



OPERATOR		FIELD NAME		Well name/No.		Rig Name & No.		Panther Job No.		Calculation Method		Minimum Curvature			
Jay Bee Oil and Gas		Marcellus		Gorby 2H		HWD 12		NE140033H		Proposed Azimuth		158.11°			
MWD OPERATOR		DIR SUPERVISOR		COUNTY		STATE		Start Date		Depth Reference:		RKB			
Don Hilliard				Tyler		WV		06-Nov-14		Tie Into:		GyroMultiShot			
DipA: 66.92		Mag Field: 0.52346		Mag Dec. -8.51		Total Cor.: -7.68				Job Service:		Dir/Gamma			
Mag Spacing Req.		Mag Spacing Actual		Mag Spacing Req.		Mag Spacing Actual									
Below 30		Below 28		Above 48		Above 47									
Survey Number	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (°/100')	Build Rate (°/100')	Walk Rate (°/100')		
							N/S (ft)	E/W (ft)	Distance (ft)	Direction Azimuth					
Tie-In	0.00'	0.00°	0.00°	0.00'	0.00'	0.00'	0.00'	N	0.00'	W	0.00'	0.00°	0.00°	0.0°	0.0°
Gyro 1	100.00'	0.38°	53.16°	100.00'	100.00'	-0.09'	0.20'	N	0.27'	E	0.33'	53.16°	0.38°	0.4°	53.2°
2	200.00'	1.15°	313.03°	100.00'	199.99'	-1.08'	1.08'	N	0.20'	W	1.10'	349.39°	1.27°	0.8°	259.9°
3	300.00'	1.70°	249.84°	100.00'	299.97'	-2.03'	1.26'	N	2.33'	W	2.65'	298.34°	1.56°	0.6°	-63.2°
4	400.00'	0.80°	204.44°	100.00'	399.94'	-1.60'	0.11'	N	4.01'	W	4.01'	271.56°	1.27°	-0.9°	-45.4°
5	500.00'	0.62°	132.14°	100.00'	499.94'	-0.63'	0.89'	S	3.90'	W	4.00'	257.15°	0.85°	-0.2°	-72.3°
6	600.00'	0.29°	41.75°	100.00'	599.94'	-0.25'	1.06'	S	3.33'	W	3.49'	252.28°	0.69°	-0.3°	-90.4°
7	700.00'	0.74°	334.48°	100.00'	699.93'	-1.01'	0.29'	S	3.44'	W	3.45'	265.14°	0.68°	0.5°	292.7°
8	800.00'	2.73°	210.56°	100.00'	799.90'	-0.20'	1.76'	S	4.93'	W	5.23'	250.34°	3.20°	2.0°	-123.9°
9	900.00'	4.36°	165.36°	100.00'	899.72'	5.02'	7.49'	S	5.18'	W	9.11'	214.65°	3.11°	1.6°	-45.2°
10	1000.00'	4.73°	168.22°	100.00'	999.41'	12.85'	15.20'	S	3.38'	W	15.57'	192.52°	0.43°	0.4°	2.9°
11	1100.00'	5.19°	162.38°	100.00'	1099.03'	21.42'	23.55'	S	1.16'	W	23.58'	182.83°	0.68°	0.5°	-5.8°
12	1200.00'	5.60°	165.34°	100.00'	1198.59'	30.77'	32.58'	S	1.44'	E	32.61'	177.47°	0.50°	0.4°	3.0°
13	1300.00'	5.92°	170.45°	100.00'	1298.08'	40.65'	42.39'	S	3.53'	E	42.53'	175.24°	0.60°	0.3°	5.1°
14	1400.00'	6.27°	140.56°	100.00'	1397.54'	50.90'	51.69'	S	7.86'	E	52.29'	171.36°	3.16°	0.4°	-29.9°
15	1500.00'	6.50°	139.77°	100.00'	1496.92'	61.47'	60.23'	S	14.98'	E	62.07'	166.03°	0.25°	0.2°	-0.8°
16	1600.00'	6.66°	153.82°	100.00'	1596.27'	72.63'	69.76'	S	21.20'	E	72.91'	163.10°	1.61°	0.2°	14.1°
17	1700.00'	6.79°	152.01°	100.00'	1695.58'	84.29'	80.18'	S	26.53'	E	84.46'	161.69°	0.25°	0.1°	-1.8°
18	1800.00'	6.85°	140.01°	100.00'	1794.88'	95.84'	89.97'	S	33.14'	E	95.88'	159.78°	1.42°	0.1°	-12.0°
19	1900.00'	7.08°	155.90°	100.00'	1894.15'	107.67'	100.17'	S	39.48'	E	107.67'	158.49°	1.93°	0.2°	15.9°
20	2000.00'	6.85°	152.20°	100.00'	1993.41'	119.76'	111.07'	S	44.78'	E	119.76'	158.04°	0.50°	-0.2°	-3.7°
21	2100.00'	6.70°	148.80°	100.00'	2092.72'	131.44'	121.33'	S	50.59'	E	131.46'	157.37°	0.43°	-0.1°	-3.4°
22	2200.00'	6.77°	142.52°	100.00'	2192.03'	142.88'	131.00'	S	57.19'	E	142.94'	156.41°	0.74°	0.1°	-6.3°
23	2300.00'	6.89°	149.23°	100.00'	2291.32'	154.48'	140.83'	S	63.85'	E	154.63'	155.61°	0.81°	0.1°	6.7°
24	2400.00'	6.71°	148.37°	100.00'	2390.62'	166.17'	150.96'	S	69.98'	E	166.39'	155.13°	0.21°	-0.2°	-0.9°

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25	2500.00'	5.30°	145.69°	100.00'	2490.06'	176.44'	159.75'	S	75.65'	E	176.76'	154.66°	1.44°	-1.4°	-2.7°
26	2600.00'	3.63°	139.59°	100.00'	2589.76'	183.95'	165.98'	S	80.31'	E	184.38'	154.18°	1.73°	-1.7°	-6.1°
27	2700.00'	2.57°	151.41°	100.00'	2689.61'	189.18'	170.35'	S	83.43'	E	189.69'	153.91°	1.23°	-1.1°	11.8°
28	2800.00'	1.23°	151.28°	100.00'	2789.55'	192.47'	173.26'	S	85.02'	E	193.00'	153.86°	1.34°	-1.3°	-0.1°
29	2900.00'	0.78°	168.17°	100.00'	2889.54'	194.21'	174.87'	S	85.67'	E	194.73'	153.90°	0.53°	-0.5°	16.9°
30	3000.00'	0.40°	167.35°	100.00'	2989.53'	195.22'	175.88'	S	85.89'	E	195.73'	153.97°	0.38°	-0.4°	-0.8°
31	3100.00'	0.22°	212.81°	100.00'	3089.53'	195.68'	176.38'	S	85.86'	E	196.17'	154.04°	0.29°	-0.2°	45.5°
32	3200.00'	0.23°	237.28°	100.00'	3189.53'	195.82'	176.65'	S	85.59'	E	196.29'	154.15°	0.10°	0.0°	24.5°
33	3300.00'	0.24°	316.51°	100.00'	3289.53'	195.67'	176.61'	S	85.28'	E	196.12'	154.23°	0.30°	0.0°	79.2°
34	3400.00'	0.69°	286.27°	100.00'	3389.53'	195.10'	176.29'	S	84.55'	E	195.52'	154.38°	0.50°	0.5°	-30.2°
35	3500.00'	0.68°	270.17°	100.00'	3489.52'	194.51'	176.12'	S	83.38'	E	194.86'	154.66°	0.19°	0.0°	-16.1°
36	3600.00'	0.72°	264.81°	100.00'	3589.51'	194.10'	176.17'	S	82.16'	E	194.39'	155.00°	0.08°	0.0°	-5.4°
37	3700.00'	0.71°	324.57°	100.00'	3689.51'	193.32'	175.72'	S	81.18'	E	193.57'	155.20°	0.71°	0.0°	59.8°
38	3800.00'	0.47°	292.83°	100.00'	3789.50'	192.43'	175.06'	S	80.44'	E	192.66'	155.32°	0.40°	-0.2°	-31.7°
39	3900.00'	0.83°	41.40°	100.00'	3889.50'	191.81'	174.36'	S	80.54'	E	192.06'	155.21°	1.08°	0.4°	-251.4°
40	4000.00'	0.61°	281.50°	100.00'	3989.49'	191.20'	173.71'	S	80.50'	E	191.45'	155.14°	1.25°	-0.2°	240.1°
41	4100.00'	0.57°	287.57°	100.00'	4089.49'	190.59'	173.45'	S	79.50'	E	190.80'	155.37°	0.07°	0.0°	6.1°
42	4200.00'	0.45°	285.96°	100.00'	4189.48'	190.03'	173.19'	S	78.65'	E	190.22'	155.58°	0.12°	-0.1°	-1.6°
43	4300.00'	0.40°	275.78°	100.00'	4289.48'	189.63'	173.05'	S	77.93'	E	189.79'	155.76°	0.09°	-0.1°	-10.2°
44	4400.00'	0.29°	327.19°	100.00'	4389.48'	189.22'	172.80'	S	77.44'	E	189.36'	155.86°	0.32°	-0.1°	51.4°
45	4500.00'	0.42°	21.83°	100.00'	4489.48'	188.70'	172.25'	S	77.44'	E	188.86'	155.79°	0.35°	0.1°	-305.4°
46	4600.00'	0.60°	36.44°	100.00'	4589.47'	188.16'	171.49'	S	77.89'	E	188.35'	155.57°	0.22°	0.2°	14.6°
47	4700.00'	0.84°	191.19°	100.00'	4689.47'	188.50'	171.79'	S	78.06'	E	188.69'	155.56°	1.41°	0.2°	154.8°
48	4800.00'	0.88°	3.56°	100.00'	4789.47'	188.42'	171.74'	S	77.96'	E	188.61'	155.58°	1.72°	0.0°	-187.6°
49	4900.00'	0.60°	27.86°	100.00'	4889.46'	187.39'	170.51'	S	78.26'	E	187.61'	155.35°	0.41°	-0.3°	24.3°
50	5000.00'	1.03°	14.82°	100.00'	4989.45'	186.33'	169.18'	S	78.73'	E	186.60'	155.04°	0.47°	0.4°	-13.0°
51	5100.00'	1.01°	0.45°	100.00'	5089.43'	184.80'	167.43'	S	78.97'	E	185.11'	154.75°	0.26°	0.0°	-14.4°
52	5200.00'	1.05°	0.24°	100.00'	5189.42'	183.13'	165.63'	S	78.98'	E	183.50'	154.51°	0.04°	0.0°	-0.2°
53	5300.00'	1.30°	13.84°	100.00'	5289.39'	181.36'	163.61'	S	79.25'	E	181.80'	154.15°	0.37°	0.3°	13.6°
54	5400.00'	1.15°	329.41°	100.00'	5389.37'	179.45'	161.65'	S	79.01'	E	179.92'	153.95°	0.94°	-0.2°	315.6°
55	5500.00'	1.08°	346.96°	100.00'	5489.36'	177.53'	159.86'	S	78.29'	E	178.01'	153.91°	0.35°	-0.1°	17.6°
56	5600.00'	0.79°	346.50°	100.00'	5589.34'	175.91'	158.28'	S	77.92'	E	176.42'	153.79°	0.29°	-0.3°	-0.5°
57	5700.00'	0.66°	21.15°	100.00'	5689.33'	174.81'	157.07'	S	77.96'	E	175.35'	153.60°	0.45°	-0.1°	-325.4°
58	5800.00'	0.73°	52.95°	100.00'	5789.33'	174.22'	156.15'	S	78.68'	E	174.85'	153.26°	0.39°	0.1°	31.8°
59	5890.00'	0.68°	62.20°	90.00'	5879.32'	174.02'	155.55'	S	79.61'	E	174.74'	152.90°	0.14°	-0.1°	10.3°
60	5958.00'	0.70°	69.40°	68.00'	5947.32'	173.99'	155.22'	S	80.36'	E	174.79'	152.63°	0.13°	0.0°	10.6°

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61	6000.00'	0.70°	88.40°	42.00'	5989.31'	174.08'	155.12'	S	80.85'	E	174.93'	152.47°	0.55°	0.0°	45.2°
62	6045.00'	0.70°	84.00°	45.00'	6034.31'	174.25'	155.08'	S	81.40'	E	175.15'	152.31°	0.12°	0.0°	-9.8°
63	6089.00'	0.60°	87.80°	44.00'	6078.31'	174.40'	155.05'	S	81.90'	E	175.35'	152.16°	0.25°	-0.2°	8.6°
64	6133.00'	1.70°	93.90°	44.00'	6122.30'	174.76'	155.08'	S	82.78'	E	175.79'	151.91°	2.51°	2.5°	13.9°
65	6176.00'	3.70°	129.60°	43.00'	6165.25'	176.26'	156.01'	S	84.49'	E	177.42'	151.56°	5.87°	4.7°	83.0°
66	6220.00'	5.90°	146.90°	44.00'	6209.09'	179.73'	158.81'	S	86.82'	E	180.99'	151.34°	5.93°	5.0°	39.3°
67	6264.00'	9.30°	148.50°	44.00'	6252.70'	185.45'	163.74'	S	89.91'	E	186.80'	151.23°	7.74°	7.7°	3.6°
68	6308.00'	13.00°	144.80°	44.00'	6295.86'	193.78'	170.82'	S	94.62'	E	195.27'	151.02°	8.56°	8.4°	-8.4°
69	6352.00'	16.00°	140.50°	44.00'	6338.46'	204.38'	179.54'	S	101.33'	E	206.16'	150.56°	7.24°	6.8°	-9.8°
70	6397.00'	18.10°	135.10°	45.00'	6381.48'	216.72'	189.28'	S	110.21'	E	219.03'	149.79°	5.84°	4.7°	-12.0°
71	6441.00'	20.70°	136.20°	44.00'	6422.98'	230.23'	199.74'	S	120.42'	E	233.23'	148.91°	5.97°	5.9°	2.5°
72	6485.00'	20.70°	136.80°	44.00'	6464.14'	244.69'	211.02'	S	131.13'	E	248.44'	148.14°	0.48°	0.0°	1.4°
73	6530.00'	21.10°	142.60°	45.00'	6506.18'	259.91'	223.25'	S	141.49'	E	264.31'	147.63°	4.68°	0.9°	12.9°
74	6574.00'	23.70°	142.00°	44.00'	6546.86'	276.04'	236.51'	S	151.75'	E	281.01'	147.32°	5.93°	5.9°	-1.4°
75	6618.00'	27.40°	141.00°	44.00'	6586.55'	294.22'	251.36'	S	163.57'	E	299.89'	146.95°	8.47°	8.4°	-2.3°
76	6663.00'	31.20°	137.20°	45.00'	6625.79'	315.01'	267.96'	S	178.01'	E	321.70'	146.40°	9.40°	8.4°	-8.4°
77	6707.00'	35.70°	135.80°	44.00'	6662.49'	337.54'	285.54'	S	194.71'	E	345.61'	145.71°	10.38°	10.2°	-3.2°
78	6751.00'	40.70°	134.40°	44.00'	6697.06'	362.57'	304.79'	S	213.93'	E	372.37'	144.94°	11.53°	11.4°	-3.2°
79	6796.00'	44.80°	133.70°	45.00'	6730.10'	390.46'	326.02'	S	235.88'	E	402.40'	144.11°	9.17°	9.1°	-1.6°
80	6840.00'	48.60°	134.40°	44.00'	6760.27'	419.69'	348.28'	S	258.89'	E	433.96'	143.38°	8.71°	8.6°	1.6°
81	6885.00'	52.40°	136.30°	45.00'	6788.89'	451.71'	372.99'	S	283.27'	E	468.36'	142.78°	9.05°	8.4°	4.2°
82	6929.00'	54.80°	138.30°	44.00'	6815.00'	484.81'	399.02'	S	307.28'	E	503.62'	142.40°	6.57°	5.5°	4.5°
83	6973.00'	57.60°	138.40°	44.00'	6839.47'	519.22'	426.34'	S	331.57'	E	540.10'	142.13°	6.37°	6.4°	0.2°
84	7017.00'	60.20°	138.00°	44.00'	6862.20'	554.64'	454.42'	S	356.69'	E	577.69'	141.87°	5.96°	5.9°	-0.9°
85	7062.00'	62.20°	140.90°	45.00'	6883.88'	592.00'	484.38'	S	382.31'	E	617.08'	141.72°	7.19°	4.4°	6.4°
86	7107.00'	66.70°	144.60°	45.00'	6903.29'	631.13'	516.70'	S	406.85'	E	657.65'	141.78°	12.45°	10.0°	8.2°
87	7151.00'	72.40°	146.80°	44.00'	6918.66'	671.38'	550.75'	S	430.06'	E	698.77'	142.01°	13.77°	13.0°	5.0°
88	7195.00'	73.80°	147.70°	44.00'	6931.45'	712.72'	586.16'	S	452.83'	E	740.70'	142.31°	3.74°	3.2°	2.0°
89	7240.00'	74.10°	150.30°	45.00'	6943.89'	755.42'	623.22'	S	475.10'	E	783.66'	142.68°	5.59°	0.7°	5.8°
90	7284.00'	75.50°	152.50°	44.00'	6955.43'	797.59'	660.50'	S	495.43'	E	825.66'	143.13°	5.78°	3.2°	5.0°
91	7328.00'	75.30°	154.80°	44.00'	6966.52'	840.03'	698.65'	S	514.32'	E	867.55'	143.64°	5.08°	-0.5°	5.2°
92	7373.00'	79.30°	158.30°	45.00'	6976.42'	883.90'	738.91'	S	531.78'	E	910.37'	144.26°	11.69°	8.9°	7.8°
93	7417.00'	84.10°	161.20°	44.00'	6982.77'	927.40'	779.75'	S	546.83'	E	952.38'	144.96°	12.71°	10.9°	6.6°
94	7462.00'	88.60°	162.10°	45.00'	6985.63'	972.21'	822.36'	S	560.97'	E	995.47'	145.70°	10.20°	10.0°	2.0°
95	7504.00'	90.10°	162.20°	42.00'	6986.11'	1014.11'	862.34'	S	573.84'	E	1035.82'	146.36°	3.58°	3.6°	0.2°
96	7548.00'	90.20°	161.90°	44.00'	6985.99'	1058.00'	904.19'	S	587.40'	E	1078.24'	146.99°	0.72°	0.2°	-0.7°



97	7593.00'	89.90°	161.80°	45.00'	6985.95'	1102.91'	946.96'	S	601.42'	E	1121.80'	147.58°	0.70°	-0.7°	-0.2°
98	7637.00'	89.80°	161.80°	44.00'	6986.07'	1146.81'	988.75'	S	615.16'	E	1164.50'	148.11°	0.23°	-0.2°	0.0°
99	7679.00'	89.70°	161.40°	42.00'	6986.25'	1188.74'	1028.61'	S	628.42'	E	1205.38'	148.58°	0.98°	-0.2°	-1.0°
100	7724.00'	89.40°	160.60°	45.00'	6986.60'	1233.68'	1071.15'	S	643.07'	E	1249.36'	149.02°	1.90°	-0.7°	-1.8°
101	7768.00'	89.20°	160.50°	44.00'	6987.14'	1277.63'	1112.64'	S	657.72'	E	1292.50'	149.41°	0.51°	-0.5°	-0.2°
102	7812.00'	89.50°	159.40°	44.00'	6987.64'	1321.61'	1153.97'	S	672.80'	E	1335.78'	149.76°	2.59°	0.7°	-2.5°
103	7857.00'	89.10°	159.10°	45.00'	6988.19'	1366.60'	1196.05'	S	688.74'	E	1380.18'	150.06°	1.11°	-0.9°	-0.7°
104	7902.00'	88.70°	158.50°	45.00'	6989.06'	1411.58'	1237.99'	S	705.01'	E	1424.67'	150.34°	1.60°	-0.9°	-1.3°
105	7946.00'	88.70°	157.60°	44.00'	6990.05'	1455.57'	1278.79'	S	721.46'	E	1468.27'	150.57°	2.04°	0.0°	-2.0°
106	7987.00'	88.80°	160.20°	41.00'	6990.95'	1496.55'	1317.03'	S	736.21'	E	1508.83'	150.80°	6.34°	0.2°	6.3°
107	8030.00'	89.00°	160.10°	43.00'	6991.77'	1539.52'	1357.47'	S	750.81'	E	1551.27'	151.05°	0.52°	0.5°	-0.2°
108	8072.00'	89.80°	162.80°	42.00'	6992.21'	1581.44'	1397.28'	S	764.17'	E	1592.59'	151.33°	6.70°	1.9°	6.4°
109	8115.00'	89.70°	163.00°	43.00'	6992.40'	1624.29'	1438.38'	S	776.81'	E	1634.74'	151.63°	0.52°	-0.2°	0.5°
110	8157.00'	89.50°	161.60°	42.00'	6992.69'	1666.18'	1478.39'	S	789.58'	E	1676.03'	151.89°	3.37°	-0.5°	-3.3°
111	8202.00'	89.20°	161.00°	45.00'	6993.20'	1711.10'	1521.01'	S	804.01'	E	1720.44'	152.14°	1.49°	-0.7°	-1.3°
112	8246.00'	88.80°	160.00°	44.00'	6993.97'	1755.06'	1562.48'	S	818.69'	E	1763.97'	152.35°	2.45°	-0.9°	-2.3°
113	8288.00'	89.60°	162.00°	42.00'	6994.56'	1797.00'	1602.19'	S	832.37'	E	1805.50'	152.55°	5.13°	1.9°	4.8°
114	8332.00'	89.80°	162.40°	44.00'	6994.79'	1840.88'	1644.08'	S	845.82'	E	1848.89'	152.78°	1.02°	0.5°	0.9°
115	8376.00'	90.60°	164.90°	44.00'	6994.64'	1884.68'	1686.30'	S	858.20'	E	1892.12'	153.03°	5.97°	1.8°	5.7°
116	8421.00'	90.60°	165.20°	45.00'	6994.16'	1929.34'	1729.77'	S	869.81'	E	1936.15'	153.30°	0.67°	0.0°	0.7°
117	8465.00'	89.80°	164.40°	44.00'	6994.01'	1973.04'	1772.23'	S	881.35'	E	1979.28'	153.56°	2.57°	-1.8°	-1.8°
118	8509.00'	88.40°	163.30°	44.00'	6994.70'	2016.81'	1814.49'	S	893.58'	E	2022.58'	153.78°	4.05°	-3.2°	-2.5°
119	8554.00'	88.10°	161.40°	45.00'	6996.08'	2061.67'	1857.35'	S	907.22'	E	2067.07'	153.97°	4.27°	-0.7°	-4.2°
120	8599.00'	88.30°	162.00°	45.00'	6997.49'	2106.56'	1900.05'	S	921.34'	E	2111.65'	154.13°	1.40°	0.4°	1.3°
121	8643.00'	89.60°	163.00°	44.00'	6998.30'	2150.42'	1942.00'	S	934.57'	E	2155.18'	154.30°	3.73°	3.0°	2.3°
122	8688.00'	89.70°	163.90°	45.00'	6998.57'	2195.22'	1985.14'	S	947.39'	E	2199.62'	154.49°	2.01°	0.2°	2.0°
123	8732.00'	89.60°	164.40°	44.00'	6998.84'	2238.98'	2027.46'	S	959.40'	E	2243.00'	154.68°	1.16°	-0.2°	1.1°
124	8776.00'	89.70°	164.80°	44.00'	6999.11'	2282.70'	2069.88'	S	971.09'	E	2286.36'	154.87°	0.94°	0.2°	0.9°
125	8821.00'	89.80°	165.40°	45.00'	6999.31'	2327.36'	2113.37'	S	982.66'	E	2330.66'	155.06°	1.35°	0.2°	1.3°
126	8865.00'	90.20°	166.70°	44.00'	6999.31'	2370.94'	2156.07'	S	993.27'	E	2373.86'	155.27°	3.09°	0.9°	3.0°
127	8910.00'	89.40°	164.20°	45.00'	6999.46'	2415.56'	2199.62'	S	1004.57'	E	2418.16'	155.45°	5.83°	-1.8°	-5.6°
128	8954.00'	89.00°	163.80°	44.00'	7000.08'	2459.33'	2241.92'	S	1016.70'	E	2461.68'	155.61°	1.29°	-0.9°	-0.9°
129	8998.00'	89.30°	164.00°	44.00'	7000.73'	2503.10'	2284.18'	S	1028.90'	E	2505.22'	155.75°	0.82°	0.7°	0.5°
130	9042.00'	89.50°	164.70°	44.00'	7001.19'	2546.83'	2326.55'	S	1040.77'	E	2548.73'	155.90°	1.65°	0.5°	1.6°
131	9087.00'	89.80°	165.60°	45.00'	7001.47'	2591.49'	2370.05'	S	1052.30'	E	2593.16'	156.06°	2.11°	0.7°	2.0°
132	9131.00'	89.30°	162.50°	44.00'	7001.81'	2635.25'	2412.35'	S	1064.39'	E	2636.73'	156.19°	7.14°	-1.1°	-7.0°

Environmental Protection

WV Department of

Gas



133	9176.00'	89.30°	160.50°	45.00'	7002.36'	2680.17'	2455.02' S	1078.67' E	2681.53'	156.28°	4.44°	0.0°	-4.4°
134	9220.00'	89.70°	160.20°	44.00'	7002.74'	2724.13'	2496.45' S	1093.46' E	2725.42'	156.35°	1.14°	0.9°	-0.7°
135	9264.00'	89.70°	160.60°	44.00'	7002.97'	2768.10'	2537.90' S	1108.22' E	2769.31'	156.41°	0.91°	0.0°	0.9°
136	9309.00'	89.60°	160.10°	45.00'	7003.25'	2813.06'	2580.28' S	1123.35' E	2814.21'	156.47°	1.13°	-0.2°	-1.1°
137	9351.00'	89.50°	158.80°	42.00'	7003.58'	2855.05'	2619.61' S	1138.10' E	2856.15'	156.52°	3.10°	-0.2°	-3.1°
138	9395.00'	89.00°	157.60°	44.00'	7004.16'	2899.04'	2660.45' S	1154.43' E	2900.13'	156.54°	2.95°	-1.1°	-2.7°
139	9440.00'	88.90°	157.00°	45.00'	7004.98'	2944.03'	2701.96' S	1171.80' E	2945.11'	156.55°	1.35°	-0.2°	-1.3°
140	9484.00'	89.50°	157.80°	44.00'	7005.59'	2988.02'	2742.58' S	1188.70' E	2989.11'	156.57°	2.27°	1.4°	1.8°
141	9528.00'	89.10°	156.10°	44.00'	7006.13'	3032.01'	2783.06' S	1205.93' E	3033.10'	156.57°	3.97°	-0.9°	-3.9°
142	9572.00'	89.20°	156.50°	44.00'	7006.78'	3075.98'	2823.35' S	1223.61' E	3077.09'	156.57°	0.94°	0.2°	0.9°
143	9617.00'	90.50°	157.00°	45.00'	7006.90'	3120.97'	2864.69' S	1241.38' E	3122.09'	156.57°	3.10°	2.9°	1.1°
144	9659.00'	92.00°	158.50°	42.00'	7005.99'	3162.95'	2903.55' S	1257.27' E	3164.07'	156.59°	5.05°	3.6°	3.6°
145	9702.00'	92.00°	158.40°	43.00'	7004.49'	3205.93'	2943.52' S	1273.06' E	3207.02'	156.61°	0.23°	0.0°	-0.2°
146	9746.00'	91.20°	158.60°	44.00'	7003.26'	3249.91'	2984.44' S	1289.18' E	3250.98'	156.64°	1.87°	-1.8°	0.5°
147	9790.00'	91.20°	159.10°	44.00'	7002.34'	3293.89'	3025.47' S	1305.05' E	3294.94'	156.67°	1.14°	0.0°	1.1°
148	9834.00'	89.50°	159.70°	44.00'	7002.07'	3337.88'	3066.65' S	1320.53' E	3338.89'	156.70°	4.10°	-3.9°	1.4°
149	9879.00'	89.70°	159.80°	45.00'	7002.38'	3382.86'	3108.87' S	1336.11' E	3383.82'	156.74°	0.50°	0.4°	0.2°
150	9921.00'	88.00°	156.50°	42.00'	7003.22'	3424.84'	3147.84' S	1351.73' E	3425.79'	156.76°	8.84°	-4.0°	-7.9°
151	9965.00'	87.30°	155.20°	44.00'	7005.03'	3468.77'	3187.95' S	1369.72' E	3469.75'	156.75°	3.35°	-1.6°	-3.0°
152	10008.00'	87.20°	154.00°	43.00'	7007.09'	3511.64'	3226.75' S	1388.14' E	3512.67'	156.72°	2.80°	-0.2°	-2.8°
153	10051.00'	88.40°	156.70°	43.00'	7008.74'	3554.56'	3265.80' S	1406.06' E	3555.62'	156.71°	6.87°	2.8°	6.3°
154	10095.00'	88.80°	157.00°	44.00'	7009.82'	3598.53'	3306.25' S	1423.35' E	3599.61'	156.71°	1.14°	0.9°	0.7°
155	10139.00'	89.90°	158.60°	44.00'	7010.32'	3642.53'	3346.98' S	1439.97' E	3643.60'	156.72°	4.41°	2.5°	3.6°
156	10184.00'	90.10°	159.00°	45.00'	7010.32'	3687.52'	3388.93' S	1456.25' E	3688.57'	156.75°	0.99°	0.4°	0.9°
157	10228.00'	88.60°	160.70°	44.00'	7010.82'	3731.50'	3430.23' S	1471.40' E	3732.50'	156.78°	5.15°	-3.4°	3.9°
158	10273.00'	88.40°	160.50°	45.00'	7011.99'	3776.44'	3472.67' S	1486.34' E	3777.38'	156.83°	0.63°	-0.4°	-0.4°
159	10317.00'	88.30°	159.70°	44.00'	7013.26'	3820.39'	3514.02' S	1501.31' E	3821.29'	156.87°	1.83°	-0.2°	-1.8°
160	10362.00'	88.40°	159.80°	45.00'	7014.56'	3865.36'	3556.22' S	1516.88' E	3866.22'	156.90°	0.31°	0.2°	0.2°
161	10406.00'	88.50°	159.20°	44.00'	7015.75'	3909.33'	3597.42' S	1532.29' E	3910.16'	156.93°	1.38°	0.2°	-1.4°
162	10450.00'	88.30°	158.80°	44.00'	7016.98'	3953.30'	3638.48' S	1548.05' E	3954.11'	156.95°	1.02°	-0.5°	-0.9°
163	10495.00'	88.20°	158.30°	45.00'	7018.35'	3998.28'	3680.34' S	1564.50' E	3999.07'	156.97°	1.13°	-0.2°	-1.1°
164	10540.00'	88.30°	159.10°	45.00'	7019.72'	4043.26'	3722.25' S	1580.84' E	4044.03'	156.99°	1.79°	0.2°	1.8°
165	10584.00'	88.30°	159.00°	44.00'	7021.03'	4087.23'	3763.32' S	1596.56' E	4087.98'	157.01°	0.23°	0.0°	-0.2°
166	10629.00'	87.80°	157.60°	45.00'	7022.56'	4132.21'	3805.11' S	1613.19' E	4132.95'	157.03°	3.30°	-1.1°	-3.1°
167	10671.00'	88.70°	158.60°	42.00'	7023.84'	4174.18'	3844.06' S	1628.85' E	4174.92'	157.04°	3.20°	2.1°	2.4°
168	10716.00'	88.90°	158.50°	45.00'	7024.79'	4219.17'	3885.93' S	1645.30' E	4219.89'	157.05°	0.50°	0.4°	-0.2°



169	10760.00'	88.70°	160.20°	44.00'	7025.71'	4263.15'	3927.10' S	1660.81' E	4263.85'	157.08°	3.89°	-0.5°	3.9°
170	10802.00'	88.30°	159.50°	42.00'	7026.81'	4305.12'	3966.51' S	1675.28' E	4305.78'	157.10°	1.92°	-1.0°	-1.7°
171	10844.00'	90.30°	163.40°	42.00'	7027.32'	4347.03'	4006.32' S	1688.63' E	4347.65'	157.14°	10.43°	4.8°	9.3°
172	10889.00'	90.50°	163.90°	45.00'	7027.01'	4391.82'	4049.50' S	1701.30' E	4392.36'	157.21°	1.20°	0.4°	1.1°
173	10933.00'	90.20°	162.90°	44.00'	7026.74'	4435.63'	4091.66' S	1713.87' E	4436.11'	157.27°	2.37°	-0.7°	-2.3°
174	10977.00'	90.50°	162.40°	44.00'	7026.47'	4479.49'	4133.66' S	1726.99' E	4479.91'	157.33°	1.33°	0.7°	-1.1°
175	11022.00'	91.30°	161.80°	45.00'	7025.76'	4524.38'	4176.47' S	1740.82' E	4524.75'	157.37°	2.22°	1.8°	-1.3°
176	11066.00'	91.30°	162.20°	44.00'	7024.76'	4568.27'	4218.31' S	1754.41' E	4568.60'	157.42°	0.91°	0.0°	0.9°
177	11110.00'	90.70°	162.10°	44.00'	7024.00'	4612.15'	4260.19' S	1767.90' E	4612.44'	157.46°	1.38°	-1.4°	-0.2°
178	11155.00'	90.40°	162.20°	45.00'	7023.56'	4657.04'	4303.02' S	1781.69' E	4657.29'	157.51°	0.70°	-0.7°	0.2°
179	11199.00'	90.40°	161.90°	44.00'	7023.26'	4700.93'	4344.87' S	1795.25' E	4701.15'	157.55°	0.68°	0.0°	-0.7°
180	11243.00'	90.80°	162.70°	44.00'	7022.80'	4744.81'	4386.79' S	1808.63' E	4745.00'	157.59°	2.03°	0.9°	1.8°
181	11288.00'	90.50°	162.50°	45.00'	7022.28'	4789.67'	4429.73' S	1822.08' E	4789.83'	157.64°	0.80°	-0.7°	-0.4°
182	11333.00'	89.30°	161.40°	45.00'	7022.36'	4834.57'	4472.51' S	1836.03' E	4834.70'	157.68°	3.62°	-2.7°	-2.4°
183	11377.00'	89.30°	161.20°	44.00'	7022.90'	4878.49'	4514.18' S	1850.13' E	4878.61'	157.71°	0.45°	0.0°	-0.5°
184	11422.00'	89.50°	161.90°	45.00'	7023.37'	4923.41'	4556.87' S	1864.37' E	4923.51'	157.75°	1.62°	0.4°	1.6°
185	11467.00'	89.60°	162.40°	45.00'	7023.73'	4968.30'	4599.70' S	1878.17' E	4968.38'	157.79°	1.13°	0.2°	1.1°
186	11511.00'	90.10°	163.20°	44.00'	7023.84'	5012.15'	4641.73' S	1891.18' E	5012.21'	157.83°	2.14°	1.1°	1.8°
187	11556.00'	89.60°	162.80°	45.00'	7023.96'	5056.99'	4684.77' S	1904.33' E	5057.03'	157.88°	1.42°	-1.1°	-0.9°
188	11600.00'	89.10°	161.90°	44.00'	7024.46'	5100.86'	4726.69' S	1917.67' E	5100.89'	157.92°	2.34°	-1.1°	-2.0°
189	11644.00'	89.30°	162.60°	44.00'	7025.07'	5144.74'	4768.59' S	1931.09' E	5144.76'	157.95°	1.65°	0.5°	1.6°
190	11688.00'	89.80°	162.70°	44.00'	7025.42'	5188.60'	4810.59' S	1944.21' E	5188.61'	157.99°	1.16°	1.1°	0.2°
191	11733.00'	89.50°	161.60°	45.00'	7025.69'	5233.49'	4853.42' S	1958.00' E	5233.49'	158.03°	2.53°	-0.7°	-2.4°
192	11777.00'	90.20°	162.70°	44.00'	7025.81'	5277.38'	4895.30' S	1971.49' E	5277.38'	158.06°	2.96°	1.6°	2.5°
193	11821.00'	90.80°	164.10°	44.00'	7025.42'	5321.19'	4937.47' S	1984.06' E	5321.19'	158.11°	3.46°	1.4°	3.2°
194	11866.00'	90.20°	160.00°	45.00'	7025.03'	5366.07'	4980.26' S	1997.92' E	5366.07'	158.14°	9.21°	-1.3°	-9.1°
195	11910.00'	90.20°	159.30°	44.00'	7024.88'	5410.05'	5021.52' S	2013.22' E	5410.06'	158.15°	1.59°	0.0°	-1.6°
196	11955.00'	90.60°	159.60°	45.00'	7024.56'	5455.04'	5063.65' S	2029.02' E	5455.04'	158.16°	1.11°	0.9°	0.7°
197	11997.00'	90.50°	159.30°	42.00'	7024.16'	5497.03'	5102.98' S	2043.76' E	5497.03'	158.17°	0.75°	-0.2°	-0.7°
198	12039.00'	90.20°	157.90°	42.00'	7023.90'	5539.02'	5142.08' S	2059.08' E	5539.03'	158.18°	3.41°	-0.7°	-3.3°
199	12083.00'	90.60°	158.00°	44.00'	7023.60'	5583.02'	5182.86' S	2075.60' E	5583.03'	158.18°	0.94°	0.9°	0.2°
200	12128.00'	90.90°	159.00°	45.00'	7023.01'	5628.02'	5224.73' S	2092.09' E	5628.02'	158.18°	2.32°	0.7°	2.2°
201	12173.00'	91.00°	158.70°	45.00'	7022.26'	5673.01'	5266.69' S	2108.33' E	5673.01'	158.18°	0.70°	0.2	-0.7
202	12217.00'	89.70°	158.20°	44.00'	7021.99'	5717.00'	5307.61' S	2124.49' E	5717.01'	158.19°	3.17°	-3.0	-1.1
203	12262.00'	89.30°	157.50°	45.00'	7022.38'	5762.00'	5349.29' S	2141.45' E	5762.01'	158.18°	1.79°	-0.9	-1.6
204	12306.00'	89.20°	157.00°	44.00'	7022.96'	5805.99'	5389.86' S	2158.47' E	5806.00'	158.18°	1.16°	-0.2	-1.1



205	12351.00'	89.50°	158.10°	45.00'	7023.47'	5850.99'	5431.45' S	2175.65' E	5850.99'	158.17°	2.53°	0.7	2.4
206	12395.00'	89.70°	158.40°	44.00'	7023.78'	5894.99'	5472.31' S	2191.96' E	5894.99'	158.17°	0.82°	0.5	0.7
207	12439.00'	90.00°	159.10°	44.00'	7023.89'	5938.98'	5513.32' S	2207.90' E	5938.99'	158.18°	1.73°	0.7	1.6
208	12483.00'	90.20°	159.40°	44.00'	7023.82'	5982.97'	5554.47' S	2223.49' E	5982.98'	158.18°	0.82°	0.5	0.7
209	12527.00'	90.20°	159.50°	44.00'	7023.66'	6026.96'	5595.67' S	2238.94' E	6026.97'	158.19°	0.23°	0.0	0.2
210	12573.00'	89.00°	159.90°	46.00'	7023.98'	6072.94'	5638.81' S	2254.89' E	6072.95'	158.20°	2.75°	-2.6	0.9
211	12617.00'	89.20°	159.90°	44.00'	7024.68'	6116.91'	5680.12' S	2270.01' E	6116.93'	158.22°	0.45°	0.5	0.0
212	12661.00'	88.00°	157.40°	44.00'	7025.75'	6160.90'	5721.09' S	2286.03' E	6160.91'	158.22°	6.30°	-2.7	-5.7
213	12705.00'	87.90°	157.30°	44.00'	7027.32'	6204.86'	5761.67' S	2302.96' E	6204.87'	158.21°	0.32°	-0.2	-0.2
214	12750.00'	87.90°	158.00°	45.00'	7028.97'	6249.83'	5803.26' S	2320.06' E	6249.84'	158.21°	1.55°	0.0	1.6
215	12794.00'	88.00°	156.90°	44.00'	7030.55'	6293.80'	5843.87' S	2336.92' E	6293.81'	158.20°	2.51°	0.2	-2.5
216	12838.00'	88.10°	156.50°	44.00'	7032.04'	6337.76'	5884.26' S	2354.32' E	6337.77'	158.19°	0.94°	0.2	-0.9
217	12883.00'	91.00°	157.00°	45.00'	7032.40'	6382.74'	5925.60' S	2372.08' E	6382.75'	158.18°	6.54°	6.4	1.1
218	12927.00'	91.30°	157.50°	44.00'	7031.52'	6426.73'	5966.17' S	2389.09' E	6426.73'	158.18°	1.33°	0.7	1.1
219	12972.00'	91.30°	157.50°	45.00'	7030.49'	6471.71'	6007.73' S	2406.30' E	6471.72'	158.17°	0.00°	0.0	0.0
220	13016.00'	89.90°	156.30°	44.00'	7030.03'	6515.70'	6048.20' S	2423.57' E	6515.70'	158.16°	4.19°	-3.2	-2.7
221	13061.00'	89.50°	154.90°	45.00'	7030.27'	6560.65'	6089.18' S	2442.15' E	6560.66'	158.15°	3.24°	-0.9	-3.1
222	13105.00'	89.00°	154.70°	44.00'	7030.85'	6604.58'	6128.99' S	2460.89' E	6604.58'	158.12°	1.22°	-1.1	-0.5
223	13147.00'	88.70°	155.60°	42.00'	7031.69'	6646.51'	6167.09' S	2478.53' E	6646.51'	158.10°	2.26°	-0.7	2.1
proj.	13192.00'	88.50°	155.80°	45.00'	7032.79'	6691.46'	6208.09' S	2497.05' E	6691.46'	158.09°	0.00°	0.0	0.0