



VLT

An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

BOPCO, L.P.

JAMES RANCH UNIT # 105H

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

Pathfinder Energy Services, Inc.
6213 W. Interstate 20 • Midland, TX • 79706
(432) 681-6000

A handwritten signature in the bottom right corner of the page, appearing to be "F. Sinisterra".



June 3, 2009

BOPCO, L.P.
P.O. BOX 2760
MIDLAND TX 79702

RE: BOPCO, L.P.
JAMES RANCH UNIT # 105H
EDDY COUNTY, NM
RIG: MCVAY 5
FIELD: JAMES RANCH
PES FILE NO.: 101008604-WT-WT

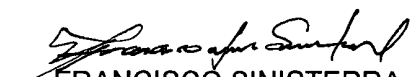
To whom it may concern:

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 survey report
2 – 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 (432) 687-1647

Sincerely,


FRANCISCO SINISTERRA
M/LWD Service Coordinator
PathFinder Energy Services

ML:sh



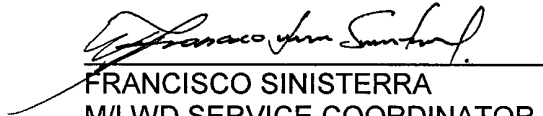
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) CHRIS CARSON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 06/25/09 TO 07/06/09
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

BOPCO, LP
JAMES RANCH UNIT # 105H
EDDY COUNTY, NM
RIG: MCVAY 5

9. SURVEY CERTIFIED FROM: 6748 TO 12949 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 5856.43 FEET ON A BEARING OF 274.71 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 13017.68 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 06/24/2009
Date Completed: 07/05/2009

BOPCO, L.P.
JAMES RANCH UNIT #105H
EDDY COUNTY, NEW MEXICO
Rig:McVAY 5
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:CHRIS CARSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.20.56.9778 N LON:103.50.18.9477 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 694116.7760 Y: 491109.4250
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.68° EAST TO GRID
Vertical Section Plane: 275.53
Survey Vert. Reference: 19.00' Rotary Table To Ground
Altitude:3311.00' Ground To MSL

Measured Depth	13017.68	(feet)
Inclination	96.64	(deg)
Azimuth	271.54	(deg)
True Vertical Depth	7208.62	(feet)
Vertical Section	5855.84	(feet)
Survey X cord	688280.16	(feet)
Survey Y cord	491590.78	(feet)
Survey Lat	32.35055634 N	(deg)
Survey Lon	103.85748948 W	(deg)
Rectangular Corr. N/S	481.35 N	(feet)
Rectangular Corr. E/W	5836.61 W	(feet)
Closure Distance	5856.43	(feet)
Direction of Closure	274.71	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Page 01/04
Tie-in Date: 06/24/2009
Date Completed: 07/05/2009

BOPCO, L.P.
JAMES RANCH UNIT #105H
EDDY COUNTY, NEW MEXICO
Rig:McVAY 5
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: CHRIS CARSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.20.56.9778 N LON:103.50.18.9477 W
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Ref GRID Coord: X: 694116.7760 Y: 491109.4250
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.68° EAST TO GRID
Vertical Section Plane: 275.53
Survey Vert. Reference: 19.00' Rotary Table To Ground
Altitude:3311.00' 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)		Closure Dist (ft)	Dir (deg)	DLS (dg/100ft)
TIE IN TO SCIENTIFIC GYRO SURVEY @ 6720'MD.										
6720.00	1.02	186.08	6718.92	0.00	-37.06	85.92 S	28.91 E	90.65@	161.40	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6748.00	1.14	176.90	6746.91	28.00	-37.09	86.45 S	28.90 E	91.15@	161.52	0.75
6779.00	0.97	176.40	6777.91	31.00	-37.18	87.02 S	28.93 E	91.70@	161.61	0.55
6810.00	1.58	269.34	6808.90	31.00	-36.80	87.28 S	28.52 E	91.82@	161.90	6.12
6842.00	4.40	284.74	6840.86	32.00	-35.15	86.98 S	26.89 E	91.04@	162.82	9.08
6873.00	7.56	288.41	6871.68	31.00	-31.99	86.03 S	23.81 E	89.26@	164.53	10.26
6904.00	10.82	288.59	6902.28	31.00	-27.16	84.46 S	19.11 E	86.59@	167.25	10.52
6936.00	14.60	287.37	6933.49	32.00	-20.29	82.29 S	12.41 E	83.23@	171.42	11.84
6967.00	17.32	288.01	6963.30	31.00	-11.96	79.70 S	4.30 E	79.82@	176.92	8.79
6998.00	19.43	288.52	6992.71	31.00	-2.42	76.64 S	4.98 W	76.80@	183.72	6.83
7030.00	21.72	288.38	7022.67	32.00	8.54	73.08 S	15.65 W	74.73@	192.09	7.16
7061.00	25.24	287.26	7051.10	31.00	20.60	69.31 S	27.41 W	74.53@	201.58	11.45
7093.00	29.63	287.33	7079.49	32.00	35.03	64.92 S	41.48 W	77.05@	212.58	13.72
7124.00	34.03	286.69	7105.83	31.00	51.05	60.15 S	57.12 W	82.94@	223.52	14.23
7156.00	37.64	285.70	7131.76	32.00	69.46	54.93 S	75.10 W	93.05@	233.82	11.42
7187.00	40.36	286.24	7155.85	31.00	88.65	49.56 S	93.86 W	106.14@	242.16	8.84
7219.00	43.53	285.44	7179.65	32.00	109.69	43.73 S	114.43 W	122.50@	249.09	10.05
7251.00	47.75	284.46	7202.02	32.00	132.25	37.83 S	136.53 W	141.68@	254.51	13.37
7281.00	52.58	283.72	7221.23	30.00	155.03	32.23 S	158.87 W	162.11@	258.53	16.21
7312.00	57.51	283.11	7238.99	31.00	180.19	26.34 S	183.58 W	185.46@	261.83	15.98
7343.00	61.99	283.10	7254.60	31.00	206.73	20.27 S	209.65 W	210.63@	264.48	14.45
7375.00	66.13	282.67	7268.59	32.00	235.26	13.86 S	237.70 W	238.10@	266.66	12.99

PathFinder Energy Services, Inc.

Survey Report

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

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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)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
7405.00	69.64	281.89	7279.89	30.00	262.85	7.95 S	264.85 W	264.97@	268.28	11.95
7437.00	73.86	281.26	7289.91	32.00	293.07	1.86 S	294.62 W	294.62@	269.64	13.32
7469.00	78.61	280.64	7297.52	32.00	324.00	4.04 N	325.13 W	325.15@	270.71	14.96
7500.00	83.36	280.30	7302.37	31.00	354.50	9.60 N	355.22 W	355.35@	271.55	15.36
7531.00	85.03	279.61	7305.51	31.00	385.24	14.94 N	385.60 W	385.89@	272.22	5.82
7563.00	86.44	279.00	7307.89	32.00	417.09	20.10 N	417.09 W	417.57@	272.76	4.80
7594.00	88.55	278.58	7309.24	31.00	448.00	24.83 N	447.69 W	448.38@	273.17	6.94
7707.00	91.54	277.09	7309.16	113.00	560.90	40.23 N	559.62 W	561.07@	274.11	2.96
7737.00	91.80	277.81	7308.28	30.00	590.87	44.12 N	589.36 W	591.01@	274.28	2.55
7831.00	91.36	278.18	7305.69	94.00	684.74	57.19 N	682.41 W	684.80@	274.79	0.61
7924.00	91.80	279.55	7303.13	93.00	777.55	71.51 N	774.26 W	777.56@	275.28	1.55
8017.00	90.75	279.18	7301.06	93.00	870.32	86.64 N	866.00 W	870.32@	275.71	1.20
8049.00	90.75	279.05	7300.64	32.00	902.25	91.71 N	897.59 W	902.26@	275.83	0.41
8112.00	91.71	280.13	7299.28	63.00	965.08	102.20 N	959.69 W	965.12@	276.08	2.29
8208.00	92.51	281.17	7295.75	96.00	1060.63	119.93 N	1053.97 W	1060.78@	276.49	1.37
8303.00	92.95	284.27	7291.22	95.00	1154.76	140.82 N	1146.53 W	1155.14@	277.00	3.29
8399.00	90.75	282.14	7288.12	96.00	1249.84	162.74 N	1239.93 W	1250.56@	277.48	3.19
8463.00	87.67	280.81	7289.01	64.00	1313.48	175.47 N	1302.63 W	1314.40@	277.67	5.24
8526.00	88.64	281.68	7291.04	63.00	1376.13	187.75 N	1364.39 W	1377.25@	277.83	2.07
8622.00	88.90	280.33	7293.10	96.00	1471.67	206.07 N	1458.60 W	1473.09@	278.04	1.43
8718.00	86.97	277.23	7296.56	96.00	1567.44	220.71 N	1553.40 W	1569.00@	278.09	3.80
8814.00	90.04	278.70	7299.06	96.00	1663.30	234.01 N	1648.43 W	1664.95@	278.08	3.55
8909.00	90.13	277.98	7298.92	95.00	1758.19	247.79 N	1742.42 W	1759.95@	278.09	0.76
9005.00	89.69	277.56	7299.07	96.00	1854.12	260.77 N	1837.54 W	1855.95@	278.08	0.63
9101.00	88.81	276.32	7300.33	96.00	1950.08	272.36 N	1932.82 W	1951.92@	278.02	1.58
9133.00	88.46	275.62	7301.09	32.00	1982.07	275.69 N	1964.64 W	1983.89@	277.99	2.44
9228.00	89.52	275.87	7302.76	95.00	2077.05	285.20 N	2059.15 W	2078.80@	277.89	1.15

PathFinder Energy Services, Inc.

Survey Report

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

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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)		Closure Dist (ft)	Dir (deg)	DLS (dg/100ft)
9324.00	90.40	276.32	7302.83	96.00	2173.04	295.39 N	2154.60 W	2174.76@	277.81	1.03
9420.00	92.33	278.81	7300.54	96.00	2268.94	308.03 N	2249.73 W	2270.72@	277.80	3.28
9515.00	91.19	278.23	7297.63	95.00	2363.77	322.09 N	2343.63 W	2365.66@	277.83	1.35
9611.00	89.78	276.93	7296.81	96.00	2459.70	334.76 N	2438.79 W	2461.66@	277.82	2.00
9707.00	90.75	276.55	7296.37	96.00	2555.67	346.02 N	2534.12 W	2557.64@	277.78	1.08
9802.00	88.90	275.48	7296.66	95.00	2650.66	355.98 N	2628.59 W	2652.59@	277.71	2.25
9897.00	90.92	273.83	7296.81	95.00	2745.64	363.69 N	2723.27 W	2747.45@	277.61	2.75
9992.00	90.48	274.11	7295.65	95.00	2840.60	370.26 N	2818.04 W	2842.26@	277.49	0.55
10087.00	88.55	272.97	7296.45	95.00	2935.54	376.13 N	2912.85 W	2937.03@	277.36	2.36
10182.00	90.40	272.75	7297.32	95.00	3030.42	380.87 N	3007.72 W	3031.74@	277.22	1.96
10277.00	91.89	273.53	7295.42	95.00	3125.32	386.07 N	3102.56 W	3126.48@	277.09	1.77
10373.00	90.66	271.85	7293.29	96.00	3221.17	390.57 N	3198.42 W	3222.18@	276.96	2.17
10469.00	91.10	272.50	7291.81	96.00	3317.00	394.22 N	3294.34 W	3317.84@	276.82	0.82
10564.00	92.42	274.19	7288.90	95.00	3411.88	399.76 N	3389.13 W	3412.62@	276.73	2.26
10659.00	92.24	273.96	7285.03	95.00	3506.77	406.50 N	3483.81 W	3507.44@	276.66	0.31
10691.00	92.24	273.39	7283.78	32.00	3538.73	408.55 N	3515.72 W	3539.38@	276.63	1.78
10723.00	92.77	273.84	7282.38	32.00	3570.68	410.57 N	3547.62 W	3571.30@	276.60	2.17
10818.00	90.66	273.89	7279.54	95.00	3665.59	416.97 N	3642.36 W	3666.15@	276.53	2.22
10914.00	91.28	272.93	7277.92	96.00	3761.51	422.68 N	3738.17 W	3761.99@	276.45	1.19
11009.00	92.42	272.65	7274.85	95.00	3856.35	427.30 N	3833.01 W	3856.75@	276.36	1.24
11105.00	91.89	273.88	7271.24	96.00	3952.20	432.76 N	3928.78 W	3952.55@	276.29	1.39
11200.00	91.45	274.49	7268.47	95.00	4047.14	439.69 N	4023.49 W	4047.44@	276.24	0.79
11296.00	89.96	275.50	7267.29	96.00	4143.12	448.05 N	4119.11 W	4143.41@	276.21	1.88
11391.00	91.19	275.15	7266.34	95.00	4238.11	456.86 N	4213.70 W	4238.39@	276.19	1.35
11487.00	90.04	274.13	7265.31	96.00	4334.09	464.63 N	4309.37 W	4334.35@	276.15	1.60
11582.00	88.46	273.89	7266.55	95.00	4429.05	471.27 N	4404.13 W	4429.27@	276.11	1.68
11678.00	88.64	271.66	7268.98	96.00	4524.90	475.92 N	4499.98 W	4525.08@	276.04	2.33

PathFinder Energy Services, Inc.

Survey Report

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

Page 04/04

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS (dg/100ft)
(ft)	(deg)	(deg)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(deg)	(dg/100ft)
11773.00	89.08	268.96	7270.87	95.00	4619.48	476.43 N	4594.95 W	4619.59@	275.92	2.88
11868.00	90.40	268.45	7271.30	95.00	4713.80	474.28 N	4689.93 W	4713.85@	275.77	1.49
11963.00	92.24	268.07	7269.11	95.00	4808.01	471.40 N	4784.85 W	4808.02@	275.63	1.98
12059.00	93.91	267.62	7263.96	96.00	4903.01	467.80 N	4880.64 W	4903.01@	275.47	1.80
12154.00	94.62	268.08	7256.90	95.00	4996.89	464.24 N	4975.31 W	4996.92@	275.33	0.89
12249.00	95.32	267.93	7248.67	95.00	5090.72	460.95 N	5069.90 W	5090.81@	275.19	0.75
12344.00	91.63	269.91	7242.91	95.00	5184.89	459.16 N	5164.68 W	5185.05@	275.08	4.41
12440.00	90.92	271.38	7240.77	96.00	5280.52	460.24 N	5260.65 W	5280.74@	275.00	1.70
12535.00	90.84	272.90	7239.31	95.00	5375.34	463.79 N	5355.57 W	5375.61@	274.95	1.60
12631.00	90.92	271.96	7237.84	96.00	5471.19	467.86 N	5451.47 W	5471.51@	274.91	0.98
12726.00	92.95	272.72	7234.63	95.00	5565.98	471.74 N	5546.33 W	5566.36@	274.86	2.28
12822.00	94.26	271.97	7228.60	96.00	5661.64	475.66 N	5642.06 W	5662.07@	274.82	1.57
12917.00	96.02	271.64	7220.09	95.00	5756.05	478.64 N	5736.63 W	5756.56@	274.77	1.88
12949.00	96.64	271.54	7216.56	32.00	5787.78	479.52 N	5768.42 W	5788.32@	274.75	1.96
STRAIGHT LINE PROJECTION TO BIT @ 13017.68										
13017.68	96.64	271.54	7208.62	68.68	5855.84	481.35 N	5836.61 W	5856.43@	274.71	0.00



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	BOPCO, L.P.		
LEASE / WELL No.:	JAMES RANCH UNIT	105H	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY	NM	USA
RIG:	MCVAY 5		
API WELL No:	30-015-37064		
JOB No:	101008604 WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.682652	LWD Calculated:	7.682652
Agreed Upon:	7.682652		
X =	694116.776000	Feet	Y = 491109.425000
			Feet
SITE LATITUDE:	32.349160 N	SITE LONGITUDE:	103.838597 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	275.53		
KELLY BUSHING ELEVATION:	19		
ALTITUDE:	3011	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	6720		
DRIFT ANGLE:	1.02		
DRIFT DIRECTION:	186.08		
TRUE VERTICAL DEPTH:	6718.92		
VERTICAL SECTION:	-36.77		
RECTANGULAR COORDINATE (N / S) :	-85.92		
RECTANGULAR COORDINATE (E / W) :	28.91		
CLOSURE DISTANCE / DIRECTION:	90.65	161.41	
SURVEY CALCULATION METHOD:	AA ☐	MC ☐	RC ☒ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING CONTROLS		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	6850	TOTAL DEPTH:	13218.43
KICKOFF ANGLE:	1.02	MAX ANGLE:	90.51

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____