

30-015-42615

A Gyrodata Directional Survey

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 21 2016

Final Definitive Copy

For

BOPCO LP.

RECEIVED

Lease: JAMES RANCH UNIT D11 Well: 162H, 4 1/2 IF DRILLPIPE
Location: INDEPENDENCE 207, EDDY COUNTY, NEW MEXICO

Job Number: MD1114GDM1100

Run Date: 13 Nov 2014

Report Generated: 13 Nov 2014 12:58

Surveyor: Will Skelton

Proposed Well Direction: 85.030 deg

Depth Reference: Rotary Table

Air Gap (RKB to Ground / RKB to MSL): 26.50

Calculation Method: MINIMUM CURVATURE

Vertical-Section-Calculated from Well-Head-Location

Survey surface coordinates obtained from: Well Plan/Plot

Closure Calculated from Well Head Location

Survey Latitude: 32.380879 deg. N Longitude: 103.881745 deg. W

Horizontal Coordinates Calculated from Well Head Location

Azimuth Correction:

Gyro: -0.24000 deg to Grid North

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MEASURED DEPTH	INCL	AZIMUTH	VERTICAL SECTION	DOGLEG SEVERITY	VERTICAL DEPTH	CLOSURE DIST.	COORDINATES
feet	deg.	deg.	feet	deg./100 ft.	feet	feet deg.	feet
97.79	0.19	338.02	-0.1	0.19	97.79	0.2 338.0	0.15 N 0.06 W
160.67	0.17	277.36	-0.2	0.29	160.67	0.3 323.4	0.26 N 0.19 W
254.00	0.16	278.64	-0.4	0.01	254.00	0.5 302.9	0.30 N 0.46 W
377.78	0.17	223.07	-0.7	0.12	377.78	0.8 284.0	0.19 N 0.75 W
440.66	0.17	223.04	-0.9	0.00	440.66	0.9 273.4	0.05 N 0.88 W
533.99	0.15	301.32	-1.1	0.22	533.99	1.1 270.7	0.01 N 1.08 W
627.32	0.16	294.89	-1.3	0.02	627.32	1.3 275.8	0.13 N 1.30 W
692.70	0.10	280.36	-1.4	0.10	692.70	1.5 277.2	0.18 N 1.44 W
785.30	0.45	124.42	-1.2	0.59	785.30	1.2 269.5	0.01 S 1.22 W
877.90	0.84	123.67	-0.4	0.42	877.89	0.7 211.1	0.59 S 0.36 W
972.56	0.71	103.81	0.7	0.31	972.54	1.4 144.7	1.12 S 0.79 E
1067.22	1.05	24.47	1.7	1.22	1067.19	1.8 105.2	0.47 S 1.72 E
1161.88	1.39	12.52	2.4	0.45	1161.83	2.7 58.2	1.44 N 2.33 E
1256.54	1.19	324.58	2.3	1.12	1256.47	3.9 30.8	3.37 N 2.01 E
1351.20	1.01	236.23	1.1	1.63	1351.12	3.8 11.3	3.70 N 0.74 E
1445.86	1.07	172.15	0.4	1.17	1445.77	2.4 4.1	2.36 N 0.17 E
1540.52	1.31	134.37	1.1	0.85	1540.41	1.3 55.5	0.73 N 1.06 E
1635.18	0.40	86.23	2.2	1.15	1635.06	2.2 90.1	0.00 S 2.17 E

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1729.84	0.22	359.75	2.5	0.47	1729.72	2.5 85.4	0.20 N 2.50 E
1824.50	0.49	150.78	2.7	0.73	1824.37	2.7 89.4	0.03 N 2.69 E
1919.16	0.46	152.37	3.0	0.03	1919.03	3.1 102.2	0.66 S 3.07 E
2013.82	0.39	155.56	3.3	0.08	2013.69	3.6 110.9	1.29 S 3.38 E
2108.48	0.33	155.17	3.5	0.06	2108.35	4.1 116.8	1.83 S 3.62 E
2203.14	0.30	148.47	3.7	0.05	2203.01	4.5 120.6	2.29 S 3.87 E
2297.80	0.27	139.49	3.9	0.06	2297.66	4.9 122.8	2.67 S 4.14 E
2392.46	0.25	180.48	4.0	0.19	2392.32	5.3 125.4	3.05 S 4.29 E
2487.12	0.17	229.88	3.9	0.20	2486.98	5.4 128.7	3.35 S 4.18 E
2581.78	0.22	344.90	3.7	0.35	2581.64	5.2 129.0	3.26 S 4.02 E
2676.44	0.60	85.87	4.2	0.72	2676.30	5.4 124.3	3.05 S 4.47 E
2771.10	0.80	102.97	5.3	0.30	2770.95	6.4 119.4	3.16 S 5.61 E
2865.76	0.25	83.83	6.2	0.60	2865.61	7.2 117.0	3.29 S 6.46 E
2960.42	0.32	12.15	6.4	0.36	2960.27	7.4 114.1	3.01 S 6.72 E
3055.08	0.55	43.93	6.8	0.34	3054.93	7.5 108.9	2.42 S 7.09 E
3149.74	0.88	51.10	7.8	0.36	3149.58	8.1 101.6	1.64 S 7.97 E
3244.40	0.90	46.26	9.0	0.08	3244.23	9.1 94.2	0.67 S 9.07 E
3339.06	0.30	32.15	9.7	0.65	3338.88	9.7 89.7	0.06 N 9.74 E
3433.72	0.51	232.91	9.5	0.84	3433.54	9.5 89.9	0.01 N 9.54 E
3528.38	0.81	242.58	8.5	0.34	3528.19	8.6 93.7	0.55 S 8.61 E
3623.04	0.99	254.09	7.1	0.27	3622.84	7.3 98.5	1.08 S 7.23 E
3717.70	1.04	267.45	5.4	0.25	3717.49	5.7 103.5	1.34 S 5.58 E

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3812.36	0.97	277.34	3.8	0.20	3812.13	4.1 108.1	1.28 S 3.93 E
3907.02	0.95	285.41	2.3	0.14	3906.78	2.6 112.2	0.97 S 2.38 E
4001.68	1.11	287.52	0.7	0.17	4001.42	0.9 123.0	0.49 S 0.75 E
4096.34	1.31	292.02	-1.1	0.23	4096.06	1.1 279.9	0.20 N 1.13 W
4191.00	1.28	299.91	-2.9	0.19	4190.70	3.3 290.3	1.13 N 3.05 W
4285.66	1.34	310.20	-4.6	0.26	4285.33	5.4 296.2	2.37 N 4.81 W
4380.32	1.14	318.77	-5.9	0.29	4379.97	7.3 301.1	3.79 N 6.28 W
4474.98	1.29	315.19	-7.2	0.18	4474.61	9.3 304.5	5.26 N 7.65 W
4569.64	0.80	310.82	-8.3	0.52	4569.26	11.0 305.9	6.45 N 8.90 W
4664.30	0.57	311.48	-9.1	0.24	4663.91	12.1 306.4	7.19 N 9.75 W
4758.96	0.60	318.02	-9.7	0.08	4758.56	13.1 307.0	7.87 N 10.44 W
4853.62	0.14	354.09	-10.0	0.52	4853.22	13.6 307.8	8.35 N 10.78 W
4948.28	0.17	79.41	-9.9	0.22	4947.88	13.6 308.6	8.49 N 10.65 W
5042.94	0.28	86.34	-9.5	0.12	5042.54	13.4 309.7	8.53 N 10.29 W
5137.60	0.41	90.97	-8.9	0.14	5137.20	12.9 311.3	8.54 N 9.72 W
5232.26	0.32	105.02	-8.3	0.13	5231.86	12.4 312.9	8.47 N 9.12 W
5326.92	0.27	134.33	-8.0	0.17	5326.52	12.0 313.4	8.25 N 8.71 W
5421.58	0.30	141.39	-7.7	0.05	5421.17	11.5 313.2	7.90 N 8.39 W
5516.24	0.36	134.49	-7.3	0.08	5515.83	11.0 313.0	7.49 N 8.03 W
5610.90	0.41	129.70	-6.9	0.06	5610.49	10.3 313.1	7.07 N 7.55 W
5705.56	0.48	124.49	-6.4	0.09	5705.15	9.6 313.6	6.63 N 6.97 W

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5800.22	0.40	118.23	-5.8	0.10	5799.81	8.9 314.5	6.25 N 6.35 W
5894.88	0.34	116.47	-5.3	0.06	5894.46	8.3 315.8	5.97 N 5.81 W
5989.54	0.32	107.41	-4.8	0.06	5989.12	7.8 317.4	5.76 N 5.30 W
6084.20	0.24	104.00	-4.3	0.09	6083.78	7.4 319.2	5.63 N 4.86 W
6178.86	0.30	115.49	-4.0	0.09	6178.44	7.1 321.0	5.48 N 4.44 W
6273.52	0.43	123.94	-3.5	0.15	6273.10	6.5 322.8	5.17 N 3.92 W
6368.18	0.50	121.62	-2.9	0.08	6367.75	5.8 325.5	4.76 N 3.28 W
6462.84	0.37	124.21	-2.3	0.14	6462.41	5.1 328.6	4.37 N 2.67 W
6557.50	0.24	165.00	-2.0	0.26	6557.07	4.7 329.4	4.01 N 2.37 W
6652.16	0.26	186.21	-2.0	0.10	6651.73	4.3 327.0	3.60 N 2.34 W
6746.82	0.44	337.45	-2.2	0.72	6746.39	4.5 326.1	3.73 N 2.50 W
6841.48	0.60	331.77	-2.5	0.18	6841.04	5.3 327.4	4.50 N 2.88 W
6936.14	0.35	309.26	-2.9	0.32	6935.70	6.1 326.9	5.12 N 3.34 W
7030.80	0.28	232.64	-3.3	0.42	7030.36	6.4 324.0	5.16 N 3.74 W
7125.46	0.53	199.36	-3.7	0.35	7125.02	6.1 318.5	4.61 N 4.07 W
7220.12	0.73	187.90	-4.0	0.25	7219.67	5.6 309.9	3.60 N 4.30 W
7314.78	0.56	169.11	-4.1	0.28	7314.33	5.0 300.6	2.54 N 4.30 W
7409.44	0.38	262.10	-4.3	0.73	7408.98	5.0 294.4	2.05 N 4.52 W
7504.10	0.89	298.40	-5.3	0.66	7503.64	6.0 293.3	2.35 N 5.48 W
7598.76	1.08	309.14	-6.5	0.28	7598.28	7.6 295.6	3.27 N 6.82 W
7693.42	1.11	300.82	-7.9	0.17	7692.93	9.3 297.4	4.30 N 8.29 W
7788.08	1.09	285.76	-9.5	0.31	7787.57	11.1 296.7	5.01 N 9.95 W

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7882.74	1.32	266.13	-11.4	0.50	7882.21	13.0 293.5	5.18 N
7977.40	0.93	216.76	-13.0	1.06	7976.85	14.2 288.5	4.50 N
8052.40	1.40	200.72	-13.8	0.76	8051.84	14.5 282.6	3.15 N
							14.14 W

Final Station Closure: Distance: 14.49 ft Az: 282.56 deg.

