



Job Number: 1020419  
Company: Black Hills E&P  
Lease/Well: Ute #34-14  
Location: La Plata County, Colorado  
Rig Name: Aztec 507  
RKB: 7260'  
G.L. or M.S.L.: 7249'

State/Country: CO  
Declination: 10.00194  
Grid: NA  
File name: C:\102041~1\#34-14.SVY  
Date/Time: 28-Jul-10 / 08:07  
Curve Name: Ute #34-14 Surveys

### Ute #34-14 Surveys

WINSERVE SURVEY CALCULATIONS  
*Minimum Curvature Method*  
*Vertical Section Plane 34.37*  
*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>CLOSURE Distance FT</i>	<i>Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
<b>Surface Tie In point</b>									
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<b>First Nevis MWD Surveys</b>									
450.00	2.40	29.50	449.87	8.20	4.64	9.39	9.42	29.50	.53
481.00	2.60	29.50	480.84	9.38	5.31	10.74	10.78	29.50	.65
512.00	2.70	30.70	511.81	10.62	6.03	12.17	12.21	29.57	.37
543.00	3.00	25.70	542.77	11.98	6.75	13.70	13.75	29.40	1.26
572.00	3.30	26.40	571.72	13.41	7.45	15.27	15.34	29.06	1.04
603.00	4.00	29.10	602.66	15.15	8.37	17.23	17.31	28.92	2.32
634.00	4.30	29.40	633.58	17.11	9.47	19.47	19.56	28.96	.97
664.00	4.70	27.20	663.49	19.18	10.58	21.81	21.91	28.88	1.45
695.00	4.90	29.50	694.38	21.46	11.82	24.39	24.50	28.83	.90
726.00	5.10	26.90	725.26	23.85	13.09	27.07	27.20	28.77	.97
757.00	4.90	26.00	756.14	26.26	14.29	29.75	29.90	28.56	.69
788.00	5.10	28.80	787.02	28.66	15.54	32.43	32.60	28.46	1.02
818.00	5.90	29.10	816.89	31.18	16.93	35.29	35.48	28.50	2.67
849.00	7.10	31.70	847.69	34.20	18.71	38.79	38.98	28.69	3.98
880.00	8.10	35.00	878.41	37.62	20.97	42.89	43.07	29.14	3.52
911.00	9.50	38.80	909.05	41.40	23.83	47.63	47.77	29.92	4.89
941.00	10.50	39.50	938.59	45.44	27.12	52.82	52.92	30.83	3.36
972.00	11.30	38.50	969.03	50.00	30.81	58.66	58.73	31.64	2.65
1004.00	11.60	37.70	1000.40	55.00	34.72	65.00	65.04	32.27	1.06
1036.00	12.30	36.90	1031.70	60.27	38.74	71.61	71.64	32.73	2.25

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	
1068.00	13.10	36.30	1062.92	65.92	42.93	78.64	78.66	33.08	2.53
1100.00	14.20	34.30	1094.01	72.08	47.29	86.19	86.21	33.27	3.74
1131.00	15.20	33.00	1124.00	78.63	51.65	94.06	94.08	33.30	3.40
1162.00	16.50	33.70	1153.82	85.70	56.30	102.52	102.54	33.30	4.24
1193.00	17.10	33.40	1183.50	93.17	61.25	111.48	111.50	33.32	1.96
1225.00	17.60	33.60	1214.04	101.13	66.52	121.03	121.04	33.34	1.57
1255.00	18.50	33.20	1242.56	108.89	71.64	130.32	130.34	33.34	3.03
1287.00	19.40	33.50	1272.83	117.57	77.35	140.71	140.73	33.34	2.83
1319.00	20.10	33.90	1302.95	126.56	83.35	151.52	151.54	33.37	2.23
1351.00	21.20	33.90	1332.89	135.93	89.65	162.81	162.83	33.40	3.44
1383.00	21.60	34.40	1362.68	145.59	96.20	174.48	174.50	33.45	1.37
1414.00	22.70	35.30	1391.40	155.18	102.88	186.17	186.19	33.54	3.71
1445.00	23.50	34.90	1419.91	165.13	109.87	198.33	198.35	33.64	2.63
1476.00	24.20	34.10	1448.26	175.46	116.97	210.86	210.88	33.69	2.49
1508.00	24.70	34.70	1477.39	186.39	124.46	224.11	224.12	33.73	1.74
1539.00	25.40	34.50	1505.48	197.20	131.91	237.23	237.25	33.78	2.27
1570.00	26.30	34.70	1533.38	208.32	139.58	250.75	250.76	33.82	2.92
1601.00	27.30	36.40	1561.05	219.69	147.71	264.72	264.73	33.92	4.06
1632.00	28.20	36.90	1588.48	231.27	156.33	279.15	279.15	34.06	3.00
1664.00	28.60	36.70	1616.63	243.46	165.45	294.35	294.35	34.20	1.28
1696.00	29.30	36.70	1644.63	255.88	174.70	309.83	309.83	34.32	2.19
1728.00	30.00	36.70	1672.44	268.57	184.16	325.65	325.65	34.44	2.19
1760.00	31.00	36.40	1700.01	281.62	193.83	341.87	341.88	34.54	3.16
1791.00	31.50	36.80	1726.51	294.53	203.42	357.94	357.95	34.63	1.75
1822.00	31.70	36.00	1752.92	307.60	213.06	374.18	374.18	34.71	1.50
1854.00	31.60	35.80	1780.16	321.20	222.91	390.96	390.97	34.76	.45
1886.00	31.10	34.20	1807.49	334.84	232.46	407.61	407.62	34.77	3.03
1918.00	31.00	33.90	1834.90	348.51	241.70	424.11	424.12	34.74	.58
1950.00	30.90	33.40	1862.35	362.21	250.82	440.57	440.58	34.70	.86
1982.00	30.70	33.00	1889.83	375.92	259.79	456.95	456.96	34.65	.89
2013.00	31.20	33.80	1916.42	389.23	268.57	472.89	472.90	34.61	2.09
2044.00	31.40	34.20	1942.91	402.58	277.57	489.00	489.00	34.59	.93
2076.00	32.20	34.10	1970.10	416.54	287.04	505.86	505.86	34.57	2.51
2109.00	32.00	34.00	1998.06	431.07	296.86	523.39	523.40	34.55	.63
2140.00	32.20	34.20	2024.32	444.71	306.09	539.87	539.87	34.54	.73
2171.00	32.60	35.00	2050.49	458.38	315.53	556.48	556.48	34.54	1.89
2202.00	32.50	35.60	2076.62	471.99	325.16	573.15	573.16	34.56	1.09
2234.00	32.00	35.20	2103.69	485.91	335.06	590.23	590.23	34.59	1.70
2266.00	31.80	35.30	2130.85	499.72	344.82	607.14	607.14	34.61	.65
2297.00	31.40	35.20	2157.26	512.99	354.19	623.38	623.38	34.62	1.30
2329.00	30.70	35.50	2184.67	526.45	363.74	639.88	639.89	34.64	2.24
2360.00	30.60	35.10	2211.34	539.35	372.87	655.68	655.69	34.66	.73
2391.00	30.20	34.30	2238.08	552.24	381.80	671.37	671.38	34.66	1.84
2423.00	30.10	33.80	2265.75	565.56	390.80	687.44	687.45	34.64	.84
2454.00	30.50	33.90	2292.52	578.55	399.51	703.08	703.09	34.63	1.30

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	
2485.00	30.30	33.80	2319.25	591.58	408.25	718.77	718.77	34.61	.67
2517.00	29.70	34.00	2346.97	604.86	417.18	734.77	734.77	34.59	1.90
2548.00	30.50	34.40	2373.79	617.72	425.91	750.31	750.32	34.59	2.66
2580.00	30.80	35.20	2401.32	631.11	435.23	766.62	766.63	34.59	1.58
2612.00	30.80	34.80	2428.80	644.53	444.62	783.01	783.01	34.60	.64
2643.00	31.50	34.70	2455.33	657.71	453.76	799.04	799.05	34.60	2.26
2675.00	31.20	34.70	2482.66	671.40	463.24	815.69	815.70	34.60	.94
2707.00	31.00	34.10	2510.06	685.03	472.58	832.22	832.23	34.60	1.15
2738.00	30.80	33.90	2536.66	698.23	481.48	848.14	848.15	34.59	.73
2770.00	31.40	33.60	2564.06	711.98	490.66	864.67	864.67	34.57	1.94
2802.00	31.20	34.00	2591.40	725.79	499.91	881.29	881.30	34.56	.90
2834.00	30.80	34.10	2618.83	739.45	509.14	897.77	897.78	34.55	1.26
2865.00	30.80	32.60	2645.46	752.70	517.87	913.64	913.65	34.53	2.48
2896.00	31.50	32.60	2671.99	766.21	526.51	929.67	929.67	34.50	2.26
2928.00	31.30	32.40	2699.31	780.27	535.46	946.33	946.34	34.46	.70
2960.00	31.40	32.30	2726.63	794.34	544.37	962.97	962.97	34.42	.35
2991.00	31.90	34.60	2753.02	807.91	553.34	979.23	979.23	34.41	4.21
3023.00	31.40	35.10	2780.26	821.69	562.93	996.02	996.02	34.41	1.76
3054.00	30.90	34.90	2806.79	834.82	572.13	1012.06	1012.06	34.42	1.65
3086.00	30.70	35.20	2834.28	848.24	581.54	1028.44	1028.44	34.43	.79
3118.00	30.20	35.10	2861.87	861.50	590.88	1044.66	1044.66	34.45	1.57
3150.00	29.20	34.30	2889.66	874.53	599.90	1060.51	1060.51	34.45	3.36
3181.00	28.80	34.30	2916.78	886.95	608.37	1075.54	1075.54	34.45	1.29
3213.00	27.90	33.80	2944.94	899.54	616.88	1090.74	1090.74	34.44	2.91
3245.00	27.90	35.00	2973.22	911.89	625.34	1105.71	1105.71	34.44	1.75
3276.00	27.40	35.30	3000.68	923.65	633.62	1120.09	1120.10	34.45	1.67
3307.00	27.20	35.80	3028.23	935.22	641.89	1134.31	1134.31	34.46	.98
3338.00	27.50	34.60	3055.76	946.86	650.10	1148.55	1148.55	34.47	2.02
3370.00	28.00	33.90	3084.08	959.17	658.48	1163.45	1163.45	34.47	1.87
3402.00	28.90	34.60	3112.22	971.77	667.06	1178.69	1178.69	34.47	3.00
3433.00	30.20	35.10	3139.18	984.32	675.80	1193.98	1193.98	34.47	4.27
3464.00	31.10	35.00	3165.85	997.26	684.88	1209.78	1209.79	34.48	2.91
3496.00	30.70	34.30	3193.31	1010.78	694.22	1226.22	1226.22	34.48	1.68
3527.00	30.30	33.40	3220.02	1023.84	702.99	1241.95	1241.95	34.47	1.96
3559.00	30.50	33.50	3247.62	1037.35	711.91	1258.14	1258.14	34.46	.64
3591.00	30.30	34.70	3275.22	1050.76	720.99	1274.33	1274.33	34.46	2.00
3623.00	29.60	34.80	3302.95	1063.89	730.09	1290.31	1290.31	34.46	2.19
3652.00	30.00	35.10	3328.11	1075.70	738.35	1304.72	1304.72	34.47	1.47
3681.00	30.40	35.10	3353.18	1087.64	746.74	1319.30	1319.31	34.47	1.38
3714.00	31.30	35.60	3381.51	1101.44	756.53	1336.22	1336.23	34.48	2.84
3746.00	31.30	36.50	3408.85	1114.88	766.31	1352.84	1352.84	34.50	1.46
3777.00	31.00	35.90	3435.38	1127.82	775.78	1368.87	1368.87	34.52	1.39
3808.00	31.40	35.80	3461.90	1140.83	785.19	1384.92	1384.93	34.54	1.30
3840.00	31.60	34.60	3489.18	1154.50	794.83	1401.64	1401.65	34.55	2.06
3872.00	31.10	34.10	3516.51	1168.24	804.22	1418.29	1418.29	34.54	1.76

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	
3903.00	31.20	34.50	3543.04	1181.49	813.26	1434.32	1434.33	34.54	.74
3935.00	30.60	35.00	3570.50	1194.99	822.62	1450.76	1450.76	34.54	2.04
3967.00	31.00	35.70	3597.99	1208.35	832.10	1467.14	1467.15	34.55	1.68
3998.00	31.30	37.20	3624.52	1221.25	841.63	1483.16	1483.17	34.57	2.68
4029.00	30.30	37.00	3651.14	1233.91	851.21	1499.02	1499.03	34.60	3.24
4061.00	30.90	35.30	3678.69	1247.06	860.81	1515.30	1515.31	34.62	3.29
4093.00	32.50	34.30	3705.91	1260.87	870.41	1532.11	1532.13	34.62	5.26
4125.00	33.70	34.30	3732.72	1275.31	880.25	1549.59	1549.60	34.61	3.75
4156.00	33.00	34.00	3758.61	1289.41	889.82	1566.63	1566.64	34.61	2.32
4187.00	32.70	33.30	3784.66	1303.41	899.14	1583.44	1583.45	34.60	1.56
4218.00	32.50	32.80	3810.77	1317.41	908.25	1600.14	1600.15	34.58	1.08
4250.00	32.50	32.60	3837.76	1331.88	917.54	1617.33	1617.33	34.56	.34
4281.00	32.70	32.80	3863.88	1345.93	926.56	1634.02	1634.03	34.54	.73
4313.00	32.00	32.50	3890.91	1360.35	935.80	1651.14	1651.14	34.52	2.24
4345.00	31.10	32.30	3918.18	1374.49	944.77	1667.87	1667.87	34.50	2.83

<b>Last Nevis MWD Surveys</b>
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4375.00	30.00	32.00	3944.02	1387.40	952.88	1683.11	1683.11	34.48	3.70
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<b>Projection to TD</b>
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4425.00	30.00	32.00	3987.32	1408.60	966.13	1708.08	1708.09	34.45	.00
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