

Job Number: State/Country:
 Company: Declination:
 Lease/Well: Lantz-Mills Unit 2 #1H Grid:
 Location: ORIGINAL File name: D:\WINSERVE\JOBS\UNIT21HR.SVY
 Rig Name: HOLE Date/Time: 08-May-10 / 05:42
 RKB: Curve Name: Work Curve
 G.L. or M.S.L.:

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Office of Oil & Gas

JUL 18 2011

WV Department of
Environmental Protection

Scientific Drilling

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 337.20
 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	WALK RATE Deg/100	BUILD RATE Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
108.00	.25	42.17	108.00	.17	.16	.10	.24	.23	39.05	.23
208.00	.25	76.90	208.00	.39	.52	.16	.65	.15	34.73	.00
308.00	.25	157.62	308.00	.23	.81	-.10	.85	.32	80.72	.00
408.00	.25	199.34	408.00	-.17	.82	-.48	.84	.18	41.72	.00
508.00	.25	167.07	508.00	-.59	.80	-.86	1.00	.14	-32.27	.00
608.00	.50	189.79	607.99	-1.24	.77	-1.44	1.46	.29	22.72	.25
708.00	1.75	186.53	707.97	-3.18	.53	-3.14	3.23	1.25	-3.26	1.25
808.00	1.75	214.24	807.93	-5.96	-.51	-5.30	5.98	.84	27.71	.00
908.00	2.50	221.96	907.86	-8.85	-2.82	-7.06	9.29	.80	7.72	.75
1008.00	3.00	203.71	1007.75	-12.86	-5.33	-9.79	13.93	1.00	-18.25	.50
1108.00	3.50	202.06	1107.58	-18.09	-7.53	-13.76	19.59	.51	-1.65	.50
1208.00	4.25	197.80	1207.35	-24.45	-9.81	-18.73	26.34	.80	-4.26	.75

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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	WALK RATE Deg/100	BUILD RATE Deg/100
1308.00	4.25	179.55	1307.08	-31.68	-10.92	-24.97	33.51	1.35	-18.25	.00
1408.00	2.50	155.22	1406.91	-37.37	-9.97	-30.58	38.67	2.22	-24.33	-1.75
1508.00	.75	169.92	1506.87	-39.99	-8.94	-33.40	40.98	1.78	14.70	-1.75
1608.00	1.25	108.64	1606.86	-40.98	-7.80	-34.76	41.72	1.11	-61.28	.50
1708.00	1.25	61.36	1706.83	-40.81	-5.80	-35.37	41.22	1.00	-47.28	.00
1808.00	1.50	215.09	1806.82	-41.36	-5.60	-35.96	41.73	2.68	153.73	.25
1908.00	2.25	163.84	1906.78	-44.31	-5.81	-38.60	44.69	1.76	-51.25	.75
2008.00	3.00	117.53	2006.68	-47.41	-2.94	-42.57	47.50	2.18	-46.31	.75
2108.00	2.00	46.51	2106.60	-47.42	.65	-43.96	47.42	3.02	-71.02	-1.00
2208.00	2.50	342.51	2206.54	-44.14	1.26	-41.18	44.15	2.42	-64.00	.50
2308.00	1.50	325.46	2306.48	-40.98	-.14	-37.72	40.98	1.15	-17.05	-1.00
2408.00	1.50	325.44	2406.45	-38.82	-1.62	-35.16	38.86	.00	-.02	.00
2508.00	1.00	307.40	2506.42	-37.21	-3.06	-33.12	37.34	.63	-18.04	-.50
2608.00	.50	304.38	2606.41	-36.44	-4.11	-32.00	36.67	.50	-3.02	-.50
2708.00	.25	310.35	2706.41	-36.05	-4.64	-31.44	36.35	.25	5.97	-.25
2808.00	.25	284.32	2806.41	-35.85	-5.02	-31.11	36.20	.11	-26.03	.00
2908.00	.25	329.30	2906.41	-35.61	-5.34	-30.76	36.01	.19	44.98	.00
3008.00	.25	323.27	3006.41	-35.25	-5.58	-30.33	35.69	.03	-6.03	.00
3108.00	.50	345.11	3106.41	-34.65	-5.82	-29.69	35.14	.28	21.84	.25
3208.00	.25	315.08	3206.40	-34.08	-6.09	-29.06	34.62	.31	-30.03	-.25
3308.00	.25	315.06	3306.40	-33.77	-6.40	-28.65	34.37	.00	-.02	.00
3408.00	.25	328.03	3406.40	-33.43	-6.67	-28.23	34.09	.06	12.97	.00
3508.00	.50	340.00	3506.40	-32.83	-6.93	-27.58	33.56	.26	11.97	.25
3608.00	.25	333.98	3606.40	-32.23	-7.18	-26.93	33.02	.25	-6.02	-.25
3708.00	.25	326.95	3706.40	-31.85	-7.39	-26.50	32.70	.03	-7.03	.00
3808.00	.50	310.92	3806.39	-31.38	-7.84	-25.89	32.35	.27	-16.03	.25
3908.00	.25	254.90	3906.39	-31.15	-8.38	-25.47	32.26	.42	-56.02	-.25
4008.00	.25	243.97	4006.39	-31.30	-8.79	-25.45	32.51	.05	-10.93	.00
4108.00	.25	235.09	4106.39	-31.53	-9.16	-25.51	32.83	.04	-8.88	.00
4208.00	.25	184.32	4206.39	-31.87	-9.36	-25.75	33.21	.21	-50.77	.00
4308.00	.50	200.54	4306.39	-32.49	-9.53	-26.26	33.86	.27	16.22	.25
4408.00	.25	196.76	4406.39	-33.11	-9.74	-26.75	34.51	.25	-3.78	-.25
4508.00	.50	197.99	4506.38	-33.74	-9.94	-27.25	35.17	.25	1.23	.25
4608.00	.50	215.21	4606.38	-34.51	-10.33	-27.81	36.02	.15	17.22	.00

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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	WALK RATE Deg/100	BUILD RATE Deg/100
4708.00	.50	190.43	4706.38	-35.29	-10.66	-28.40	36.87	.21	-24.78	.00
4808.00	.25	206.65	4806.37	-35.92	-10.83	-28.91	37.51	.27	16.22	-.25
4908.00	.25	221.88	4906.37	-36.27	-11.08	-29.15	37.93	.07	15.23	.00
5008.00	.25	164.10	5006.37	-36.65	-11.16	-29.46	38.31	.24	-57.78	.00
5108.00	.25	188.44	5106.37	-37.07	-11.14	-29.86	38.71	.11	24.34	.00
5208.00	.50	194.66	5206.37	-37.71	-11.28	-30.39	39.36	.25	6.22	.25
5308.00	.25	191.89	5306.37	-38.35	-11.43	-30.92	40.01	.25	-2.77	-.25
5408.00	.25	164.11	5406.37	-38.77	-11.42	-31.31	40.42	.12	-27.78	.00
5508.00	.25	187.33	5506.36	-39.19	-11.39	-31.72	40.82	.10	23.22	.00
5608.00	.25	185.79	5606.36	-39.63	-11.44	-32.10	41.25	.01	-1.54	.00
5708.00	.25	180.00	5706.36	-40.06	-11.46	-32.49	41.67	.03	-5.79	.00
5808.00	.25	180.45	5806.36	-40.50	-11.46	-32.89	42.09	.00	.45	.00
5908.00	.25	260.52	5906.36	-40.75	-11.68	-33.04	42.39	.32	80.07	.00
6003.00	.13	296.00	6001.36	-40.74	-11.98	-32.92	42.47	.17	37.35	-.13
6034.00	.08	274.86	6032.36	-40.72	-12.03	-32.88	42.46	.20	-68.19	-.16
6065.00	.77	11.44	6063.36	-40.52	-12.01	-32.70	42.26	2.53	311.55	2.23
6096.00	3.48	13.54	6094.33	-39.40	-11.75	-31.77	41.11	8.74	6.77	8.74
6126.00	6.09	12.05	6124.23	-36.96	-11.20	-29.73	38.62	8.71	-4.97	8.70
6157.00	9.14	10.73	6154.95	-32.93	-10.40	-26.32	34.53	9.85	-4.26	9.84
6188.00	11.94	11.51	6185.42	-27.37	-9.30	-21.62	28.90	9.04	2.52	9.03
6220.00	15.03	13.91	6216.54	-20.09	-7.65	-15.56	21.50	9.81	7.50	9.66
6252.00	18.44	15.75	6247.18	-11.19	-5.27	-8.27	12.37	10.78	5.75	10.66
6283.00	21.20	15.47	6276.34	-1.07	-2.45	-.04	2.67	8.91	-.90	8.90
6315.00	24.09	15.24	6305.87	10.81	.81	9.65	10.84	9.04	-.72	9.03
6347.00	26.88	15.42	6334.75	24.09	4.45	20.48	24.50	8.72	.56	8.72
6379.00	29.65	18.09	6362.94	38.59	8.84	32.15	39.59	9.51	8.34	8.66
6411.00	32.21	19.48	6390.38	54.16	14.14	44.45	55.97	8.31	4.34	8.00
6443.00	34.22	19.61	6417.15	70.67	20.00	57.40	73.45	6.29	.41	6.28
6475.00	36.34	18.42	6443.28	88.15	26.02	71.18	91.91	6.96	-3.72	6.63
6506.00	37.69	17.55	6468.03	105.90	31.78	85.31	110.56	4.67	-2.81	4.35
6538.00	39.04	16.26	6493.12	124.90	37.55	100.59	130.42	4.90	-4.03	4.22
6570.00	39.89	12.35	6517.83	144.60	42.57	116.81	150.74	8.21	-12.22	2.66
6601.00	43.03	9.64	6541.06	164.75	46.47	133.87	171.18	11.66	-8.74	10.13
6633.00	46.13	8.30	6563.85	186.93	49.96	152.96	193.49	10.12	-4.19	9.69

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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	WALK RATE Deg/100	BUILD RATE Deg/100
6665.00	48.79	6.71	6585.48	210.30	53.03	173.32	216.89	9.08	-4.97	8.31
6696.00	51.15	3.40	6605.42	233.94	55.11	194.31	240.35	11.17	-10.68	7.61
6728.00	53.63	.77	6624.95	259.27	56.03	217.30	265.25	10.12	-8.22	7.75
6760.00	56.39	358.65	6643.30	285.48	55.88	241.52	290.90	10.19	-6.63	8.62
6791.00	59.04	355.33	6659.86	311.64	54.50	266.17	316.37	12.45	-10.71	8.55
6822.00	62.18	354.24	6675.07	338.54	52.04	291.92	342.51	10.58	-3.52	10.13
6854.00	64.94	352.57	6689.32	367.00	48.74	319.43	370.22	9.81	-5.22	8.62
6886.00	67.58	351.14	6702.20	395.99	44.59	347.77	398.49	9.21	-4.47	8.25
6918.00	69.72	349.74	6713.85	425.38	39.64	376.78	427.22	7.83	-4.37	6.69
6950.00	71.61	345.54	6724.45	454.86	33.17	406.46	456.07	13.72	-13.13	5.91
6982.00	73.65	344.78	6734.01	484.38	25.35	436.71	485.04	6.77	-2.37	6.38
7014.00	76.43	343.67	6742.27	514.13	16.94	467.39	514.41	9.31	-3.47	8.69
7060.00	79.66	342.18	6751.79	557.14	3.73	512.16	557.15	7.70	-3.24	7.02
7092.00	81.20	342.30	6757.11	587.19	-5.90	543.59	587.22	4.83	.37	4.81
7124.00	83.31	341.58	6761.43	617.33	-15.73	575.19	617.53	6.96	-2.25	6.59
7155.00	85.33	340.47	6764.49	646.50	-25.76	605.97	647.01	7.43	-3.58	6.52
7187.00	87.01	340.22	6766.63	676.57	-36.50	637.85	677.55	5.31	-.78	5.25
7219.00	86.64	339.11	6768.40	706.53	-47.60	669.77	708.13	3.65	-3.47	-1.16
7251.00	87.11	339.11	6770.15	736.38	-58.99	701.70	738.74	1.47	.00	1.47
7283.00	87.78	339.28	6771.57	766.26	-70.35	733.65	769.49	2.16	.53	2.09
7315.00	90.40	339.09	6772.08	796.17	-81.72	765.62	800.35	8.21	-.59	8.19
7347.00	90.54	338.93	6771.82	826.04	-93.18	797.61	831.28	.66	-.50	.44
7379.00	90.47	338.42	6771.54	855.85	-104.81	829.60	862.25	1.61	-1.59	-.22
7411.00	90.27	338.30	6771.33	885.60	-116.61	861.59	893.24	.73	-.38	-.63
7442.00	90.34	338.88	6771.17	914.46	-127.93	892.58	923.36	1.88	1.87	.23
7474.00	91.04	339.66	6770.78	944.38	-139.26	924.55	954.59	3.28	2.44	2.19
7506.00	90.03	339.00	6770.48	974.32	-150.55	956.53	985.88	3.77	-2.06	-3.16
7538.00	88.19	338.55	6770.98	1004.14	-162.13	988.51	1017.15	5.92	-1.41	-5.75
7570.00	86.57	337.58	6772.44	1033.79	-174.08	1020.47	1048.35	5.90	-3.03	-5.06
7602.00	85.06	336.57	6774.78	1063.19	-186.51	1052.39	1079.42	5.67	-3.16	-4.72
7633.00	85.12	336.46	6777.43	1091.52	-198.81	1083.27	1109.47	.40	-.35	.19
7665.00	85.67	335.78	6780.00	1120.68	-211.73	1115.16	1140.51	2.73	-2.13	1.72
7697.00	85.83	335.74	6782.37	1149.78	-224.83	1147.06	1171.56	.52	-.12	.50
7729.00	86.38	336.03	6784.54	1178.92	-237.87	1178.98	1202.68	1.94	.91	1.72

12/02/2011

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	WALK RATE Deg/100	BUILD RATE Deg/100
7760.00	87.48	335.65	6786.21	1207.16	-250.54	1209.93	1232.89	3.75	-1.23	3.55
7792.00	88.49	335.42	6787.33	1236.27	-263.79	1241.89	1264.10	3.24	-.72	3.16
7824.00	90.24	336.28	6787.68	1265.47	-276.88	1273.88	1295.40	6.09	2.69	5.47
7856.00	91.64	337.47	6787.16	1294.89	-289.44	1305.88	1326.85	5.74	3.72	4.38
7888.00	92.12	336.99	6786.11	1324.38	-301.82	1337.86	1358.34	2.12	-1.50	1.50
7920.00	92.35	336.97	6784.86	1353.81	-314.32	1369.83	1389.82	.72	-.06	.72
7951.00	92.59	337.07	6783.53	1382.32	-326.42	1400.80	1420.34	.84	.32	.77
8016.00	92.69	337.22	6780.53	1442.16	-351.64	1465.74	1484.41	.28	.23	.15
8078.00	92.39	337.05	6777.78	1499.23	-375.70	1527.67	1545.59	.56	-.27	-.48
8141.00	92.45	335.62	6775.12	1556.88	-400.97	1590.61	1607.68	2.27	-2.27	.10
8205.00	91.81	335.32	6772.75	1615.06	-427.52	1654.54	1670.69	1.10	-.47	-1.00
8268.00	91.85	335.58	6770.73	1672.34	-453.68	1717.47	1732.78	.42	.41	.06
8300.00	91.48	335.55	6769.80	1701.46	-466.91	1749.45	1764.36	1.16	-.09	-1.16
8332.00	91.41	334.46	6769.00	1730.45	-480.43	1781.41	1795.91	3.41	-3.41	-.22
8396.00	90.81	332.93	6767.76	1787.81	-508.79	1845.28	1858.80	2.57	-2.39	-.94
8460.00	91.45	332.73	6766.50	1844.74	-538.00	1909.08	1921.59	1.05	-.31	1.00
8524.00	91.58	331.82	6764.80	1901.37	-567.77	1972.82	1984.33	1.44	-1.42	.20
8587.00	92.32	332.18	6762.66	1956.96	-597.33	2035.53	2046.09	1.31	.57	1.17
8651.00	92.25	331.45	6760.11	2013.33	-627.53	2099.19	2108.86	1.14	-1.14	-.11
8714.00	91.34	330.24	6758.13	2068.32	-658.21	2161.77	2170.52	2.40	-1.92	-1.44
8777.00	90.44	329.74	6757.16	2122.87	-689.71	2224.27	2232.10	1.63	-.79	-1.43
8841.00	90.91	330.11	6756.40	2178.24	-721.78	2287.75	2294.72	.93	.58	.73
8904.00	91.35	330.30	6755.16	2232.91	-753.08	2350.26	2356.48	.76	.30	.70
8968.00	90.67	327.36	6754.03	2287.65	-786.20	2413.57	2418.98	4.71	-4.59	-1.06
9032.00	89.63	325.05	6753.86	2340.83	-821.79	2476.39	2480.90	3.96	-3.61	-1.63
9095.00	90.30	325.32	6753.90	2392.56	-857.76	2538.00	2541.67	1.15	.43	1.06
9159.00	90.74	325.88	6753.32	2445.36	-893.92	2600.69	2603.63	1.11	.88	.69
9222.00	91.21	326.45	6752.25	2497.68	-928.99	2662.52	2664.85	1.17	.90	.75
9285.00	90.87	326.38	6751.11	2550.16	-963.83	2724.40	2726.22	.55	-.11	-.54
9349.00	89.46	324.61	6750.92	2602.90	-1000.09	2787.06	2788.41	3.54	-2.77	-2.20
9413.00	89.83	324.63	6751.32	2655.08	-1037.14	2849.52	2850.45	.58	.03	.58

12/02/2011



Scientific Drilling

Survey Report

SIDE TRACK

Well Name: LANTZ MILLS UNIT #2 1H-ST1								
Survey: Computed from MWDRun Lantz Mills Unit 2 1H ST1 Run 2's RawMSur								
Survey Date: 5/19/2010, 5/21/2010, 5/22/2010, 5/26/2010, 5/27/2010								
MD	Type	Inc	Azim	TVD	VS	Northing	Easting	DLS
ft		deg	deg	ft	ft	ft	ft	deg/100ft
4508.00	Tie-in	0.50	197.99	4506.38	-27.25	-33.74	-9.94	Invalid
4608.00	User mag	0.50	215.21	4606.38	-27.81	-34.51	-10.33	0.15
4708.00	User mag	0.50	190.43	4706.37	-28.41	-35.30	-10.66	0.21
4808.00	User mag	0.25	206.65	4806.37	-28.92	-35.92	-10.83	0.27
4908.00	User mag	0.25	221.88	4906.37	-29.15	-36.28	-11.08	0.07
5008.00	User mag	0.25	164.10	5006.37	-29.46	-36.65	-11.16	0.24
5108.00	User mag	0.25	188.44	5106.37	-29.86	-37.08	-11.14	0.11
5208.00	User mag	0.50	194.66	5206.37	-30.40	-37.71	-11.28	0.25
5308.00	User mag	0.25	191.89	5306.36	-30.92	-38.35	-11.43	0.25
5408.00	User mag	0.25	164.11	5406.36	-31.32	-38.77	-11.42	0.12
5508.00	User mag	0.25	187.33	5506.36	-31.72	-39.20	-11.39	0.10
5556.00	User mag	0.32	182.78	5554.36	-31.94	-39.44	-11.41	0.15
5590.00	User mag	0.34	199.22	5588.36	-32.10	-39.63	-11.44	0.28
5622.00	User mag	0.21	110.46	5620.36	-32.21	-39.74	-11.42	1.24
5654.00	User mag	1.93	30.16	5652.35	-31.92	-39.29	-11.09	5.94
5686.00	User mag	5.48	38.41	5684.28	-30.86	-37.63	-9.87	11.19
5718.00	User mag	8.54	32.81	5716.04	-28.78	-34.43	-7.64	9.79
5750.00	User mag	11.99	30.90	5747.52	-25.47	-29.58	-4.64	10.85
5781.00	User mag	13.67	30.79	5777.75	-21.39	-23.67	-1.11	5.41
5813.00	User mag	16.31	29.09	5808.66	-16.37	-16.50	3.01	8.35
5845.00	User mag	17.76	27.15	5839.25	-10.46	-8.23	7.42	4.86
5877.00	User mag	18.54	27.07	5869.66	-4.04	0.64	11.96	2.47
5908.00	User mag	19.19	28.20	5898.99	2.34	9.52	16.61	2.40
5940.00	Mag	20.30	26.69	5929.11	9.26	19.12	21.59	3.81
5972.00	User mag	21.43	25.90	5959.01	16.72	29.34	26.64	3.63
6004.00	User mag	22.01	25.27	5988.74	24.58	40.02	31.75	1.96
6036.00	User mag	22.26	25.85	6018.38	32.60	50.89	36.96	1.03
6067.00	User mag	22.94	27.56	6047.00	40.33	61.53	42.31	3.06
6099.00	User mag	23.95	27.49	6076.36	48.46	72.82	48.20	3.15
6131.00	User mag	26.14	28.17	6105.35	57.05	84.80	54.52	6.92
6163.00	User mag	27.98	27.35	6133.85	66.30	97.68	61.30	5.86
6195.00	User mag	30.10	26.78	6161.82	76.31	111.52	68.37	6.68
6227.00	User mag	31.71	25.52	6189.28	87.11	126.27	75.61	5.41
6259.00	User mag	33.24	25.09	6216.27	98.58	141.81	82.95	4.84
6291.00	User mag	34.84	25.72	6242.79	110.52	157.98	90.64	5.11
6323.00	User mag	36.14	26.09	6268.84	122.78	174.69	98.75	4.12
6354.00	User mag	37.14	25.91	6293.72	134.96	191.32	106.86	3.26
6386.00	User mag	38.63	25.67	6318.97	147.96	209.02	115.41	4.66
6418.00	User mag	40.40	27.55	6343.66	161.20	227.22	124.53	6.70



Scientific Drilling

Survey Report

Well Name:		LANTZ MILLS UNIT #2 1H-ST1						
Survey:		Computed from MWDRun Lantz Mills Unit 2 1H ST1 Run 2's RawMSur						
Survey Date:		5/19/2010, 5/21/2010, 5/22/2010, 5/26/2010, 5/27/2010						
MD ft	Type	Inc deg	Azim deg	TVD ft	VS ft	Northing ft	Easting ft	DLS deg/100ft
6450.00	User mag	43.00	29.77	6367.55	174.46	245.89	134.75	9.34
6482.00	User mag	44.86	28.79	6390.59	188.10	265.25	145.61	6.19
6514.00	User mag	45.50	27.71	6413.15	202.37	285.25	156.35	3.12
6546.00	User mag	46.70	26.03	6435.33	217.30	305.82	166.77	5.34
6577.00	User mag	47.52	26.10	6456.43	232.24	326.22	176.75	2.63
6609.00	User mag	49.14	24.38	6477.71	248.22	347.84	186.94	6.47
6641.00	User mag	50.85	21.82	6498.28	265.28	370.39	196.55	8.13
6673.00	User mag	51.98	19.68	6518.24	283.41	393.78	205.40	6.30
6705.00	User mag	53.11	18.01	6537.70	302.39	417.82	213.61	5.44
6737.00	User mag	54.60	15.90	6556.58	322.26	442.53	221.14	7.08
6769.00	User mag	56.09	14.34	6574.77	343.02	467.94	228.00	6.15
6801.00	User mag	58.38	13.15	6592.09	364.64	494.08	234.39	7.81
6833.00	User mag	60.22	10.45	6608.43	387.29	521.01	240.01	9.27
6864.00	User mag	60.97	8.63	6623.65	410.11	547.64	244.48	5.64
6896.00	User mag	61.99	6.98	6638.93	434.31	575.49	248.30	5.55
6927.00	User mag	63.17	5.10	6653.21	458.41	602.86	251.19	6.59
6959.00	User mag	64.85	2.80	6667.23	484.09	631.55	253.17	8.31
6991.00	User mag	66.30	0.41	6680.47	510.62	660.67	253.98	8.17
7022.00	User mag	68.50	358.87	6692.38	537.07	689.28	253.80	8.46
7054.00	User mag	70.86	356.99	6703.49	565.14	719.27	252.71	9.21
7086.00	User mag	72.90	355.40	6713.44	593.89	749.61	250.69	7.94
7118.00	User mag	73.74	352.95	6722.63	623.21	780.10	247.58	7.78
7150.00	User mag	74.81	350.95	6731.30	652.99	810.60	243.26	6.88
7181.00	User mag	75.48	350.33	6739.25	682.14	840.17	238.39	2.91
7213.00	User mag	77.01	347.46	6746.86	712.57	870.66	232.40	9.93
7245.00	User mag	77.79	345.24	6753.84	743.40	901.01	225.03	7.19
7277.00	User mag	79.49	343.21	6760.14	774.54	931.19	216.50	8.17
7309.00	User mag	82.22	340.00	6765.23	806.03	961.16	206.53	13.07
7333.00	User mag	82.72	339.49	6768.38	829.80	983.49	198.29	2.99
7365.00	User mag	85.43	338.31	6771.68	861.61	1013.18	186.84	9.20
7397.00	User mag	86.91	337.33	6773.82	893.53	1042.74	174.78	5.56
7428.00	User mag	86.97	336.06	6775.47	924.49	1071.17	162.54	4.11
7460.00	User mag	86.27	334.74	6777.36	956.42	1100.21	149.24	4.66
7492.00	User mag	86.23	334.64	6779.45	988.32	1129.08	135.59	0.33
7524.00	User mag	86.54	334.99	6781.47	1020.23	1157.98	121.99	1.45
7556.00	User mag	86.54	334.08	6783.40	1052.13	1186.82	108.26	2.84
7588.00	User mag	87.21	332.43	6785.15	1084.01	1215.35	93.88	5.55
7620.00	User mag	86.77	330.36	6786.83	1115.80	1243.41	78.58	6.61



Scientific Drilling

Survey Report

Well Name:		LANTZ MILLS UNIT #2 1H-ST1						
Survey:		Computed from MWDRun Lantz Mills Unit 2 1H ST1 Run 2's RawMSur						
Survey Date:		5/19/2010, 5/21/2010, 5/22/2010, 5/26/2010, 5/27/2010						
MD	Type	Inc	Azim	TVD	VS	Northing	Easting	DLS
ft		deg	deg	ft	ft	ft	ft	deg/100ft
7652.00	User mag	87.01	329.52	6788.56	1147.49	1271.06	62.58	2.75
7684.00	User mag	88.19	325.43	6789.90	1179.00	1298.01	45.39	13.27
7716.00	User mag	91.24	326.66	6790.06	1210.39	1324.55	27.52	10.30
7748.00	User mag	92.76	327.11	6788.94	1241.85	1351.34	10.05	4.93
7780.00	User mag	92.89	326.72	6787.37	1273.30	1378.12	-7.40	1.29
7811.00	User mag	93.16	326.41	6785.73	1303.73	1403.95	-24.45	1.32
7843.00	User mag	93.02	326.63	6784.01	1335.13	1430.60	-42.08	0.80
7875.00	User mag	92.65	327.40	6782.43	1366.58	1457.41	-59.48	2.69
7907.00	User mag	92.72	327.43	6780.93	1398.08	1484.34	-76.69	0.23
7970.00	User mag	91.81	328.67	6778.43	1460.23	1537.76	-110.01	2.43
8002.00	User mag	90.27	329.10	6777.85	1491.89	1565.15	-126.54	5.02
8035.00	User mag	90.17	328.35	6777.73	1524.53	1593.35	-143.67	2.29
8065.00	User mag	90.07	328.39	6777.66	1554.17	1618.89	-159.40	0.36
8097.00	User mag	90.03	328.06	6777.64	1585.78	1646.10	-176.26	1.04
8129.00	User mag	90.37	328.33	6777.52	1617.38	1673.29	-193.12	1.36
8160.00	User mag	90.37	327.88	6777.32	1647.99	1699.61	-209.50	1.46
8224.00	User mag	91.21	328.64	6776.44	1711.21	1754.04	-243.16	1.77
8288.00	User mag	91.27	328.93	6775.06	1774.51	1808.76	-276.32	0.47
8352.00	User mag	91.11	329.42	6773.73	1837.87	1863.71	-309.10	0.81
8415.00	User mag	90.24	329.87	6772.99	1900.31	1918.07	-340.94	1.55
8479.00	User mag	90.10	331.75	6772.80	1963.91	1973.94	-372.15	2.94
8543.00	User mag	90.87	333.35	6772.26	2027.70	2030.73	-401.65	2.78
8606.00	User mag	91.11	335.43	6771.17	2090.61	2087.53	-428.88	3.32
8670.00	User mag	90.84	335.02	6770.08	2154.56	2145.63	-455.69	0.76
8734.00	User mag	90.94	335.31	6769.09	2218.51	2203.70	-482.57	0.48
8797.00	User mag	90.84	333.67	6768.11	2281.43	2260.55	-509.70	2.61
8861.00	User mag	91.41	334.80	6766.85	2345.33	2318.17	-537.51	1.97
8925.00	User mag	91.48	335.97	6765.24	2409.28	2376.34	-564.16	1.83
8988.00	User mag	91.58	335.18	6763.56	2472.23	2433.68	-590.20	1.26
9052.00	User mag	91.75	336.04	6761.70	2536.18	2491.94	-616.62	1.36
9115.00	User mag	92.15	335.99	6759.56	2599.13	2549.47	-642.22	0.64
9179.00	User mag	91.88	334.57	6757.31	2663.05	2607.57	-668.96	2.25
9243.00	User mag	92.52	334.87	6754.85	2726.95	2665.39	-696.28	1.10
9306.00	User mag	92.76	333.33	6751.95	2789.78	2722.00	-723.76	2.46
9370.00	User mag	93.15	333.40	6748.66	2853.56	2779.14	-752.41	0.63
9434.00	User mag	92.95	332.52	6745.25	2917.29	2836.06	-781.47	1.40
9497.00	User mag	91.98	330.64	6742.54	2979.93	2891.42	-811.42	3.36
9561.00	User mag	89.87	328.61	6741.51	3043.35	2946.62	-843.77	4.59



Scientific Drilling

Survey Report

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Survey Date:		5/19/2010, 5/21/2010, 5/22/2010, 5/26/2010, 5/27/2010						
MD	Type	Inc	Azim	TVD	VS	Northing	Easting	DLS
ft		deg	deg	ft	ft	ft	ft	deg/100ft
9624.00	User mag	89.56	328.51	6741.82	3105.64	3000.37	-876.63	0.50
9688.00	User mag	89.63	328.66	6742.27	3168.91	3054.98	-909.99	0.26
9751.00	User mag	88.83	327.48	6743.12	3231.11	3108.45	-943.30	2.27
9815.00	User mag	89.19	327.12	6744.22	3294.14	3162.29	-977.88	0.81
9878.00	User mag	91.51	329.41	6743.83	3356.37	3215.87	-1011.01	5.17
9942.00	User mag	91.24	329.00	6742.30	3419.73	3270.82	-1043.77	0.77
10006.00	User mag	90.47	327.77	6741.34	3482.96	3325.32	-1077.32	2.27
10069.00	User mag	89.56	326.89	6741.32	3545.03	3378.35	-1111.33	2.00
10133.00	User mag	90.94	327.64	6741.04	3608.07	3432.18	-1145.93	2.45
10196.00	User mag	90.84	327.72	6740.06	3670.19	3485.41	-1179.61	0.20
10260.00	User mag	89.30	325.97	6739.99	3733.14	3538.99	-1214.62	3.65
10323.00	User mag	91.14	327.48	6739.75	3795.09	3591.65	-1249.18	3.79
10387.00	User mag	92.92	327.49	6737.48	3858.13	3645.59	-1283.55	2.79
10451.00	User mag	91.98	322.09	6734.73	3920.55	3697.81	-1320.41	8.56
10515.00	User mag	88.22	319.33	6734.62	3981.90	3747.33	-1360.92	7.29
10578.00	User mag	87.95	319.27	6736.72	4041.82	3795.07	-1401.98	0.44
10610.00	User mag	87.22	318.28	6738.07	4072.15	3819.11	-1423.05	3.86
TD 10620				6741				