

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY CORPORATION
WAY SOUTH STATE COM #1
BONE SPRING
Rig: PATRIOT #2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: HAFIA DONARUMMA

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.1.8.0790 N LON: 104.7.7.1922 W
Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 566532.6000 Y: 370672.4000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.87° EAST TO GRID
Vertical Section Plane: 268.22
Survey Vert. Reference: 19.00' Kelly Bushing To Ground
Altitude: 3130.00' Ground To MSL

Survey Calculations by RX5 V6.02A using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Subsea Depth (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)	TEMP (F)
TIE IN TO SCIENTIFIC GYRO @ 6100'MD											
6100.00	3.92	187.46	6097.06	6078.06	11.59	7.55 N	11.83 W	14.03@	302.55	0.00	0.00
THE FOLLOWING ARE PATHFINDER SURVEYS											
6107.00	4.31	207.32	6104.04	6085.04	11.76	7.08 N	11.98 W	13.92@	300.58	20.99	101.02
6139.00	6.95	240.46	6135.89	6116.89	14.06	5.06 N	14.22 W	15.09@	289.57	12.77	101.02
6170.00	11.34	251.83	6166.49	6147.49	18.64	3.18 N	18.75 W	19.02@	279.62	15.25	101.02
6202.00	15.56	259.69	6197.61	6178.61	25.91	1.43 N	25.96 W	26.00@	273.15	14.34	101.02
6234.00	19.52	263.27	6228.12	6209.12	35.48	0.03 N	35.50 W	35.50@	270.05	12.82	101.02
6265.00	23.21	258.89	6256.99	6237.99	46.67	1.75 S	46.64 W	46.68@	267.85	12.96	101.02
6297.00	26.82	256.38	6285.98	6266.98	59.97	4.67 S	59.85 W	60.03@	265.54	11.76	104.64
6328.00	30.60	256.59	6313.16	6294.16	74.55	8.15 S	74.33 W	74.77@	263.75	12.20	104.64
6360.00	34.03	258.84	6340.20	6321.20	91.36	11.77 S	91.04 W	91.80@	262.63	11.36	104.64
6392.00	37.46	260.26	6366.17	6347.17	109.84	15.15 S	109.42 W	110.47@	262.12	11.03	104.64
6423.00	41.24	261.09	6390.14	6371.14	129.32	18.33 S	128.82 W	130.11@	261.90	12.31	104.64
6455.00	44.14	262.75	6413.66	6394.66	150.89	21.37 S	150.29 W	151.81@	261.91	9.72	104.64
6487.00	47.31	264.25	6436.00	6417.00	173.72	23.95 S	173.06 W	174.71@	262.12	10.46	104.64
6518.00	49.07	264.79	6456.66	6437.66	196.77	26.16 S	196.06 W	197.79@	262.40	5.82	108.25
6549.00	51.62	264.88	6476.44	6457.44	220.60	28.31 S	219.82 W	221.64@	262.66	8.23	104.64
6581.00	54.34	262.42	6495.71	6476.71	246.06	31.14 S	245.21 W	247.18@	262.76	10.48	104.64
6613.00	56.63	260.27	6513.84	6494.84	272.23	35.11 S	271.27 W	273.53@	262.62	9.05	104.64
6644.00	59.79	259.24	6530.17	6511.17	298.29	39.80 S	297.20 W	299.85@	262.37	10.58	104.64
6676.00	62.78	260.48	6545.55	6526.55	326.05	44.74 S	324.82 W	327.89@	262.16	9.94	104.64
6706.00	68.50	262.49	6557.92	6538.92	353.18	48.77 S	351.84 W	355.20@	262.11	20.02	104.64
6737.00	74.39	262.21	6567.78	6548.78	382.40	52.69 S	380.95 W	384.58@	262.13	19.02	108.25
6769.00	80.20	261.73	6574.81	6555.81	413.42	57.05 S	411.85 W	415.78@	262.11	18.21	108.25
6800.00	82.04	262.14	6579.60	6560.60	443.86	61.34 S	442.17 W	446.41@	262.10	6.08	108.25
6831.00	83.27	262.51	6583.56	6564.56	474.45	65.45 S	472.64 W	477.15@	262.12	4.14	108.25

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6862.00	84.33	262.92	6586.91	6567.91	505.12	69.36 S	503.21 W	507.97@	262.15	3.66	108.25
6894.00	85.21	264.12	6589.82	6570.82	536.88	72.95 S	534.87 W	539.82@	262.23	4.64	108.25
6925.00	86.35	265.04	6592.11	6573.11	567.73	75.87 S	565.65 W	570.72@	262.36	4.72	108.25
6956.00	86.97	267.34	6593.91	6574.91	598.66	77.93 S	596.53 W	601.59@	262.56	7.67	111.87
6988.00	87.41	267.84	6595.48	6576.48	630.62	79.27 S	628.46 W	633.44@	262.81	2.08	111.87
7083.00	88.90	269.91	6598.54	6579.54	725.56	81.14 S	723.38 W	727.92@	263.60	2.68	111.87
7178.00	89.25	270.38	6600.07	6581.07	820.49	80.90 S	818.37 W	822.36@	264.35	0.62	115.48
7272.00	89.16	270.16	6601.38	6582.38	914.42	80.45 S	912.36 W	915.90@	264.96	0.25	115.48
7366.00	89.43	269.99	6602.53	6583.53	1008.36	80.33 S	1006.35 W	1009.55@	265.44	0.34	119.09
7460.00	91.36	269.75	6601.89	6582.89	1102.32	80.54 S	1100.35 W	1103.29@	265.81	2.07	115.48
7554.00	91.89	270.39	6599.22	6580.22	1196.23	80.43 S	1194.31 W	1197.01@	266.15	0.88	119.09
7649.00	91.28	269.52	6596.59	6577.59	1291.15	80.50 S	1289.27 W	1291.78@	266.43	1.12	119.09
7744.00	89.25	268.94	6596.15	6577.15	1386.13	81.78 S	1384.25 W	1386.67@	266.62	2.22	119.09
7838.00	88.90	268.73	6597.67	6578.67	1480.11	83.69 S	1478.22 W	1480.59@	266.76	0.43	122.71
7932.00	89.69	268.70	6598.83	6579.83	1574.10	85.80 S	1572.19 W	1574.53@	266.88	0.84	119.09
8027.00	90.48	268.76	6598.69	6579.69	1669.09	87.90 S	1667.17 W	1669.48@	266.98	0.83	122.71
8121.00	91.28	268.49	6597.24	6578.24	1763.08	90.16 S	1761.13 W	1763.43@	267.07	0.90	122.71
8215.00	91.45	268.92	6595.00	6576.00	1857.05	92.28 S	1855.08 W	1857.37@	267.15	0.49	122.71
8310.00	91.45	267.75	6592.60	6573.60	1952.02	95.04 S	1950.01 W	1952.32@	267.21	1.23	122.71
8404.00	89.87	268.77	6591.52	6572.52	2046.01	97.90 S	2043.95 W	2046.29@	267.26	2.00	126.32
8499.00	90.13	268.87	6591.52	6572.52	2141.00	99.85 S	2138.93 W	2141.26@	267.33	0.29	126.32
8594.00	89.96	268.84	6591.44	6572.44	2235.99	101.75 S	2233.91 W	2236.23@	267.39	0.18	122.71
8688.00	90.75	269.25	6590.86	6571.86	2329.98	103.32 S	2327.90 W	2330.19@	267.46	0.95	126.32
8782.00	90.92	268.64	6589.49	6570.49	2423.96	105.05 S	2421.87 W	2424.15@	267.52	0.67	126.32
8877.00	91.98	270.01	6587.09	6568.09	2518.91	106.17 S	2516.83 W	2519.07@	267.58	1.82	126.32
8970.00	91.01	269.92	6584.66	6565.66	2611.84	106.22 S	2609.80 W	2611.96@	267.67	1.05	126.32
9064.00	91.28	269.55	6582.78	6563.78	2705.79	106.66 S	2703.78 W	2705.88@	267.74	0.49	129.94
9158.00	90.57	269.53	6581.26	6562.26	2799.75	107.41 S	2797.76 W	2799.82@	267.80	0.76	129.94
9252.00	91.89	268.03	6579.25	6560.25	2893.72	109.41 S	2891.71 W	2893.78@	267.83	2.13	129.94

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9346.00	93.56	266.26	6574.78	6555.78	2987.59	114.09 S	2985.48 W	2987.66@	267.81	2.59	129.94
9441.00	91.63	267.29	6570.48	6551.48	3082.45	119.43 S	3080.23 W	3082.54@	267.78	2.30	129.94
9535.00	90.22	268.68	6568.96	6549.96	3176.44	122.73 S	3174.15 W	3176.53@	267.79	2.11	129.94
9630.00	90.22	268.84	6568.59	6549.59	3271.43	124.79 S	3269.13 W	3271.51@	267.81	0.17	129.94
9724.00	88.46	269.45	6569.68	6550.68	3365.41	126.19 S	3363.11 W	3365.48@	267.85	1.98	129.94
9818.00	88.99	269.98	6571.77	6552.77	3459.35	126.66 S	3457.09 W	3459.40@	267.90	0.80	133.55
9913.00	88.90	269.75	6573.52	6554.52	3554.30	126.88 S	3552.07 W	3554.33@	267.95	0.26	133.55
10007.00	88.55	269.46	6575.61	6556.61	3648.25	127.53 S	3646.04 W	3648.27@	268.00	0.48	133.55
10102.00	89.43	269.36	6577.28	6558.28	3743.21	128.51 S	3741.02 W	3743.23@	268.03	0.93	133.55
10196.00	90.84	269.33	6577.06	6558.06	3837.19	129.58 S	3835.01 W	3837.20@	268.06	1.50	137.17
10291.00	91.10	269.36	6575.45	6556.45	3932.16	130.67 S	3929.99 W	3932.17@	268.10	0.28	137.17
10385.00	91.63	269.02	6573.21	6554.21	4026.12	132.00 S	4023.96 W	4026.12@	268.12	0.67	137.17
10479.00	92.33	268.96	6569.97	6550.97	4120.05	133.65 S	4117.89 W	4120.05@	268.14	0.75	137.17
10573.00	88.99	268.54	6568.88	6549.88	4214.03	135.70 S	4211.84 W	4214.03@	268.15	3.58	137.17
10668.00	88.20	268.38	6571.21	6552.21	4309.00	138.25 S	4306.78 W	4309.00@	268.16	0.85	137.17
10763.00	89.34	268.44	6573.25	6554.25	4403.97	140.89 S	4401.72 W	4403.97@	268.17	1.20	137.17
10857.00	88.99	267.45	6574.62	6555.62	4497.96	144.26 S	4495.65 W	4497.96@	268.16	1.12	137.17
10914.00	88.64	267.43	6575.80	6556.80	4554.94	146.81 S	4552.58 W	4554.95@	268.15	0.61	137.17
STRAIGHT LINE PROJECTION TO BIT AT 10990' MD.											
10990.00	88.64	267.43	6577.60	6558.60	4630.91	150.21 S	4628.48 W	4630.92@	268.14	0.00	0.00

SurFace 660' FWL , 330' FEL
EOL 810' FWL , 321' FWL