	166.23
3400.00	1.99	129.40	3399.18	-22.41	-59.42	16.76	0.24	61.74	164.25
3500.00	1.96	129.56	3499.12	-25.27	-61.62	19.42	0.03	64.61	162.51
3600.00	1.44	125.69	3599.08	-27.78	-63.44	21.76	0.54	67.07	161.07
3700.00	0.92	124.11	3699.06	-29.57	-64.63	23.45	0.52	68.75	160.06
3800.00	0.87	139.95	3799.05	-30.82	-65.66	24.60	0.25	70.12	159.46



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3900.00	0.80	143.80	3899.04	-31.82	-66.80	25.50	0.09	71.50	159.10
4000.00	0.82	140.52	3999.03	-32.80	-67.92	26.37	0.05	72.86	158.78
4100.00	0.84	142.89	4099.02	-33.80	-69.06	27.27	0.04	74.25	158.45
4200.00	0.87	136.27	4199.00	-34.87	-70.19	28.23	0.10	75.65	158.09
4300.00	0.78	140.97	4298.99	-35.92	-71.26	29.18	0.11	77.01	157.73
4400.00	0.79	139.73	4398.98	-36.89	-72.32	30.06	0.02	78.32	157.43
4500.00	0.77	140.83	4498.97	-37.86	-73.37	30.94	0.03	79.63	157.14
4600.00	0.55	165.51	4598.97	-38.50	-74.36	31.48	0.36	80.75	157.05
4700.00	0.49	172.33	4698.96	-38.76	-75.25	31.66	0.09	81.64	157.18
4800.00	0.49	184.40	4798.96	-38.87	-76.11	31.68	0.10	82.44	157.40
4900.00	0.48	189.90	4898.96	-38.85	-76.94	31.58	0.05	83.17	157.69
5000.00	0.41	196.50	4998.95	-38.75	-77.70	31.41	0.08	83.81	157.99
5100.00	0.51	164.95	5098.95	-38.84	-78.48	31.42	0.27	84.53	158.18
5200.00	0.46	207.39	5198.95	-38.84	-79.26	31.35	0.35	85.24	158.42
5300.00	0.43	195.83	5298.94	-38.63	-79.98	31.06	0.09	85.80	158.78
5400.00	0.46	203.61	5398.94	-38.43	-80.72	30.80	0.07	86.39	159.12
5500.00	0.22	208.40	5498.94	-38.23	-81.26	30.54	0.24	86.81	159.40
5600.00	0.12	228.13	5598.94	-38.09	-81.50	30.38	0.12	86.97	159.56
5700.00	0.15	222.00	5698.94	-37.94	-81.66	30.21	0.04	87.07	159.70
5800.00	0.15	213.73	5798.94	-37.80	-81.87	30.05	0.02	87.21	159.84
5900.00	0.18	214.64	5898.94	-37.66	-82.11	29.89	0.02	87.38	160.00
6000.00	0.30	298.20	5998.94	-37.34	-82.12	29.57	0.33	87.28	160.20
6100.00	0.23	305.86	6098.94	-36.92	-81.87	29.17	0.08	86.91	160.39
6200.00	0.11	305.54	6198.94	-36.66	-81.70	28.92	0.12	86.66	160.50
6300.00	0.28	168.24	6298.94	-36.65	-81.87	28.89	0.37	86.82	160.56
6400.00	0.58	145.35	6398.93	-37.05	-82.53	29.23	0.35	87.55	160.50
6500.00	0.50	202.27	6498.93	-37.25	-83.35	29.36	0.52	88.37	160.60
6600.00	0.64	189.72	6598.92	-37.09	-84.30	29.10	0.19	89.18	160.96
6700.00	0.85	184.99	6698.92	-37.05	-85.60	28.94	0.22	90.35	161.32
6720.00	1.02	186.08	6718.92	-37.05	-85.92	28.91	0.84	90.65	161.41

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

BOPCO, L.P.
JAMES RANCH UNIT #105H
EDDY COUNTY, NEW MEXICO
Rig:McVAY 5

Tue Jun 09 15:14:58 2009

Coordinates

Latitude: 32.349160 N (32 deg. 20 min. 56.9778 sec.)
Longitude: 103.838597 W (-103 deg. 50 min. 18.9477 sec.)
Elevation: 3330.00 feet.
Calculation Date: Jun/09/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.3225 degrees
Total Magnetic Field: 0.48893 gauss
Magnetic Declination: 7.947379 degrees
Horizontal Intensity: 0.242079 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.947379 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 694116.7760 feet
Y: 491109.4250 feet
True to Grid: (convergence) -0.264727 degrees
Magnetic to Grid: 7.682652 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.682652 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

BOPCO, L.P.
JAMES RANCH UNIT #105H
EDDY COUNTY

Wed Jun 24 14:23:19 2009

Coordinates

Latitude: 32.349160 N (32 deg. 20 min. 56.9778 sec.)
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