

Job Number: []	State/Country: []
Company: []	Declination: []
Lease/Well: [] Lantz-Mills Unit 2 #3H	Grid: []
Location: []	File name: D:\WINSERVE\UNIT2_3H.SVY
Rig Name: []	Date/Time: 17-Jun-10 / 06:26
RKB: []	Curve Name: Unit 2 #H_Plan
G.L. or M.S.L.: []	

### Scientific Drilling

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane 328.47  
 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	Distance FT	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00
108.00	.25	83.39	108.00	.03	.23	-.10	.24	.23
208.00	.00	.00	208.00	.05	.45	-.19	.45	.25
308.00	.00	.00	308.00	.05	.45	-.19	.45	.00
408.00	.00	.00	408.00	.05	.45	-.19	.45	.00
508.00	.25	348.90	508.00	.27	.41	.01	.49	.25
608.00	.25	183.16	608.00	.26	.35	.04	.44	.50
708.00	.00	.00	708.00	.04	.34	-.14	.35	.25
808.00	.25	252.93	808.00	-.02	.13	-.09	.14	.25
908.00	.50	265.06	908.00	-.12	-.51	.16	.52	.26
1008.00	.50	271.19	1007.99	-.15	-1.38	.59	1.39	.05
1108.00	.75	284.32	1107.99	.02	-2.45	1.30	2.45	.29
1208.00	.75	245.45	1207.98	-.09	-3.68	1.85	3.68	.50
1308.00	.25	245.58	1307.97	-.45	-4.47	1.96	4.50	.50
1408.00	.50	91.70	1407.97	-.55	-4.24	1.74	4.27	.73
1508.00	.75	104.83	1507.97	-.73	-3.17	1.03	3.25	.29
1608.00	.50	95.96	1607.96	-.95	-2.10	.29	2.30	.27
1708.00	.25	55.03	1707.96	-.87	-1.49	.04	1.72	.35
1808.00	.25	249.03	1807.96	-.82	-1.51	.09	1.72	.50
1908.00	.25	310.04	1907.96	-.76	-1.88	.34	2.03	.25
2008.00	.50	350.04	2007.96	-.19	-2.13	.95	2.13	.35
2108.00	1.00	341.04	2107.95	1.07	-2.49	2.21	2.70	.51
2208.00	1.00	357.04	2207.93	2.76	-2.81	3.83	3.94	.28
2308.00	.75	338.05	2307.92	4.24	-3.10	5.24	5.26	.38
2408.00	.50	316.05	2407.91	5.16	-3.65	6.31	6.32	.34
2508.00	.25	342.06	2507.91	5.69	-4.02	6.95	6.96	.30
2608.00	.25	344.06	2607.91	6.10	-4.15	7.37	7.38	.01
2708.00	.24	338.07	2707.91	6.51	-4.29	7.79	7.79	.03
2808.00	.50	331.09	2807.91	7.08	-4.58	8.43	8.43	.26
2908.00	.25	350.09	2907.91	7.68	-4.82	9.07	9.07	.28

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	Dogleg Severity Deg/100
3008.00	.25	356.10	3007.91	8.11	-4.88	9.46	9.47	.03
3108.00	.25	318.10	3107.90	8.49	-5.04	9.87	9.87	.16
3208.00	.25	301.10	3207.90	8.77	-5.37	10.28	10.28	.07
3308.00	.50	295.11	3307.90	9.07	-5.95	10.84	10.84	.25
3408.00	.50	330.11	3407.90	9.63	-6.56	11.64	11.65	.30
3508.00	.50	301.12	3507.89	10.23	-7.15	12.46	12.49	.25
3608.00	.50	291.12	3607.89	10.62	-7.94	13.20	13.25	.09
3708.00	.25	325.15	3707.89	10.95	-8.47	13.76	13.84	.32
3808.00	.25	309.20	3807.89	11.27	-8.76	14.19	14.27	.07
3908.00	.25	333.26	3907.89	11.60	-9.03	14.61	14.70	.10
4008.00	.25	285.31	4007.89	11.85	-9.34	14.99	15.09	.20
4108.00	.50	273.36	4107.88	11.94	-9.98	15.39	15.56	.26
4208.00	.50	225.42	4207.88	11.66	-10.73	15.55	15.84	.41
4308.00	.50	210.47	4307.88	10.97	-11.26	15.24	15.72	.13
4408.00	.50	202.53	4407.87	10.19	-11.65	14.78	15.48	.07
4508.00	.25	220.58	4507.87	9.63	-11.96	14.46	15.35	.27
4608.00	.75	211.63	4607.87	8.90	-12.44	14.10	15.30	.50
4708.00	.25	206.96	4707.86	8.15	-12.89	13.69	15.25	.50
4808.00	.50	201.01	4807.86	7.55	-13.14	13.31	15.16	.25
4908.00	.50	183.06	4907.86	6.71	-13.32	12.68	14.91	.16
5008.00	.50	177.12	5007.85	5.83	-13.32	11.94	14.54	.05
5108.00	.50	197.17	5107.85	4.98	-13.43	11.27	14.32	.17
5208.00	.50	207.22	5207.84	4.18	-13.76	10.76	14.38	.09
5308.00	.25	208.28	5307.84	3.60	-14.06	10.42	14.51	.25
5408.00	.25	187.33	5407.84	3.19	-14.19	10.14	14.55	.09
5508.00	.25	162.41	5507.84	2.76	-14.15	9.76	14.42	.11
5600.00	.25	162.41	5599.84	2.38	-14.03	9.37	14.23	.00
5670.00	.43	251.33	5669.84	2.15	-14.23	9.28	14.40	.70
5702.00	1.80	287.88	5701.83	2.27	-14.83	9.69	15.00	4.62
5734.00	3.76	279.60	5733.79	2.60	-16.34	10.76	16.55	6.24
5766.00	5.56	286.52	5765.69	3.21	-18.86	12.60	19.13	5.88
5796.00	7.66	291.67	5795.49	4.36	-22.11	15.28	22.54	7.27
5827.00	9.96	291.20	5826.12	6.10	-26.53	19.07	27.22	7.42
5858.00	11.21	292.41	5856.59	8.22	-31.82	23.64	32.86	4.10
5889.00	12.69	293.72	5886.92	10.73	-37.72	28.88	39.22	4.85
5920.00	14.46	294.28	5917.05	13.70	-44.37	34.88	46.43	5.73
5951.00	16.23	292.51	5946.94	16.95	-51.90	41.58	54.60	5.91
5982.00	18.13	289.92	5976.56	20.25	-60.44	48.86	63.74	6.61
6013.00	20.17	286.67	6005.84	23.43	-70.09	56.62	73.90	7.42
6043.00	21.45	284.43	6033.89	26.28	-80.36	64.42	84.55	5.02
6074.00	23.30	286.21	6062.55	29.40	-91.74	73.03	96.33	6.35
6104.00	24.46	285.90	6089.98	32.76	-103.41	82.00	108.47	3.89
6135.00	25.96	286.95	6118.03	36.49	-116.07	91.81	121.67	5.05
6166.00	27.63	288.68	6145.70	40.78	-129.37	102.41	135.65	5.95
6197.00	29.00	290.66	6172.99	45.73	-143.21	113.87	150.34	5.36
6227.00	30.35	292.81	6199.06	51.23	-157.01	125.78	165.15	5.73
6259.00	31.00	293.47	6226.58	57.65	-172.02	139.09	181.42	2.29
6290.00	32.55	294.47	6252.93	64.28	-186.93	152.55	197.68	5.28
6320.00	33.91	294.36	6278.03	71.08	-201.90	166.17	214.05	4.54
6351.00	35.71	296.07	6303.48	78.62	-217.91	180.97	231.66	6.60

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	Dogleg Severity Deg/100
6382.00	36.80	297.51	6328.48	86.89	-234.27	196.57	249.86	4.46
6413.00	38.00	298.17	6353.10	95.68	-250.92	212.77	268.54	4.08
6444.00	39.17	299.23	6377.33	104.97	-267.87	229.55	287.71	4.33
6476.00	40.42	300.11	6401.92	115.11	-285.67	247.50	307.99	4.28
6507.00	42.89	301.02	6425.08	125.59	-303.41	265.71	328.37	8.20
6538.00	44.90	300.74	6447.42	136.62	-321.85	284.76	349.65	6.51
6568.00	46.85	301.22	6468.31	147.70	-340.31	303.86	370.98	6.60
6599.00	47.91	301.11	6489.30	159.51	-359.83	324.13	393.60	3.43
6631.00	49.16	302.63	6510.49	172.17	-380.19	345.57	417.36	5.28
6663.00	50.81	304.35	6531.06	185.70	-400.63	367.79	441.57	6.60
6695.00	52.10	305.53	6551.00	200.03	-421.14	390.73	466.23	4.96
6727.00	53.50	306.27	6570.35	214.98	-441.79	414.27	491.32	4.75
6758.00	53.62	306.31	6588.76	229.74	-461.89	437.36	515.87	.40
6790.00	54.51	308.13	6607.54	245.41	-482.52	461.51	541.34	5.38
6822.00	57.01	309.05	6625.55	261.91	-503.19	486.39	567.28	8.17
6854.00	59.19	310.54	6642.46	279.30	-524.06	512.12	593.84	7.88
6886.00	61.20	312.77	6658.36	297.76	-544.80	538.70	620.86	8.72
6918.00	63.69	314.03	6673.16	317.25	-565.41	566.09	648.33	8.53
6950.00	66.15	314.74	6686.73	337.52	-586.12	594.20	676.36	7.95
6981.00	69.05	315.99	6698.54	357.92	-606.25	622.11	704.02	10.07
7013.00	70.86	316.44	6709.51	379.62	-627.05	651.49	733.01	5.81
7045.00	72.35	317.09	6719.61	401.74	-647.85	681.22	762.30	5.04
7077.00	72.64	316.29	6729.23	423.95	-668.78	711.10	791.84	2.55
7109.00	73.15	317.54	6738.64	446.29	-689.67	741.06	821.48	4.06
7140.00	75.63	320.06	6746.99	468.75	-709.33	770.49	850.22	11.19
7172.00	78.19	320.15	6754.23	492.66	-729.32	801.32	880.13	8.00
7204.00	80.28	321.62	6760.21	517.05	-749.15	832.48	910.26	7.94
7236.00	82.08	323.08	6765.12	542.09	-768.47	863.92	940.42	7.21
7268.00	84.16	325.32	6768.95	567.85	-787.05	895.60	970.51	9.52
7300.00	86.44	325.73	6771.57	594.14	-805.10	927.45	1000.59	7.24
7332.00	88.28	326.68	6773.05	620.70	-822.88	959.39	1030.73	6.47
7363.00	89.23	326.56	6773.72	646.58	-839.93	990.36	1059.98	3.09
7395.00	90.03	326.72	6773.93	673.31	-857.53	1022.35	1090.27	2.55
7427.00	89.83	327.15	6773.97	700.13	-874.98	1054.33	1120.61	1.48
7459.00	89.83	328.04	6774.06	727.15	-892.13	1086.33	1150.93	2.78
7490.00	90.44	328.64	6773.99	753.53	-908.40	1117.33	1180.26	2.76
7522.00	91.04	328.93	6773.57	780.90	-924.99	1149.33	1210.54	2.08
7554.00	91.31	329.18	6772.92	808.34	-941.44	1181.32	1240.85	1.15
7585.00	90.81	329.96	6772.34	835.06	-957.14	1212.31	1270.21	2.99
7617.00	90.57	330.11	6771.96	862.78	-973.12	1244.29	1300.52	.88
7648.00	90.24	331.25	6771.74	889.81	-988.30	1275.27	1329.85	3.83
7680.00	90.34	331.72	6771.58	917.93	-1003.57	1307.22	1360.05	1.50
7712.00	90.30	331.65	6771.40	946.10	-1018.75	1339.17	1390.31	.25
7744.00	90.13	331.29	6771.28	974.21	-1034.04	1371.13	1420.67	1.24
7775.00	90.27	332.24	6771.17	1001.52	-1048.70	1402.08	1450.11	3.10
7807.00	90.67	332.50	6770.91	1029.87	-1063.54	1434.00	1480.46	1.49
7839.00	91.21	332.45	6770.38	1058.25	-1078.33	1465.92	1510.85	1.69
7871.00	90.10	332.74	6770.02	1086.65	-1093.05	1497.83	1541.29	3.59
7903.00	90.17	332.47	6769.94	1115.06	-1107.78	1529.75	1571.79	.87
7966.00	90.71	333.34	6769.46	1171.15	-1136.47	1592.56	1631.92	1.63

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	Dogleg Severity Deg/100
8030.00	90.94	332.92	6768.54	1228.23	-1165.39	1656.34	1693.13	.75
8093.00	90.13	334.72	6767.95	1284.76	-1193.19	1719.06	1753.37	3.13
8157.00	90.24	334.66	6767.74	1342.62	-1220.55	1782.68	1814.49	.20
8221.00	90.40	334.10	6767.38	1400.33	-1248.22	1846.34	1875.89	.91
8284.00	90.91	334.16	6766.66	1457.01	-1275.71	1909.03	1936.57	.82
8348.00	90.34	335.30	6765.97	1514.88	-1303.03	1972.64	1998.18	1.99
8411.00	90.71	335.58	6765.39	1572.18	-1329.21	2035.17	2058.77	.74
8475.00	90.57	336.51	6764.67	1630.66	-1355.19	2098.61	2120.28	1.47
8539.00	90.54	335.54	6764.05	1689.13	-1381.20	2162.05	2181.94	1.52
8602.00	91.18	335.13	6763.11	1746.38	-1407.49	2224.59	2242.96	1.21
8666.00	91.14	334.62	6761.81	1804.31	-1434.65	2288.18	2305.16	.80
8729.00	90.57	334.22	6760.87	1861.13	-1461.85	2350.83	2366.61	1.11
8793.00	90.94	334.43	6760.03	1918.81	-1489.58	2414.49	2429.13	.66
8857.00	90.10	334.77	6759.45	1976.62	-1517.03	2478.12	2491.66	1.42
8921.00	90.34	334.80	6759.20	2034.52	-1544.29	2541.74	2554.23	.38
8985.00	90.71	334.76	6758.62	2092.42	-1571.56	2605.35	2616.87	.58
9048.00	90.84	334.47	6757.76	2149.33	-1598.57	2667.98	2678.62	.50
9112.00	90.91	333.80	6756.79	2206.91	-1626.49	2731.66	2741.51	1.05
9176.00	91.08	333.20	6755.68	2264.18	-1655.04	2795.40	2804.57	.97
9240.00	91.48	334.68	6754.25	2321.65	-1683.15	2859.09	2867.59	2.39
9304.00	90.91	335.11	6752.91	2379.59	-1710.29	2922.68	2930.46	1.12
9367.00	91.18	335.37	6751.76	2436.79	-1736.67	2985.23	2992.32	.59
9431.00	91.01	334.52	6750.54	2494.76	-1763.77	3048.81	3055.28	1.35
9495.00	90.81	333.52	6749.52	2552.28	-1791.80	3112.50	3118.45	1.59
9558.00	90.94	333.40	6748.56	2608.64	-1819.95	3175.25	3180.76	.28
9622.00	89.90	333.09	6748.09	2665.78	-1848.76	3239.03	3244.12	1.70
9686.00	89.73	332.53	6748.30	2722.71	-1878.01	3302.84	3307.58	.91
9749.00	90.03	332.73	6748.43	2778.66	-1906.97	3365.68	3370.08	.57
9813.00	90.50	332.13	6748.13	2835.39	-1936.59	3429.52	3433.63	1.19
9876.00	90.37	331.16	6747.66	2890.83	-1966.51	3492.42	3496.29	1.55
9940.00	90.74	331.89	6747.04	2947.08	-1997.02	3556.33	3559.97	1.28
10004.00	91.65	333.17	6745.70	3003.85	-2026.54	3620.15	3623.53	2.45
10068.00	90.77	333.19	6744.35	3060.96	-2055.40	3683.92	3687.02	1.38
10131.00	90.34	332.73	6743.74	3117.07	-2084.04	3746.72	3749.58	1.00
10195.00	91.01	333.14	6742.99	3174.05	-2113.16	3810.52	3813.14	1.23
10259.00	91.31	334.42	6741.69	3231.46	-2141.43	3874.23	3876.60	2.05
10323.00	90.40	334.59	6740.73	3289.22	-2168.98	3937.87	3939.97	1.45
10386.00	90.54	334.59	6740.22	3346.12	-2196.01	4000.51	4002.37	.22
10450.00	91.24	334.42	6739.22	3403.88	-2223.55	4064.15	4065.78	1.13
10514.00	89.76	334.65	6738.67	3461.66	-2251.07	4127.79	4129.21	2.34
10578.00	89.13	334.55	6739.29	3519.47	-2278.52	4191.42	4192.65	1.00
10640.00	89.70	334.79	6739.92	3575.50	-2305.04	4253.05	4254.11	1.00
10703.00	90.07	334.78	6740.04	3632.50	-2331.88	4315.67	4316.57	.59
10766.00	90.37	334.91	6739.80	3689.53	-2358.66	4378.28	4379.03	.52
10829.00	90.17	334.41	6739.51	3746.46	-2385.62	4440.91	4441.53	.85
10892.00	90.94	334.58	6738.90	3803.32	-2412.75	4503.56	4504.07	1.25
10955.00	91.81	334.69	6737.38	3860.23	-2439.73	4566.18	4566.58	1.39
11019.00	90.71	334.17	6735.98	3917.95	-2467.34	4629.81	4630.13	1.90
11083.00	90.84	334.22	6735.11	3975.56	-2495.20	4693.49	4693.73	.22
11146.00	90.81	333.07	6734.20	4032.01	-2523.17	4756.22	4756.41	1.83

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Distance FT	Dogleg Severity Deg/100
11210.00	90.71	333.43	6733.35	4089.15	-2551.97	4820.00	4820.14	.58
11273.00	91.01	333.61	6732.41	4145.54	-2580.06	4882.74	4882.84	.56
11337.00	91.24	333.52	6731.15	4202.83	-2608.54	4946.48	4946.54	.39
11400.00	91.31	332.91	6729.75	4259.06	-2636.93	5009.25	5009.29	.97
11464.00	90.57	331.97	6728.70	4315.79	-2666.53	5073.08	5073.11	1.87
11527.00	90.97	331.72	6727.85	4371.33	-2696.26	5135.97	5135.98	.75
11591.00	91.01	331.89	6726.75	4427.73	-2726.49	5199.85	5199.86	.27
11655.00	91.95	332.07	6725.10	4484.20	-2756.55	5263.71	5263.71	1.50
<b>Proj. to Bit</b>								
11711.00	92.77	332.23	6722.79	4533.68	-2782.69	5319.54	5319.54	1.49
11767.00	93.59	332.39	6719.68	4583.19	-2808.67	5375.33	5375.33	1.49