



OPERATOR		FIELD NAME		Well name/No.		Rig Name & No.		Panther Job No.		Calculation Method		Minimum Curvature			
Jay Bee Oil and Gas		Marcellous		Doc 1H		HWD 12		NE140041H		Proposed Azimuth		151.94°			
MWD OPERATOR		DIR SUPERVISOR		COUNTY		STATE		Start Date		Depth Reference:		RKB			
Don Hilliard		Merle Hall		Tyler		WV		19-Dec-14		Tie Into:		GyroMultiShot			
DipA: 66.89		Mag Field: 0.52320		Mag Dec: -8.53		Total Cor.: -7.72				Job Service:		Dir/Gamma			
Mag Spacing Req.		Mag Spacing Actual		Mag Spacing Req.		Mag Spacing Actual									
Below 25		Below 27		Above 40		Above 45									
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'	0.74°	161.13°	100.00'	100.00'	0.64'	0.61'	S	0.21'	E	0.65'	161.13°	0.74°	0.7°	161.1°
2	200	1.18	179.01	100.00'	199.98'	2.19'	2.25'	S	0.44'	E	2.29'	169.05°	0.53°	0.4°	17.9°
3	300	0.77	176.63	100.00'	299.97'	3.72'	3.95'	S	0.49'	E	3.98'	172.89°	0.41°	-0.4°	-2.4°
4	400	1.05	159.64	100.00'	399.96'	5.24'	5.48'	S	0.85'	E	5.55'	171.17°	0.39°	0.3°	-17.0°
5	500	1.48	162.82	100.00'	499.93'	7.41'	7.57'	S	1.55'	E	7.73'	168.43°	0.44°	0.4°	3.2°
6	600	1.66	171.72	100.00'	599.89'	10.05'	10.24'	S	2.14'	E	10.46'	168.19°	0.30°	0.2°	8.9°
7	700	2.45	170.9	100.00'	699.83'	13.43'	13.79'	S	2.69'	E	14.05'	168.97°	0.79°	0.8°	-0.8°
8	800	3.22	167.57	100.00'	799.71'	18.16'	18.64'	S	3.63'	E	18.99'	168.98°	0.79°	0.8°	-3.3°
9	900	3.87	166.27	100.00'	899.51'	24.13'	24.66'	S	5.04'	E	25.17'	168.46°	0.65°	0.7°	-1.3°
10	1000	4.43	165.61	100.00'	999.25'	31.15'	31.68'	S	6.80'	E	32.40'	167.89°	0.56°	0.6°	-0.7°
11	1100	4.95	163.69	100.00'	1098.92'	39.13'	39.56'	S	8.97'	E	40.56'	167.23°	0.54°	0.5°	-1.9°
12	1200	5.33	161	100.00'	1198.51'	47.94'	48.09'	S	11.69'	E	49.49'	166.34°	0.45°	0.4°	-2.7°
13	1300	5.56	157.88	100.00'	1298.06'	57.34'	56.97'	S	15.03'	E	58.92'	165.22°	0.37°	0.2°	-3.1°
14	1400	5.94	157.37	100.00'	1397.56'	67.31'	66.24'	S	18.84'	E	68.86'	164.12°	0.38°	0.4°	-0.5°
15	1500	6.14	160.01	100.00'	1497.00'	77.76'	76.04'	S	22.66'	E	79.34'	163.40°	0.34°	0.2°	2.6°
16	1600	6.5	160.49	100.00'	1596.40'	88.65'	86.40'	S	26.38'	E	90.34'	163.02°	0.36°	0.4°	0.5°
17	1700	6.52	161.72	100.00'	1695.75'	99.84'	97.12'	S	30.05'	E	101.67'	162.81°	0.14°	0.0°	1.2°
18	1800	6.75	162.74	100.00'	1795.08'	111.21'	108.13'	S	33.58'	E	113.22'	162.75°	0.26°	0.2°	1.0°
19	1900	6.93	162.3	100.00'	1894.37'	122.92'	119.49'	S	37.15'	E	125.13'	162.73°	0.19°	0.2°	-0.4°
20	2000	7.15	164.28	100.00'	1993.62'	134.93'	131.23'	S	40.68'	E	137.38'	162.78°	0.33°	0.2°	2.0°
21	2100	7.59	165.69	100.00'	2092.79'	147.43'	143.62'	S	43.99'	E	150.20'	162.97°	0.48°	0.4°	1.4°
22	2200	7.81	165.76	100.00'	2191.89'	160.44'	156.60'	S	47.30'	E	163.59'	163.19°	0.22°	0.2°	0.1°
23	2300	7.8	168.34	100.00'	2290.96'	173.55'	169.83'	S	50.34'	E	177.14'	163.49°	0.35°	0.0°	2.6°
24	2400	6	168.36	100.00'	2390.23'	185.07'	181.60'	S	52.77'	E	189.11'	163.80°	1.80°	-1.8°	0.0°



25	2500	4.58	169.88	100.00'	2489.81'	193.88'	190.65' S	54.52' E	198.29'	164.04°	1.43°	-1.4°	1.5°
26	2600	2.9	166.73	100.00'	2589.59'	200.13'	197.04' S	55.80' E	204.79'	164.19°	1.69°	-1.7°	-3.2°
27	2700	1.85	165.08	100.00'	2689.50'	204.15'	201.06' S	56.80' E	208.93'	164.22°	1.05°	-1.1°	-1.6°
28	2800	1.2	153.24	100.00'	2789.47'	206.77'	203.56' S	57.69' E	211.57'	164.18°	0.72°	-0.7°	-11.8°
29	2900	0.66	177.76	100.00'	2889.45'	208.33'	205.07' S	58.18' E	213.16'	164.16°	0.66°	-0.5°	24.5°
30	3000	0.52	183.81	100.00'	2989.45'	209.24'	206.10' S	58.17' E	214.15'	164.24°	0.15°	-0.1°	6.1°
31	3100	0.42	182.95	100.00'	3089.44'	209.93'	206.91' S	58.13' E	214.92'	164.31°	0.10°	-0.1°	-0.9°
32	3200	0.44	176.92	100.00'	3189.44'	210.60'	207.66' S	58.13' E	215.65'	164.36°	0.05°	0.0°	-6.0°
33	3300	0.41	174.82	100.00'	3289.44'	211.27'	208.40' S	58.18' E	216.37'	164.40°	0.03°	0.0°	-2.1°
34	3400	0.46	186.14	100.00'	3389.44'	211.94'	209.16' S	58.17' E	217.10'	164.46°	0.10°	0.1°	11.3°
35	3500	0.41	167.24	100.00'	3489.43'	212.61'	209.91' S	58.21' E	217.83'	164.50°	0.15°	-0.1°	-18.9°
36	3600	0.36	173.09	100.00'	3589.43'	213.25'	210.57' S	58.32' E	218.50'	164.52°	0.06°	-0.1°	5.8°
37	3700	0.45	192.96	100.00'	3689.43'	213.84'	211.26' S	58.27' E	219.15'	164.58°	0.17°	0.1°	19.9°
38	3800	0.41	212.05	100.00'	3789.43'	214.32'	211.95' S	57.99' E	219.74'	164.70°	0.15°	0.0°	19.1°
39	3900	0.46	192.3	100.00'	3889.42'	214.80'	212.64' S	57.72' E	220.34'	164.81°	0.16°	0.1°	-19.8°
40	4000	0.59	195.65	100.00'	3989.42'	215.48'	213.53' S	57.49' E	221.14'	164.93°	0.13°	0.1°	3.3°
41	4100	0.3	200.79	100.00'	4089.41'	216.02'	214.27' S	57.26' E	221.79'	165.04°	0.29°	-0.3°	5.1°
42	4200	0.53	216.62	100.00'	4189.41'	216.39'	214.89' S	56.89' E	222.29'	165.17°	0.25°	0.2°	15.8°
43	4300	0.37	224.8	100.00'	4289.41'	216.68'	215.49' S	56.39' E	222.74'	165.34°	0.17°	-0.2°	8.2°
44	4400	0.43	230.33	100.00'	4389.41'	216.86'	215.96' S	55.87' E	223.07'	165.49°	0.07°	0.1°	5.5°
45	4500	0.31	260.55	100.00'	4489.40'	216.84'	216.24' S	55.32' E	223.20'	165.65°	0.23°	-0.1°	30.2°
46	4600	0.34	229.75	100.00'	4589.40'	216.82'	216.48' S	54.82' E	223.31'	165.79°	0.18°	0.0°	-30.8°
47	4700	0.37	228.53	100.00'	4689.40'	216.96'	216.88' S	54.36' E	223.59'	165.93°	0.03°	0.0°	-1.2°
48	4800	0.49	237.91	100.00'	4789.40'	217.06'	217.32' S	53.75' E	223.87'	166.11°	0.14°	0.1°	9.4°
49	4900	0.73	267.61	100.00'	4889.39'	216.82'	217.58' S	52.75' E	223.88'	166.37°	0.39°	0.2°	29.7°
50	5000	0.77	269.62	100.00'	4989.38'	216.23'	217.61' S	51.45' E	223.61'	166.70°	0.05°	0.0°	2.0°
51	5100	0.59	281.46	100.00'	5089.38'	215.59'	217.51' S	50.27' E	223.24'	166.99°	0.23°	-0.2°	11.8°
52	5200	0.53	283.83	100.00'	5189.37'	214.95'	217.30' S	49.31' E	222.82'	167.21°	0.06°	-0.1°	2.4°
53	5300	0.44	275.81	100.00'	5289.37'	214.43'	217.15' S	48.48' E	222.50'	167.41°	0.11°	-0.1°	-8.0°
54	5400	0.45	275.11	100.00'	5389.37'	214.00'	217.07' S	47.71' E	222.26'	167.60°	0.01°	0.0°	-0.7°
55	5500	0.5	276.54	100.00'	5489.36'	213.54'	216.99' S	46.89' E	222.00'	167.81°	0.05°	0.1°	1.4°
56	5600	0.5	296.22	100.00'	5589.36'	212.94'	216.75' S	46.06' E	221.59'	168.00°	0.17°	0.0°	19.7°
57	5700	0.33	274.07	100.00'	5689.36'	212.43'	216.53' S	45.38' E	221.24'	168.16°	0.23°	-0.2°	-22.2°
58	5800	0.52	290.68	100.00'	5789.35'	211.94'	216.35' S	44.67' E	220.92'	168.33°	0.22°	0.2°	16.6°
59	5870	0.4	325.6	70.00'	5859.35'	211.45'	216.04' S	44.24' E	220.52'	168.43°	0.43°	-0.2°	49.9°
60	5914.00'	0.40°	338.60°	44.00'	5903.35'	211.15'	215.77' S	44.09' E	220.23'	168.45°	0.21°	0.0°	29.5°

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61	5959.00'	2.20°	244.50°	45.00'	5948.34'	210.95'	216.00'	S	43.26'	E	220.28'	168.68°	5.03°	4.0°	-209.1°
62	6003.00'	6.60°	240.70°	44.00'	5992.20'	210.97'	217.60'	S	40.29'	E	221.30'	169.51°	10.02°	10.0°	-8.6°
63	6047.00'	10.30°	240.20°	44.00'	6035.71'	211.15'	220.79'	S	34.67'	E	223.50'	171.08°	8.41°	8.4°	-1.1°
64	6090.00'	13.50°	240.30°	43.00'	6077.78'	211.41'	225.19'	S	26.97'	E	226.80'	173.17°	7.44°	7.4°	0.2°
65	6132.00'	17.00°	239.50°	42.00'	6118.30'	211.81'	230.74'	S	17.42'	E	231.39'	175.68°	8.35°	8.3°	-1.9°
66	6176.00'	20.90°	241.30°	44.00'	6159.91'	212.17'	237.77'	S	4.99'	E	237.82'	178.80°	8.96°	8.9°	4.1°
67	6221.00'	24.00°	243.50°	45.00'	6201.49'	212.01'	245.71'	S	10.25'	W	245.93'	182.39°	7.14°	6.9°	4.9°
68	6265.00'	28.70°	243.40°	44.00'	6240.91'	211.50'	254.44'	S	27.71'	W	255.95'	186.22°	10.68°	10.7°	-0.2°
69	6309.00'	32.30°	242.80°	44.00'	6278.81'	211.05'	264.55'	S	47.62'	W	268.80'	190.20°	8.21°	8.2°	-1.4°
70	6354.00'	35.60°	241.50°	45.00'	6316.14'	210.97'	276.30'	S	69.83'	W	284.99'	194.18°	7.51°	7.3°	-2.9°
71	6398.00'	35.70°	242.40°	44.00'	6351.89'	210.97'	288.36'	S	92.46'	W	302.82'	197.78°	1.21°	0.2°	2.0°
72	6443.00'	40.00°	242.30°	45.00'	6387.42'	210.77'	301.17'	S	116.92'	W	323.07'	201.22°	9.56°	9.6°	-0.2°
73	6487.00'	41.10°	243.70°	44.00'	6420.85'	210.24'	314.15'	S	142.40'	W	344.92'	204.38°	3.24°	2.5°	3.2°
74	6532.00'	43.30°	242.70°	45.00'	6454.18'	209.58'	327.78'	S	169.38'	W	368.96'	207.33°	5.11°	4.9°	-2.2°
75	6576.00'	48.80°	240.50°	44.00'	6484.71'	209.79'	342.87'	S	197.22'	W	395.54'	209.91°	13.01°	12.5°	-5.0°
76	6620.00'	53.90°	237.20°	44.00'	6512.19'	211.68'	360.66'	S	226.59'	W	425.93'	212.14°	12.98°	11.6°	-7.5°
77	6663.00'	59.30°	236.40°	43.00'	6535.85'	214.90'	380.32'	S	256.61'	W	458.79'	214.01°	12.65°	12.6°	-1.9°
78	6710.00'	64.60°	234.40°	47.00'	6557.95'	219.64'	403.88'	S	290.73'	W	497.63'	215.75°	11.88°	11.3°	-4.3°
79	6752.00'	69.40°	233.90°	42.00'	6574.35'	224.88'	426.51'	S	322.06'	W	534.45'	217.06°	11.48°	11.4°	-1.2°
80	6797.00'	72.20°	234.20°	45.00'	6589.15'	230.72'	451.46'	S	356.46'	W	575.22'	218.29°	6.25°	6.2°	0.7°
81	6841.00'	72.50°	234.30°	44.00'	6602.49'	236.33'	475.96'	S	390.49'	W	615.64'	219.37°	0.72°	0.7°	0.2°
82	6884.00'	72.60°	233.80°	43.00'	6615.38'	241.96'	500.04'	S	423.69'	W	655.40'	220.28°	1.13°	0.2°	-1.2°
83	6926.00'	72.80°	233.60°	42.00'	6627.87'	247.71'	523.78'	S	456.01'	W	694.47'	221.04°	0.66°	0.5°	-0.5°
84	6970.00'	73.00°	233.50°	44.00'	6640.81'	253.84'	548.76'	S	489.84'	W	735.58'	221.75°	0.50°	0.5°	-0.2°
85	7014.00'	73.30°	232.80°	44.00'	6653.57'	260.28'	574.02'	S	523.54'	W	776.91'	222.37°	1.67°	0.7°	-1.6°
86	7059.00'	74.90°	229.00°	45.00'	6665.90'	268.57'	601.31'	S	557.11'	W	819.72'	222.81°	8.87°	3.6°	-8.4°
87	7103.00'	75.80°	225.00°	44.00'	6677.03'	279.54'	630.34'	S	588.23'	W	862.17'	223.02°	9.03°	2.0°	-9.1°
88	7147.00'	75.90°	221.30°	44.00'	6687.79'	293.28'	661.46'	S	617.41'	W	904.83'	223.03°	8.16°	0.2°	-8.4°
89	7191.00'	76.00°	216.70°	44.00'	6698.48'	309.92'	694.62'	S	644.26'	W	947.40'	222.85°	10.14°	0.2°	-10.5°
90	7236.00'	76.40°	212.90°	45.00'	6709.21'	329.85'	730.50'	S	669.19'	W	990.68'	222.49°	8.25°	0.9°	-8.4°
91	7281.00'	76.40°	209.30°	45.00'	6719.80'	352.27'	767.94'	S	691.78'	W	1033.59'	222.01°	7.78°	0.0°	-8.0°
92	7325.00'	77.10°	205.20°	44.00'	6729.89'	376.64'	806.01'	S	711.39'	W	1075.05'	221.43°	9.21°	1.6°	-9.3°
93	7369.00'	77.90°	202.00°	44.00'	6739.41'	403.28'	845.37'	S	728.58'	W	1116.01'	220.76°	7.33°	1.8°	-7.3°
94	7414.00'	79.50°	198.60°	45.00'	6748.23'	432.60'	886.75'	S	743.88'	W	1157.45'	219.99°	8.22°	3.6°	-7.6°
95	7458.00'	79.90°	195.70°	44.00'	6756.10'	463.09'	928.11'	S	756.65'	W	1197.46'	219.19°	6.55°	0.9°	-6.6°
96	7503.00'	81.00°	193.50°	45.00'	6763.57'	495.73'	971.05'	S	767.83'	W	1237.94'	218.33°	5.41°	2.4°	-4.9°

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97	7548.00'	81.30°	190.90°	45.00'	6770.49'	529.66'	1014.51' S	777.23' W	1278.01'	217.46°	5.75°	0.7°	-5.8°
98	7592.00'	83.10°	187.20°	44.00'	6776.47'	564.41'	1057.55' S	784.08' W	1316.51'	216.55°	9.28°	4.1°	-8.4°
99	7636.00'	85.60°	183.00°	44.00'	6780.80'	601.06'	1101.15' S	787.97' W	1354.04'	215.59°	11.07°	5.7°	-9.5°
100	7678.00'	87.10°	179.60°	42.00'	6783.47'	637.59'	1143.05' S	788.91' W	1388.86'	214.61°	8.83°	3.6°	-8.1°
101	7723.00'	88.30°	175.40°	45.00'	6785.28'	678.14'	1187.96' S	786.95' W	1424.97'	213.52°	9.70°	2.7°	-9.3°
102	7768.00'	88.80°	172.60°	45.00'	6786.42'	719.83'	1232.69' S	782.25' W	1459.95'	212.40°	6.32°	1.1°	-6.2°
103	7812.00'	88.20°	170.00°	44.00'	6787.57'	761.32'	1276.17' S	775.60' W	1493.37'	211.29°	6.06°	-1.4°	-5.9°
104	7855.00'	88.90°	165.90°	43.00'	6788.66'	802.63'	1318.20' S	766.63' W	1524.91'	210.18°	9.67°	1.6°	-9.5°
105	7899.00'	90.70°	162.70°	44.00'	6788.81'	845.60'	1360.55' S	754.72' W	1555.86'	209.02°	8.34°	4.1°	-7.3°
106	7943.00'	91.20°	158.70°	44.00'	6788.08'	889.08'	1402.06' S	740.18' W	1585.45'	207.83°	9.16°	1.1°	-9.1°
107	7988.00'	90.80°	155.10°	45.00'	6787.30'	933.89'	1443.44' S	722.54' W	1614.18'	206.59°	8.05°	-0.9°	-8.0°
108	8032.00'	91.20°	151.40°	44.00'	6786.53'	977.87'	1482.72' S	702.74' W	1640.82'	205.36°	8.46°	0.9°	-8.4°
109	8076.00'	91.20°	147.80°	44.00'	6785.61'	1021.81'	1520.65' S	680.48' W	1665.96'	204.11°	8.18°	0.0°	-8.2°
110	8121.00'	91.30°	147.80°	45.00'	6784.63'	1066.69'	1558.72' S	656.51' W	1691.34'	202.84°	0.22°	0.2°	0.0°
111	8165.00'	91.90°	147.80°	44.00'	6783.40'	1110.55'	1595.94' S	633.07' W	1716.92'	201.64°	1.36°	1.4°	0.0°
112	8210.00'	90.20°	144.10°	45.00'	6782.57'	1155.29'	1633.21' S	607.88' W	1742.67'	200.42°	9.05°	-3.8°	-8.2°
113	8254.00'	89.90°	143.50°	44.00'	6782.54'	1198.85'	1668.72' S	581.90' W	1767.26'	199.22°	1.52°	-0.7°	-1.4°
114	8299.00'	89.90°	142.90°	45.00'	6782.61'	1243.32'	1704.75' S	554.94' W	1792.80'	198.03°	1.33°	0.0°	-1.3°
115	8343.00'	90.00°	141.90°	44.00'	6782.65'	1286.71'	1739.61' S	528.09' W	1818.00'	196.89°	2.28°	0.2°	-2.3°
116	8388.00'	89.80°	141.20°	45.00'	6782.73'	1330.98'	1774.85' S	500.11' W	1843.97'	195.74°	1.62°	-0.4°	-1.6°
117	8432.00'	90.00°	140.60°	44.00'	6782.81'	1374.16'	1809.00' S	472.36' W	1869.65'	194.63°	1.44°	0.5°	-1.4°
118	8476.00'	89.80°	139.50°	44.00'	6782.88'	1417.22'	1842.73' S	444.11' W	1895.49'	193.55°	2.54°	-0.5°	-2.5°
119	8521.00'	89.50°	139.10°	45.00'	6783.16'	1461.13'	1876.84' S	414.77' W	1922.13'	192.46°	1.11°	-0.7°	-0.9°
120	8566.00'	89.40°	138.80°	45.00'	6783.59'	1504.97'	1910.78' S	385.21' W	1949.22'	191.40°	0.70°	-0.2°	-0.7°
121	8610.00'	90.30°	140.10°	44.00'	6783.71'	1547.93'	1944.21' S	356.61' W	1976.64'	190.39°	3.59°	2.0°	3.0°
122	8655.00'	90.20°	140.00°	45.00'	6783.51'	1591.96'	1978.71' S	327.72' W	2005.66'	189.40°	0.31°	-0.2°	-0.2°
123	8699.00'	90.30°	139.80°	44.00'	6783.32'	1634.99'	2012.36' S	299.37' W	2034.51'	188.46°	0.51°	0.2°	-0.5°
124	8741.00'	90.10°	138.90°	42.00'	6783.17'	1675.98'	2044.23' S	272.02' W	2062.25'	187.58°	2.20°	-0.5°	-2.1°
125	8785.00'	90.10°	138.80°	44.00'	6783.10'	1718.84'	2077.36' S	243.06' W	2091.53'	186.67°	0.23°	0.0°	-0.2°
126	8830.00'	90.10°	141.40°	45.00'	6783.02'	1762.88'	2111.88' S	214.20' W	2122.71'	185.79°	5.78°	0.0°	5.8°
127	8874.00'	90.20°	141.30°	44.00'	6782.90'	1806.13'	2146.24' S	186.72' W	2154.35'	184.97°	0.32°	0.2°	-0.2°
128	8919.00'	90.00°	141.00°	45.00'	6782.82'	1850.33'	2181.29' S	158.49' W	2187.04'	184.16°	0.80°	-0.4°	-0.7°
129	8968.00'	90.10°	140.20°	44.00'	6782.78'	1893.47'	2215.29' S	130.56' W	2219.13'	183.37°	1.83°	0.2°	-1.8°
130	9007.00'	89.80°	139.90°	44.00'	6782.82'	1936.53'	2249.02' S	102.31' W	2251.34'	182.60°	0.96°	-0.7°	-0.7°
131	9057.00'	89.60°	139.40°	44.00'	6783.05'	1979.52'	2282.55' S	73.82' W	2283.74'	181.85°	1.22°	-0.5°	-1.1°
132	9096.00'	90.20°	140.90°	45.00'	6783.13'	2023.57'	2317.09' S	44.99' W	2317.53'	181.11°	3.59°	1.3°	3.3°

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133	9140.00'	90.30°	140.10°	44.00'	6782.94'	2066.70'	2351.05' S	17.00' W	2351.11'	180.41°	1.83°	0.2°	-1.8°
134	9185.00'	90.20°	139.80°	45.00'	6782.74'	2110.71'	2385.49' S	11.95' E	2385.52'	179.71°	0.70°	-0.2°	-0.7°
135	9229.00'	90.10°	139.20°	44.00'	6782.63'	2153.68'	2418.95' S	40.53' E	2419.29'	179.04°	1.38°	-0.2°	-1.4°
136	9274.00'	90.40°	141.30°	45.00'	6782.43'	2197.74'	2453.55' S	69.30' E	2454.52'	178.38°	4.71°	0.7°	4.7°
137	9318.00'	90.20°	141.00°	44.00'	6782.20'	2240.97'	2487.81' S	96.90' E	2489.70'	177.77°	0.82°	-0.5°	-0.7°
138	9362.00'	90.40°	140.80°	44.00'	6781.97'	2284.15'	2521.96' S	124.65' E	2525.04'	177.17°	0.64°	0.5°	-0.5°
139	9407.00'	90.50°	140.30°	45.00'	6781.62'	2328.26'	2556.70' S	153.24' E	2561.29'	176.57°	1.13°	0.2°	-1.1°
140	9452.00'	90.40°	140.30°	45.00'	6781.26'	2372.34'	2591.33' S	181.99' E	2597.71'	175.98°	0.22°	-0.2°	0.0°
141	9496.00'	90.20°	139.70°	44.00'	6781.03'	2415.38'	2625.03' S	210.27' E	2633.44'	175.42°	1.44°	-0.5°	-1.4°
142	9540.00'	89.90°	139.10°	44.00'	6781.00'	2458.33'	2658.44' S	238.90' E	2669.15'	174.86°	1.52°	-0.7°	-1.4°
143	9585.00'	89.10°	142.00°	45.00'	6781.39'	2502.44'	2693.18' S	267.49' E	2706.43'	174.33°	6.68°	-1.8°	6.4°
144	9629.00'	89.10°	141.90°	44.00'	6782.08'	2545.77'	2727.83' S	294.61' E	2743.69'	173.84°	0.23°	0.0°	-0.2°
145	9673.00'	89.00°	141.10°	44.00'	6782.81'	2589.03'	2762.26' S	322.00' E	2780.96'	173.35°	1.83°	-0.2°	-1.8°
146	9718.00'	89.10°	140.60°	45.00'	6783.55'	2633.19'	2797.15' S	350.40' E	2819.01'	172.86°	1.13°	0.2°	-1.1°
147	9762.00'	88.80°	144.20°	44.00'	6784.36'	2676.56'	2832.00' S	377.24' E	2857.01'	172.41°	8.21°	-0.7°	8.2°
148	9806.00'	89.20°	144.40°	44.00'	6785.13'	2720.17'	2867.72' S	402.91' E	2895.89'	172.00°	1.02°	0.9°	0.5°
149	9850.00'	89.40°	145.20°	44.00'	6785.67'	2763.82'	2903.67' S	428.27' E	2935.09'	171.61°	1.87°	0.5°	1.8°
150	9898.00'	89.50°	145.90°	48.00'	6786.13'	2811.52'	2943.25' S	455.42' E	2978.28'	171.20°	1.47°	0.2°	1.5°
151	9939.00'	89.00°	145.00°	41.00'	6786.66'	2852.25'	2977.02' S	478.67' E	3015.26'	170.87°	2.51°	-1.2°	-2.2°
152	9984.00'	88.40°	142.70°	45.00'	6787.69'	2896.79'	3013.34' S	505.21' E	3055.40'	170.48°	5.28°	-1.3°	-5.1°
153	10028.00'	88.10°	142.70°	44.00'	6789.03'	2940.20'	3048.33' S	531.86' E	3094.38'	170.10°	0.68°	-0.7°	0.0°
154	10072.00'	89.40°	141.90°	44.00'	6789.99'	2983.57'	3083.13' S	558.76' E	3133.36'	169.73°	3.47°	3.0°	-1.8°
155	10114.00'	89.00°	142.00°	42.00'	6790.58'	3024.93'	3116.20' S	584.65' E	3170.57'	169.37°	0.98°	-1.0°	0.2°
156	10159.00'	90.70°	141.50°	45.00'	6790.69'	3069.21'	3151.54' S	612.50' E	3210.51'	169.00°	3.94°	3.8°	-1.1°
157	10203.00'	90.90°	140.70°	44.00'	6790.08'	3112.42'	3185.78' S	640.13' E	3249.46'	168.64°	1.87°	0.5°	-1.8°
158	10248.00'	92.40°	140.60°	45.00'	6788.78'	3156.53'	3220.56' S	668.65' E	3289.24'	168.27°	3.34°	3.3°	-0.2°
159	10292.00'	92.60°	140.40°	44.00'	6786.86'	3199.62'	3254.48' S	696.61' E	3328.20'	167.92°	0.64°	0.5°	-0.5°
160	10336.00'	93.10°	139.80°	44.00'	6784.68'	3242.63'	3288.20' S	724.80' E	3367.13'	167.57°	1.77°	1.1°	-1.4°
161	10380.00'	91.10°	140.10°	44.00'	6783.06'	3285.64'	3321.85' S	753.09' E	3406.15'	167.23°	4.60°	-4.5°	0.7°
162	10425.00'	91.00°	139.80°	45.00'	6782.24'	3329.65'	3356.29' S	782.04' E	3446.20'	166.88°	0.70°	-0.2°	-0.7°
163	10469.00'	90.70°	141.20°	44.00'	6781.59'	3372.77'	3390.24' S	810.03' E	3485.67'	166.56°	3.25°	-0.7°	3.2°
164	10513.00'	90.60°	141.30°	44.00'	6781.09'	3416.00'	3424.55' S	837.56' E	3525.49'	166.26°	0.32°	-0.2°	0.2°
165	10558.00'	90.40°	140.60°	45.00'	6780.69'	3460.18'	3459.50' S	865.91' E	3566.22'	165.95°	1.62°	-0.4°	-1.6°
166	10602.00'	89.90°	139.90°	44.00'	6780.58'	3503.26'	3493.33' S	894.05' E	3605.92'	165.64°	1.96°	-1.1°	-1.6°
167	10647.00'	89.40°	139.70°	45.00'	6780.85'	3547.26'	3527.70' S	923.09' E	3646.47'	165.34°	1.20°	-1.1°	-0.4°
168	10691.00'	89.50°	140.00°	44.00'	6781.28'	3590.28'	3561.33' S	951.46' E	3686.24'	165.04°	0.72°	0.2°	0.7°

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169	10733.00'	89.30°	139.80°	42.00'	6781.72'	3631.35'	3593.45' S	978.51' E	3724.30'	164.77°	0.67°	-0.5°	-0.5°
170	10778.00'	89.10°	139.20°	45.00'	6782.34'	3675.29'	3627.67' S	1007.74' E	3765.04'	164.48°	1.41°	-0.4°	-1.3°
171	10822.00'	89.30°	141.00°	44.00'	6782.96'	3718.35'	3661.42' S	1035.96' E	3805.15'	164.20°	4.12°	0.5°	4.1°
172	10864.00'	89.40°	140.40°	42.00'	6783.44'	3759.54'	3693.92' S	1062.56' E	3843.70'	163.95°	1.45°	0.2°	-1.4°
173	10909.00'	91.20°	141.10°	45.00'	6783.20'	3803.68'	3728.76' S	1091.03' E	3885.10'	163.69°	4.29°	4.0°	1.6°
174	10953.00'	91.30°	140.80°	44.00'	6782.24'	3846.86'	3762.92' S	1118.74' E	3925.71'	163.44°	0.72°	0.2°	-0.7°
175	10997.00'	91.40°	140.40°	44.00'	6781.20'	3889.99'	3796.92' S	1146.66' E	3966.28'	163.20°	0.94°	0.2°	-0.9°
176	11039.00'	91.40°	140.60°	42.00'	6780.18'	3931.15'	3829.31' S	1173.37' E	4005.05'	162.96°	0.48°	0.0°	0.5°
177	11084.00'	90.60°	141.30°	45.00'	6779.39'	3975.31'	3864.25' S	1201.71' E	4046.80'	162.73°	2.36°	-1.8°	1.6°
178	11128.00'	90.40°	141.30°	44.00'	6779.01'	4018.56'	3898.59' S	1229.22' E	4087.79'	162.50°	0.45°	-0.5°	0.0°
179	11173.00'	90.60°	141.30°	45.00'	6778.62'	4062.78'	3933.71' S	1257.36' E	4129.77'	162.27°	0.44°	0.4°	0.0°
180	11217.00'	90.70°	141.50°	44.00'	6778.12'	4106.03'	3968.09' S	1284.81' E	4170.91'	162.06°	0.51°	0.2°	0.5°
181	11261.00'	90.80°	140.80°	44.00'	6777.54'	4149.25'	4002.36' S	1312.40' E	4212.04'	161.85°	1.61°	0.2°	-1.6°
182	11306.00'	89.40°	141.30°	45.00'	6777.46'	4193.44'	4037.35' S	1340.69' E	4254.14'	161.63°	3.30°	-3.1°	1.1°
183	11350.00'	89.80°	141.80°	44.00'	6777.77'	4236.72'	4071.81' S	1368.05' E	4295.49'	161.43°	1.46°	0.9°	1.1°
184	11392.00'	88.40°	142.70°	42.00'	6778.43'	4278.11'	4105.01' S	1393.76' E	4335.17'	161.25°	3.96°	-3.3°	2.1°
185	11437.00'	88.40°	143.30°	45.00'	6779.69'	4322.55'	4140.94' S	1420.83' E	4377.92'	161.06°	1.33°	0.0°	1.3°
186	11481.00'	88.70°	142.80°	44.00'	6780.80'	4366.01'	4176.09' S	1447.27' E	4419.77'	160.89°	1.32°	0.7°	-1.1°
187	11523.00'	88.60°	142.90°	42.00'	6781.79'	4407.47'	4209.56' S	1472.63' E	4459.71'	160.72°	0.34°	-0.2°	0.2°
188	11568.00'	88.40°	142.80°	45.00'	6782.97'	4451.89'	4245.41' S	1499.80' E	4502.55'	160.54°	0.50°	-0.4°	-0.2°
189	11612.00'	88.50°	142.10°	44.00'	6784.16'	4495.27'	4280.28' S	1526.60' E	4544.38'	160.37°	1.61°	0.2°	-1.6°
190	11654.00'	88.40°	141.60°	42.00'	6785.29'	4536.60'	4313.30' S	1552.54' E	4584.20'	160.20°	1.21°	-0.2°	-1.2°
191	11699.00'	88.70°	142.10°	45.00'	6786.43'	4580.89'	4348.68' S	1580.33' E	4626.92'	160.03°	1.30°	0.7°	1.1°
192	11743.00'	90.60°	143.30°	44.00'	6786.70'	4624.32'	4383.68' S	1606.99' E	4668.94'	159.87°	5.11°	4.3°	2.7°
193	11787.00'	91.00°	142.90°	44.00'	6786.09'	4667.79'	4418.86' S	1633.40' E	4711.08'	159.71°	1.29°	0.9°	-0.9°
194	11832.00'	90.90°	142.70°	45.00'	6785.34'	4712.21'	4454.70' S	1660.61' E	4754.15'	159.56°	0.50°	-0.2°	-0.4°
195	11876.00'	91.00°	142.00°	44.00'	6784.61'	4755.59'	4489.53' S	1687.48' E	4796.19'	159.40°	1.61°	0.2°	-1.6°
196	11921.00'	90.90°	141.40°	45.00'	6783.86'	4799.87'	4524.84' S	1715.36' E	4839.07'	159.24°	1.35°	-0.2°	-1.3°
197	11962.00'	91.00°	140.80°	41.00'	6783.18'	4840.13'	4556.74' S	1741.11' E	4878.05'	159.09°	1.48°	0.2°	-1.5°
198	12007.00'	91.30°	139.40°	45.00'	6782.28'	4884.16'	4591.26' S	1769.97' E	4920.61'	158.92°	3.18°	0.7°	-3.1°
199	12051.00'	91.00°	139.60°	44.00'	6781.40'	4927.12'	4624.71' S	1798.54' E	4962.12'	158.75°	0.82°	-0.7°	0.5°
200	12096.00'	91.70°	139.90°	45.00'	6780.34'	4971.10'	4659.04' S	1827.60' E	5004.68'	158.58°	1.69°	1.6°	0.7°
201	12138.00'	92.00°	139.80°	42.00'	6778.98'	5012.14'	4691.13' S	1854.67' E	5044.45'	158.43°	0.75°	0.7	-0.2
202	12182.00'	89.50°	139.80°	44.00'	6778.41'	5055.15'	4724.73' S	1883.07' E	5086.16'	158.27°	5.68°	-5.7	0.0
203	12226.00'	89.20°	139.70°	44.00'	6778.90'	5098.16'	4758.31' S	1911.49' E	5127.90'	158.11°	0.72°	-0.7	-0.2
204	12271.00'	89.30°	140.40°	45.00'	6779.49'	5142.19'	4792.81' S	1940.39' E	5170.69'	157.96°	1.57°	0.2	1.6

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205	12315.00'	89.50°	140.60°	44.00'	6779.95'	5185.31'	4826.76' S	1968.37' E	5212.68'	157.81°	0.64°	0.5	0.5
206	12360.00'	89.50°	139.70°	45.00'	6780.35'	5229.36'	4861.30' S	1997.21' E	5255.58'	157.67°	2.00°	0.0	-2.0
207	12404.00'	89.60°	139.30°	44.00'	6780.69'	5272.32'	4894.76' S	2025.78' E	5297.40'	157.52°	0.94°	0.2	-0.9
208	12449.00'	87.60°	140.10°	45.00'	6781.79'	5316.29'	4929.07' S	2054.88' E	5340.24'	157.37°	4.79°	-4.4	1.8
209	12493.00'	87.40°	140.10°	44.00'	6783.71'	5359.31'	4962.79' S	2083.07' E	5382.24'	157.23°	0.45°	-0.5	0.0
210	12538.00'	87.30°	139.80°	45.00'	6785.79'	5403.28'	4997.20' S	2112.00' E	5425.17'	157.09°	0.70°	-0.2	-0.7
211	12583.00'	90.00°	140.50°	45.00'	6786.85'	5447.31'	5031.73' S	2140.82' E	5468.22'	156.95°	6.20°	6.0	1.6
212	12627.00'	91.00°	142.00°	44.00'	6786.47'	5490.55'	5066.05' S	2168.36' E	5510.59'	156.83°	4.10°	2.3	3.4
213	12672.00'	90.40°	143.00°	45.00'	6785.92'	5534.93'	5101.74' S	2195.75' E	5554.20'	156.71°	2.59°	-1.3	2.2
214	12716.00'	90.30°	142.90°	44.00'	6785.65'	5578.39'	5136.86' S	2222.26' E	5596.94'	156.61°	0.32°	-0.2	-0.2
215	12760.00'	90.50°	142.80°	44.00'	6785.34'	5621.84'	5171.93' S	2248.83' E	5639.69'	156.50°	0.51°	0.5	-0.2
216	12805.00'	90.60°	143.10°	45.00'	6784.91'	5666.28'	5207.84' S	2275.94' E	5683.44'	156.39°	0.70°	0.2	0.7
217	12849.00'	90.60°	141.80°	44.00'	6784.45'	5709.68'	5242.72' S	2302.76' E	5726.15'	156.29°	2.95°	0.0	-3.0
218	12891.00'	88.60°	140.50°	42.00'	6784.74'	5750.93'	5275.43' S	2329.10' E	5766.70'	156.18°	5.68°	-4.8	-3.1
219	12936.00'	88.90°	140.20°	45.00'	6785.72'	5795.00'	5310.07' S	2357.81' E	5810.00'	156.06°	0.94°	0.7	-0.7
220	12980.00'	89.00°	140.10°	44.00'	6786.53'	5838.07'	5343.84' S	2386.00' E	5852.32'	155.94°	0.32°	0.2	-0.2
221	13024.00'	89.40°	141.70°	44.00'	6787.15'	5881.25'	5377.98' S	2413.74' E	5894.82'	155.83°	3.75°	0.9	3.6
222	13068.00'	90.20°	143.50°	44.00'	6787.30'	5924.66'	5412.94' S	2440.47' E	5937.66'	155.73°	4.48°	1.8	4.1
223	13112.00'	90.50°	144.00°	44.00'	6787.03'	5968.21'	5448.42' S	2466.48' E	5980.70'	155.64°	1.33°	0.7	1.1
224	13155.00'	90.70°	143.80°	43.00'	6786.58'	6010.79'	5483.16' S	2491.82' E	6022.81'	155.56°	0.66°	0.5	-0.5
225	13199.00'	90.90°	144.70°	44.00'	6785.97'	6054.39'	5518.87' S	2517.52' E	6065.96'	155.48°	2.10°	0.5	2.0
226	13244.00'	91.20°	144.10°	45.00'	6785.14'	6098.99'	5555.45' S	2543.71' E	6110.12'	155.40°	1.49°	0.7	-1.3
227	13289.00'	91.50°	143.70°	45.00'	6784.08'	6143.54'	5591.80' S	2570.22' E	6154.21'	155.31°	1.11°	0.7	-0.9
228	13333.00'	90.70°	144.40°	44.00'	6783.24'	6187.11'	5627.41' S	2596.05' E	6197.36'	155.24°	2.42°	-1.8	1.6
229	13378.00'	90.40°	143.20°	45.00'	6782.80'	6231.65'	5663.72' S	2622.62' E	6241.47'	155.15°	2.75°	-0.7	-2.7
230	13422.00'	89.50°	143.60°	44.00'	6782.84'	6275.17'	5699.05' S	2648.86' E	6284.55'	155.07°	2.24°	-2.0	0.9
231	13467.00'	88.10°	142.50°	45.00'	6783.78'	6319.61'	5735.00' S	2675.90' E	6328.56'	154.99°	3.96°	-3.1	-2.4
232	13509.00'	88.00°	142.10°	42.00'	6785.21'	6361.00'	5768.21' S	2701.57' E	6369.52'	154.90°	0.98°	-0.2	-1.0
233	13554.00'	87.90°	141.30°	45.00'	6786.82'	6405.25'	5803.50' S	2729.44' E	6413.31'	154.81°	1.79°	-0.2	-1.8
234	13599.00'	89.40°	141.80°	45.00'	6787.88'	6449.50'	5838.73' S	2757.41' E	6457.10'	154.72°	3.51°	3.3	1.1
235	13641.00'	89.70°	143.00°	42.00'	6788.21'	6490.92'	5872.01' S	2783.04' E	6498.14'	154.64°	2.94°	0.7	2.9
236	13685.00'	90.20°	143.40°	44.00'	6788.25'	6534.40'	5907.24' S	2809.39' E	6541.27'	154.56°	1.46°	1.1	0.9
237	13730.00'	90.50°	143.70°	45.00'	6787.98'	6578.92'	5943.44' S	2836.13' E	6585.44'	154.49°	0.94°	0.7	0.7
238	13774.00'	91.80°	143.10°	44.00'	6787.09'	6622.42'	5978.75' S	2862.36' E	6628.62'	154.42°	3.25°	3.0	-1.4
239	13815.00'	90.10°	142.70°	41.00'	6786.41'	6662.91'	6011.45' S	2887.08' E	6668.79'	154.35°	4.26°	-4.1	-1.0
240	13860.00'	90.40°	142.20°	45.00'	6786.22'	6707.29'	6047.12' S	2914.51' E	6712.83'	154.27°	1.30°	0.7	-1.1

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241	13904.00'	89.00°	141.90°	44.00'	6786.45'	6750.64'	6081.82' S	2941.57' E	6755.84'	154.19°	3.25°	-3.2	-0.7
242	13949.00'	88.60°	141.20°	45.00'	6787.39'	6794.89'	6117.05' S	2969.54' E	6799.74'	154.11°	1.79°	-0.9	-1.6
243	13993.00'	88.80°	141.10°	44.00'	6788.39'	6838.10'	6151.31' S	2997.14' E	6842.62'	154.02°	0.51°	0.5	-0.2
244	14038.00'	89.40°	139.50°	45.00'	6789.10'	6882.17'	6185.93' S	3025.88' E	6886.34'	153.93°	3.80°	1.3	-3.6
245	14083.00'	89.40°	139.50°	45.00'	6789.57'	6926.11'	6220.14' S	3055.10' E	6929.92'	153.84°	0.00°	0.0	0.0
246	14126.00'	90.90°	139.80°	43.00'	6789.45'	6968.12'	6252.91' S	3082.94' E	6971.62'	153.75°	3.56°	3.5	0.7
247	14171.00'	90.60°	139.10°	45.00'	6788.87'	7012.05'	6287.10' S	3112.19' E	7015.23'	153.66°	1.69°	-0.7	-1.6
248	14215.00'	90.70°	138.90°	44.00'	6788.37'	7054.93'	6320.31' S	3141.06' E	7057.80'	153.57°	0.51°	0.2	-0.5
249	14259.00'	90.20°	138.20°	44.00'	6788.02'	7097.73'	6353.29' S	3170.18' E	7100.30'	153.48°	1.96°	-1.1	-1.6
250	14304.00'	89.90°	139.10°	45.00'	6787.98'	7141.53'	6387.07' S	3199.91' E	7143.81'	153.39°	2.11°	-0.7	2.0
251	14348.00'	90.10°	139.60°	44.00'	6787.98'	7184.47'	6420.45' S	3228.57' E	7186.51'	153.30°	1.22°	0.5	1.1
252	14393.00'	90.10°	139.50°	45.00'	6787.90'	7228.42'	6454.69' S	3257.77' E	7230.22'	153.22°	0.22°	0.0	-0.2
253	14437.00'	89.70°	139.60°	44.00'	6787.98'	7271.40'	6488.18' S	3286.32' E	7272.98'	153.14°	0.94°	-0.9	0.2
254	14481.00'	89.50°	139.20°	44.00'	6788.29'	7314.35'	6521.58' S	3314.95' E	7315.73'	153.06°	1.02°	-0.5	-0.9
255	14526.00'	89.30°	139.20°	45.00'	6788.76'	7358.24'	6555.65' S	3344.35' E	7359.43'	152.97°	0.44°	-0.4	0.0
256	14571.00'	89.10°	139.20°	45.00'	6789.39'	7402.12'	6589.71' S	3373.75' E	7403.14'	152.89°	0.44°	-0.4	0.0
257	14615.00'	89.30°	139.70°	44.00'	6790.00'	7445.08'	6623.14' S	3402.36' E	7445.94'	152.81°	1.22°	0.5	1.1
258	14659.00'	89.90°	140.10°	44.00'	6790.31'	7488.11'	6656.79' S	3430.70' E	7488.83'	152.73°	1.64°	1.4	0.9
259	14703.00'	89.10°	139.10°	44.00'	6790.69'	7531.09'	6690.30' S	3459.21' E	7531.68'	152.66°	2.91°	-1.8	-2.3
260	14748.00'	88.70°	138.30°	45.00'	6791.56'	7574.88'	6724.10' S	3488.91' E	7575.35'	152.58°	1.99°	-0.9	-1.8
Proj.	14772.00'	88.50°	138.60°	24.00'	6792.14'	7598.22'	6742.05' S	3504.82' E	7598.62'	152.53°	0.00°	0.0	0.0
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