



Company: Chesapeake Operating
Lease/Well: Ray Baker / #1H

Rig Name: Nomac #290
State/County: West Virginia/Marshall
Latitude: 39.75

GRID North is 7.80 Degrees East of True North
VS-Azi: 319.00 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RBK=19 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ray baker #1h_ed.ut
Minimum Curvature Method
Report Date/Time: 1/2/2011 / 17:31

Vaughn Energy Services
Morgantown, WV
304.777.2189
Surveyor: Troy Bracke

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.17	307.88	100.00	0.09	-0.12	0.15	0.15	307.88	0.17
200.00	0.17	291.89	200.00	0.24	-0.37	0.42	0.44	302.59	0.05
300.00	0.11	261.27	300.00	0.28	-0.60	0.60	0.66	294.82	0.09
400.00	0.19	251.65	400.00	0.21	-0.85	0.72	0.88	283.84	0.09
500.00	0.22	283.46	500.00	0.20	-1.20	0.94	1.22	279.55	0.12
600.00	0.10	328.37	600.00	0.32	-1.44	1.19	1.47	282.70	0.17
700.00	0.11	265.42	700.00	0.39	-1.58	1.33	1.63	283.93	0.11
800.00	0.06	231.41	800.00	0.35	-1.72	1.39	1.75	281.66	0.07
900.00	0.06	357.39	900.00	0.37	-1.76	1.43	1.79	282.00	0.10
1000.00	0.06	78.36	1000.00	0.43	-1.71	1.45	1.76	284.19	0.07
1100.00	0.06	272.69	1100.00	0.44	-1.71	1.46	1.77	284.56	0.12
1200.00	0.20	306.93	1200.00	0.55	-1.90	1.66	1.98	286.13	0.15
1300.00	0.83	329.90	1299.99	1.28	-2.40	2.54	2.72	298.08	0.66
1400.00	0.60	329.58	1399.98	2.37	-3.03	3.78	3.85	307.94	0.23
1500.00	0.42	359.24	1499.98	3.19	-3.31	4.58	4.59	313.97	0.32
1600.00	0.35	335.40	1599.98	3.84	-3.44	5.15	5.16	318.14	0.17
1700.00	0.42	359.15	1699.98	4.49	-3.57	5.73	5.74	321.47	0.17
1800.00	0.46	24.65	1799.97	5.22	-3.41	6.18	6.24	326.83	0.20
1900.00	0.47	20.73	1899.97	5.97	-3.10	6.54	6.73	332.54	0.03
2000.00	0.36	350.91	1999.97	6.66	-3.01	7.00	7.31	335.72	0.24
2100.00	0.24	71.90	2099.97	7.04	-2.85	7.19	7.60	337.94	0.40
2200.00	0.28	11.52	2199.97	7.35	-2.60	7.25	7.80	340.51	0.27
2300.00	0.43	18.44	2299.96	7.94	-2.43	7.59	8.31	342.97	0.15
2400.00	0.43	351.65	2399.96	8.67	-2.37	8.10	8.99	344.71	0.20
2500.00	0.46	353.98	2499.96	9.44	-2.47	8.75	9.76	345.36	0.03
2600.00	0.33	337.35	2599.96	10.11	-2.62	9.35	10.45	345.46	0.17

HORIZONTAL DISPLACEMENT IS
10.45 FEET AT 345.46 DEGREES

RECEIVED

FEB 27 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Company: Chesapeake Appalachia LLC
 Field: Marshall, WV
 City/Blk/Par: _____
 Well Name: Ray Baker 1H ST1
 Rig: Nomac 290

Job Number: 4715
 Magnetic Decl.: -7.80
 Grid Corr.: _____
 Total Survey Corr.: -7.80
 Target Info: _____

Calculation Method: Minimum Curvature
 Proposed Azimuth: 319
 Depth Reference: Driller
 Tie Into: GYRO

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates N/S (ft)	Coordinates E/W (ft)	Closure Dist (ft)	Ang (°)	DLS (°/100')	Bid Rate (°/100')	Wlk Rate (°/100')
0	Tie In	2705	3.19	271.85	0	2704.90	11.59	10.45 N	5.65 W					
1	MWD	2891	6.40	264.50	186	2890.23	21.14	9.62 N	21.15 W	23.23	294.47	1.75	1.7	-4.0
2	MWD	3018	7.20	232.30	127	3016.38	25.71	4.08 N	34.49 W	34.73	276.74	3.02	0.6	-25.4
3	MWD	3144	7.40	202.70	126	3141.40	22.56	8.24 S	43.88 W	44.64	259.36	2.96	0.2	-23.5
4	MWD	3271	6.90	202.30	127	3267.41	15.51	22.85 S	49.93 W	54.91	245.41	0.40	-0.4	-0.3
5	MWD	3397	9.50	205.70	126	3392.11	8.00	39.22 S	57.31 W	69.44	235.61	2.10	2.1	2.7
6	MWD	3525	9.90	202.50	128	3518.28	-1.09	58.91 S	66.10 W	88.54	228.29	0.52	0.3	-2.5
7	MWD	3652	13.10	200.70	127	3642.72	-12.79	82.46 S	75.37 W	111.71	222.43	2.54	2.5	-1.4
8	MWD	3778	11.30	207.40	126	3765.87	-24.10	106.78 S	86.10 W	137.17	218.88	1.82	-1.4	5.3
9	MWD	3904	12.90	204.50	126	3889.07	-34.48	130.54 S	97.61 W	163.00	216.79	1.36	1.3	-2.3
10	MWD	4030	13.70	203.80	126	4011.69	-46.67	156.99 S	109.47 W	191.39	214.89	0.65	0.6	-0.6
11	MWD	4157	11.20	207.60	127	4135.70	-57.57	181.69 S	121.25 W	218.43	213.72	2.07	-2.0	3.0
12	MWD	4283	9.70	213.00	126	4259.61	-64.96	201.43 S	132.70 W	241.22	213.38	1.42	-1.2	4.3
13	MWD	4411	10.40	215.60	128	4385.64	-70.61	219.87 S	145.30 W	263.55	213.46	0.65	0.5	2.0
14	MWD	4537	8.70	206.40	126	4509.90	-76.91	237.66 S	156.16 W	284.37	213.31	1.81	-1.3	-7.3
15	MWD	4664	8.70	201.80	127	4635.44	-84.99	255.18 S	164.00 W	303.34	212.73	0.55	0.0	-3.6
16	MWD	4791	9.90	195.60	127	4760.77	-95.39	274.61 S	170.50 W	323.24	211.84	1.23	0.9	-4.9
17	MWD	4917	11.30	203.10	126	4884.62	-106.75	296.40 S	178.26 W	345.88	211.02	1.56	1.1	6.0
18	MWD	5045	12.20	213.10	128	5009.95	-115.93	319.27 S	190.57 W	371.82	210.83	1.74	0.7	7.8
19	MWD	5172	13.40	207.20	127	5133.80	-125.08	343.60 S	204.62 W	399.92	210.77	1.40	0.9	-4.6
20	MWD	5299	12.60	204.40	127	5257.55	-136.31	369.31 S	217.07 W	428.38	210.45	0.80	-0.6	-2.2
21	MWD	5426	11.80	213.80	127	5381.69	-145.48	392.72 S	230.02 W	455.12	210.36	1.68	-0.6	7.4
22	MWD	5553	12.50	220.90	127	5505.85	-150.82	413.90 S	246.24 W	481.61	210.75	1.30	0.6	5.6
23	MWD	5680	11.90	212.30	127	5629.99	-156.52	435.36 S	262.24 W	508.24	211.06	1.51	-0.5	-6.8
24	MWD	5807	12.80	213.00	127	5754.05	-164.16	458.22 S	276.90 W	535.39	211.14	0.72	0.7	0.6
25	MWD	5934	12.70	207.80	127	5877.92	-173.09	482.37 S	291.07 W	563.39	211.11	0.91	-0.1	-4.1
26	MWD	6060	11.30	209.30	126	6001.17	-182.26	505.39 S	303.57 W	589.56	210.99	1.14	-1.1	1.2
27	MWD	6187	10.00	203.80	127	6125.98	-191.15	526.33 S	314.11 W	612.94	210.83	1.30	-1.0	-4.3

RECEIVED
 FEB 27 2015
 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV



Company: Chesapeake Appalachia LLC
 Field: Marshall, WV
 City/Blk/Par: _____
 Well Name: Ray Baker 1H ST1
 Rig: Nomac 290

Job Number: 4715
 Magnetic Decl.: -7.80
 Grid Corr.: _____
 Total Survey Corr.: -7.80
 Target Info: _____
 Calculation Method: Minimum Curvature
 Proposed Azimuth: 319
 Depth Reference: Driller
 Tie Info: GYRO

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates N/S (ft)	EW/W (ft)	Closure Dist (ft)	Ang (°)	DLS (°/100')	Bid Rate (°/100')	Wlk Rate (°/100')
28	MWD	6315	9.40	206.90	128	6252.15	-199.81	545.82 S	323.33 W	634.40	210.64	0.62	-0.5	2.4
29	MWD	6442	10.20	208.10	127	6377.30	-207.73	564.99 S	333.32 W	655.98	210.54	0.65	0.6	0.9
30	MWD	6504	10.30	207.40	62	6438.31	-211.73	574.75 S	338.45 W	667.00	210.49	0.26	0.2	-1.1
31	MWD	6549	11.40	208.20	45	6482.50	-214.79	582.24 S	342.41 W	675.46	210.46	2.47	2.4	1.8
32	MWD	6580	12.00	225.70	31	6512.87	-216.06	587.20 S	346.16 W	681.64	210.52	11.56	1.9	56.5
33	MWD	6611	13.50	247.30	31	6543.12	-215.11	590.85 S	351.81 W	687.65	210.77	16.01	4.8	69.7
34	MWD	6643	15.80	264.20	32	6574.09	-211.42	592.73 S	359.59 W	693.28	211.24	15.09	7.2	52.8
35	MWD	6675	18.90	278.50	32	6604.65	-204.97	592.40 S	369.06 W	697.96	211.92	16.41	9.7	44.7
36	MWD	6707	21.80	289.00	32	6634.66	-195.87	589.70 S	379.81 W	701.43	212.78	14.54	9.1	32.8
37	MWD	6738	26.00	295.80	31	6663.00	-184.64	584.87 S	391.38 W	703.74	213.79	16.18	13.5	21.9
38	MWD	6770	30.70	299.50	32	6691.15	-170.48	577.79 S	404.81 W	705.49	215.02	15.67	14.7	11.6
39	MWD	6802	34.20	302.00	32	6718.15	-154.17	569.00 S	419.55 W	706.95	216.40	11.71	10.9	7.8
40	MWD	6834	35.90	301.60	32	6744.35	-136.62	559.31 S	435.17 W	708.66	217.88	5.36	5.3	-1.2
41	MWD	6866	37.10	299.40	32	6770.07	-118.57	549.66 S	451.57 W	711.37	219.40	5.55	3.8	-6.9
42	MWD	6898	38.70	299.40	32	6795.32	-100.06	540.01 S	468.70 W	715.04	220.96	5.00	5.0	0.0
43	MWD	6929	40.30	300.00	31	6819.24	-81.45	530.24 S	485.82 W	719.15	222.50	5.31	5.2	1.9
44	MWD	6961	40.90	302.70	32	6843.54	-61.61	519.40 S	503.60 W	723.46	224.12	5.80	1.9	8.4
45	MWD	6993	42.40	303.20	32	6867.45	-41.17	507.84 S	521.45 W	727.88	225.76	4.80	4.7	1.6
46	MWD	7024	44.60	304.20	31	6889.94	-20.59	495.99 S	539.20 W	732.63	227.39	7.44	7.1	3.2
47	MWD	7056	47.20	305.70	32	6912.21	1.70	482.83 S	558.03 W	737.91	229.13	8.79	8.1	4.7
48	MWD	7088	47.90	308.10	32	6933.81	24.79	468.65 S	576.90 W	743.27	230.91	5.95	2.2	7.5
49	MWD	7120	49.80	311.10	32	6954.86	48.56	453.29 S	595.46 W	748.36	232.72	9.22	5.9	9.4
50	MWD	7151	50.90	313.80	31	6974.65	72.27	437.18 S	613.06 W	752.97	234.51	7.59	3.5	8.7
51	MWD	7181	53.60	316.70	30	6993.01	95.93	420.33 S	629.75 W	757.14	236.28	11.81	9.0	9.7
52	MWD	7213	58.20	318.20	32	7010.95	122.41	400.81 S	647.66 W	761.65	238.25	14.89	14.4	4.7
53	MWD	7244	64.00	319.30	31	7025.93	149.54	380.41 S	665.54 W	766.58	240.25	18.97	18.7	3.5
54	MWD	7276	68.70	320.50	32	7038.76	178.84	357.99 S	684.41 W	772.38	242.39	15.08	14.7	3.7
55	MWD	7308	72.50	320.00	32	7049.39	209.01	334.79 S	703.71 W	779.29	244.56	11.97	11.9	-1.6

RECEIVED

FEB 27 2015

WV GEOLOGICAL SURVEY
 MORGANTOWN, WV



Company: Chesapeake Appalachia LLC
 Field: Marshall, WV
 City/Blk/Par: _____
 Well Name: Ray Baker 1H ST1
 Rig: Nomac 290

Job Number: 4715
 Magnetic Decl.: -7.80
 Grid Corr.: _____
 Total Survey Corr.: -7.80
 Target Info: _____
 Calculation Method: Minimum Curvature
 Proposed Azimuth: 319
 Depth Reference: Driller
 Tie Into: GYRO

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates		Closure		DLS (°/100')	Bid Rate (°/100')	Wlk Rate (°/100')
								N/S (ft)	E/W (ft)	Dist (ft)	Ang (°)			
56	MWVD	7340	76.70	320.50	32	7057.88	239.84	311.07 S	723.43 W	787.47	246.73	13.21	13.1	1.6
57	MWVD	7371	79.80	319.80	31	7064.20	270.18	287.77 S	742.88 W	796.67	248.82	10.24	10.0	-2.3
58	MWVD	7403	83.90	319.50	32	7068.73	301.85	263.64 S	763.38 W	807.62	250.95	12.85	12.8	-0.9
59	MWVD	7468	89.10	319.40	65	7072.70	366.71	214.36 S	805.54 W	833.58	255.10	8.00	8.0	-0.2
60	MWVD	7531	89.50	318.70	63	7073.47	429.70	166.78 S	846.83 W	863.10	258.86	1.28	0.6	-1.1
61	MWVD	7595	90.30	319.00	64	7073.58	493.70	118.59 S	888.95 W	896.82	262.40	1.33	1.3	0.5
62	MWVD	7658	90.80	319.20	63	7072.97	556.70	70.97 S	930.19 W	932.90	265.64	0.85	0.8	0.3
63	MWVD	7722	90.90	319.20	64	7072.03	620.69	22.53 S	972.01 W	972.27	268.67	0.16	0.2	0.0
64	MWVD	7786	90.90	319.10	64	7071.02	684.68	25.87 N	1013.86 W	1014.19	271.46	0.16	0.0	-0.2
65	MWVD	7849	90.30	319.10	63	7070.36	747.68	73.49 N	1055.11 W	1057.66	273.98	0.95	-1.0	0.0
66	MWVD	7913	89.50	319.40	64	7070.47	811.68	121.97 N	1096.88 W	1103.65	276.35	1.33	-1.3	0.5
67	MWVD	7976	89.30	319.60	63	7071.13	874.67	169.88 N	1137.80 W	1150.41	278.49	0.45	-0.3	0.3
68	MWVD	8040	89.40	319.50	64	7071.86	938.66	218.58 N	1179.32 W	1199.40	280.50	0.22	0.2	-0.2
69	MWVD	8104	89.80	319.80	64	7072.30	1002.66	267.35 N	1220.75 W	1249.69	282.35	0.78	0.6	0.5
70	MWVD	8167	89.90	319.80	63	7072.47	1065.65	315.47 N	1261.42 W	1300.27	284.04	0.16	0.2	0.0
71	MWVD	8231	90.20	320.20	64	7072.41	1129.64	364.50 N	1302.55 W	1352.59	285.63	0.78	0.5	0.6
72	MWVD	8294	90.70	319.70	63	7071.92	1192.63	412.72 N	1343.09 W	1405.07	287.08	1.12	0.8	-0.8
73	MWVD	8358	90.50	318.70	64	7071.25	1256.63	461.16 N	1384.91 W	1459.67	288.42	1.59	-0.3	-1.6
74	MWVD	8421	90.80	318.90	63	7070.53	1319.62	508.56 N	1426.40 W	1514.35	289.62	0.57	0.5	0.3
75	MWVD	8485	90.90	318.30	64	7069.58	1383.61	556.56 N	1468.72 W	1570.64	290.75	0.95	0.2	-0.9
76	MWVD	8548	91.30	317.40	63	7068.38	1446.59	603.26 N	1510.99 W	1626.97	291.76	1.56	0.6	-1.4
77	MWVD	8612	92.20	317.40	64	7066.42	1510.53	650.35 N	1554.29 W	1684.87	292.71	1.41	1.4	0.0
78	MWVD	8675	91.30	317.40	63	7064.50	1573.48	696.70 N	1596.91 W	1742.28	293.57	1.43	-1.4	0.0
79	MWVD	8739	90.40	316.80	64	7063.55	1637.43	743.58 N	1640.47 W	1801.13	294.38	1.69	-1.4	-0.9
80	MWVD	8802	89.90	316.90	63	7063.38	1700.39	789.54 N	1683.56 W	1859.50	295.13	0.81	-0.8	0.2
81	MWVD	8866	90.20	317.40	64	7063.33	1764.36	836.46 N	1727.08 W	1918.98	295.84	0.91	0.5	0.8
82	MWVD	8930	90.20	317.20	64	7063.10	1828.33	883.50 N	1770.49 W	1978.68	296.52	0.31	0.0	-0.3

RECEIVED

FEB 27 2015

WV GEOLOGICAL SURVEY
 MORGANTOWN, WV



Company: Chesapeake Appalachia LLC
 Field: Marshall, WV
 City/Blk/Par:
 Well Name: Ray Baker 1H ST1
 Rig: Nomac 290

Job Number: 4715
 Magnetic Decl.: -7.80
 Grid Corr.:
 Total Survey Corr.: -7.80
 Target Info:
 Calculation Method: Minimum Curvature
 Proposed Azimuth: 319
 Depth Reference: Driller
 Tie Into: GYRO

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates	Closure	DLS	Bid Rate	Wlk Rate
								Dist (ft) Ang (°)	(°/100)	(°/100)	(°/100)	
83	MWD	8993	90.50	317.40	63	7062.72	1891.30	929.79 N 1813.21 W	2037.71 297.15	0.57	0.5	0.3
84	MWD	9057	91.20	318.10	64	7061.77	1955.27	977.16 N 1856.24 W	2097.73 297.76	1.55	1.1	1.1
85	MWD	9121	91.60	318.90	64	7060.21	2019.25	1025.08 N 1898.63 W	2157.68 298.36	1.40	0.6	1.2
86	MWD	9184	91.70	319.30	63	7058.39	2082.23	1072.68 N 1939.86 W	2216.69 298.94	0.65	0.2	0.6
87	MWD	9247	91.00	318.30	63	7056.91	2145.21	1120.07 N 1981.35 W	2276.02 299.48	1.94	-1.1	-1.6
88	MWD	9311	90.60	319.90	64	7056.01	2209.20	1168.44 N 2023.24 W	2336.40 300.01	2.58	-0.6	2.5
89	MWD	9374	89.80	319.50	63	7055.79	2272.19	1216.48 N 2063.99 W	2395.81 300.51	1.42	-1.3	-0.6
90	MWD	9438	90.10	319.50	64	7055.85	2336.19	1265.15 N 2105.56 W	2456.41 301.00	0.47	0.5	0.0
91	MWD	9502	90.40	319.80	64	7055.57	2400.19	1313.92 N 2146.99 W	2517.14 301.47	0.66	0.5	0.5
92	MWD	9566	91.50	320.60	64	7054.51	2464.16	1363.09 N 2187.95 W	2577.82 301.92	2.13	1.7	1.3
93	MWD	9629	92.40	320.10	63	7052.37	2527.11	1411.56 N 2228.13 W	2637.63 302.36	1.63	1.4	-0.8
94	MWD	9692	91.60	319.70	63	7050.17	2590.06	1459.72 N 2268.68 W	2697.73 302.76	1.42	-1.3	-0.6
95	MWD	9755	90.90	319.20	63	7048.79	2653.04	1507.58 N 2309.63 W	2758.12 303.13	1.37	-1.1	-0.8
96	MWD	9819	90.80	319.30	64	7047.84	2717.03	1556.06 N 2351.40 W	2819.65 303.49	0.22	-0.2	0.2
97	MWD	9882	90.50	319.90	63	7047.13	2780.03	1604.03 N 2392.23 W	2880.23 303.84	1.06	-0.5	1.0
98	MWD	9946	90.60	320.70	64	7046.51	2844.01	1653.27 N 2433.11 W	2941.66 304.20	1.26	0.2	1.3
99	MWD	10009	90.60	321.30	63	7045.85	2906.96	1702.23 N 2472.76 W	3002.02 304.54	0.95	0.0	1.0
100	MWD	10072	89.70	319.40	63	7045.69	2969.94	1750.74 N 2512.95 W	3062.68 304.86	3.34	-1.4	-3.0
101	MWD	10136	88.10	318.10	64	7046.92	3033.93	1798.84 N 2555.14 W	3124.83 305.15	3.22	-2.5	-2.0
102	MWD	10200	88.60	318.70	64	7048.76	3097.90	1846.68 N 2597.61 W	3187.14 305.41	1.22	0.8	0.9
103	MWD	10263	89.20	318.60	63	7049.97	3160.88	1893.97 N 2639.23 W	3248.48 305.66	0.97	1.0	-0.2
104	MWD	10326	89.70	319.00	63	7050.57	3223.88	1941.36 N 2680.72 W	3309.86 305.91	1.02	0.8	0.6
105	MWD	10389	90.00	318.90	63	7050.74	3286.88	1988.88 N 2722.10 W	3371.27 306.15	0.50	0.5	-0.2
106	MWD	10452	90.30	319.30	63	7050.57	3349.88	2036.49 N 2763.34 W	3432.69 306.39	0.79	0.5	0.6
107	MWD	10515	90.80	319.70	63	7049.97	3412.87	2084.40 N 2804.26 W	3494.08 306.62	1.02	0.8	0.6
108	MWD	10578	91.60	319.80	63	7048.65	3475.85	2132.47 N 2844.95 W	3555.45 306.85	1.28	1.3	0.2
109	MWD	10641	90.90	319.50	63	7047.28	3538.83	2180.47 N 2885.73 W	3616.89 307.07	1.21	-1.1	-0.5
110	MWD	10704	90.50	317.70	63	7046.51	3601.82	2227.72 N 2927.39 W	3678.64 307.27	2.93	-0.6	-2.9

RECEIVED
 FEB 27 2009
 WV GEOLOGICAL SURVEY
 MORGANTHAU



Company: Chesapeake Appalachia LLC
 Field: Marshall, WV
 City/Bik/Par: _____
 Well Name: Ray Baker 1H ST1
 Rig: Nomac 290

Job Number: 4715
 Magnetic Decl.: -7.80
 Grid Corr.: _____
 Total Survey Corr.: -7.80
 Target Info: _____

Calculation Method: Minimum Curvature
 Proposed Azimuth: 319
 Depth Reference: Driller
 Tie Info: GYRO

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates		Closure		DLS (°/100')	Bid Rate (°/100')	Wlk Rate (°/100')		
								N/S (ft)	E/W (ft)	Dist (ft)	Ang (°)					
111	MWD	10767	90.70	317.20	63	7045.85	3664.80	2274.13	N	2969.99	W	3740.66	307.44	0.85	0.3	-0.8
112	MWD	10831	92.70	320.00	64	7043.95	3728.76	2322.11	N	3012.29	W	3803.43	307.63	5.37	3.1	4.4
113	MWD	10894	92.60	319.70	63	7041.03	3791.68	2370.21	N	3052.87	W	3864.96	307.83	0.50	-0.2	-0.5
114	MWD	10957	92.10	319.90	63	7038.45	3854.63	2418.29	N	3093.50	W	3926.56	308.02	0.85	-0.8	0.3
115	MWD	11021	92.70	319.20	64	7035.77	3918.57	2466.95	N	3134.98	W	3989.23	308.20	1.44	0.9	-1.1
116	MWD	11084	91.70	318.40	63	7033.35	3981.52	2514.32	N	3176.45	W	4051.13	308.36	2.03	-1.6	-1.3
117	MWD	11148	92.10	318.70	64	7031.23	4045.48	2562.26	N	3218.79	W	4114.10	308.52	0.78	0.6	0.5
118	MWD	11212	90.40	318.60	64	7029.84	4109.46	2610.29	N	3261.06	W	4177.10	308.68	2.66	-2.7	-0.2
119	MWD	11275	88.20	318.20	63	7030.60	4172.45	2657.39	N	3302.89	W	4239.20	308.82	3.55	-3.5	-0.6
120	MWD	11339	88.80	318.00	64	7032.28	4236.42	2705.01	N	3345.61	W	4302.35	308.96	0.99	0.9	-0.3
121	MWD	11402	88.20	317.30	63	7033.93	4299.38	2751.56	N	3388.04	W	4364.61	309.08	1.46	-1.0	-1.1
122	MWD	11466	89.40	317.90	64	7035.27	4363.34	2798.81	N	3431.18	W	4427.90	309.20	2.10	1.9	0.9
123	MWD	11529	90.30	317.70	63	7035.43	4426.33	2845.48	N	3473.50	W	4490.20	309.32	1.46	1.4	-0.3
124	MWD	11592	92.50	319.50	63	7033.90	4489.30	2892.71	N	3515.15	W	4552.37	309.45	4.51	3.5	2.9
125	MWD	11656	93.50	320.90	64	7030.55	4553.20	2941.82	N	3556.06	W	4615.17	309.60	2.69	1.6	2.2
126	MWD	11719	93.70	320.50	63	7026.59	4616.05	2990.47	N	3595.88	W	4676.89	309.75	0.71	0.3	-0.6
127	MWD	11783	94.10	320.40	64	7022.24	4679.88	3039.71	N	3636.54	W	4739.64	309.89	0.64	0.6	-0.2
128	MWD	11847	93.70	320.10	64	7017.88	4743.71	3088.80	N	3677.37	W	4802.47	310.03	0.78	-0.6	-0.5
129	MWD	11910	93.20	320.10	63	7014.09	4806.59	3137.04	N	3717.70	W	4864.40	310.16	0.79	-0.8	0.0
130	MWD	11974	92.60	319.90	64	7010.85	4870.50	3186.00	N	3758.79	W	4927.39	310.29	0.99	-0.9	-0.3
131	MWD	12038	90.60	319.10	64	7009.07	4934.47	3234.65	N	3800.34	W	4990.54	310.40	3.37	-3.1	-1.2
132	MWD	12101	91.60	319.30	63	7007.86	4997.45	3282.33	N	3841.49	W	5052.80	310.51	1.62	1.6	0.3
133	MWD	12165	91.90	318.50	64	7005.90	5061.42	3330.53	N	3883.55	W	5116.09	310.62	1.33	0.5	-1.3
134	MWD	12229	90.20	317.40	64	7004.73	5125.40	3378.05	N	3926.40	W	5179.56	310.71	3.16	-2.7	-1.7
135	MWD	12292	90.90	316.80	63	7004.13	5188.36	3424.20	N	3969.29	W	5242.17	310.78	1.46	1.1	-1.0
136	MWD	12356	91.50	316.50	64	7002.79	5252.29	3470.72	N	4013.21	W	5305.82	310.85	1.05	0.9	-0.5
137	MWD	12419	91.80	317.00	63	7000.97	5315.22	3516.59	N	4056.36	W	5368.47	310.92	0.93	0.5	0.8

RECEIVED

FEB 27 2015

WV GEOLOGICAL SURVEY
 MORGANTOWN, WV