



1724-B Townhurst Dr, Houston, Tx 77043
(713) 827-8302
www.nevisenergy.com

Job Number: 61xxx
Company: Black Hills E & P
Lease/Well: HSC Unit 3-22
Location: Mesa Co., CO
Rig Name: ☐
RKB: ☐
G.L. or M.S.L.: 5405'

State/Country: CO/USA
Declination: ☐
Grid: ☐
File name: Z:\BLACKH~1\NEWWEL~1\HSC3-2~1\HSC3-22.SVY
Date/Time: 07-Aug-07 / 10:30
Curve Name: HSC 3-22 Plan 12-1-06

HSC 3-22 Plan 12-1-06

WINSERVE PROPOSAL REPORT
Minimum Curvature Method
Vertical Section Plane 151.56
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Surface Wasatche									
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Mesaverde - 70' TVD									
70.00	.00	.00	70.00	.00	.00	.00	.00	.00	.00
KOP-> 700 TVD Begin Build @ 4.00% 100'									
700.00	.00	151.56	700.00	.00	.00	.00	.00	.00	.00
730.00	1.20	151.56	730.00	.31	-.28	.15	.31	151.55	4.00
760.00	2.40	151.56	759.98	1.26	-1.10	.60	1.26	151.56	4.00
790.00	3.60	151.56	789.94	2.83	-2.49	1.35	2.83	151.56	4.00
820.00	4.80	151.56	819.86	5.02	-4.42	2.39	5.02	151.56	4.00
850.00	6.00	151.56	849.73	7.85	-6.90	3.74	7.85	151.56	4.00
880.00	7.20	151.56	879.53	11.29	-9.93	5.38	11.29	151.56	4.00
910.00	8.40	151.56	909.25	15.37	-13.51	7.32	15.37	151.56	4.00
940.00	9.60	151.56	938.88	20.06	-17.64	9.55	20.06	151.56	4.00
970.00	10.80	151.56	968.40	25.37	-22.31	12.08	25.37	151.56	4.00
1000.00	12.00	151.56	997.81	31.30	-27.52	14.91	31.30	151.56	4.00
1030.00	13.20	151.56	1027.09	37.85	-33.28	18.03	37.85	151.56	4.00
1060.00	14.40	151.56	1056.22	45.00	-39.57	21.43	45.00	151.56	4.00
1090.00	15.60	151.56	1085.20	52.77	-46.40	25.13	52.77	151.56	4.00
1120.00	16.80	151.56	1114.01	61.14	-53.76	29.12	61.14	151.56	4.00
1150.00	18.00	151.56	1142.63	70.11	-61.64	33.39	70.11	151.56	4.00
1180.00	19.20	151.56	1171.07	79.67	-70.06	37.95	79.67	151.56	4.00
1210.00	20.40	151.56	1199.29	89.84	-78.99	42.79	89.84	151.56	4.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
1240.00	21.60	151.56	1227.30	100.59	-88.45	47.91	100.59	151.56	4.00
1270.00	22.80	151.56	1255.08	111.92	-98.41	53.31	111.92	151.56	4.00
1300.00	24.00	151.56	1282.61	123.84	-108.89	58.98	123.84	151.56	4.00
1330.00	25.20	151.56	1309.88	136.33	-119.87	64.93	136.33	151.56	4.00
1360.00	26.40	151.56	1336.89	149.38	-131.35	71.15	149.38	151.56	4.00
1390.00	27.60	151.56	1363.62	163.00	-143.33	77.63	163.00	151.56	4.00
1420.00	28.80	151.56	1390.06	177.18	-155.79	84.39	177.18	151.56	4.00
1450.00	30.00	151.56	1416.20	191.90	-168.74	91.40	191.90	151.56	4.00
1480.00	31.20	151.56	1442.02	207.18	-182.17	98.67	207.18	151.56	4.00
1510.00	32.40	151.56	1467.52	222.98	-196.07	106.20	222.98	151.56	4.00
1540.00	33.60	151.56	1492.68	239.32	-210.43	113.99	239.32	151.56	4.00
1570.00	34.80	151.56	1517.49	256.18	-225.26	122.02	256.18	151.56	4.00
1600.00	36.00	151.56	1541.94	273.56	-240.54	130.29	273.56	151.56	4.00
1630.00	37.20	151.56	1566.02	291.45	-256.27	138.81	291.45	151.56	4.00
1660.00	38.40	151.56	1589.73	309.84	-272.44	147.57	309.84	151.56	4.00
1690.00	39.60	151.56	1613.04	328.72	-289.04	156.56	328.72	151.56	4.00
1720.00	40.80	151.56	1635.96	348.08	-306.06	165.78	348.08	151.56	4.00
1750.00	42.00	151.56	1658.46	367.92	-323.51	175.23	367.92	151.56	4.00
1780.00	43.20	151.56	1680.54	388.22	-341.36	184.90	388.22	151.56	4.00
Begin Hold @ 44.27°, 151.56° Azm									
1806.87	44.27	151.56	1699.95	406.80	-357.69	193.75	406.80	151.56	4.00
1906.87	44.27	151.56	1771.55	476.61	-419.08	227.00	476.61	151.56	.00
2006.87	44.27	151.56	1843.15	546.42	-480.46	260.25	546.42	151.56	.00
2106.87	44.27	151.56	1914.75	616.23	-541.84	293.50	616.23	151.56	.00
2206.87	44.27	151.56	1986.35	686.04	-603.23	326.75	686.04	151.56	.00
2306.87	44.27	151.56	2057.95	755.85	-664.61	360.00	755.85	151.56	.00
2406.87	44.27	151.56	2129.55	825.66	-725.99	393.25	825.66	151.56	.00
Begin Drop @ -3.00% 100'									
2472.23	44.27	151.56	2176.36	871.29	-766.12	414.98	871.29	151.56	.00
2502.23	43.37	151.56	2198.00	892.06	-784.38	424.87	892.06	151.56	3.00
2532.23	42.47	151.56	2219.97	912.49	-802.35	434.60	912.49	151.56	3.00
2562.23	41.57	151.56	2242.25	932.58	-820.01	444.17	932.58	151.56	3.00
2592.23	40.67	151.56	2264.85	952.31	-837.36	453.57	952.31	151.56	3.00
2622.23	39.77	151.56	2287.76	971.68	-854.39	462.79	971.68	151.56	3.00
2652.23	38.87	151.56	2310.96	990.69	-871.11	471.85	990.69	151.56	3.00
2682.23	37.97	151.56	2334.47	1009.34	-887.50	480.73	1009.34	151.56	3.00
2712.23	37.07	151.56	2358.26	1027.61	-903.57	489.43	1027.61	151.56	3.00
Cameo - 2380' TVD									
2739.34	36.26	151.56	2380.00	1043.80	-917.80	497.14	1043.80	151.56	3.00
2742.23	36.17	151.56	2382.33	1045.51	-919.30	497.96	1045.51	151.56	3.00
2772.23	35.27	151.56	2406.69	1063.02	-934.71	506.30	1063.02	151.56	3.00
2802.23	34.37	151.56	2431.32	1080.15	-949.77	514.46	1080.15	151.56	3.00
2832.23	33.47	151.56	2456.21	1096.90	-964.49	522.43	1096.90	151.56	3.00
2862.23	32.57	151.56	2481.36	1113.25	-978.87	530.22	1113.25	151.56	3.00
2892.23	31.67	151.56	2506.77	1129.20	-992.90	537.82	1129.20	151.56	3.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	C L O S U R E		Dogleg Severity Deg/100
Distance FT	Direction Deg								
2922.23	30.77	151.56	2532.42	1144.75	-1006.57	545.23	1144.75	151.56	3.00
2952.23	29.87	151.56	2558.32	1159.90	-1019.89	552.44	1159.90	151.56	3.00
2982.23	28.97	151.56	2584.45	1174.64	-1032.85	559.46	1174.64	151.56	3.00
3012.23	28.07	151.56	2610.81	1188.96	-1045.44	566.28	1188.96	151.56	3.00
3042.23	27.17	151.56	2637.39	1202.87	-1057.68	572.91	1202.87	151.56	3.00
Rollins - 2645' TVD									
3050.78	26.92	151.56	2645.00	1206.76	-1061.09	574.76	1206.76	151.56	3.00
3072.23	26.27	151.56	2664.18	1216.36	-1069.54	579.33	1216.36	151.56	3.00
3102.23	25.37	151.56	2691.18	1229.43	-1081.03	585.56	1229.43	151.56	3.00
3132.23	24.47	151.56	2718.39	1242.07	-1092.15	591.58	1242.07	151.56	3.00
3162.23	23.57	151.56	2745.79	1254.29	-1102.88	597.40	1254.29	151.56	3.00
3192.23	22.67	151.56	2773.38	1266.07	-1113.24	603.01	1266.07	151.56	3.00
3222.23	21.77	151.56	2801.15	1277.42	-1123.22	608.41	1277.42	151.56	3.00
3252.23	20.87	151.56	2829.10	1288.33	-1132.81	613.61	1288.33	151.56	3.00
3282.23	19.97	151.56	2857.21	1298.79	-1142.02	618.59	1298.79	151.56	3.00
3312.23	19.07	151.56	2885.48	1308.82	-1150.84	623.37	1308.82	151.56	3.00
Cozzette - 2890' TVD									
3317.01	18.93	151.56	2890.00	1310.38	-1152.20	624.11	1310.38	151.56	3.00
3342.23	18.17	151.56	2913.91	1318.40	-1159.26	627.93	1318.40	151.56	3.00
3372.23	17.27	151.56	2942.49	1327.53	-1167.29	632.28	1327.53	151.56	3.00
3402.23	16.37	151.56	2971.20	1336.22	-1174.93	636.42	1336.22	151.56	3.00
3432.23	15.47	151.56	3000.05	1344.45	-1182.16	640.34	1344.45	151.56	3.00
3462.23	14.57	151.56	3029.03	1352.23	-1189.00	644.04	1352.23	151.56	3.00
3492.23	13.67	151.56	3058.12	1359.55	-1195.44	647.53	1359.55	151.56	3.00
Target Corcoran 3080' TVD, Drop @ -2.00% 100'									
3514.72	13.00	151.56	3080.00	1364.73	-1200.00	650.00	1364.73	151.56	3.00
3544.72	12.40	151.56	3109.27	1371.33	-1205.80	653.14	1371.33	151.56	2.00
3574.72	11.80	151.56	3138.60	1377.62	-1211.33	656.14	1377.62	151.56	2.00
3604.72	11.20	151.56	3168.00	1383.60	-1216.59	658.99	1383.60	151.56	2.00
3634.72	10.60	151.56	3197.46	1389.27	-1221.58	661.69	1389.27	151.56	2.00
3664.72	10.00	151.56	3226.97	1394.64	-1226.29	664.24	1394.64	151.56	2.00
3694.72	9.40	151.56	3256.54	1399.69	-1230.74	666.65	1399.69	151.56	2.00
3724.72	8.80	151.56	3286.17	1404.44	-1234.91	668.91	1404.44	151.56	2.00
3754.72	8.20	151.56	3315.84	1408.87	-1238.81	671.02	1408.87	151.56	2.00
Mancos - 3330' TVD									
3769.02	7.91	151.56	3330.00	1410.87	-1240.57	671.98	1410.87	151.56	2.00
3784.72	7.60	151.56	3345.55	1412.99	-1242.43	672.98	1412.99	151.56	2.00
3814.72	7.00	151.56	3375.31	1416.80	-1245.79	674.80	1416.80	151.56	2.00
3844.72	6.40	151.56	3405.10	1420.31	-1248.86	676.47	1420.31	151.56	2.00
3874.72	5.80	151.56	3434.93	1423.49	-1251.67	677.99	1423.49	151.56	2.00
3904.72	5.20	151.56	3464.79	1426.37	-1254.19	679.36	1426.37	151.56	2.00
3934.72	4.60	151.56	3494.68	1428.93	-1256.45	680.58	1428.93	151.56	2.00
3964.72	4.00	151.56	3524.60	1431.18	-1258.43	681.65	1431.18	151.56	2.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3994.72	3.40	151.56	3554.54	1433.12	-1260.13	682.57	1433.12	151.56	2.00
4024.72	2.80	151.56	3584.49	1434.74	-1261.55	683.34	1434.74	151.56	2.00
4054.72	2.20	151.56	3614.46	1436.05	-1262.70	683.97	1436.05	151.56	2.00
4084.72	1.60	151.56	3644.45	1437.04	-1263.58	684.44	1437.04	151.56	2.00
4114.72	1.00	151.56	3674.44	1437.72	-1264.18	684.76	1437.72	151.56	2.00
4144.72	.40	151.56	3704.44	1438.09	-1264.50	684.94	1438.09	151.56	2.00
Vertical									
4164.72	.00	151.56	3724.44	1438.16	-1264.56	684.97	1438.16	151.56	2.00
4264.72	.00	151.56	3824.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4364.72	.00	151.56	3924.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4464.72	.00	151.56	4024.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4564.72	.00	151.56	4124.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4664.72	.00	151.56	4224.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4764.72	.00	151.56	4324.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4864.72	.00	151.56	4424.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
4964.72	.00	151.56	4524.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5064.72	.00	151.56	4624.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5164.72	.00	151.56	4724.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5264.72	.00	151.56	4824.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5364.72	.00	151.56	4924.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5464.72	.00	151.56	5024.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5564.72	.00	151.56	5124.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5664.72	.00	151.56	5224.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5764.72	.00	151.56	5324.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5864.72	.00	151.56	5424.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
5964.72	.00	151.56	5524.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6064.72	.00	151.56	5624.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6164.72	.00	151.56	5724.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6264.72	.00	151.56	5824.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6364.72	.00	151.56	5924.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6464.72	.00	151.56	6024.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6564.72	.00	151.56	6124.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6664.72	.00	151.56	6224.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6764.72	.00	151.56	6324.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6864.72	.00	151.56	6424.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
6964.72	.00	151.56	6524.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7064.72	.00	151.56	6624.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7164.72	.00	151.56	6724.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7264.72	.00	151.56	6824.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7364.72	.00	151.56	6924.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7464.72	.00	151.56	7024.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7564.72	.00	151.56	7124.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7664.72	.00	151.56	7224.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
7764.72	.00	151.56	7324.44	1438.16	-1264.56	684.97	1438.16	151.56	.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
Target 7350' TVD									
7790.28	.00	151.56	7350.00	1438.16	-1264.56	684.97	1438.16	151.56	.00
Dakota Silt - 7355' TVD									
7795.28	.00	151.56	7355.00	1438.16	-1264.56	684.97	1438.16	151.56	.01
Dakota Sand - 7400' TVD									
7840.28	.00	151.56	7400.00	1438.16	-1264.56	684.97	1438.16	151.56	.00
7864.72	.00	151.56	7424.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
Cedar Mountain - 7515' TVD									
7955.28	.00	151.56	7515.00	1438.16	-1264.56	684.97	1438.16	151.56	.00
7964.72	.00	151.56	7524.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
Morrison - 7600' TVD									
8040.28	.00	151.56	7600.00	1438.16	-1264.56	684.97	1438.16	151.56	.00
8064.72	.00	151.56	7624.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
8164.72	.00	151.56	7724.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
8264.72	.00	151.56	7824.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
8364.72	.00	151.56	7924.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
8464.72	.00	151.56	8024.44	1438.16	-1264.56	684.97	1438.16	151.56	.00
PBHL @ 8100' TVD									
8540.28	.00	151.56	8100.00	1438.16	-1264.56	684.97	1438.16	151.56	.00