KG
11366
v. 762

nnt.phae.proj.17608

Investigation of Errors of West Circle from Stops, for 15° spaces.
also
Investigation of Quadrant Points.

Oct 30th 1884 to Jan 26 1885

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1984phae.proj..1766R

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Inversion of 15° spectra

Oct 30th 1884 temp 52.0

87-102

23.5	24.1	24.2	23.9	29.5	28.8	29.8	30.0	−5.6	
8.3	9.7	9.9	9.3	12.1	12.0	12.2	12.1	2.8	
24.9	24.2	25.6	24.9	28.0	27.8	28.5	27.6	3.1	
9.1	10.1	9.1	9.4	12.7	12.3	12.7	13.0	9.3	
658	681	686			806	832	829		
1645	1702	1720			2022	2080	2068		
					1645	1702	1720		
					377	378	348		
							203		203
							+8.68		368

117-132°

26.0	26.3	27.6	26.6	32.7	30.6	30.8	30.6	30.3	−4.0
6.8	6.2	7.8	6.9	15.5	12.6	12.8	12.4	12.7	5.7
24.8	24.9	24.9	24.9	30.6	29.0	29.0	29.6	28.4	4.1
11.1	11.4	11.3	11.3	18.0	15.9	15.9	16.1	15.7	4.6
687	688	716				885	884	871	
1714	1720	1790				2212	2214	2174	
						1717	1720	1780	
						495	495	387	
								1379	
								460	

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10²-11⁷°

29.6	28.8	30.2	29.5	32.0	32.2	32.0	31.9	-2.5
10.9	11.0	12.1	11.3	12.8	12.8	12.2	13.3	1.5
27.5	27.1	27.8	27.5	31.1	31.8	30.9	30.5	3.6
11.6	11.1	12.7	11.8	17.5	17.8	17.6	17.1	5.7

3,66 +.18+.18
3,31 -.18+.00
59
3.50

996	980	825
1990	1950	2070

946	927	925	993
2365	2818	2370	3.31
19.50	19.50	2050	
3.75	3.68	2.70	

993 688
1831 229

132°-147°

37.0	37.8	37.7	37.5	41.5	41.4	41.2	41.8	-4.0
18.2	19.8	19.2	19.1	22.4	22.4	22.0	22.8	3.3
35.8	35.8	34.9	35.5	39.4	39.1	39.6	39.5	3.9
23.0	23.2	22.8	23.0	29.2	29.1	29.2	29.3	6.2
1140	1166	1146			1320	1320	1334	
28.50	29.15	28.65			33.00	33.00	33.35	
					28.50	29.15	1765	
					450	385	470	

1305
435

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1884phae.proj.1766R

(Repeated observations because of doubts as to an angle in one of the last 2 pieces)

87°-102°

34.7	34.6	34.2	34.5	39.8	38.8	38.8	± 4.6
19.9	19.0	19.7	19.5	22.7	22.7	22.8	3.2
34.8	35.8	36.4	35.7	39.1	38.6	38.0	2.9
19.8	19.3	20.1	19.7	22.9	23.0	22.7	3.2
1092	1084	1104		1245	1231	1233	
27.30	27.17	27.60		3112	3077	3057	
3				2730	2717	2760	
				382	360	297	
						1039	
						+368	346

117°-132°

37.0	37.0	38.0	37.3	42.7	42.8	43.1	42.1	± 5.4
18.4	18.0	19.9	18.8	24.6	25.0	24.0	24.8	5.8
35.8	36.2	36.6	36.2	40.9	40.7	41.3	40.7	4.7
22.4	22.1	23.0	22.5	28.6	29.0	28.8	28.1	6.1
1136	1133	1175		1375	1372	1357		
2840	2842	2937		3437	3430	3392		
	3			2840	2832	2937		
				597	598	455		
						1650		
						550		
						452		
						500		

147°-167°

31.5	30.8	32.1	31.5	38.0	37.8	38.1	38.2	± 6.5
12.2	11.8	12.2	12.1	14.2	13.2	14.0	15.3	2.1
27.7	28.6	28.3	28.2	31.4	31.3	31.2	31.8	3.2
17.8	19.0	19.2	18.7	25.7	25.3	25.8	26.1	7.0
892	902	918			1076	1091	1114	
2230	2255	2295			2690	2728	2785	
					2230	2255	2295	
					460	473	490	
							1423	
							474	

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1884phae.proj.1766R

102° – 117°

26.8	27.4	(2) 28.4	27.7	27.3	31.0	31.8	30.7	30.4
9.4	9.3	10.8	9.7	9.5	12.5	12.6	12.6	12.4
25.0	26.1	26.2	25.1	25.4	30.8	31.3	30.8	30.2
10.5	10.9	11.1	9.9	10.4	16.3	16.7	16.3	15.8
717	737	765	724			924	904	888
17.92	18.43	19.12	18.10			23.10	22.60	22.20
						17.52	18.43	18.10
						5.18	4.17	4.10

± 3.7
3.0
5.4
5.9

1345
448
897

3.57

132° – 147°

25.1	25.8	26.0	25.6	29.4	29.4	28.8	30.0	
6.8	8.4	7.8	7.7	10.3	10.1	11.1	9.8	
23.2	24.0	24.0	23.7	28.0	28.0	28.0	28.0	
11.1	10.9	12.1	11.4	17.8	17.2	18.1	18.0	
662	691	699			847	860	858	
16.55	17.28	17.47			21.17	21.50	21.45	
					16.35	17.28	17.47	
					462	422	354	

± 3.8
± 2.6
4.3
6.4

1282
427
4.3

162° – 177°

21.8	21.6	22.8	22.1	28.7	30.9	27.5	29.6	29.1
59.9	59.0	0.8	59.9	4.5	55.9	5.0	4.0	4.4
16.1	15.9	16.3	16.1	23.0	5.0	22.3	22.8	23.8
10.9	10.1	10.8	10.6	17.0	8.9	16.4	16.8	17.7
2887	2866	507				712	732	750
72.18	71.65	12.68				17.80	18.30	18.75
						12.18	11.65	12.68
						562	665	607

-6.6
4.6
6.9
6.4

1834
6.11

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1884phae.proj.1766R

177° - 192°

33.9	33.5	34.6	34.0	38.7	38.7	39.0	38.4	-4.7
8.8	7.9	9.8	8.8	13.4	14.0	13.2	13.0	4.6
27.6	27.0	28.1	27.6	33.0	33.4	32.6	33.0	5.4
22.2	20.7	21.8	21.6	29.3	30.2	28.8	29.0	7.7
925	891	943			1163	1136	1134	
2312	2228	2357			2908	2840	2835	
					23.12	22.28	23.57	
					5.86	6.12	6.58	
					5.89			

1686
562

207° - 222°

41.5	41.2	42.0	41.6	47.8	48.1	47.6	47.8	-6.2
18.3	18.0	19.2	18.5	22.8	22.8	22.8	22.7	4.3
38.7	38.8	39.2	38.9	44.7	45.1	44.2	44.9	5.8
33.1	32.8	32.9	32.9	39.8	39.8	40.0	39.7	6.9
1316	1308	1333			1558	1546	1551	
3290	3270	3332			3895	3865	3878	
					32.90	32.70	33.32	
					6.05	5.95	5.46	

1746
582

237° - 252°

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1884phae.proj.1766R

192°- 207°

35.8	35.9	37.1	36.8	36.4	40.3	40.6	40.7	39.7	-3.9
10.6	11.0	11.3	11.8	11.2	17.0	17.6	17.2	16.1	5.8
29.9	29.6	31.3	31.1	30.5	37.6	38.1	37.8	37.0	7.1
26.1	26.1	27.7	27.1	26.8	32.3	33.0	32.2	31.8	5.5
1024	1026	1074	1068			1293	1279	1246	
2560	2565	2685	2670			3233	3197	3115	
						25.60	25.65	26.97	
						6.73	6.29	4.38	

1740
5.80

222°- 237°

16.0	16.1	15.8	16.0	20.7	23.6	20.0	20.8	21.2	-4.7
50.1	51.1	50.8	50.7	57.4	59.8	57.2	57.8	57.1	6.7
12.2	12.9	12.8	12.6	21.4	23.0	20.9	22.0	21.3	8.8
7.9	8.0	7.0	7.6	14.2	16.2	13.2	15.0	14.4	6.6
2662	2681	2664			3026	2913	2956	2940	
66.55	~~67.02~~	66.60			75.65	72.83	73.90	73.50	
					6	66.55	67.02	66.60	
						6.28	6.88	6.90	

2006
6.69

+3.36	-1.06	-106	-154	+3.57	3.14	+2.60	-188		
+3.87	-55	-161	-127	+408	+362	+3.14	-1.64		
+4.22	+20	-141	-16	+5.01	+3.84	+4.9	-32		
+4.12	-30	-171	-84	+4.35	+3.90	+3.8	-59		
+4.42	+00	-171	-142	+4.74	+410	+5.6	+98		
+6.26	+1.84	+.13	+97	+6.11	+444	+5.10	+32		
+5.27	+85	+98	+216	+5.62	+4.92	+4.31	+53		
+5.38	+96	+1.94	+64	+5.80	+4.95	+5.36	+58		
+5.86	+1.44	+3.36	+66	+5.82	+591	+5.83	+105		
+6.27	+1.85	+5.23	+153	+6.69	+5.85	+6.30	+1.52		
4.90				5.59		+4.76			
4.76				5.16					

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222°-237° 2nd Series — going back. Thermom 53.0°

15.8	16.4	16.1	20.3	20.4	20.2	-4.2	
51.2	52.5	51.8	57.0	57.1	56.8	5.2	
12.8	12.0	12.4	21.0	20.7	21.2	8.6	
8.0	8.6	8.3	13.8	13.8	13.9	5.5	
2678	2695			2920	2921		
6695	6738			7300	7303		
				(669)	6738		
				6.05	565		
					1170		
					5.85		

207°-192°

32.4	32.3	32.4	35.0	35.0	34.9	-2.6	
6.2	6.1	6.2	12.2	12.8	11.7	6.0	
27.6	26.9	27.2	33.4	33.8	33.0	6.2	
22.6	22.1	22.3	27.3	27.6	27.0	5.0	
888	874			1092	1066		
2220	2185			2730	2665		
				2240	2185		
				510	480		
					990		
					4.95		

177°-162°

30.9	32.3	31.6	37.9	37.6	38.2	-6.3	
10.4	8.6	9.5	14.4	14.2	14.6	4.9	
26.2	27.0	26.6	33.0	32.8	33.3	6.4	
19.6	20.2	19.9	25.9	25.6	26.2	6.0	
871	881			1102	1123		
2178	2202			2755	2808		
				2178	2202		
				577	706		
					1283		
					6.41		

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222°-207°

22.6	22.0	22.3	29.0	28.9	29.0	-6.7
59.2	58.9	59.0	3.8	3.7	4.0	4.8
20.1	19.2	19.6	25.4	25.6	25.2	5.8
14.0	13.2	13.6	20.0	19.9	20.2	6.4
295.9	293.3			781	784	
73.97	73.32			1952	1960	
				1397	1332	
				555	628	

1183
591

192°-177°

40.0	40.0	40.0	44.9	44.6	45.2	-4.9
17.1	16.6	16.8	20.0	19.9	20.0	3.2
35.4	35.2	35.3	39.6	39.2	40.0	4.3
27.1	27.6	27.3	34.7	34.5	35.0	7.4
1196	1194			1382	1402	
299.0	298.5			3455	3505	
				2990	2985	
				465	520	

985
492

162°-147°

31.7	32.8	32.2	37.8	37.6	38.0	-5.6
12.5	13.0	12.8	14.7	14.2	15.2	1.9
30.0	31.6	30.8	33.2	33.1	33.2	2.4
20.0	20.2	20.1	26.6	26.9	26.4	6.5
942	976			1118	1128	
23.55	24.40			2795	2820	
				2355	2440	
				440	380	

820
4.10

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147° - 132°

29.9	30.0	30.0	33.8	33.3	34.2	-3.8
12.8	12.1	12.4	15.1	15.0	15.2	2.4
29.8	28.8	29.3	32.9	32.4	33.4	3.6
15.8	16.4	16.1	21.6	21.1	22.2	5.5
883	873			1018	1050	
2208	2182			2545	2625	
				2208	2182	
				337	443	

780
390

117° - 102°

36.3	37.6	37.0	39.0	38.8	39.1	-2.0
19.0	20.7	19.8	21.0	20.9	21.0	1.2
36.8	36.8	36.8	39.2	38.7	39.6	2.4
19.9	21.0	20.4	24.0	24.1	23.8	3.6
1120	1161			1225	1235	
2800	2903			3062	3084	
				2800	2903	
				262	184	

446
223

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132–117

26.2	27.7	26.7	26.9	30.3	29.6	31.0	−3.4
8.3	9.1	8.2	8.5	12.2	12.0	12.3	3.7
26.4	27.8	26.8	27.0	29.0	28.3	29.8	2.0
11.3	12.2	11.3	11.6	15.3	14.8	15.8	3.7
722	768	730			847	889	
1805	1920	1825			2117	2225	
					1805	1825	
					312	400	88

655
344

102°–87°

30.6	32.6	32.5	32.6	36.5	36.2	36.4	36.8	−3.9
15.8	17.4	17.2	17.3	19.1	19.4	19.2	18.6	1.8
32.6	34.6	34.9	34.8	35.8	35.6	35.6	36.3	1.0
15.6	17.0	16.8	16.9	19.7	19.1	19.6	20.3	2.8
940	1016	1014			1103	1108	1120	
2350	2540	2535			2758	2770	2800	
					2350	2540	2535	
					408	230	265	
						943	716	
						314	239	

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1884phae.proj.1766R

Nov 1, 1884 Temp. 50°.2

87° to 102°

35.9	36.0	34.8	35.6	36.2	35.3	36.1	35.7	41.0	41.6	40.9	42.1	40.6	40.9	40.0	41.0
20.8	20.6	21.0	21.5	21.0	20.8	21.6	21.0	23.1	24.0	24.1	24.8	23.1	24.0	23.9	23.8
36.8	37.3	37.0	37.2	37.8	37.2	36.8	37.1	39.2	40.6	40.2	41.2	40.2	41.1	40.2	40.4
21.1	20.1	22.0	20.8	21.8	22.0	21.6	21.3	24.3	25.4	25.8	25.6	25.3	24.8	24.0	25.0
1146	1140	1148	1151	1168	1153	1161			1316	1310	1337	1292	1308	1281	
2865	2850	2870	2878	2920	2882	2902			3250	3275	3342	3230	3270	3202	
									2878	2520	2882	2502	4320	2832	
									4.12	3.55	4.60	3.28	400	3.52	

	p 20.	p 20.	Mean
ε	−5.3	5.0	5.0	−5.1
ζ	−2.8	3.3	2.8	−3.0
η	−3.3	2.2	3.2	−2.9
H	−3.7	3.4	3.5	−3.5

117° – 132°

28.7	28.0	29.1	28.6	32.1	32.1	32.0	32.1	−3.5			
8.7	9.1	9.4	9.1	14.9	15.1	14.7	14.9	5.8			
26.0	26.4	27.0	26.5	31.4	31.5	31.4	31.3	4.9			
12.8	12.2	13.6	12.9	18.7	18.7	18.7	18.7	5.8			
763	754	791			968		970				
1908	1892	1977			2420		2425				
					1852		1977				
					568		448				
							1503				
							5.01				

147° – 162°

36.4	35.0	35.9	35.8	41.0	41.2	40.9	40.8	−5.2			
16.4	16.1	17.4	16.6	19.2	19.8	19.2	18.6	2.6			
34.7	33.8	34.7	34.4	36.3	37.0	36.1	35.7	1.9			
24.0	22.8	24.3	23.7	29.8	30.2	30.1	29.1	6.1			
1115	1097	1123			1282	1264	1242				
2788	2695	2808			3205	3160	3105				
					2788	2695	2808				
					4.17	4.05	2.57				
							1179				
							3.93				

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1884phae.proj.1766R

102° - 117°

38.0	38.0	38.2	38.1	41.8	41.7	42.1	41.6	−3.7
21.8	20.8	21.3	21.3	23.5	23.7	23.3	23.6	2.2
37.1	36.8	37.6	37.2	41.3	41.3	40.9	41.6	4.1
41.0 −5.8 21.6	21.7	22.1	21.8	27.3	27.7	27.1	27.1	5.5
23.8 2.8								
40.4 3.3 118.5	1173	1192			1344	1334	1369	
25.0 3.7		29.80						
29.6	29.2				33.61	33.35	34.22	
					25.6	25.2	29.80	
					4.01	4.03	4.42	

1246
4.15

132° - 147°

34.0	33.8	33.2	33.7	28.1	38.0	38.0	38.2	−4.4
14.8	16.8	16.8	16.0	19.2	19.0	19.2	19.4	3.2
31.8	32.7	32.9	32.5	36.9	37.1	36.4	37.2	4.4
19.0	19.7	20.2	19.6	26.4	26.2	26.2	26.8	6.8
99.6	1030	1031			1203	1198	1216	
24.90	25.75	25.78			30.08	29.95	30.40	
					24.75	25.75	25.78	
					5.33	4.20	4.62	

1415
4.72

162° - 177°

25.0	24.7	24.0	24.6	28.9	29.0	28.9	28.6	−4.3
1.6	1.6	2.6	1.9	5.4	6.0	5.7	4.5	3.5
19.7	18.7	18.8	19.1	24.7	24.8	24.6	~~25.0~~	5.6
12.3	12.2	11.8	12.1	17.7	18.0	18.0	24.7	5.6
							17.0	
58.6	57.2	57.2			77.8	77.2	74.8	
14.65	14.30	14.30			~~25.53~~	19.30	18.70	
					19.45	14.30	14.30	
					14.65	5.20	4.40	
					4.80			

1420
4.73

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177° – 192

45.8	45.8	45.3	45.6	50.2
22.0	21.9	22.7	22.2	26.2
41.3	40.7	41.8	41.3	45.8
34.0	34.2	34.8	34.3	41.2
1431	1426	1446		
3578	3565	36.15		

50.1	50.2	50.2	4.6
26.7	26.1	25.8	4.0
45.6	46.1	45.8	4.5
40.7	41.6	41.4	6.9
1631	1640	1632	
4078	41.00	40.80	
3178	3565	36.15	
500	53.5	4.65	
		1500	
		500	

217° – 232° Wavelength (battery off)

30.8	30.9	30.0
6.8	8.0	8.2
29.2	28.2	28.6
23.4	23.6	22.8
902	907	
2255	2268	

34.6	34.8	35.8	
11.6	11.8	10.8	
32.3	33.3	33.1	
27.6	28.5	28.6	
1061	1084	1073	
2652	2710	2685	
2255	2268	2268	
397	442	7	

207° 242° (Repeated – battery on)

34.1	34.2	33.0	33.8	38.4
10.1	10.9	11.1	10.7	14.9
31.6	31.3	30.8	31.2	36.3
25.7	25.8	25.8	25.8	31.1
1015	1022	1004		
2538	2555	2514		

38.6	38.7	38.0	– 4.6
15.0	14.8	15.0	4.2
35.9	36.4	36.6	5.1
30.8	30.6	31.8	5.3
1203	1205	1214	
3008	3012	3035	
2538	2555	2517	
470	457	518	
		32.1	
		1445	
		482	

247° – 262°

28.8	29.3	28.7	28.9	31.2
4.6	5.7	6.1	5.5	7.6
29.3	30.2	30.3	29.9	37.3
22.8	22.7	23.0	22.8	29.8
855	860	881		
2138	2240	2202		

30.9	30.5	31.8	– 2.3	
7.6	7.7	7.6	2.7	
37.3	37.8	36.8	7.4	
29.8	29.9	29.6	7.0	
1006	1075	1058		
2640	2685	2645		
2138	2240	2202		
502	445	443		
		1430		
		477		

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192° – 207°

36.3	36.7	37.6	37.2	36.7
11.6	12.0	13.6	13.0	12.7
30.9	31.4	32.4	31.1	31.1
27.1	28.0	28.0	28.0	27.7
1059	1081		1093	
2648	2702		2733	

39.9	40.3	40.4	39.0	−3.2
18.2	18.2	17.7	18.1	5.8
38.8	38.7	38.7	38.1	7.7
31.9	31.8	32.3	31.7	4.2
	1290	1291	1269	
	3225	3228	3172	
	2648	2702	2733	
	577	526	439	

1542
514

232° – 247°

22.8	22.0	21.2	22.0	
59.6	58.9	57.5	58.7	
20.4	20.1	19.6	20.0	
15.1	14.9	13.7	14.6	
2979	2959	2920		
~~2948~~	~~2895~~	7300		
7448	7358			

25.9	25.8	26.2	25.8	2 −3.9
2.5	2.4	2.4	2.8	3.8
27.3	27.3	27.4	27.2	7.3
20.1	20.1	20.1	20.2	5.5
7561	7561	7560		
1850	1902	1900		
1648	1858	1340		
442	504	600		

1546
515

252° – 267°

32.8	32.8	32.2	32.6	
8.1	8.0	8.8	8.3	
37.3	37.1	38.2	37.6	
29.6	29.6	29.7	29.6	
1078	1075	1089		
2695	2688	2723		

37.1	37.4	37.4	36.5	−4.5
14.2	13.9	14.0	14.8	5.9
44.4	44.3	44.6	44.3	6.8
36.1	36.1	36.1	36.1	6.5
1317	1321	1314		
3292	3302	3288		
2648	2648	2723		
644	654	565		

1780
593

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267° – 282°

33.6	33.4	33.1	33.4	37.0	36.8	37.0	37.1	−3.6
11.6	10.7	10.8	11.0	15.9	15.8	16.1	15.8	4.9
40.7	40.4	40.7	40.6	47.6	47.4	47.4	47.2	6.8
32.0	32.1	32.1	32.1	36.9	36.8	36.8	37.0	4.8
1179	1166	1167		1370	1373		1371	
2948	2915	2917		3425	3425		3428	
				2548	2515		2917	
				477	510		511	
							1498	
							499	

297° – 320°

31.1	31.8	31.7	31.5	35.6	35.0	36.0	35.8	−4.1
10.1	11.0	11.6	10.9	17.9	18.1	17.8	17.8	7.0
40.9	40.9	41.0	40.9	47.1	47.1	47.0	47.3	6.2
27.3	28.8	29.4	28.5	34.9	34.8	35.2	34.7	6.4
1094	1125	1137			1350	1360	1356	
2735	2812	2842			3375	3400	3390	
					2735	2812	2842	
					640	588	548	
							1776	
							592	

327° – 342°

36.3	36.0	35.2	35.8	36.0	36.0	36.0	36.0	−1.2
20.1	20.0	20.2	20.1	25.9	25.6	25.8	26.2	5.8
47.3	47.6	48.0	47.6	53.3	52.8	53.5	53.6	5.7
33.1	33.0	32.8	33.0	35.2	34.7	35.3	35.7	2.2
1368	1366	1362			1491	1506	1515	
3420	3415	3405			3728	3765	3784	
					3420	3415	3405	
					308	350	382	
							1046	
							347	

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282° – 297°

~~33.4~~	32.8	32.6	32.8	32.7	37.6	37.4	37.0	−4.6
~~10.8~~	10.2	10.4	11.2	10.6	17.1	17.2	17.0	6.5
~~40.7~~	42.6	42.1	42.8	42.5	47.8	47.9	46.9	5.0
~~32.1~~	31.8	32.0	32.1	32.0	35.2	35.2	34.9	3.1
	1174	1171	1189		1377	1377	1358	
	2935	2928	2973		3442	3445	3395	
					2535	2928	2973	
					5.07	5.17	4.22	

1446
4.82

312° – 327°

31.1	32.0	32.1	31.7	36.0	36.6	35.8	35.7	−4.3
12.8	14.1	13.0	13.3	20.8	21.4	20.9	20.2	7.5
43.0	43.1	42.7	42.9	48.7	49.2	49.0	47.8	5.8
30.1	30.9	31.0	30.7	33.7	33.3	33.7	34.0	3.0
1170	1201	1188			1405	1394	1377	
2925	3002	2970			3512	3485	3442	
					2925	3002	2970	
					587	483	472	

1542
5.14

342° – 357°

31.0	30.4	30.9	30.8	35.8	35.0	36.2	36.2	−5.0
20.4	19.9	19.9	20.1	24.6	24.0	24.8	25.0	4.5
47.6	47.6	46.8	47.3	52.0	51.9	52.2	52.0	4.7
29.8	29.4	29.9	29.7	32.2	32.2	32.3	32.2	2.5
1288	1273	1275			1431	1455	1454	
3220	3182	3187			3578	3638	3635	
					3220	3182	3187	
					358	456	448	

1262
4.21

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18

35°–22°

27.1	27.6	27.0	27.2	29.7	30.7	29.4	29.1	−2.5
15.9	15.8	15.5	15.7	22.1	22.9	22.3	21.2	6.4
42.6	42.3	42.8	42.6	45.5	46.2	45.1	45.1	2.9
23.8	23.0	23.7	23.5	25.9	26.1	26.1	25.6	2.4
1084	1087	1090		259	1235	1210		
27.25	27.18	27.25		3148	3075	3025		
				2935	2718	2725		
				413	357	300		
						1070		
						357		

27°–42°

27.1	26.6	27.6	27.1	33.4	33.1	33.5	32.7	−6.3
17.1	16.6	17.6	17.1	21.9	22.1	22.1	21.5	4.8
39.2	38.8	39.1	39.0	44.2	44.0	44.7	44.0	5.2
22.1	21.4	21.6	21.7	26.1	25.6	26.8	25.9	4.4
1055	1034	1059		1248	1271	1241		
2638	2585	2648		3120	3178	3102		
				2638	2585	2648		
				482	593	454		
						1529		
						510		

42°–72°

20.4	21.1	20.4	20.6	25.5	25.6	25.9	25.0	−4.9
4.6	5.7	5.6	5.3	11.9	12.2	12.0	11.6	6.6
26.6	26.3	26.8	26.6	29.8	30.6	29.7	29.2	3.2
10.2	9.8	10.2	10.1	12.0	12.2	11.7	12.0	1.9
618	625	630		806	793	778		
1545	1572	1575		2015	1985	1945		
				1545	1572	1575		
				470	413	370		
						1253		
						418		

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12° – 27°

31.6	30.9	30.6	31.0	35.6	35.8	35.7	35.2	4.6		
22.1	21.9	22.8	22.3	25.3	25.6	25.0	25.3	3.0		
46.0	46.0	46.1	46.0	48.0	47.6	48.2	48.1	2.0		
26.6	26.6	26.7	26.6	30.3	30.1	30.6	30.3	3.7		
1263	1254	1262			1391	1395	1389			
3158	3135	3155			3478	3488	3442			
					3158	3135	3155			
					320	353	317			

990
330

42° – 57°

29.6	30.2	29.7	29.8	37.5	38.0	37.4	37.2	7.7		
18.7	19.0	18.4	18.7	22.5	22.1	22.8	22.6	3.8		
40.8	40.8	41.0	40.9	44.0	44.7	44.0	43.3	3.1		
22.1	22.3	22.8	22.4	26.9	27.2	27.2	26.2	4.5		
1112	1123	1119			1326	1314	1293			
2780	2808	2797			3340	3285	3233			
					2780	2808	2797			
					560	477	436			

1433
478

72° – 87°

34.1	34.0	33.7	33.9	38.2	38.5	38.0	38.1	4.3		
21.2	20.6	20.0	20.6	23.7	23.8	23.9	23.4	3.1		
37.0	37.2	36.8	37.0	40.3	40.1	40.6	40.4	3.3		
19.6	20.0	19.2	19.6	24.9	24.8	25.0	24.8	5.3		
1119	1118	1097			1272	1275	1267			
2798	2795	2742			3180	3188	3167			
					2798	2795	2742			
					382	353	425			

1200
400

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1884phae.proj.1766R

20

87° – 102°

27.7	28.2	27.1	27.7	32.7	32.8	32.2	33.0	-.5
13.1	13.3	12.7	13.0	16.3	16.5	16.2	16.1	3.3
29.7	29.8	29.2	29.6	31.8	31.8	32.1	31.6	2.2
13.8	14.0	13.3	13.7	17.1	17.0	16.4	17.0	3.4
843	853	823			981	985	997	
2108	2135	2054			2452	2448	2442	
					21.08	21.35	20.58	
					3.44	3.03	3.84	

87

27.6	28.0	26.9	27.5	32.5	32.6	32.6	32.3	3.8 -.5
13.2	13.1	12.7	13.0	15.8	15.7	16.0	15.7	2.8
29.0	29.4	28.2	28.9	32.1	32.4	31.6	32.3	3.2
13.2	13.2	13.7	13.4	16.9	17.1	16.8	16.8	3.5
830	837	815			978	980	977	
2075	2095	2038			2445	2425	2428	
					20.75	20.95	20.38	
					3.70	3.30	3.90	

For sun = 51.1°

3.44
3.03
3.84
3.70
3.30
3.50
321
353
384
137

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		Z	
3 ~~68~~		-92	-92 -106 -106
~~4.85~~		-45	-137 -55 -161
5.01		+40	-97 +20 -141
4.72		+12	-85 -30 -171
3.93		-67	-152 +0 -171
4.73	4370	+12	-140 +184 +13
5.00		+40	-100 +85 +98
5.14		+54	-46 +96 +154
4.82		+21	-25 +144 +338
4.63 5.15		+15	+30 +185 +523
4.79		+17	+47
5.53	5.131	+132	+179
4.99		+39	+218
4.82		+22	+240
5.92		+131	+371
5.14		+57	+425
3.47		+113	+312
4.21	4.756	-40	+272
3.57		-103	+169
3.30		-130	+39
5.10		+49	+78
4.78		+18	+96
4.18		+60	+31
4.00	4.155		
4.603			

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Nov. 28 1884

15°

87°

44.3	46.2 45.2	37.2	36.8 37.0	55.0	54.8 54.9	42.5	42.1 42.3
26.8	29.0 27.9	16.6	16.6 16.6	35.0	35.1 35.3	25.9	26.0 26.0
35.8	36.1 36.0	28.0	28.0 28.0	42.1	42.6 42.3	32.7	32.3 32.5
22.8	23.5 22.9	24.7	15.0 14.8	30.8	30.8 30.8	20.7	20.6 20.6
139.7	144.3	96.5	96.4	162.9	163.9	121.8	121.0
34.93	36.08	24.13	24.10	40.73	40.98	30.45	30.25
				34.93	36.08	24.13	24.10
				6.80	4.90	6.32	6.15
				4.50			
				6.32			
				6.15			
				24.17	604		

Mean

(1)

E.	-9.7	-5.3	-7.5
T.	7.4	9.4	8.4
G.	6.3	4.5	5.4
H.	7.9	5.8	6.8

~~102~~

102°

32.8	34.2 33.5		39.4	39.8	39.0	-5.9
12.6	13.4 16.0		18.7	18.2	18.2	2.2
21.2	21.4 21.3		27.0	27.2	26.9	5.7
8.4	9.7 9.0		17.0	17.1	17.0	8.0
75.0	78.7			102.3	101.1	
18.75	19.68			25.58	25.28	
				18.75	19.68	
				6.83	5.60	
				5.60		
				12.43		
				6.21		

(2)

117°

27.4	28.9 28.2		35.4	35.8	35.0	-7.2
5.1	5.9 5.5		15.2	15.1	15.2	-9.7
16.7	15.7 16.2		23.1	23.6	22.6	-6.9
5.2	6.1 5.6		14.4	14.7	14.1	-8.8
54.4	56.6			89.2	86.9	
13.60	14.15			22.30	21.73	
				13.60	14.15	
				8.70	7.58	
				7.58		
				16.28		
				8.14		

(3)

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132°

28.9 7.6 14.7 6.6 = 57.8 → 14.45

~~30.0~~ ~~9.2~~ ~~16.4~~ ~~8.0~~ = ~~63.8~~ → 15.95

28.7 9.3 15.6 7.0 = 60.6 → 15.15 | 28.8 8.4 15.2 6.8

35.1 13.0 21.4 14.9 = 84.2 → 21.05 → 14.45 → 6.60

35.2 12.9 21.3 14.8 = 84.2 → 21.15 → 15.15 → 6.00

35.0 13.2 21.4 15.0 = 84.6 → 21.15 → 15.15 → 6.00 | −7.2 4.6 6.2 8.1

630

(4)

147°

47.3 25.0 33.2 27.2 = 132.7 → 33.18

48.2 26.0 34.2 28.2 = 136.6 → 34.15

47.1 26.2 33.8 28.0 = 135.1 → 33.78 | 47.5 25.7 33.7 27.8

53.3 28.6 36.8 34.2 = 153.9 → 38.48 → 33.18 → ~~2.80~~ → 5.30 → 4.15 → 5.45 → 4.82

53.2 28.7 36.2 33.7 = 151.8 → 37.83 → 34.15 → ~~4.18~~ → 3.68 → 5.01 → 1.83 → 4.04

52.8 28.0 36.8 34.1 = 151.7 → 37.93 → 37.78 → 4.15 | −5.8 2.9 3.1 6.4

(5)

112°

68.8 43.0 51.6 48.8 = 212.0 → 53.00

69.0 43.8 51.4 48.9 = 213.1 → 43.28 | 68.9 43.4 51.5 48.8

75.3 48.2 58.1 55.8 = 236.9 → 59.23 → 57.00 → 6.23

75.0 47.6 58.2 56.1 = 236.9 → 59.23 → 42.28 → 6.20

75.6 48.7 58.0 57.6 = 237.9 → 59.48 → 42.28 → 6.20 | −6.4 4.8 6.6 7.0

6.21

(6)

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1884phae.proj.1766R

177°

(7)

39.0 39.8 39.4
17.7 13.0 12.8
22.5 23.9 23.2
19.0 20.1 19.6
~~93.2~~ 96,8
~~24.80~~ 24.20
~~22.80~~
23.30

45.1 45.6 44.6 -5.7
18.2 17.7 18.6 5.4
28.2 28.3 28.2 5.0
28.6 29.0 28.3 9.0
120.6 119.7
30.15 29.93
~~24.30~~ 24.20
~~7.35~~ 5.73
6.85
5.73
1258
625

192°

(8)

46.4 48.6 48.1 47.5 47.7 52.2 51.2 50.8 51.6 50.0 -3.5
20.7 20.8 20.9 20.9 20.8 27.2 25.9 25.1 25.8 25.5 5.1
31.2 30.8 31.2 31.9 31.3 39.0 38.4 38.2 38.2 38.1 7.1
30.0 31.8 30.9 30.8 30.9 38.4 36.5 36.2 36.4 35.1 5.6
128.3 132.0 131.1 131.1 156.8 150.3 152.0 148.7
32.08 33.0 32.78 32.78 39.20 37.58 38.00 37.18
3208 33.00 32.78 32.78
7.12 4.58 5.22 4.40
7458
522
440
2132
533

207°

(9)

56.4 57.1 56.8
33.2 32.8 33.0
44.9 43.8 44.4
42.0 41.3 41.6
176.5 175.0
44.13 43.75

64.2 64.8 63.5 -.7
37.4 37.5 37.2 4.4
50.4 50.0 50.7 6.0
49.1 48.8 49.5 7.5
201.1 200.9
50.28 50.22
44.13 43.75
6.15 6.48
48
63
6.31

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1884phae.proj.1766R

222°

(10)

47.8 48.2 48.0
21.3 22.7 22.0
34.8 34.8 34.8
33.4 32.3 32.8
137.3 138.0
34.32 34.50

52.4 52.2 52.5 -4.4
27.4 27.3 27.4 5.4
42.3 42.8 41.8 7.5
39.0 38.8 39.1 6.2
161.1 160.8
40.28 40.20
34.34 34.50
5.94 5.70

582.

237°

(11)

26.7 30.1 30.5 29.9 30.2 34.4 33.3 33.9 -3.1 33.3 33.0
0.9 4.2 4.9 5.0 4.7 7.2 6.2 6.0 1.5 7.0 5.6
17.2 19.9 19.9 20.0 19.9 26.6 26.8 26.9 7.2 27.0 26.4
14.2 15.8 15.8 15.8 15.8 24.2 22.9 24.0 7.1 22.8 22.0
59.0 70.0 71.1 70.7 92.4 90.8 90.1 87.0
14.75 17.50 17.78 17.68 23.10 22.70 22.53 21.75
14.75 17.50 17.78 17.68 22.70 17.50 17.78 17.68
5.20 4.75 4.07
4.75 4.07
1402
467

252°

(12)

33.0 33.4 33.2 37.7 37.7 37.7 -4.5
5.6 6.2 5.9 13.1 12.8 13.4 7.2
26.0 25.9 26.0 33.0 32.8 33.1 7.0
22.1 22.1 22.1 29.6 29.0 30.1 7.5
86.7 87.6 112.3 114.3
21.68 21.90 28.08 28.58
21.68 21.90
6.40 6.68

6.54

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1884phae.proj.1766R

267°

(13)

27.6	29.9	29.9	29.2	35.1	33.8	34.0	34.2
3.2	4.1	5.1	5.4	8.8	8.5	8.7	9.1
22.6	25.2	24.6	25.0	32.8	32.6	32.3	32.6
18.7	20.4	20.9	20.9	26.1	26.1	25.6	25.6
73.1	79.6	80.5	80.5	102.8	101.0	100.6	101.5
18.28	19.90	20.13	20.13	25.70	25.25	25.15	25.38
				18.28	19.90	20.13	20.13
				7.42	5.35	5.02	5.25

29.0 − 4.5 = 24.4 ; 34.3 − 8.8 = 32.6 ; 32.6 − 25.6 = 7.0

−5.3 ; 4.3 ; 8.2 ; 4.9

7.42
5.02
5.25
2304
5476

282°

(14)

21.1	33.7	32.8	33.2	38.2	37.9	38.6	38.4
6.0	8.2	8.2	9.3	14.7	13.6	14.3	15.0
29.9	31.8	31.8	31.2	37.0	36.3	37.2	36.2
22.2	25.0	24.2	24.8	28.3	27.8	28.7	28.2
79.2	98.7	97.0	98.5	118.2	115.6	118.8	117.8
22.30	24.68	24.25	24.63	29.55	28.90	29.70	29.45
				22.30	24.68	24.25	24.63
				7.25	4.22	5.45	4.82

33.2 − 8.6 = 24.6 ; 38.2 − 14.7 = 23.5 ; 37.0 − 31.6 = 5.4 ; 28.3 − 24.7 = 3.6

38.3 − 14.3 = 24.0 ; 37.9 − 13.6 = 24.3 ; 36.6 − 26.3 = 10.3 ; 28.2 − 27.8 = 0.4

−5.1 ; 5.7 ; 5.0 ; 3.5

5.45
4.82
1449
4.83

297°

(15)

28.6	28.4	28.5	32.2	32.2	32.2	−3.7
5.8	5.8	5.8	10.7	10.9	10.5	4.9
25.2	26.1	25.6	32.2	32.7	31.8	6.6
17.7	18.0	17.8	23.2	23.1	23.2	5.4
77.3	78.3			98.9	97.7	
19.33	19.58			24.73	24.43	
				19.33	19.58	
				5.40	4.85	
					5.40	
					1025	
					5.12	

∴ 4.5

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1884phae.proj.1766R

312°

(16)

31.7	32.0	31.8
10.9	12.0	11.4
31.6	31.9	31.8
23.8	24.0	23.9
98.0	99.9	
24.50	24.98	

36.2	35.7	26.8	−4.4
17.2	17.1	17.4	5.8
36.6	26.4	36.9	4.8
26.4	26.0	26.8	2.5
	115.2	117.9	
	28.80	29.48	
	24.50	24.98	
	4.30	4.50	

4.35

327°

(17)

24	23.2	23.5
6.6	6.3	6.4
24.6	24.2	24.2
13.0	13.7	13.8
68.4		68.4
1685		1710

23.8	23.7	24.0	−0.3
10.3	10.1	10.6	3.9
30.3	30.6	30.1	6.1
16.2	16.6	15.9	2.4
810		806	
2025		2015	
1685		1710	
340		305	

3.23

042

22.2	22.8	22.5
9.6	10.4	10.0
28.7	28.7	28.7
14.1	14.4	14.2
846	863	
1865	1908	

30.2	29.5	30.5	−1.7
16.4	16.3	16.6	6.4
34.6	34.7	34.5	5.9
19.0	18.9	19.1	4.8
	958	1007	
	2495	2518	
	1535	1908	
	630	610	

6.20

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1884phae.proj.1766R

357

37.2 ~~39.8~~ 38.0
24.1 24.7 24.4
42.1 42.9 42.5
26.8 26.8 26.8
130 2 133 2
3250 ~~3330~~
3330

44.1 ~~44.8~~
32.9 33.1
47.8 ~~47.8~~
32.7 32.6
156
3940
3250
690

44.1 -6.1
32.7 8.5
47.9 5.3
32.8 5.9
1575
3938
3330
608

649

12

~~67.0~~ 11.3 11.4 11.6 11.4
~~11.4~~ 0.8 0.8 0.1
~~11.1~~ 16.2 15.3 16.2 15.9
~~56.2~~ 0.0 0.2 0.3 0.2
2833 277 289
~~4820~~ 692 722
~~65~~

19.0 18.9
45 4.0
19.0 18.6
64 7.0
485
12.12
8.33
305

19.2 19.0 7.6
5.4 4.1 4.4
18.7 19.7 3.1
6.0 6.2 6.2
493 490
1232 1225
~~6932~~ ~~6922~~
540 503
503
355
1474

27

48.6 49.9 49.2
37.1 37.7 37.4
52.2 52.2 52.2
36.8 36.6 36.7
1747 1764
4368 4410

57.4 57.0
42.6 43.0
56.6 56.9
44.8 44.2
2021
5252
4368
684

57.7 -8.2
42.1 5.2
56.3 4.4
44.4 8.1
2005
5212
4410
602

643

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71.4 72.8
57.6 58.2
71.6 72.7
58.9 58.6

19.8 18.4
5.0 4.9
18.1 18.7
4.3 4.0

OK

42

33.9 36.2 35.6 36.2 36.1 46.9 -10.1 46.2 46.1
20.4 22.5 22.2 21.8 22.0 28.7 29.0 6.7 28.7 28.4
34.7 35.2 34.8 35.2 35.1 40.7 5.8 40.9 41.2
20.9 22.0 21.0 20.3 21.1 28.6 24.0 7.5 24.8 24.8

1159 1136 1135 1436 1446 1445
2895 2840 2838 3590 3615 3612
2855 2440 2433
695 625 633
70 8.2

OK

57

74.8 18.2 78.8
44.0 1.2 50.2
57.2 10.0 3.2
47.2 56.2 50.2
2656 2424
6060

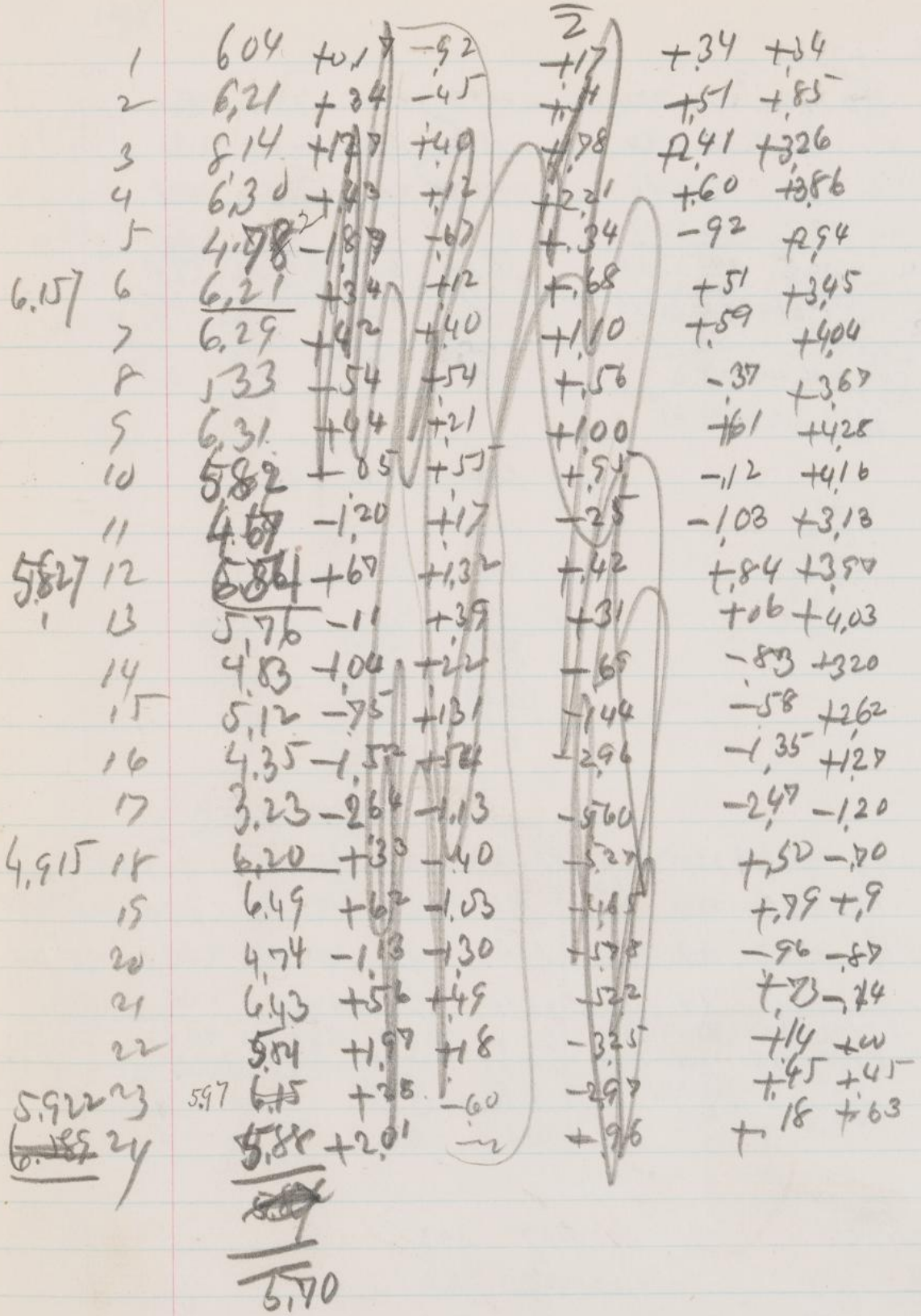
17.6 17.0 18.2 -8.8
0.6 0.0 1.2 10.4
10.0 9.9 10.0 6.8
56.2 56.2 56.2 6.0
2631 2656
6575 6640
6060 6060
615 580
615
119
97

1884phae.proj.1766R

33.8	33.7	33.8	41.3		-7.5
16.1	16.9	16.5	23.5		7.0
24.9	24.7	24.8	32.2		7.4
11.8	12.2	12.0	21.6		+0.4
					-9.6
866	876		1186		
~~2415~~	8		2765		
2165	2180		2177		
			~~788~~		
			588		

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	1	6.04	+0.17	−.92	+.17	+.34	+.34	
	2	6.21	+.34	−.45	+.34	+.51	+.85	
	3	8.14	+1.27	+.49	+.98	+2.41	+3.26	
	4	6.30	+.43	+.12	+2.21	+.60	+3.86	
	5	4.78	−1.89	−.60	+.34	−.92	+2.94	
6.157	6	6.21	+.34	+.12	+.68	+.51	+3.45	
	7	6.29	+.42	+.40	+1.10	+.59	+4.04	
	8	5.33	−.54	+.54	+.56	−.37	+3.67	
	9	6.31	+.44	+.21	+1.00	+.61	+4.28	
	10	5.82	−.05	+.53	+.53	−.12	+4.16	
	11	4.69	−1.20	+.17	−.25	−1.03	+3.13	
5.827	12	6.84	+.67	+1.32	+.42	+.84	+3.97	
	13	5.76	−.11	+.39	+.31	+.06	+4.03	
	14	4.83	−1.04	+.22	−.65	−.83	+3.20	
	15	5.12	−.75	+1.31	−.144	−.58	+2.62	
	16	4.35	−1.52	+.24	−2.96	−1.35	+1.27	
	17	3.23	−2.64	−1.13	−5.60	−2.47	−1.20	
4.915	18	6.20	+.33	−.40	−5.27	+.50	−.70	
	19	6.49	+.62	−1.03	−4.65	+.79	+.9	
	20	4.74	−1.13	−.30	−5.78	−.96	−.87	
	21	6.43	+.56	+.49	−5.22	+.73	−.14	
	22	5.84	+.97	+.18	−3.25	+.14	+.00	
5.922	23	5.97 6.15	+.25	−.60	−2.97	+.45	+.45	
6.185	24	5.88	+2.01	−.2	−.96	+.18	+.63	

5.70

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1884phae.proj.1766R

32 Dec 24

MHz = 40.2 87°

(1)

23.6 24.0 23.4 23.7 32.0 32.3 32.0 32.0 32.3 32.0
1.2 3.3 3.6 2.4 2.6 8.9 9.2 8.6 9.0 6.37
6.0 7.6 7.0 6.6 6.8 13.9 14.0 14.0 13.8 7.1
59.7 59.7 0.2 0.2 0.1 6.5 6.7 6.7 6.1 6.4
9052 8.65 3.45 3.31 6.7 6.19 6.16 6.09
8262 8.62 8.28 15.48 15.40 15.22
19.62 6.85 6.80 8.65 8.25
6.85 5.46 end sec 40 6.78 6.94
1231
6.16 final mean 87°

6.83
6.78
6.94
25.5
6.85

102°

(2)

27.7 28.8 28.2 35.1 35.0 35.2 6.9
4.9 6.7 5.8 11.1 10.4 11.8 5.3
10.2 10.3 10.2 16.4 16.8 16.1 6.2
3.2 3.1 3.2 12.0 12.0 12.1 6.8
460 487 742 742 752
1150 1218 1855 1855 1880
1150 1150 1218
705 705 6.62
662
1367
683

117

(3)

24.7 25.6 24.8 24.9 25.0 25.0 25.0 32.0 32.0 31.6 30.7 31.7 30.1
2.7 1.48 1.3 2.3 2.4 1.0 7.8 1.9 3.14 8.1 9.1 9.3 9.0 9.3 8.7
7.8 8.7 8.6 8.9 8.3 7.8 8.4 89 13.3 13.2 13.7 13.1 13.5 12.2
1.2 1.6 0.4 1.2 1.4 2.0 1.3 13.8 8.4 8.7 9.1 8.2 8.2 8.1
364 377 351 373 371 358 6.18 6.30 6.37 6.10 6.27 5.91
9.10 9.42 8.78 9.32 9.28 8.95 15.47 15.75 15.92 15.25 15.68 14.78
9.10 9.42 8.78 9.32 9.28 8.95
6.37 6.33 7.14 5.93 6.40 6.83

637
633
714
593
640
683
3900
650

(4)

132

33.5 34.7 34.1 40.0 40.7 39.3 -5.9
12.2 12.8 12.5 16.0 15.9 16.2 3.5
14.9 15.2 15.0 21.2 21.5 20.8 6.2
10.1 9.9 10.0 19.4 19.7 19.0 9.4
676 725 978 953
1690 1812 2445 2382
1768 1690 1812
677 570 1247 623
6.77 5.70

707
17.68

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147

Mean
-81 (5)
5.7
5.4 683
-6.0 667
150
675

	32.8	38.1	55.0	30	3.4	27	-8.0
	31.8	32.4	32.1	37.1	37.2	37.0	5.0
	37.1	36.6	36.8	41.4	41.6	41.3	4.6
	34.0	33.4	33.7	43.0	42.8	43.2	9.3
	1577	1595			1850	1842	
	3942	3938			4625	4605	
					3942	3938	
					6.83	6.67	

162°

-6.4
7.0 (6)
5.4
7.1 763
6.95
1458
729

	53.2	54.4	53.8	61.6	61.3	61.9	-7.8
	27.7	27.1	26.9	32.7	32.2	33.2	5.8
	31.9	32.3	32.1	40.0	40.2	39.9	7.9
	33.1	34.2	33.6	41.2	41.7	40.8	7.6
	1449	1480			1754	1758	
	3622	3700			4385	4395	
					3622	3700	
					9.63	6.95	

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1884phae.proj.1766R

177°

	35.6	36.7	26.2	41.8	41.9	41.8	-5.6
(7)	4.5-	7.8	7.6	13.9	13.8	14.0	6.3
668	15.0	15.9	15.4	20.2	20.0	20.3	4.8
605	15.2	15.6	15.4	24.2	24.3	24.1	8.8
73	733	760		1000	1002		
636	18.32	19 00		2500	25.05-		
				1832	1900		
				6.68	6.05		

192°

	43.2	43.8	43.5	49.2	48.7	49.6	-5.7
(8)	14.6	15.1	14.8	21.6	21.4	218	6.8
695	22.0	23.0	22.5	30.9	30.6	312	8.4
733	25.8	25.1	25.4	33.2	32.7	33.7	7.8
1428	1056	1070		1334	1363		
714	2640	2675-		3335-	3408		
				2640	2725-		
				6.95	7.33		

207°

	44.4	44.6	44.5	51.6	51.7	57.6	-7.1
	17.5	17.9	17.7	21.6	21.8	21.3	3.9
	26.9	26.2	26.6	32.0	32.1	320	5.4
(9)	280	280	280	35.1	34.8	35.4	7.1
590	1168	1167		1404	1403		
590	2920	2918		3510	3508		
				2920	2918		
590				590	590		

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1884phae.proj.1766R

222°

	43.6	43.8	43.7	48.0 47.9	48.2	−4.3
	15.8	16.1	16.0	20.2 20.1	20.3	4.2
(10)	24.7	25.0	24.8	33.0 33.1	33.0	8.2
584	27.4	27.7	27.6	33.4 33.0	33.8	5.8
567	1115	1126		1341	1353	
566	27.88	2815		3352	3382	
				2788	2815	
				5.64	5.67	

237°

	28.5	28.8	28.8	32.4 32.8	32.0	−3.6
	1.8	1.6	1.7	3.0 3.2 6.2 8	3.2	1.3
	12.8	13.2	13.0	20.6	20.2	7.6
(11)	14.1	12.2	13.2	20.8 20.9	20.7	7.6
497	1575	1158		20.9	1361	
507	14.38	28.95		1374	3402	
1004	29.38			3435	2895	
502				2928	5.07	
				4.97		

252°

	36.0	35.9	36.0	40.7 41.2	40.2	−4.7
	7.0	6.8	6.9	13.0 13.1	12.9	6.1
(12)	23.8	24.3	24.0	31.3 31.6	31.0	7.3
660	23.9	23.6	23.8	31.0 31.2	30.7	7.2
605	1507	1506		1771	1748	
61	3768	3765		4428	4	
6.32				3768	2870	
				6.60	4370	
					3765	
					6.05	

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1884phae.proj.1766R

267°

	43.6	43.4	43.5		47.7	47.4	48.0	-4.2
	15.8	16.4	16.1		21.9	21.7	22.1	5.8
(13)	23.1	332 340	33.2		41.6	41.3	42.0	8.4
555	33.6	32.40	32.8		38.1	38.0	38.2	5.3
633	1261	1264				1484	1503	
1191	3152	3160				3710	3758	
59.6		1250				3152	3125	
		31.25				5.58	6.33	

282

	19.0	16.6	18.8		23.5	24.1	23.9	23.1	-4.7
	52.1	52.8	52.4		58.6	58	59.0	58.3	6.2
(14)	12.0	12.7	12.3		16.7	16.7	16.8	16.6	4.4
320	8.8	8.4	8.6		12.6	14.8	13.0	12.1	4.0
440	919	921				1264	1127	1101	
96	2298	2312				3910	2818	2752	
4.80						2298	2298	2312	
						7.12	5.20	4.40	

297

	33.7	35.7	34.4	34.7	34.4	39.9	38.7	39.1	38.7	40.8	38.4	-4.3
	8.2	10.1	10.5	10.2	10.0	15.3	16.3	15.7	16.9	17.0	16.2	6.3
(15)	27.0	28.4	26.3	27.8	27.9	35.3	34.0	34.1	34.1	33.3	33.7	6.1
557	220	230	22.1	22.1	22.3	30.7	29.0	29.6	29.4	30.9	28.1	6.7
596	909	962	953	948		1212	1185	1191		1164		
5.40	22.72	2401	2382	2370		3030	2962	2978		2910		
193						2272	2401	2382		2370		
5.64						7.58	5.57	5.96		5.40		

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1884phae.proj.1766R

312°

(16)

497
540
1037
518

23.6 29.4 29.8 29.6
0.5 5.5 6.2 5.8
13.8 24.2 24.3 24.2
17.9 17.9 17.9
13.3 17.0 17.8 2
12.82 19.25 19.55

331 41 32.8 33.4 3[illegible] -3.5
14.0 13.[illegible] 13.8 14.2 16.3 8.2
28.[illegible] 29.6 28.3 29.0 [illegible] 4.4
22.6 [illegible] 22.0 23.2 [illegible] 4.7
10.[illegible] 9.69 9.48 10.[illegible]
2.[illegible] 24.22 24.95
[illegible] 19.25 19.55
[illegible] 4.97 5.40

(17) 327°

482
337
822
411

[illegible] 52.1 52.9 52.5
32.9 33.7 33.3
47.8 48.5 48.2
40.7 40.4 40.6
173.5 175.5
43.38 43.88

53.2 53.8 52.7 -0.7
39.4 39.7 39.2 6.1
54.2 54.3 54.1 6.0
43.5 44.0 43.0 2.9
1928 1890
4820 4725
4338 4387
4.82 337

342°

(18)

566
510
76
538

[illegible] 35.0 35.3 35.2
19.1 20.2 19.6
35.0 35.4 35.2
25.0 24.4 24.7
1141 1153
2852 2882

410 41.2 40.9 -5.8
25.8 26.3 25.2 6.2
40.0 39.9 40.1 4.8
29.4 29.3 29.5 4.7
1367 1357
3418 3392
2852 2882
566 510

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1884phae.proj.1766R

357°

(19)

34.2	34.9	34.6		40.0	40.4	39.7	-5.4
20.0	19.4	19.7		26.3	25.9	26.7	6.6
33.8	34.2	34.0		38.4	38.5	38.3	4.4
22.4	23.6	23.0		27.7	27.6	27.8	4.7
1104	1121				1324	1325	
27.60	28.02				3310	3312	
					2760	2802	
					5.50	5.10	

5.50
5.10
5.30

372°

(20)

29.0	34.0	33.7	33.8	41.0	41.1	40.8	-7.2
15.1	21.4	21.3	21.4	24.6	24.6	24.7	3.2
27.3	32.8	32.9	32.8	35.6	35.9	35.2	2.8
15.8	21.8	21.2	21.5	27.2	27.4	32.0	5.7
872	1100	1091			1290	1277	
21.80	27.50	27.28			3225	3192	
					2750	2728	
					475	464	

4.75
4.64
139
4.69

(21)

387°

27.6	32.5	32.1	32.3	39.8	39.6	40.0	-7.5
11.3	16.5	16.6	16.6	23.3	23.2	23.4	6.7
22.2	27.8	27.7	27.8	33.6	33.8	33.5	5.8
13.2	19.8	18.2	19.0	24.8	25.0	24.3	5.8
743	966	946			1216	1212	
18.58	24.15	23.65			3040	3030	
					2415	2365	
					625	665	

6.25
6.65
90
6.45

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42°

	39.2	39.0	39.1	46.9	46.8	47.0	−7.8	
	23.1	24.2°	23.6	27.9	28.0	27.8	4.3	
(22)	33.9	33.0	33.4	37.4	37.3	37.4	4.0	
575	24.0	23.0	23.5	28.6	28.7	28.6	5.1	
548	1202	1190			1408	1408		
63	30.05	29.75			3520	3520		
5.32					3005	29.75		
					5.15	5.48		

57°

(23)	64.5	46 / 45.7	44	44	45.9	46.2	45.4	52.0	51.6	57.7	52.3	52.3	6.6
617	43.8	45.3	45.9	46.2	45.4	52.0	51.6	57.7	52.3	52.3	6.6		
483	54.7	55.3	55.8	54.9	55.2	58.9	57.7	58.7	56.8	58.4	3.7		
528	46.1	45.8	45.6	45.0	45.6	49.3	50.1	49.2	49.2	48.7	3.7		
525	2091	2114	2117	2302		2838		2307	2328	2312			
2153	52.28	5285	5292	5505		5845		5768	5820	5780			
538				5255		5228		5285	5292	5255			
						6.17		483	5.28	5.25			

72°

	41.3	41.3	41.3	48.1	48.6	47.6	−6.8	
(24)	22.3	22.4	22.4	27.4	27.0	27.8	5.0	
620	28.2	29.0	28.6	33.6	33.6	33.7	5.0	
608	19.0	18.1	18.6	26.2	26.4	26.0	7.6	
(24) 20	1108	1108			1356	1351		
6.14	27.70	27.70			3390	3378		
					2770	2770		
					6.20	6.08		

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Mt Th = 43.9

87° end of series

49.7	45.3	45.0	45.1	46.0	45.4	52.9	52.8	53.6	52.8 -8.6
21.2	26.6	26.3	27.0	27.3	26.8	30.6	30.8	31.2	31.2 7.2
(1) 26.8	31.8	31.4	31.9	32.1	31.8	37.0	36.4	37.1	36.2 4.9
19.2	24.0	23.2	23.0	23.1	23.3	30.0	30.0	28.9	28.8 6.1
107.9	127.7	125.9	127.0	128.5		150.5	150.0	150.8	149.0
26.98	31.92	31.48	31.75	32.12		37.62	37.50	37.70	37.25
						37.62	31.48	31.75	32.12
						31.92	6.02	5.95	5.13
						10.64			
						5.70			

5.30
5.12
4.97
38.19
5.46

87° repeated

44.7	45.1	45.0	44.9	52.1	52.5	51.9	52.0	-7.2
(1) 26.8	26.6	27.2	26.8	30.5	30.1	30.6	30.8	3.7
31.8	31.2	31.2	31.4	35.5	35.7	35.6	35.2	4.1
22.8	22.9	23.0	22.8	28.4	29.0	28.0	28.2	5.6
126.1	125.6	126.3			147.3	146.1	146.2	
31.52	31.40	31.58			36.82	36.52	36.55	
					31.52	31.40	31.58	
					5.30	5.12	4.97	

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Dec 4 Sun

1	87°		6.85		~~5.46~~
2	102		6.83	+6	6
3	117		6.50	+12	12
4	132		6.23	+18	18
5	147		6.75		24
6	162	6.74	7.29	+24	30
7	177		6.36	+29	36
8	192		7.14	+30	42
9	207		5.90	+40	47
10	222		5.66	+46	53
11	237		5.02	+52	59
12	252	6.07	6.32	+57	65
13	267		5.96	+63	74
14	282		4.80	+69	80
15	297		5.64	+75	86
16	312		5.16	81	91
17	327		4.11	86	96
18	342	5.16	5.38	86	102
19	357		5.30	92	108
20	12		4.69	98	114
21	27		6.45	104	120
22	42		5.32	110	125
23	57		5.38	116	132
24	72	5.55	6.14	122	139
				128	

6.85		6.85	+.36	+.36
6.89		6.89	+.30	+.66
6.62		6.62	+.03	+.69
6.41		6.41	-.18	+.51
6.99		6.99	+.40	+.91
6.41	6.89	7.59	+1.00	+1.91
7.58		6.72	+.13	+2.04
6.70		7.50	+.97	+3.11
7.54		6.37	-.22	+2.89
6.56		6.19	-.40	+2.49
6.85		5.61	-.98	+1.50
5.54	6.57	6.57	+.38	+1.88
6.55		6.70	+.11	+1.99
6.65		5.60	-.98	+1.00
5.35		6.50	+.09	-.91
6.19		6.09	-.50	-1.41
		5.29	-1.32	-2.73
	6.13	6.40	-.19	-2.92
		6.38	-.21	-3.13
		5.83	-.76	-3.89
		7.65	+1.06	
		6.57	-.02	
		6.80	+.11	
	6.76	7.53	+.94	
		6.59		

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5 4
Dec. 4 1884 M. T. = 44.0

57°

	44.2	44.4	44.3	45.2	45.8	45.6	44.9 45.0	53.0	54.1	54.3	54.2	54.0	53.8	9.1
	28.2	27.6	35.9	28.4	29.0	29.8	29.0 28.7	34.9 35.3	35.1	35.9	34.9	35.6	35.2	6.6
(1)	34.2	34.8	42.0	35.1	35.9	35.7	35.1 35.1	40.3 41.6	41.8	42.0	41.8	42.0	41.9	6.5
723	24.7	24.3	32.8	25.7	25.7	25.8	25.1 25.2	32.0 32.3	32.3	32.8	31.8	32.1	32.7	7.1
804	1313	1311		1344	1364	1369	1341	1602	1633	1650	1627	1637	1636	
765	32.82	32.78		33.60	34.10	34.22	33.52	40.05	40.82	41.25	40.68	40.92	40.90	
658								32.82	32.78	33.60	34.10	34.22	33.52	
670								7.23	8.04	7.65	6.58	6.70	7.38	
738														
4358														
7.26														

6.70 final mean →

102°

													b 43 mean	
(2)	48.7	49.3	49.6	49.6	49.3	55.8	55.2	55.3	56.6	55.9	−6.5	−6.1	−6.3	
	28.7	29.1	30.1	29.0	29.1	35.1	35.0	34.3	36.2	35.0	6.0	4.7	5.4	
7.32						42.6	42.3	42.2						
5.95	35.2	36.9	36.1	36.3	36.1				43.8	42.1	6.5	5.8	6.2	
7.46	26.2	27.7	27.1	27.0	27.0	35.8	35.1	35.0	36.1	35.0				
6.52	1383	1430	1429	1419		1676	1668	1724	1680		8.382	−8.2		
2725	34.58	35.75	35.72	35.48		41.90	41.70	43.10	42.00					
681						34.58	35.75	35.72	35.28					
						7.32	5.95	7.46	6.52					

6.51 final mean

117°

(3)	25.7	24.7	25.2	33.0	33.2	32.8	−7.8
	4.0	3.3	3.6	12.0	12.2	11.7	8.4
7.43	13.8	12.7	13.2	18.8	19.2	18.4	5.6
774	4.2	4.0	4.1	12.8	12.8	12.8	8.7
117	47.7	44.7		77.4	77.4	75.7	
7.58	11.92	11.18		19.35	18.92		
				11.92	11.18		
				7.43	7.74		

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Dec 5 1884.

mean →

87° end of series.

(1)

6.40	46.2	46.1	45.6	46.0	54.0	54.2	53.8	54.0	-8.0	7.8	9.1	-8.3
6.30	27.2	27.6	27.7	27.5	32.1	31.9	32.2	32.2	4.6	5.7	6.6	-5.6
6.00	35.9	35.9	35.9	35.9	41.1	41.6	40.8	40.9	5.2	5.6	6.5	-5.8
5.72	25.8	25.8	26.6	26.1	32.8	33.0	32.8	32.7	6.7	6.8	7.1	-6.9
7.13	1351	1354	1358			1607	1596	1598				
6.60	33.78	33.60	33.95			4018	3990	3995				
38.15						33.78	33.60	33.95				
6.36						6.40	6.30	6.00				

87° means
7.26
6.36
6.48
2010
670

87° repeated

5.72	40.0	45.6	45.8	45.8	45.5	53.3	52.6	53.9	53.4	-7.8
7.13	28.0	27.4	28.2		27.9	33.6	33.0	34.1	33.6	5.7
6.60	35.2	35.4	35.9		35.4	41.0	40.0	41.3	41.8	5.6
19.45	26.0	25.4	25.2		25.5	32.3	31.3	33.0	32.7	6.8
6.48	1340	1338	1351			1569	1623	1615		
	33.50	33.45	33.78			3922	4058	4038		
						3352	3345	3378		
						5.72	7.13	6.60		

102°

(2)

6.20	39.7	39.6	39.7	39.3	39.6	45.7	46.0	45.8	45.3	45.7	-6.1
6.20	18.6	18.6	19.3	19.1	18.9	23.6	22.8	22.8	24.6	24.2	4.7
6.03	27.0	26.8	27.4	27.1	27.1	32.9	32.6	33.0	32.7	33.3	5.8
6.42	17.3	17.8	17.7	17.6	17.6	25.8	26.0	26.0	25.6	25.6	8.2
85	1026	1028	1041	1031		1274	1276	1282	1288		
6.21	25.65	257	2602	2578		3185	3190	3205	3220		
						2565	2570	2602	2578		
						6.20	6.20	6.03	6.42		

102° means
681
6.21
102
651

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132^0

(4).

	47.8	48.1	48.0	55.6	55.9	55.2	−7.6
	28.1	27.4	27.8	34.2	34.2	34.2	6.4
763	25.2	35.2	35.2	41.2	41.3	41.2	6.0
728	28.7	26.9	28.8	38.9	38.9	38.9	10.1
91	1398	1396			1703	1695	
7.45	34.95	3490			42.58	42.38	
					34.95	3490	
					7.63	728	

147^0

(5)

	46.2	46.0	45.8	46.0	53.3	53.6	53.1	−7.3
	25.2	25.2	25.0	25.1	27.8	28.2	27.4	2.7
	31.8	~~33.1~~ 31.8	32.1	31.9	35.5	35.8	35.4	8.6
570	282	280	28.2	28.1	36.6	36.6	36.7	8.5
537	1314	1310	1311			1540	1526	
107	3285	32.75	32.78			3850	3815	
5.53						3280	3278	
						5.70	5.37	

162^0

(6)

	41.7	42.1	41.9	48.8	48.6	48.9	−6.9
	16.3	16.7	16.5	22.2	22.0	22.5	5.7
705	23.8	24.3	24.0	32.0	32.4	31.7	8.0
6.77	24.8	24.0	24.4	31.4	31.8	31.1	7.0
1382	1066	1071			1348	1342	
641	2665	2678			3370	3355	
					2665	2678	
					7.05	6.77	

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177°

(7)

29.4	34.9	34.7	34.8	40.8	40.8	41.2	−6.0
2.3	8.3	8.3	8.3	13.8	13.7	14.0	5.5
12.0	18.0	18.1	18.0	23.3	23.8	22.8	5.3
11.4	17.7	17.6	17.6	25.9	26.7	25.1	8.3
5.51	789	787			1046	1031	
13.78	19.72	19.68			2615	25.78	
					1972	1968	
					6.43	6.10	

6.43
6.10
5.5
6.26

192°

(8)

47.4	48.8	48.1		52.4	52.2	52.5	−4.3
20.2	21.7	21.0		27.3	27.6	27.0	6.3
29.6	31.2	30.4		38.0	38.2	37.9	7.6
32.8	33.3	33.0		38.8	38.8	38.8	5.8
1300	1350				1568	1562	
32.50	3375				39.20	39.05	
					3250	3375	
					6.70	5.30	

6.70
5.30
0
6.00

207°

(9)

40.1	40.4	40.2		47.3	47.1	47.5	−7.1
14.7	14.9	14.8		19.8	19.5	20.2	5.0
25.9	26.6	26.2		32.7	32.8	32.6	6.5
26.9	26.9	26.9		34.2	34.1	34.3	7.3
1076	1088				1335	1346	
26.90	27.20				3338	3365	
					2690	2720	
					6.48	6.45	

6.48
6.45

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222°

(10)

30.7	40.9	41.1	41.0	
3.8	14.1	13.6	13.8	
15.1	26.2	26.3	26.2	
16.7	27.3	27.8	27.6	
463	1085	1088		
654	2712	2715		

636
670
6
6.53

46.0	76.7	75.7	46.1	46.0	-5.0
20.0	49.6	49.6	19.6	20.3	6.2
34.5	64.8	63.9	34.2	34.8	8.3
34.2	64.8	63.4	34.0	34.3	6.6
	2554	2526	1339	1354	
	63.85	63.15	33.48	33.85	
			2712	2715	
			6.3 6	6.70	

237°

(11)

628	6.0	5.2	5.8	5.5
373	40.1	39.4	39.7	39.6
509	54.3	54.3	54.6	54.4
512	52.8	52.8	53.0	52.9
2022	2046	2117	2131	
5055	5110	5292	5328	

548
497
1045
5.22

9.6	70.1	10.0	9.3	-4.1
41.7	42.4	41.3	42.1	2.1
1.1	62.4	1.5	0.7	6.7
0.8	61.0	0.8	0.9	7.9
	2365	2336	2330	
	5912	5840	5825	
	5105	5292	5328	
	807	548	497	

252°

(12)

41.2	41.0	41.1	
13.4	13.8	13.6	
33.0	32.7	32.8	
32.9	31.8	32.4	
1205	1193		
3012	2982		

657

46.2	46.2	46.2	-5.1
21.0	21.3	20.8	7.4
39.9	40.1	39.7	7.1
39.2	39.1	39.3	6.8
	1467	1460	
	3668	3650	
	3012	2982	
	656	668	

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267°

(13)	29.6	30.0	29.8	35.0	35.0	35.1	-5.2
	4.1	3.8	4.0	9.5	10.0	9.0	5.5
652	23.2	23.5	23.5	32.2	32.2	32.2	8.7
620	22.6	22.6	22.6	28.6	28.4	28.7	6.0
32	79.5	80.2		105.6	105.0		
6.36	29.88	20.05		26.40	26.25		
				19.88	20.05		
				6.52	6.20		

282°

(14)	57.0	57.4	57.2	57.9	57.6	58.2	-6.7
	26.3	26.1	26.2	33.8	33.6	34.1	7.6
636	48.3	48.6	48.4	54.5	54.9	54.1	6.1
633	44.7	44.4	44.6	49.4	49.4	49.4	4.8
	17.03	17.05		195.5	195.8		
6.32	42.58	42.62		48.88	48.95		
				42.58	42.62		
				6.30	6.33		

297°

(15)	32.2	32.2	32.2	37.4	37.9	37.0	-5.2
	8.7	9.0	8.8	15.4	15.8	15.1	6.6
657	29.7	29.3	29.5	36.0	36.1	34.9	6.5
604	23.7	23.4	23.6	30.4	30.8	30.1	6.8
61	94.3	93.9		120.6	118.1		
630	23.58	23.48		30.15	29.52		
				23.58	23.48		
				6.57	6.04		

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312°

(46)

23.9	24.5	24.2		29.0	29.0	29.1	-4.8
1.8	2.3	2.0		9.8	9.6	10.0	7.8
21.8	21.9	21.8		28.2	27.8	28.7	6.4
16.0	16.2	16.1		21.0	20.7	21.3	4.9
635	649			871		891	
15.88	16.22			21.98		22.28	
				15.88		16.22	
				5.90		6.06	

590
606
1196
5.98

327°

(17)

35.3	35.0	35.2		37.9	37.9	37.9	-2.7
15.8	16.1	16.0		23.3	23.0	23.6	7.3
33.8	34.2	34.0		41.1	40.9	41.3	7.1
25.8	26.84	26.1		31.6	31.6	31.7	-5.5
1107	1111				1334	1345	
27.68	27.92				33.35	33.62	
					27.68	27.92	
					5.67	5.70	

567
570
137
5.68

342°

(18)

31.8	32.8	31.4	32.0	39.9	40.1	39.7	-7.9
17.7	18.2	17.9	17.9	24.5	24.7	24.3	6.6
35.9	36.8	36.2	36.0	43.0	43.1	42.8	7.6
26.4	25.2	25.1	25.6	31.2	31.3	31.2	-5.6
1118	1120	1106			1392	1380	
27.95	28.00	27.65			34.80	34.50	
	27.65				27.95	27.82	
	1.65				6.85	6.68	
	27.82						

685
668
153
6.76

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357°

(19)

39.0	38.1	38.6	44.2	44.4	43.9	−5.6
23.8	24.1	23.9	31.2	31.3	31.2	7.3
41.2	41.3	41.2	46.9	46.8	47.0	5.7
23.7	28.0	29.8	34.9	34.8	35.0	−7.1
1317	1315		1573		1571	
32.92	32.88		39.32		39.28	
			3292		3284	
			6.40		6.40	

6.40

12°

(20)

32.0	32.6	32.3	39.6	39.2	39.9	−7.3
19.7	21.0	20.4	24.3	24.4	24.2	3.9
34.7	35.4	35.0	37.9	37.8	38.0	2.9
22.8	22.6	22.7	28.3	28.6	28.0	−5.6
1092	1116		1300		1301	
27.30	27.9		32.50		32.52	
			2730		2710	
			5.20		4.62	

520
462
958
4.91

27°

(21)

43.0	44.0	43.5	50.6	50.7	50.6	−7.1
30.5	31.2	30.8	35.2	35.2	35.1	4.4
43.2	43.4	43.3	48.9	48.7	49.1	5.6
32.5	33.6	33.2	37.6	37.3	37.8	4.4
1495	1522		1719		1726	
37.38	38.05		42.98		43.15	
			3738		3705	
			5.60		5.10	

560
510
7
5.35

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42°

(22)

47.1 47.1 47.1
32.8 32.2 32.5
45.9 46.4 46.2
34.3 35.8 34.5
1601 1607
40.02 40.18

5.38
484
1022
5.11

55.0 55.0 55.0 −7.9
36.4 36.4 36.4 3.9
49.4 49.6 49.3 3.2
40.0 40.6 39.4 −5.5
1816 1801
4540 4502
4002 4018
5.38 4.84

(23) 57°

36.7 37.0 37.4
17.8 19.9 19.7
31.0 31.08 32.0
21.2 21.1 20.2
1067 1098 1093
26.68 27.45 27.32
2745
1413
706

5.16
5.26
4.82
6.22
2146
5.36

37.2 37.6 37.2 43.9 44.2 44.6 45.6 −7.4
19.9 19.9 19.4 25.5 25.5 25.7 27.0 6.5
32.2 31.5 31.7 34.8 35.9 35.1 36.1 3.8
20.6 19.8 20.6 24.7 24.7 23.8 25.0 −3.9
1099 1088 1289 1303 1292 1337
27.48 27.20 32.22 32.58 32.30 33.42
2706 2732 2748 2720
5.16 5.26 4.82 6.22

24) 72°

(6)3.9 4.7 44.3 44.3
26.3 27.2 26.8 26.8
34.8 35.3 35.4 35.2
23.6 23.7 23.7 23.7
1286 1309 1302
3215 32.72 32.55
72
87
32.43

6.69
7.25
1394
6.97

51.8 51.2 52.5 −7.5
32.8 32.5 33.2 6.0
40.9 40.7 41.1 5.7
32.2 32.1 32.4 −8.5
1565 1592
39.12 3980
32.48 32.55
6.69 7.25

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Dec 5. 1884 Sum

1	7.26	6.36
2	6.81	6.21
3	7.58	
4	7.45	
5	5.53	
6	6.41	
7	6.26	
8	6.40	
9	6.46	
10	6.53	
11	5.22	
12	6.57	
13	6.36	
14	6.32	
15	6.30	
16	5.98	
17	5.68	
18	6.76	
19	6.40	
20	4.91	
21	5.35	
22	5.11	
23	5.36	
24	6.97	
~~25~~		

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1884phae.proj.1766R

Prog. T = 448 = beginning

87°

(1)

9.70	22.7	22.3	23.7	23.7	23.1	22.6	23.3	33.7	34.6	34.6	34.3	34.6	34.6	34.3	11.1
10.50	4.8	5.1	7.0	5.7	6.0	6.0	5.8	34.5	15.8	15.4	14.9	15.4	14.3	14.4	9.2
8.90	12.8	12.7	13.0	13.0	13.1	13.4	13.0	15.0	22.4	21.6	21.5	22.1	21.7	22.3	10.0
9.50	3.6	3.0	4.1	3.9	4.4	3.3	3.7	23.0	12.3	12.9	13.2	12.8	13.3	13.7	9.1
9.64	439	431	488	463	466	457		8.16	851	845	839	849	839	847	
9.33	10.98	10.78	12.20	11.58	11.65	11.28		8.27	21.28	21.12	20.98	21.22	20.98	21.18	
9.90								20.68	10.78	12.20	11.98	11.58	11.65	11.28	
447								10.98	10.50	8.90	10.10	9.64	9.33	9.90	
9.64								9.70			9.50				

9.07 final mean

102°

(2)

9.72	46.3	46.4	46.4	55.3	55.6	55.1	−8.9	8.4	−8.6	p68	mean
9.23	26.2	25.9	26.0	34.3	34.6	34.0	8.3	8.2	8.2		
9.5	34.8	34.4	34.6	43.8	44.0	43.7	9.2	8.7	9.0		
9.48	25.0	25.0	25.0	36.4	37.0	35.8	−11.4	11.1	11.2		
	1323	1317		171.2	168.6						
	33.08	32.92		42.80	42.15						
				33.08	32.92						
				9.72	9.23						

9.48
9.14 new series p68
9.31 final mean

117°

(3)

11.63	33.1	33.4	33.2	43.2	43.8	42.7	−10.0	10.9	10.4	p68	mean
10.47	11.2	11.0	11.1	23.1	23.1	23.1	12.0	11.2	11.6		
21.0	20.2	20.4	20.3	30.6	31.3	29.9	10.3	10.8	10.6		
11.05	12.8	13.1	13.0	24.8	25.8	24.1	11.8	12.0	11.9		
	773	779		1238	1198						
	19.32	19.48		30.95	29.95						
				19.32	19.48						
				11.63	10.47						

11.05
11.19 new series p68
11.12 final mean

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87° after 252° (No 12)

(1)

33.7	34.4	34.1	34.4	33.9	34.1	45.3	45.1	44.5	45.6	45.8	45.4	−11.2
16.1	17.1	17.7	17.4	16.7	17.0	26.4	26.1	25.2	27.0	26.7	27.1	9.4
26.3	25.3	26.1	25.8	26.1	25.9	34.8	35.4	35.1	35.3	34.1	34.1	8.9
15.7	15.5	15.7	15.8	15.6	15.7	24.8	23.9	24.1	25.6	25.2	25.1	9.1
918	923	936	934	923		130.5	1289	1335	1318	1317		
22.95	23.08	23.40	23.35	23.08		32.62	32.22	33.38	32.95	32.92		
						22.95	23.08	23.40	23.35	23.08		
						9.67	9.14	9.98	9.60	9.84		

967
9.14
9.98
960
984
32.3
9.65

87° after 72° (No 24) end of Series.

52.1	52.9	52.7	52.7	53.0	52.7	3.0	3.1	26	3.4	3.0	3.1	−10.3
35.2	35.1	35.6	35.5	36.0	35.4	43.4	42.9	43.9	44.0	43.0	43.1	8.0
44.1	43.6	44.2	44.2	44.7	44.2	52.0	51.9	52.4	52.5	51.0	52.1	7.8
35.2	34.6	34.6	34.9	34.7	34.8	43.0	43.2	42.8	43.0	42.7	43.2	8.2
1662	1662	1671	1673	1684			2011	2017	2029	1997	2015	
41.55	41.55	41.78	41.82	42.10			50.28	50.42	50.72	49.92	50.38	
							41.55	41.55	41.78	41.82	42.10	
							8.73	8.87	8.94	8.10	8.28	

873
8.87
8.94
8.10
8.28
292
8.58

	p58	p59	p59	p68	p71	Mean
ε	−11.1	11.2	10.3	10.4	10.4	−10.7
ζ	9.2	9.4	8.0	6.3	7.7	8.1
η	10.0	8.9	7.8	8.4	7.5	8.5
H	9.1	9.1	8.2	8.1	7.6	8.4

87°
means
9.64
9.65
8.58
8.34 new series
.21
9.07

see p71

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1884phae.proj.1766R

132°

(4)

								p69	mean
	41.2	42.0	41.6	50.8	50.9	50.8	-9.2	10.6	-9.9
	21.2	21.0	21.1	29.8	30.3	29.3	8.7	8.9	8.8
	27.9	28.8	28.4	38.2	38.2	38.3	9.8	10.1	10.0
	22.0	23.1	22.6	34.3	3×3.9	34.7	-11.7	13.4	12.6
10.14	1123	1149			153.3	153.1			
9.53	28.08	28.72			38.22	38.28			
19.70					2808	2872			
9.85					10.14	9.56			

9.85
1172 new series p69
2157
1078 final mean

147°

(5)

								p69	Mean
	32.9	33.6	33.2	42.8	42.8	42.8	-9.6	-11.2	-10.4
	10.2	10.9	10.6	19.4	19.8	19.0	8.8	8.4	8.6
	19.7	20.7	20.4	27.3	27.7	26.9	6.9	7.8	7.4
	16.1	16.0	16.0	27.6	27.7	27.4	11.6	12.4	12.0
9.78	789	812			1180	1161			
8.72	19.72	20.30			2950	29.02			
18.50					1972	20.30			
9.25					9.78	8.72			

9.25
9.91 new series p69
11.6
9.58 final mean

162°

(6)

								p69	Mean
	44.4	45.1	44.8	55.4	54.9	55.8	-10.6	9.9	-10.2
	19.7	20.6	20.2	29.6	29.7	29.6	9.4	10.2	9.6
	30.4	29.0	29.7	40.3	39.7	40.9	10.6	12.7	11.6
	28.0	29.2	28.6	39.0	38.2	39.8	10.4	11.0	-10.7
10.00	1225	1239			1625	1661			
5.4	30.62	30.98			40.62	41.52			
10.27					38.82	30.98			
					10.00	10.54			

10.27
1094 new series p69
121
1060 final mean

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1884phae.proj.1766R

177°

(7)

	43.7	43.7	44.0	52.6	52.6	52.6	-8.6	8.8	-8.7
	16.1	17.8	18.0	26.2	26.6	25.8	8.2	7.6	7.9
8.33	28.7	29.1	28.9	36.8	37.3	36.3	7.9	8.6	8.2
8.38	27.3	28.4	27.8	38.6	38.6	38.7	10.8	12.0	11.4
1771	117.8	120.0		155.1	155.1	153.4			
8.86	29.45	30.00		38.78	38.78	38.35			
				2.94		3.00			
						9.33			
						8.38			

886
9.25 new series p70
1811
9.06 final mean

192°

(8)

	35.0	34.9	35.0	42.2	42.6	41.8	-7.2	6.3	-6.8
	7.7	8.4	8.0	16.6	16.4	16.7	8.6	8.8	8.7
8.78	19.0	16.7	18.8	29.7	29.5	29.9	10.9	10.0	10.4
8.78	21.6	20.8	21.2	29.7	29.9	29.5	8.5	8.2	8.3
	833	828		1184	1179				
8.78	20.82	20.70		29.60	29.48				
				2082	2070				
				8.78	8.78				

878
8.32 new series p70
710
8.55 final mean

207°

(9)

	42.8	43.9	43.4	52.8	53.0	52.5	-9.4	8.6	9.0
	19.3	19.1	19.2	27.3	27.2	27.4	8.1	6.6	7.3
9.28	30.8	31.1	31.0	40.0	40.1	39.9	9.0	8.7	8.8
8.75	30.7	30.9	30.8	40.3	40.4	40.2	9.5	9.1	9.3
1803	1236	1250		1607	1600				
9.02	30.90	31.25		40.18	40.00				
				3090	3125				
				9.28					
					8.75				

902
8.25 new series
1727
8.64 final mean

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1884phae.proj.1766R

222°

48.2	48.9	48.6	
23.8	23.6	23.7	
35.6	35.2	35.4	
35.8	36.7	36.2	
1434	1444		
35.85	36.10		

57.1	58.1	58.1	-7.5
31.0	31.1	30.8	7.3
46.2	46.2	46.2	10.8
45.0	45.0	45.0	8.8
	1784	1781	
	44.60	44.52	
	35.85	36.10	
	8.75	8.42	

0)

8.75
8.42
117
8.58

237°

58.1	58.7	58.4	
33.1	34.9		
48.0	48.8 ~~47.7~~	34.0 48.4	
46.7	47.7	47.2	
1859	1901		
46.48	47.52		

4.5	4.8	4.2	-6.1
38.5	38.8	38.2	4.5
59.2	59.6	56.7	10.8
57.3	57.7	56.9	10.1
	2209	2180	
	55.22	54.50	
	46.48	47.52	
	8.74	6.98	

(11)

8.74
6.98
1572
7.86

252

38.7	39.7	39.2	
12.1	13.6	12.8	
32.2	33.0	32.6	
31.4	32.1	31.8	
1144	1184		
28.60	29.60		

44.5	44.2	44.8	-5.3
20.5	20.8	20.2	7.7
41.2	41.1	41.4	8.6
39.0	39.3	38.7	7.2
	1454	1451	
	36.35	36.28	
	28.60	29.60	
	7.75	6.68	

(12)

7.75
6.68
1443
7.21

443
7.71

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267°

(13)

	37.8	38.2	38.0	44.0	44.4	43.7	-6.0
	14.0	13.4	13.7	21.0	20.9	21.2	7.3
7.37	35.7	35.8	35.8	44.8	44.5	45.1	9.0
7.20	32.7	33.4	33.0	39.8	39.9	39.6	-6.8
.57	1202	1208			1497	1496	
7.28	3005	3020			37.42	3740	
					30.05	3020	
					737	7.20	

282°

(14)

	36.5	36.5	36.5	44.1	44.1	44.1	-7.6
	12.7	13.4	13.0	22.0	22.2	21.8	9.0
7.76	37.3	37.6	37.4	44.2	44.7	43.6	6.8
6.87	30.8	31.6	31.2	37.2	37.3	37.1	6.0
1463	1173	1191			1483	1466	
7.32	29.32	29.78			3708	36.65	
					29.32	29.78	
					7.76	6.87	

297°

(15)

	48.9	49.2	49.0	55.2	55.4	55.0	-6.2
	26.4	27.0	26.7	35.6	35.7	35.6	8.9
8.00	49.0	48.7	48.8	56.6	56.6	56.7	7.8
7.53	41.7	41.3	41.5	49.6	50.3	49.0	8.1
15.55	1660	1662			1980	1963	
7.78	41.50	41.55			4950	49.08	
					4150	41.55	
					8.00	7.53	

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1884phae.proj.1766R

(16) 312°

46.1	47.1	46.6		51.8	52.2	51.5	-5.2
26.6	27.0	26.8		34.5	34.7	34.3	7.7
47.1	47.8	47.4		54.7	54.4	55.0	7.3
40.2	40.3	40.2		44.8	44.7	44.9	4.6
1600	1622			1860	1857		
4000	4055			4650	4642		
				4025	4055		
				6.50	5.87		

6.50
5.87
1237
6.18

(17) 327°

47.1	59.4	1.0	0.2	4.6	4.9	4.4	-4.4
29.0	42.7	42.2	42.4	51.9	51.7	52.1	-9.5
47.8	1.2	2.1	1.6	10.7	10.9	10.5	-9.1
40.3	52.0	53.1	52.6	59.0	59.2	58.9	-6.4
2153		2184		2467		2459	
5382		5460		6168		6148	
53.82				5382		5460	
				7.86		6.88	

786
6.88
1474
7.37

(18) 342°

19.9	20.7	20.0		29.0	28.9	29.0	-9.0
6.7	6.4	7.6		15.0	14.9	15.0	7.4
26.0	26.4	26.2		33.4	32.8	34.0	7.2
13.7	14.0	13.8		19.5	16.9	20.1	5.7
663	688			955		981	
16.58	17.20			23.88		24.52	
				16.58		17.20	
				7.30		7.32	

730
732
731

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1884phae.proj.1766R

(19) 357°

6.95
7.36
14 31
7.16

51.8 52.0 51.9
38.1 39.0 38.6
57.1 57.5 57.3
43.0 43.2 43.1
1900 1917
49.50 47.92

58.2 57.8 58.6 -6.3
47.6 47.1 48.2 9.0
3.4 3.2 3.7 6.1
50.2 49.7 50.6 7.1
2178 2211
54.45 55.28
47.50 47.92
6.95 7.36

(20) 12°

6.32
6.95
127
6.64

57.7 52.6 53.2 52.9
39.2 42.7 41.7 42.2
57.4 57.9 57.6
44.1 44.4 44.2
1968 1972
49.20 49.30

1.6 1.3 2.0 -8.7
48.9 48.7 49.1 6.7
1.8 1.3 2.3 4.2
51.2 50.8 57.6 7.0
2221 2250
5552 5625
4920 4930
6.32 6.9

(21) 27°

8.52
.03
55
8.28

39.3 39.7 39.5
26.2 26.2 26.2
40.1 40.1 40.1
28.3 28.9 28.6
1339 1349
33.48 33.72

48.6 48.6 48.7 -9.1
33.9 34.0 33.8 7.7
48.6 48.7 48.6 8.5
36.3 36.7 35.9 7.7
1680 1670
4200 4175
33.48 33.72
8.52 8.03

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1884phae.proj.1766R

42°

(22)

39.8	39.9	39.8	
26.1	26.1	26.1	
39.7	40.3	40.0	
27.8	27.7	27.8	
1334	1340		
33.35	33.50		

F80
8.30
90
8.45

50.6	50.6	50.6	-10.8
33.4	33.3	33.6	7.3
46.8	46.8	46.8	6.8
36.6	37.1	36.2	8.8
	1678	1672	
	41.95	41.80	
	33.35	33.50	
	8.60	8.30	

47°

(23)

44.0	44.0	44.0	
26.1	26.1	26.1	
38.7	39.3	39.0	
29.1	28.8	28.7	
1379	1377		
34.48	34.42		

827
820
8.24

53.1	53.1	53.1	-9.1
36.4	36.3	36.4	10.3
46.3	46.6	46.0	7.3
35.0	35.0	35.0	6.3
	1710	1705	
	42.75	42.62	
	34.48	34.42	
	8.27	8.20	

72°

(24)

38.2	38.6	38.4	
20.3	21.7	21.0	
31.7	31.3	31.5	
19.7	19.7	19.7	
1099	1113		
27.48	27.82		

927
890
1817
908

47.8	47.6	47.9	-9.4
29.8	29.3	30.2	8.8
39.6	40.1	39.1	8.1
29.8	30.0	29.7	10.1
	1470	1469	
	36.75	36.72	
	27.48	27.82	
	9.27	8.90	

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Dec. 9 1884 new series.

#										
1	87	9.11	~~8.58 end~~	8.38	8.28 end.	+.26	+76	+40	+110
2	102	9.48		9.14		+1.13	+193	+77	+1.14
3	117	11.05		11.19		+2.70	+463	+234	+3.51
4	132	9.85		11.72		+1.50	+613	+1.4	+1.65
5	147	9.25		9.91		+.90	+703	+54	+519
6	162	9.835	10.27	~~11.94~~	10.94	+1.52	+895	+1.56	+675
7	177	8.86		9.25		+.5	+546	+15	+690
8	192	8.78		8.32		+43	~~+989~~	+07	+6.87
9	207	9.02		8.25		+47	+936	+31	+7.28
10	222	8.54				+23	+1055	-12	+7.16
11	237	7.86				-49		-85	+631
12	252	8.389	7.21			-1.14		-150	+481
13	267		7.28 +11	7.39		-1.07		-132	+349
14	282		7.32 +22	7.54		-1.03		-117	+232
15	297		7.78 +33	8.11		-57		-60	+172
16	312		6.18 +44	6.62		-217		-209	-37
17	327	9.552	7.37 +55	7.92		-98		-95	-186
18	342	~~7.07~~	7.31 +66	7.97		-1.04		-79	-150
19	357		7.16 +77	7.93		-1.19		-74	-268
20	12		6.64 +88	7.52		-171		-119	-367
21	27		6.28 +99	7.27		-97		-56	-331
22	42		8.45 +110	9.55		+.10		+84	-247
23	57	9.020	8.24 +121	9.45		-11		+74	-173
24	72	~~9.575~~	9.08 +132	10.40		+73		+161	+12
			835						
			871						

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1884phae.proj.1766R

68

Dec. 9 new series

(1) 87°

57.6	52.7	52.2	2.6	3.1	2.2		-10.4
36.6	36.0	36.3	4.26	4.2 4.9	4.2 4	4.2 4	6.3
43.2	43.1	43.2	51.6	52.1	57.0		8.4
34.2	33.8	34.0	42.1	42.7	41.5		8.1
16.56	16.56		2008	1971			
41.40	41.40		5020	4928			
			4140	4140			
			8.80	7.88			

(2) 102°

46.7	46.4	46.6	5.5.0	5.5.0	5.5.0		-8.4
25.7	26.6	26.2	34.4	34.5	34.4		8.2
35.7	34.8	35.2	43.9	43.6	44.2		8.7
25.3	25.0	25.2	36.3	36.0	36.6		11.1
13.34	13.28		1691	1702			
33.35	33.20		4228	4255			
			3335	3320			
			8.93	9.35			

(3) 117

48.4	50.7	50.8	50.8	57.3	50.9	1.8 2.6	2.3	1.2	1.0	-10.9
28.0	30.6	29.3	30.9	30.4	30.3	41.5 41.5	42.0	41.3	41.0	11.2
37.1	41.2	40.3	38.7	38.7	39.7	50.5 51.4	50.6	49.8	50.4	10.8
29.0	32.3	32.0	31.3	32.6	32.0	44.0 45.0	44.1	43.8	43.0	12.0
15.42	15.48	15.24	15.17	15.30		2005	1990	1961	1954	
35.30	38.70	38.10	37.92	38.25		5012	4975	4902	4885	
						3870	3810	3792	3825	
						19.42	11.65	11.10	10.60	

11.42
11.65
11.10
10.60
4.77
11.19

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132°

(4)

31.2	30.7	30.2	30.8	30.7	41.3	41.3	41.6	40.8	41.6	-10.6
11.9	10.7	10.0	10.8	10.8	19.7	19.6	19.4	20.4	20.4	- 8.9
20.1	18.8	19.1	19.3	19.3	29.4	29.0	29.0	29.7	29.7	-10.1
13.3	12.6	11.6	12.2	12.4	25.8	25.3	25.6	25.7	26.8	-13.4
765-	728	709	731			1252	1256	1166	1185	
19.38	18.20	17.72	18.28			3130	3140	2915	2962	
						19.38	18.20	1772	1828	
						11.92	13.20	11.43	11.34	

1192
1320
1143
1134
289
11.72

147°

(5)

47.4	50.0	50.5	50.2	1.4	1.0	1.7	-11.2
25.7	27.0	28.7	27.8	36.2	36.3	36.2	8.4
35.1	37.8	37.8	37.8	45.6	45.9	45.3	7.8
31.6	33.7	34.0	33.8	46.2	46.3	46.1	12.4
1398	1485-	1510		1895-		1893	
34.95	37.12	37.75-		47.38		47.32	
				37.92		37.75-	
				10.26		9.57	

10.26
9.57
19.83
9.91

162°

(6)

34.0	35.0	34.5	44.4	44.3	44.6	-9.9
8.6	7.4	8.0	18.2	18.6	17.8	10.2
17.6	18.6	18.1	30.8	30.9	30.6	12.7
16.1	18.2	18.2	29.2	29.2	29.1	11.0
783	792		1230		1221	
19.58	19.80		30.75		30.52	
			19.58		19.40	
			11.17		10.72	

1117
1072
189
494
10.94

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1884phae.proj.1766R

177°

(8)

	46.5	46.0	46.2
	20.0	19.3	19.6
920	31.2	31.2	31.2
930	30.5	31.0	30.8
	1282	1275	
925	32.05	31.88	

55.0	55.1	54.8	- 8.8
27.2	27.3	27.2	7.6
39.8	39.9	39.8	8.6
42.8	42.7	42.9	- 12.0
	1650	1647	
	41.25	41.18	
	3205	31.88	
	9.20	9.30	

192°

(8)

	34.8	35.6	35.2
	6.7	7.7	7.2
160	18.6	19.4	19.0
104	21.7	21.6	21.6
	818	843	
	20.45	21.08	
832			

41.5	41.2	41.8	-6.3
16.0	15.9	16.2	8.8
29.0	28.8	29.1	10.0
29.8	30.3	29.4	8.2
	1162	1165	
	2905	2912	
	2645	2108	
	8.60	8.04	

207°

(9)

	51.5	53.2	52.4
	26.8	27.4	27.1
	39.9	40.6	40.2
850	41.1	40.7	40.9
100	1593	1619	
	39.82	4048	
825			

1.0	0.6	1.3	- 8.6
33.7	33.8	33.6	6.6
48.9	48.8	49.0	8.7
50.0	50.1	50.0	9.1
	1933	1939	
	48.32	48.48	
	39.82	4048	
	8.50	800	

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1884phae.proj.1766R

Dec 9 1884

87° after 207° (No 9) New Series.

(1)

	51.2	52.1	52.8	52.2	52.8	54.0	52.5	20	28	27	29	3.7	3.3	10.4	
873	36.1	36.6	37.7	36.1	38.4	39.7	32.8	44.7	45.1	45.0	45.3	45.8	46.0	7.7	
9.00	48.7	46.7	46.2	46.8	47.6	47.5	47.3	53.6	55.1	54.3	55.0	54.9	55.6	7.5	
7.47	33.7	34.7	36.0	35.2	35.6	36.1	35.2	42.3	43.1	42.6	42.9	43.2	42.8	7.6	
8.44	167.7	170.1	174.7	172.3	174.4	177.3		202.6	206.1	204.6	206.1	207.6	207.7		
8.30	41.92	42.52	43.68	43.08	43.60	44.32		50.65	51.52	51.15	51.52	51.90	51.92		
7.60								41.92	42.52	43.68	43.08	43.60	44.32		
154								8.73	9.00	7.47	8.44	8.30	7.60		
8.28															

See page 67 for sum of series.

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1884phae.proj.1766R

72 1884

Dec 11. Alt. Th. = 41.8

87°

(4)

	41.3	41.5	42.6
11.65	21.9	22.3	22.9
11.44	29.2	29.5	30.7
10.02	20.0	20.2	20.9
	1124	1135	1171
3.11	28.10	28.38	29.28
11.04			

54.8	54.4	54.3
33.7	33.9	32.7
40.3	40.0	39.6
30.2	31.0	30.6
1590	1593	1572
39.75	39.82	39.30
28.10	28.38	29.28
11.65	11.44	10.02

87° New series with counterbalancing weight on.

	53.3	53.6	53.5	53.5
	35.1	34.7	34.6	34.8
9.52	41.0	41.4	41.1	41.2
8.00	31.3	31.3	31.4	31.3
9.05	1607	1610	1606	
2.57	40.18	40.25	40.15	
8.86				

64.1	64.6	64.0	63.8
43.8	43.8	44.0	43.6
49.0	49.6	48.7	48.8
40.4	40.8	40.3	40.2
	1988	1970	1964
	49.70	48.25	49.10
	40.18	40.25	40.05
	9.52	8.00	9.05

p 73

-10.6	10.8	12.2	10.3	11.2	9.1	10.5	10.2
9.0	8.2	9.8	7.9	10.0	7.3	7.6	8.4
7.8	8.9	8.3	8.0	8.9	7.9	7.7	8.7
9.1	8.2	9.8	9.0	8.1	8.1	8.8	8.9

	Mean
E	-10.8
J	8.5
G	8.3
H	8.8

87° 3rd Series weight still on.

	53.6	54.1	53.5	53.7
9.00	35.2	35.7	34.7	35.2
8.68	41.8	42.4	41.1	41.8
9.38	32.0	32.6	32.3	32.3
.06	1626	1648	1616	
9.03	40.65	41.20	40.40	

4.5	4.4	4.4	4.7
43.4	42.8	43.8	43.5
50.7	50.7	51.1	50.3
40.5	40.7	40.2	40.6
	1986	1995	1991
	49.65	49.88	49.78
	40.65	41.20	40.40
	9.00	8.68	9.38

-10.8
8.2
8.9
8.2

8.94 mean of 2nd & 3rd Series 8.91 final mean

102°

(2)

	77.8	78.2	78.0
	56.2	57.2	56.7
	4.2	4.0	4.1
8.86	54.3	54.4	54.4
7.77	2525	2538	
16.63	63.12	63.45	
8.31			

26.7	26.8	26.6
3.8	4.2	3.4
11.4	12.2	10.7
4.4	4.7	4.2
	479	449
	11.98	11.22
	63.12	3.45
	8.86	7.77

-8.7
7.1
7.3
10.0

117°

(3)

	40.2	39.9	40.0	34.5	34.8
	17.6	17.7	17.6	11.7	12.0
	26.8	27.0	26.9	20.7	21.4
	20.2	20.6	20.4	12.9	13.0
12.22	1048	1052		798	812
11.58	26.20	26.3		19.95	20.30
11.75					
10.88					
6.43					
11.61					

set again.

	34.6				
	11.8				
	21.0				
	13.0				
	812				
	20.30				

53.2	51.9	52.6	46.1	45.1	45.6
30.6	30.8	30.7	24.2	24.1	24.1
37.2	36.6	36.9	31.8	31.6	31.7
32.7	32.2	32.4	24.7	23.9	24.3
1537	1518		1268	1247	
38.42	37.88		31.70	31.18	
26.20	26.30		19.95	20.30	
12.22	11.58		11.75	10.88	

set again.

			Mean
-12.6	11.0		-11.8
13.1	12.3		12.7
10.0	10.7		10.4
12.0	11.3		11.6

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Dec 11 1884

(1) 87° after (no. 6) 162°

	42.8	42.1	42.5	42.5	54.7	54.2	55.1	54.7	-12.2	8.94	(no 1)
	25.2	25.2	26.4	25.9	35.7	35.9	35.3	35.9	9.8	9.47	after no 6
10.17	32.8	32.8	33.2	32.9	41.2	41.9	41.0	41.7	8.3	9.52	" " 12
10.34	20.7	21.4	21.6	21.2	31.0	30.2	31.5	31.3	9.8	8.20	" 18
998	1215	1215	1237			162.2	162.9	163.6		8.88	" 24
.49	30.38	30.38	30.92			40.55	40.72	40.90		481	
10.16						30.38	30.38	30.92		8.96	
						101.7	103.4	99.8			

	42.8	43.2	438	43.3	53.6	54.0	52.6	54.1	-10.3
8.58	26.1	26.2	26.9	26.4	34.3	33.4	34.7	34.7	7.9
9.05	33.0	31.4	33.2	32.5	40.8	39.8	40.7	41.0	8.0
872	21.3	21.6	22.8	21.9	30.9	30.3	30.6	31.8	9.0
235	1232	1224	1267			157.5	158.6	161.6	
8.78	30.80	30.60	31.68			39.38	39.65	40.40	
9.47						30.80	30.60	31.68	
						87.58	90.05	87.2	

87° after (no 12) 252°

	49.4	49.6	49.9	49.6	0.8	0.0	1.1	1.2	-11.2
9.37	30.7	33.2	33.2	32.4	42.4	42.0	42.4	42.7	10.0
9.38	41.3	41.5	41.3	41.4	50.3	49.8	50.2	50.9	8.9
9.82	32.0	31.3	30.7	31.3	39.4	39.1	39.4	39.6	8.1
157	1534	1556	1351			190.9	193.1	194.4	
9.52	38.35	38.90	38.78			47.72	48.28	48.60	
						38.35	38.90	38.78	
						9.37	9.38	9.82	

87° after (no 18) 342°

8.47	38.2	37.9	38.6	38.3	38.0	38.3	38.2	47.6	47.6	47.1	46.8	47.6	47.2	-9.1
8.60	19.0	19.1	18.7	19.7	19.3	19.8	19.3	26.3	26.9	26.2	25.2	25.8	26.9	-7.3
7.85	27.4	27.3	28.2	24.3	27.2	27.8	27.5	36.6	36.2	35.3	34.7	34.8	34.7	7.9
7.33	19.2	19.1	18.7	18.1	18.0	17.6	18.4	27.2	26.1	27.0	26.0	26.1	25.8	8.1
7.96	103.8	103.4	104.2	103.4	102.5	103.5	103.3	137.7	137.8	135.6	132.7	134.3	134.6	
7.77	25.95	25.85	26.05	25.85	25.62	25.88	25.83	34.42	34.45	33.90	33.18	33.58	33.65	
5.98								25.95	25.85	26.05	25.85	25.62	25.88	
8.60								8.47	8.60	7.85	7.33	7.96	7.77	

87° after (no 24) 72° end of series

9.07	54.6	54.1	55.3	54.6	55.0	53.9	55.2	54.6	5.1	5.3	4.9	4.8	4.8	4.9	5.7	-10.5
8.48	36.7	36.8	36.9	37.2	36.6	37.1	36.9	44.5	44.6	44.3	44.2	44.6	45.1	44.2	7.6
8.13	42.4	43.6	43.9	43.3	42.1	43.3	43.1	50.8	50.9	50.4	50.2	51.3	50.7	51.4	7.7
8.56	34.1	34.0	34.0	33.8	33.6	33.7	33.9	42.7	43.3	42.8	42.7	42.8	42.0	42.7	8.8
9.13	167.8	168.5	169.4	169.3	166.2	169.3		204.1	202.4	201.9		203.5	202.7	204.0	
8.68	41.95	42.12	42.35	42.32	41.55	42.32		51.02	50.60	50.48		50.88	50.68	51.00	
405								41.95	42.12	42.35		42.32	41.55	42.32	
8.68								9.07	8.48	8.13		8.56	9.13	8.68	

87° shifted direction of motion

	45.0	45.0	46.3	45.4	55.6	55.8	55.7	55.4	-10.2
	26.8	27.2	27.7	27.2	35.6	35.8	35.9	35.1	8.4
9.40	33.5	33.3	34.0	33.6	42.3	42.6	42.1	42.3	8.7
9.40	24.2	24.0	24.9	24.4	33.3	32.9	33.4	33.7	8.9
4.40	129.5	129.5	132.9			167.1	167.1	166.5	
.20	32.38	32.38	33.22			41.78	41.78	41.62	
9.07						32.38	32.38	33.22	
						9.40	9.40	8.40	

8.68
9.07
1775
8.88

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74

182°

(4)

1890
11.33
223
11.11

39.0 39.8 39.4
18.1 19.6 18.8
24.1 25.1 24.6
18.0 19.2 18.6
992 1037
24.80 25.92

-1.0

51.4 51.3 51.6 -12.0
28.6 28.2 28.9 9.8
35.4 35.0 35.7 10.8
32.6 32.3 32.8 14.0
1468 1490
36.70 37.25
24.80 25.92
10.90 11.33

147°

(5)

10.41
10.26
9.58
.25
10.08

27.7 27.2 28.0 27.4
5.3 4.1 4.7 4.7
11.2 11.4 11.4 11.3
8.7 8.6 8.7 8.7
529 513 528
13.22 12.82 13.20

39.3 39.9 39.0 39.0 -11.9
13.2 14.0 13.2 12.4 8.5
19.8 19.7 20.1 19.6 8.5
20.4 21.0 20.0 20.1 11.7
946 923 911
2365 2308 2278
1322 1282 1320
10.41 10.26 9.58

162°

(6)

1068
11.28
196
10.98

33.6 32.9 33.2
7.2 7.7 7.4
14.9 14.0 13.4 14.4
15.6 15.1 15.3
713 697
17.82 17.42

44.6 44.3 44.8 -11.4
17.4 16.6 16.1 10.0
26.6 27.2 25.9 12.2
26.0 25.9 26.0 10.7
1140 1148
2850 2870
17.82 17.42
10.68 11.28

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177°

(7)

	42.9	43.9	43.4	52.6	53.2	52.1	-9.2
	15.7	16.3	16.0	24.2	24.2	24.3	8.2
10.30	24.9	24.8	24.8	34.0	34.1	33.8	9.2
9.18	24.7	25.9	25.3	37.6	37.9	37.4	12.3
1948	1082	1109			1494	1476	
9.74	27.05	27.72			34.35	36.90	
					2705	2772	
					10.30	9.18	

192°

(8)

	50.7	50.2	50.4	58.4	58.9	57.9	-8.0
	21.2	22.1	21.6	32.3	32.2	32.4	10.7
1040							
9.67	31.4	31.8	31.6	43.3	43.6	43.1	11.7
07							
10.04	34.9	35.0	35.0	44.8	45.1	44.4	9.8
	1382	1391			1798	1778	
	34.55	34.78			4495	44.45	
					34.55	34.78	
					10.40	9.67	

207°

(7)

	49.6	49.3	49.4	59.0	58.9	59.1	-9.6
	23.9	24.1	24.0	32.3	32.4	32.2	8.3
9.53							
9.48	34.7	33.4	34.0	43.6	44.2	43.1	9.6
101							
9.50	36.0	35.7	35.8	46.4	46.8	45.9	10.6
	1442	1425			1823	1804	
	36.05	35.62			4558	4510	
					3605	3562	
					9.53	9.48	

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1884phae.proj.1766R

222°

(10)

	56.2	57.1	56.6	5.7	5.6	5.8	9.1
	29.3	29.3	29.3	38.4	38.2	38.6	9.1
	41.4	41.8	41.6	53.3	53.1	53.6	11.7
1010	42.8	43.4	43.1	53.4	53.2	53.6	10.3
1000	1697	1716		2101	2116		
10.05	4242	4290		5252	5290		
				42.42	4290		
				10.10	10.00		

237°

(11)

	40.6	41.3	41.0	49.4	48.7	50.0	8.4
	13.8	16.1	15.4	21.4	21.1	21.8	6.0
9.37	26.7	29.9	29.2	40.6	40.4	40.8	11.4
9.40	29.7	28.6	29.2	40.7	40.7	40.7	11.5
77	1128	1157		1509	1533		
9.38	28.45	28.92		37.82	38.32		
				2845	2892		
				9.39	9.40		

252°

(12)

	40.9	41.9	41.4	49.5	49.7	49.3	8.1
	13.4	12.9	13.2	24.0	23.8	24.1	10.8
1040	32.2	33.4	32.8	43.8	43.9	43.6	11.0
9.73	32.0	32.3	32.2	42.6	42.7	42.4	10.4
2013	1185	1205		1601	1594		
10.06	29.62	30.12		40.02	39.85		
				2962	30.12		
				10.40	9.73		

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1884phae.proj.1766R

267°

(13)

9.75	36.0	43.1	43.3	43.2	37.8	51.7	57.7	8.5
10.30	11.4	18.3	18.1	18.1	27.8	29.1	28.4	10.3
20.05	30.0	36.8	37.0	36.9	48.7	49.3	49.0	12.1
10.02	28.0	35.0	35.2	35.1	43.9	44.7	44.3	9.2
	10.51	13.32	13.36		17.22	17.48		
	4	33.30	33.40		43.05	43.70		
					33.30	33.40		
					9.75	10.30		

282°

(14)

9.16	31.6	32.4	32.7	32.2	41.6	41.0	41.3	9.1
8.20	7.6	7.2	7.8	7.5	18.1	17.9	18.0	10.5
17.36	29.0	28.8	29.7	29.2	37.7	37.0	37.4	8.2
8.68	24.0	24.5	24.0	24.2	31.8	31.1	31.4	7.4
	9.22	9.29	9.42		12.92	12.70		
	23.05	23.22	23.55		32.30	31.75		
	23.14				23.14	23.53		
					9.16	8.20		

297°

(15)

5.10	34.7	36.1	35.9	35.6	44.3	43.2	43.8	8.2
8.84	11.9	12.2	12.7	12.3	22.5	21.9	22.2	9.9
8.74	30.9	32.2	31.2	31.4	42.0	41.1	41.6	10.2
9.37	25.0	25.6	25.7	25.3	36.0	35.1	35.6	10.3
	10.25	10.56	10.56		14.48	14.13		
	25.62	26.40	26.38		36.20	35.32		
					25.62	26.39		
					10.58	8.93		
					36.20	35.32		
					26.40	26.38		
					9.80	8.94		

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1884phae.proj.1766R

812°

(16)

	35.2	36.2	35.7	44.4	44.6	44.5	8.8
	17.6	15.9	15.7	25.0	26.1	25.5	9.8
9.20	33.2	33.9	33.6	42.1	43.0	42.6	9.0
8.23	26.6	28.1	27.3	35.7	35.7	35.8	8.5
03	1106	1141		1474	1494		
9.02	27.65	28.52		36.85	37.35		
				27.65	28.52		
				9.20	8.83		

327°

(17)

	39.9	41.4	41.2	41.9	41.1	47.6	47.4	47.5	46.6	47.3	1.2
9.87	31.7	22.8	23.2	22.2	22.5	32.9	33.7	33.7	33.3	33.4	10.9
8.70	38.6	40.0	39.4	40.4	39.6	50.2	50.4	50.1	50.3	50.2	10.6
8.87	30.8	32.1	32.0	31.6	31.6	39.8	39.6	39.6	39.2	39.5	7.9
8.33	1210	1363	1358	1361		1705	1711	1709	1644		
190	32.75	34.08	33.95	34.02		42.62	42.78	42.82	42.35		
8.63						32.75	34.08	33.95	34.02		
						9.87	8.70	8.87	8.33		
						9.77					

342°

(18)

	37.8	39.0 ~~40.0~~	38.4	49.8	48.6	49.2	7.8
1607	24.4	24.9	24.6	34.0	35.0	34.5	9.9
9.10	40.9	41.4	41.1	51.8	51.3	51.6	10.5
1415	30.3	31.3	30.8	38.1	38.1	38.1	7.3
9.58	1334	1366		1737	1730		
	33.35	34.15		43.42	43.25		
				33.35	34.15		
				10.07	9.10		

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1884phae.proj.1766R

35 7°

(19)

	36.8	37.7	37.3	44.4	44.8	44.6	7.3
	24.7	24.0	24.4	33.0	34.0	33.5	9.1
7.84	41.0	41.6	41.8	48.9	48.7	48.8	7.0
8.08	27.0	26.7	26.8	34.6	34.8	34.7	7.9
1592	1295	1300		1609	1623		
796	32.38	32.50		4022	4058		
				3238	3250		
				7.84	8.08		

12°

(20)

	43.6	~~44.8~~ ~~46.6~~	44.2	53.6	53.8	53.7	9.5
	33.0	34.0	33.5	40.1	40.0	40.1	6.6
7.38	47.4	48.0	47.7	52.0	52.6	52.3	4.6
6.90	33.8	33.6	33.7	40.6	41.7	41.1	7.4
1428	1568	1604		1863	1881		
714	39.20	40.10		4658	4700		
				3920	4010		
				7.38	6.90		

27°

(21)

	43.0	43.4	43.2	52.6	52.6	52.6	9.4
	30.7	30.1	30.4	39.6	39.0	39.3	8.9
8.56	42.3	42.6	42.4	50.2	50.2	50.2	7.8
8.54	30.9	30.2	30.5	38.7	38.7	38.7	8.2
8.55	1469	1468		1811	1803		
	36.72	36.58		4528	4572		
				3672	3658		
				8.56	8.54		

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(22) 42°

48.2	49.6	48.9	
34.6	36.1	35.3	
46.1	47.0	46.5	
34.0	32.0	34.5	
1629	1677		
40.72	41.92		

9.08
7.98
1706
8.53

60.0	60.3	60.1	11.2
42.6	42.3	42.4	7.1
54.0	53.8	53.9	10.1
42.6	43.2	42.9	7.84
1992	1996		
49.80	49.90		
40.72	41.92		
9.08	7.98		

(23) 57°

42.4	42.8	42.6	
25.3	23.8	24.5	
35.1	35.6 / 34.2	35.3	
25.1	25.8	25.4	
1279	1280		
31.98	32.00		

8.97
8.60
157
8.78

52.6	52.0	52.3	9.7
36.0	36.0	36.0	11.5
43.2	42.6	42.9	14.76
32.0	31.8	31.9	6.5
1638	1624		
4095	40.60		
3198	32.02		
8.97	8.60		

72°

(24)

51.5	52.0	51.7	
34.1	34.1	34.1	
42.1	42.0	42.1	
31.0	30.7	30.9	
1587	1588		
39.68	39.70		

9.24
8.85
1809
9.04

61.8	61.0	61.4	9.7
42.8	42.2	42.5	8.4
49.8	49.9	49.9	7.8
41.3	41.1	41.2	10.3
1957	1942		
48.92	48.55		
39.68	39.70		
9.24	8.85		

T=44.3

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Dec 11 1884 Denn.

No.					
1	67°	8.72	(8.72 [illegible])	−66	−66
2	102°	8.31		+1.07	−1.73
3	117°	11.61		+2.23	+0.60
4	132°	11.11		+1.73	+2.33
5	147°	10.08		+.70	+3.03
6	162°	10.98	10.17	+1.60	+4.63
7	177°	9.74		+.36	+4.99
8	192°	10.04		+.66	+5.65
9	207°	9.50		+.12	+5.73
10	222°	10.05		+.67	+6.40
11	237°	9.38		+.00	+6.40
12	252°	10.06	9.78	+.68	+7.08
13	267°	10.02		+.64	+7.72
14	282°	8.68		−.70	+7.02
15	297°	9.37		−.01	+7.01
16	312°	9.02		−.36	+6.65
17	327°	8.63		−.75	+5.90
18	342°	9.58	9.22	+.20	+6.10
19	357°	7.96		−1.42	+4.68
20	12°	7.14		−2.24	+2.44
21	27°	8.55		−.83	+1.61
22	42°	8.53		−.85	+.76
23	57°	8.78	8.33	−.60	+.16
24	72°	9.04		−.34	−.18
			9.38		

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Dec. 12 1884 Att. Th. 42.7 at beginning.
Note Cleaned and oiled the circle before beginning
found periphery of circle badly gummed with oil.

(1) 87°

	2	39.6	40.4	39.0	40.0	39.8	51.7	52.1	51.5	52.0	51.8	−12.0
10.87	F	19.8	21.1	20.8	20.2	20.5	30.5	30.9	31.6	31.5	31.1	10.6
11.00												
11.52	G	24.1	24.7	23.6	25.0	24.3	34.8	35.1	35.8	35.0	35.2	−10.9 (10.4)
11.20												
.59	H	17.2	17.7	17.0	16.8	17.1	27.2	29.8	27.6	28.3	28.2	−11.1
11.15		100.7	103.9	100.4	102.0	398	144.2	147.9	146.5	146.8		
		25.18	25.98	25.10	25.50		36.05	36.98	36.62	36.70		
							25.18	25.98	25.10	25.52		
							10.87	11.00	11.52	11.20		

10.77 final mean

(2) 102°

	54.9	54.6	54.7	3.1	3.9	3.5	8.8
	31.0	32.0	31.5	40.9	41.1	40.0	8.6
9.72	37.5	36.4	36.9	47.0	47.0	47.0	−10.1
10.15							
19.87	29.7	30.0	29.9	41.0	41.6	41.3	−11.9
9.94	1531	1530		1920	1936		
	3828	3825		4800	4840		
				3828	3825		
				9.72	10.15		

(3) 117°

	49.0	49.1	49.0	0.0	59.6	59.8	10.8
	25.1	27.3	26.5	38.2	39.1	38.7	−12.2
11.25							
11.22	32.9	32.2	32.5	42.9	42.4	42.6	−8.9
	26.2	26.3	26.3	38.1	38.2	38.1	−11.8
11.24	1342	1344		1792	1793		
	3355	3360		4480	4482		
				3355	3360		
				11.25	11.22		

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All Th. = 43.9 at end

(1) 87° after no 6 162°

	43.6	44.7	43.8	44.9	44.5	57.2	56.9	57.6	57.6	57.4
10.80										
11.53	25.0	26.7	26.3	26.0		35.1	36.6	37.1	37.1	
11.43										
76	29.0	30.9	30.8	31.2	31.0	44.6	41.2	41.3	41.6	41.4
	21									
11.25	21.1	21.6	22.1	22.0		32.8	32.4	33.1	33.5	
	1287	1239	1230	1241		16 6.7	1671	1691	1698	
	29.68	30.98	30.75	31.02		41.68	41.78	42.28	42.45	
						29.68	30.98	30.75	31.02	
						12.00	10.80	11.53	11.43	

-12.9

11.25
11.25
11.42
10.27
309
30.77

(1) 87° after no 12 252°

1218	38.0	39.8	38.9	51.4	51.6	51.5	-12.6		
1065	20.2	21.2		31.9	31.8				
283									
11.42	27.8	28.0	27.9	39.8	38.2	39.0	-11.1		
	18.4	20.0		30.0	30.0				
	1044	1090		1531	1516				
	26.10	27.25		38.28	37.90				
				26.10	27.25				
				12.18	10.65				

87° 3rd reading after (no 24) 72°

	38.1	39.9	40.1	39.0	39.6	39.3	57.0	49.8	51.0	51.6	57.0 -50.9 -11.6
1008	16.3	19.2	21.1	20.2	19.1		29.1	29.7	29.7	29.0	30.1
1088	22.9	24.1	24.1	23.6	23.8	23.7	33.0	32.9	33.4	34.0	33.5 33.4-87
9.60					16.8		26.7	27.0	27.0	27.1	27.4
10.57	15.3	17.1	16.8	17.1	9.99	9.93	13.98	13.94	14.11	14.17	14.20
10.22	9.46	10.03	10.21	24.98	24.82		34.95	34.85	35.28	35.42	35.50
9.63	23.65	25.08	25.52				23.65	25.08	25.52	24.98	24.82
11.30							11.30	9.76	9.76	10.44	10.68
9.77											
9.76											
10.44											
10.68											
112.93											
10.27											

(1) 87° after (no 24) 72° end of series.

	38.5	38.7	39.6	38.9	50.2	50.7	50.0	50.2	-11.8
1008	18.2	19.1	19.7		27.1	28.7	29.2		
1086									
960	22.8	22.3	24.2	23.1	33.1	33.0	33.0	33.0	-9.9
10.57									
10.22	17.0	15.9	16.9		26.4	27.1	26.6		
9.63	965	960	1004		1368	1395	1388		
10.98	24.12	24.00	25.10		3420	3486	3470		
10.16					24.12	24.00	25.10		
					10.08	10.88	9.60		

set again

	38.6	38.6	39.0	39.1	50.8	50.0	50.1	50.8	-11.2
	19.8	20.0	20.1		28.0	28.3	27.3		
	23.1	23.0	22.8	23.0	33.9	33.0	32.9	33.3	-10.3
	16.3	16.0	17.0		27.4	27.2	27.1		
	978	976	989		1401	1385	1374		
	24.45	24.40	24.72		35.02	34.62	34.35		
					24.45	24.40	24.72		

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132^0

(1)

	55.0	55.1	55.0		6.3	6.2	6.2	11.2
	32.8	33.6	33.2		43.8	45.1	44.4	11.2
11.36	37.7	37.0	36.9		47.3	47.9	47.6	−10.7
11.70								
106	33.6	33.6	33.6		46.4	46.9	46.6	−13.0
11.53	1581	1593			2035	2061		
	39.52	39.82			50.88	51.52		
					39.52	39.82		
					11.36	11.70		

147^0

(57)

	40.1	40.6	40.5		53.1	53.1	53.1	12.6
	17.8	18.0	17.9		26.4	27.2	26.8	−8.9
11.46	21.0	21.8	21.4		31.5	30.6	31.0	−9.6
1088								
234	20.0	20.9	20.4		33.7	33.9	33.8	−13.4
11.17	989	1613			1447	1448		
	24.72	25.32			36.18	36.20		
					24.72	25.32		
					11.46	10.88		

162^0

(61)

	38.6	39.6	38.2	39.8	38.9	51.6	50.9	52.5	51.1	50.0	11.1
1257	12.8	13.3	12.0	11.7	12.5	23.5	22.9	23.4	24.7	23.6	11.1
1160											
1278	15.8	16.1	15.9	17.0	16.2	30.0	29.4	29.6	29.8	29.7	−13.5
1245											
970	19.0	19.7	18.0	19.1	18.9	32.6	31.9	31.7	31.2	31.8	12.9
1242	862	887	841	870		1377	1351	1352	1368		
	21.55	22.18	21.02	21.75		3442	3378	3380	3420		
						2155	2218	2102	2175		
						1287	1160	1278	1245		

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1884phae.proj.1766R

(7) 177°

	48.7	48.9	48.8
	21.0	20.2	20.6
10.36	28.2	27.8	28.0
1052	30.6	30.7	30.6
88	1285	1276	
10.44	32.12	31.90	

59.7	58.7	58.2	÷10.4
29.9	30.2	30.1	9.5
37.8	37.6	37.7	-9.7
42.5	43.2	42.8	12.2
1699	1897		
4248	4242		
3212	3190		
10.36	10.52		

(8) 192°

	55.4	55.0	55.2
1057	25.9	27.4	26.6
943	32.8	33.2	33.0
.50	38.1	38.2	38.1
10.25	1522	1538	
	38.05	38.45	

3.8	2.8	3.3	8.1
37.2	38.1	37.7	11.1
44.8	44.4	44.6	11.6
48.7	48.2	48.4	10.3
1945	1933		
48.62	48.38		
3805	3845		
10.57	9.93		

(9) 207°

	40.8	42.2	41.5
	14.3	15.2	14.7
1118	22.2	23.0	22.6
1053	25.1	26.1	25.6
171	1024	1065	
10.86	25.60	2662	

52.4	52.6	52.5	11.0
24.0	24.9	24.5	9.8
33.4	33.9	33.6	-11.0
37.3	37.2	37.3	11.7
1471	1486		
36.78	37.15		
2560	2662		
11.18	10.53		

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1884phae.proj.1766R

222°

41.7	38.2	48.6	50.0	48.4	485	56.8	57.2	570	−10.5
11.8	10.2	20.0	22.0	21.4	20.7	30.0	32.0	31.0	10.3
21.3	16.4	27.9	30.8	30.8	29.8	42.0	42.5	422	−12.4
25.0	21.8	31.4	33.0	32.0	31.7	42.2	43.4	426	10.9
99.3	86.6	127.9	135.8	132.6		171.0	175.1		
2	21.15	31.98	33.95	33.15		42.75	43.78		
						31.98	33.15		
						10.77	10.63		

1077
1063
140
10.70

(11) 23.7°

44.6	45.0	448	53.8	54.5	541	9.3
17.4	18.6	18.0	25.2	25.8	25.5	7.5
28.3	29.7	29.0	42.1	42.1	42.1	−13.1
30.7	31.0	30.9	42.6	43.0	428	11.9
121.0	124.3		163.7	165.4		
30.25	31.08		40.92	41.35		
			30.25	31.08		
			10.67	10.27		

10.67
10.27
94
10.47

(12) 25.2°

50.3	50.9	−.6	506	59.8	60.2	60.0	5.4
22.0	21.2		21.6	34.1	33.1	33.6	12.0
37.6	37.8		37.7	50.0	49.4	49.7	12.0
39.2	39.4		39.3	51.2	51.1	51.1	11.8
149.1	149.3			195.1	193.8		
37.28	37.32			48.78	48.45		
				37.28	37.32		
				11.50	11.13		

1150
1113
63
11.32

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1884phae.proj.1766R

(13) 267°

47.5 47.2 | 46.9 47.8 47.4
20.0 19.8 21.2 21.5 20.7
37.2 38.2 37.9 38.0 37.8
38.8 39.2 39.1 39.2 39.1
1435 1437 1451 1465
35.88 35.92 36.28 36.62

12.54
11.96
11.42
11.30
3.22
11.80

58.0 57.7 | 57.7 57.6 57.5 −10.1
32.0 31.8 32.0 32.8 32.1 11.4
52.7 52.0 52.0 52.0 52.2 14.4
51.0 52.0 49.1 49.3 49.8 10.7
1937 1915 1908 1917
48.42 47.88 47.70 47.92
35.88 35.92 36.28 36.62
12.54 11.96 11.42 11.30

(14) 282°

46.8 46.1 46.4
20.6 20.5 20.5
38.7 39.2 39.0
36.5 37.7 37.1
1376 1435
34.40 35.88
35.65

10.37
9.54
1991
9.96

56.4 55.2 55.8 −9.4
32.2 32.2 32.2 −11.7
49.9 49.3 48.6 −10.6
45.6 45.0 45.3 8.2
1841 1817
46.02 45.42
35.65 35.88
10.37 9.54

(15) 297°

44.6 44.9 45.6 45.0
20.1 20.9 21.8 20.9
37.3 38.1 39.0 38.1
33.2 34.2 35.0 34.1
1352 1381 1414
3380 3452 3535
532
34.16

1164
1083
247
11.24

54.9 55.3 55.1 −10.1
32.8 34.0 33.4 −12.5
49.7 49.7 49.7 −11.6
45.8 45.7 45.7 −11.6
1832 1847
45.80 46.18
3416 3535
11.64 10.83

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1884phae.proj.1766R

312°

(16)

49.0	49.7	49.4	
26.6	27.8	27.2	
42.9	43.5	43.2	
39.4	40.0	39.7	
157.9	161.0		
39.48	40.25		

10.84
11.05
1.89
10.94

59.2	58.8	59.0	9.6
39.0	41.0	40.0	12.8
54.0	55.8	54.9	11.7
49.1	49.6	49.3	9.6
201.3	205.2		
50.32	51.30		
39.48	40.25		
10.84	11.05		

327°

(17)

49.0	50.5	49.7	
31.0	29.9	30.4	
44.5	43.7	44.1	
39.9	39.2	39.6	
164.4	163.3		
41.10	40.82		

9.95
9.80
1.75
9.88

57.1	58.3	56.8	-7.1
42.1	41.0	41.5	11.1
56.1	56.6	56.3	8.2
48.9	48.6	48.7	-9.1
204.2	202.5		
51.05	50.62		
41.10	40.82		
9.95	9.80		

342°

(18)

49.5	50.2	49.8	
35.0	35.2	35.1	
49.2	49.9	49.5	
40.8	40.9	40.8	
174.5	176.2		
43.62	44.05		

11.33
10.80
2.13
11.06

61.7	61.8	61.7	11.9
47.0	46.6	46.8	11.7
60.2	60.4	60.3	-10.8
50.9	52.6	50.7	-8.9
219.8	219.4		
54.95	54.85		
43.62	44.05		
11.33	10.80		

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1884phae.proj.1766R

(19) 357°

	38.0	37.7	37.8		49.0	48.1	48.6	10.8
	20.8	22.1	21.4		34.1	34.2	34.1	12.7
11.24	36.3	36.3	36.3		46.9	46.0	46.4	−10.1
1060	26.8	25.8	26.3		36.9	36.0	36.5	−10.2
184	1219	1219			1669	1643		
1992	3048	3048			41.72	41.08		
					30.48	30.48		
					11.24	10.60		

(20) 12°

	41.4	42.0	41.7		52.2	52.6	52.4	10.7
993	27.8	28.0	27.9		37.1	37.6	37.4	9.5
950	40.0	39.2	39.6		48.4	47.1	47.7	−8.1
143	29.0	29.4	29.2		40.2	39.3	39.7	10.5
9.72	1382	1386			1779	1766		
	34.55	34.65			44.48	44.15		
					34.55	34.65		
					9.93	9.50		

(21) 27

	42.7	43.0	42.9		53.1	53.6	53.4	10.5
	28.2	26.6	27.4		38.0	37.7	37.8	10.4
1040	37.2	37.3	37.3		47.6	47.8	47.7	10.4
1033	25.9	29.7	29.3		39.9	38.8	39.3	10.0
73	1370	1366			1786	1779		
1036	3425	3415			44.65	44.48		
					34.25	34.15		
					10.40	10.33		

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1884phae.proj.1766R

42°

53.5	3.8 55.0	53.6	
37.7	38.1	37.9	
47.9	47.0	47.4	
38.7	38.6	38.6	
177.8	177.5		
44.45	44.38		

10.13
9.24
1937
9.68

66.0	65.7	65.8	12.2
47.7	46.0	46.8	8.9
56.5	55.7	56.1	8.7
48.1	47.1	47.6	9.0
2183	2145		
54.58	53.62		
44.45	44.38		
10.13	9.24		

57°

(23)

50.2	50.8 / 50.3	50.2	50.4	
31.4	31.0	30.6	31.0	31.0
40.3	39.9	39.3	40.1	39.9
32.2	32.6	32.0	31.8	32.1
1541	1543	1522	1531	
38.52	38.58	38.05	38.28	

883
890
910
924
07

9.02

61.3	60.9 / 61.2	61.4	61.2	10.8
40.8	42.1	41.6	42.4	41.7 10.7
47.4	47.6	47.0	47.2	47.3 7.9
39.9	39.3	38.8	39.1	39.3 7.2
1894	1899	1886	1901	
47.35	47.48	47.15	47.52	
38.52	38.58	38.05	38.28	
8.83	8.90	9.10	9.24	

72°

37.4	7.8 38.6	37.6	
18.6	18.2	18.4	
23.8	23.7	23.7	
150	14.9	15.0	
948	946		
23.70	23.65		

1062
997
2059
10.30

48.2	47.7	47.9	10.3
28.5	28.2	28.3	9.9
32.7	32.2	32.4	8.7
27.9	26.4	27.1	12.1
1373	1345		
34.32	33.62		
23.70	23.65		
10.62	9.97		

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1884phae.proj.1766R

Dec 15 1884 Mt. Th = 41.2

87°

H	40.0	41.8	41.9	41.2	54.1	53.0	54.6	54.6 − 13.4
F	22.5	22.8	22.3	22.5	33.2	33.8	33.5	33.5 −11.0
G	25.2	26.0	25.5	25.6	37.3	37.7	37.7	37.6 − 12.0
N	18.0	18.8	19.6	18.8	29.7	30.4	30.3	30.1 −11.3

12.16
11.87
11.70
573
11.91

1057 1094 1093
26.42 27.35 27.32

543 1569 1561
38.58 39.22 39.02
26.42 27.35 27.32
12.16 11.87 11.70

10.71 final mean

after 87° on opposite page

102°

	45.8	46.7	50.3		50.3	37.2	48.1	55.2	55.0			0.8	1.1	5.0 9.9
(2)	21.7	21.8	24.9		26.5	27.0		30.8	30.6			35.3	35.5	
10.26	24.8	24.9			25.7	29.0		34.3	35.7			38.7	38.9	
11.43	16.6	18.7			21.6	21.8		29.6	28.8			34.1	33.5	
9.92	1089	1121			1271	1290		1499	1501			1689	1690	
10.44	27.22	28.02	31.32	32.10	31.78	32.25		37.48	37.52	42.75	42.02	42.22	42.25	
1000								27.22	28.02	31.32	32.10	31.78	32.25	
5205								10.26	9.50	11.43	9.92	10.44	10.00	
10.41														

10.45

(3) 119°

	39.7	41.8	40.6	52.3	52.1	52.2 − 11.6
	14.3	15.5	14.9	25.9	27.3	26.6 − 11.7
11.20						
11.07	19.0	19.7	19.4	29.1	29.7	29.4 − 10.0
11.38	13.7	14.1	13.9	26.2	25.9	26.0 − 12.1
	867	907		1335	1350	
	21.68	22.68		33.38	33.75	
				21.68	22.68	
				11.70	11.07	

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1884phae.proj.1766R

87° after no 6 162°

	33.7	34.4	35.6 / 36.1	34.6
12.53				
11.30	11.4	12.9	12.7	12.3
10.84				
4.67	15.9	16.6	17.3	16.6
11.56				
	8.7	8.5	9.1	8.8
	6.97	7.24	7.47	
	17.42	18.10	18.68	

50.1	48.0	47.8	48.6	−14.0	11.91
23.2	23.4	23.3	23.3	11.0	11.56 after no 6
26.9	26.8	27.2	27.0	10.4	10.78 " " 12
					9.98 " " 18
19.6	19.4	19.8	19.6	10.8	9.32 " " 24
11.98	11.76	11.81			53.55
29.95	29.40	29.52			10.71
17.42	18.10	18.68			
12.53	11.30	10.84			

87°

50.3	50.6	50.4	
24.9	26.3	25.6	
28.7	29.6	29.1	
21.4	21.9	21.6	
125.3	128.4		
31.32	32.10		

0.6	0.0	0.3	−9.9
35.4	35.1	35.3	−9.7
41.2	39.9	40.5	−11.4
33.8	33.1	33.4	−11.8
171.0	168.1		
42.75	42.02		
31.32	32.10		
11.43	9.92		

87° after no 12 252°

46.0	47.8	47.1	48.3	
24.6	26.0	26.1	27.3	
31.2	32.6	31.7	31.2	
23.4	24.6	24.1	25.1	
125.2	131.0	129.0	131.9	
31.30	32.75	32.25	32.98	

60.0	59.3	60.6	60.2	
35.3	36.4	35.3	37.2	
42.2	42.2	42.0	41.5	
34.8	34.0	34.3	34.8	
172.3	171.9	172.2	173.2	
43.08	42.98	48.05	43.30	
31.30	32.25	32.25	32.98	
11.78	10.23	10.80	10.32	

11.78
10.23
10.80
10.32
3.13
10.78
87°

after no 18 342°

27.3	28.3		
3.2	3.6		
9.1	9.7		
4.0	4.0	**	
43.6	45.6		
10.90	11.40		

9.90
10.05
199.5
9.98

38.3	38.7		
12.4	13.2		
19.4	19.6		
13.1	14.3		
83.2	85.8		
20.80	21.45		
10.90	11.40		
9.90	10.05		

87° after no 24 72° end of reads.

43.0	43.2	42.2	43.2	42.0	43.1	
20.4	20.0	19.3	20.9	19.0	19.8	
24.0	23.0	22.5	23.1	22.0	22.2	
18.0	17.2	17.2	17.8	16.6	16.1	
105.4	103.4	101.2	105.0	99.6	101.2	
26.35	25.85	25.30	26.25	24.90	25.30	

53.6	54.0	54.2	53.4	54.0	52.5	
27.1	27.0	27.5	27.4	28.6	28.0	
32.3	31.5	33.3	31.7	32.1	31.3	
27.2	27.8	26.5	26.1	26.2	26.1	
140.2	140.3	141.5	138.6	140.9	137.9	
35.05	35.08	35.38	34.65	35.22	34.48	
26.35	25.85	25.30	26.25	24.90	25.30	
8.70	9.23	10.08	8.40	10.32	9.18	

8.70
9.23
10.08
6.40
10.32
9.18
55.91
9.32

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1884phae.proj.1766R

132°

45.2 47.5 47.2 47.2 46.8 | 57.8 57.2 | 58.2 58.7 58.0 11.2

19.9 21.4 21.0 22.1 21.1 | 30.8 32.0 | 32.1 32.4 31.8 10.7

23.3 24.7 24.2 25.0 24.3 | 34.7 34.9 | 36.2 34.8 35.1 -10.8

19.8 21.7 20.7 21.6 20.9 | 34.7 34.4 | 35.1 34.1 34.6 13.7

1082 1153 1131 1150 | 1580 1585 | 1676 1600

27.05 28.82 28.28 28.98 | 39.50 39.62 | 40.40 40.00

27.05 28.82 28.28 28.98

12.55 | 10.80 | 12.12 | 11.02

1080

1212

1102

649

1162

(5)

(6) 147°

58.6 59.9 59.2 | 12.2 12.6 12.4 - 11.2

31.6 31.8 31.7 | 42.8 42.9 42.8 11.1

35.6 36.3 35.9 | 44.8 45.6 45.2 - 9.3

34.2 35.4 34.8 | 48.7 49.4 49.0 14.2

1600 1634 | 2085 2105

40.00 40.85 | 52.12 52.62

40.00 40.85

12.12 | 11.77

12.12

11.77

3.89

11.94

(6) 162°

42.2 43.6 42.3 43.4 42.9 | 55.4 55.0 | 55.5 55.1 55.2 - 12.3

11.6 12.3 13.7 12.2 12.6 | 24.0 23.7 | 23.2 23.7 23.5 10.9

14.5 15.2 15.1 15.8 15.2 | 28.8 29.6 | 29.2 30.2 29.7 -14.5

18.6 19.7 19.3 19.7 19.3 | 32.2 32.8 | 32.2 33.1 32.7 13.4

869 908 904 916 | 1404 1411 | 1401 1421

21.72 22.70 22.60 22.90 | 35.10 35.28 | 35.02 35.52

21.72 22.70 22.60 22.90

13.38 | 12.58 | 12.42 | 12.62

1338

12.58

12.42

12.62

162

12.54

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1964phae.proj..1760K

(7) 177°

	51.2	52.4	51.8		2.8	2.9	2.8	11.0
	19.8	20.5	20.1		29.0	31.0	30.0	9.9
10.74	26.7	26.6	26.6		36.1	36.3	36.2	9.6
1090								
164	29.8	29.8	29.8		42.6	42.7	42.7	12.9
10.82	1275	1293			1705	1729		
	31.88	32.32			42.62	43.22		
					31.88	32.32		
					10.74	10.90		

(8) 192°

	39.2	40.6	39.7	40.2	39.9		48.2	48.3	48.0	48.7	48.3	8.4
	7.1	8.5	6.8	8.7	8.1		17.0	17.8	18.3	20.1	18.3	10.2
9.75												
9.15	13.6	14.6	13.6	13.2	13.7		24.7	24.2	25.1	26.8	26.9	13.2
9.93												
11.17	20.1	20.1	19.6	19.6	19.8		29.1	30.1	30.0	30.2	29.8	10.0
4000	800	838	817	811			1190	1204	1214	1258		
1000	20.00	20.95	20.42	20.28			29.75	30.10	30.35	31.45		
							20.00	20.95	20.42	20.28		
							9.75	9.15	9.93	11.17		

(9) 207°

	50.6	51.0	50.8		0.5	1.4	0.9	10.1
	20.8	22.2	21.5		30.0	30.7	30.3	8.8
9.72	28.1	27.4	27.7		38.2	37.9	38.0	10.3
9.88								
160	32.0	31.9	32.0		41.7	42.0	41.9	8.9
9.80	1315	1325			1704	1720		
	32.88	33.12			42.60	43.00		
					32.88	33.12		
					9.72	9.88		

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1884phae.proj.1766R

(10) 222°

39.9	41.1	40.5		48.2	47.5	47.8	−7.3
6.9	8.7	7.8		16.4	17.8	17.1	9.3
14.9	18.3	16.6		25.0	27.6	27.8	−12.2
20.4	20.1	20.2		30.6	30.2	30.4	10.2
821	862			1232	1231		
20.52	21.55			3080	3078		
				2052	2155		
				1028	923		

1028
9.23
1951
9.76

(11) 237

45.1	45.8	45.5		52.8	53.3	53.0	−7.5
14.9	14.8	14.8		21.0	21.2	21.1	6.3
24.2	24.2	24.2		36.8	36.1	36.4	−12.2
27.2	27.2	27.2		38.0	38.8	38.4	−11.7
1214	1120			1496	1494		
27.85	28.00			3740	3735		
				2785	2800		
				953	935		

9.55
9.35
90
9.45

(12) 252°

49.2	51.0	50.1		58.8	59.9	59.3	9.2
18.7	17.8	18.2		29.0	29.6	29.3	11.1
33.5	34.0	33.8		44.6	44.2	44.4	−10.6
35.6	35.2	35.4		46.1	46.3	46.2	−10.8
1370	1380			1785	1800		
34.25	34.50			4462	4500		
				3425	3450		
				1037	1050		

1037
10.50
87
10.44

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1884phae.proj.1766R

267°

(13)

34.7	5.8 36.2	35.2	
5.8	6.6	6.2	
22.2	22.6	22.4	
24.2	24.8	24.5	
869	898		
21.72	22.45		

1078
9.97
75
10.38

43.8	44.8	44.3	8.1
15.8	16.0	15.9	9.7
36.1	34.3	35.2	−12.8
34.3	34.6	34.4	9.9
1300	1297		
32.50	32.42		
2172	22.45		
14.78	9.97		

282°

(14)

39.6	41.0	40.3	
10.0	11.2	10.6	
31.1	30.9	31.0	
29.2	29.1	29.1	
1099	1122		
27.48	28.05		

10.94
9.97
91
10.46

57.0	56.6	56.8	10.5
23.4	23.5	23.4	12.8
41.4	40.0	40.7	9.7
37.9	38.0	38.0	8.9
1537	1521		
38.42	38.02		
27.48	28.05		
10.94	9.97		

297°

(15)

37.7	38.7	39.1	40.0	41.0	40.5	
10.8	11.0	11.0	14.3	15.0	14.7	
26.8	27.1	27.2	30.2	31.8	31.0	
23.2	23.6	23.8	26.3	27.2	26.7	
985	1004	1011	1108	1150		
24.62	25.10	25.28	27.70	28.75		

1193
1062
131
11.60
10.45
205
11.02

47.0	46.4	50.9	51.2	57.0	10.5	
23.4	23.2	25.9	26.0	26.0	11.3	
39.6	38.9	42.0	41.6	41.8	10.8	
36.2	35.1	38.4	38.0	35.2	11.5	
1462	1436	1572	1568			
36.55	35.90	39.30	39.20			
24.62	25.28	27.70	28.75			
11.93	10.62	11.60	10.45			

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1884phae.proj.1766R

(16) 312°

10.23
10.05
10.14

46.0	46.2	46.1
20.8	21.9	21.3
36.5	36.3	36.4
32.1	33.6	32.8
13 54	1380	
33.85	34.50	

53.2	55.8	55.5	−9.4
83.0	84.0	83.5	−12.2
46.0	46.1	46.0	−9.6
42.1	42.3	42.2	−9.4
1763	1782		
4408	4455		
33.85	3450		
1923	1005		

(17) 327°

8.70
7.84
16.54
8.27
+1.00
10.21

43.4	44.7	44.0	
22.1	22.6	22.4	
34.4	35.2	34.9	
31.2	30.5	30.8	
311	1332		
32.78	33.30		

51.1	50.4	50.1	50.5	+6.5
31.2	31.5	31.3	31.3	8.9
45.8	45.8	45.0	45.5	−10.6
37.8	38.2	36.8	37.6	8.8
1659	1659	1632		
41.48	41.48	4080		
3278		41.14		
8.70		3330		
		7.84		

(18) 342°

9.54
9.35
.69
9.44

Diff		42.8		
42.8	44.8	43.0	42.8	
24.2	26.5	25.0	24.6	
38.7	40.3	38.4	38.5	
30.2	32.0	30.0	30.1	
1359	1436	1362		
33.98	35.90	34.05		

53.3	53.4	53.4	10.6	
34.1	34.0	34.0	9.4	
48.0	47.8	47.5	−8.6	
38.7	38.4	38.6	8.5	
1741	1736			
43.52	4340			
33.98	3405			
9.54	9.35			

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1884phae.proj.1700R

(19) 357°

56.4	57.8	56.7	
39.9	39.9	39.9	
53.0	54.6	53.8	
42.1	42.8	42.4	
1914	1943		
47.85	48.58		

9.57
8.54
1811
9.06

6.0	5.1	5.6	8.9
51.1	50.9	51.0	11.1
1.4	2.2	1.8	8.0
51.2	50.3	50.8	8.4
2297	2285		
57.42	57.12		
2485	4858		
9.57	8.54		

(20) 12°

50.0	50.9	50.5	
34.3	34.7	34.5	
44.8	44.9	44.8	
34.1	34.6	34.3	
1632	1657		
40.80	41.28		

950
890
40
9.20

1.0	0.9	0.9	10.4
43.1	43.1	43.1	8.6
52.4	52.6	52.6	9.8
44.7	44.1	44.4	10.1
2012	2007		
5030	5018		
4080	4128		
9.50	8.90		

(21) 27°

41.5	42.6	42.0	
23.3	25.8	24.3	
33.6	33.8	33.7	
25.7	25.5	25.6	
1241	1272		
31.02	31.80		

10.18
8.65
1883
9.42

53.6	53.0	53.3	11.3
33.7	32.8	33.2	8.9
42.8	42.0	42.4	8.7
34.7	34.0	34.3	8.7
1648	1618		
4120	4045		
3102	3180		
10.18	8.65		

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1884phae.proj.1766R

Alt Th = 46.0 atmos Dan Shiny

42°

0.2 0.1 0.1
40.3 41.0 40.6
49.0 49.6 49.3
41.5 41.2 41.3
1910 1919
47.75 47.98

9.55
9.34
89
9.44

11.9 11.8 11.8 11.7
49.1 48.9 49.0 8.4
57.4 57.4 57.4 8.1
50.8 51.2 51.0 9.7
2292 2293
57.30 57.32
47.75 47.98
9.55 9.34

(23) 57°

41.4 41.3 41.3
17.5 18.7 18.1
26.9 26.5 26.7
20.2 20.2 20.2
1060 1067
2650 2668

1041
9.77
18
1009

stat stat
52.8 53.7 53.3 53.2 11.8
30.4 31.3 30.2 30.8 12.4
35.1 36.6 35.1 35.8 9.1
27.1 28.8 27.2 27.7 9.5
1449 1504 1458
3622 3760 3645
3691 2650 2668
2650 9.77
1041

(24) 72°

38.7 38.7 38.7
16.0 15.8 15.9
19.9 21.2 20.6
12.2 13.2 12.7
868 889
2170 2222

1048
9.01
1949
9.74

49.0 48.8 48.9 10.2
26.1 24.7 25.4 9.5
29.4 28.1 28.7 8.1
24.2 23.3 23.8 11.1
1287 1249
32.18 31.22
2170 2222
1048 9.01

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1884phae.proj.1766R

Dec 15 Lunn.

1		10.71	+488	+48	
2		10.47	+18	+.66	+1.00
3		11.38	+1.15	+1.81	-1.13
4		11.62	+1.39	+3.20	+1.0
5		11.94	+1.71	+4.51	-1.84
6	11.433	12.54	+2.31	+7.22	+1.75
7		10.8	+.59	+7.81	-.20
8		10.00	-.23	+7.58	+1.02
9		9.80	-.43	+7.15	-.07
10		9.76	-.47	+6.68	+.07
11		9.45	-.78	+5.90	-.02
12	10.145	10.44	+.21	+6.11	+.01
13		10.38	+.15	+6.26	+.29
14		10.46	+.23	+6.55	2.20
15		11.02	+.79	+7.38	+.90
16		10.14	-.05	+7.29	-.31
17		8.27	-1.96	+5.33	+2.27
18	9.952	9.44	-.75	+4.56	-2.52
19		9.06	-1.17	+3.37	+.86
20		9.20	-1.03	+2.34	-1.56
21		9.42	-.81	+1.53	-3.30
22		9.44	-.79	+.94	-1.22
23		10.09	-.14	+.60	-.74
24	9.449	9.74	-.45	+.11	+1.62
		10.18			

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1884phae.proj.1766R

Dec 22 1884 Mt Ht = 35.6 Very cold snap

57° Dec 20h + 21st moderated suddenly on 22nd

111

weight off		weight on		weight off			weight on	
39.1	40.6	52.2	53.2	55.8	54.8	55.9	8.0	7.1
13.55 15.4	15.9	27.6	28.3	28.7	29.0	29.6	39.8	40.1
13.08								
14.1	14.0	26.8	26.2	26.9	26.1	28.3	38.2	38.1
13.65								
12.77 11.8	9.9	21.0	20.6	23.2	22.8	23.0	36.2	34.1
1305 804	804	1276	1283	1346	1327	1348	1822	1794
13.26 2010	2010	3190	3208	3365	3318	3370	4555	4485
				20.10	2010	2010	31.90	32.08
				13.55	13.08	14.10	13.65	12.77

102

48.9	49.6	0.8	0.6	
(2) 21.3	21.8	31.8	32.6	
12.58 18.3	20.1	30.8	31.0	
11.76				
434 14.3	15.0	29.7	29.3	
12.17 1028	1065	1531	1535	
1204 25.70	2662	38.28	38.38	
		2570	2662	
1210		12.58	11.76	

These two sets are the same.

62											
55.0	57.0	54.8	55.8	78.2	76.1	7.1	8.1	+15 6.8	7.9	30.3	29.8
27.1	27.4	28.2	27.8	49.1	49.0	39.4	40.6	37.8	39.2	3.6	3.9
7								3			
12.10 2x6	28.2	27.3	26.4	49.8	47.2	37.2	37.2	26.6	37.2	0.0	0.6
11.93											
11.80 23.4	25.1	24.3	23.6	46.4	44.1	37.8	38.7	36.6	37.3	59.2	0.0
1200 1331	1369	1346	1336	2235	2264	1815	1846	1778	1116	2731	2743
1240 3328	34.22	33.65	33.40	5588	5660	45.38	46.15	1818	4540	6828	6858
11.98						3328	3422	4545	3340	5588	5660
1221								33.65			
12.04						1210	1193	1180	12.00	1240	11.98

(3) 117°

46.6	46.4	61.3	0.8	
19.7	19.7	33.6	33.8	
14.12 20.0	20.2	33.0	33.0	
14.48 17.3	16.6	32.6	33.2	
60 1036	1029	1605	1608	
1430 25.90	25.72	40.12	40.20	
		2590	2572	
		14.12	14.48	

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1884phae.proj.1766R

132°
~~147°~~

	38.9	38.0	51.8	51.3
	10.0	10.6	23.6	23.4
	9.1	8.1	22.0	21.2
	7.7	7.7	24.4	24.0
	657	644	1218	1199
	1642	1610	3045	2998
			1642	1610
			1403	1388

(4)

14.03
13.88
79'
1396

147°
~~150°~~

	38.7	~~40.0~~ 39.2	53.6	53.8
	10.8	10.8	20.4	20.0
	9.4	9.1	19.9	19.4
	11.2	11.8	27.0	27.0
	701	709	1209	1202
	1752	1772	3022	3005
			1752	1772
			1270	1233

(5)

12.70
12.33
103
12.52

162°

	32.0	33.2	32.2	~~33.8~~ 34.4	47.0	46.8	47.6	46.9
	0.2	2.0	2.6	1.8	12.4	12.8	13.6	13.3
	58.8	0.2	58.6	0.2	14.1	14.2	14.3	14.2
	5.2	~~5.8~~	5.4	6.7	20.8	21.0	20.0	20.1
	2762	~~2812~~	2788	~~2825~~	943	948	945	945
	6905	7030	6970	7062	2858	2370	2388	2362
					905	1030	970	1062
					1453	1340	1418	1300

(6)

14.53
1340
1418
1300
1511
13.78

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1884phae.proj.1766R

177°

(7)

	47.2	46.7	59.8	60.0
	14.3	13.8	24.6	25.0
12.72				
13.12	14.6	14.8	27.1	27.2
584	20.7	20.7	36.2	36.3
1292	968	960	1477	1485
	2420	2400	3692	3712
			2420	2400
			12.72	13.12

192°

(8)

	57.4	58.4	8.8	8.9
	22.3	25.0	36.8	37.0
1362	24.2	25.3	39.8	40.2
1267	33.2	34.2	46.2	47.2
629	1371	1426	1916	1933
13.14	3428	3565	4790	4832
			3428	3565
			13.62	1267

207

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1884phae.proj.1766R

Other reversed

192°

(8)

1290	58.0	57.6	8.9	9.4
1284	24.0	25.8	36.8	37.0
174	25.2	25.2	39.8	40.1
1287	32.8	33.7	46.1	47.2
	1400	1428	1916	1937
	35.00	3558	47.90	48.42
			35.58	35.58
			1290	1284

177°

(7)

12.38	45.1	46.3	58.0	58.6
12.14	14.6	16.2	25.1	25.9
52	15.4	15.8	25.9	27.4
12.26	18.1	18.8	33.7	33.8
	932	971	1427	1457
	2330	2428	35.68	36.42
			2330	2428
			1238	1214

162°

(6)

~~1425~~	33.2	47.4	48.7 |	47.0	47.3
13.08	5.8	18.3	20.2	19.3	18.8
13.70		16.8	18.1	18.0	18.4
1330		19.7	21.1	20.6	21.2
108		1022	1081	1049	1067
13.36		25.55	27.02	26.22	26.42

1.2	1.9	2.6	1.4	
31.0	31.0	30.2	31.5	
32.1	32.1	31.8	31.3	
34.9	35.4	35.1	34.7	
1592	1604	1547	1589	
39.80	40.10	39.92	39.72	
25.55	27.02	26.22	26.42	
14.25	13.08	13.70	13.30	

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1884phae.proj.1766R

147°

(5)

1325
1180
505
1252

38.7	40.1 ~~41.0~~	
16.9	17.4	
14.2	15.8 ~~16.0~~	
13.0	14.1	
828	874	
2070	2185	

55.0	54.9
26.8	26.6
25.4	24.9
28.6	28.2
1338	1346
33.95	33.65
2070	2185
13,25	11,80

(4) 132°

1455
1360
815
1408

41.6	3.9 ~~4.0~~	
20.7	21.2	
19.3	20.3	
14.4	15.6	
960	1010	
2400	2525	

57.0	58.0
34.0	34.0
32.2	32.8
31.0	30.6
1542	1554
3855	3885
2400	2525
14,55	13,60

(3) 117

1360
1352
112
13,56

50.6	51.6	
28.1	28.3	
29.3	29.0	
22.8	23.1	
1308	1320	
3270	3300	

5.0	5.6
43.1	42.2
40.3	41.1
36.8	37.2
1852	1861
4630	4652
3270	3300
13,60	1352

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1884phae.proj.1766R

All Th at end 3.0 (cm)

102°

	40.7	1.6 4.2	42.3	42.8		54.6	55.0	56.1	
(2)	19.2	20.0	20.4	20.7		31.4	32.1	31.4	
13.38	19.9	20.8	20.1	20.2		31.8	30.7	31.7	
12.50	10.7	12.2	12.1	12.7		26.2	26.3	27.6	
12.98	9.03	9.41	9.49	9.64		14.40	14.41	14.68	
12.60	22.62	23.52	23.72	24.10		36.00	36.02	36.70	36.70
11.46						22.62	23.52	23.72	24.10
12.86						13.38	12.50	12.98	12.60

87°

	31.2	30.5	1.6 3.2	32.0	32.7	45.0	46.0	46.6	46.7	46.9
(1)	11.3	11.0	11.1	12.4	11.7	22.3	23.5	22.9	24.1	23.6
12.28	10.4	10.4	10.9	10.8	11.2	21.8	21.1	22.0	22.3	21.0
13.14	×2.3	×2.0	×3.2	3.1	5.1	15.2	15.9	15.8	16.3	15.8
12.62	5.52	5.39	5.68	5.83	6.07	10.43	10.65	10.73	10.94	10.73
12.77	13.80	13.48	14.20	14.58	15.18	26.08	26.62	26.82	27.35	26.82
11.64						13.80	13.48	14.20	14.58	15.18
12.45						12.28	13.14	12.62	12.77	11.64
12.49										

87°	13.26	+54	+54			+12.49	+02	+02	+28	
102	12.10	−62	−08			12.86	+39	+41	+16	
117	14.30	+1.58	+1.50			13.56	+1.09	+1.50	+1.50	
132	13.96	+1.24	+2.74			14.08	+1.61	−0.11	+2.92	
147	12.52	−20	+2.54			12.52	+05	+3.16	+2.85	
162	13.78	+1.06	+3.60			13.36	+89	+4.05	+3.82	
177	12.92	+20	+3.80			12.26	−21	+3.84	+3.82	
192	13.14	+42	+4.22			12.57	+1.0	+4.24	+4.23	
	13.25					13.70				
	−53					−53				
	12.72					12.47				

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1884phae.proj.1766R

Jan 1st 1885 Mt Jk. 500

Reversed order

87° to 102°

(4) + 67 72

13.48
13.32
14.30
14.30
15.50
13.88
13.92 acc p 118
180
13.90

40.6	41.5	40.9	42.6	41.0	41.0	56.0	57.0	56.8	57.4	56.8	-15.8		
22.0	22.6	21.6	23.2	22.6	22.2	33.8	35.1	35.0	35.2	34.8	12.6		
24.1	24.9	24.3	26.6	23.9	24.3	36.6	37.2	37.8	38.1	37.4	13.1		
16.6	18.6	17.3	19.0	17.8	17.6	30.8	31.6	31.7	31.8	31.5	13.9		
1033	1076	1041	1112	1053		1572	1609	1613	1625				
25.82	26.90	26.02	27.80	26.32		39.30	40.22	40.32	40.62				
						25.82	26.90	26.02	26.32				
						13.48	13.32	14.30	14.30				

72° to 87°

(24)

1558
14.23
1437
14.45
263
14.66

Setazimu

48.2	49.5	49.0	38.0	38.9	38.2	43.6	3.9	4.4		53.2	52.8	56.8	-13.2
29.6	32.1	31.0	19.0	19.4	18.9	27.0	44.7	45.9		33.1	33.4	33.2	14.1
33.1	34.7	34.3	22.1	23.3	22.2	33.6	46.6	47.8		36.4	35.6	36.1	13.3
24.0	25.8	24.1	13.0	14.7	13.7	24.0	41.0	40.9		29.0	29.0	29.0	9.8
1349	1421		921	963	430	1912	1990			1517	1508		
3372	3552		2302	2408	23.25	47.80	49.75			37.92	37.70		
			23.55			32.72	35.52			23.55	23.25		
						15.58	14.23			14.37	14.45		

59.6 to 2

(23)

1258
1272
130
12.65

42.8	42.0	42.4	57.0	57.0	57.0	14.6	
24.3	23.7	24.0	37.8	38.7	38.3	14.3	
30.2	30.9	30.5	42.1	41.9	42.0	11.5	
21.9	22.6	22.2	32.6	32.5	32.5	10.3	
1192	1192		1695	1701			
29.80	29.80		42.38	42.52			
			29.80	29.80			
			12.58	12.72			

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1884phae.proj.1766R

42° to 57°

(22)

1243	38.6	39.7	39.2		53.6	54.0	53.8	14.6
12.40	23.2	22.8	23.0		34.9	35.7	35.2	12.2
12.41	30.7	31.8	31.2		41.3	41.9	41.6	10.4
	20.8	21.3	21.0		33.2	33.6	33.4	12.4
	1133	1156			1630	1652		
	28.32	28.90			40.75	41.30		
					2832	28.90		
					1243	12.40		

27° to 42°

(21)

1097	54.1	54.2	54.1		6.2	6.9	6.4	−10.3
11.68	38.9	38.7	38.8		50.3	51.2	50.7	−11.9
267	47.1	48.1	47.6		57.1	58.5	57.8	−10.2
11.34	37.7	37.8	37.7		48.1	48.9	48.5	−10.8
	1778	1788			2217	2255		
	4445	4470			55.42	56.38		
					44.45	4470		
					10.97	11.68		

0 D

12 to 27

(20)

1082	37.6	38.0	37.8		52.2	52.0	52.1	12.3
1023	23.9	25.[illegible]	24.5		34.8	34.8	34.8	10.3
105	34.3	34.9	34.6		42.5	42.9	42.7	−8.1
10.52	22.1	22.8	22.4		33.7	34.1	33.9	11.5
	1179	1209			1612	1618		
	29.48	3022			4030	4045		
					2948	3022		
					10.82	10.23		

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1884phae.proj.1766R

357° to 12°

(16)

	41.0	41.9	41.0		52.7	57.9	52.7	11.7
11.32	26.1	27.3	27.2		39.6	39.7		12.5
10.07	38.9	39.5			48.8	48.2		-.99
139								
+0.69	26.8	27.9			37.0	37.1		10.2
	1328	1366			1781	1769		
	33.20	34.15			44.52	44.22		
					33.20	34.15		
					11.32	10.07		

19

342° to 357°

(18)

	48.5	48.7	48.6		2.3	2.1	2.2	13.6
12.33	33.3	34.1	33.7		47.2	46.0	46.6	12.9
11.52	47.2	47.7	47.5		58.7	58.3	58.0	10.5
385	37.6	37.6	37.6		47.7	47.7	47.7	10.1
11.92	1666	1680			2159	2041		
+1.00	41.65	42.00			53.98	53.52		
12.92					41.65	42.00		
					12.33	11.52		

18

327 to 342

(17)

	45.4	45.6	45.5		56.0	55.6	55.8	10.3
13.00	25.8	28.8	36.3		42.2	42.0	42.1	18.8
12.18	40.7	40.6	40.6		54.7	53.7	54.2	13.6
518								
12.59	33.8	34.2	34.0		44.8	44.6	44.7	10.7
+1.00	14.57	14.72			1977	1959		
13.46	36.42	36.80			49.42	48.98		
					36.42	36.80		
					13.00	12.18		

17

Add 100" for 34° to 23" for a constant

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1884phae.proj.1766R

312 & 327

(16)

12.57
12.35
92
12.46
+FW
+13.46

25.6	25.5	25.6	
3.8	3.7	3.7	16
18.8	18.8	18.8	
14.1	13.8	14.0	
623	618		
15.58	1545		

37.4	37.0	37.2	11.6
18.8	18.1	18.4	14.7
31.3	31.5	31.4	12.6
25.1	24.6	24.8	10.8
1126	1112		
28.15	2780		
15.58	15.45		
12.57	12.35		

297 & 312

(15)

12.77
11.37
24.14
12.07
+FW
13.07

52.5	52.4	52.4	
27.6	28.4	28.0	15
43.6	45.1	14.4	
39.4	40.0	39.7	
1631	1659		
40.78	41.48		

63.1	62.4	2.7	10.3
42.0	41.0	41.5	13.5
57.0	56.3	56.6	-1.2
52.1	51.7	51.9	12.2
2142	2114		
53.55	52.85		
40.78	41.48		
12.77	11.37		

287 & 297

(14)

Add 3.00
10.40
9.65
05
18.02
+FW
14.02

53.6	54.0	53.8	
28.8	29.9	29.3	14
46.0	47.0	46.5	
42.8	43.3 / 44.2	43.0	
1712	1742		
42.80	43.55		

4.4	4.4	4.4	10.6
40.2	40.5	40.3	9.0
56.6	56.2	56.4	8.5
516	517	516	8.6
2128	2128		
53.20	53.20		
42.80	43.55		
10.40	9.65		

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1884phae.proj.1766R

267 & 282

(13)

+100

11.26
10.90
216
108
+1.00
13.08

58.8 59.5 59.1
34.0 33.6 33.8
48.4 48.2 48.3
49.8
47.7 48.1 47.9
1889 1894
47.22 47.35

9.4 9.0 9.2 10.1
44.1 44.6 44.3 10.5
1.7 1.0 1.3 13.0
5
58.7 58.4 58.5 10.8
2339 2330
58.48 58.25
47.22 47.35
11.26 10.90

252 & 267

(12)

13.10
13.10
13.10
+1.00
14.10

38.0 38.0 38.0
9.7 9.4 9.5
25.4 24.6 25.0
25.0 26.1 25.6
981 981
24.52 24.52

49.7 49.6 49.6 49.6
23.0 23.5 23.3 13.8
38.9 38.7 38.8 13.8
38.9 38.6 38.7 13.1
1505 1505
37.62 37.62
2452 2452
13.10 13.10

237 & 252

(11)

12.25
11.95
420
12.10
+1.00
13.10

15.9 16.1 16.0
49.9 50.1 50.0
59.8 59.7 59.7
0.0 0.9 0.4
1856 1868
46.40 46.70

26.3 26.6 26.4 10.4
58.8 59.1 58.9 8.9
15.1 14.6 15.1 15.4
14.4 14.3 14.4 14.0
2346 2346
5865 5865
46.40 46.70
12.25 11.95

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1884phae.proj.1766R

222° ≤ 237°

(10)

42.9	43.0 ~~44.0~~	43.0		55.3	55.6	55.4	12.4
15.1	16.9	16.0		29.0	29.2	29.1	13.1
24.0	24.2	24.1		38.9	39.4	39.1	−15.0
25.3	26.3	25.8		39.6	40.4	40.0	−14.2
1073	1104			1628	1646		
26.82	27.60			40.70	41.15		
				2682	2760		
				13.88	13.55		

13.88
13.55
143
13.72

10

207° ≤ 222°

(9)

63.8	5.0	4.4		20.7	19.7	20.2	1.58
37.8	38.2	38.0		50.8	51.0	50.9	12.9
44.6	44.9	44.7		58.9	58.6	58.7	−14.0
46.1	46.6	46.4		61.1	61.0	61.1	14.7
1923	1947			2515	2503		
48.08	48.68			62.88	62.58		
				4808	4868		
				14.80	13.90		

14.80
13.90
870
14.35

9

192° ≤ 207°

(8)

50.3	57.2 ~~57.9~~	50.8		2.5	3.8	3.1	12.3
21.8	22.6	22.2		36.0	37.0	36.5	14.3
27.3	28.8	28.0		112.3	43.9	43.1	15.1
314	32.7	32.0		44.4	45.0	44.7	12.7
1308	1353			1852	1897		
32.70	33.82			46.30	47.42		
				3270	3382		
				13.60	13.60		

13.60
13.60
13.60

8

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1884phae.proj.1766R

177 to 192

(7)

49.2 50.4 49.8 | 2.3 2.8 2.5 1.27
21.3 22.0 21.7 | 33.7 33.9 33.8 1.21
26.9 27.3 27.1 | 39.9 39.4 39.6 1.25
28.0 28.9 28.4 | 42.7 42.7 42.7 1.43
12.54 12.86 | 17.86 17.88
31.35 32.15 | 44.65 44.70
| 31.35 32.15
| 13.30 12.55

1330
12.55
585
12.92

162 to 177

(6)

38.2 40.9 39.9 39.0 | 54.2 53.5 54.6 1.56
10.8 12.9 12.1 11.4 | 24.9 24.7 24.8 1.34
14.0 16.1 15.0 14.5 | 31.3 31.2 31.7 1.67
16.8 18.0 16.8 16.8 | 32.1 31.9 32.0 1.82
7.98 8.38 | 14.25 14.13
19.95 20.95 | 35.62 35.32
| 19.95 20.95
| 15.67 14.37

1437
1004
15.02

147 to 162

(5)

42.6 43.9 43.2 | 58.9 59.1 59.0 1.58
18.6 19.4 19.1 | 31.5 31.2 31.3 1.22
24.0 24.6 24.3 | 35.6 35.9 35.8 1.14
20.7 21.7 21.2 | 36.9 36.6 36.7 1.55
10.59 10.96 | 16.29 16.28
26.48 27.40 | 40.72 40.70
| 26.48 27.40
| 14.24 13.30

1424
13.30
794
13.77

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1884phae.proj.1766R

132 & 147

(4)

16.52	44.1	45.5	44.8	60.7	60.0	60.3	15.5
14.57	21.1	22.8	21.8	37.0	35.9	36.5	14.7
11.09	25.1	26.1	25.6	40.6	40.0	40.3	14.7
15.54	20.1	21.1	20.6	38.2	37.9	38.1	17.5
	11.04	11.55		17.65	17.38		
	27.60	28.88		44.12	43.45		
				27.60	28.88		
				16.52	14.57		

4

117 & 132

(3)

15.27	41.7	42.8	42.1	57.0	57.4	57.2	15.1
14.82	18.6	19.9	19.2	35.0	34.6	34.8	15.6
10.09	25.1	24.8	25.0	38.2	38.7	38.4	13.4
15.04	16.8	17.7	17.2	33.1	33.8	33.4	16.2
	10.22	10.52		16.33	16.45		
	25.55	26.30		40.82	41.12		
				25.55	26.30		
				15.27	14.82		

3

102 & 117

(2)

13.65	51.1	53.0	37.9	39.0	15.7	4.7	5.1	52.2	57.8	58.5	13.3
12.34	27.9	30.0	13.9	14.2	21.5	40.9	40.7	24.6	27.6	34.5	13.0
15.32	33.1	34.1	17.2	18.0	25.6	46.8	47.0	32.8	32.7	35.8	14.2
14.03	25.1	26.0	11.4	12.2	18.7	39.4	39.7	28.1	27.4	39.6	20.0
15.34	13.72	14.31	8.04	6.32		19.18	19.25	14.17	13.95		14.5
8.83	34.30	35.78	20.10	20.85		47.95	48.12	35.42	34.88		
						34.30	35.78	20.10	20.85		
						13.65	12.34	15.32	14.03		

2

continued from p. 118

from p 118

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1884phae.proj.1766R

87 to 102 end series backward motion.

(1)

1437	E	44.4	45.0	46.1	45.2	1.2	1.1	1.3	1.2
1417	F	24.9	24.9	25.0	24.9	38.6	39.0	38.6	38.7
1323	G	28.4	29.0	29.2	28.9	41.0	42.3	41.1	41.5
1177	H	19.7	20.6	21.8	20.7	34.1	34.2	34.0	34.1
1392		1174	1195	1221		1749	1766	1750	
1388		29.35	29.88	30.52		43.72	44.15	43.75	
1390						2935	2988	3052	
						1437	1417	1329	

-160 -159 -154 1.38 1.26 1.34

Forward motion

102 to 117

(2)

1482		38.5	39.6	37.9	39.0	52.6	52.6	52.2	51.8
1392		14.8	14.9	13.9	14.2	27.3	26.8	28.6	27.6
1532		16.1	16.9	17.2	16.0	33.6	34.0	32.8	32.7
1403		11.8	13.0	11.4	12.2	29.0	28.7	28.1	27.4
209		832	864	804	834	1425	1421	1417	1395
1452		20.80	21.60	20.10	20.85	35.62	35.52	35.42	34.88
						2080	2160	2010	2085
						14.82	13.52	15.32	14.03

18.5 33.8 -153

117 to 132

(3)

1390		47.1	47.7			1.9	1.7		
1438		22.6	23.2			36.4	37.9		
28		26.3	28.6	28.4		40.1	41.0	40.6	
1414		21.6	21.8			36.9	38.2		
		1196	1213			1752	1788		
		2990	3032			4380	4470		
						2990	3032		
						1390	1438		

-122

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1884phae.proj.1766R

132 to 147

(4)

	45.0	45.1	1.0	0.7
	20.1	21.6	35.0	34.6
1620	23.8	22.7	39.1	38.5
1540				
1160	20.1	20.7	38.7	37.9
1580	1090	1101	1738	1717
	27.25	27.52	43.45	42.92
			2725	27.52
			1620	1540

147 to 162

(5)

	39.4	42.5	41.9	58.1	58.8
1428	14.7	17.0	16.6	29.0	29.5
1516	17.3	20.1	19.9	32.7	33.4
9484					
1472	17.1	19.7	19.7	36.6	37.0
	8815	993	981	1564	1587
	22.12	24.82	24.52	39.10	39.68
				2482	2452
				1428	1516

162 to 177

(6)

	46.8	47.9 48.8		2.5	2.5
	17.1	18.1		31.3	31.4
1577	21.3	23.0		38.6	37.9
1442	25.1	26.1		41.0	41.0
1015	1103	1151		1734	1728
1510	27.58	28.78		43.35	4320
				2758	2878
				1577	1442

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1884phae.proj.1766R

Alt. h, 50.1 atmos

177°6792

(7)	45.5	46.5	0.0	59.1
	14.1	15.9	24.0	26.2
1470				
1310	21.1	21.7	34.6	34.3
780	23.8	25.2	40.7	40.1
1390	1045	1093	1633	1617
	26.12	27.32	4082	4042
			2612	27.32
			1470	1310

192°-20°7

(8)	55.9	56.0	7.9	7.9
14.07	23.6	24.8	35.6	35.1
	30.3	30.7	46.4	41.6
	36.8	36.6	50.0	50.1
	1466	1481	2029	1977
	36.65	37.02	50.72	49.42
			3665	3702
			1407	1240

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1884phae.proj.1766R

					I		II	
				$\frac{1}{2}$		$\frac{1}{2}$		$\frac{1}{2}$
1	13,90	+6 6	+6,6	+6,6	+,23	+23	13,90	−09 −09
2	13.83	+,58	+,58	+1,24	+,16	+39	14,52	+53 +44
3	15,04	+1,80	+1,80	+4,04	+1,37	+176	14,14	+15 +59
4	15,54		+2,32	+6,36	+1,87	+3,63	15,82	+1,81 +240
5	13,77		+,53	+6,89	+,10	+3,73	14,72	+73 +313
6	15,02	14,517	+1,35	+8,24	+1,35	+5,08	15,10	+1,11 +424
7	12,52		−,32	+8,35	−,75	+4,33	13,50	−09 +4,15
8	13,60		+,36	+8,71	−,07	+4,26	14,07	+08 +4,23
9	14,34		+1,91	+8,62			14,52	
10	13,72		+,48	+10,30			−0,53	
11	13,10		−1,14	+9,16			13,94	
12	14,10	13,298	−,31	+8,02				
13	13,08		−1,16	+6,86				
14	14,02		−,24	+6,62				
15	13,07		−1,17	+5,45				
16	13,46		−,78	+4,67				
17	12,59		−,65	+4,02				
18	12,92	12,353	−1,32	+2,70				
19	11,82		−,92	+1,78				
20	10,52		−2,32	−,54				
21	11,34		−1,90	−2,44				
22	12,41		−,88	−3,32				
23	12,65		−,54	−3,86				
24	14,66	12,150	+1,42	−2,44				
		13,084						

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1884phae.proj.1766R

Jan 21 1885 Readings of Circle for quadrant points for δ = 84°

87 − 177

	"	"	"	
ξ	43.8	43.8	44.0	43.53
F	19.7	20.2	19.8	19.90
G	20.0	20.6	20.6	20.40
H	13.9	14.0	14.0	13.97
	974	986	984	
	2435	2465	24.60	24.52

0 24.52
0 24.15 43.8
0 27.19
0 21.91
0 24.52

1776 26.7

	42.4	41.8	42.3	42.17
	9.6	F2	10.1	9.30
	13.3	12.7	12.9	12.97
	16.3	16.3	15.7	16.10
	818	790	810	
	20.45	19.75	20.25	20.15

H − G − H

89 59	53.57	53.19
60	3.13	2.75
	1.43	1.05
	3.40	3.02
900	0.38	

Cor = −.38

E, F

89 5	36.37	50 0.617
	27.13	1.53
	29.76	5.56
	27.56	5.36
	30.20	

Cor = +29.50

2676 357

	54.0	53.6	53.4	53.67
	23.0	24.0	23.3	23.43
	35.0	35.1	35.2	35.10
	36.8	36.8	36.0	36.53
	1488	1496	1479	
	37.20	37.38	36.98	37.19

87 − 177

	44.0	44.7	44.1	44.27
	11.6	11.8	12.1	11.83
	14.0	14.8	13.4	14.07
	17.2	18.2	17.0	17.47
	868	895	866	
	21.70	22.38	21.65	21.91

R − H

	−6.17	+6.11	+5.5	+2.2
	+3.07	+2.35	+3.2	+1.16
	+0.44	−1.05	−0.61	−0.30
	+2.14	−3.02	−0.38	−0.19

H − H

			Mean	Cor.
			+2.2	+2.2
			+1.16	+3.8
			−0.30	+0.8
			−0.19	−1.1

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1884phae.proj.1766R

Ja 11 85

		I		I		II		II	
			$\bar{2}$		$\bar{2}$			$\bar{2}$	
1	13.80	+32	+32	+23	+23	+390	-05	-05	
2	13.83	+25	+57	+16	+39	14.52	+13	+14	
3	15.04	+1.46	+2.03	+1.37	+1.76	14.14	+05	+19	
4	15.54	+1.96	+3.99	+1.87	+3.63	15.80	+1.81	+2.40	
5	13.77	+19	+4.18	+1.10	+3.73	14.72	+.73	+3.13	
14.517 6	15.02	+1.44	+5.62	+1.35	+5.08	15.10	+1.11	+4.24	
7	1292	-66	+4.56	-.75	+4.33	13.50	-05	+4.15	
8	1360	+02	+4.58	-07	+4.26	14.07	+08	+4.73	
14.20 9	14.35	+77	+5.35			14.52			
10	13.72	+14	+5.49			-53			
11	13.10	-48	+5.01			1354			
13.632 12	14.10	+52	+5.52						
13	13.08	-50	+5.02						
14	14.02	+44	+5.46						
15	13.07	-51	+4.95						
16	13.46	-.12	+4.83						
17	13.57	+.01	+4.84						
13.357 18	1292	-.66	+4.18						
15	1232	-1.26	+2.92						
20	11.52	-2.06	+0.86						
21	1234	-1.24	-.38						
22	1341	-.17	+.55						
23	1265	-.93	+1.48						
12.819 24	14.66	+1.08	+2.40						
	13.58								

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Jan 6 1885 Alt. Sh. = 37.0
Tightened side clamps before beginning work

57°
(1)

	43.4	45.0	43.2	43.3
	20.3	20.8	19.8	20.0
	15.3	16.8	16.0	15.6
	12.1	12.8	11.6	11.8
	911	954	906	
	22.78	23.85	22.65	

1467
1520
987
1494
1586
1080
1540

59.9	57.8	59.8	−16.5	
34.1	33.6	33.8	17.4	13.8
29.0	30.0	29.5	13.9	16.1
26.8	28.0	27.4		15.6
1498	1514			
3745	3785			
2278	2265			
1467	1520			

72°
(24)

	38.1	39.9	38.8	38.4
	16.2	17.6	15.6	15.9
	12.3	14.0	12.7	12.5
	6.6	8.0	6.7	16.7
	732	795	738	
	1830	1988	1845	

15.15
15.97
112
15.56

54.3	54.0	54.2	−15.8	
31.0	32.8	31.9	16.0	
25.6	26.9	26.2	13.7	
22.9	24.0	23.5	16.8	
1338	1377			
3345	3442			
1830	1845			
15.15	15.97			

57°
(22)

	37.6	37.2	37.4	
	15.0	14.7	14.7	
	13.6	13.2	13.4	
	8.0	8.2	8.1	
	742	730		
	1855	1825		

1507
1563
70
15.35

54.0	54.0	54.0	−16.6	
31.4	32.7	32.0	17.3	
27.7	27.3	27.5	−14.1	
21.4	21.5	21.4	13.3	
1345	1355			
3362	3388			
1855	1825			
15.07	15.63			

42°
(22)

	52.3	52.6	52.4	
	33.0	33.7	33.3	
	34.0	34.3	34.1	
	27.0	27.8	27.4	
	1463	1484		
	3658	3710		

15.17
15.30
47
15.24

9.4	10.9	10.2	−17.8	
49.8	49.7	49.8	−16.5	
46.6	47.0	46.8	−12.7	
41.2	42.0	41.6	−14.2	
2070	2096			
5175	5240			
3658	3710			
15.17	15.30			

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1884phae.proj.1766R

27°

(21)

1468
1415
83
1442

33.8 33.6 33.7
16.0 16.9 16.4
15.6 16.0 15.8
10.3 9.9 10.1
757 764
1894 1910

50.2 49.9 50.0 −16.3
29.5 29.1 29.8 −12.9
30.0 30.0 30.0−14.2
24.8 24.0 24.4 −14.3
1345 1330
336 2 33.25
1894 19.10
1468 1415

12°

(20)

1416
1397
1403
1413
1629
1407

43.0 43.1 43.7 44.2 43.5
25.9 27.9 28.2 28.2 28.1
30.8 29.3 29.4 30.2 29.9
21.2 22.0 21.6 22.3 22.0
1229 1223 1229 1249
3072 3058 3072 3122

60.1 59.9 60.1 59.8 60.0 −16.5
40.4 41.0 41.6 42.6 41.4 1.33
42.4 41.4 41.4 42.1 41.8 11.9
36.6 35.9 35.9 36.9 36.1 11.1
1795 1782 1790 1814
4488 4455 4475 4535
3072 3058 3072 3122
1416 1397 1403 1413

35°

(19)

1514
1430
944
1472

36.6 38.5 37.6
19.2 20.0 19.6
24.3 24.0 24.2
14.9 15.6 15.2
951 981
2378 2452

51.4 52.0 51.7 −14.1
36.8 35.8 36.3 −16.7
38.1 38.3 38.2 −14.0
29.4 29.2 29.3 −14.1
1557 1553
3892 3882
2378 2452
1514 1430

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1884phae.proj.1766R

342°

	43.6	44.2	43.9
(18)	27.4	26.7	27.0
1527	32.4	31.6	32.0
1477	26.0	25.8	25.9
04	1294	1283	
15.02	32.35	32.08	

60.7	60.0	60.4	-16.5
42.6	42.1	42.3	15.3
48.1	47.1	47.6	15.6
39.1	38.2	38.6	12.7
1905	1874		
47.62	46.85		
32.35	32.08		
15.27	1477		

327

	32.0	31.8	31.9
(17)	10.8	11.6	11.2
1447	15.1	15.4	15.3
1443	12.4	12.2	12.3
14.45	703	710	
	17.58	1775	

44.3	44.4	44.4	-12.5
27.0	26.8	26.9	-15.8
31.4	31.8	31.6	-16.5
25.5	25.7	25.6	-43.3
1282	1287		
32.05	32.18		
17.58	1775		
14.47	1443		

312

	48.1	48.3 / ~~49.1~~	48.4
(16)	22.9	23.4	23.1
1463	31.3	31.6	31.5
1493	29.1	30.0	29.6
156	314	1333	
14.78	32.85	3332	

63.7	62.0	62.4	62.2	-13.8
40.9	40.6	42.0	41.3	18.2
47.3	45.3	46.1	45.7	-19.2
46.2	42.0	42.5	42.3	12.7 +30 147
1961	1899	1930		
49.02	47.48	48.25		
32.85	32.85	3332		
16.17	1463	14.93		

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297

27

38.4 39.2 38.8
13.0 12.8 12.9
20.1 21.2 20.7
17.8 19.1 18.5

1608
1492
1100
1550

893
2232
923 11
2308

53.9 53.0 53.4 −14.6
28.1 28.3 28.2 −15.3
35.9 35.6 35.7 −15.0
35.7 35.1 35.4 −16.9

1536
3840
2232
1608

1520
3800
2308
1492

282

(14)

31.0 31.6 | 31.6 31.4 31.4
11.1 2.7 2.6 2.8 2.8
14.3 13.6 12.8 12.8 14.5
13.7 13.1 13.8 14.2 13.7

1550
1610
1622
1668
80
1670

621
1552
610
1525
608
1520
612
1530

47.0 47.7 | 47.6 47.7 47.5 −16.1
21.0 21.3 21.2 22.8 21.6 15.6
29.3 29.0 28.9 29.7 29.2 −14.7
27.4
28.0 28.0 28.0 27.7 27.8 14.1

1253
3132
1552
1580

1254
3135
1525
1610

1257
3142
1520
1622

1279
3198
1530
1668

267

(13)

42.1 43.1 42.6
13.3 14.8 14.0
20.9 22.1 21.6
24.1 24.6 24.3

1605
1547
1152
1576

1004
2510

1046
2615

57.7 57.7 57.7 −15.1
29.7 29.7 29.7 15.7
38.3 39.4 38.8 −17.2
3 48.9 3 97 39.4 15.

1646
4115
2510
1605

1665
4162
2615
1547

1884phae.proj.1766R

252°

(12)

16.75
16.58
12
16.66

43.6 44.3 43.7 43.6
12.1 14.6 13.1 12.6
22.2 22.3 22.2
24.9 25.6 25.2
1028 1047
25.70 26.18

59.1 59.8 59.4 −15.8
30.9 30.4 30.6 18.6
38.8 39.2 39.0 16.8
41.0 41.6 41.3 16.1
1698 1710
42.45 42.75
25.70 26.18
16.75 16.57

237

(11)

15.55
14.95
50
15.75

48.7 49.9 49.3
20.6 20.9 20.7
24.9 24.1 24.0
25.8 27.3 26.5
1200 1222
3000 3055

4.0 2.0 3.5 −14.2
32.8 33.4 33.1 12.4
41.6 41.2 41.4 17.4
43.8 44.0 43.9 17.4
1822 1816
4555 4540
3000 3055
15.55 14.95

222

(10)

15.33
15.90
12.3
15.62

39.9 39.6 39.8 39.8
9.1 9.0 9.6 9.3
12.1 11.2 11.3 11.5
15.9 15.6 15.3 15.6
770 754 760
19.25 1885 1900
1810
1901

53.7 54.1 53.9 −14.1
24.7 25.6 25.1 −15.8
27.5 28.0 27.7 −16.2
31.6 31.9 31.7 −16.1
1375 1396
34.38 34.90
1905 1900
15.33 15.90

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207
9)
15.02
15.10
15.06

48.8 49.4 49.1
20.0 20.6 20.6
20.9 20.2 20.5
25.1 25.1 25.1
1148 1153
28.70 28.82

4.6 4.6 4.6 −15.5
34.0 34.1 34.0 14.0
35.3 34.9 35.1 −14.6
41.0 41.1 41.1 16.0
1749 1757
43.72 43.92
28.70 28.82
15.02 15.10

192
(8)
15.10
15.00
15.05

46.0 47.0 46.5
16.0 15.9 16.0
14.7
14.2 14.5
20.9 21.6 21.2
971 992
24.28 24.80

59.1 60.2 59.6 −13.1
31.2 31.9 31.6 15.6
31.1 30.3 30.8 −16.3
36.1 36.8 36.4 15.2
1575 1592
39.38 39.80
24.28 24.80
15.10 15.00

177
(7)
14.83
14.70
15.3
14.76

41.7 41.6 41.6
12.6 13.0 12.8
10.7 11.1 10.9
18.4 15.0 14.9
798 807
1995 2018

57.4 56.9 56.6 −15.0
25.8 26.8 26.3 13.5
25.1 24.1 24.6 −13.7
31.8 31.7 31.7 16.8
1391 1395
34.78 34.88
19.95 20.18
14.83 14.70

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1884phae.proj.1766R

162
(6)
15.77
15.93
17.0
15.85

39.0 40.4 42.0
10.7 11.3 10.0
7.8 7.7 7.7
11.6 12.7 12.1
691 717
17.28 17.92

55.8 56.2 56.0 -16.0
24.6 25.8 25.2 14.2
23.7 24.4 24.0 16.3
28.1 29.0 28.6 16.5
1322 1354
3305 3385
17.28 17.92
15.77 15.93

147
(5)
16.10
14.77
10.87
15.43

45.9 46.6 46.3
21.0 21.0 21.0
16.2 17.9 14.0
17.7 18.8 18.2
1028 1043
25.70 26.08

3.5 3.0 3.3 -17.0
34.8 33.6 34.2 13.1
32.8 30.7 31.7 13.7
36.1 36.1 36.1 17.9
1672 1634
4180 4085
2570 2608
16.10 14.77

132
(4)
16.83
16.32
11.5
16.58

33.9 34.9 34.1
8.7 9.8 9.2
5.9 6.1 6.0
4.2 4.9 4.6
537 551
13.42 13.78

57.3 50.6 51.0 -16.8
24.6 25.9 25.2 16.0
22.0 21.1 21.8 16.6
23.1 22.6 22.8 18.2
1210 1204
3025 3010
13.92 13.78
16.83 16.32

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1884phae.proj.1766R

117°	368	369	363	366	366	526	520	534	528	531 -16.5
(31)	9.7	11.3	11.6	10.9	10.7	27.1	27.1	28.3	28.2	28.3 17.6
15.78	9.1	9.6	9.8	10.8	9.9	22.8	23.3	24.1	24.1	23.7 -13.8
~~15.05~~	6.1	7.8	6.3	6.4	6.3	22.3	22.6	23.1	23.6	23.4 14.7
16.22	61.7	64.8	640	647		1248	1250	1289	1287	
16.00	15.42	16.20	16.00	16.18		3120	3125	32.22	32.18	
.00						1542	1520	16.00	16.18	
16.00						15.78	15.05	16.22	16.00	

102	48.6	48.6	48.6	
(2)	24.4	24.7	24.5	
15.13	21.1	19.7	20.4	
14.65	16.4	16.8	16.6	
978	1105	1098		
14.84	27.62	27.45		

3.0	2.9	3.0	-14.4	
37.2	37.0	37.1	12.6	
37.8	36.4	37.1	-16.7	
33.0	32.1	32.6	-16.0	
1710	1684			
4275	4210			
27.62	27.45			
15.13	14.65			

End of series backward

(87)	45.2	44.9	45.1	
(1)	23.6	22.9	23.2	
15.63	19.2	20.0	19.6	
16.08	13.8	14.2	14.0	
1.17	1018	1020		
15.86	2545	2550		

2.0	2.9	2.5	-17.4	
38.1	38.2	38.1	14.9	
34.2	35.0	34.6	-15.0	
30.0	30.2	30.1	16.1	
1643	1663			
4108	4158			
2545	2550			
15.63	16.08			

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Forward Series.

87° after no 8 forward p137

(1)

	49.4	50.6	50.8	12.4	80	
	28.6	30.0	28.0	42.8	44.6	
1615	27.0	27.0	27.3	41.3	41.2	
1608						
23	21.5	21.2	20.4	36.9	39.0	
	1265	1258	1265	1934	1908	
16.11	3162	3220	3162	4835	4770	
				3220	3162	
				16.15	16.05	

(2)

102	46.1	46.4		3.3	2.6	
	22.2	21.8		24.8	25.0	
1525	18.6	19.1		34.2	34.0	
1443						
1018	14.7	14.8		32.3	32.2	
	1036	1041		1646	1638	
15.09	2590	2602		4115	4095	
				2590	2602	
				15.25	1493	

(3)

117	40.7	40.4	40.6	39.8	55.8	54.7	56.2	54.9
	14.0							
	14.9	14.8	13.5	12.7	28.9	29.1	28.3	28.0
1502	10.2	11.6	9.9	11.0	25.3	24.9	25.1	24.4
1480								
1375	9.9	9.4	9.0	8.2	24.9	25.9	26.4	25.0
1516	7.48	7.54	7.30	7.17	1349	1346	1360	1323
73	18.70	18.85	18.25	17.92	3372	3365	3400	3308
					1870	1885	1825	1792
15.18					15.02	14.80	15.75	15.16

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132	41.7	42.3	56.6	57.4
(4)	15.7	16.7	30.0	30.6
1633	11.8	12.2	27.2	27.2
1528	12.2	13.2	30.9	30.3
1161	814	844	1467	1455
1580	20.35	21.10	36.68	36.38
			20.35	21.10
			16.33	15.28

147				
(5)	37.0	38.0	54.2	54.5
1575	8.6	9.1	22.0	22.3
1550	5.6	5.8	20.0	20.2
125	9.0	8.9	27.0	26.8
1562	602	618	1232	1238
	15.05	15.45	30.80	30.95
			15.05	15.45
			15.75	15.50

162				
(6)	47.0	47.7	3.1	2.0
1605	16.7	16.4	30.3	29.7
1487	13.0	13.8	30.8	29.8
1092	19.3	20.3	36.0	36.2
1546	960	982	1602	1577
	24.00	24.55	4005	39.42
			2400	2455
			16.05	14.87

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Att. 7h 39.2 end.

177	466	47.2	0,6	06
(7)	14.1	14.1	26,0	27.0
1456	12.1	13.5	27.7	27.9
1452	20.1	20.7	36.8	37.6
	929	951	1511	1532
1454	2322	2378	37.78	38.30
			2322	2378
			14,56	14,52

192	~~39~~			
(8)	39.8	39.9	52.5	52.1
1430	7.0	8.0	20,0	20,9
1425	5.6	6.7	22,8	21,8
5	15.7	15.2	30,0	30.0
1426	681	678	1253	1248
	17,02	16,95	3132	3120
			1702	16.95
			14.30	14,25

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Jan 6 1885

1	15,40	+08	+08
2	1484	-42	-34
3	16,00	+68	+34
4	16,58	+1,26	+1,60
5	15,43	+11	+1,71
6	15.85	15,683	+53 +2,24
7	1476	-56	+1,68
8	1505	15489	-27 +1,41
9	15,06	-26	+1,15
10	15,62	+30	+145
11	15,25	-07	+138
12	1666	15,405	+1,34 +2,72
13	15.76	+44	+3,16
14	1620	+88	+4,04
15	15,50	+18	+4,22
16	14,78	-54	+3,68
17	14.45	-87	+2,81
18	1502	15286	30 +2,51
19	14,72	-60	+1,91
20	14,07	-1,25	+,66
21	14,42	-,90	-24
22	15,24	-,08	-32
23	16,35	+,03	-29
24	1556	14.89	+24 -01
	15,315		
	15.489	mean 1st 8	
	-.174		

V	Σ	I	Σ
16.11	+138	+138	+44 +44
15,09	+46	+184	-12 +32
15,18	+45	+233	+104 +136
15,80	+1.07	+3.40	+1,62 +2,98
15.62	+84	+429	+47 +3,45
15.46	+73	+502	+89 +1,34
14,54	-19	+483	-20 +1,14
14,28	-40	+438	+09 +423
15.260			
-530			
14.730			

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1884phae.proj.1766R

	Jan 1	6	7
1	13.50	15.40	14.15
2	13.83	14.84	15.35
3	15.04	16.00	15.04
4	15.34	16.58	15.76
5	13.77	15.43	14.05
6	15.02	15.85	15.86
7	12.52	14.76	14.58
8	13.60	15.05	13.64
9	14.35	15.06	14.56
10	13.72	15.62	15.30
11	13.10	15.25	13.57
12	14.10	16.66	14.22
13	13.08	15.76	13.76
14	14.02	16.20	13.08
15	13.07	15.50	13.71
16	13.46	14.78	13.81
17	13.59	14.65	13.45
18	12.92	15.02	14.67
19	12.32	14.92	13.54
20	11.52	14.07	12.52
21	12.34	14.42	13.53
22	13.41	15.29	14.22
23	12.65	15.35	14.41
24	14.66	15.56	15.08
1	13.58	15.32	

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1884phae.proj.1766R

Jan 7 1885 Alt. Th = 44.4

72°

	44.2	43.8	44.0
(24)	24.6	23.5	24.0
1503	24.3	24.8	24.5
1512	17.0	17.0	17.0
15	1101	1091	
15.08	27.52	27.28	

0.0	59.4	59.7	−15.7
38.8	38.9	38.8	−14.8
38.0	37.6	37.8	−13.3
33.4	33.7	33.5	−16.5
1702	1696		
4255	4240		
27.52	27.28		
15.03	15.12		

57°

	50.3	51.1	50.7
(23)	28.9	30.7	29.8
14.98	33.6	34.0	33.8
13.95	27.3	28.6	27.9
893	1401	1444	
1446	35.02	36.10	

6.4	6.4	6.4	−15.7
46.8	47.0	46.9	−17.1
46.8	47.1	47.9	−14.1
40.0	39.7	39.9	−12.0
2000	2002		
5000	50.05		
3502	36.10		
14.98	13.95		

42°

	28.6	28.7	28.6
(22)	11.0	11.6	11.3
1398	16.6	15.8	16.2
1447	9.0	8.2	8.6
845	652	643	
14.22	16.30	16.08	

45.4	46.1	45.7	−17.1
24.2	25.0	24.6	−13.3
29.1	28.1	28.6	−12.4
22.4	23.0	22.7	−14.1
1211	1222		
3028	30.55		
1630	1608		
13.98	14.47		

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1884phae.proj.1766R

27°
(27)
12.96
13.63
13.62
14.00
14.21
13.53

36.5 36.8 | 36.6 | 36.4 36.8 36.6
20.4 18.8 20.1 20.1 19.7 19.8
24.6 24.9 24.1 24.0 23.9 24.3
17.8 17.8 17.0 17.9 17.8 17.6
988 983 978 984 982
2470 2458 2445 2460 2451
24.64

309°
33.2
37.2
29.1
1504
37.60
24.64
12.96

51.2 | 51.6 51.5 51.3 -14.7
34.0 34.0 34.0 33.8 14.0
37.2 37.9 37.8 37.5 13.2
29.9 29.4 29.9 29.8 12.2
1523 1529 1542
38.08 38.22 38.55
24.45 24.60 24.55
13.63 13.62 14.00

12
(20)
12.88
12.16
10.4
12.52

41.0 42.8 41.5
26.9 ~~28.1~~ 27.5
33.8 33.6 33.7
24.0 24.3 24.1
1257 1281
31.42 32.02

56.6 56.6 56.6 -15.1
39.2 39.9 39.5 12.0
43.7 43.2 43.4 9.9
37.7 37.0 37.4 13.3
1772 1767
44.30 44.18
31.42 32.02
12.88 12.16

357°
(19)
13.82
13.26
10.8
13.54

40.8 41.0 40.9
~~23.9~~ 24.9 24.4
33.1 33.2 33.1
23.4 24.6 23.0
1212 1237
30.30 30.92

55.0 54.7 54.8 13.9
39.1 39.9 39.5 15.1
45.4 45.1 45.3 12.2
37.0 37.0 37.6 13.0
1765 1767
44.12 44.18
30.30 30.92
13.82 13.26

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1884phae.proj.1766R

342°

(8)

1446
1485
134
1467

39.9	39.8	39.8
23.0	23.3	23.2
33.0	33.2	33.1
25.0	25.0	25.0
1209	1213	
30.22	30.22	

55.2	55.6	55.4	−15.6
38.1	39.9	39.0	15.8
47.2	46.9	47.0	13.9
38.2	38.0	38.1	13.1
1787	1804		
44.68	45.10		
3022	3022		
1446	1488		

327°

(17)

1390
1308
1349

56.0	56.1	56.0
34.1	35.3	34.7
44.8	44.9	44.8
39.9	40.9	40.4
1748	1772	
43.70	44.30	

66.9	66.3	66.6	−10.6
50.9	50.6	50.7	−16.0
60.0	59.9	60.0	−15.2
52.6	52.7	52.6	12.2
2304	2295		
57.60	57.38		
4370	4430		
1390	1308		

312°

(16)

1340
1423
763
1381

39.7	40.1	39.9
17.8	17.0	17.4
28.8	28.3	28.5
25.6	25.1	25.3
1119	1105	
27.98	27.62	

53.3	54.0	53.6	13.7
32.6	33.2	32.9	18.5
42.3	41.8	42.0	13.5
37.3	38.4	37.8	12.5
1655	1674		
41.38	41.85		
2798	2762		
1340	1423		

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1994phae.proj.17668

297°
(15)

36.2 35.7 36.0
11.5 10.7 11.1
23.0 22.9 23.0
20.0 20.7 20.3
907 900
22.68 22.50

13.97
1345
142
1371

48.7 48.1 48.4 −12.4
26.4 25.7 26.0 14.9
36.9 35.9 36.4 −13.4
34.6 34.1 34.3 14.0
1466 1438
36.65 35.95
2268 2250
13.97 13.45

After 2nd Series p150

262°
(14)

44.0 44.9 55.9 57.0 56.5
17.9 17.5 27.4 28.4 27.9
32.3 31.7 44.9 43.6 44.2
30.6 30.9 46.4 46.1 46.2
1248 1241 1746 1751
31.20 31.02 43.65 4378

1215
1216
1216
1338
0054
1277
1338

57.3 57.0 10.7 11.2 10.9 12.9
30.1 31.8 43.8 44.7 44.3 16.4
43.1 43.0 59.3 59.3 59.3 15.1
40.9 40.9 59.7 00 59.8 1.36
1784 1727 2835 2352
4335 4318 58.38 5880
3120 3102 4365 4378
12.7 12.16 1473 1502

1975
1488
1338

267°
(13)

40.1 40.0 41.2 40.9 40.3
10.6 11.9 14.0 14.8 12.4
24.9 24.0 26.1 24.9 24.6
26.3 26.3 27.8 26.9 26.3
1019 1022 1091 1075
25.48 25.55 27.28 26.88
25.51

1454
12.97
75
13.76

53.3 52.7 52.0 +11.8
27.2 26.9 27.1 −14.7
40.0 39.9 40.0 −15.4
39.7 39.9 39.8 −13.5
1602 1594
40.05 39.85
2551 2688
14.54 12.97

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252

(12) 32.8 32.6 33.6 33.0 | 45.8 46.2 46.0 −13.0

1438 3.2 3.1 3.3 3.2 | 17.4 17.7 17.6 14.4

1407 14.6 14.7 14.7 14.7 | 29.6 29.2 29.4 12.7

45 17.1 16.6 17.5 7.1 | 32.1 32.3 32.2 15.1

14.22 677 670 691 | 1249 1254

1692 1675 1728 | 3122 3135

1684 | 1684 1728

14.38 | 1407

3

(17) 237 56.9 58.1 54.0 | 10.6 10.3 10.4 −11.4

(11) 29.0 30.9 29.9 | 40.7 41.0 40.9 11.0

14.32 35.8 36.2 36.0 | 51.6 ~~53.0~~ 51.7 15.7

1362 38.6 38.8 38.7 | 54.7 55.3 55.0 16.3

794 1603 1640 | 2176 2185

1397 4008 4100 | 5440 5462

4008 4100

14.32 | 1362

31

222 49.9 50.4 50.1 | 4.1 3.8 3.9 −13.8

(16) (10) 21.3 ~~49.9~~ 21.7 21.5 | 36.2 37.0 36.6 15.7

1525 25.1 24.9 25.0 | 41.9 42.8 42.5 12.5

1536 29.9 29.9 29.9 | 45.0 44.7 44.9 15.0

61 1262 1269 | 1872 1883

1530 31.55 31.72 | 4680 4708

3155 3172

15.25 | 1536

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1884phae.proj.1766R

207 #

(9)

1442	41.0	42.0	41.5	57.0	57.6	57.4	-15.9
14.70	15.1	15.3	15.2	28.1	28.3	28.2	13.0
	18.6	17.5	18.0	32.3	32.1	32.2	-14.2
14.56	22.0	21.6	21.8	37.0	37.2	37.1	15.3
	967	964		1544	1552		
	24.18	2410		3860	3880		
				2418	2410		
				14.42	14.70		

192

(8)

1386	26.1	26.2	26.1	38.5	38.8	38.6	-12.5
1343	56.4	57.2	56.8	12.0	11.0	11.5	-14.7
129	59.1	58.9	59.0	13.7	13.2	13.4	-14.4
13.64	4.9	4.7	4.8	17.7	17.7	17.7	-12.9
	2065	2070		819	807		
	5162	5175		20.48	20.18		
	6662	6675		662	675		
				12.86	13.43		

177

(7)

1483	49.7	49.9	49.8	3.8	4.1	4.0	-14.2
1432	19.9	20.9	20.4	35.3	34.0	34.6	14.2
115	23.2	22.9	23.0	36.8	37.2	37.0	14.0
1458	26.1	27.1	26.6	423	428	42.6	16.0
	1189	1208		1782	1781		
	29.72	3020		44.55	44.52		
				2972	3020		
				14.83	14.32		

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1884phae.proj.1766R

After series

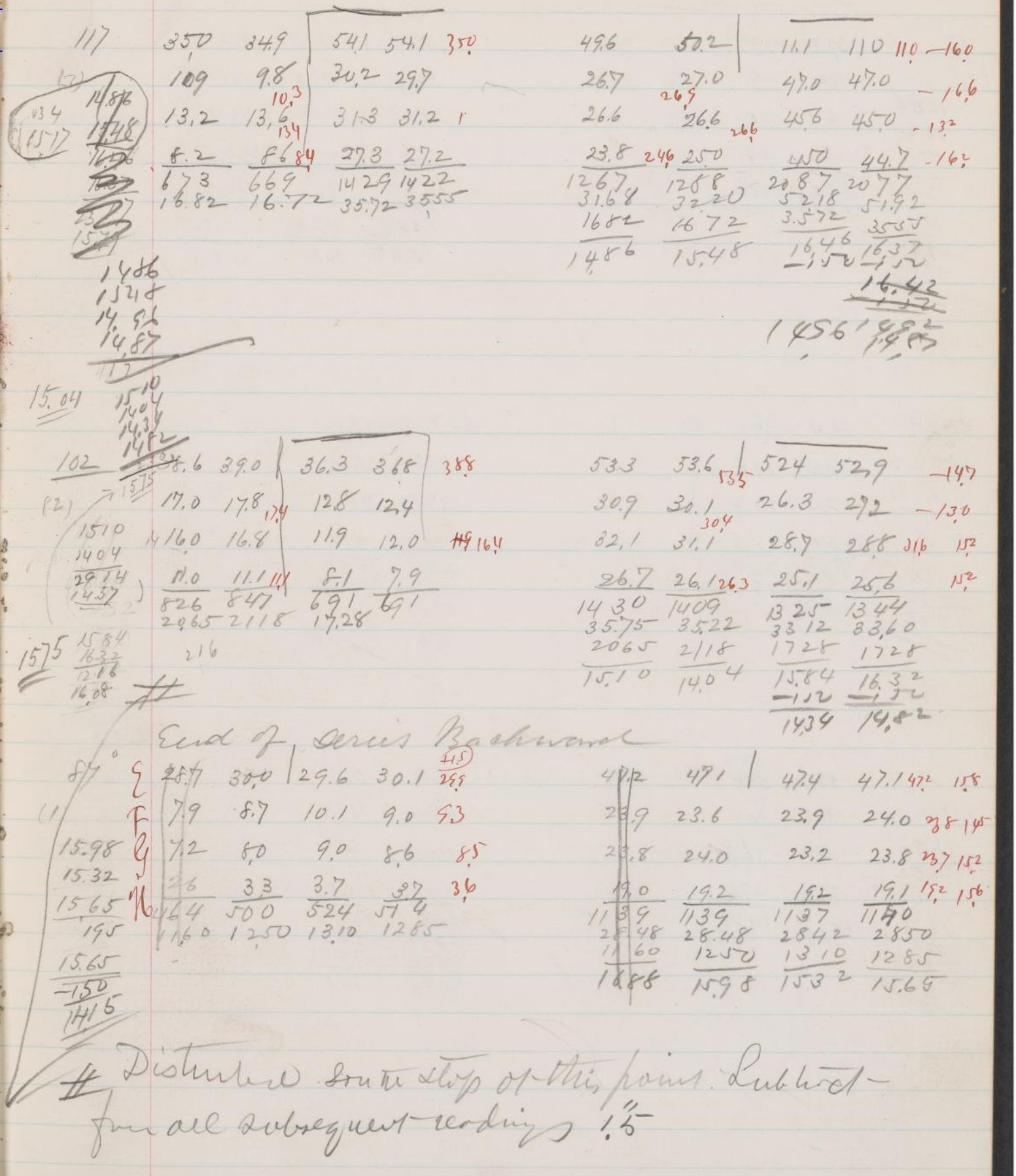
162	39.0	38.2	44.1	45.0	37.6	53.9	54.0	2.1	1.9	1.40	−16.4	
(6) 1574	10.0	9.8	16.0	15.8		24.6	24.6	30.5	31.0			1724
1606		9.9					24.6					1652
1620	10.1	9.4	14.8	15.0	14.7	26.6	27.1	33.1	32.8	14.7		1416
2342		9.7					26.8				17.1	1708
1586	13.8	14.8	21.0	21.0		80.0	30.6	31.3	39.2	38.8	16.3	
	709	722	959	968		13 51	1370	1649	1645			
	17.72	1805	23.98	24.20		3378	34.25	4122	4112			
						1772	1805	2398	2420			
						16.06	16.20	17.24	16.92			
								1.52	1.52			
								1572	1542			

147	46.0	45.6	45.8			1.6	1.5	1.5	−15.7			
(5)	21.3	22.0	21.7			34.8	33.8	34.3	−12.6			
1413	22.7	22.1	22.4			34.0	33.8	33.9	−14.5			
1402	22.6	22.3	22.4			38.7	39.0	38.8	−16.4			
1408	1126	1120				1691	1681					
	28.15	28.00				42.28	42.02					
						28.15	28.00					
						14.13	14.02					

132	42.0	40.4	40.6	40.5		56.4	55.6	56.0	−15.5			
(4)	18.9	17.1	17.1	17.1		31.9	31.2	31.6	−14.5			
1618	19.2	16.4	17.2	16.8		32.2	32.2	32.2	−15.4			
1533	16.9	15.0	15.2	15.1		33.1	32.4	32.7	−17.6			
1151	970	889	901			1536	1514					
1576	24.25	22.22	22.52			38.40	37.85					
						2222	2252					
						16.118	15.33					

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End of Series Backward

Disturbed from stop at this point. Rubber for all subsequent readings 1.5

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1884phae.proj.1766R

Forward series

87
1)

29.3	29.5	29.9	30.0	47.0	47.4	47.3
9.6	7.9	9.6	9.0	24.7	23.8	24.1
8.1	7.6	9.0	8.3	22.3	23.0	23.2
3.1	3.8	30	2.9	18.1	19.1	19.0
501	488	515	502	1121	1133	1136
12.52	12.20	12.88	12.55	2802	28.32	2840
	12.36			1236	12.88	1255
				15.66	15.44	15.85

15.66
15.44
15.80
19.5
15.65
-1.30
19.15

1020
(2)

36.4	37.1	52.7	52.6
13.2	13.6	26.7	26.8
12.4	12.7	27.6	28.0
8.0	8.6	25.5	25.0
700	720	1325	1324
17.50	180	33.12	3310
		1750	1850
		15.62	15.10

15.62
15.10
15.36
-1.50
13.86

117
(3)

53.9	54.6 ~~55.0~~	11.6	11.2
30.5	30.1	48.0	47.3
31.5	30.0 1.0	45.4	45.7
27.3	27.4	45.8	45.0
1432	1431	2408	2092
3580	35.78	5270	5230
		3580	3578
		16.90	16.52

16.90
16.52
1.42
16.71
-1.50
15.21

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1884phae.proj.1766R

132	41.0	41.0	40.8	40.0	59.9	59.2	58.5	58.4
(4)	17.6	16.6	16.2	17.6	33.9	33.1	33.0	33.0
18.67	16.5	16.1	15.2	15.7	34.1	32.7	32.6	32.8
17.80	15.1	15.1	15.6	14.7	36.2	35.0	34.6	34.6
1773	902	888	878	880	1641	1600	1587	1588
1770	22.55	2220	21.95	2200	41.02	40.00	39.68	39.70
390					2255	2220	2195	2200
17.98					18.67	17.80	17.53	17.70
170								
168								

147	40.3	40.9	40.8	42.0	58.6	59.2	61.1	60.7
(5)	13.8	15.1	18.0	19.0	30.8	31.0	33.8	33.7
17.52	13.8	14.9	18.1	19.0	38.7	39.7	33.8	33.6
150	16.1	17.1	18.4	18.9	36.0	36.0	38.2	38.1
1775	840	880	953	989	1541	1559	1669	1661
1752	21.00	22	23.82	2472	3852	3898	4172	4152
1790					2100	2200	2382	2472
1680					17.52	17.98	17.90	16.80
122								
1741								
1551								

162	43.8	44.4	1.9	1.4
(6)	15.8	15.8	20.6	31.7
17.56	14.0	14.9	33.1	32.9
17.42	20.9	21.7	39.1	39.0
98	945	968	1647	1650
17.49	23.62	2420	41.18	41.62
150			2362	2420
155			17.56	17.42

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1884phae.proj.1766R

	R'		Alt 7h 46.3	end
177	38.3	38.9	53.9	54.0
(7)	5.7	7.0	23.1	22.7
~~1716~~ 01	8.4	9.7	24.1	24.8
1663	14.6	14.0	33.6	33.6
~~188~~	66.0	68.6	134.7	135.1
~~150~~	1650	1715	3368	3378
1690			1659	1715
-120			1718	1663
1570			64	
192	31.9	33.1	47.1	46.4
(8)	1.7	2.4	18.1	17.8
1688	2.1	3.1 ~~4.2~~	~~21~~ 3	21.7
1892	11.6	11.7	28.3	28.1
80	473	563	1148	1140
1640	11.82	12.58	2870	2850
-150			1182	1258
1490			1688	1592

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1884phae.proj.1766R

Jan 7 1885

			Σ		Σ
1	14.15		-14	14.15	-56
2	15.75		+1.46	13.86	-1.41
3	15.04		+75	15.21	+50 -91
4	15.76		+147	16.48	+1.77 +86
5	14.08		-21	15.91	+1.20 +206
6	15.86	15.107	+1.57	15.99	+1.28 +3.34
7	14.58		+29	15.40	+.69 +4.03
8	13.64		-85	14.90	+.19 +4.22
9	14.56		+27	15.236	
10	15.30		+1.01	-.530 = Constant dyst	
11	13.97		-32	14.706	
12	14.22	14.377	-07		
13	13.76		-.53		
14	13.38		-91		
15	13.71		-58		
16	13.81		-48		
17	13.49		-80		
18	14.67	13803	+38		
19	13.54		-75		
20	12.52		-1.77		
21	13.53		-76		
22	14.22		-.07		
23	14.46		+17		
24	15.08	13892	+79		

14.86
14.85

14295
14858
-.563

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1884phae.proj.1766R

Jan 13 1885 Att. Th = 39.2

	Weight off		Weight on				Weight off			Weight on			
87°	37.7	38.2	41.8	41.8	41.2	40.7	55.8	56.9	57.0	58.3	59.1	58.0	58.7
(1)	13.6	14.6	19.7	18.3	18.0	19.0	29.1	31.8	31.4	33.1	33.4	34.6	34.2
1407 weight	12.4	13.1	14.3	16.2	16.0	15.6	24.6	29.8	30.4	31.3	31.9	31.2	32.2
17.45 off	10.5	10.9	14.2	14.0	13.8	13.2	26.6	28.0	27.8	28.8	29.8	29.9	28.8
1513	742	768	900	907	890	885	1101	1465	1466	1515	1541	1537	1539
1584	1853	192	2275	2268	2225	2212	3502	3662	3665	3788	3852	3842	3846
16.17								1455	1920	2275	2268	2225	2212
16.36								1807	1745	1513	1584	1617	1636
2350													
1588													

102°				
(2)	46.1	46.4	1.8	2.3
1560	20.6	21.4	34.4	35.9
1580	20.2	20.7	35.9	35.1
1560	16.7	16.7	33.9	34.3
	1036	1052	1660	1676
	2590	2630	4150	4190
			2590	2630
			1560	1560

117°	37.6	37.1	55.0	55.0
(3)	10.3	11.0	28.6	29.7
1740	12.4	12.3 ~~10.4~~	28.0	27.8
1737	9.9	10.2	28.2	27.6
57	702	706	1398	1401
1738	1755	1765	3495	3502
			1755	1765
			1740	1737

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1884phae.proj.1766R

132

(4)

	41.9	42.8	58.6	58.2
	16.6	16.1	31.8	31.9
17.03	14.0	14.9	31.5	31.3
16.50				
13.53	15.3	15.24	33.8	33.8
16.76	878	892	1569	1552
	21.95	22.30	38.98	38.80
			21.95	22.30
			1703	16.50

147

(5)

	31.6	31.4	49.2	49.7 ~~44.8~~
	5.4	5.9	19.7	19.1
16.03	3.8	4.7	18.0	17.2
15.35				
11.38	6.9	7.1	24.9	24.7
15.69	477	492	1118	1107
	11.92	1230	27.95	27.68
			11.92	1230
			1603	15.35

162

(6)

	35.3	35.9	51.9	52.0
16.56	5.6	6.3	20.8	20.9
16.14				
70	3.2	4.0	21.3	21.2
16.35	11.6	11.3	27.8	28.0
	557	576	1219	1221
	13.92	1438	30.48	30.52
			1392	1438
			16.56	16.14

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1884phae.proj.1766R

177°

(7)

1560	40.6	40.9	55.6	56.1
1580	10.1	9.0	24.4	24.4
	9.9	10.4	23.7	24.4
	15.3	15.8	4 96	33.6
	75.9	76.1	1383	1385
	18.98	19.02	34.58	34.62
			18.98	19.02
			15,60	15.60

192°

(8)

15.26	44.1	44.3	57.6	58.4
1567	12.7	12.2	28.4	28.3
93	13.4	12.8	30.0	30.1
15.46	21.9	22.5	37.1	37.7
	921	918	1531	1545
	2302	2295	38.28	38.62
			2302	22.95
			15,26	15,67

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1884phae.proj.1766R

Jan 13

1	15.88	+32	+32
2	15.60	+4	+36
3	17.38	+1.82	+2.18
4	16.76	+1.20	+3.38
5	15.69	+13	+3.51
6	16.35	+79	+4.30
7	15.60	+71	+4.34
8	15.46	−10	+4.24
	160.90		
	−.53		
	16.16		

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1884phae.proj.1766R

192°

(81.

1620

1689

89

1644

42.1 42.8 | 41.8

11.0 11.7 12.0

12.6 11.9 13.1

20.9 20.0 19.6

866 8621 863

21.65 21.60 21.62

21.61

57.0 56.8 |

26.6 29.1

29.1 30.3

36.7 37.0

1514 1532

37.85 38.30

21.65 21.69

16.20 16.89

177°

(7)

17.35

1663

1398

1699

49.8 49.6

19.2 19.1

20.2 21.0

25.0 25.7

1142 1157

28.55 28.85

6.4 6.1

35.4 35.0

37.1 37.1

44.7 43.7

183.6 181.9

45.90 45.48

28.55 28.85

17.35 16.63

162°

(6)

17.10

1686

1396

1698

UL

44.3 45.1 44.7

16.0 15.0 15.8

13.6 15.5 14.8

19.7 21.0 19.6

93.6 96.7 94.9

23.40 24.18 23.72

61.9 61.8

30.7 31.2

31.8 32.3

37.6 37.0

162.0 162.3

40.50 40.58

23.40 23.72

17.10 16.86

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1884phae.proj.1766R

147°

(5)

16.90
17.63
14.53
17.26

38.8 38.0
13.0 13.6
12.4 12.3
14.1 13.8
783 777
19.58 19.42

57.0 57.2
27.9 30.0
27.6 28.0
33.4 33.0
1459 1482
36.48 37.01
19.58 19.42
16.90 17.63

132

(4)

17.94
16.62
14.56
17.28

46.8 47.8
21.3 22.3
20.8 21.0
19.0 20.4
1079 1115
26.98 27.88

4.5 4.2
39.2 36.8
37.0 36.0
39.0 39.0
1797 1780
44.92 44.50
26.98 27.81
17.94 16.62

117

(31)

17.39
17.03
17.30
16.73
.45
17.11

41.4 40.8 41.2 | 41.8 42.1
14.6 16.0 16.0 16.0 17.0
15.0 15.8 15.8 15.3 15.4
12.1 13.6 12.3 13.0 14.0
891 862 853 861 885
20.78 21.55 21.32 21.52 22.12
21.16

58.8 58.4 | 59.3 58.7
33.1 33.6 33.8 33.7
31.2 30.4 31.1 31.2
31.1 31.0 31.1 31.8
1542 1534 1553 1554
38.55 38.35 38.82 38.85
21.16 21.32 21.52 22.12
17.39 17.03 17.30 16.73

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1884phae.proj.1766R

Th = 41.0 at end

102°

(2)

16.77
16.47
124
16.62

40.4	41.6	
15.9	15.8	
13.1	13.9	
10.9	11.3	
803	826	
20.08	20.65	

57.1	56.8
30.8	31.6
31.4	31.4
28.1	28.7
1474	1485
36.85	37.12
2008	2065
16.77	16.47

87°

(1)

16.75
16.22
97
16.48

50.0	57.6	58.6
38.6	29.6	29.0
26.2	28.2	27.0
22.4	23.8	22.9
1272	1332	1295
31.80	3330	3238

9.1

42.6	9.1
448	448
42.0	42.8
39.3	38.7
1397	1944
1942	48.60
4855	3238
3180	
16.75	16.22

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1884phae.proj.1766R

87° to 177° E

0° 0'	41.6	0. 0 19.2
	41.8	19.9
	41.6	21.1
	41.67	60.2
		20.1
		41.7
		8.4

177–267

40.6	57.2
40.2	56.8
40.7	56.6
15	56.9
40.5	40.5
	16.4

267–357

43.6	15.0
43.8	13.8
43.9	13.1
43.8	11.9
	14.0
	43.8
	6.3

357 – 447

39.2	7.0
39.8	7.2
39.4	6.8
39.5	39.5

41.3	19.0	27.3
41.8	19.0	
41.9	16.9	
20	19.0	
41.7	41.7	
	37.3	

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1884phae.proj.1766R

Jan 26 Investigation of the Quadrant Points

87.-177

						Mean				
	E	36.8	44.4	36.6	44.1	40.7	40.5			
	F	48.8	56.5	49.7	58.1	53.0	41.0			
1	G	47.8	56.7	46.8	54.7	53.1				
	H	41.7	50.0	41.2	49.1	46.9				

E-H	F-G	G-H	E-F
-4.9	-6.1	+1.0	+12.0
-5.6	-6.7	+0.2	+11.1
-4.6	-5.6	-0.9	+10.5
-5.0	-5.6	-1.4	+12.0
-6.2	-6.2	+0.1	+12.3
-5.26	-6.04	-0.48	+11.78

177-267

	E	29.4	38.1	49.6	36.2	53.8
	F	32.5	41.1	53.6	40.0	58.0
2	G	34.5	44.3	60.4	44.0	60.1
	H	37.3	46.7	62.9	47.7	62.4

-7.9	+2.8	+2.9	+3.1
-8.6	+2.4	+3.2	+3.0
—	+2.5	—	+4.0
—	+3.7	—	+3.8
-8.6	+2.3	+2.1	+4.2
-8.37	+2.74	+2.43	+3.62

267-357

	E	39.8	37.5	42.1	40.8	40.8
	F	44.8	42.7	50.0	47.1	45.9
3	G	56.8	55.1	2.8 / 59.0	1.0 / 57.0	58.4
	H	58.4	55.8			59.6

+4.4 −18.6	+1.6	+12.0	+5.0
+4.7 −18.3	+0.7	+12.4	+5.2
—	—	—	—
—	—	—	—
—	+1.2	+12.5	+5.1
+1.88			
+1.43 −18.57	+1.19	+12.30	+5.10

357-87

	E	36.7	34.8	50.4	47.9	37.0
	F	39.0	37.2	55.5	52.4	40.3
4	G	42.2	40.3	58.3	55.8	43.6
	H	44.8	41.9	2.4	59.7	45.5

-8.1	+1.5	+2.6	+2.7 +2.3
-7.9	—	+1.6	+3.1 +3.2
—	+1.20	—	+2.8 —
			+3.4
-8.5	+1.8	+1.9	+3.3 +3.3
-8.17	+1.50	2.03	+2.96 +2.93

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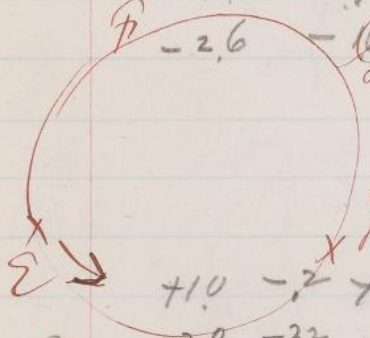
1884phae.proj.1766R

Ra & Constant = Σ, F₇

87-177	−12,0	−12,1	−11,1	−12,0	−12,0	−6,1	−6,7	−6,7	−5,4	−6,1	−5,76 −5,75
177-267	−3,1	−3,0	−3,5	−3,8	−4,2	+2,5	+2,9	+2,9	+2,8	+2,0	+2,63 −3,12
267-357	−5,0	−5,2	−5,7	−6,3	−5,1	+0,6	+,7	+0,5	+0,3	+1,1	+0,65 −2,47
357-87	−2,3	−3,2	−5,1	−4,5	−3,3	+3,3	+2,7	+1,3	+2,2	+2,9	+2,48 +,11
	−5,6	−5,9	−6,1	−6,6	−6,2						

Constant = G N₆ — G−N₆ Σ F — Σ

88-177	+6,1	+6,7	+5,6	+5,6	+6,2	+5,03	+5,14	−5,76 −3,1 −0,31
177-267	−2,8	−2,4	−2,5	−3,7	−2,3	−2,29	−2,18	+2,63 +3,2 −,49
	−1,6	−,7	—	—	−1,2	−1,17	−1,06	+0,45 −,20 −,24
	−2,6	−,6	—	—	−1,9	−2,03	−1,92	+2,48 +,28 +,08
						−,11		+5,14 −5,75 −,31
								+2,96 −3,12 −,05
								+,90 −2,47 −,25
								+,05 +,00 +,01



Const = Σ G

	+1,0	−,2	+,9	+,4	−,1	+0,37	+,55	+,55
	−2,0	−3,2	—	—	−2,1	−2,42	+2,03	+6,85
	−12,0	−12,4	−12,9	−13,9	−12,5	−12,74	−8,29	−1,31
	−3,2	−3,1	−2,8	−3,4	−3,3	−3,16	+1,29	+,70
						−4,45		

Const = N₆ Σ

	−,9	−,6	−,6	−,0	−,2	−5,26	+4,63	+,55 +,85
	−7,5	−8,7	—	—	−8,6	−8,40	+1,49	+6,64 +6,98
	−18,6	−18,3	−16,8	−16,2	−18,8	−17,74	−7,85	−1,41
	−8,1	−7,9	—	—	−8,5	−8,17	+1,92	+,31
						−9,89		

Tortue halves for 87° & 87°+180

I = 90 ∘ 11,30 −2,95
17,20 −2,95
90
14,25

	11,0
	12,3
	10,2
	10,6
	12,4
	11,30

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Jan 26 Division in two parts 87° & 267°

87° | ε | f | g | h

ε	f	g
44.8	58	1.0
44.5		0.8
44.7		0.4
44.0		0.6
44.0		1.0
220		3.8
44.40		0.76

f	g	h
58.8	0.0	-.24
58.8	0.8	-.20
58.4	0.4	-.12
58.7	0.6	-.13
58.1	1.0	-.20

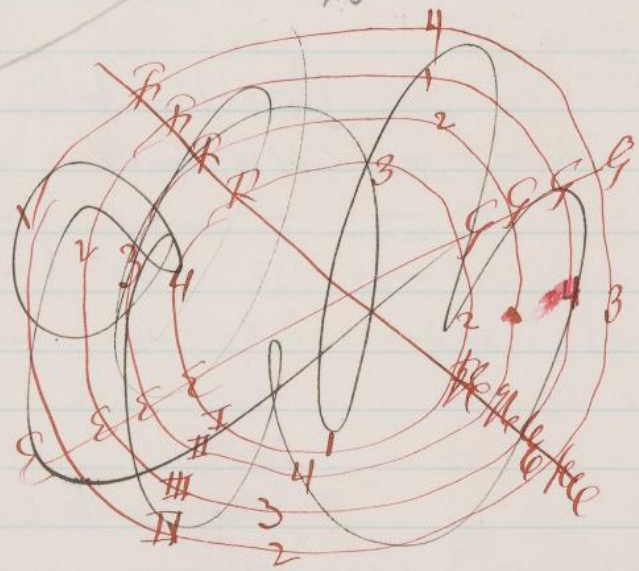
87+180 = 267

ε	-f	g	H
44.8		4.8	
44.8		5.0	
46.3		4.8	
45.7		4.9	
45.9		5.0	
225		24.5	
45.50		4.90	

90 0 16.30 +1.55
90 0 19.40 -1.55
17.85

87°

ε	g
30.5	47.0
30.8	46.8
30.7	46.1
30.1	46.8
30.2	46.8
23	33.5
30.46	46.70
	16.24
	16.36



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1884phae.proj.1766R

87°

ε	ϱ	
30.8	46.0	−15.2
37.8	51.7	13.9
33.2	48.0	14.8
		139
		14.13

+7° +180

ε	ϱ	
38.4	60.0	−21.6
36.9	58.3	21.4
43.5	64.8	21.1
		21.37
		14.63
		3600 +3.37
		18.00 −3.37

90 0 14.63 +3.37
90 0 21.37 −3.37
2600
1800

ε	ϱ	
4.60	1.2 / 2.7	−15.2
36.8	52.1	−15.3
36.7	52.4	−15.7
		12
		15.40

ε	ϱ	
43.9	4.7	20.8
37.8	58.3	20.5
41.0	2.1	21.1
		24
		20.80 +2.70
		18.40 −2.70
		120

ε	ϱ	
36.9	57.0	14.1
41.1	58.5	17.4
		−15.5

ε	ϱ	
32.4	53.0 2.8	18.10 −20.4

+2.95
+3.33
+2.70
898
+2.99

ε	ϱ	
34.4	51.6	−17.3
37.3	57.4	−20.1

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1884phae.proj.1766R

Sun 87° to 87+180° under F and H

	F	H			F	H		
90				267+90 = 357				
177	46.4	53.6	-7.2		2.8	3.6	-2.8	-10.2 -5.2 2.20
	45.1	52.5	7.4		7.2	8.8	-1.8	9.2 -4.6 2.8 V
	468	54.8	8.8		58.8	59.9	1.5	10.3 -5.15 -3.65
	5.7	12.8	-7.1		37.7	44.4	-6.7	8.65 2.88

Sin I Sin I

Σ to 7 8.96

+2.95 +2.20

+3.33 +2.82

+2.70 +3.65

8.65

+2.99 -2.88

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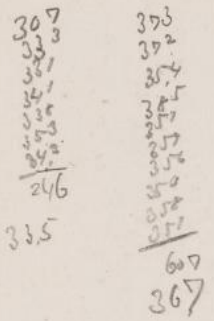
1004.phae.proj.1766R

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29, Revere

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noaaphne.prod.17668

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