



Job Number: 1020396
Company: Black Hills E&P
Lease/Well: Ute #34-34
Location: La Plata County, Colorado
Rig Name: Aztec 507
RKB: 7209'
G.L. or M.S.L.: 7198'

State/Country: CO
Declination: 10.00294
Grid: NA
File name: C:\102039~2\#34-34.SVY
Date/Time: 11-Jul-10 / 07:51
Curve Name: Ute #34-34 Surveys

Ute #34-34 Surveys

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 27.65
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>True Vertical Depth</i>	<i>N-S FT</i>	<i>E-W FT</i>	<i>Vertical Section FT</i>	<i>C L O S U R E Distance FT</i>	<i>Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
Tie In point Surface									
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
First Nevis MWD Surveys									
483.00	1.30	181.60	482.96	-5.48	-.15	-4.92	5.48	181.60	.27
514.00	1.30	169.70	513.95	-6.17	-.10	-5.52	6.18	180.93	.87
545.00	.60	184.90	544.95	-6.68	-.05	-5.94	6.68	180.44	2.38
575.00	.20	109.10	574.95	-6.86	-.01	-6.08	6.86	180.12	1.95
606.00	.40	126.00	605.95	-6.94	.12	-6.09	6.94	178.98	.70
637.00	1.00	44.90	636.94	-6.81	.40	-5.84	6.82	176.62	3.28
667.00	1.30	37.80	666.94	-6.35	.80	-5.26	6.40	172.86	1.11
698.00	1.20	53.50	697.93	-5.88	1.27	-4.62	6.02	167.80	1.15
729.00	1.40	45.40	728.92	-5.42	1.80	-3.97	5.72	161.62	.87
760.00	2.40	34.80	759.90	-4.63	2.44	-2.96	5.23	152.16	3.41
790.00	2.90	29.80	789.87	-3.45	3.18	-1.58	4.69	137.36	1.83
821.00	3.20	28.70	820.83	-2.01	3.98	.07	4.46	116.80	.99
852.00	3.80	32.40	851.77	-.39	4.95	1.96	4.96	94.46	2.07
883.00	4.80	31.80	882.68	1.58	6.18	4.27	6.38	75.63	3.23
914.00	6.20	23.90	913.54	4.22	7.55	7.24	8.64	60.80	5.12
944.00	6.90	23.20	943.34	7.35	8.91	10.65	11.55	50.47	2.35
974.00	7.80	19.80	973.10	10.93	10.31	14.46	15.02	43.34	3.33
1006.00	9.30	19.50	1004.74	15.41	11.91	19.17	19.47	37.71	4.69
1038.00	10.50	21.10	1036.26	20.56	13.82	24.63	24.78	33.91	3.85
1069.00	11.30	22.40	1066.70	26.01	16.00	30.46	30.53	31.60	2.70

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	
1101.00	12.10	24.20	1098.04	31.97	18.57	36.93	36.97	30.15	2.75
1132.00	12.60	27.50	1128.32	37.93	21.46	43.56	43.58	29.50	2.79
1163.00	13.80	28.90	1158.50	44.16	24.81	50.63	50.66	29.32	4.01
1194.00	15.00	31.00	1188.53	50.84	28.66	58.34	58.36	29.41	4.22
1226.00	15.50	31.90	1219.40	58.02	33.05	66.73	66.77	29.67	1.73
1258.00	17.00	31.80	1250.12	65.63	37.78	75.66	75.72	29.93	4.69
1290.00	18.00	31.50	1280.64	73.82	42.83	85.26	85.34	30.12	3.14
1321.00	19.20	31.20	1310.02	82.26	47.97	95.13	95.23	30.25	3.88
1353.00	20.40	31.00	1340.13	91.54	53.57	105.95	106.07	30.33	3.76
1385.00	21.10	31.30	1370.05	101.25	59.43	117.27	117.40	30.41	2.21
1416.00	21.40	31.70	1398.94	110.83	65.30	128.48	128.64	30.51	1.07
1446.00	22.60	31.00	1426.76	120.42	71.15	139.69	139.87	30.58	4.09
1478.00	22.90	30.70	1456.27	131.05	77.50	152.05	152.25	30.60	1.01
1510.00	22.20	31.40	1485.82	141.56	83.82	164.30	164.52	30.63	2.34
1542.00	22.70	31.10	1515.40	152.01	90.16	176.49	176.74	30.67	1.60
1574.00	22.10	31.70	1544.98	162.42	96.52	188.66	188.93	30.72	2.01
1605.00	21.70	31.50	1573.75	172.27	102.57	200.19	200.49	30.77	1.31
1637.00	21.50	31.90	1603.50	182.29	108.76	211.94	212.27	30.82	.78
1668.00	21.20	31.80	1632.37	191.88	114.72	223.20	223.55	30.87	.97
1699.00	21.10	31.00	1661.28	201.42	120.55	234.36	234.74	30.90	.99
1731.00	20.70	31.30	1691.18	211.19	126.45	245.76	246.15	30.91	1.29
1762.00	21.00	32.00	1720.15	220.58	132.24	256.76	257.19	30.94	1.26
1793.00	21.20	31.90	1749.07	230.05	138.15	267.89	268.35	30.98	.66
1825.00	22.00	31.00	1778.82	240.10	144.29	279.64	280.12	31.00	2.71
1857.00	21.60	30.70	1808.53	250.31	150.39	291.51	292.01	31.00	1.30
1889.00	21.90	29.90	1838.26	260.54	156.37	303.35	303.86	30.97	1.32
1921.00	22.10	28.80	1867.93	270.99	162.24	315.34	315.85	30.91	1.43
1952.00	22.00	28.40	1896.66	281.21	167.81	326.97	327.48	30.83	.58
1984.00	22.30	27.60	1926.30	291.86	173.48	339.04	339.53	30.73	1.33
2016.00	22.60	27.30	1955.87	302.71	179.11	351.26	351.73	30.61	1.00
2047.00	23.00	26.90	1984.45	313.40	184.58	363.27	363.72	30.50	1.38
2079.00	23.00	27.00	2013.91	324.55	190.25	375.77	376.20	30.38	.12
2111.00	22.40	28.50	2043.43	335.48	196.00	388.12	388.53	30.30	2.61
2142.00	22.20	28.90	2072.11	345.79	201.65	399.88	400.29	30.25	.81
2174.00	22.20	29.00	2101.74	356.37	207.50	411.97	412.38	30.21	.12
2205.00	22.10	28.90	2130.45	366.60	213.16	423.65	424.07	30.18	.34
2237.00	21.90	28.40	2160.12	377.12	218.90	435.64	436.05	30.13	.86
2269.00	21.50	29.00	2189.85	387.50	224.58	447.47	447.88	30.10	1.43
2300.00	21.20	29.00	2218.72	397.37	230.06	458.75	459.16	30.07	.97
2332.00	21.40	28.10	2248.54	407.58	235.61	470.37	470.78	30.03	1.20
2363.00	21.40	27.40	2277.40	417.59	240.88	481.68	482.08	29.98	.82
2395.00	21.90	27.00	2307.14	428.09	246.27	493.49	493.87	29.91	1.63
2426.00	22.40	26.30	2335.86	438.54	251.52	505.18	505.54	29.84	1.82
2458.00	22.00	26.00	2365.48	449.39	256.84	517.26	517.61	29.75	1.30
2489.00	22.30	24.90	2394.20	459.94	261.87	528.94	529.27	29.65	1.65

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	
2520.00	22.40	24.90	2422.87	470.64	266.83	540.72	541.01	29.55	.32
2552.00	22.20	24.30	2452.47	481.68	271.88	552.84	553.11	29.44	.95
2583.00	21.80	24.20	2481.22	492.26	276.65	564.43	564.68	29.34	1.30
2615.00	22.00	24.50	2510.91	503.14	281.58	576.35	576.57	29.23	.72
2646.00	22.10	23.00	2539.64	513.79	286.26	587.96	588.15	29.12	1.84
2678.00	22.30	21.80	2569.27	524.97	290.87	600.00	600.16	28.99	1.55
2710.00	21.80	23.10	2598.93	536.07	295.45	611.96	612.10	28.86	2.18
2741.00	22.20	24.70	2627.67	546.69	300.16	623.55	623.67	28.77	2.32
2773.00	23.10	26.30	2657.20	557.81	305.47	635.86	635.97	28.71	3.41
2805.00	23.20	27.00	2686.62	569.05	311.11	648.44	648.54	28.67	.92
2837.00	23.00	26.70	2716.06	580.25	316.78	660.99	661.09	28.63	.73
2868.00	23.20	26.00	2744.57	591.15	322.18	673.15	673.24	28.59	1.10
2900.00	23.00	25.90	2774.01	602.44	327.67	685.70	685.79	28.54	.64
2930.00	22.30	26.00	2801.69	612.83	332.73	697.25	697.33	28.50	2.34
2962.00	22.50	25.80	2831.28	623.80	338.05	709.44	709.51	28.45	.67
2994.00	22.10	25.40	2860.89	634.75	343.30	721.57	721.64	28.41	1.34
3025.00	21.80	24.90	2889.64	645.24	348.23	733.15	733.21	28.36	1.14
3057.00	21.70	24.60	2919.36	656.00	353.19	744.99	745.04	28.30	.47
3088.00	21.20	24.50	2948.21	666.32	357.90	756.31	756.35	28.24	1.62
3120.00	20.90	24.60	2978.08	676.77	362.68	767.79	767.82	28.19	.94
3151.00	20.70	23.80	3007.06	686.81	367.19	778.78	778.81	28.13	1.12
3183.00	20.10	23.80	3037.05	697.02	371.69	789.91	789.93	28.07	1.87
3215.00	20.20	23.70	3067.09	707.11	376.13	800.91	800.92	28.01	.33
3247.00	20.30	23.40	3097.11	717.26	380.56	811.95	811.96	27.95	.45
3278.00	20.40	24.50	3126.18	727.11	384.93	822.71	822.72	27.90	1.28
3310.00	19.80	25.30	3156.23	737.09	389.56	833.69	833.70	27.86	2.06
3341.00	20.40	26.10	3185.34	746.69	394.18	844.34	844.35	27.83	2.13
3372.00	19.70	26.70	3214.46	756.21	398.91	854.97	854.97	27.81	2.35
3403.00	19.70	27.00	3243.65	765.53	403.63	865.42	865.42	27.80	.33
3434.00	19.30	26.30	3272.87	774.78	408.27	875.76	875.76	27.79	1.49
3466.00	18.50	26.40	3303.15	784.07	412.87	886.12	886.13	27.77	2.50
3498.00	19.10	27.40	3333.44	793.26	417.54	896.44	896.44	27.76	2.13
3530.00	19.00	28.00	3363.69	802.51	422.39	906.88	906.88	27.76	.69
3561.00	19.50	28.40	3392.95	811.52	427.22	917.10	917.10	27.76	1.67
3593.00	19.90	29.00	3423.08	820.98	432.40	927.88	927.89	27.78	1.40
3624.00	19.30	29.50	3452.28	830.05	437.48	938.28	938.28	27.79	2.01
3655.00	18.60	29.10	3481.60	838.83	442.41	948.34	948.35	27.81	2.30
3686.00	17.70	29.10	3511.06	847.27	447.10	958.00	958.00	27.82	2.90
3718.00	17.40	29.70	3541.57	855.67	451.84	967.64	967.65	27.84	1.09
3750.00	17.20	29.50	3572.12	863.95	456.54	977.15	977.16	27.85	.65
3782.00	15.90	30.00	3602.80	871.86	461.06	986.26	986.27	27.87	4.09
3813.00	15.70	29.50	3632.63	879.19	465.25	994.69	994.70	27.89	.78
3845.00	15.90	30.30	3663.42	886.74	469.60	1003.40	1003.41	27.90	.92
3875.00	15.80	31.20	3692.28	893.78	473.78	1011.58	1011.59	27.93	.88
3907.00	16.70	32.70	3723.00	901.38	478.53	1020.51	1020.53	27.96	3.10

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
3939.00	16.80	33.00	3753.64	909.13	483.53	1029.69	1029.71	28.01	.41
3970.00	17.40	32.20	3783.27	916.81	488.44	1038.78	1038.80	28.05	2.08
4002.00	16.50	32.50	3813.88	924.69	493.43	1048.07	1048.10	28.09	2.83
4033.00	15.90	32.10	3843.65	932.00	498.05	1056.69	1056.73	28.12	1.97
4065.00	15.40	32.00	3874.46	939.32	502.63	1065.30	1065.34	28.15	1.56
4096.00	15.00	31.30	3904.38	946.23	506.90	1073.41	1073.45	28.18	1.42
4128.00	14.10	30.30	3935.35	953.14	511.02	1081.43	1081.48	28.20	2.92
Last Nevis MWD Surveys									
4159.00	13.80	29.40	3965.44	959.62	514.74	1088.90	1088.95	28.21	1.19
Projection to TD									
4209.00	13.80	29.40	4013.99	970.01	520.59	1100.82	1100.88	28.22	.00