

30-025-45618



Job Number: ID-2161
 Company: Taprock Resources
 Lease/Well: Cosmo K Fee #206H
 Location: Lea Co.
 Rig Name: H&P 422
 RKB:
 G.L. or M.S.L.:

State/Country: NM
 Declination:
 Grid:
 File name: C:\WINSERVE\2161.SVY
 Date/Time: 04-Apr-19 / 18:27
 Curve Name: As Drilled

As Drilled

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 359.44
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
181.00	.40	284.90	181.00	.16	-.61	.17	.63	284.90	.22
334.00	1.00	293.20	333.99	.83	-2.35	.85	2.49	289.33	.40
515.00	.90	314.70	514.96	2.45	-4.82	2.49	5.40	296.94	.20
695.00	.00	17.10	694.95	3.44	-5.82	3.50	6.76	300.60	.50
875.00	.79	70.84	874.95	3.85	-4.65	3.89	6.04	309.63	.44
Final 17 1/2 Hole Survey									
986.00	1.20	83.80	985.93	4.23	-2.77	4.25	5.05	326.75	.42
1149.00	2.10	126.80	1148.87	2.62	1.32	2.61	2.93	26.69	.90
1329.00	5.60	126.80	1328.43	-4.62	10.99	-4.72	11.92	112.78	1.94
1518.00	5.30	125.90	1516.58	-15.26	25.45	-15.51	29.67	120.95	.17
1707.00	5.10	126.90	1704.80	-25.42	39.24	-25.80	46.75	122.94	.12
1895.00	5.10	124.50	1892.06	-35.17	52.81	-35.69	63.45	123.67	.11
2084.00	5.00	126.00	2080.32	-44.77	66.39	-45.42	80.08	123.99	.09
2272.00	4.80	127.20	2267.64	-54.34	79.29	-55.11	96.12	124.43	.12
2462.00	4.20	119.90	2457.05	-62.62	91.65	-63.51	111.00	124.34	.44
2650.00	4.00	106.00	2644.58	-67.86	103.92	-68.87	124.11	123.14	.54
2839.00	4.50	104.70	2833.06	-71.55	117.43	-72.70	137.51	121.36	.27
3028.00	5.40	103.40	3021.35	-75.50	133.25	-76.80	153.15	119.53	.48
3217.00	4.70	101.00	3209.61	-79.04	149.51	-80.49	169.11	117.86	.39
3406.00	6.20	125.20	3397.78	-86.40	165.45	-88.01	186.65	117.57	1.44
3595.00	6.10	132.40	3585.69	-99.05	181.20	-100.82	206.51	118.66	.41
3784.00	6.10	133.90	3773.62	-112.79	195.86	-114.70	226.01	119.94	.08
3973.00	7.00	123.30	3961.39	-126.07	212.72	-128.15	247.27	120.65	.80
4161.00	5.10	132.90	4148.34	-138.05	228.42	-140.28	266.89	121.15	1.14
4350.00	3.30	153.00	4336.84	-148.62	237.04	-150.93	279.78	122.09	1.22

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
4540.00	3.20	126.90	4526.54	-156.68	243.76	-159.05	289.77	122.73	.77
4728.00	5.60	97.00	4714.00	-160.95	257.07	-163.45	303.29	122.05	1.73
4917.00	7.90	88.60	4901.68	-161.75	279.21	-164.47	322.68	120.08	1.32
Final 12 1/4 Survey									
5012.00	7.00	89.60	4995.88	-161.55	291.52	-164.39	333.30	118.99	.96
5189.00	5.60	104.10	5171.81	-163.58	310.69	-166.61	351.12	117.77	1.19
5378.00	4.30	131.20	5360.13	-170.50	324.97	-173.66	366.98	117.68	1.40
5567.00	4.60	129.80	5548.56	-180.01	336.12	-183.29	381.29	118.17	.17
5756.00	4.90	131.80	5736.91	-190.25	347.96	-193.64	396.57	118.67	.18
5945.00	4.90	131.20	5925.22	-200.94	360.05	-204.45	412.33	119.17	.03
6135.00	1.10	159.70	6114.93	-208.00	366.79	-211.58	421.66	119.56	2.09
6324.00	1.50	150.90	6303.88	-211.86	368.62	-215.46	425.17	119.89	.24
6513.00	1.50	156.50	6492.82	-216.29	370.81	-219.91	429.29	120.25	.08
6702.00	1.50	163.20	6681.75	-220.93	372.51	-224.56	433.10	120.67	.09
6892.00	1.50	159.30	6871.69	-225.64	374.11	-229.28	436.89	121.10	.05
7082.00	1.50	147.50	7061.62	-230.06	376.33	-233.73	441.08	121.44	.16
7271.00	.70	107.50	7250.59	-232.50	378.76	-236.19	444.42	121.54	.56
7459.00	.70	100.20	7438.58	-233.04	380.98	-236.76	446.61	121.45	.05
7648.00	.40	242.60	7627.57	-233.55	381.53	-237.27	447.34	121.47	.55
7837.00	.50	241.10	7816.57	-234.25	380.23	-237.96	446.59	121.64	.05
8026.00	.60	138.60	8005.56	-235.40	380.16	-239.10	447.14	121.77	.46
8215.00	.70	84.00	8194.55	-236.02	381.96	-239.74	449.00	121.71	.32
8404.00	.80	81.90	8383.53	-235.71	384.42	-239.46	450.93	121.52	.05
8593.00	1.40	58.00	8572.50	-234.30	387.68	-238.08	452.98	121.15	.39
8783.00	.50	128.80	8762.48	-233.59	390.29	-237.39	454.86	120.90	.70
8972.00	1.10	183.40	8951.46	-235.92	390.83	-239.73	456.51	121.12	.48
9162.00	1.00	192.80	9141.43	-239.36	390.35	-243.16	457.89	121.52	.10
9351.00	1.00	208.50	9330.40	-242.41	389.20	-246.21	458.52	121.92	.14
9540.00	1.50	265.20	9519.36	-244.07	385.95	-247.83	456.65	122.31	.67
9730.00	1.30	311.90	9709.31	-242.84	381.87	-246.56	452.54	122.45	.59
9919.00	1.10	323.90	9898.27	-239.94	379.20	-243.64	448.74	122.32	.17
10108.00	1.10	283.90	10087.24	-238.04	376.37	-241.71	445.33	122.31	.40
10298.00	1.80	294.20	10277.17	-236.38	371.88	-240.00	440.65	122.44	.39
10487.00	2.00	297.70	10466.07	-233.63	366.25	-237.20	434.42	122.53	.12
10675.00	1.50	314.00	10653.98	-230.39	361.58	-233.92	428.74	122.50	.37
10864.00	1.60	313.20	10842.91	-226.87	357.88	-230.36	423.73	122.37	.05
11053.00	.40	250.30	11031.88	-225.28	355.33	-228.75	420.73	122.38	.77
11242.00	.40	216.90	11220.88	-226.03	354.31	-229.49	420.27	122.54	.12
11431.00	1.40	184.90	11409.86	-228.86	353.72	-232.31	421.30	122.90	.57
11621.00	3.50	198.20	11599.67	-236.69	351.71	-240.11	423.93	123.94	1.14
Final 8 3/4 Hole Survey									
11747.00	3.10	196.70	11725.46	-243.60	349.53	-247.01	426.04	124.87	.32
11824.00	3.20	196.70	11802.35	-247.66	348.31	-251.05	427.38	125.41	.13
11885.00	2.70	205.10	11863.27	-250.59	347.22	-253.97	428.20	125.82	1.08
11932.00	2.30	280.90	11910.23	-251.41	345.82	-254.78	427.55	126.02	6.57
11979.00	5.20	315.80	11957.13	-249.71	343.41	-253.05	424.60	126.02	7.58
12073.00	15.40	343.30	12049.54	-234.65	336.83	-237.93	410.51	124.86	11.75

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
12120.00	25.90	345.60	12093.46	-218.69	332.47	-221.92	397.95	123.34	22.40
12168.00	34.30	346.50	12134.95	-195.34	326.70	-198.52	380.64	120.88	17.52
12215.00	36.00	346.80	12173.38	-169.01	320.45	-172.14	362.29	117.81	3.64
12262.00	38.20	348.50	12210.86	-141.32	314.40	-144.39	344.70	114.20	5.16
12309.00	43.30	354.20	12246.47	-111.01	309.87	-114.04	329.15	109.71	13.42
12356.00	48.70	1.40	12279.13	-77.28	308.67	-80.30	318.20	104.06	15.91
12403.00	54.10	7.60	12308.45	-40.71	311.62	-43.76	314.27	97.44	15.43
12451.00	55.60	7.00	12336.09	-1.79	316.61	-4.88	316.61	90.32	3.29
12498.00	57.40	5.20	12362.03	37.18	320.77	34.04	322.91	83.39	4.99
12545.00	61.10	2.40	12386.06	77.47	323.42	74.31	332.57	76.53	9.39
12592.00	64.40	.90	12407.58	119.23	324.62	116.05	345.82	69.83	7.57
12640.00	71.60	1.10	12425.55	163.70	325.40	160.51	364.25	63.29	15.00
12687.00	76.30	2.30	12438.54	208.83	326.74	205.63	387.78	57.42	10.30
12734.00	80.00	2.10	12448.19	254.79	328.51	251.57	415.73	52.20	7.88
Landed Curve @ 12878' 3'A and 35'L									
12827.00	89.40	3.20	12456.77	347.19	332.79	343.92	480.92	43.79	10.18
12867.00	90.80	3.90	12456.70	387.11	335.27	383.81	512.11	40.89	3.91
12961.00	91.40	3.80	12454.90	480.88	341.58	477.52	589.85	35.39	.65
13054.00	92.20	5.70	12451.97	573.51	349.27	570.07	671.49	31.34	2.22
13148.00	90.40	4.60	12449.84	667.10	357.71	663.57	756.95	28.20	2.24
13241.00	88.20	3.20	12450.98	759.87	364.03	756.28	842.57	25.60	2.80
13336.00	88.90	1.00	12453.38	854.77	367.51	851.14	930.43	23.27	2.43
13430.00	88.80	.40	12455.27	948.74	368.66	945.10	1017.85	21.23	.65
13524.00	88.60	.30	12457.40	1042.72	369.23	1039.06	1106.16	19.50	.24
13617.00	88.40	359.80	12459.84	1135.69	369.31	1132.02	1194.23	18.01	.58
13711.00	88.10	359.00	12462.71	1229.64	368.33	1225.98	1283.62	16.68	.91
13806.00	89.60	358.60	12464.61	1324.59	366.34	1320.95	1374.32	15.46	1.63
13899.00	89.10	358.90	12465.67	1417.56	364.31	1413.94	1463.63	14.41	.63
13993.00	90.60	359.30	12465.91	1511.55	362.84	1507.93	1554.49	13.50	1.65
14087.00	89.50	358.20	12465.83	1605.52	360.79	1601.92	1645.56	12.66	1.65
14181.00	92.10	356.50	12464.52	1699.40	356.44	1695.84	1736.38	11.85	3.30
14275.00	92.50	356.00	12460.75	1793.13	350.30	1789.62	1827.02	11.05	.68
14369.00	92.60	356.40	12456.56	1886.83	344.08	1883.37	1917.94	10.33	.44
14463.00	92.50	356.20	12452.38	1980.54	338.02	1977.14	2009.17	9.69	.24
14557.00	92.90	356.70	12447.95	2074.25	332.20	2070.91	2100.69	9.10	.68
14650.00	91.20	357.80	12444.63	2167.08	327.74	2163.77	2191.72	8.60	2.18
14744.00	90.00	358.30	12443.64	2261.02	324.54	2257.74	2284.19	8.17	1.38
14838.00	87.60	358.20	12445.61	2354.95	321.67	2351.69	2376.82	7.78	2.56
14931.00	89.70	359.00	12447.80	2447.89	319.40	2444.65	2468.64	7.43	2.42
15025.00	91.80	.60	12446.57	2541.87	319.08	2538.63	2561.82	7.15	2.81
15119.00	92.00	.00	12443.46	2635.82	319.57	2632.57	2655.12	6.91	.67
15213.00	90.90	359.30	12441.08	2729.78	318.99	2726.54	2748.36	6.67	1.39
15307.00	92.70	.00	12438.12	2823.73	318.42	2820.48	2841.63	6.43	2.05
15402.00	91.20	359.20	12434.89	2918.67	317.76	2915.43	2935.92	6.21	1.79
15496.00	91.20	359.60	12432.92	3012.64	316.77	3009.41	3029.25	6.00	.43
15590.00	90.90	359.60	12431.20	3106.63	316.12	3103.39	3122.67	5.81	.32

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
15684.00	91.30	359.50	12429.40	3200.61	315.38	3197.37	3216.11	5.63	.44
15788.00	92.80	359.60	12425.68	3304.53	314.56	3301.30	3319.47	5.44	1.45
15873.00	93.00	.30	12421.38	3389.42	314.49	3386.19	3403.98	5.30	.86
15968.00	89.40	359.30	12419.39	3484.39	314.15	3481.15	3498.52	5.15	3.93
16062.00	92.10	359.80	12418.16	3578.37	313.42	3575.13	3592.07	5.01	2.92
16156.00	94.90	1.10	12412.42	3672.18	314.15	3668.93	3685.59	4.89	3.28
16249.00	94.20	1.00	12405.04	3764.87	315.85	3761.60	3778.09	4.80	.76
16343.00	92.20	.40	12399.79	3858.71	317.00	3855.43	3871.71	4.70	2.22
16438.00	94.00	1.00	12394.66	3953.56	318.16	3950.26	3966.34	4.60	2.00
16532.00	92.90	1.00	12389.00	4047.37	319.79	4044.05	4059.99	4.52	1.17
16626.00	93.50	.30	12383.75	4141.22	320.86	4137.88	4153.63	4.43	.98
16720.00	93.30	359.70	12378.18	4235.05	320.86	4231.71	4247.19	4.33	.67
16814.00	93.80	359.70	12372.36	4328.87	320.37	4325.53	4340.71	4.23	.53
16908.00	91.40	359.60	12368.09	4422.76	319.79	4419.43	4434.31	4.14	2.56
17002.00	93.00	359.60	12364.48	4516.69	319.14	4513.36	4527.95	4.04	1.70
17096.00	91.00	359.10	12361.20	4610.62	318.07	4607.29	4621.58	3.95	2.19
17190.00	89.60	358.30	12360.71	4704.59	315.94	4701.28	4715.19	3.84	1.72
17284.00	92.20	358.80	12359.24	4798.54	313.56	4795.25	4808.78	3.74	2.82
17377.00	91.20	357.90	12356.48	4891.46	310.88	4888.19	4901.33	3.64	1.45
17471.00	88.60	356.60	12356.64	4985.34	306.37	4982.11	4994.75	3.52	3.09
17566.00	87.70	357.60	12359.71	5080.17	301.57	5076.98	5089.11	3.40	1.42
17660.00	88.80	357.30	12362.58	5174.03	297.39	5170.88	5182.57	3.29	1.21
17754.00	89.80	358.20	12363.73	5267.95	293.70	5264.83	5276.13	3.19	1.43
17848.00	89.50	358.20	12364.30	5361.90	290.75	5358.80	5369.78	3.10	.32
17942.00	90.50	358.50	12364.30	5455.86	288.04	5452.79	5463.46	3.02	1.11
18037.00	92.30	.10	12361.98	5550.82	286.88	5547.75	5558.23	2.96	2.53
18130.00	92.70	.40	12357.92	5643.73	287.29	5640.65	5651.04	2.91	.54
18225.00	91.30	359.60	12354.61	5738.67	287.29	5735.59	5745.85	2.87	1.70
18318.00	91.30	359.40	12352.50	5831.64	286.47	5828.56	5838.67	2.81	.21
18412.00	87.50	358.10	12353.48	5925.59	284.42	5922.53	5932.42	2.75	4.27
18507.00	88.90	358.20	12356.47	6020.50	281.36	6017.46	6027.07	2.68	1.48
18601.00	87.60	357.70	12359.34	6114.39	278.00	6111.38	6120.71	2.60	1.48
18740.00	87.30	357.50	12365.52	6253.13	272.18	6250.17	6259.05	2.49	.26
SLPTB									
18812.00	87.30	357.50	12368.91	6324.98	269.05	6322.05	6330.70	2.44	.00