



Job Number: 1010xxxx
Company: Black Hills E&P
Lease/Well: Ute #34-21
Location: La Plata County, Colorado
Rig Name: Aztec 507
RKB: 7337'
G.L. or M.S.L.: 7326'

State/Country: CO
Declination: 10.01467
Grid: 1.10
File name: C:\CURREN~1\UTE#34~1\#34-21.SVY
Date/Time: 27-Jun-10 / 08:33
Curve Name: Ute #34-21 surveys

Ute #34-21 surveys

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 336.19
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>
Surface									
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Surface Casing									
450.00	.00	.00	450.00	.00	.00	.00	.00	.00	.00
First Nevis MWD Survey									
481.00	.30	248.40	481.00	-.03	-.08	.00	.08	248.40	.97
512.00	.20	235.50	512.00	-.09	-.20	.00	.22	245.19	.37
542.00	.40	319.40	542.00	-.04	-.31	.09	.31	262.47	1.43
573.00	1.40	318.50	573.00	.33	-.63	.55	.71	297.38	3.23
603.00	2.60	329.10	602.98	1.18	-1.22	1.58	1.70	314.12	4.17
634.00	3.70	330.80	633.93	2.66	-2.07	3.27	3.37	322.12	3.56
665.00	4.40	333.20	664.85	4.59	-3.09	5.45	5.54	326.05	2.32
696.00	5.30	330.50	695.74	6.90	-4.33	8.06	8.15	327.87	2.99
727.00	6.00	333.20	726.59	9.59	-5.77	11.11	11.20	328.98	2.41
758.00	7.10	338.20	757.39	12.82	-7.21	14.64	14.71	330.64	3.99
788.00	8.00	340.90	787.13	16.51	-8.58	18.57	18.61	332.53	3.22
819.00	8.10	337.80	817.82	20.57	-10.12	22.91	22.93	333.82	1.44
849.00	8.70	336.20	847.50	24.61	-11.83	27.29	27.30	334.33	2.15
873.00	9.10	337.50	871.21	28.02	-13.29	31.00	31.01	334.63	1.87
911.00	10.20	337.90	908.67	33.92	-15.70	37.37	37.37	335.15	2.90
941.00	10.70	336.50	938.17	38.93	-17.81	42.81	42.81	335.41	1.87
972.00	11.20	336.10	968.61	44.32	-20.18	48.70	48.70	335.52	1.63
1004.00	11.80	335.90	999.97	50.15	-22.78	55.08	55.08	335.57	1.88

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
				FT	FT	FT	Distance FT	Direction Deg	
1035.00	12.10	337.00	1030.30	56.03	-25.34	61.50	61.50	335.67	1.22
1066.00	12.80	337.70	1060.57	62.20	-27.91	68.18	68.18	335.83	2.31
1097.00	13.60	338.00	1090.75	68.76	-30.58	75.25	75.25	336.02	2.59
1129.00	14.60	340.20	1121.78	76.04	-33.36	83.04	83.04	336.31	3.54
1161.00	15.80	340.30	1152.66	83.94	-36.19	91.41	91.41	336.68	3.75
1192.00	16.10	339.70	1182.47	91.94	-39.11	99.91	99.91	336.96	1.10
1223.00	16.10	340.20	1212.25	100.02	-42.05	108.48	108.50	337.20	.45
1255.00	16.90	340.40	1242.94	108.58	-45.12	117.55	117.58	337.44	2.51
1287.00	17.30	340.10	1273.52	117.43	-48.30	126.93	126.98	337.64	1.28
1318.00	17.90	339.70	1303.07	126.23	-51.52	136.29	136.34	337.80	1.97
1350.00	18.40	340.30	1333.48	135.60	-54.93	146.23	146.30	337.95	1.67
1381.00	19.30	339.60	1362.81	145.01	-58.36	156.23	156.31	338.08	2.99
1413.00	19.80	339.60	1392.97	155.05	-62.09	166.92	167.02	338.17	1.56
1445.00	19.70	338.70	1423.09	165.15	-65.94	177.72	177.83	338.23	1.00
1476.00	19.80	338.70	1452.26	174.91	-69.75	188.18	188.30	338.26	.32
1506.00	19.80	338.60	1480.49	184.38	-73.45	198.33	198.47	338.28	.11
1538.00	20.80	339.30	1510.50	194.74	-77.43	209.42	209.57	338.32	3.22
1570.00	21.60	339.30	1540.34	205.56	-81.52	220.98	221.14	338.37	2.50
1601.00	21.90	338.80	1569.13	216.29	-85.63	232.45	232.62	338.40	1.14
1632.00	22.40	338.60	1597.84	227.18	-89.88	244.13	244.31	338.42	1.63
1663.00	22.60	337.80	1626.48	238.19	-94.28	255.98	256.17	338.41	1.18
1694.00	23.10	337.40	1655.05	249.32	-98.87	268.02	268.21	338.37	1.69
1726.00	23.50	337.10	1684.44	260.99	-103.77	280.67	280.87	338.32	1.30
1758.00	24.00	337.00	1713.73	272.86	-108.79	293.56	293.75	338.26	1.57
1790.00	24.80	336.80	1742.87	285.02	-113.98	306.78	306.97	338.20	2.51
1822.00	25.30	336.00	1771.86	297.44	-119.40	320.33	320.51	338.13	1.89
1853.00	26.00	335.80	1799.81	309.69	-124.88	333.74	333.92	338.04	2.28
1884.00	26.80	335.70	1827.57	322.25	-130.54	347.53	347.69	337.95	2.58
1916.00	27.80	335.50	1856.01	335.62	-136.61	362.20	362.36	337.85	3.14
1948.00	28.20	335.60	1884.26	349.29	-142.83	377.23	377.37	337.76	1.26
1979.00	29.00	335.60	1911.48	362.81	-148.96	392.06	392.20	337.68	2.58
2009.00	30.00	335.60	1937.59	376.26	-155.06	406.84	406.96	337.60	3.33
2040.00	31.00	335.90	1964.30	390.61	-161.52	422.57	422.68	337.53	3.26
2072.00	31.00	335.70	1991.73	405.64	-168.28	439.05	439.16	337.47	.32
2104.00	32.00	336.40	2019.01	420.92	-175.06	455.77	455.87	337.42	3.33
2135.00	32.10	336.40	2045.29	436.00	-181.65	472.22	472.32	337.38	.32
2167.00	32.30	336.60	2072.37	451.63	-188.45	489.27	489.37	337.35	.71
2199.00	32.50	336.10	2099.39	467.34	-195.32	506.42	506.52	337.32	1.04
2230.00	32.90	336.00	2125.47	482.64	-202.12	523.16	523.26	337.28	1.30
2262.00	32.40	335.20	2152.42	498.37	-209.25	540.43	540.52	337.22	2.06
2293.00	32.60	335.00	2178.56	513.47	-216.27	557.08	557.16	337.16	.73
2325.00	32.20	334.80	2205.58	529.00	-223.54	574.22	574.29	337.09	1.29
2357.00	32.40	334.80	2232.63	544.47	-230.82	591.32	591.38	337.03	.62
2388.00	32.30	334.60	2258.82	559.47	-237.91	607.90	607.95	336.96	.47
2420.00	31.60	334.50	2285.97	574.76	-245.19	624.83	624.87	336.90	2.19

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
				FT	FT	FT	Distance FT	Direction Deg	
2452.00	32.00	333.90	2313.17	589.94	-252.53	641.68	641.72	336.83	1.59
2484.00	31.80	335.00	2340.33	605.20	-259.82	658.58	658.61	336.77	1.92
2516.00	32.30	336.70	2367.46	620.69	-266.76	675.56	675.59	336.74	3.22
2548.00	32.00	337.10	2394.55	636.35	-273.45	692.59	692.62	336.75	1.15
2580.00	31.80	337.40	2421.72	651.95	-279.99	709.49	709.53	336.76	.80
2612.00	32.00	337.30	2448.88	667.55	-286.50	726.40	726.44	336.77	.65
2643.00	31.90	337.40	2475.19	682.69	-292.81	742.80	742.84	336.79	.36
2675.00	31.50	337.40	2502.41	698.22	-299.28	759.61	759.65	336.80	1.25
2705.00	31.70	337.40	2527.96	712.73	-305.32	775.33	775.37	336.81	.67
2737.00	31.10	336.50	2555.28	728.07	-311.84	792.00	792.05	336.81	2.38
2769.00	31.30	337.20	2582.65	743.31	-318.36	808.57	808.62	336.81	1.29
2800.00	31.20	337.40	2609.15	758.15	-324.57	824.65	824.70	336.82	.46
2831.00	30.60	337.20	2635.75	772.84	-330.71	840.57	840.62	336.83	1.96
2863.00	31.00	337.30	2663.24	787.95	-337.05	856.95	857.01	336.84	1.26
2894.00	30.40	336.90	2689.89	802.53	-343.20	872.78	872.83	336.85	2.04
2925.00	30.10	337.00	2716.67	816.90	-349.32	888.39	888.45	336.85	.98
2956.00	30.40	336.50	2743.45	831.25	-355.48	904.01	904.07	336.85	1.26
2988.00	30.70	336.60	2771.01	846.17	-361.96	920.27	920.33	336.84	.95
3019.00	30.60	337.40	2797.68	860.71	-368.13	936.07	936.14	336.84	1.35
3051.00	30.30	337.60	2825.27	875.70	-374.34	952.29	952.35	336.85	.99
3082.00	30.30	337.30	2852.03	890.14	-380.34	967.92	967.99	336.86	.49
3113.00	31.20	337.10	2878.67	904.75	-386.48	983.77	983.84	336.87	2.92
3145.00	31.30	337.20	2906.03	920.05	-392.92	1000.37	1000.44	336.87	.35
3177.00	31.00	337.10	2933.42	935.30	-399.35	1016.92	1016.99	336.88	.95
3209.00	30.50	337.20	2960.92	950.38	-405.71	1033.28	1033.36	336.88	1.57
3241.00	30.10	336.90	2988.54	965.25	-412.00	1049.42	1049.50	336.89	1.34
3272.00	30.20	335.80	3015.35	979.51	-418.25	1064.99	1065.07	336.88	1.81
3304.00	29.80	335.10	3043.06	994.06	-424.89	1080.99	1081.06	336.86	1.66
3336.00	29.60	335.00	3070.86	1008.44	-431.58	1096.84	1096.91	336.83	.64
3368.00	29.40	335.30	3098.71	1022.74	-438.20	1112.60	1112.66	336.81	.78
3399.00	29.70	336.10	3125.68	1036.67	-444.50	1127.88	1127.95	336.79	1.60
3436.00	30.10	336.50	3157.75	1053.56	-451.91	1146.33	1146.39	336.78	1.21
3462.00	30.30	336.30	3180.23	1065.55	-457.14	1159.41	1159.47	336.78	.86
3494.00	31.50	336.80	3207.68	1080.62	-463.68	1175.84	1175.90	336.78	3.83
3526.00	31.60	336.70	3234.95	1096.01	-470.29	1192.58	1192.64	336.78	.35
3557.00	32.30	336.30	3261.26	1111.05	-476.83	1208.99	1209.05	336.77	2.36
3589.00	31.60	336.10	3288.41	1126.54	-483.67	1225.92	1225.98	336.76	2.21
3621.00	31.80	335.90	3315.63	1141.90	-490.51	1242.74	1242.80	336.75	.71
3652.00	31.60	335.50	3342.01	1156.75	-497.21	1259.02	1259.08	336.74	.94
3684.00	30.80	334.70	3369.38	1171.79	-504.19	1275.60	1275.65	336.72	2.82
3716.00	30.30	334.60	3396.94	1186.49	-511.15	1291.86	1291.91	336.69	1.57
3748.00	30.20	335.20	3424.58	1201.08	-517.99	1307.97	1308.02	336.67	.99
3780.00	30.60	335.70	3452.18	1215.81	-524.72	1324.17	1324.21	336.66	1.48
3811.00	31.20	336.30	3478.78	1230.36	-531.19	1340.08	1340.13	336.65	2.18
3842.00	30.40	336.10	3505.41	1244.88	-537.60	1355.96	1356.00	336.64	2.60

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	
3872.00	30.10	335.90	3531.33	1258.69	-543.74	1371.07	1371.11	336.64	1.05
3904.00	31.00	336.20	3558.88	1273.55	-550.35	1387.34	1387.38	336.63	2.85
3934.00	30.20	335.60	3584.70	1287.49	-556.58	1402.61	1402.65	336.62	2.85
3966.00	31.00	336.10	3612.25	1302.36	-563.24	1418.90	1418.93	336.61	2.62
3997.00	30.90	336.10	3638.83	1316.93	-569.70	1434.84	1434.88	336.61	.32
4029.00	30.90	336.20	3666.29	1331.96	-576.35	1451.27	1451.31	336.60	.16
4061.00	29.80	335.80	3693.91	1346.73	-582.92	1467.44	1467.48	336.59	3.50
4092.00	28.60	335.00	3720.97	1360.48	-589.22	1482.56	1482.60	336.58	4.07
4124.00	28.10	335.10	3749.13	1374.26	-595.63	1497.75	1497.79	336.57	1.57
4155.00	27.60	334.90	3776.54	1387.39	-601.75	1512.23	1512.26	336.55	1.64
4186.00	26.80	334.50	3804.11	1400.20	-607.80	1526.40	1526.43	336.54	2.65
4218.00	26.90	335.30	3832.66	1413.28	-613.93	1540.85	1540.87	336.52	1.17
4249.00	27.30	336.20	3860.26	1426.16	-619.73	1554.97	1554.99	336.51	1.85
4280.00	27.30	335.30	3887.80	1439.12	-625.57	1569.19	1569.21	336.51	1.33
4312.00	28.20	334.90	3916.12	1452.64	-631.85	1584.08	1584.10	336.49	2.87
4344.00	28.50	334.80	3944.29	1466.39	-638.30	1599.27	1599.29	336.48	.95
4375.00	28.60	335.20	3971.52	1479.82	-644.57	1614.09	1614.10	336.46	.70
4407.00	27.80	334.90	3999.72	1493.53	-650.94	1629.20	1629.22	336.45	2.54
4439.00	27.50	334.50	4028.06	1506.96	-657.29	1644.05	1644.06	336.43	1.10
4470.00	26.90	334.50	4055.63	1519.75	-663.39	1658.21	1658.23	336.42	1.94
4502.00	27.10	334.50	4084.15	1532.86	-669.64	1672.73	1672.75	336.40	.62
4533.00	26.80	333.90	4111.78	1545.51	-675.76	1686.78	1686.79	336.38	1.31
4566.00	27.30	333.40	4141.17	1558.96	-682.42	1701.77	1701.78	336.36	1.66
Last Nevis MWD Survey									
4597.00	27.50	333.10	4168.69	1571.69	-688.84	1716.02	1716.02	336.33	.78
Survey Projection to TD									
4660.00	27.50	333.10	4224.57	1597.64	-702.00	1745.06	1745.07	336.28	.00