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KG
11366
v. 611

Zone Stars
Observations and Reductions
From Aug. 8 1885 to Dec. 29. 1885
C. 49

Stars observed for Dr. Auwers
From Aug. 15. 1885 to Feb. 1. 188[illegible]

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W. C. DEMAIN & SON,

STEAM PAPER RULERS,

AND DEALERS IN BLANK MUSIC PAPER.

8 HAWLEY AND 9 ARCH STREET.

☞ Passenger Elevator at 31 MILK STREET. Freight Elevator on ARCH STREET.

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To be applied to Circle Readings

$\iota = -4^{\circ}\ 5^{\prime}\ 2^{\prime\prime}$ From Mar. 30 1885 to Sept. 30 1885

log tan ι = 8.93614$_n$ " " " " "

log 15 tan ι 0.11223$_n$ " " " " "

$i = +4^{\circ}\ 5^{\prime}\ 6^{\prime\prime}$ From Oct. 1 1885 to Dec. 29 1885

log tan i 8.93599 " " " "

log 15 tan i 0.11208 " " " "

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Log A 9.7904 Aug 8.4
B 0.9694
C 1.1347
D 1.1473n

1885 Aug. 8 266 39 9.9993n
h m s .2075
17 46 20 +1.484 −.1588
+53°53'
8.8993
u = −.12 45 50.3 2 47.9
C = .00 57.0 a−1 8.7667n a+1
9.0153

9.77009

270 52 9.9999n Aug. 8
.2635
+1.238 −1.834 18 3 13
+53°53'
8.9613
2 434
57.5 a−1
8.1797
9.0538

Aug. 8 272 10 9.9997n
h m s .2564
18 8 26 +1.269 −1.803
+53°29'
8 1.1 8.9542
27.6 a+1 8.5776
9.0492

9.77473

48 11.7 47 566 566 0.1714 8.8 10.6
13.0 572 06 7.6660n
16.9 56.90 7.7820n
18.8 −2.564 9.0146n
9.4 20.5

+.916
48 16.58 47 3126 −.043 4 656 + 14.92
− 45.32 − 5400 −.083
− .14 + 1.452
− 54.16 + .08 + 2.242 − 54.20
.02
46 37.10 9.9993n
−14.85 − 2.24 9.8839 −12.37
+11.80 46 34.86 8.7667n −2.90
9.8832
+.7642
+ 7.08 .2791 + 11.73

4 46.7 4 2148 +.764
49.7 − 54.01 +.013
53.6 − .16 +.023
56.9 +1.589
0.4 +2.389 −54.20
53.46 − .03
+28.02 3 2728
−.239
9.9075
8.1797 −12.37
9.9074
+.8080
.2555

4 38.3 4 1704 9 30.30 9 36.38 +.783
41.6 − 54.01 + 6.08 − 54.02 +.032
45.0 − .16 − .16 +.058
48.4 − 54.21 +.1571
52.0 − .03 +2.444
45.06 3 2284 8 42.17 9.9997n
− 28.02 −.239 −2.44 9.9050
3 20.45 −1.269 8 39.73 8.5776
−7.50 9.9047
+.8030
+ 11.35 .2583

5 10.8 9.80852 +1.0433 10 34.6 9.77709 +1.0635 48 34.6 37 18.6 9.77473 +1.0613
5.2 1.65629n 0.0689n 29.2 1.17377 9.4819 29.2 12.7 0.78390 9.8798
2.6 1.57704 9.9993 49.7 1.05609n 9.9999 49.7 34.3 0.67086n 9.9997
1.3 0.0184 38.3 0.0267 38.3 22.3 .10 0.0258
8 14.72 49 8.6506n 10 37.95 53 8.0872 10 37.95 37 21.98 .53 8.4826
+ 37.76 56 45.31 − 11.38 55 15.95 − 4.69 28 24.95
8 52.48 − 23.44 − .72 10 26.57 −23.84 37 1.19 −23.82 + .47
50 13 55.87 56 21.95 + 9.30 54 12 21.78 + .19 53 45 31.16 28 1.18 + 9.31
− 17 17.56 + 14.23 − 17 17.56 + 9.32 − 17 17.56 + 14.47
− .55 + .63 − .06 + 1.450 − .01 − 4.3
+ .02 46 20.01 + 23.44 + .02 3 12.52 − .17 3 8.08 + . .02 827.04 + 23.82
+ 7.50 56 33.8 + 11.58 54 49.2 + 23.84 + 11.16 27 53.6
+ .13 + .21 + .20
− 17 10.48 − 17 5.83 − 17 6.21
49 56 38.31 53 55.22 53 28 13.60

9.80580

Aug. 8 275 36 9.9979n Aug. 8 275 56 9.9977n Aug. 8 276 46 9.9970n
h m s .2069 .2069 .2828
18 22 54 +1.469 −1.603 18 22 54 +1.470 −1.602 18 27 12 44.0 +1.167 −1.905
+50°15' +50°15' +53°4'
22 24.4 a−1 8.9047 21 681 a−1 8.9047 26 487 262 474 8.9806
14.6 8.9894 17.0 9.0144 3.2 5.3 50.7 9.0712
23 57.4 23 39.2 9.0186 28 58.9 9.0186 27 22.0 57.7 19.5 9.0666
1.3 42.2 2.4 20.5 26.1 1.8 23.2
6.4 45.6 5.5 29.2 5.4 27.0
8.3 49.0 8.7 33.3 9.0 30.0
9.5 51.9 0.1670 12.0 36.7 12.2 34.3 0.0671
7.8941 8.9 7.9191 8.7 35.0 26.80 8.0518
4558 550 29.40 8.1378
− 25.80 8.0080 − 25.80 8.0330 9.0636n
9.0165n 9.0163n
27 58.10 5806
+.907 +.907 +.720
24 33.5 23 19.78 +.073 24 39.70 +.077 27 28.78 27 58.08 +.105
− 43.57 − 54.03 +.139 − 54.03 + 29.30 − 54.03 +.187
− .14 +.1458 − .14 +.1457 3 − .17 +.1625
− 54.19 +2.577 − 54.19 +2.588 − 54.28 +2.687
− .02 − .02 − .23
22 25.59 9.9979n 28 45.51 27 3.85 9.9970n
− 2.58 9.8861 − 2.59 −2.64 9.9140
22 23.01 8.9894 −14.73 23 42.92 −11.68 27 1.21 9.0712
9.8840 −23.50 9.9110
+.7656 +.8147
+ 7.53 .2771 + 1284 2481

47 12.8 9.80580 +1.0427 47 12.8 59 30 9.75787 +1.0628
7.3 1.63919n 0.2916 7.3 57.6 1.46687 0.3734
2.3 1.55722 9.9979 2.3 18.0 1.33697n 9.9970
1.7 0.0182 1.7 6.3 0.0264
47 16.52 50 8.8755 47 16.52 59 6.22 55 8.9852
+ 36.08 17 45.72 − 21.73 6 59.14
47 52.60 −28.65 − 58 44.49 −23.85 +1.46
50 34 55.75 17 22.07 +1.21 55 24 38.6 6 35.29 +.926
− 17 17.56 +9.27 − 17 17.56 +1.449
− .51 +1.422 − .22 −.36
+ .60 −10.5 + . .02 26 49.53 +28.86
+ 7.90 +28.65 + 12.83 6 11.8
+ .14 + .23
− 17 10.03 − 17 4.72
50 17 38.17 55 6 46.30

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887

Aug. 8
h m s
18 8 26
+53° 28

a-1

9 538
588
30
65
95
2.72
- 27.72

9.5

9 3500
— 5402
— .16
— .03
8 4079
— 2.44
8 38.35

-1269

-5421

9.78445

Aug. 8
h m s
18 11 6
+52° 30'
10 ~~39.3~~ 38.2
~~29.5~~ 28.9 2+1

a-1

12 588
3.0
6.0
8.1
10.5

8.5

11
47.4 47.4
466 6.00
464 5.32
46.80
+27.10
13.70

13 528
— 51.49

-5420

-1333
-9.80

+ 9.63

35 298
221
436
319
35 31.85
+ 40.59
36 1244
52 46 3591
— 17 17.56
— .70
+ .00
+ 10.14
+ .19
— 17 7.93
52 29 18.35

9.78445
1.71 172
1.60840

52
29 2.78
-23.78
29 4.20

8 25.66

9.76324

Aug. 8
h m s
18 40 8
+54° 34'
39 ~~42.1~~ 54.4
32.7

a+1

40 533
576
1.1
4.1
8.1
0.84
+ 28.46

9.9932
.2747
-1.853
8.9925
9.2461

9.0612

0.0860
8.2186
8.3073
9.0544

+.752
+.154
+.277
+1.591
+2.774
— .03
40 35.06
— 2.77
40 32.29

+ 12.48

9.99932
+1.219

544

9.76324
1.18609
1.01156

+10538
0.5483
9.9932
0.0228
9.1574

+.218
+9.17
+14.37
-2.02
+ 25.70
+ 23.70

Aug. 8
h m s
18 11 6
+52° 30'
10 39.3
29.5

a-1

12 343
377
410
441
476

0.1248
7.6327
4.6.94
7.7333
9.0388

+.823
+.040
+.074
+1.585
+2.472
9.9995

9.8994
8.6940
9.8989
+.7923
.2642

+1.0565
9.9962
9.9995
0.0239
8.5934

+ .61
+9.31
+14.41
— .55
+2.3768

11 3.79
28 54.4

9.9995
.2409
— 1.739

+1333

8.9387
8.6940

9.0393

7.6327
9.0388

+.823
+.040
+.074
+1.585
+2.472
9.9995

9.8994
8.6940
9.8989
+.7923
.2642

+1.0565
9.9962
9.9995
0.0239
8.5934

+ .61
+9.31
+14.41
— .55
+2.3768

11 3.79
28 54.4

Aug. 8
h m s
18 11 6
+52° 30'
10 39.3
29.5

a-1

12 170
19.3
21.8
24.0
26.8

9.3

12 2.78
— 4.86

-5420

-1332
-9.80

+ 10.32

35 298
221
436
319
35 3185
+ 383
36 3568
52 47 1267
— 17 17.56
— .01
+ .00
+ 10.14
+ .19
— 17 7.24
52 29 55.11

9.75714

12 372
406
439
474
54.0

44.02
-27.10

12 169.2
— 5402
— .16
— .02
11 22.72
-2.47
11 20.25

9.78445
0.68664
0.58332

52
30 5.43
-28.78
29 41.65

11 6.93
29 31.8

Aug. 8
h m s
18 53 27
+53° 8'
53 2.5
7.0

a+1

53 640
580
2.0
3.5

8.8 6.7

54 0.7
4.2
7.7
11.1
14.5
7.64
+28.86

9.9880
.2833
-1.868
8.9811
9.3656

9.0669

0.0806
8.3467
8.4325
9.0549

+.743
+.207
+.369
+1593
+2.912
— .03
53 42.26
— 2.91
53 39.35

+ 12.75

9.75714
1.55218
1.42155

+1.0463
0.6678
9.9880
0.0197
9.2798

+.287
+ 9.07
+14.27
-2.67
+ 23.54

Aug. 8
h m s
18 53 24
+53° 8'

9.9880
.2833
-1.868
8.9811

9.3656

9.0669

54 268
29.7
31.5
344

9.5

54 3060
+ 27.26

-5429

-1206
-46.70

+ 12.88

9.75714
1.43553
1.30490

+1.0463
0.6709
9.9878
0.0195
9.2829

— 2018
56 57.64
55 25 5071
— 17 17.56
— .19
+ .00
1284
+ 23
— 17 46.8
55 8 33.15

Aug. 8
h m s
18 53 24
+53° 8'

9.9878
.2833
-1.867
8.9811

9.3687

9.0669

54 218
254
29.2
326
360

2900
+28.86

54 5786
— 54.04
— .17
— .03
54 3.62
— 2.92
54 0.70

8 46.03
— 23.52
8 22.51

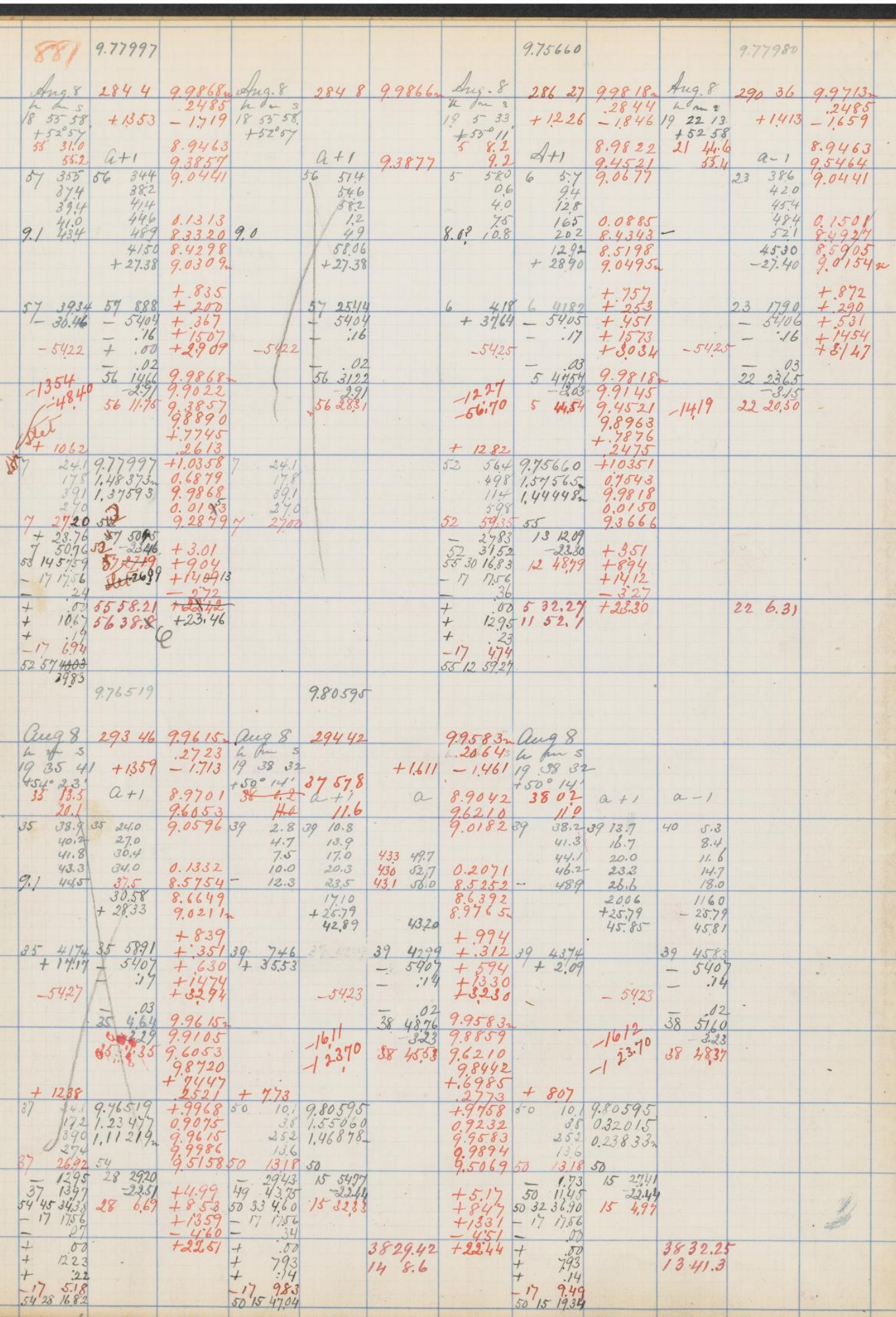
+.744
+.209
+.372
+1592
+2917
9.9878
9.9142
9.3687
9.9020
+.7980
.2479

+1.0459
0.6709
9.9878
0.0195
9.2829

+.289
+9.06
+14.26
-2.67
+ 23.52
5 34 8.64
7 35.8

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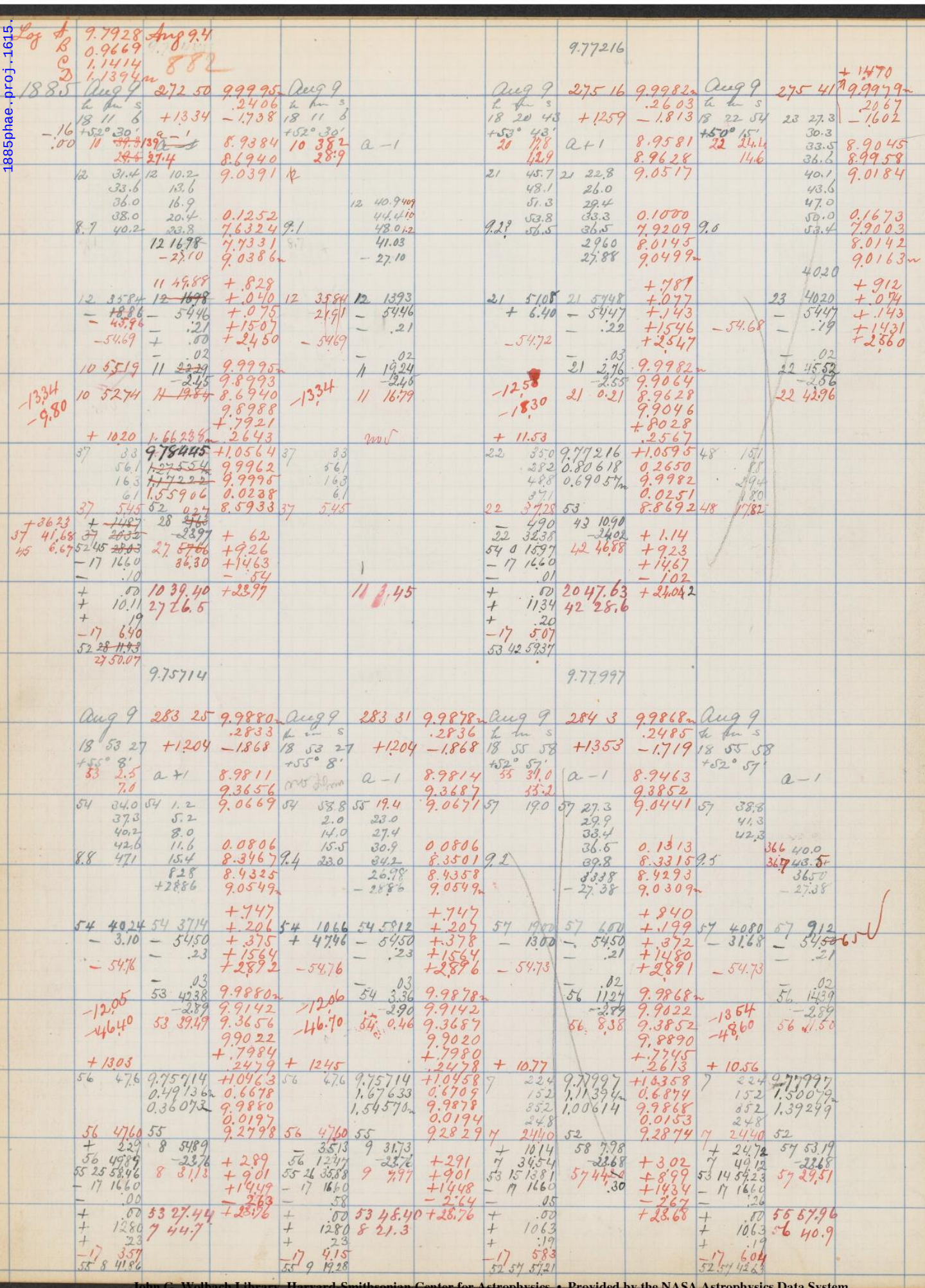


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882

9.80500

9.75787

9.79715

7

Aug 9 — 275 48 — 9.9978 — 9.9968 — 9.9968 — Aug 9 — 282 21 — 9.9898

Aug 9 — 286 27 — 9.9818 — Aug 9 — 291 59 — 9.9672 — Aug 9 — 292 34 — 9.9654 — Aug 9 — 293 43 — 9.9617

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	882	9.79272			9.78625			9.79996				
1885	Aug 9	294 13	9.9600n	Aug 9	295 7	9.9569n	Aug 9	295 21	9.9560n	Aug 9	295 50	9.9543n
	h m s		.2283	h m s		.2380	h m s		.2154	h m s		.2128
	19 36 31	+1.529	−1.543	19 40 41	+1.506	−1.566	19 41 10	+1.588	−1.484	19 43 0	+1.603	−1.469
	+51° 39′			+52° 19′	39 38.5		+50° 53′			+50° 39′		
	36 1.3	a+1	8.9261	~~40 10.8~~	a+1	8.9358	40 38.2	a−1	8.9132	42 28.5	a	8.9106
	36.2		9.6130	~~15.9~~	12.6	9.6278	50.4		9.6316	36.5		9.6392
	37 36.4	37 12.6	9.0315	40 57.5	40 48.5	9.0375	42 44.4	42 40.0	9.0236	44 11.8	44 15.3 15.3	9.0221
	37.9	17.3		0.3	51.7		47.5	43.6		15.6	15.6 19.0	
	39.2	19.6		3.0	54.9		49.5	47.0		17.4	15.4 22.2	
	40.0	23.0	0.1844	5.2	58.5	0.1778	52.0	50.0	0.2008	19.3	14.8 25.0	0.2049
	9.1 41.0	25.8	8.5391	7.8 8.4	2.0	8.5636	9.2 54.6	53.5	8.5448	8.7	14.8 28.4	8.5498
		19.66	8.6445		55.12	8.6653		46.82	8.6552		~~21.98~~	8.6613
		+26.59	8.9915n		+26.99	8.9944n		−26.15	8.9796n			8.9764n
			+.949			+.935			+.985			+.995
	37 38.90	37 46.25	+.321	41 2.88	41 22.11	+.339	42 49.60	42 20.67	+.325	44 16.02	44 15.18	+.329
	+ 7.35	− 54.54	+.611	+ 19.23	− 54.55	+.641	− 28.93	− 54.55	+.626	− 0.84	− 54.55	+.635
		− .20	+1.352		− .21	+1.361		− .20	+1.315		− .20	+1.306
	− 54.76	+ .00	+3.233	− 54.78		+3.276	− 54.77		+3.251	− 54.77		+3.265
		− .02			− .02			− .02			− .02	
		36 51.49	9.9600n		40 27.33	9.9569n		41 25.90	9.9560n		43 20.41	9.9543n
	−15.30	−3.23	9.8946	−15.07	−3.28	9.8983	−15.88	−3.25	9.8896	−16.03	−3.26	9.8885
	−1 22.10	36 48.26	9.6130	−1 25.00	40 24.06	9.6278	−1 25.70	41 22.65	9.6316	−1 27.30	43 17.15	9.6392
			9.8546			9.8552			9.8456			9.8428
			+.7155			+.7165			+.7008			+.6963
	+ 9.46		.2690	+ 10.02		.2653	+ 8.34		.2739	+ 8.45		.2749
	25 8.2	9.79272	+.9845	48 21.6	9.78625	+.9818	14 7.0	9.79996	+.9747	24 30.0	9.80213	+.9712
	1.3	0.86629	0.9152	14.7	1.28398	0.9300	0.8	1.46135n	0.9338	23.6	9.92428n	0.9414
	21.6	0.77124n	9.9600	35.3	1.18246n	9.9569	21.0	1.37354	9.9560	44.0	9.83864n	9.9543
	9.7		9.9932	24.7		9.9920	10.2		9.9889	33.8		9.9873
	25 10.20	51	9.5076	48 24.08	52	9.5261	14 9.75	50	9.5212	24 32.85	50	9.5277
	− 5.90	~~39~~ 40 36.91		− 15.22	17 32.91		+ 23.63	51 ~~4.73~~ 6.71		+ 0.69	41 6.66	
	25 4.30	−22.74	+5.10	48 8.86	−22.64	+5.28	14 33.38		+5.33	24 33.54	−22.56	+5.42
	51 57 44.05	40 14.17	+8.45	52 34 39.49	17 10.27	+8.39	51 8 14.97	−22.62	+8.37	50 58 14.81	40 44.10	+8.34
	− 17 16.60		+13.63	− 17 16.60		+13.60	− 17 16.60	50 44.09	+13.50	− 17 16.60		+13.45
	− .02		−4.44	− .10		−4.63	− .22		−4.58	− .00		−4.65
	+ .00	36 32.96	+22.74	+ .00	40 8.98	+22.64	+ .00	41 6.77	+22.62	+ .10	43 1.12	+22.56
	+ 9.32	38 52.1		+ 9.94	1545.3		+ 8.41 ~~9.43~~	49 18.4		+ 8.31	39 16.8	
	+ .16			+ .18			+ .15			+ .14		
	−17 7.14			−17 6.58			−17 8.26 ~~7.24~~			−17 8.15		
	51 40 27.45			52 17 22.89			50 50 58.37			50 40 58.21		

	9.77336		
Aug 9	296 15		9.9527n
h m s			.2590
19 44 43	45 41.7	+1.444	−1.628
+53° 36′	45.2		
44 14.1	48.5	a−1	8.9568
33.6	51.0		9.6457
46 41.6	55.8	16.6	9.0509
44.9	59.3	20.0	
48.3	2.6	23.2	
50.2	6.2	26.5	0.1596
9.0 52.6	9.3	30.3	8.6025
		23.32	8.6966
		−27.80	9.0036n
	55.51	45 55.52	
			+.896
46 47.52		45 55.51	+.371
− 52.01		− 54.55	+.689
		− 22	+1.390
	− 54.80		+3.346
		− .03	
		45 0.71	9.9527n
	−14.44	−3.35	9.9059
	−1 28.60	44 57.36	9.6457
			9.8586
			+.7221
+ 10.77			.2572
26 34.9	9.77336		+.9493
32.6	1.71609n		0.9479
52.2	1.60168		9.9527
41.0			9.9909
26 40.18	53		9.5516
+ 39.96	38 22.38		
27 20.14	−22.46		+5.50
53 55 28.21	37 59.92		+8.31
− 17 16.60			+13.56
− .70			−4.91
+ .00		44 42.92	+22.46
+ 11.27		36 31.3	
+ .20			
−17 5.83			
53 38 11.61			

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Log A 9.7955 Aug 11 4
B 0.9615
C 1.1543
D 1.1229

Aug 11 272 50

Aug 11 285 35

9.77795

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1885phae.proj.1615.

1885 Aug 11 291 10 — Aug 11 292 5 — Aug 11 293 52

Aug 11 294 13 — Aug 11 295 7 — Aug 11 295 52

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1885phae.proj.1615.

Log A 9.7974 Aug 15.4
B 0.9587
C 1.1775
D 1.0864n

Aug 15 272 19

Aug 15 287 47

Aug 15

Aug 15 288 55

Aug 15 290 32

Aug 15 290 36

Aug 15

Aug 15 292 4

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884

1885 Aug 15 292 34 — 9.9654n — Aug 15 294 8 — 9.9603n — Aug 15 294 43 — 9.9583n

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1885phae.proj.1615.

Aug 15 295 19 9.9562
.2419
19 40 56 +1494 −1.578
+52° 31′ 8.9397
40 24.3 a+1 9.6311
26.5

41 33.3 41 47.3 9.0399
36.1 48.0
08.4 51.7
40.5 0.1744
43.5 8.5708
8.6710
+27.12 8.9961

41 38.36 42 +.937
+ 3686 − 5660 +.338
3321 − .29 +.705
− 56.91 +1209
+3.189
− .02
41 18.31 9.9562

−14.94 9.8998
−1 2560 41 11.47 9.6311
+10.07 9.8560
+.7178
.2638

32 4.32 9.78428
3.63 1.56656
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32 8 45.95 52

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− .36

− .03 40 56.53
+ 10.27 31 30.3
+ .19
− 17 8.41
52 33 12.96

Aug 15 295 53 9.9541
.2020
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42 48.1 a+1 8.8998
50.9 53.7 9.6400

44 15.4 43 58.5 9.0156
16.9 59.4
18.4 2.4
19.8 5.8
21.0 9.2
2.66
+25.62 8.9697

44 18.30 44 29.28
+ 1098 − 5660
9 − .26
− 5688

− .02
43 32.40 9.9541
−3.16
43 28.24
8

+1.028
+.315
+ 681
+1138
+3.162
− 5689

46 33.20 45 30.06
−63.14 − 5660
− .27
− .02
44 33.17
−3.19
44 29.98

−15.86
−1 2820
+ 7.30

32 5.16 9.79778
4.61 1.80030
6.9 1.71031
5.61
32 5 55.18 54

+ 5132 2 51.07
2 46.50 −24.18
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− 17 18.48
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+ .863
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5.61
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− .106

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+ .863
+ .15
− 17 10.78
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Aug 15 296 12 9.9529
.2185
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+51° 43 56.4 a−1 8.9163
58.6 9.6449

46 4.0 9.0255
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17.7 8.5612
10.76 8.6704
− 26.28 8.9774

+.996
+.331
45 44.48 −.705
− 5660 +.158
− .27 +3.190
− .02
44 47.59
−3.19
44 44.40
−1588

Aug 15 296 12 9.9529
.2185
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+51° 43 56.4 a−1 8.9163
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Aug 15 299 19 9.9405
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23.6 11.8 9.6899

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6.7 45.8 17.6 37.3
10.5 48.3 20.8 40.2
13.5 51.6 24.0 43.0 0.2198
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4848 40.28 8.7100
8.9606

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− .27 +1114
− 5691 +3.186
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− .02
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−16.60 −3.29 9.8876
−1 38.10 57 14.19 9.6690
9.8277
+.6725
.2761
+ 8.24
37 20.2 9.80397 +.9486
14.0 0.61805 0.9921
35.2 0.53425 9.9405
23.5 9.9771
37 23.22 50 9.5771

− 342 28 18.31 +616
37 19.80 −23.76 +793
50 45 28.55 27 54.55 +1428
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− .01
− .02 56 57.59 +23.76
+ 8.13 26 16.5
+ .14
− 17 10.24
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Log # 9.7984 Aug 16.4
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D 1.0764

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1885phae.proj.1615.

1885

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+50° 38' | | | +50° 38' | | | +49° 54' | 14.5

56 46.6 a+1 | a−1 | 8.9106 | 56 47.4 a−1 | | | 2 1.4 | 17.5 8.9003

35.3 | | 9.6912 | | | | 30.9 | 20.7 9.7070

59 35.6 58 4.2 | 58 56.0 | 9.0221 | 58 40.7 58 57.0 | | | 3 55.8 | 23.6 9.0160

37.1 7.5 | 59.0 | | 44.4 0.7 | | | 57.6 | 26.6

38.5 10.3 | 2.7 | | 46.7 4.0 | | | 3.0 | 30.3

39.6 13.7 | 5.7 | 0.2175 | 48.7 7.0 | | | 6.2 | 33.8 0.2304

9.0 40.9 17.6 | 9.0 | 8.6018 | 9.3 49.8 10.3 | | | 9.3 8.2 | 37.2 8.6073

1066 | 2.48 | 8.7133 | 3.80 | | | | 8.7230

+26.01 | −26.01 | 8.9621 | −26.01 | | | | 8.9508

36.67 | 36.47 | | | | | 2396 |

| | +1.037 | | | | | +1.069

59 38.4 | 58 36.7 | +.364 | 58 46.6 58 37.79 | | | 4 25.6 3 23.96 | +.369

− 61.77 | − 5684 | +.787 | − 8.29 − 5684 | | | − 38.60 − 5684 | +.805

| − .22 | +1093 | − .22 | | | .21 | +1065

− 57.08 | | +3.281 | − 57.08 | | | − 57.07 | +3.308

| − .02 | | − .02 | | | − .02

| 57 39.49 | 9.9400 | 57 40.01 | | | 2 24.89 | 9.9348

| − 3.28 | 9.8885 | − 3.28 | | | − 3.51 | 9.8844

−1651 | 57 36.21 | 9.6912 | −1650 57 37.43 | | | 2 23.38 | 9.7070

−1 38.40 | | 9.8285 | −1 38.40 | | | | 9.8192

| | +.6737 | | | | | +.6595

+ 7.48 | | .2749 | + 8.47 | | | + 7.37 | .2787

24 27 9.80228 | | +.9486 | 24 27 9.80228 | | | 4 23.8 9.80897 | +.9382

58.6 1.79078 | | 0.9934 | 58.6 0.91855 | | | 18.5 1.58652 | 1.0092

18.4 1.70529 | | 9.9400 | 18.4 0.83306 | | | 4.04 1.50779 | 9.9348

80 | | 9.9771 | 80 | | | 2.96 | 9.9723

24 6.92 50 | | 9.5797 | 24 6.92 50 | | | 4 28.08 50 | 9.5914

+ 50.73 40 39.26 | | +6.19 | + 6.81 41 24.17 | | | + 32.19 0 36.53 |

24 57.65 −24.06 | | +.794 | 24 13.73 −24.05 | | | 5 0.24 −28.91 | + .642

50 57 50.70 40 15.21 | | +1445 | 50 58 34.62 41 0.12 | | | 50 17 48.08 0 12.62 | + .784

− 17 18.92 | | −.453 | − 17 18.92 | | | − 17 18.92 | +1430

− .02 | | +24.05 | − .02 | | | − .40 | − .465

| 57 19.70 | | 57 20.93 | | | | +28.91

− .04 | 38 36.8 | | − .04 | | | − .04 |

+ 8.39 | | | + 8.39 | | | + 7.68 |

+ .15 | | | + .14 | | | + .13 |

−17 11.44 | | | −17 10.45 | | | −17 11.55 |

50 40 31.78 | | | 50 41 15.70 | | | 50 0 29.16 |

Aug 16 304 28 | 9.9162 | Aug 16 | 304 54 | 9.9139 | Aug 16 | 305 20 | 9.9116 | Aug 16 | 305 26 | 9.9110

h m s | .2451 | h m s | | .2739 | h m s | | .2598 | h m s | | .2598

20 17 31 +1.622 | − 1.450 | 20 19 20 | + 1.531 | − 1.541 | 20 21 3 | + 1.588 | − 1.484 | 20 21 3 | + 1.590 | − 1.482

+52° 42' | | +52° 32' | | | +53° 38' | | | +53° 38' | |

16 58.2 a−1 | 8.9429 | 18 49.2 | a−1 | 8.9717 | 20 31.2 | a−1 | 8.9576 | 20 49.7 | a−1 | 8.9576

38.7 | 9.7528 | 38.0 | | 9.7575 | 34.0 | | 9.7622 | | | 9.7632

19 23.6 19 ~~10.3~~ | 9.0419 | 20 54.3 | 20 ~~57.5~~ | 9.0607 | | 22 39.6 | 9.0514 | 22 34.3 | 23 0.4 | 9.0514

26.4 11.9 | | 56.8 | 56.6 | | | 43.7 | | 37.0 | 3.5 |

28.8 ~~13.1~~ | | 59.0 | 0.4 | | | 46.8 | | 40.6 | 7.0 |

30.8 18.6 | 0.2100 | 3.0 | 3.8 | 0.1850 | | 50.0 | 0.2038 | 44.2 | 10.3 | 0.2014

9.1 32.8 22.0 | 8.6957 | 7.0 | 7.2 | 8.7292 | 9.1 | 53.2 | 8.7198 | 9.3 | 14.2 | 8.7208

15.30 | 8.7947 | | ~~19.6~~ 7.5 | 8.8182 | | 46.66 | 8.8136 | | 7.08 | 8.8146

− 27.23 | 8.9581 | | − 2844 | 8.9746 | | − 27.82 | 8.9630 | | − 27.82 | 8.9624

3.80 | | | 3.80 | | | | | | |

3536 | +1.019 | | 3536 | +.962 | | | +.998 | | | +1.000

19 28.48 18 48.8 | + 452 | 20 58.28 | 20 3466 | + 489 | | 22 1884 | +.478 | 22 30.03 | 22 39.26 | +.479

− 40.41 | + 950 | − 2862 | − 5686 | +1003 | | − 5686 | +.992 | +0.24 | − 5686 | +.994

| +1083 | 2292 | − .25 | +11.25 | | − .24 | +1095 | | − .24 | +1093

− 57.12 | +3.504 | − 54.14 | | +3.579 | − 57.13 | | +3.563 | − 57.13 | | +3.566

.02 | | | .03 | | | .03 | | | .03 |

17 57.37 | 9.9162 | | 19 34.52 | 9.9139 | | 21 21.71 | | | 21 42.13 | 9.9110

−16.23 −3.50 | 9.9009 | −15.31 | −3.58 | 9.9111 | | −3.56 | | 15.90 | −3.57 | 9.9062

−1 53.30 17 47.85 | 9.7528 | −1 54.60 | 19 30.94 | 9.7575 | −15.90 | 21 18.15 | | −1 56.10 | 21 38.56 | 9.7632

| 9.8171 | | 3464 | 9.8250 | | | | | | 9.8172

| +.6563 | | | +.6683 | | | | | | +.6564

+ 10.21 | .2626 | + 12.45 | | .2515 | | | | + 11.65 | | .2569

20 25.6 9.78246 | +.9189 | 31 12.2 | 9.76360 | +.9198 | 24 11.4 | | | 24 11.4 | 9.77302 | +.9134

18.7 1.60217 | 1.0550 | 5.8 | 1.42521 | 1.0594 | 3.7 | | | 3.7 | 9.38021 | 1.0654

38.6 1.49686 | 9.9162 | 25.5 | 1.30104 | 9.9139 | 24.1 | | | 24.1 | 9.26546 | 9.9110

28.2 | 9.9633 | 1.60 | | 9.9637 | 14.0 | | | 14.0 | | 9.9607

20 27.8 52 | 9.6537 | 31 ~~14.88~~ | 54 | 9.6686 | 24 13.30 | | | 24 13.30 | 53 | 9.6694

+ 31.71 44 40.47 | | + 17.22 | + 34.700 | | | | | − 0.18 | 41 27.96 |

20 59.7 ~~23.18~~ | + 714 | 31 34.88 | − 2314 | + 721 | | | | − 24 13.12 | − 22.91 | + 714

53 1 49.18 ~~44 47.19~~ | + 751 | 54 51 13.47 | 33 ~~43.86~~ | + 547 | | | | 53 58 35.23 | 41 5.05 | + 742

− 17 18.92 16.87 | +1450 | − 17 18.92 | | +1402 | | | | − 17 18.92 | | + 1392

− .42 | − 537 | − .18 | | − 556 | | | | − .80 | | − 557

− .00 17 31.22 | + 23.38 | − .01 | 19 19.33 | + 23.14 | | 21 2.25 | | − .04 | 21 22.66 | + 22.91

+ 10.45 42 23.6 | | + 12.43 | 31 52.0 | | | | | + 11.50 | 39 9.0 |

+ .18 | | + .21 | | | | | | + .19 | |

−17 8.71 | | −17 6.47 | | | | | | −17 7.27 | |

52 44 30.26 | | 54 33 54.55 | | | | | | 53 41 16.31 | |

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1885 Aug 16 306 46 9.9037
L s
20 26 46 +1.612
+53° 41'
26 14.1 a − 1
36.6
9.7771
9.0519

Aug 16
L s
20 26 46
+53° 41'
8.9584
a − 1

Aug 16 306 41 9.9042
L s
20 26 46 +1.611
+53° 41'
a − 1
8.9584
9.7763
9.0519

27 40.0 28 20.7 28 7.9 28 25.30
43.0 24.3 14.5 28.2
48.4 27.7 17.8 30.7
50.0 30.2 19.0 34.9
9.3 51.2 34.2 9.3

28 2.3
6.2
9.6
13.2
16.7
9.0

2742 31.62
− 27.86 − 27.86

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8.7355
8.8290
8.9556

0.2071
8.7347
960
8.8282
− 27.86
8.9561

+1.013
+ .496
+1.028
+1.076
+3.613

+1.013
+ .495
+1.026
+1.078
+3.612

27 46.52 27 59.56 28 14.80 28 37.6
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− 57.13 − .24 − .24
+ .00
− .03
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− 3.61 − 3.61
26 58.82 27 8.02

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− .5686
− .24
− .03
26 44.61
− 3.61
26 41.00

−16.14
−59.90
−57.1

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9.8102
+.6460
.2566

+ 11.62 + 11.64

21 37.4 9.977250 21 37.4 9.977250 21 37.4
31.2 1.11528 31.2 1.04297 31.2
51.2 1.00001 51.2 0.92470 51.2
41.3 41.3 41.3
21 40.28 53 21 40.28 53 21 40.28

+ 1.000 44 10.77 + 8.47 43 62.32
21 30.28 − 22.85 21 48.75 − 22.85
54 1 18.07 48 37.92 +7.55 540 39.60 49 29.47
− 17 18.92 47.92 +7.30 − 17 18.92 48
− .05 +13.75 − .03
− .02 − 5.75 − .02 26 46.88
+ 11.50 +22.85 + 11.50
+ .19 + .19
− 17 7.30 − 17 7.28
53 43 39.15 53 43 40.68

Aug 16 307 50 9.8975
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+51° 57'
30 45.6 a − 1
55.4
9.7877
9.0344

Aug 16
L s
20 31 20
+51° 57'
8.9308
a − 1

Aug 16 308 38 9.8927
L s
20 34 30 +1.796
+50° 40'
33 34.0 a − 1
35.4
8.9111
9.7954
9.0224

Aug 16 309 10 9.8895
L s
20 38 20 +1.699
+52° 57'
35 48.6 a − 1
50.2
8.9460
9.8004
9.0439

33 3.8 32 34.0 32 38.4
6.2 37.7 42.5
8.8 41.8
12.0 45.9 52.9
9.5 13.8 51.8 9.6
42.24 45.70
− 26.77 − 26.77

0.2358
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8.8221
8.9319

0.2533
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8.9151

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8.8443
8.9334

+1.082
+ .477
+1.012
+1.019
+3.590

+1.129
+ .464
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+ .981
+3.576

+1.068
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+3.664

33 8.92 32 15.47 32 19.93 35 29.48 35 29.13 37 55.50 37 37.53
− 53.95 − 56.87 − 56.87 − 6.35 − 56.87 − 17.97 − 56.87
− .23 − .23 − .22 − .24
− 57.12 − 57.12 − 57.11 − 57.13
− .02 − .02 − .02
31 18.35 31 22.81 34 32.02 36 40.40
− 3.59 − 3.59 − 3.58 − 3.66
31 14.76 31 19.22 34 28.44 36 36.74

−17.96
−2 5.10

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−2 6.50

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.2614

+ 9.15 + 8.51 + 10.84 8030

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53.8 1.63001 44.0 14.6 9.45824 17.8 1.15675
44.0 37 8.7
5 43.08 51 5 43.08 23 2.52 50 8 68.8 52

+ 42.66 59 12.84 + 0.29 42 35.13 + 14.35 57 19.04
6 25.74 − 22.72 − 2.81 − 22.63 8 21.23 − 29.43
52 16 22.61 58 50.12 +7.73 50 59 45.54 42 12.50 +7.87 53 14 27.12 56 56.61 +7.96
− 17 18.92 +7.20 − 17 18.92 +7.12 − 17 18.92 +7.07
− .75 +13.55 − .08 +13.40 − .08 +13.41
− 5.76 − 5.76 − 6.01
− .01 − .03 34 10.48 +22.63 − .03 36 19.75 +22.73
+ 9.71 + 8.40 40 7.4 + 107 54 50.1 +22.43
+ .17 + .14 + 48
− 17 9.77 − 17 10.41 − 17 8.08
51 59 3.69 50 42 26.62 52 57 8.20

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1885phae.proj.1615

Log A 9.8019 Aug 184
B 0.9614 886
C 1.1929
D 1.4554

Aug 18 299 32 | 9.9396 | Aug 18 299 33 | 9.9395

h m s | h m s
19 58 14 | 19 58 14
−.12 +52° 43' 19.9 | +52° 43'
.00 57 ~~54~~ a+1 | a−1 | 57 431 a+1 | a−1 | 9.6930
39.3 38.0 | 39.3

	59	25.2	58	33.1		27.7		8.9426	58	50.8	58 57.0	51.7
		28.1		36.7		31.4		9.6928		52.0	0.6	55.3
		31.7		40.3		34.7		9.0418		53.3	4.0	58.6
		34.0		43.1		38.1	0.1884			54.4	7.4	2.0
	9.2	38.5		47.0		41.3	8.6354	8.3			10.8	5.2
				4004		34.64	8.7346				396	58.5
				+ 27.24		− 27.24	8.9814				+ 27.24	− 27.24
				7.28		7.40					31.20	31.32
							+ .978					
	59	3150			59	7.34	+ .395		58	5262		59 31.26
		− 24.16				− 5744	+ .846			+ 38.64		− 57.44
						− .16	+ .1088					− .16
				− 57.62		+ 00	+ 8.307				− 57.62	
						− .02						− .02
					58	9.72	9.9896					58 33.64
		−15.44		~~13.90~~		−3.31	9.9008			−15.45	~~13.90~~	−3.31
		−138.70		~~+ 2.883~~	58	6.41	9.6928			−139.00	~~+ 29.10~~	58 30.33
							9.8404					
							+ .6925					
		+ 10.12					.2627			+ 9.88		
	21	240	9.78230				+.9552		21	240	9.78230	
		17.1	1.38310				0.9950			17.1	1.58704	
		38.7	1.27763				9.9396			38.7	1.48157	
		26.7					9.9801			26.7		
	21	2662	52				9.5936		21	2662	52	
	+	1895	43	5480					−	3031	44	4382
	21	45.57		−24.65			+6.26		20	5631		−24.65
	53	1 2.78	43	30.13			+ 7.96		53	1 52.04	44	19.17
	− 17	18.10					+ 14.89		− 17	18.10		
	−	.15					− 446		−	.39		
	−	.01			57	50.97	+ 24.65		−	.01		58 14.88
	+	10.10			41	51.5			+	10.10		42 40.2
	+	.18							+	.18		
	− 17	7.98							− 17	8.22		
	52	43 4468							52	44 3394		

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Log A 9.8067 Aug 20 4
B 0.9609
C 1.2023
D 1.0327

1885 Aug 20 295 6 9.9569m | Aug 20 295 21 9.9560m | Aug 20 295 50 9.9543m | Aug 20 296 15 9.9527m

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Aug 20 h m s 19 51 57 +52° 29' 51 26.5 53 50.0 51.1 51.9 9.0 53 5100 − 3707 3679 − 58.52 −15.34 −134.10 + 9.91 34 18.9 12.4 34.3 23.5 34 22.28 + 29.48 34 57.46 52 47 3689 − 17 1880 − .36 − .09 + 10.18 + .18 −17 8.89 52 30 38.09

298 4 +1534 a − 1 1358 53 5.43 377 41.5 44 47.7 41.30 − 27.09 14.21 53 1299 − 5830 − .20 + 3220 − .02 52 1547 − 3.22 52 12.25 47 + 9.91 52 30 48.00 − 25.44 30 22.56 51 57.13 28 48.5

9.9457 .2414 − 1538 8.9392 9.6726 9.0396 0.1858 8.6118 8.7122 8.9853 + .983 + .374 + .821 + .20 + 1042 + 3220 9.9457 − 8.996 9.6726 9.8453 + 7003 .2640 9.9643 0.9748 9.9457 9.9842 9.5722 + 605 + 806 + 1536 − 403 + 23.44 1746.56 045.5

Aug 20 h m s 19 54 42 +52° 22' 54 11.4 19.5 56 54.0 56.8 59.8 1.0 3.0 9.1 56 58.6 − 5900 − 5851 40 160 74 290 184 1778 52 + 4665 41 443 52 41 43.92 − 17 1880 − .92 − .01 + 10.09 + .18 −17 9.46 52 24 25.12 298 45 +1549 a − 1 19.8 23.2 27.3 29.9 33.7 26.78 − 27.02 55 59.76 − 5830 − .19 − .02 55 1.25 − 3.24 54 58.01 −15.50 −136.30 + 9.24 9.9429 .2398 − 1523 8.9376 9.6821 9.0386 0.1900 8.6197 8.7207 8.9815 + .992 + .381 + .830 + 1033 + 3226 9.9429 9.8990 9.6821 9.8419 + .6949 .2646 9.9595 0.9843 9.9429 9.9820 9.5811 + 618 + 801 + 15.29 − 411 + 25.87 24 34.46 − 2587 24 9.09 54 42.51 22 32.8

Aug 20 h m s 19 58 14 +52° 43' 57 43.1 39.3 59 37.9 40.7 42.5 44.3 48.0 8.7 59 4268 − 10.59 20 48.2 40.3 20 50.9 50.5 20 50.35 + 8.31 20 58.66 53 1 4969 − 17 1880 − .03 − .02 + 10.40 + .18 −17 8.27 52 44 30.89 299 38 +1544 a − 1 577 59 1.1 4.6 8.0 12.2 4.72 + 27.24 31.96 − 5853 − .02 58 3356 − 3.28 58 30.28 −15.45 −139.00 + 10.53 9.9391 .2451 − 1528 8.9429 9.6941 9.0419 0.1886 8.6370 8.7360 8.9810 + .989 + .396 + .868 + 1032 + 3285 9.9391 9.9009 9.6941 9.8400 + .6919 .2626 9.9545 0.9963 9.9391 9.9798 9.5950 + 635 + 794 + 15.21 − 424 + 25.26 44 41.42 − 25.26 44 16.16 58 14.83 42 37.2

Aug 20 h m s 20 17 46 +52° 0' 17 13.1 56.7 18 28.8 30.8 33.9 36.5 7.5 37.0 19 5.13 5.18 18 3340 + 31.75 − 58.54 −1660 −15350 + 9.53 2 58.6 50.9 13.0 14 3 0.82 52 − 2531 2 35.51 52 20 1284 − 17 1880 − .07 − .06 + 9.69 + .17 −17 9.27 52 2 54.04

304 32 +1660 51.9 55.0 58.5 2.0 18 31.6 34.7 38.4 41.7 45.0 38.28 19 5.15 − 5833 − .19 − .02 18 6.61 − 3.45 18 3.16 3.57 − 24.59 2 38.98

9.9158 .2340 − 1412 8.9318 9.7535 9.0350 0.2201 8.6853 8.7885 8.9508 +1064 + 443 + 979 + 963 + 3449 9.9158 9.8968 9.7535 9.8126 + .6495 .2668 9.9163 1.0557 9.9158 9.9620 9.6503 + 728 + 953 + 1460 − 482 + 24.59 5.3 25.3 8.4 28.5 11.8 31.9 15.2 35.4 18.5 38.8 5.18 5.5 − 5.34 − 28.43 5.8 25.3 8.4 28.5 11.8 31.9 15.2 35.4 18.5 38.8 31.98 5.15 − 5833 − .19 − .02 18 6.61 − 3.45 18 3.16 −1660 −15350 + 9.53 2 58.6 50.9 13.0 14 3 0.82 52 − 2531 2 35.51 52 20 1284 − 17 1880 − .07 − .06 + 9.69 + .17 −17 9.27 52 2 54.04

Aug 20 h m s 20 19 20 +54° 32' 18 49.2 28.0 20 45.3 47.7 49.8 51.9 54.3 20 4980 − 1289 20 58.1 1.7 5.5 8.9 12.5 7.0 5.34 − 28.43 20 36.91 − 5833 − .21 − .03 19 38.34 − 3.54 19 34.80 −1531 −15460 + 12.54 31 21.0 13.2 34.4 23.4 31 2380 + 968 − 24.48 31 32.68 54 51 1567 − 17 1880 − .05 − .02 19 19.49 + 12.40 31 50.3 + .21 −17 6.24 54 33 56.87

304 64 +1531 a − 1 9.9139 .2739 − 1541 8.9717 9.7575 9.0607 0.1850 8.7292 8.8182 8.9746 + .981 + .490 + 1048 + 1417 + 3836 9.9139 9.9111 9.7575 9.8250 + .6683 .2515 9.9198 1.0597 9.9139 9.9637 9.6686 + 735 + 750 + 1466 − 503 + 24.48 34 9.41 − 24.48 38 44.93 53.6 55.8 57.6 22.1 8.9 9.3 8.6 8.8 − 5856 20 58.1 1.7 5.5 8.9 12.5 5.34 − 28.43 34 9.41 − 24.48 38 44.93

Aug 20 h m s 21 3 +53° 38' 20 31.2 34.0 24 2.9 0.0 21.5 10.4 24 11.20 + 11.23 + 2751 24 38.71 53 58 9964 − 17 1880 − .34 − .08 + 11.46 + .19 −17 7.57 53 40 50.84 305 20 +1588 a − 1 577 53.3 55.9 58.2 2.9 6.0 5946 − 27.24 3222 59 3209 − 5831 − .20 − .02 58 3356 − 3.28 58 30.28 −15.45 −139.00 + 10.53 9.9391 .2451 − 1528 8.9429 9.6941 9.0419 0.1886 8.6370 8.7360 8.9810 + .989 + .396 + .868 + 1032 + 3285 9.9391 9.9009 9.6941 9.8400 + .6919 .2626 9.9545 0.9963 9.9391 9.9798 9.5950 + 635 + 794 + 15.21 − 424 + 25.26 44 41.42 − 25.26 44 16.16 58 14.83 42 37.2 9.9116 .2598 − 1484 8.9576 9.7622 9.0514 0.2008 8.7198 8.8136 8.9630 + 1017 + 479 + 1037 + 990 + 8823 9.9116 9.9062 9.7622 9.8178 + .6574 .2569 9.9143 1.0644 9.9116 9.9611 9.6684 + 743 + 746 + 1457 − 502 + 24.44 − 24.44 40 8763

Aug 20 h m s 20 22 15 +52° 37' 21 34.5 33.2 24 10.8 14.7 18.0 19.9 22.2 23 46.6 50.6 54.1 57.6 1.0 5398 − 27.18 23 26.80 − 5833 − .20 − .03 22 28.25 − 3.50 22 24.75 −1649 −1503 −1570 + 9.79 329 26 47.0 38.8 01 49.9 52 84 + 39.45 27 28.50 52 55 19.69 − 17 1880 − .67 − .09 + 16.32 + .18 −17 9.01 52 38 8.89 185 305 37 +1649 a − 1 34.5 24 46.6 50.6 54.1 57.6 1.0 5398 − 27.18 23 26.80 − 5833 − .20 − .03 22 28.25 − 3.50 22 24.75 −1649 −1503 −1570 + 9.79 329 26 47.0 38.8 01 49.9 52 84 + 39.45 27 28.50 52 55 19.69 − 17 1880 − .67 − .09 + 16.32 + .18 −17 9.01 52 38 8.89 185 9.9100 .2432 − 1423 8.9410 9.7652 9.0408 0.2172 8.7062 8.8060 8.9508 +1057 + 466 + 1019 + 963 + 3504 9.9100 9.9052 9.7652 9.8102 + .6460 .2633 9.9093 1.0674 9.9100 9.9587 9.6654 + 7.48 + 443 + 1449 − 499 + 24.41

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C 1.2028
D 1.0315

Aug 20 308 34 9.8931 Aug 20 308 58 9.8907 Aug 20 309 55 9.8848 Aug 20 309 56 9.88 47

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Sept 30 295 6 — Sept 30 296 15 — Sept 30 298 40 — Sept 30 302 35 — Sept 30 302 40 — Sept 30 303 42

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+ 2565 12 3882
53 33.29 −33.72 +854
54 29 45026 12 5.18 +705
−17 18.10 4 +1674
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+ 12.10 10 4.5
+ .13
−17 6.20
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Sept 30 308 38 9.8927
.2133
20 34 30 +1.796 −1.276
+50° 40'
a−1 8.9111
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24.6 1.60625 9.8927
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1680 50 9.6841

+ 4039 42 30.94
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− .65 +1.37
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Log A 9.8524
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Oct 1.3
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h m s | | .2054 | h m s | | .2128 | h m s | | | .2239 | h m s | | .2108
19 24 20 | +1.575 | −1.497 | 19 57 20 | +1.650 | −1.422 | 20 4 43 | | 10.4 +1.640 | −1.432 | 20 13 10 | +1.715 | −1.357
+50° 10′ | | | +50° 38′ | | | +51° 21′ | | 13.6 | | +50° 31′ | |
−.11 | | | | | | | | | | | |
.00 23 48.2 | a+1 | 8.9032 | 56 46.5 | a+1 | 8.9106 | 4 14.6 | | 16.9 | 8.9217 | 12 35.8 | a−1 | 8.9086
7.9 | | 9.5573 | 33.3 | | 9.6912 | 18.1 | | 20.2 | 9.7150 | 27.8 | | 9.7406

25 31.1 | 25 27.3 | 9.0176 | 59 13.6 | 58 27.9 | 9.0221 | 5 42.8 | 5 50.4 | 23.7 43.3 | 9.0288 | 15 34.0 | 15 12.0 | 9.0209
35.2 | 30.5 | | 15.2 | 30.6 | | 44.4 | 54.0 | 27.0 46.6 | | 36.0 | 16.7 | 85
38.4 | 34.0 | | 16.5 | 34.2 | | 46.7 | 56.9 | 30.4 49.8 | | 37.4 | 22.6 | 99
40.7 | 37.0 | 0.1973 | 17.6 | 37.1 | 0.2175 | 48.1 | 0.4 | 33.2 52.9 | 0.2148 | 38.4 | 27 | 0.2343
9.0 43.4 | 40.4 | 8.4605 | 9.0 18.3 | 40.7 | 8.6018 | 8.4 50.0 | 3.8 | 36.8 56.4 | 8.6367 | 9.6 39.0 | 19.52 | 8.6492
| 3384 | 8.5749 | | 34.10 | 8.7133 | | 57.10 | 4980 | 8.7438 | | 19.52 | 8.7615
| +25.76 | 8.9873 | | + 26.01 | 8.9621 | | | | 8.9607 | | − 25.95 | 8.9426
| | | | | | | 6 23.45 | 23.58 | | | | 37 |
| | +1121 | | | +1175 | | | | +1167 | | | +1221
25 37.6 | 25 59.0 | +.255 | 59 16.24 | 59 0.11 | +.352 | 5 46.52 | | .6 23.51 | +.382 | 15 36.96 | 14 53.57 | +.393
+ 21.84 | −1 21.55 | +.696 | − 16.13 | −1 21.58 | +.957 | + 36.99 | | −1 21.59 | +1.027 | − 43.37 | −1 21.60 | +1.070
| − .13 | − .309 | | − .13 | −.292 | | | − .14 | −.291 | .04 | − .13 | −.279
−1 21.70 | + .00 | +1.763 | −1 21.73 | | +2.192 | | −1 21.75 | | +2.285 | −1 21.75 | | +2.405
| − .02 | | | − .02 | | | | −5 .02 | | | − .02 |
| 24 37.90 | 9.9697 | | 57 38.38 | 9.9400 | | | 1.76 | 9.9319 | | 13 31.82 | 9.9217
−16.76 | −1.76 | 9.8855 | −16.61 | −2.19 | 9.8885 | | | −2.28 | 9.8929 | −17.16 | −2.40 | 9.8877
−1 12.30 | 24 36.14 | 9.5573 | −1 38.40 | 57 36.19 | 9.6912 | | −16.41 | 4 59.48 | 9.7150 | −1 50.20 | 13 29.77 | 9.7406
| | 9.8552 | | | 9.8285 | | −1 43.90 | | 9.8248 | | 17 | 9.8094
+ 7.84 | | +.7165 | | | +.6738 | | | | +.6680 | | | +.6448
| | .2777 | + 8.42 | | .2749 | + 8.91 | | | .2706 | + 7.82 | | .2756

53 1.7 | 9.80656 | +.9942 | 24 33.6 | 9.80228 | +.9487 | 40 22.7 | 9.79558 | | +.9386 | 32 32.7 | 9.80336 | +.9204
546 | 1.33925 | 0.8595 | 26.8 | 1.20763 | 0.9934 | 146 | 1.56808 | | 1.0172 | 25.6 | 1.63739 | 1.0428
8.8 | 1.25789 | 9.9697 | 40.4 | 1,12199 | 9.9400 | 28.3 | 1,47574 | | 9.9319 | 38.7 | 1.55288 | 9.9217
26 | | 9.9975 | 35.6 | | 9.9771 | 22.2 | | | 9.9725 | 33.6 | | 9.9640
53 1.92 | 50 | 9.4428 | 24 34.10 | 50 | 9.5797 | 40 21.95 | 51 | | 9.6079 | 32 32.70 | 50 | 9.6283
+ 18.11 | 11 51.56 | | − 13.24 | 40 51.31 | | + 29.90 | 24 20.81 | | | | − 35.77 | 33 14.58 |
53 20.03 | −33.67 | +.515 | 24 20.86 | −38.48 | +.701 | 40 51.85 | −33.63 | | +.741 | 31 56.99 | −33.62 | +.786
50 29 28.32 | 11 18.89 | +.822 | 50 58 27.99 | 40 17.83 | +.768 | 51 41 56.50 | 23 47.18 | | +.754 | 50 50 51.36 | 32 40.96 | +.736
− 17 44.60 | | +1.842 | − 17 44.60 | | +1.458 | − 17 44.60 | | | +1.739 | − 17 44.60 | | +1.705
− .13 | | + .88 | − .07 | | +.121 | − .37 | | | + 1.29 | − .50 | | + 1.35
− .03 | 24 20.38 | +2.67 | − .05 | 57 19.68 | +33.48 | − .00 | | 4 43.07 | +33.63 | − .02 | 13 12.01 | +33.42
+ 7.92 | 10 6.6 | | + .845 | 38 39.4 | | + .918 | | 22 33 | | + 8.25 | 30 [illegible] | 51.0
+ .08 | | | + .09 | | | + .10 | | | | + .09 | |
−17 36.76 | | | −17 36.18 | | | −17 35.69 | | | | −17 36.78 | |
50 11 43.72 | | | 50 40 42.89 | | | 51 24 11.30 | | | | 50 33 6.76 | |

Oct 1 | 305 22 | 9.9114 | Oct 1 | | | Oct 1 | 308 21 | 9.8944 | Oct 1 | 308 16 | 9.8950

h m s | | .2175 | h m s | | | h m s | | .2479 | h m s | | .2479
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+50° 54′ | 31.6 | | +50° 54′ | | | +52° 53′ | | | +52° 53′ | | |
20 [illegible] | a+1 | 8.9153 | 20 37.0 | a−1 | | 32 32.5 | a+1 | 8.9457 | 32 [illegible] | a−1 | 8.9457
| 52.6 | 9.7625 | 50.6 | | | 49.3 | | 9.7927 | 49.1 | | 9.7919

22 47.3 | 22 16.1 | 9.0249 | | 23 12.4 | | 34 2.7 | 34 [illegible] | 9.0438 | | 34 47.4 | 9.0438
49.0 | 19.3 | | | 16.5 | | 5.7 | 16.0 | | | 50.7 |
50.6 | 23.0 | | | 19.4 | | 7.8 | 19.6 | | | 54.2 |
52.9 | 26.1 | 0.2370 | | 22.8 | | 10.7 | 22.8 | 0.2263 | | 57.4 | 0.2258
8.9 55.0 | 29.5 | 8.6778 | 9.6 | 26.3 | | 8.6 13.3 | 26.4 | 8.7384 | 9.0 | 1.0 | 8.7376
| 2280 | 8.7874 | | 1948 | | | 1955 | 8.8365 | | 6414 | 8.8357
| +26.16 | 8.9363 | | − 26.16 | | | +27.34 | 8.9382 | | − 27.34 | 8.9388
| | | | | | | | | | | |
| | +1229 | | | | | | +1199 | | | +1197
22 50.96 | 22 48.96 | +.420 | | 22 53.32 | | 34 8.04 | 34 46.8 | +.483 | | 34 26.80 | +.482
− 2.00 | −1 21.61 | +1.136 | | −1 21.61 | | + 38.52 | −1 21.62 | +1.271 | | −1 21.62 | +1.269
| − .14 | − .278 | | − .14 | | .85 | − .15 | −.276 | | − .15 | −.277
−1 21.77 | | + 25.10 | −1 21.77 | | | −1 21.79 | | +2.677 | −1 21.79 | | +26.71
| − .02 | | | − .02 | | | − .02 | | | − .02 |
| 21 27.19 | 9.9114 | | 21 31.55 | | | 33 24.87 | 9.8944 | | | 33 5.01 |
−17.27 | −2.51 | 9.8904 | −17.27 | −2.51 | | −16.85 | −2.68 | 9.9020 | −16.84 | −2.67 |
−1 55.90 | 21 24.68 | 9.7625 | | 21 29.04 | | −2 4.30 | −33 22.12 | 9.7927 | | 33 2.34 |
| | 9.8018 | | | | | | 42 | 9.7964 | | |
+ 8.87 | | +.6336 | | | | + 10.46 | | +.6257 | | |
| | .2731 | | | | | | | .2615 | | |

6 32.2 | 9.79981 | +.9067 | 6 32.2 | | | 8 59.0 | 9.78063 | +.8872 | 8 59.0 | | | 33 2.50
24.4 | 0.30103 | 1.0647 | 24.4 | | | 52.3 | 1.58681 | 1.0949 | 52.3 | | | 26.8
38.2 | 0.21292 | 9.9114 | 38.2 | | | 4.7 | 1.47952 | 9.8944 | 4.7 | | | 22.42
31.5 | | 9.9575 | 31.5 | | | 5.92 | | 9.9480 | 59.2 | | | 16.92
6 31.58 | 50 | 9.6529 | 6 31.58 | | | 8 58.80 | 52 | 9.6947 | 8 58.80 | | | 7.77
− 1.63 | 58 4.267 | | | | | + 30.75 | 55 4.524 | | | | |
6 29.95 | −33.68 | +.826 | | | | 9 28.97 | −33.79 | +.886 | | | |
51 16 18.40 | 58 8.99 | +.719 | | | | 53 13 19.38 | 55 11.45 | +6.91 | | | |
− 17 44.60 | | +1.680 | | | | − 17 44.60 | | +16.44 | | | |
− .50 | | + 1.43 | | | | − .39 | | + 1.88 | | | |
− .01 | 21 7.41 | +33.68 | | 21 11.77 | | − .04 | 33 5.57 | +33.79 | | 32 45.50 | |
+ 8.78 | 56 13.1 | | | | | + 10.77 | 53 7.2 | | | | |
+ .10 | | | | | | + .12 | | | | | |
−17 35.73 | | | | | | −17 34.14 | | | | | |
50 58 33.80 | | | | | | 52 55 34.78 | | | | | |

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1885 Oct 1 | 308 58 | 9.8907 | Oct 1 | 310 2 | 9.8840 | Oct 1 | 312 56 | 9.8646 | Oct 1 | 313 35 | 9.8600

h m s		.2162	h m s		.2672	h m s		.2659	h m s		.2822
20 35 29	+1.793	−1.279	20 39 45	+1.656	−1.416	20 51 25	+1.721	−1.351	20 53 57	+1.685	−1.387
+50° 52′			+51° 7′			+54° 2′			+55° 3′		
34 53.4	a − 1	8.9140	39 12.0	a + 1	8.9650	50 50.4	a + 1	8.9637	53 23.1	a + 1	8.9800
47.7		9.7986	23	4.	9.8084	57.1		9.8332	58.0		9.8385
37 27.0	37 32.8	9.0241	40 38.6	40 58.3 .9	9.0563	52 30.4	52 32.0	9.0554	54 58.0	55 4.8	9.0662
30.0	36.1		40.0	1.4 .7		34.0	35.7		0.3	8.6	
33.0	39.3		41.4	4.7 .7		36.2	39.1		2.2	12.1	
34.6	42.2	0.2536	42.7		0.2191	38.4	42.4	0.2358	(4.8)	16.0	0.2266
8.6 36.4	45.4	8.7126	9.6 44.3		8.7734	9.1 42.0	46.0	8.7969	8.9	19.6	8.8185
	39.16	8.8227		4.77	8.8647		39.04	8.8886		12.02	8.9047
	− 26.14	8.9148		+26.29	8.9403		+28.09	8.9200		+ 28.80	8.9262

		+1276			+1179			+1225		41.02	+1208
37 32.20	37 13.02	+ 455	40 41.40	41 31.06	+ 523	52 36.20	53 7.13	+ 552	55 0.17	55 40.87	+ 580
− 19.18	−1 21.62	+1232	+ 49.66	−1 21.63	+1357	+ 30.93	−1 21.64	+1433	+ 40.65	−1 21.64	+1488
	.14	− 262		.15	− 278		.15	− 265	.85	.16	− 269
−1 21.78	+ .00	+2701	−1 21.81		+2781	−1 21.82		+2945	−1 21.83		+2999
	.02			− .03			− .03			− .03	
	35 51.24			40 9.25	9.8840		51 45.31	9.8646		54 18.99	9.8600
	−2.70		−16.56	−2.78	9.9088	−17.22	−2.94	9.9083	−16.84	−3.00	9.9138
−17.93	35 48.52		−2 [illegible] .90	40 6.47	9.8084	−2 16.50	51 42.37	9.8332	−2 18.10	54 15.99 16.19	9.8385
					9.7928			9.7729			9.7738
					+.6206			+.5928			+.5940
			+ 11.52		.2541	+ 11.91		.2546	+ 12.78		.2483
			55 26.7	9.76800	+8747	0 43.6	9.76887	+8474	59 17.3	9.75805	+8423
			18.1	1.69601	1.1106	35.2	1.49038	1.1354	10.3	1.60906	1.1407
			30.0	1.57609	9.8840	47.8	1.37133	9.8646	22.8	1.47919	9.8600
			25.1		9.9419	42.2		9.9281	18.0		9.9255
			55 24.98	54	9.7172	0 42.20	54	9.7415	59 17.10	55	9.7523
			+ 37.68	9 12.61		+ 23.51	4 9.95		+ 30.14	5 29.29	
			56 2.66	− 33.80	+ 918	1 5.71	−33.63	+ 972	59 47.24	−33.64	+ 984
			54 26 45.69	8 38.81	+ 675	54 21 42.64	3 36.32	+ 645	55 23 1.11	4 55.65	+ 639
			− 17 44.60		+1621	− 17 44.60		+1570	− 17 44.60		+1561
			− .64		+ 166	− .25		+ 176	− .42		+ 180
		35 30.59	− .02	39 49.91	+ 33.80	− .01	51 25.15	+ 33.63	− .04	53 59.35	+ 33.64
			+ 12.03	6 37.9		+ 12.04	1 19.8		+ 13.00	2 37.6	
			+ .13			+ .13			+ .14		
			− 17 33.08			− 17 32.69			− 17 31.82		
			54 9 1.09			54 3 58.04			55 5 16.51		

Oct 1 | 314 21 | 9.8544 | Oct 1 | 316 16 | 9.8397 | Oct 1 | 318 55 | +1.902 9.8177 | Oct 1 | 320 2 | 9.8078

h m s		.2164	h m s		.2540	h m s		.2503	h m s		.2857
20 57 4	+1.895	−1.177	21 4 42	+1.831	−1.241	21 15 15	16 48.3	−1.170	21 19 44	+1.832	−1.240
+50° 52′			+53° 17′			+53° 4′	52.5		+55° 13′		
56 26.2	a + 1	8.9142	4 5.5	a + 1	8.9518	14 38.6	55.6	8.9481	19 7.7	a + 1	a − 1 8.9835
47.7		9.8445	11.9		9.8589	58.5	59.0	9.8772	7.5	53.0	9.8845
58 20.7	58 15.2	9.0243	5 45.1	5 51.7	9.0476	17 2.5	2.2	9.0453	21 20.4	20 56.6	21 47.6 9.0686
23.6	18.7		48.4	55.3		4.8	6.3		23.2	0.0	52.0
26.2	21.6		50.2	58.4		6.6	9.3		26.2	3.7	55.4
29.0	24.8	0.2776	53.3	1.6	0.2627	9.7	12.6	0.2792	28.4	7.6	58.5 0.2629
8.6 31.0	27.7	8.7587	8.6 57.3	5.2	8.8107	8.8 11.5	16.2	8.8253	31.2		2.4 8.8680
	21.60	8.8688		68.44	8.9065			8.9225		0.18	65.18 8.9531
	+26.15	8.8787		+27.60	8.8873		2.47	8.8630		+ 28.92	− 28.92 8.8764
										29.10	21 26.26

	85	+1349			+1303			+1354			+1304
58 26.10	58 47.75	+ 506	5 50.86	6 26.04	+ 570	17 7.02	17 2.47	+ 590	21 25.88	21 29.10	21 26.26 + 651
+ 21.65	−1 21.65	+1370	+ 35.18	−1 21.65	+1494	− 4.55	−1 21.66	+1550	+ 3.22	−1 21.67	+1663
.76	.14	− 241		.15	− 246		.15	− 232		.16	− 240
−1 21.81		+2984	−1 21.83		+3321	−1 21.84		+3262	−1 21.86		+3378
	.02			.03			.03			.03	
	57 25.94	9.8544		5 4.21	9.8397		15 40.63	9.8177		20 7.24	20 4.40 9.8078
−18.95	−2.98	9.8900	−18.61	−3.12	9.9041	−19.02	−3.26	9.9028	−17.32	−3.44	−3.38 9.9150
−2 20.10	57 22.96 23.06	9.8445	−2 24.80	5 1.09	9.8589	−2 31.00	15 37.37	9.8772		20 3.80	20 1.02 9.8845
		9.7444			9.7438			9.7205		6	9.7228
		+.5551			+.5544			+.5254			+.5282
+ 8.62		.2735	+ 10.99		.2592	+ 11.06		.2606	+ 13.47		.2470
9 47.7	9.80012	+8286	45 34.1	9.77660	+8136	59 44.0	9.77879	+7860	47 32.9	9.75823	+7752
45.0	1.33546	1.1467	25.7	1.54630	1.1611	43.1	0.65806	1.1794	25.2	0.50786	1.1867
55.8	1.24766	9.8544	39.0	1.43498	9.8397	54.9	0.54888	9.8177	38.4	0.37817	9.8078
49.6		9.9183	33.6		9.9104	49.6		9.8964	32.4		9.8894
9 49.42	50	9.7345	45 33.10	53	9.7630	59 49.15	53	9.7800	47 32.22	55	9.7995
+ 17.67	55 5.16		+ 27.23	19 14.41		3.54	5 29.20		+ 2.39	17 42.61	
10 7.29	−33.37	+ 998	46 0.33	−33.34	+1032	59 45.61	−33.03	+1076	47 34.61	−32.97	+1094
51 12 47.14	54 31.79	+ 631	53 36 48.02	18 41.07	+ 610	53 23 2.74	4 56.17	+ 579	55 35 13.74	17 9.64	+ 566
− 17 44.60		+1535	− 17 44.60		+1507	− 17 44.60		+1456	− 17 44.60		+1436
.13		+ 173	.32	42.78	+ 185	− .01		+ 192	.00		+ 201
− .05	57 4.12	+ 33.37	− .01	41 43.08	+ 33.24	− .05	15 18.35	+ 33.03	− .02	19 45.54	+ 32.97
+ 8.70	52 11.7		+ 11.20	16 16.3		+ 11.00	2 25.2		+ 13.34	14 36.0	
+ .10			+ .12			+ .12			+ .15		
− 17 35.98			− 17 33.61			− 17 33.54			− 17 31.13		
50 54 56.54			53 19 3.42			53 5 18.14			55 17 29.14		

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1885phae.proj.1615.

Log A 9.8570 Oct 5.3
B 0.9397
C 1.2619
D 9.6597

Oct 5	299 32	9.9396
h m s		.2448
19 58 14	+1543	− 1.529
−.08 +52° 43'	19.9	
.00 57 [illegible]	a+1	8.9426
[illegible]	38.0	9.6928
58 57.7 58 39.4		9.0418
0.6 2.6		
3.0 6.0		
4.4 8.4		0.1884
8.8 6.4 12.3		8.6354
5.84		8.7346
	+27.24	8.9814
		+1.110
59 2.42 59 33.08		+.376
+ 30.66 −1 24.56		+ .992
.10		− .438
−1 24.68 + .00		+2.040
− .02		
58 8.40		9.9396
−15.44	−2.04	9.9008
−1 38.70	58 6.36	9.6928
		9.8404
		+.6925
+ 10.44		.2627
20 47.7	9.78230	+.9552
38.7	1.48657	0.9950
29.6	1.38095	9.9396
46.7		9.9801
20 45.68	52	9.5936
+ 24.04	44 44.3	
21 9.72	−33.93	+ 7.11
53 1 38.63	43 8.050	+ .557
−.17 44.64		+ .1746
− .25		+ .179
− .01	57 50.92	+33.93
+ 10.58	41 51.8	
+ .12		
−17 34.20		
52 43 53.99		

Oct 5	303 27	9.9214
h m s		.2312
20 13 28	+ 1.651	− 1.421
+51° 51'		
12 33.3	a+1	8.9290
	42.0	9.7413
14 57.2	14 39.7	9.0333
0.2	43.2	
2.3	46.2	
5.1	49.7	0.2178
9.0 7.1	52.8	8.6703
8.0	46.32	8.7746
	+26.71	8.9547
		+1.188
15 3.32	15 13.03	+.407
+ 9.71 −1 24.57		+1.088
.10		− .412
−1 24.69		+.2278
− .02		
13 48.34		9.9214
−16.52	−2.27	9.8957
−1 50.40	13 46.07	9.7413
		9.8171
		+.6563
+ 9.81		.2679
13 8.4	9.79079	+.9242
.16	0.88722	1.0435
12.3	0.89009	9.9214
.92		9.9658
13 4.88	51	9.6370
+ 17.76	51 57.88	
13 15.44	−34.08	+ .795
52 9 32.71	51 23.80	+ .726
−17 44.64		+ .1689
− .03		+ .198
− .03	13 29.55	+34.08
+ 9.76	49 33.4	
+ .11		
−17 34.83		
51 51 48.07		

Oct 5		
h m s		
20 13 28		
+51° 51'		
	a−1	
15 36.0		
39.5		
42.4		
45.6		
49.0		
4.250		
− 26.71		
15 15.79		
−1 24.57		
− .10		
− .02		
13 51.10		
−2.27		
13 48.83		
13 8.4		
.16		
12.3		
.92		
13 7.88		

Oct 5	304 31	9.9159
h m s		.2340
20 17 46	+1.660	−1.412
+52° 01'		
17 13.1	a+1	8.9318
36.7		9.7533
18 46.5	18 58.8	9.0350
48.7	0.1	
51.3	3.4	
53.3	6.8	0.2201
− 55.9	10.2	8.6851
	3.46	8.7883
	+ 26.80	8.9509
		+1.194
18 5.14	19 30.26	+.421
+ 39.12	−1 24.58	+1.123
	− .10	− .408
−1 24.70		+2.330
	− .02	
	18 5.56	9.9159
	−2.33	9.8968
−16.60	18 3.23	9.7533
−1 53.50		9.8127
		+.6497
+ 9.56		.2668
1 29.4	9.78939	+.9165
22.3	1.59240	1.0555
32.2	1.49382	9.9159
29.0		9.9621
1 28.15	52	9.6591
+ 31.18	3 13.94	
1 59.33	−34.14	+ .848
52 2049.02	2 39.80	+ .717
− 17 44.64		+ .1775
− .40		+ .204
− .01	17 46.63	+34.14
+ 9.86	0 46.3	
+ .11		
−17 35.08		
52 3 43.8		

Oct 5	306 49	9.9034
h m s		.2662
20 27 45	+1.594	− 1.478
+54° 8.10		
27 13.2	a−1	8.9640
6.1		9.7776
29 29.2	29 0.8	9.0555
33.0	4.0	
36.7	7.4	
39.0	10.9	0.2025
9.1 41.8	14.6	8.7416
	7.54	8.8331
	−28.14	8.9589
		+1.147
29 35.94	28 39.40	+.480
− 66.54 −1 24.60		+12.45
− .11		− .416
−1 24.74		+ 2.456
− .03		
27 14.66		9.9034
	−2.46	9.9084
	27 12.20	9.7776
		9.8118
		+.6483
+ 11.37	7.47	.2545
0 40.7	9.76 [illegible]	+.9028
32.7	1.75236	1.0798
43.4	1.63261	9.9034
40.3	191	9.9556
0 39.28	54 44	9.6860
− 42.94	5 18.71	
59 56.44	−34.34	+.865
54 22 51.98	1 4 44.39	+.697
− 17 44.64		+1.650
− .83		+ 2.22
− .01		+34.34
+ 12.08		
+ .13		
−17 33.27		
54 5 7.34		

Oct 5	308 16	9.8950
h m s		.2479
20 33 6	+1.682	− 1.390
+52° 53'	11.9	
32 32.5	a+1	8.9457
49.3	49.1 55.2	9.7919
34 18.5	33 58.6	9.0438
20.5	2.3	
22.4	5.8	
24.6	9.0	0.2258
8.2 28.2		8.7376
	2.18	88357
	+ 27.34	8.9388
		+1.210
34 2.84	34 29.52	+.476
.+ 6.68	−1 24.61	+1252
	− .11	− 397
−1 24.74		+ 2541
	− .02	
	33 4.78	9.8950
	−2.54	9.9020
−16.84	33 2.24	9.7919
−2.410		9.7970
		+.6266
+ 10.88		.2615
9 32.74	9.78063	+.8881
	30.1	1.0941
	42.0	9.8950
	37.7	9.9485
9 36.80	52	9.6939
+ 5.22	55 32.57	
9 42.02	−34.36	+8.94
53 13 6.33	54 58.81	+6.83
− 17 44.64		+1623
− .01		+ 226
− .05	32 45.40	+34.36
+ 10.82	52 54.2	
+ .12		
−17 33.76		
52 55 21.29		

Oct 5	308 21	+1.685 9.8944
h m s		.2477
34 36.2	− 1.387	
39.6		
43.1	8.9455	
46.8	9.7927	
34 59.2	50.2	9.0436
1.2	53.2	
2.7	56.7	
5.3	0.4	0.2266
5.8	3.6	8.7382
		88363
		8.9380
	40.98	
34 4.98	+1.212	
−1 24.61	+1.254	
− .11	− 396	
−1 24.74	+2.546	
− .02		
33 25.24	9.8944	
−2.55	9.9019	
33 22.69	9.7927	
	9.7963	
	+.6256	
	.2616	
9 32.74	9.78063	+.8872
	1.67339	1.0949
	1.56610	9.8944
		9.9480
9 36.80	52 47.24	9.6946
104 [illegible]	55 [illegible]	
10 13.62	−34.25	+8.95
53 12 34.73	54 26.15	+.682
− 17 44.64	55 13.01	+1.622
− .38		+ 226
− .05	33 5.83	+34.28
+ 10.82	[illegible]	
+ .12	53 8.7	
−17 34.33		
52 54 50.09		

Oct 5	309 55	9.8848
h m s		.2121
+ 50° 36'	+ 1.822	− 1.250
49.6		
38 54.2	a+1	8.9099
31.6	50.3	9.8073
40 40.6	40 32.7	9.0216
43.3	36.0	
45.0	39.4	
48.2	42.7	0.2606
2.93	46.3	8.7172
	39.42	8.8289
	+ 26.80	8.9064
		+1.311
40 4.28	41 5.42	+.454
+ 2.84	−1 24.61	+1.233
	− .10	− .368
−1 24.73		+ 2.680
− .02		
39 40.69		9.8848
−2.63		9.8882
39 38.06		9.8073
−2 8.60		9.7730
		+.5929
+ 8.38		.2751
26 2.68	9.80259	+.8680
2.94	1.32510	1.1095
3.12	1.23977	9.8848
2.71		9.9388
26 2.638	50	9.6955
+ 17.37	38 28.34	
26 43.75	−34.07	+ .926
50 56 4.60	55 54.27	+ .668
− 17 44.64	37	+.1586
− .12		+ 227
− .01	39 19.84	+34.07
+ 8.42	3545.7	
+ .09		
−17 36.26		
50 38 19.96		

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1885 Oct 5 | 309 50 | 9.8853 | Oct 5 | 312 12 | 9.8697 | Oct 5 | 312 21 | 9.8687 | Oct 5 | 313 35 | 9.8600

Oct 5 | 318 11 | 9.8240 | Oct 5 | 318 14 | 9.8235 | Oct 5 | 320 1 | 9.8079 | Oct 5 | 327 44 | 9.7274

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1885phae.proj.1615.

890

Oct 5 314 8 9.8560

h m s
20 50 12
+55° 2'
55 37.6
57.7
57 19.7
22.2
24.3
26.6
9.3 28.5

a + 1
21.0
9.8428

57 24.6
28.2
31.7
34.5

2800
+28.79

57 5679
−1 2463
.11
−1 24.77
03
56 32.02
−2.90
−16.97
−2 19.50
56 29.12
+ 12.98

59 38.8 9.75823
33.0 1.51228
43.0 1.38259
40.0
59 38.70 55
+ 24.13 5 1386
0 28.3 −8419
53 22.4552 4 39.67
− 17 44.64
− .27
− .05 56 12.15
+ 13.16 2 20.2
+ .14
−17 31.66
55 5 0.88

Oct 5 314 9

h m s
20 56 12 57 48.0
+55° 2' 52.0
55 43.2 55.3
57.2
58 12.0 2.7
15.2 6.1
18.6 9.6
22.8 13.2
9.0 26.1 17.1
258

58 1894 58 2.58
− 16.36 −1 2463
.11
−1 24.77
.03
56 37.81
−2.90
−16.98
−2 1960 56 84.91
+ 13.18

59 38.8 9.75823
33.0 1.21378
43.0 1.08409
40.0
59 38.70 55
− 12.14 5 5033
59 26.56 −84.19
55 23 21.79 5 16.14
− 17 44.64
− .07
− .05 56 17.93
+ 13.14 2 56.5
+ .14
−17 31.46
55 5 37.15

+1.697
9.8558
.2825
− 1.375
8.9803
9.8429
9.0664
0.2297
8.8232
8.9093
8.9222

+1.221
+ .5796
+ 1.483
− .382
+2.901
9.8558

9.9139
9.8429
9.7697
+ .5884
.2482
9.7568
+.8366
1.1451
9.8558
9.9225
+ 1.057
+ .624
+ 15.29
+ .261
+ 34.19

Oct 5 316 37

h m s
21 4 12 5 23.4
+53° 6' 26.9
3 35.4 147 30.2
1.4 33.7
5 54.4 5 36.8
58.6 39.7
1.2 43.1
4.4 47.8
9.3 7.2 51.3

116 5 36.99
− 24.17 −1 2464
.11
−1 24.78
.03
4 12.21
−2.99
−18.34
−2 24.30 4 9.22
+ 10.99

56 51.3 9.77846
44.0 1.38328
54.7 1.27382
51.3
56 50.32 53
− 18.79 8 43.17
56 31.53 −38.97
53 26 16.82 8 9.20
− 17 44.64
− .15
− .02 3 50.88
+ 11.04 5 44.9
+ .12
−17 33.65
53 8 32.18

+1.834
9.8414
.2513
− 1.238
8.9491
9.8573
9.0459
0.2634
8.8064
8.9032
8.8873

+1.319
+ .5576
+ 1.463
− .352
+2.987
9.8414

9.9032
9.8573
9.7446
+ .5554
.2602
9.7605
+.8186
1.1595
9.8414
9.9115
+ 1.039
+ .604
+ 14.91
+ 2.63
+ 33.97

Oct 5 316 8

h m s
21 4 12
+53° 6'
3 35.4
1.4
6 53.7
57.0
0.0
3.0
6.0
9.1

+1.836

a − 1
8.9491
9.8579
6 18.7
22.4
25.9
29.5
32.9
2588
− 27.60

5 5828
−1 2464
.11
− 352
+2.992
9.8407

4 3350
−2.99
−18.36
4 30.51
−2 24.50

56 51.3 9.77846
44.0 1.79888
54.7 1.68054
51.3
53
− 47.92 9 11.45
56 2.40 −33.72
53 26 46.95 8 37.73
− 17 44.64
− 1.00
− .02 4 12.15
+ 11.04 6 13.2
+ .12
−17 34.50
53 9 1.31

.25-13
− 1.236
8.9491
9.8579
9.0459
0.2639
8.8070
8.9038
8.8866

+1.321
+ .558
+ 1.465
− .352
+2.992
9.8407

9.9032
9.8579
9.7439
+ .5545
.2602
9.8110
9.7611
+.8147
1.1601
9.8407
9.9110
+ 1.016
+ .603
+ 14.89
+ 2.64
+ 33.72

Oct 5 328 22 9.7197

h m s
21 53 23
+50° 17'
52 38.4 13.5
11.7 9.0
55 24.8 54 14.3
26.8 23.0
29.0 23.3 26.5
30.4 28.3 29.7
8.4 32.9
23.2 26.24
+25.82
49.02
55 26.20 54 52.10
− 34.10 −1 24.71
- 3.18 .10
−1 24.83
−24.19.02
53 24.09
− 3.57
-22.26 9.8861
-2 50.60 53 23.34 9.9301
20.62 9.6058
.85 +.4035
+ 7.81 .2771

+2228
− .844
a + 1
8.9047
9.9301
9.0186
0.3479
8.8348
8.9487
8.7383
+1.603
+ .595
+ 1.624
− .250
+3.572
9.7197

47 19.0 9.80550
10.3 1.57225
21.3 1.45033
17.8 1.48789
47 14.10 50 25.23
− 30.75 18 22.53
46.34 32.27
50 35 59.46 17.7 50.46
− 17 44.64 17 52.98
− 3.81 4
− .02 52 58.36
+ 8.15 15 2.3
+ .09
−17 36.89
50 18 14.82

+6806
1.2323
9.7197
9.8329
9.8162
+1.228
+ .456
+ 12.44
+ 2.99
+ 32.27

Oct 5 328 25

h m s
21 53 23
+50° 17'
52 26.5 a + 1
9.0
55 31.9 54 31.6
35.6
39.3
43.4
46.6
39.30
+25.82
5.12

8.9047
9.9301
9.0186
0.3479
8.8348
8.9487
8.7383
+1.603
+ .595
+ 1.624
− .250
+3.572
9.7197

47 19.0 9.80550
10.3 1.45736
21.3 1.24894
17.5 1.35263
47 14.10 50 17.15
− 22.35 18 16.76
46 54.58 − 32.27
50 35 53.58 17 48.69
− 17 44.64 44.79
− .20 .88
− .02
+ 8.15
+ .09
−17 36.62
50 18 8.94

+2229
9.7191
.2069
− .843
8.9047
9.9304
9.0186
0.3481
8.8351
8.9490
8.7377
+1.604
+ .595
+ 1.625
− .250
+3.574
9.7191

55 4.90
−1 24.71
− .10
−3984.02
53 40.07
− 8.57
9.8861
9.9304
9.6052
+.4029
.2771
+.6800
1.2326
9.7191
9.8325
9.8165

+1229
+ 456
+ 12.43
+ 2.99
+ 32.27

5314.06
14 54.2

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Log A 9.8583 Oct 103
B 0.9454
C 1.2517
D 0.7972

891

1885 Oct 10 295 18 +1.494 9.9562n

.2419
−1.578
8.9397
9.6308
9.0399

Oct 10
h m s
19 40 56
+52° 32′
40 26.3
28.5

a − 1

42 50.8 / 54.7 / 55.8 · 9.0
42 25.3 / 28.0 / 31.6 / 35.0 / 38.2 / 41.8 / 44.9 / 48.4 / 51.6
43 28.2 / 31.0 / 34.3 / 36.6 / 38.6 · 8.7
43 1.7 / 5.5 / 9.0 / 12.2 / 15.4 / 8.76 / −27.12

0.1744
8.5705
8.6707
8.9961n

38.31

53.77
42 ... 42 38.31 / −1 28.30 / :05 / .00 / .02
− 15.46
−1 28.37
41 9.94 / −1.62 / 41 8.32

+1.078
+.328
+.836
−.621
+1.621
9.9562n
9.8998
9.6308
9.8560
+.7178
.2638

43 33.74 / − 52.10 / −1 28.37
42 41.64 / −1 28.30 / .05 / .02 / 41 13.27 / −1.62 / 41 11.65
−14.94 / −1 25.60
+9.81

+10.46
32 26.1 / 18.3 / 28.8 / 26.0 / 32 24.80
9.78412 / 1.19921n / 1.09541n
52
+.9816
0.9330
9.9562
9.9919
9.5306

32 26.1 / 18.3 / 28.8 / 26.0 / 32 24.80 / 52
9.78412 / 1.71684n / 1.61304n

− 12.46 / 32 12.34 / 52 50 36.01 / −17 44.37 / − .06 / + .00 / + 10.41 / + .11 / −17 33.91 / 52 32 51.64
33 2.10 / −33.80 / 32 28.80
+618 / +797 / +1752 / +2.13 / +38.80

− 41.02 / 31 43.78 / 52 51 4.57 / −17 44.37 / − .71 / + .00 / + 10.41 / + .11 / −17 34.56 / 52 33 20.26
33 30.01 / −33.80 / 32 56.21
40 56.71 / 31 30.6

Oct 10 298 40 9.9432n
h m s
19 54 23
+52° 30′
53 51.8
26.6
a + 1
+1.541
.2419
−1.531
8.9397
9.6810
9.0399

55 37.6 / 40.5 / 44.0 / 47.4 / 49.4 · 8.7
55 35.2 / 38.6 / 41.8 / 45.4 / 49.1 / 42.02 / +27.10

0.1878
8.6207
8.7209
8.9831n

55 43.78 / +25.34
56 9.12 / −1 28.31 / .05 / .02 / 54 40.74 / −1.82 / 54 38.92
−1 28.38
−15.41 / −1 36.10
+1.112 / +.368 / +.939 / −.603 / +1.816
9.9432n / 9.8998 / 9.6810 / 9.8430 / +.6966 / .2638
+10.26

32 32 / 64.8 / 5.3 / 2.7 / 32 1.50 / 52
9.78445 / 1.40381 / 1.30034
+.9604 / 0.9832 / 9.9432 / 9.9824 / 9.5808

+ 19.97 / 32 21.47 / 52 50 26.88 / −17 44.37 / − .17 / + .00 / + 10.32 / + .11 / −17 34.11 / 52 32 42.51
32 52.77 / −34.21 / 32 18.56
+694 / +774 / +1714 / +2.39 / +32.21
54 23.51 / 30 42.5

Oct 10 299 23 9.9402n
h m s
19 57 31
+51° 31′
56 58.5
27.7
+1.600
444 a − 1
33.0
.2276
−1.472
8.9254
9.6908
9.0310

59 5.0 / 8.0 / 10.7 / 13.0 / 16.0 · 8.6
59 22.5 / 25.9 / 29.1 / 32.5 / 35.8 / 29.16 / −26.52

0.2041
8.6162
8.7218
8.9712n

59 10.54 / − 7.90 / −1 28.38
59 2.64 / −1 28.31 / .05 / .02 / 57 34.26 / −1.87 / 57 32.39
−16.01 / −1 38.30
+1.154 / +.364 / +.941 / −.587 / +1.872
9.9402n / 9.8943 / 9.6908 / 9.8345 / +.6831 / .2693
+9.57

26 52.4 / 44.3 / 54.1 / 51.0 / 26 50.45 / 51
9.79399 / 0.89763 / 0.80370n
+.9524 / 0.9930 / 9.9402 / 9.9788 / 9.5851

− 6.36 / 26 44.09 / 51 56 4.26 / −17 44.37 / − .02 / + .00 / + 9.49 / + .10 / −17 34.80 / 51 38 19.89
38 29.46 / −34.19 / 37 55.27
+7.10 / +7.68 / +17.03 / +2.41 / +34.19
57 16.38 / 36 17.0

−.04
.00

Oct 10 316 14 9.8399n
h m s
21 4 42
+53° 17′
4 5.3
11.9
+1.837
359.6
a + 1
4.0
.2519
−1.235
8.9497
9.8586
9.0463

6 15.3 / 18.0 / 20.3 / 25.0 / 26.6 · 8.5
5 50.6 / 54.0 / 57.4 / 1.0 / 4.5 / 57.50 / +27.60

0.2641
8.8083
8.9049
8.8862n

24.72
6 21.14 / + 3.96 / 0.38
6 25.10 / −1 28.33 / :05 / .03 / 4 56.69 / −.284 / 4 53.85
−1 28.41
−18.37 / −2 24.70
+1.326 / +.567 / +1.434 / −.182 / +2.845
9.8399n / 9.9034 / 9.8586 / 9.7433 / +.5537 / .2600
+11.20

53 44.4 / 37.6 / 47.2 / 45.2 / 53 43.60
9.77660 / 0.59770 / 0.48638
53 31.28
+8137 / 1.1608 / 9.8399 / 9.9105 / 9.7620

−0.30
+ 30.65 / 54 14.25 / 53 28 34.10 / −17 44.37 / − .00 / + .00 / + 11.09 / + .11 / −17 33.17 / 53 10 49.73
11 0.93 / −34.70 / 10 26.23 / 56.58
+1045 / +6.10 / +14.53 / +3.62 / +34.70
4 35.48 / 8 1.5 / 31.9

Oct 10 318 57 9.8174n
h m s
21 15 27
+52° 57′
14 49.3
52.4
a − 1
+1.907
.2490
−1.165
8.9468
9.8774
9.0444

17 22.4 / 24.9 / 27.2 / 29.8 / 31.8 · 8.0
17 38.5 / 42.0 / 45.1 / 48.7 / 52.2 / 45.30 / −27.39

0.2804
8.8242
8.9218
8.8618n

17 27.22 / − 9.31 / −1 28.40
17 17.91 / −1 28.33 / :05 / .02 / 15 49.51 / −3.00 / 15 46.51
−19.07 / −2 31.10
+1.376 / +.588 / +1.491 / −.456 / +2.999
9.8174n / 9.9024 / 9.8774 / 9.7198 / +.5246 / .2611
+10.97

5 22 / 53.3 / 26 / 59.9 / 4 59.50 / 53
9.77997 / 0.96895n / 0.86100n
+.7857 / 1.1796 / 9.8174 / 9.8953 / 9.7798

− 7.26 / 4 52.24 / 53 17 56.11 / −17 44.37 / − .03 / + .00 / + 10.89 / + .11 / −17 33.40 / 53 0 11.74
0 22.71 / −34.51 / 59 48.20
+1091 / +5.79 / +14.03 / +3.78 / +34.51
15 27.44 / 57 17.1

Oct 10 320 1 9.8079n
h m s
21 19 44
+55° 13′
19 7.7
7.5
a + 1
+1.834
.2849
−1.238
8.9827
9.8844
9.0680

21 22.0 / 23.8 / 25.0 · 9.3
20 56.5 / 0.3 / 3.8 / 6.8 / 10.5 / 3.580 / +28.92

0.2634
8.8671
8.9524
8.8759n

21 23.60 / + 8.90 / 9.12 / −1 28.42
21 32.50 / −1 28.33 / .06 / .03 / 20 4.48 / −3.10 / 20 0.98 / 1.20
3.72
−18.33 / −2 33.50
+1.323 / +.650 / +1.600 / −.471 / +3.102
9.8079n / 9.9147 / 9.8844 / 9.7226 / +.5280 / .2473
+13.31

50 29.9 / 21.6 / 31.7 / 28.4 / 50 27.90 / 55
9.75624 / 0.94939 / 0.81771
+.7753 / 1.1866 / 9.8079 / 9.8895 / 9.7991

+ 6.5 / 50 34.47 / 55 32 13.88 / −17 44.37 / − .02 / + .00 / + 13.70 / + .13 / −17 31.06 / 55 14 24.51
.65 / 14 42.82 / −34.55 / 14 8.27 / .10
+1109 / +5.67 / +13.84 / +3.95 / +34.55
19 42.87 / 11 34.8 / 6

Oct 10
h m s
21 19 44
+55° 13′
19 9.7
10.0
a − 1

21 56.9 / 0.7 / 4.2 / 7.5 / 11.1 / 4.08 / −28.92 · 8.4

21 35.16 / −1 28.33 / .06 / .03 / 20 6.74 / −3.10 / 20 3.64
−1 28.42
−18.33

50 29.9 / 21.6 / 31.7 / 28.4 / 50 27.90

19 45.31

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891

Oct 10 305 17 9.9118m
.2172
− 1.346
8.9150
9.7616
9.0247

0.2370
8.6766
8.7863
8.9365m

+1245
+419
+1091
−543
+2213
9.9118m
9.8903
9.7616
9.8021
+6340
.2732
+9072
1.0638
9.9118
9.9577
9.6519

+8.36
+720
+16.20
+2.81
+34.37

Oct 10 9.9118m
20 21 12 +1.726
+50° 54'
20 37.0 a−1
50.6
22 49.5 22 55.4
50.8 58.3
52.0 1.8
5.4
8.4
1.86
− 26.16

9.2 9.6

22 50.77 22 35.70
− 15.07 −1 28.31
− .05
−1 28.38
− .02
21 7.32
−2.21
21 5.11
+8.80
7 6.1 9.79981
573 1.17811m
7.7 1.09000m
56
7 4.18 50
− 12.30 58 20.90
6 51.88 −34.57
51 15 56.47 57 46.54
− 7 44.87 .33
− .06
+ .02
+ 8.77
+ .09
−17 35.57
50 58 12.10

Oct 10 314 8 9.8560m
.2822
− 1.375
8.9800
9.8428
9.0662

0.2297
8.8228
3702
+28.79
8.9090
8.9222m

+1225
+586
+1448
− 524
+2735
9.8560m
9.9138
9.8428
9.7698
+.5886
.2483
+8369
1.1450
9.8560
9.9227
9.7566

+1008
+6.33
+1494
+3.58
+34.73

20 58 12 +1.697
+55° 2'
55 37.6 a+1
37.7
57 12.9 57 23.9
16.8 27.6
19.3 31.0
21.9 34.4
9.0 25.2 38.2

57 19.22 57 59.81
+ 40.59 −1 28.32
− .06
−1 28.41
− .03
56 31.40
−16.97 −2.74
−2 19.50 56 28.66
+ 12.80
59 35.0 9.75823
27.4 1.60842
37.4 1.47873
34.6
59 33.60 55
+ 30.11 5 13.07
0 3.91 −34.93
55 22 44.64 4 38.14
− 17 44.31
− .42
+ .02 56 11.69
+ 13.09 2 18.6
+ .13
−17 31.57
55 5 0.27

Oct 10 314 9 9.8558m
.2825
− 1.375
8.9803
9.8430
9.0664

0.2297
8.8233
8.9094
8.9222m

+1225
+587
+1449
− 524
+2737
9.8558m
9.9139
9.8430
9.7697
+.5884
.2482
+8366
1.1452
9.8558
9.9225
9.7869

+1008
+6.33
+1493
+3.58
+34.92

20 56 12 57 51.6
+55° 2' 55.3
55 43.2 59.0
2.2
58 11.8 5.7
13.9 9.4
16.7 12.5
18.6 16.4
8.8 21.5 20.3

58 16.50 58 58.2
− 10.68 −1 28.32
− .06
−1 28.41
− .03
56 34.67
−16.98 −2.74
−2 19.60 56 34.67

Oct 10 321 31 9.7940m
.2427
− 1.088
8.9405
9.8936
9.0404

0.2975
8.8341
8.9340
8.8344m

+1432
+602
+1534
− 428
+3146
9.7940m
9.9088
9.8936
9.6940
+.4943
.2635
+7578
1.1958
9.7940
9.8796
9.7936

+1133
+549
+1417
+3.90
+34.89

Oct 10 321 34 9.7935m
.2427
− 1.087
8.9405
9.8940
9.0404

0.2978
8.8345
8.9344
8.8339m

+1433
+602
+1535
− 428
+3142
9.7935m
9.9085
9.8940
9.6942
+.4943
.2635
+7578
1.1958
9.7935
9.8796
9.7936

+1133
+549
+1417
+3.90
+34.89

21 25 43 +1.985
+52° 24'
25 13.4 a−1
11.8
27 55.2
58.2
1.8
5.5
9.0
1.94
−27.04
27 44.90
+ 17.18 −1 28.33
− .05
−1 28.40
− .02
26 16.50
−3.14
26 13.36
−19.84
−2 36.90
3 + 10.50
28 37.9 9.78543
30.1 1.23502
40.0 1.13253
3 36.2
28 36.05 52
+ 13.57 26 24.86
28 49.62 2 34.89
52 58.73 25 49.97
− 17 44.37 2
− .08
+ .02 2541.12
+ 10.47 23 13.1
+ .11
−17 33.87
52 36 14.36
2

Oct 10 325 20 9.7550m
.2646
− 1.046
8.9624
9.9151
9.0545

0.3066
8.8475
8.9696
8.8095m

+1462
+665
+1665
− 404
+3388
9.7550m
9.9079
9.9151
9.6629
+.4602
.2551
+7153
1.2173
9.7550
9.8545
9.8230

+1190
+502
+12.77
+4.47
+33.86

21 40 58 +2.026
+53° 56'
40 17.4 a+1
50.7
42 17.0 42 14.4
21.8 17.6
24.0 21.2
26.6 24.8
8.4 29.0 28.7
21.94
+28.02
42 23.68 42 49.36
+ 25.68 −1 28.34
− .05
−1 28.42
− .03
41 20.94
−3.39
41 17.55
−20.26
−2 44.80
+ 11.90
5 37.0 9.76991
28.2 1.40960
37.6 1.29159
35.2 +1
5 34.60 53
+ 19.57 59 20.81
5 54.07 −33.86
54 16 58.28 58 46.95
− 17 44.37 47.
− .17
+ .02 40 57.29
+ 11.95 56 2.2
+ 12
−17 32.47
53 57 8.91

Oct 10 327 44
9.5
12.8
16.0 8.9400
19.4 9.9272
22.8 9.0401
26.2
29.6
33.4 0.3304
36.7 8.8672
8.9673
8.7675m
.2293
+1544
+.6850
−1 28.34 +1656
− .05 −.367
−1 28.41 +8483
− .02
50 54.58 9.7274m
−8.48 9.8999
50 51.10 9.9272
9.6273
+.4239
.2637
+7876
1.2294
9.7274
9.8373
9.8271

21 50 30 +2.140
+52° 32' 9.7274m
.2422
−.932

49 46.9 a+1
26.6

51 55.3 51 48.9
57.3 52.6
59.5 56.4
59.2
2.8
55.98
+27.12
23.10

52 22.99
−2 49.50
+ 25.62

+ 10.42

31 18.7 9.78412
10.2 1.40858
20.0 1.30478
17.6
31 16.62 52

+ 20.47 33 37.61
31 36.79 −33.43
52 51 11.56 33 4.18
− 17 44.37
− .17
+ .02
+ 10.48
+ .11
−17 33.95
52 33 37.19

29.71

+12.24
+4.71
+1227
+4.21
+33.43
50 48.71
30 14.7

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891

1885 Oct 10 327 51 9.7260n

L m s
21 50 30
+52°32'

+2.143 −.929
.2422

8.9400
9.9277
9.0401

	53.0	12.8	
53.0	16.3	16.5	
52.9	1.0	22.3	
53.2	4.3	26.2	0.3310
9.6 53.1	6.6	19.45	8.8677
	0.24	27.12	8.9678
	53.28	52.33	8.7661n
			+1546
	52	5280	+.650
	−1	2834	+1658
		05	−.366
	−1 2841	+ .00	+3.488
		.02	
		51 2439	
		8.49	
		51 20.90	

31 .187
10.2
20.0
1.76
31 16.62

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Log A 9.8595 Oct 113
B 0.9478
C 1.2492
D 9.8198

892

Oct 11 320 44 9.8014n
h m s
21 22 30 +2063 .2025
+49° 58' −1.009
21 48.6 a−1 8.9003
53.6 9.8889
9.0160
24
49 52.9 0.3145
44 55.8 8.7892
49.27 55 8.9049
− 25.65 8.8174n
90 +1493
24 23.62 +.546
−1 28.76 +1.426
−.28 −.434
−.05 +3.031
−.02 9.8014n
22 5.49 9.8844
−3.08 9.8889
22 5.76 9.6858
5.04 +.4851
.2787
+7.44

Oct 11 321 32 9.7938n
h m s
21 25 43 +1.990 .2406
+52° 25' −1.082
25 3.6 a+1 8.9384
19.4 9.8938
27 9.0391
27 21.1
22.8
24.2
25.5
9.1 0.2988
8.8322
8.9329
+27.05 8.8329n
+1440
27 3533 +.603
−1 28.76 +1.521
−.05 −.449
−1 2883 +3.115
−.02
26 6.50 9.7938n
−3.12 9.8993
26 3.38 9.8938
9.6931
+.4933
.2643
+10.48

Oct 11 322 48 +1.952 9.7815n
h m s .2678
21 30 49 26.0 −1.120
+54° 8' 29.7
30 9.7 33.3 8.9656
2.3 36.3 9.9012
9.0566
32 27.0 32 39.8
29.0 43.4
31.7 46.6
34.0 51.2 0.2905
35.8 54.3 8.8668 9.8
8.9578
8.8381n
40.7
+1413
32 41.50 32 40.7 +.653
+8.57 −1 28.77 +1.611
−.06 −.455
−1 2886 +3.223
−.03 9.7815n
31 11.21 −3.22 9.9090
−19.52 31 7.99 9.9012
−2 39.60 9.6905
+.4903
+12.32 .2539

Oct 11 323 10 9.7778n
h m s .2466
21 32 18 +2.014 −1.058
+52° 48' a−1 8.9444
31 37.5 42.3 9.9033
9.0429
34 49.0 34 34.0
50.0 37.7
51.0 .6411.0
.6444
0.3041
8.8477 9.8
37.58 8.9462
−27.29 8.8207n
+1457
34 10.29 +.224
−1 28.77 +1568
−.05 −.437
−1 2884 +3.212
−.02 9.7778n
32 41.45 −3.21 9.9015
22 38.24 9.9033
9.6793
+.4779
.2620

Oct 11 324 34
h m s
21 37 53
+50° 17'
37 16.5
11.9
39 14.7
17.0
19.0
22.0
25.0
39 14.3
17.7
21.0
24.2
27.4
2042
39 46.77 46.79
39 46.78
−1 28.78
−.05
−1 2885
−.02
38 17.93
−3.24
−21.37 38 14.69
−2 43.30
38.7
37.0
40.3
43.6
46.7
50.1
53.3
56.7
6.4
9.3
12.5
15.7
19.2
1262
+2137

9.7632n
2077
−.935
8.9055
9.9110
9.0190
0.3298
8.8165
8.9300
8.7822n
+1546
+.581
+1511
−.400
+3.238
9.7632n
9.8865
9.9110
9.6497
+.4464
.2768

Oct 11 322 1 9.7892n
h m s .2726
21 27 30 +1.919 −1.153
+54° 27' a−1 8.9704
9.8966
30 10.7 29 56.7 9.0598
14.0 59.1
16.2 2.7
18.7 6.5 0.2831
8.6 23.1 9.8 8.8670
2.76 8.9564
−28.38 8.8490n
+1389
30 16.54 29 34.38 +.653
−4.216 −1 28.76 +1605
−.06 −.466
−1 28.85 +3.181
−.03 9.7892n
28 5.53 9.9106
−3.18 9.8966
28 2.35 9.6998
+.5010
+12.21 .2520

Oct 11 324 34 9.7632n
h m s .2077
21 37 53 −.935
+50° 17'
37 16.5 8.9055
11.9 9.9110
39 14.3 9.0190
39 14.7
17.0
19.0
21.0
24.2
27.4
2042
39 46.77 46.79
39 46.78
−1 28.78
−.05
−1 2885
−.02
38 17.93
−3.24
−21.37 38 14.69
−2 43.30
38.7
37.0
40.3
43.6
46.7
50.1
53.3
56.7
6.4
9.3
12.5
15.7
19.2
1262
+2137

0.3298
8.8165
8.9300
8.7822n
+1546
+.581
+1511
−.400
+3.238
9.7632n
9.8865
9.9110
9.6497
+.4464
.2768

Oct 11 322 48 +1.952 9.7815n
h m s .2678
21 30 49 26.0 −1.120
+54° 8' 29.7
30 9.7 33.3 8.9656
2.3 36.3 9.9012
9.0566
32 27.0 32 39.8
29.0 43.4
31.7 46.6
34.0 51.2 0.2905
35.8 54.3 8.8668 9.8
8.9578
8.8381n
40.7
+1413
32 41.50 32 40.7 +.653
+8.57 −1 28.77 +1.611
−.06 −.455
−1 2886 +3.223
−.03 9.7815n
31 11.21 −3.22 9.9090
−19.52 31 7.99 9.9012
−2 39.60 9.6905
+.4903
+12.32 .2539

Oct 11 323 10 9.7778n
h m s .2466
21 32 18 +2.014 −1.058
+52° 48' a−1 8.9444
31 37.5 42.3 9.9033
9.0429
34 49.0 34 34.0
50.0 37.7
51.0 .6411.0
.6444
0.3041
8.8477 9.8
37.58 8.9462
−27.29 8.8207n
+1457
34 10.29 +.224
−1 28.77 +1568
−.05 −.437
−1 2884 +3.212
−.02 9.7778n
32 41.45 −3.21 9.9015
22 38.24 9.9033
9.6793
+.4779
.2620

Oct 11 324 34
h m s
21 37 53
+50° 17'
37 16.5
11.9
39 14.7
17.0
19.0
22.0
25.0
39 14.3
17.7
21.0
24.2
27.4
2042
39 46.77 46.79
39 46.78
−1 28.78
−.05
−1 2885
−.02
38 17.93
−3.24
−21.37 38 14.69
−2 43.30
38.7
37.0
40.3
43.6
46.7
50.1
53.3
56.7
6.4
9.3
12.5
15.7
19.2
1262
+2137

9.7632n
2077
−.935
8.9055
9.9110
9.0190
0.3298
8.8165
8.9300
8.7822n
+1546
+.581
+1511
−.400
+3.238
9.7632n
9.8865
9.9110
9.6497
+.4464
.2768

Oct 11 322 1 9.7892n
h m s .2726
21 27 30 +1.919 −1.153
+54° 27' a−1 8.9704
9.8966
30 10.7 29 56.7 9.0598
14.0 59.1
16.2 2.7
18.7 6.5 0.2831
8.6 23.1 9.8 8.8670
2.76 8.9564
−28.38 8.8490n
+1389
30 16.54 29 34.38 +.653
−4.216 −1 28.76 +1605
−.06 −.466
−1 28.85 +3.181
−.03 9.7892n
28 5.53 9.9106
−3.18 9.8966
28 2.35 9.6998
+.5010
+12.21 .2520

Oct 11 324 34 9.7632n
h m s .2077
21 37 53 −.935
+50° 17'
37 16.5 8.9055
11.9 9.9110
39 14.3 9.0190
39 14.7
17.0
19.0
21.0
24.2
27.4
2042
39 46.77 46.79
39 46.78
−1 28.78
−.05
−1 2885
−.02
38 17.93
−3.24
−21.37 38 14.69
−2 43.30
38.7
37.0
40.3
43.6
46.7
50.1
53.3
56.7
6.4
9.3
12.5
15.7
19.2
1262
+2137

0.3298
8.8165
8.9300
8.7822n
+1546
+.581
+1511
−.400
+3.238
9.7632n
9.8865
9.9110
9.6497
+.4464
.2768

54 2.70 9.76782
1.72 0.93298
2.82 0.81288
2.53
54 24.42 54
+6.50 10 45.72
54 30.92 −34.40
54 28 17.43 10 11.32
−17 44.03
−.02
+.80 30 48.47
+12.22 7 31.7
+.12
−17 31.91
54 10 33.40

14 4.60 9.78147
3.76 1.59890n
4.80 1.49245n
4.50
14 44.15 52
−31.08 51 1.69
14 13.07 −34.27
53 8 35.28
−17 44.03
−.41
+.50 32 18.10
10.74 47 47.0
+.11
−17 33.59
52 50 51.25

44 19.6 9.80550
1.03 1.43521
21.6 1.35279
18.0
44 17.38 50 3
+22.53 20 42.42
44 39.91 −33.94
50 38 8.44 20 8.48
−17 44.03 19 58.48
−.20
+.80 37 53.32
+8.13 17 15.2
+.08
−17 36.02
50 20 34.41

+7.399 9.78147
1.20355 1.59890n
9.77778 1.49245n
9.8692
9.8048
+11.61
+5.32
+13.13
+4.21
+8.427

+.7442
1.2034
9.7815
9.8717
9.8102
+1156
+536
+1321
+427
+3.440

+.7399 9.78147
1.20355 1.59890n
9.77778 1.49245n
9.8692
9.8048
+11.61
+5.32
+13.13
+4.21
+8.427

+.7232
1.2132
9.7632
9.8593
9.7975
+11.82
+5.14
+12.84
+4.14
+3.394

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Log A 9.8597 Oct 11.4
B 0.9481
C 1.2489
D 0.8221

1885 Oct 11 325 17 +2.027 9.7555n
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− 1.045
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9.0540
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8.8765
8.9689
8.8095n
+1467
+ 668
+1651
− 428
+8358
9.7555n
9.9076
9.9149
9.6631
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9.8548
9.8225
+7158
1.2171
9.7555
9.8548
9.8225
+11.93
+ 505
+1270
+ 441
+84.09
40 44.39
52 33.6
28.7
53 55 35.40

Oct 11 326 24 9.7430n
2625
− 1.013
8.9603
9.9206
9.0531
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8.8809
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8.7961n
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+ 675
+1690
− 415
+8.421
9.7430n
9.9071
9.9206
9.6501
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.2559
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0.87157
0.75995
9.8468
9.8277
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1.2228
9.7430
9.8468
9.8277
− 1460
5 335
43.00
− 14403
− .09
+ 33.93
45 14.35
47 29.7
53 50 38.68

Oct 11 326 30 +2.062 9.7419n
.2625
− 1.010
8.9603
9.9211
9.0531
0.3143
8.8814
8.9742
8.7950n
+1493
+ 675
+1671
− 414
+8425
9.7419n
9.9071
9.9211
9.6490
+.4457
.2559
9.77130
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1.16441
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+7016
1.2233
9.7419
9.8461
9.8282
− 1460
5 335
43.00
− 14403
− .09
+ 33.93
45 36.36
47 49.8
53 50 58.97

Oct 11 327 28 9.7306n
2540
− 965
8.9518
9.9259
9.0476
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8.8777
8.9735
8.7782n
+1525
+ 670
+1669
− 398
+8466
9.7306n
9.9041
9.9259
9.6347
+4312
.2572
9.77128
1.26670
1.22901
9.8391
9.8300
+6904
1.2281
9.7306
9.8391
9.8300
+1224
+ 477
+1225
+ 449
+88.70
49 32.63
15 26.9
53 18 41.00

Oct 11 327 57 9.7248n
.2388
− 920
8.9366
9.9282
9.0380
0.3328
8.8648
8.9662
8.7628n
+1558
+ 650
+1641
− 384
+8465
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9.8986
9.9282
9.6234
+4201
.2650
9.78625
1.47144
1.36977
9.8358
9.8268
+6851
1.2304
9.7248
9.8358
9.8268
+1231
+ 470
+1215
+ 446
+33.62
51 24.91
17 26.2
52 20 39.59

Oct 11 328 27 9.7187n
.2069
− 843
8.9047
9.9305
9.0186
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8.8352
8.9491
8.7373n
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+ 607
+1578
− 363
+8436
9.7187n
9.8861
9.9305
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9.80550
0.13078n
0.64876n
9.8166
+1287
+ 475
+1205
+ 435
+33.82
52 58.51
15 5.3
53 50 58.97

Oct 11 328 25 9.7191n
.2069
− 843
9.9304
0.3481
+2229
a−1
9.8804
0.1307
0.6487
9.8166
+1287
+ 475
+1205
+ 435
+33.82
53 13.84
53 50 58.97

Oct 11 326 24 +2059 a+1 46 32.3 36.0 39.2 42.5 46.4 3928 +27.94 47 7.22 − 1 28.78 − .05 45 38.36 −3.42 45 34.94 −2059 −2 47.00 + 11.92 14 21.6 13.4 23.8 27.0 14 19.95 53 50 50.60 −33.93 50 16.67 −14 25.64 54 8 22.71 −17 44.03 − .02 + 11.82 −17 32.11

Oct 11 326 30 +2.062 9.7419n
.2625
− 1.010
8.9603
9.9211
9.0531
0.3143
8.8814
8.9742
8.7950n
+1493
+ 675
+1671
− 414
+8425
9.7419n
9.9071
9.9211
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+.4457
.2559
9.77130
1.28103n
1.16441
9.8282
+7016
1.2233
9.7419
9.8461
9.8282
− 1460
5 335
43.00
− 14403
− .09
+ 33.93
45 36.36
47 49.8
53 50 58.97

Oct 11 327 28 9.7306n
2540
− 965
8.9518
9.9259
9.0476
0.3237
8.8777
8.9735
8.7782n
+2107
50.5 a+1
9.8
48.5
55.12
+27.54
2604
2266
− 1 28.79
− .05
5717.03
49 33.49
−3.47
49 30.02
53.70
+1525
+ 670
+1669
− 398
+8466
9.7306n
9.9041
9.9259
9.6347
+4312
.2572
9.77128
1.26670
1.22901
9.8391
9.8300
+6904
1.2281
9.7306
9.8391
9.8300
+1224
+ 477
+1225
+ 449
+88.70
49 32.63
15 26.9
53 18 41.00

Oct 11 328 25 9.7191n
.2069
− 843
9.9304
0.3481
+2229
a−1
9.8804
0.1307
0.6487
9.8166
+1287
+ 475
+1205
+ 435
+33.82
53 13.84
53 50 58.97

Oct 11 327 57 9.7248n
.2388
− 920
8.9366
9.9282
9.0380
0.3328
8.8648
8.9662
8.7628n
+1558
+ 650
+1641
− 384
+8465
9.7248n
9.8986
9.9282
9.6234
+4201
.2650
9.78625
1.47144
1.36977
9.8358
9.8268
+6851
1.2304
9.7248
9.8358
9.8268
+1231
+ 470
+1215
+ 446
+33.62
51 24.91
17 26.2
52 20 39.59

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Log A 9.98650 Oct-14.3
B 0.9515 893
b 1.2408
D 0.8808

Oct 14 307 7 9.9017
h m s .2464
20 28 11 +1.666
+01 +52° 48' −1.406
.00 27 36.3 a+1 8.9442
43.7 9.7806
29 51.2 29 9.0428
52.5 26.6
53.9 30.4
55.1 34.0
9.4? 56.4 37.3
40.3
+27.29
33.80
30 1:09
+1221
+.475
+1.159
−.669
+2.186
9.9017
−1.66
−2 0.90
+10.54
14 5.32 9.78147
4.50 0.58092
5.47 0.47447
5.16
14 57.72 52 1787
+ 2.98 50 2058
14 34.10 35.28
53.7 54.25 49
−17 44.21 44.60
− .01
+ .00 28 12.20
+ 1044 47 41.7
+ .11
−17 33.57
52 50 10.04
+8976
1.0828
9.9017
9.9531
9.6820
+8.87
+4.13
+1.563
+.365
+35.28

Oct 14 314 8 9.8560
h m s .2822
20 56 12 +1.697
+55° 23' −1.375
55 37.6 a+1 8.9800
57.7 9.8428
57 28.0 57 25.7 9.0662
30.7 28.4
33.0 32.3
35.0 36.0
9.3 37.2 40.0
3248
+28.79
+28.99
−1 3002
+ .01
− .03
56 31.23
−2.62
56 28.61
−16.97
−2 19.50
+12.74
59 43.0 9.75823
34.7 1.45469
43.3 1.32500
400
55 4025
+ 27.13 5 1550
0 1.38 −35.56
55 22 46.97 4 39.94
− 17 44.21
− .21
+ .00 56 11.64
+ 1282 2 20.14
+ .13
−17 3147
55 5 2.76
+8369
1.1450
.8560
.9227
.9566
+1023
+6.42
+14.57
+.434
+35.56

Oct 14
h m s
20 56 12 57 52.7
+55° 21' 58.4
55 43.2 0.3
3.8
58 22.6 7.5
26.5 10.7
29.4 14.4
31.4 18.2
9.0 33.9 21.9
7.32
+12.44
+.595
+2.616
58 28.76 58 7.32
− 21.44 −1 3002
+ .01
−1 3004
− .03
56 37.28
−2.62
56 34.66
−16.98
−2 19.60
+12.84
59 43.0 9.75823
34.7 1.33122
43.3 1.20153
400
55 4025
− 15.90 5 5.263
59 24.35 −35.56
55 23 24.80 5 17.07
− 17 44.21
− .11
+ .00 56 17.68
+ 1282 2 57.5
+ .13
−17 3137
55 5 39.79
+8369
1.1450
.8560
.9227
.9566
+1023
+6.42
+14.57
+.434
+35.56

Oct 14 315 39 9.8445
h m s .2635
21 2 13 +1.790 −1.282
+53° 54' 40.0
1 37.0 a+1 8.9613
44.7 47.0 9.8544
3 27.5 3 32.4 9.0538
30.1 36.0
32.7 39.3
35.0 42.8 0.2528
8.9 38.6 46.1 8.8157
39.32 8.9082
+28.00 8.8983
+1312
+.585
3 32.84 4 7.32
+ 34.48 −1 3002 +1409
+ .01 − .601
−1 3004 +2.705
− .03
2 37.28 9.8445
−17.90 −2.70 9.9075
−2 23.30 2 34.58 9.8544
9.7520
+.5649
.2555
+ 11.39
10 10.1 9.77026 +8204
16 1.53757 1.1566
107 1.41991 9.8445
81 9.9140
10 7.62 53 9.7619
+ 26.30 54 41.61
10 33.92 −35.43 +10.57
54 12.1443 54 6.18 +6.25
− 17 44.21 +14.28
− .31 +4.39
+ .00 2 16.68 +35.43
+ 11.58 51 42.9
+ .12
−17 3282
53 54 30.22

Oct 14 316 4 9.8412
h m s .2513
21 2 13 +1.835
+53° 54' −1.237
a+1 3 35.4 a−1 8.9491
1.4 9.8574
8.9 3 48.8 6 6.3 9.04579
52.9 9.2 1421 9.2
86.1 12.9
.4210 16.5 0.2636
+28.00 20.0 8.80665
1248 8.90331
− 27.48 8.8871
+1345
+.573
+1.393
−.586
+2.725
4 .1010
−1 3002
+ .01
−1 3004 − .03
2 4006
−2.70
2 37.36
5 4550
−1 3002
+ .01
−1 3004
− .03
4 15.46
−2.77
4 12.74
10 10.1 9.77026
16
107
81
10 7.62
56 40.9
32.4
41.6
38.2
56 38.28

Oct 14 316 8 9.8407
.2518
21 4 12 +1.836 −1.236
+53° 6' a−1 8.9491
3 35.4 9.8579
7 9.3 6 23.7 9.04589
10.3 27.3
11.6 30.9
34.3 0.2639
38.0 8.80705
3084 8.90388
− 27.48 8.88666
+1346
+.573
7 10.40 6 3.36
− 6.04 −1 3002 +1398
+ .01 −.585
−1 3004 +2.729
− .03 −1 3003
4 33.32 − .02
9.8407 12 52.02
−1.836 −2.73 9.9032 .1929 −2.84
−2 24.50 4 30.59 9.8579 −2 29.40 12 49.18
9.7439
+.5545
+9.79 .2602 +9.37
56 40.9 9.77846 +8147
32.4 1.82633 1.1601
41.6 1.71687 9.8407
38.2 9.9110
56 38.28 53 9.7611
− 5.210 9 27.75
55 46.18 −35.35 +1059
53 27 21.7 8 52.40 +620
− 17 44.21 +14.18
− 1.18 +4.38
+ .02 4 12.23 +8.535
+ 1086
+ .11
−17 3442
53 9 17.96

Oct 14 318 18 9.8237
.2343
21 12 30 +1.929 −1.143
+52° 1' 11 51.9 8.9321
55.8 9.8726
13 35.3 13 48.9 9.0352
37.6 52.1
40.0 55.0
42.6 58.5 0.2853
8.8 48.9 1.7 8.8044
55.24 8.9078
+26.81 8.8589
+1414
+.570
13 30.88 14 22.05
+ 42.17 −1 3002 +1408
+ .01 −.549
−1 3003 +2.843
− .02
12 52.02 9.8237
−2.84 9.8969
12 49.18 9.8726
9.7206
+.5255
.2667
0 5.08 9.789918 +7922
42.0 1.62500 1.1448
51.1 1.52626 9.8237
48.2 9.8988
0 48.2 52 9.7695
+ 33.59 3 51.90
1 27.61 −35.18 +10.96
52 21 26.74 8 16.72 +5.76
−17 44.21 +13.79
− .47 +4.17
+ .02 12 29.89 +.5518
+ 9.74 047.3
+ .10
−17 3484
52 3 42.53

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893

1885 Oct 14 318 54 9.8178 Oct 14 320 44 9.8014 Oct 14 321 32 9.7938 Oct 14 321 36 9.7932

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893

Oct 14 321 58 9.7897
.2731
h m s
21 27 31 +1.916
+54° 27'
26 59.2 a 5
22.3 22.
98.9709
9.8963
9.0601

Oct 14 322 1 9.7892
.2731
h m s
21 27 31 +1.918
+54° 27'
8.9709
9.8966
9.0601

Oct 14 322 48 9.7815
.2678
h m s
21 30 48 +1.952
+54° 8'
30 9.7 a
2.3
40
9.9656
9.9012
9.0586

Oct 14 323 10 9.7778
.2466
h m s
21 32 18 +2.014
+52° 48'
31 37.5 a − 1
42.3
8.9444
9.9033
9.0429

Oct 14 326 30 9.7419
.2625
h m s
21 45 15 −1.010
+53° 47'
20.3
23.4
26.3
30.2
8.9603
9.9211
9.0531

Oct 14 327 27 9.7308
.2532
h m s
21 49 20 +2.108
+53° 12'
48 38.6 a + 1
7.3
8.9510
9.9258
9.0471

Oct 14 327 57 9.7248
.2388
h m s
21 51 25 −.920
+52° 19'
50 42.5 a + 1
13.1
8.9366
9.9282
9.0380

Oct 14 328 27 9.7187
.2077
h m s
21 53 23 +2.228
+50° 17'
52 38.4 a + 1
11.7
8.9055
9.9305
9.0190

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Log A 9.8652 Oct 14.4
B 0.9516
C 1.2405
D 0.8827
898

1885 Oct 14 328 25 9.7191n Oct 14 330 48 9.6883n Oct 14 332 19 9.6671n
.2077 h m s .2172 h m s .2330
21 53 23 +2227 −.845 22 3 15 +2268 −.804 22 8 51 +2277 −.795
+50° 17' a 3 to a 9 +50° 53' +51° 56'
52 26.5 559.8 3.4 8.9055 2 30.5 a + 1 a 1 to 5 8.9150 8 5.3 a + 1 8.9308
9.0 7 6.5 9.9304 47.7 9.9410 49.6 9.9472
7 9.7 9.0190 4 24.5 4 9.7 4 10 28.0 9.0247 10 21.3 10 18.4 9.0344
5 12.7 26.7 11.0 11 31.3 23.7 208 17.5
7 16.1 28.3 15.0 08 34.3 26.8 210 21.0
4 19.1 0.3477 30.2 17.5 05 37.2 0.3556 207 24.0 0.3574
8.9 7 22.6 8.8359 9.5 32.8 20.7 05 40.5 8.8560 9.8 207 27.4 8.8780
9.64 8.9494 34.8 14.78 8.9657 4 2066 8.9816
8.7381n +26.15 8.7130n +26.76 8.7015n
40.93 40.78

55 964 +1633 4 4066 4 40.86 +1663 10 2393 10 4742 +1670
−1 3001 +613 + 11.20 −1 3001 +642 + 23.49 −1 3001 +675
+ .01 +1549 + .01 +1668 63 + .01 +1668
−1 3002 + .00 −418 −1 3002 −394 −1 3002 −384
− .02 +3377 − .02 +3579 − .02 +3629
53 3962 3 10.84 9.6883n 9 1940 549.6671n
−3.38 −3.52 9.8903 −3.63 9.8964
−2228 53 3624 3 7.32 9.9410 −2277 9 13.77 9.9472
9.5786 −2 57.50 91 9.5635
+3790 +3660
+8.71 .2732 +9.63 .2672
43 366 6 531 9.79996 +.6522 6 23 9.78999 +6332
282 433 1.04922 1.2432 532 1.37888 1.2494
387 542 0.97126 9.6883 30 1.27295 9.6671
357 60.1 9.8144 02 037 9.8015
43 3480 6 50.18 50 9.8313 5 57.78 51 45 9.8436
+ 936 58 1331 + 18.75 458 5534
6 5954 −3372 +1283 6 18432 −3852 +1302
51 15488 57 8959 + 436 52 16 3303 58 21.82 + 416
− 17 4421 + 1135 − 17 4421 .21.93 +1102
− .03 + 518 − .14 + 532
53 13.96 + .00 +3372 + .00 8 51.14 +3352
+ 865 + 967 55 24.4
+ .09 + .10
−17 3550 −17 3458
50 58 4.60 51 58 45.71

+2.340
Oct 14 Oct 14 333 59 9.6421n
h m s h m s .2224
22 8 51 10 33.3 22 15.30 13.2 −.732
+51° 56' 36.4 +51° 14' 16.4
8 4! 40.0 14 43.7 a + 1 19.8 8.9202
508 43.4 7.4 23.0 9.9536
46.7 16 39.6 16 53.3 26.3 9.0279
49.9 42.0 56.6 29.5
53.1 44.2 59.8 32.7
56.9 46.0 3.2 36.0 0.3692
9.46 0.4 7.0 48.2 6.4 39.3 8.8738
5986 8.9815
4668 + 2635 8.6700n
2621 2624
+1716
10 4668 16 4400 17 2623 +.669
−1 3001 + 4223 −1 3001 +1667
+ .01 + .01 −357
−1 3002 −1 3002 +3695
− .02 .02
−9 1666 −15 56.21 9.6421n
−3.63 −3.70 9.8923
−2277 9 13.03 −2340 15 52.51 9.9536
−3 0.10 9.5344
+3423
+ 8.60 .2712
6 23 47 73 9.79668 +.6135
532 59.1 1.62562 1.2558
30 9.3 1.53438 9.6421
02 62 9.7878
5 59.68 47 54.8 51 9.8459
8 50.26 + 3423 17 3303 15 29.11
47 3271 −33.15 13 59.8 +1321
51 35 8.64 16 59.88 + 392
− 17 4421 +1067
− .41 + 535
+ .00 +33.15
+ 8.97
+ .10
−17 35.61
51 17 24.43

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Log A 9.8693
B 0.9490
C 1.2311
D 0.9350

Oct 17 h m s 19 57 20 +50° 38' 56 46.5 35.3

299 24 +1.650 a+1 58 36.8 40.0 43.0 46.6 50.0 43.28 +2601 59 9.29 −1.3166 +.10 −.02 57 38.71 −1.67 57 36.04

9.9401 .2128 −.1422 8.9106 9.6910 9.0221 .2175 8.6016 8.7131 8.9622 +1221 +.355 +.879 −.789 +1,666 9.9401 9.8885 9.6910 9.8286 +.6739 .2749 9.80228 1.17348 1.08784 +.9488 0.9932 9.9401 9.9772 9.5795 −7.29 +7.75 +16.15 +3.27 +34.26

Oct 17 h m s 19 57 20 +50° 38' 56 47.4

a−1 59 30.0 33.2 36.9 40.2 43.6 36.18 −26.01 59 10.78 −1.3166 +.10 −.02 57 37.20 −1.67 57 35.53 −16.50 24 35.8 34.7 38.8 36.1 24 34.60 −12.24 24 22.36 50 58 25.99 −17 44.32 −.06 57 19.53 28 37.4 3

Oct 17 h m s 20 4 43 +51° 21' 4 10.6 18.1

301 15 +1.640 a+1 6 21.8 24.7 27.4 30.3 33.9 5 59.5 3.0 6.4 9.6 13.0 6.30 +26.42 6 27.62 −5.10 6 32.72 −1.3166 +.10 −.02 5 1.14 −1.76 4 59.38 −16.41 −14.3.90 +9.28 40 50.6 42.9 50.4 48.1 40 47.50 +4.12 40 51.62 51 41 56.73 −17 44.32 −.01 +.60 +9.19 +.10 −17 35.04 51 24 12.41

9.9319 .2239 −1.432 8.9217 9.7150 9.0288 .2148 8.6367 8.7438 8.9607 +1214 +.385 +.944 −.786 +1.757 9.9319 9.8929 9.7150 9.8248 +.6680 .2706 +9.386 1.0172 9.9319 9.9725 9.6079 +7.70 +1.760 +15.98 +3.49 +34.77 4 42.9.7 22 3.0

Oct 17 h m s 20 10 5 +54° 48' 9 35.2 44.0

302 36 +1.473 a+1 11 52.4 55.7 57.6 59.1 8.3 11 20.5 23.9 27.6 31.5 35.1 27.72 +28.62 29.07 5.26 11 5.70 6.34 −.68 433 −1 31.58 −.03 10 24.76 −1.76 10 22.80 19.35 −14.74 −14.790 +12.88 15 .190 80 172 15.7 15 14.98 54 3.23 50 2.44 15 14.47 −35.26 55 7 33.88 49 27.18 2.90 −17 44.32 −.50 10 4.61 47 42.0 +.50 +12.75 +.13 −17 31.44 54 49.56

9.9256 .2782 −1.599 8.9760 9.7314 9.0635 0.1682 8.7074 8.7949 8.9891 +1090 +.453 +1.062 −.840 +1.765 9.9256 9.9125 9.7314 9.8381 +.6888 .2499 9.76075 9.83251 9.70534 +.9387 1.0336 9.9256 9.9725 9.6439 +8.00 +.749 +15.98 +3.49 +35.26

Oct 17 h m s 20 12 47 +51° 24' 12 13.5 20.0

303 16 +1.670 a+1 14 1.9 3.3 4.7 9.2 14 4.1 7.6 11.3 14.6 18.0 11.12 +26.45 14 37.57 −1.3166 +.10 −.02 13 5.90 −1.87 13 4.12 −16.71 −1.49.90 +8.97 38 39.8 31.2 41.7 37.7 38 37.62 +27.67 39 5.20 51 43 43.06 −17 44.32 −.32 +.02 +9.19 +.10 −17 35.35 51 25 58.74

9.9223 .2245 −1.402 8.9223 9.7392 9.0291 0.2227 8.6615 8.7683 8.9514 +1236 +.408 +.999 −.770 +1,873 9.9223 9.8931 9.7392 9.8154 +.6537 .2704 9.79510 1.53498 1.44209 +.9241 1.0414 9.9223 9.9657 9.6323 −8.14 +7.44 +15.73 +3.69 +35.00 12 47.41 23 42.8

Oct 17 h m s 20 13 44 +51° 38' 13 11.4 34.0

303 34 +1.662 a−1 15 54.8 57.5 1.3 4.6 7.7 1.08 −26.58 15 54.3 15 35.50 −1.3166 +.10 −.02 14 3.92 −1.88 14 2.04 +9.50 25 28.8 18.0 27.7 24.7 25 24.60 −15.51 −25 9.09 31 57 39.26 −17 44.32 −.10 +.02 +9.50 +.10 −17 34.82 51 39 54.44

9.9210 .2281 −1.410 8.9259 9.7421 9.0313 0.2206 8.6680 8.7734 8.9523 +1230 +.414 +1.010 −.771 +1,883 9.9210 9.8945 9.7421 9.8155 +.6539 .2691 +9.230 1.0443 9.9210 9.9652 9.6366 +8.20 +.741 +15.71 +3.73 +35.05 39 29.39

Oct 17 h m s 20 13 44 +51° 38'

a−1 15 39.6 15 58.6 2.2 5.2 8.3 10.6 4.98 −26.58 15 39.60 −1.20 −1.3166 +.10 −.02 14 6.82 −1.88 14 4.94 −1.663 −1.50.60 +9.60 25 28.0 18.0 27.7 24.7 25 24.60 −.96 25 23.64 51 57 24.71 −17 44.32 −.00 +.50 +9.50 +.10 −17 34.72 51 39 40.39

15 3840 −1.3166 +.10 −.02 14 6.82 −1.88 14 4.94 −1.663 −1.50.60 +9.60 25 28.0 9.79288 0.07918 9.98414 51 39 4999 −35.05 39 14.94 13 48.31 37 24.3

Oct 17 h m s 20 39 25 +51° 54' 38 42.6 44.3 44.9

309 54 +1.762 a+1 40 37.6 39.4 40 35.6 38.8 42.0 46.1 49.1 42.32 +26.74 40 38.50 +30.56 −1.3166 +.10 −.02 39 37.48 −2.26 39 35.22 −17.62 −2.8.50 +9.56 7 5.36 4.42 5.41 5.20 7 50.98 +.24 8 15.39 5.21 43.96 −17 44.32 −.25 +.50 +9.71 +.10 −17 34.96 51 56 48.64

9.8849 .2325 −1.310 8.9303 9.8072 9.0341 0.2460 8.7375 8.8413 8.9190 +1304 +.486 +1.881 −.774 +2.257 9.8849 9.8962 9.8072 9.8811 +.6041 .2674 9.79031 1.48515 1.38754 +.8715 1.1094 9.8849 9.9403 9.7034 −9.52 +6.82 +14.84 +4.35 +35.53 39 17.60 54 14.2

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894

1885 Oct 17 309 56 9.8847n

h	m	s	
20	09	25	+1.762
+57° 54'			
38	49.6		a −1
	50.3		
41	5.4	41	36.9
	10.7		40.7
	14.7		43.5
	17.3		46.7
9.1	20.7		51.0
			43.76
			− 26.74

41	13.76	41	17.02
+	3.26	−1	31.66
		+	.10
−1	31.58	+	.08
		−	.02
		39	45.44
			−2.26
−17.62		39	43.18
−2 8.60			
+ 9.80			

7	53.6	9.79031	
	44.2	0.57322	
	54.1	0.41561	
	52.0		
7	50.98	51	
+	.260	57	20.25
7	53.58		−35.53
52	14	54.77	56 44.72
− 17	44.32		
−	.01		
+	.02	39	25.56
+	9.71	54	36.1
+	.10		
−17	34.52		
51	57	10.45	

0.2325
− 1.310
9.80775
0.2460

Oct 17 310 42 9.8798n

h	m	s	
20	42	29	+1.739
+52° 42'			
41	33.1		a +1
	32.6		
43	44.0	43	46.9
	47.3		50.0
	50.3		53.5
	52.4		56.7
8.7	54.8		0.3
			53.48
			+ 27.23

43	40.76	44	20.71
+	30.95	−1	31.66
		+	.10
−1	31.58	−	.02
		42	49.13
			−2.30
−17.40		42	46.83
−2 10.70			
+ 10.41			

20	54	9.78246	
	56.0	1.49066	
	56.1	1.38520	
	8.7		
20	0.30	52	
+	2.428	44	50.94
20	24.58		49.86
53	2	23.77	−35.64
− 17	44.32	44	14.22
−	.25		
+	.02	42	29.43
+	10.55	42	3.5
+	.11		
−17	33.87		
52	44	39.45	

0.2451
− 1.333
8.9429
9.8143
9.0419
0.2403
8.7572
8.8562
8.9217n

Oct 17 314 21 9.8544n

h	m	s	
20	57	4	+1.893
+50° 52'			28.0
56	27.7		a +1
	44.7		49.1
58	57.9	58	24.6
	1.2		28.5
	2.9		32.2
	6.0		34.8
9.1	8.1		38.7
			31.76
			+26.14

59	3.22	58	57.90
	5.32	−1	31.66
		+	.10
−1	31.58	−	.02
		57	26.32
			−2.52
−18.94		57	23.80
−2 20.10			
+ 8.85			

8	40.9	9.80012	
	32.6	0.72591	
	42.3	0.63811	
	39.9		
8	38.92	50	
	4.35	56	38.31
8	34.57		−35.51
51	14	13.78	56 2.80
− 17	44.32		
−	.01		
+	.02	57	4.86
+	8.77	50	42.7
+	.09		
−17	35.47		
50	56	29.46	

0.2170
− 1.179
8.9148
9.8445
9.0246
0.2772
8.7593
8.8691
8.8790n

Oct 17 3'16 8 9.8407n

h	m	s	
21	4	12	+1.836
+53° 6'			
3	35.4		a +1
	1.4		
5	30.4		
	33.7		
	37.6		
	41.0		
	44.7		
	37.48		
	+ 27.48		

6	21.67	6	4.96
−	16.71	−1	31.66
		+	.11
−1	31.58	−	.03
		4	33.38
			−2.60
−18.36		4	30.78
−2 24.30			
+ 10.98			

56	16.2	9.77846	
	6.3	1.22298	
	16.4	1.13552	
	13.2		
56	13.02	53	
−	1.299	9	14.98
	56 0.03		−36.70
53	26	48.32	8 38.28
− 17	44.32		39.28
−	.08		
+	.02	4	12.42
+	10.95	6	15.0
+	.11		
−17	33.34		
53	9	4.80	

0.2513
− 1.236
8.9491
9.8579
9.0459
0.2639
8.8070
8.9038
8.8866n

+1.359
+ .570
+1.333
− .663
+2.599
9.8407n
9.9032
9.8579
9.7439
+1.5545
.2602
+8.147
1.1601
9.8407
9.9110
9.7611
+10.70
+ 6.16
+1.387
+ .497
+36.76

Oct 17 318 14 9.8235n

h	m	s	
21	12	30	+1.932
+52° 1'			56.6
11	49		a +1
	44		52.4
13	52.5	13	55.6
	56.0		58.8
	59.2		2.0
	1.6		5.7
9.0	3.7		8.9
			2.20
			+26.81

13	58.60	14	29.01
+	30.41	−1	31.66
		+	.10
−1	31.58	−	.02
		12	57.43
−1932			27.72
−2 29.50		12	34.71
+ 9.67			

4	9.7	9.78918	
	26	1.48302	
	11.3	1.38428	
	9.6		
4	8.30	52	
+	24.23	0	41.17
4	32.53		−35.53
52	18	15.82	0 5.64
− 17	44.32		
−	.24		
+	.02	12	35.39
+	9.81	57	36.1
+	.10		
−17	34.65		
52	0	31.50	

0.2335
− 1.140
8.9313
9.8727
9.0347
0.2860
8.8040
8.9074
8.8582n

Oct 17 318 11 9.8240n

h	m	s	
21	12	30	+1.930
+52° 1'			
11	42	3	a −1
	52.4		
14	34.0		
	37.5		
	40.8		
	44.4		
7.8			47.4
			40.82
			−26.81

14	14.02		
−1	31.66		
+	.10		
−1	31.58		
	.02		
12	42.44		
	−2.72		
12	39.72		

4	9.7		
	26		
	11.3		
	9.6		
4	8.30		
+	24.23		
4	32.53		
52	18	15.82	
− 17	44.32		
−	.24		
+	.02	12	20.41

0.2335
− 1.142
9.8313
9.8723
9.0347
0.2856
8.8036
8.9070
8.8587n

Oct 17 318 57 9.8174n

h	m	s	
21	15	27	+1.907
+52° 57'			
14	49.3		a +1
	52.4		
17	47.6	16	46.5
	48.8		50.4
	51.0		54.1
	52.0		57.4
8.4	53.3		0.7
			53.82
			+ 27.39

17	5.54	17	21.2
−	29.33	−1	31.66
	.40	+	.11
−1	31.58	−	.03
		15	49.63
			−2.80
−1907		15	46.83
−2 31.10			
+ 10.74			

5	15.4	9.77797	
	5.1	1.46731	
	15.4	1.35936	
	13.0		
5	12.22	53	
−	22.87	0	25.42
4	49.35		−35.60
53	17	39.00	59 49.82
− 17	44.32		
−	.22		
+	.02	15	27.69
+	10.85	57	18.7
+	.11		
−17	33.58		
53	0	14.65	

0.2146
− 1.165
9.8981
9.8774
9.0444
0.2804
8.8242
8.9218
8.8618n

Oct 17 320 44 9.8014n

h	m	s	
21	22	30	+2.063
+49° 58'			
21	48.6		a +1
	53.0		
24	19.1	23	53.9
	22.2		57.9
	25.0		1.6
	27.6		4.2
9.1	30.4		7.3
			0.05
			+ 25.65

24	24.86	24	26.63
+	1.77	−1	31.66
		+	.10
−1	31.58	−	.02
		22	55.05
			−2.88
−2063		22	52.17
−2 35.10			
+ 7.82			

4	9.4	9.80837	
	06	0.24797	
	10.3	0.16842	
	8.2		
4	7.12	50	
+	1.47	1	3.26
4	8.59		−36.23
50	18	39.76	0 28.03
− 17	44.32		
−	.20		
+	.02	22	31.54
+	7.74	57	52.9
+	.08		
−17	36.57		
50	0	55.44	

0.2025
− 1.009
8.9003
9.8889
9.0161
0.3145
8.7892
8.9050
8.8175n

+1.527
+ .547
+1.368
− .566
+2.876
9.8014n
9.8845
9.8889
9.6859
+ .4852
.2787
+7.639
1.1911
9.8014
9.8830
9.7734
+1.149
+ .563
+ .350
+ .511
+35.23

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1885phae.proj.1615

Log A 9.8701 Oct. 20.3
B 0.9473
C 1.2199
D 9.9791

Oct 20 327 47 9.7268
h m s .2511
21 50 43 +2122 −.950
+.08 +53° 5' 8.9489
.00 50 0.1 a+1 9.9274
59.0

52 18.6 52 6.8 9.0458
21.1 9.8
24.4 13.0
27.1 16.6
8.7 29.8 19.3
1320
+27.47

0.3268
8.8763
8.9732
8.7726 n

+1574
52 2420 52 4067 +.666
+ 16.47 −1 3357 +1560
+ .11 −.565
−1 33.49 +8.235
−.03
51 7.18 9.7268 n
−3.24
−2121 9.9031
−24.960 51 3.94 9.9274
9.6299
+.4265
+10.94 .2603

57 16.7 9.771862
79 1.21669
197 1.10739
149
57 14.80 537 4712 9.8305
+ 12.81 8 12.84
57 1.99 21 −36.14
53 25 14.36 20.47 −8.764
−17 4456 7 11.98
− .07
+ .02 50 42.73
+ 10.90 4 22.4
+ .11
−17 33.62
53 8 1.80

Oct 20 328 11 9.7220
h m s 540 .2162
21 52 13 54 2.3 −.867
+50° 50' 12.1 5.2
51 28.8 11.7 8.7 8.9140
44.8 11.9 12.0 9.9293
12.0
118 15.0 9.0241
14.4 12.118.6
17.6 12.3 22.1
20.6 24.5
8.4 22.5 27.8 0.3434
15.13 8.8433
8.9534
8.7461 n

11.99 +1.635
54 1730 54 1513 +.617
−2.17 −1 3357 +1490
−5.31 + .10 −.531
−1 33.49 +8.211
−.02
52 4664 9.7220 n
−3.21
52 38.50 9.8899
52 35.73 9.9293
3529 9.6119
+.4092
.2736

11 160 9.900443
71 0.338476
186 0.248994
151 0.637602
11 1420 9.8192
−434 +.77
11.96 12.43
51 11 35.92 38.49
−17 4456.9 2773
− .00
+ .00 52 13.25
+ 8.63 50 37.4
+ .09
−17 33.84
50 53 51.36

Oct 20 333 26 9.6505
h m s .2328
22 13 12 +2.308 −.764
+51° 54'
12 26.5 a+1 8.9306
48.4 9.9515
9.0342
0.3632
8.8821
8.9857
8.6847 n

+2.205
9.7220 n
.2162
−.867
21 52 13
+ 50° 50'
a−1

54 38.0
41.0
44.3
47.4
50.7
44.28
− 26.12

54 18.16
−1 3357
+ .10
−1 33.47
− .02
52 44.67
−3.21
52 41.46

+1.308
a+1
9.9306
9.9515
9.0342
0.3632
8.8821
9.9857
8.6847 n

+1711
+1.675
+1.604
−.463
+3.527

9.6505 n
9.8963
9.9515
9.5468
+.3822
.2673

Log A 9.8701 Oct. 20.4
B 0.9474
C 1.2195
D 9.9806

Oct 20 331 3 9.6849
h m s 2297
22 3 41 +2.251 −.821
+51° 43'
2 55.9 3 1.7 8.9275
39.5 9.9420

5 15.5 5 12.3 9.0323
18.3 16.3
19.9 19.5
23.2 22.5 0.3524
9.2 26.4 26.0 8.8695
19.32 8.9743
+26.63 8.7172 n

+1669
5 2066 5 4695 +.456
+ 25.29 −1 3358 +1562
+ .10 −.499
−1 33.50 +3.388
−.02
4 12.45 9.6849 n
−8.89
−22.50 9.8951
−25.540 4 9.06 9.9420
9.5800
+.3802
+9.49 .2685

19 160 9.792.08
86 1.40295
191 1.30711
157
19 14.85 51 9.8371
+ 20.28 45 38.15
19 35.13 −34.62
52 3 13.22 45 3.53
−17 4456
− .17
+ .02 3.46.56
+ 9.55 42 8.1
+ .11
−17 3507
57 45 28.66

Oct 20 332 14 9.6683
h m s .2545
22 8 30 +2.235 −.837
+53° 17'
7 48.1 a+1 8.9523
10.7 9.9469

9 52.6 9 54.0 9.0480
58.2 59.0
59.9 0.9
2.0 7.5
8.5 5.0 0.3493
0.66 8.8992
+27.60 8.9949
8.7163 n

+1657
9 5896 10 28.32 +.702
+ 29.30 −1 3358 +1638
.44 + .11 −.498
−1 33.50 +3.499
−.03
−8 5476 9.6683 n
−3.50
−2.234 9.9043
−2 57.40 8 51.26 9.9469
9.5726
+.3738
+11.01 .2590

44 147 9.771660
67 1.46687
174 1.35555
140
44 13.20 53 82 9.8512
+ 22.68 20 38.92
44 35.88 −34.57
53 38 12.47 20 4.85
−17 4456 25
− .22
+ .00 8 29.06
+ 1111 17 7.0
+ .12 69
−17 3355
53 20 21.91

Oct 20 333 16 9.6678
h m s .2545
22 8 30 +2.236 −.836
+53° 17'
7 55.5 a−1 8.9523
26.2 9.9470

10 28.6 11 0.0 9.0480
31.3 3.3
34.3 6.4
36.5 9.8
8.8 38.7 13.4 0.3495
6.58 8.8993
−27.60 8.9950
8.7158 n

+1658
10 3388 10 3898 +.703
+ 5.10 −1 3358 +1639
+ .11 −.497
−1 33.50 +3.583
−.03
9 5.48 9.6678 n
−3.50
−22.38 9.9043
−2 57.50 9 1.98 9.9470
9.5721
+.3733
+11.22 .2590

44 147 9.770660
67 0.470757
174 0.597625
140
44 13.20 53 9.8513
+ 3.95 20 57.86
44 17.15 −34.55
53 38 31.20 20 23.31
−17 4456
− .01
+ .00 8 39.60
+ 1111 17 26.8
+ .12
−17 3334
53 20 46.64

Oct 20 334 2 9.6413
h m s .2087
22 15 43 30.8 −.708
+50° 21' 34.0
14 55.7 37.1 8.9065
15.1 40.5 9.2538

43.5 9.0196
46.7
49.7
53.1 0.3736
56.8 8.8603
8.9734
17.70 8.6609 n
25.86
43.56 4358

17 11.2 +1753
14.5 +.642
17.7 17 43.57
21.0 −1 3359 +1559
24.1 + 10 −438
−1 33.51 +3.516
−.02
16 10.06 9.6413 n
3.52 9.8869
16 6.54 9.9538
9.5282
+.3374
.2764

39 543 9.80489 +6138
460 1.62951 12560
573 1.54648 9.6413
532 9.7880
50 52.70 9.8407

+ 35.20 24 43.61 +1337
40 27.90 −34.05 +388
50 42 20.45 23 9.56 +10.17
− 17 4456 24 +663
− .49
+ .02 15 42.91 +34.05
+ 8.12 21 9.4
+ .09
−17 3684
50 24 35.84

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895

1885 Oct 20 3h 34m 40s

h m s		
22 18 14	+2.256	
+54° 56′		a~1
17 29.2		
42.6		
20 53.2	20 35.5	
58.5	39.3	
0.3	42.7	
3.0	46.1	
9.0 6.3	47.8	
	42.68	
	−28.72	
20 57.86	20 13.96	
− 45.90	−1 33.59	
	+ .14	
−1 33.51	+ .00	
	.03	
	18 40.45	
	−3.70	
−2.55	18 36.75	
−3 17.0		
+12.50		
6 5.80	9.75931	
4.96	1.66181	
5.98	1.53320	
5.67		
6 56.02	.54	
− 34.14	58 54.41	
− 6 21.88	−84.25	
55 16 26.44	58 20.16	
−17 44.56		
− .54		
+ .00	18 14.20	
+ 12.90	55 19.0	
+ .14		
−17 32.06		
54 58 41.91		

9.6313n
.2806
− .816
8.9784
9.9561
9.0651
0.3533
8.9345
9.0212
8.6964n
+1673
+ .762
+1.741
− .475
+3.701
9.6313n
9.9133
9.9561
9.5446
+.3504
.2490
+5994
1.2583
9.6313
9.7777
9.8694
+1344
+ 3.79
+ 9.94
+ 7.08
+34.25

Oct 20 3h 35m 18s

h m s		
22 20 43	+2.406	
+49° 59′		a~1
19 33.2		
53.7		
22 58.2	23 08 7.6	
1.7	11 11.0	
5.4	11 8 15.0	
	11.6 18.0	
9.5		
	11.30	
	−25.66	
23 11.0	22 45.64	
− 15.46	−1 33.59	
	+ .10	
−1 33.51		
	− .02	
	21 12.13	
	−3.57	
−2.40	21 8.56	
−3 2.10		
+ 7.73		
21 5.56	9.80822	
4.70	1.18921	
5.76	1.10951	
5.43		
21 53.62	50 3	
− 12.87	2 30.77	
21 40.75	−83.80	
50 28 1.60	×2 56.97	
−17 44.56		
− .06		
+ .60	20 44.51	
+ 7.71	59 54.9	
+ .08		
−17 36.83		
50 2 23.04		

9.6210n
.2028
− .666
8.9006
9.9583
9.0161
0.3813
8.8589
8.9744
8.6371n
+1.784
+ .640
+1.563
− .415
+3.572
9.6210n
9.8845
9.9583
9.5055
+.3203
.2787
+.5990
1.2605
9.6210
9.7774
9.8428
+1351
+ 3.70
+ 9.93
+ 6.66
+33.80

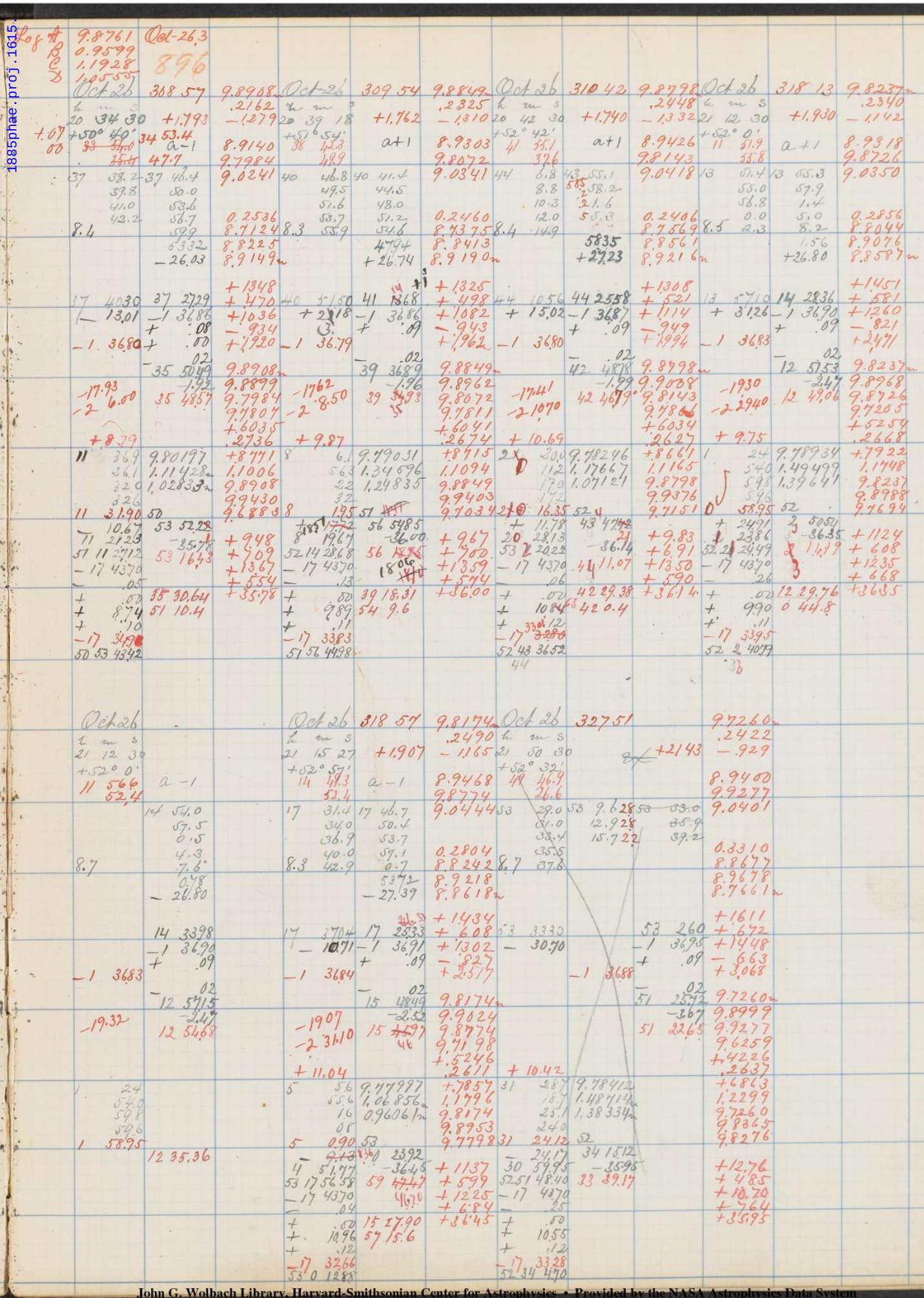
Oct 20 3h 35m 27s

h m s		
22 20 43	+2.409	
+49° 59′		a~1
20 31.8		
23 42.0		
45.3		
48.0		
51.4		
54.6		
48.26		
− 25.66		
23 22.60		
−1 33.59		
+ .10		
	− .02	
21 49.09		
− 8.58		
21 40.31		
21 21.42		

9.6186n
.2028
− .663
8.9006
9.9588
9.0161
0.3818
8.8594
8.9749
8.6347
+1786
+ .641
+1.565
− .412
+3.580

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1885 Oct 26 331 4 — 9.6847 — Oct 26 331 7 — 9.6840 — Oct 26 332 20 — Oct 26 333 59

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1885phae.proj.16151

Log A 9.8785 Oct-27.3
B 0.9612
C 1.1876
D 40667

877

Oct 27 334 2 9.6413
Oct 27 334 29 9.6342
Oct 27 335 18
Oct 27 337 53 9.5758

Oct 27 337 54 9.5754
Oct 27
Oct 27 342 7 9.4872
Oct 27 342 11 9.4857

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1885phae.proj.1615.

Log A 9.8788 Oct 27.4
B 0.9613
C 1.1871
D 1.0478

1885 Oct 27 342 41 9.4737 Oct 27 343 41 9.4486 Oct 27 344 10 9.4359 Oct 27 348 21

h m s
22 50 17 +2.597
+49° 58'
49 24.9
51.3
a − 1
8.9006
9.9799
9.0161
0.4145
8.8805
9.7960
8.4898
− 25.65
4930
+1965
+ 695
+1524
− 361
+8823
9.4737
9.8845
9.9799
9.3582
+.2281
.2787
+ 7.34
4 154 9.80837
7.1 1.62910
15.1 1.54953
138
4 1285 50
− 3544 1 3482
3 37.41 −88.58
50 19 10.94 1 1.27
− 17 4346
− .49
+ .00 50 16.59
+ 7.74 57 49.9
+ .09
−17 3612
50 1 27.48

h m s
22 54 15 8.7
+53° 2'
53 23.5 12.0
53.3 15.7
18.8
52 43.1 56 22.6
46.1 19.3 26.0
49.4 24.3 29.6
52.4 32.5
55.5 35.7
8.7
+2572
9.4486
.2503
− .500
8.9481
9.9822
9.0453
0.4103
8.9303
9.0275
8.4939
2240
+1946
+ 779
+1639
− 364
+4000
9.4486
9.9028
9.9822
9.3514
+.2246
.2606
+ 11.86
8.2
53 622 52 2365 56 2027 56 2240
− 42.57 −1 3727 + 2.13 −1 37.27
+ .01 + .01
−1 37.28 + .00 −1 37.29
− .02 − .03
50 17.37 54 45.11
−.587 −4.00
−2.596 50 42.58 54 41.11
−3 11.40
+ 7.34
4 154 9.77913
7.1 0.32838
15.1 0.21959
138
0 64
56.1
3.8
2.0
53
+5068
1.2821
9.4737
9.7048
9.8644
+ 1.66 5 12.22
0 3.74 33 3.56
+1448 53 22 44.61 4 38.66
+ 272
+ 780 − 17 43.46
+ 855 − .00
+33.35
+ .60 54 15.40
+ 10.95 1 26.3
+ .12
−17 32.39
53 5 1.15
58 38.8
43.0
46.5
58 17.79
−1 37.27
+ .01
−1 37.29
− .03
56 40.50
−.407
56 36.43
−2.568
−3 12.90
+ 11.86
9.7769
1.4027
1.2844
9.4486
9.6859
9.8850
− 19.25
− 38.80
54 20 9.55
− 17 43.46
− .17
+ .60
+ 11.90
+ .13
−17 31.60
54 2 26.09
54
2 38.05
2 3795
−33.51
2 4.44
56 10.75
58 51.5
56 10.79
58 38.8
42.4
46.2
49.2
52.6
45.84
−28.05
9.7769
1.4027
1.2844
9.4359
9.6772
9.8914
+ 1509
32 58.34
53 49 50.01
− 17 43.46
− .10
+ 33.51
+ .00
+ 1138
+ .13
−17 32.05
53 32 6.55
32 470
37.3
44.7
44.0
53
+4755
1.2854
9.4359
9.6772
9.8914
+1459
+ 250
+ 732
+ 9.10
+33.51
9.7745
1.2920
1.1786
32 4325
32 1796
−22.89
31 45.57
14 36.9
38.5
41.7
43.7
45.2
46.2
14 26.9
30.7
33.6
37.5
41.1
33.96
+ 27.73
1.69
9.4359
9.9082
9.9832
9.3441
+.2208
.2547
+ 11.41
14 4203
+ 19.59
4072
−27.05
−3 16.40
−1 37.29
− .03
13 24.33
−4.28
13 20.05
15 1.62
−1 37.27
+ .01
− .03
12 53.00
28 29.2
479 +2.707
51.6
54.6
58.0
1.5
5.0
8.7
11.6
15.3
1.58

Oct 27 351 33 9.1672 Oct 27 352 23 9.1224 Oct 27 353 8 9.0776 Oct 27 354 49 8.9559

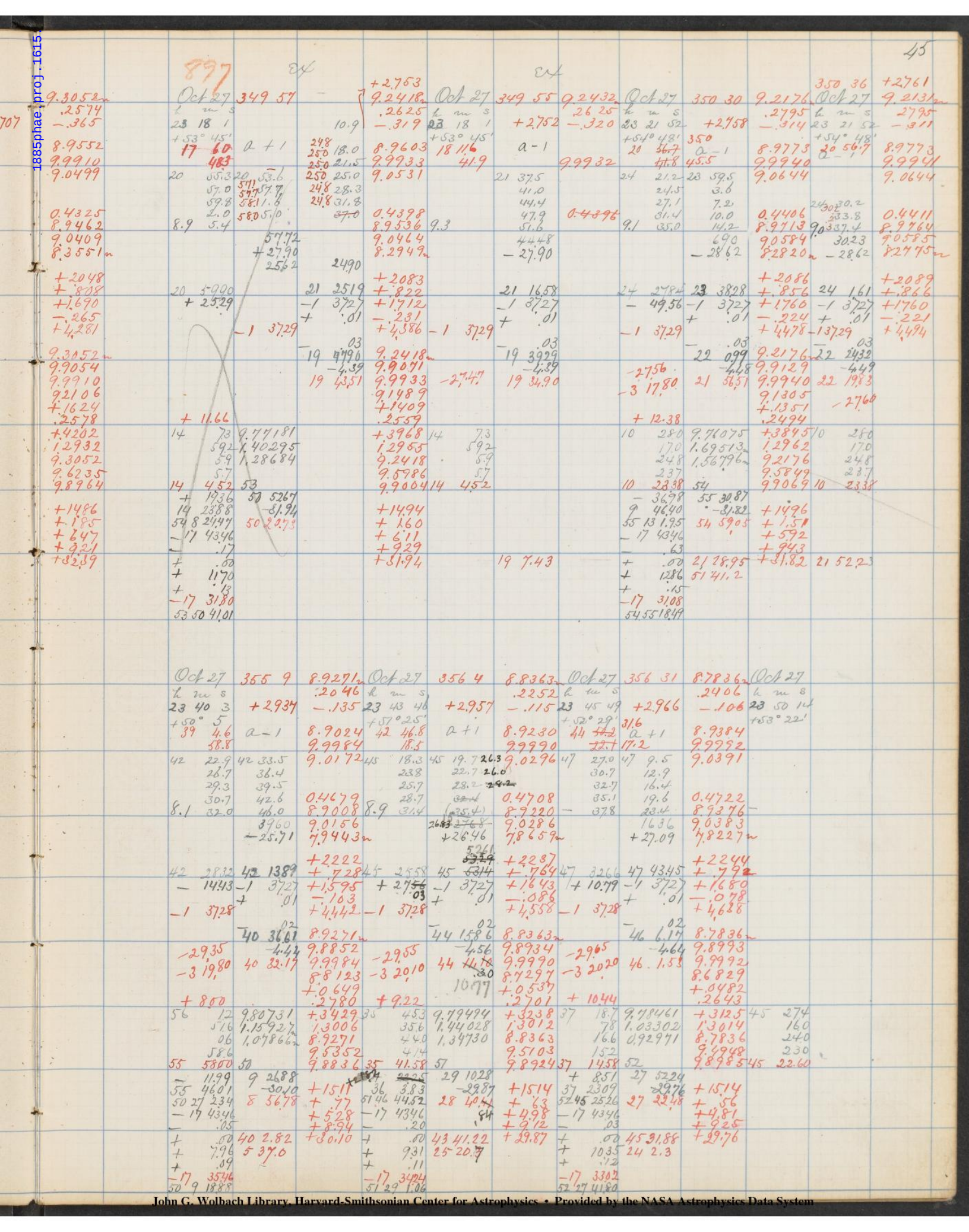
h m s
23 25 40 +2.838
+49° 59'
24 43.8
52.3
a +1
8.9006
9.9953
9.0161
0.4530
8.8959
9.0114
8.1833
+2147
+ 720
+1579
− 178
+4268
9.1672
9.8845
9.9953
9.0517
+1126
.2787
+ 7.54
2 234 9.80822
146 1.52140
226 1.44170
212
2 2045 50
+ 276.5 2 2432
2 48.10 −31.23
50 20 02.5 1 53.10
− 17 4346
− .30
+ .02 2540.43
+ 7.75 5834.8
+ .09
−17 3592
50 2 16.79

h m s
23 28 59 +2851
+51° 12'
28 3.0
5.0
a +1
9.0006
9.9953
9.0161
0.4530
8.8959
9.0114
8.1833
+2634
30 3242
+ 36.70
−1 37.27
+ .01
−1 37.28
− .02
29 31.84
−4.37
29 27.47
−2849
−3 18.70
+ 8.75
49 338
25.7
34.1
32.4
31.50
+ 29.77
50 1.27
51 32 47.08
− 17 43.46
− .36
+ 1.00
+ 9.00
+ .11
−17 34.71
51 15 3.62
30 29.0
30.7
32.4
34.0
36.0
30 36.2
39.4
42.8
46.0
49.5
4278
+ 26.34
31 912
−1 37.27
+ .01
−1 37.28
− .02
29 31.84
−4.37
29 27.47
51
15 1237
−31.06
14 41.31
5898
28 59.0
11 22.6

h m s
23 31 59 +2877
+50° 33'
31 2.5
26.6
a +1
9.0194
9.9962
9.0274
0.4550
8.9156
9.0236
8.1498
+2157
+ 753
+1624
− 165
+4369
9.1224
9.8920
9.9962
9.0144
+1034
.2715
+ 8.38
33 48.2 33 37.5
50.0 40.8
52.7 43.9
55.7 47.8
58.8 50.7
44.14
+ 25.97
34 1011
−1 37.27
+ .01
−1 37.28
− .02
32 32.83
−4.37
32 28.46
−28.76
−3 19.10
+ 8.38
28 104
17
10.4
7.6
7.52
+ 1401
28 21.53
30 54 28.82
− 17 43.46
− .08
+ .60
+ 8.37
+ .09
−17 35.08
30 36 43.32
9.0776
2.118
−.195
9.0981
9.9969
8.9657
+.0924
.2752
+ 13.09
55 454
37.0
45.0
43.3
42.72
+ 23.09
55 58.1
55 27 42.54
− 17 43.46
− .25
+ .60
+ 13.19
+ .15
−17 30.37
55 9 59.08
40 2286
+ 31.20
−1 37.27
+ .01
−1 37.29
− .03
39 16.77
−4.78
39 12.04
−2896
−3 19.70
+ 13.09
54 42.72
10 12.17
−30.44
9 41.73
36 51.74
−30.76
36 20.98
+1506
+ 1.07
+ 5.66
+ 8.97
+30.76
33 59.70
33 1.9
40 5406
+ 1788
− .123
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9.9142
9.9982
8.8701
+.0741
.2478
9.7757
1.4941
1.3633
9.0776
9.5654
9.8850
+ 2309
55 58.1
55 27 42.54
− 17 43.46
− .25
+ .60
+ 13.19
+ .15
−17 30.37
55 9 59.08
+3219
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8.9559
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9.9124
+1511
+ 83
+ 4.95
+ 9.58
+6044
3843.08
6 22.0

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897

1885 Oct 27 357 42 8.6035m Oct 27 Oct 27 358 36 8.3880m

h m s .2569 h m s .2048

23 50 14 +3.000 −.072 23 50 14 23 53 50 +3.033 −.039

+53° 22′ +53° 22′ +58° 5′

49 14.1 a−1 8.9547 49 15.7 a+1 52 50.2 a+1 a−1 8.9026

15.5 9.9996 9.5 38.7 9.9999

52 46.9 9.0495 52 10.1 51 53.7 55 53.5 55 30.8 56 22.0 9.0173

50.5 12.2 57.0 57.2 33.8 25.0

53.8 14.5 0.2 0.1 36.9 28.1

57.0 0.4771 4.1 2.4 40.4 31.8 0.4819

9.0? 1.0 8.9543 7.4 8.7 4.0 43.6 34.9 8.9025

53.84 9.0491 0.48 6.0 37.10 28.36 9.0172

−27.65 4.6530m +27.65 +25.71 −25.71 7.4053m

.281 2.65

+2.269 +2.295

52 26.19 +.823 52 12.27 52 28.13 56 0.53 56 2.73 +.731

−1 37.27 +1.723 +15.86 −1 37.27 + 2.20 −1 37.28 +1.601

+ .01 − .053 + .01 + .01 − .030

−1 37.29 +.4762 −1 37.29 −1 37.29 + .4597

− .03 − .03 − .02

50 48.90 8.6035m 50 50.84 54 25.44 8.3880m

−.476 9.9052 −.476 −4.60 9.8853

−29.98 50 44.14 9.3996 −29.98 50 46.08 −3031 54 20.84 9.9999

−3 20.40 −3 20.50 8.2733

8.5087 +.0188

+.0323 .2779

.2580 +11.45 + 8.06

45 27.4 +.2903 45 27.4 9.775575 55 43.2 9.980731 +.2967

16.0 1.3018 16.0 1.200830 33.8 0.342422 1.3021

24.0 8.6035 24.0 1.088133 42.7 0.261811 8.3880

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+ 12.25 29 41.49 + 1.83 9 31.10

45 34.85 29.39 55 41.85 −28.92

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+ 9.39 + .13 + .09 5 41.7

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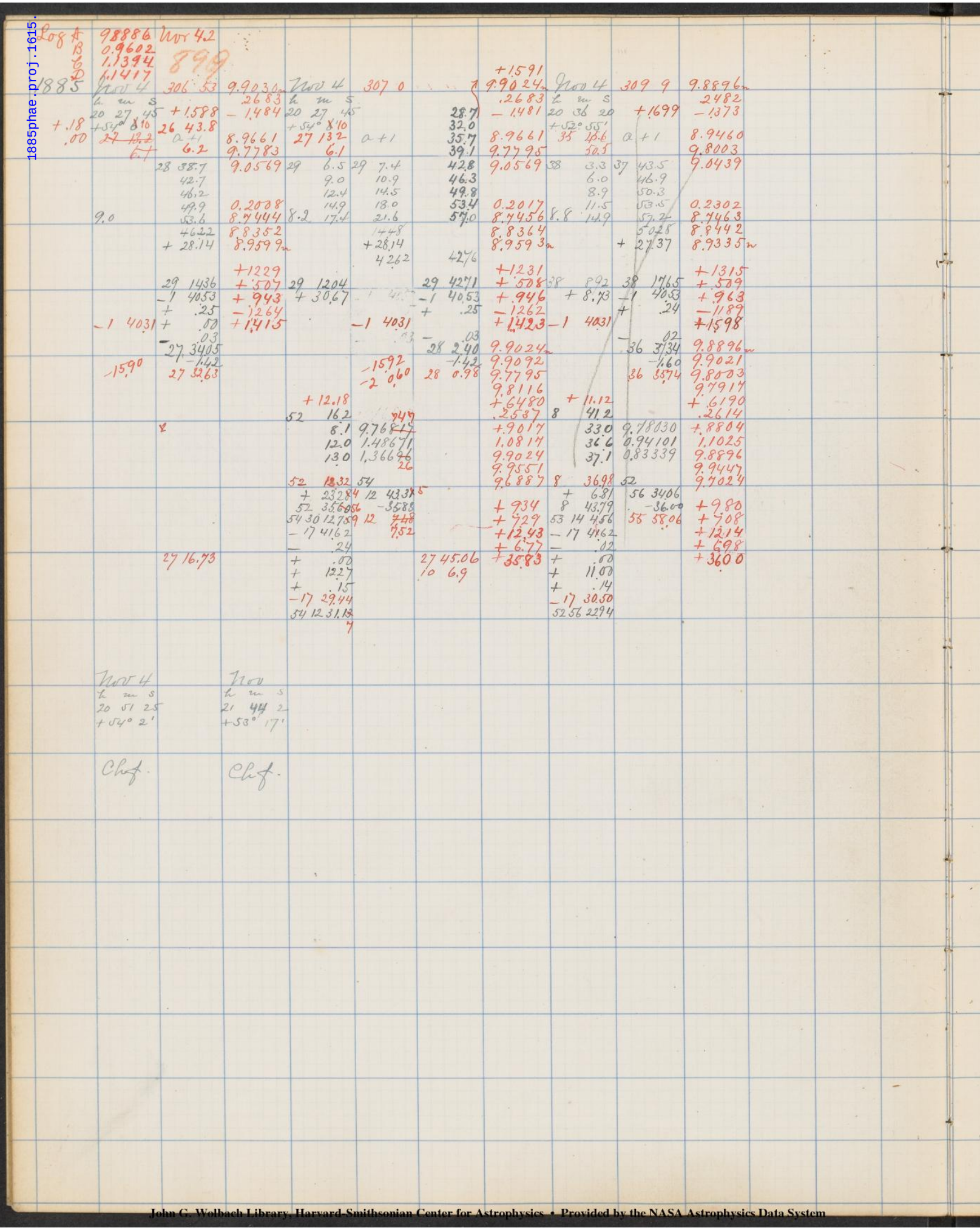
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20 28 12	+ 1.666	− 1.406	20 35 29	+ 1.793	− 1.279	20 39 4	+ 1.747	− 1.325	20 42 35	+ 1.678	− 1.394
+52° 48'			+50° 52'			+52° 11'			+53° 56'		
27 38.3	a −1	8.9442	34 53.4	a −1	8.9140	38 28.7	a 569	8.9347	42 1.5	a+1	8.9624
43.7		9.7806	41.7		9.7984	6.6		9.8067	51.7		9.8145
30 57.7	30 30.3	9.0428	37 48.3	37 49.3	9.0241	41 13.8	41 2.3	9.0368	44 0.1	43 57.6	9.0545
58.4	33.4		49.9	52.0		16.9	23 5.5		2.5	1.0	
59.0	36.5		51.2	55.5		18.4	59.2		4.9	4.6	
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	− 27.29	8.9445		− 2614	8.9149		− 21.91	8.9220		+2802	8.9341
		+1282			+1380			+1345			+1292
30 58.37	30 9.33	+ 483	37 49.80	37 29.34	+ 470	41 16.20	41 2.52	+ 502	44 4.72	44 32.68	+ 545
− 49.04	− 1 39.25	+ 974	− 20.46	− 1 39.25	+ 972	− 13.68	− 1 39.25	+ 1020	+ 27.96	− 1 37.26	+ 1681
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− 1 39.09	+ .02	+ 3612	− 1 39.10		+ 1770	− 1 39.09		+ 1797	− 1 39.10		+ 1818
	− .02			− .02			− .02			− .03	
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− 1.66	28 28.63	9.7806	− 17.93	35 48.47	9.7984	− 17.48	39 21.63	9.8067	− 16.79	42 51.76	9.8145
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15 32.80	52	9.6820	11 40.75	50	9.6883	51 51.05	52	9.7046	6 10.98	53	9.7224
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14 59.42	− 38.86	+931	11 24.03	− 38.85	+9.70	51 40.19	− 36.12	+989	6 32.29	− 36.42	+1087
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+ .03	28 11.97	+38.86	+ .00	35 30.54	+38.85	+ .00	39 4.15	+36.12	+ .00	42 34.97	+36.42
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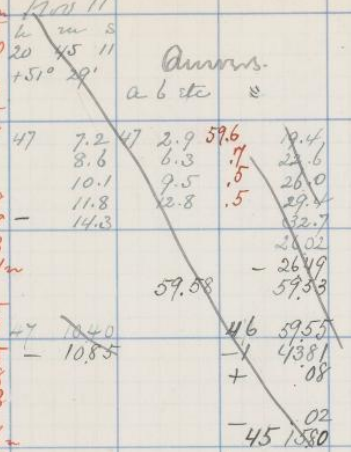
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+1.721 — 0.2358 — 8.7969 — 8.8886 — 8.9200n — 27.79 — +1366 — +.589 — +.938 — −1297 — +1596 — 8.8646n — 9.9083 — 9.8332 — 9.4729 — +5928 — .2546 — +8474 — 1.1354 — 9.8646 — 9.9281 — 9.7415 — +1084 — +688 — +10.28 — +860 — +8660

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a+1 — a to 5 — 31 49.6 — 28 52.7 — 27 58.0 — 29 59.5 — 3.0 — 5.6 — 2.90 — 22 29.5 — −1 43.83 — + 08 — 02 — 20 19.18 — 4.01 — 20 15.17

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−1 43.76 — −17.22 — −21.650 — −17.88 — −2 23.30 — 2 30.14 — −1.78 — 3 12.26 — 54 30.8 — 54 31.07 — −36.92 — 56 64.15 — +8660 — +.00 — +11.89 — +.17 — −17 3203 — 53 57 19.47

−1 43.76 — 4768 — +28.00 — 3 40.5 — 44.2 — 47.5 — 51.0 — 55.2 — 4 16.68 — −1 43.81 — + .08 — − 03 — −2 31.92 — −1.78 — 2 30.14 — 4 5.754 — −1 41.86 — 4 57.54 — 53.7 — 57.9 — 1.0 — 3.9 — 8.9085 — 8.8989n — +1.420 — +.616 — +.980 — −1238 — +1.778 — 9.8446n — 9.9078 — 9.8542 — 9.7524 — +.5655 — .2552 — +8207 — 1.1564 — 9.8446 — 9.9142 — 9.7620 — +1139 — +6.37 — +.993 — +.903 — +8692

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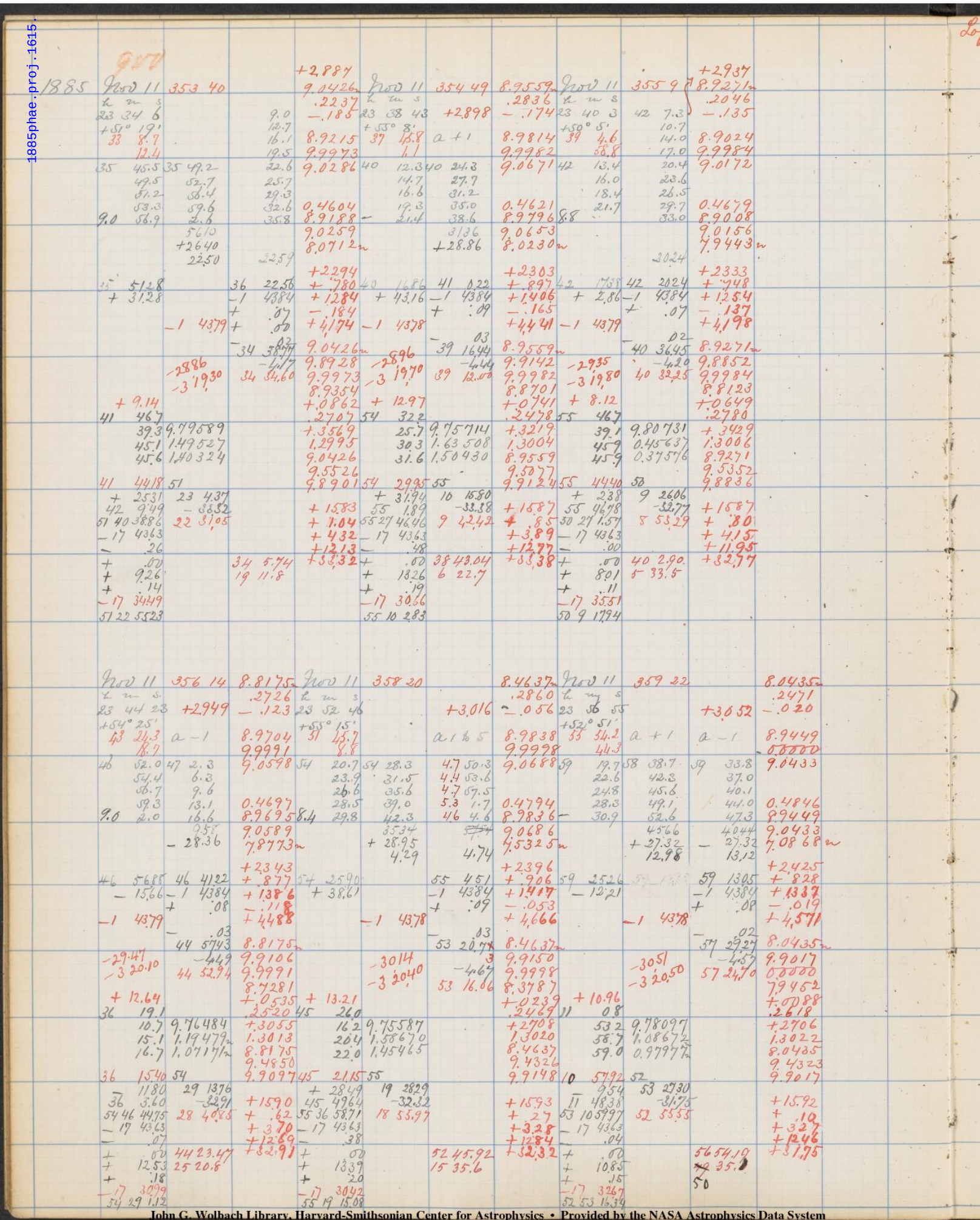
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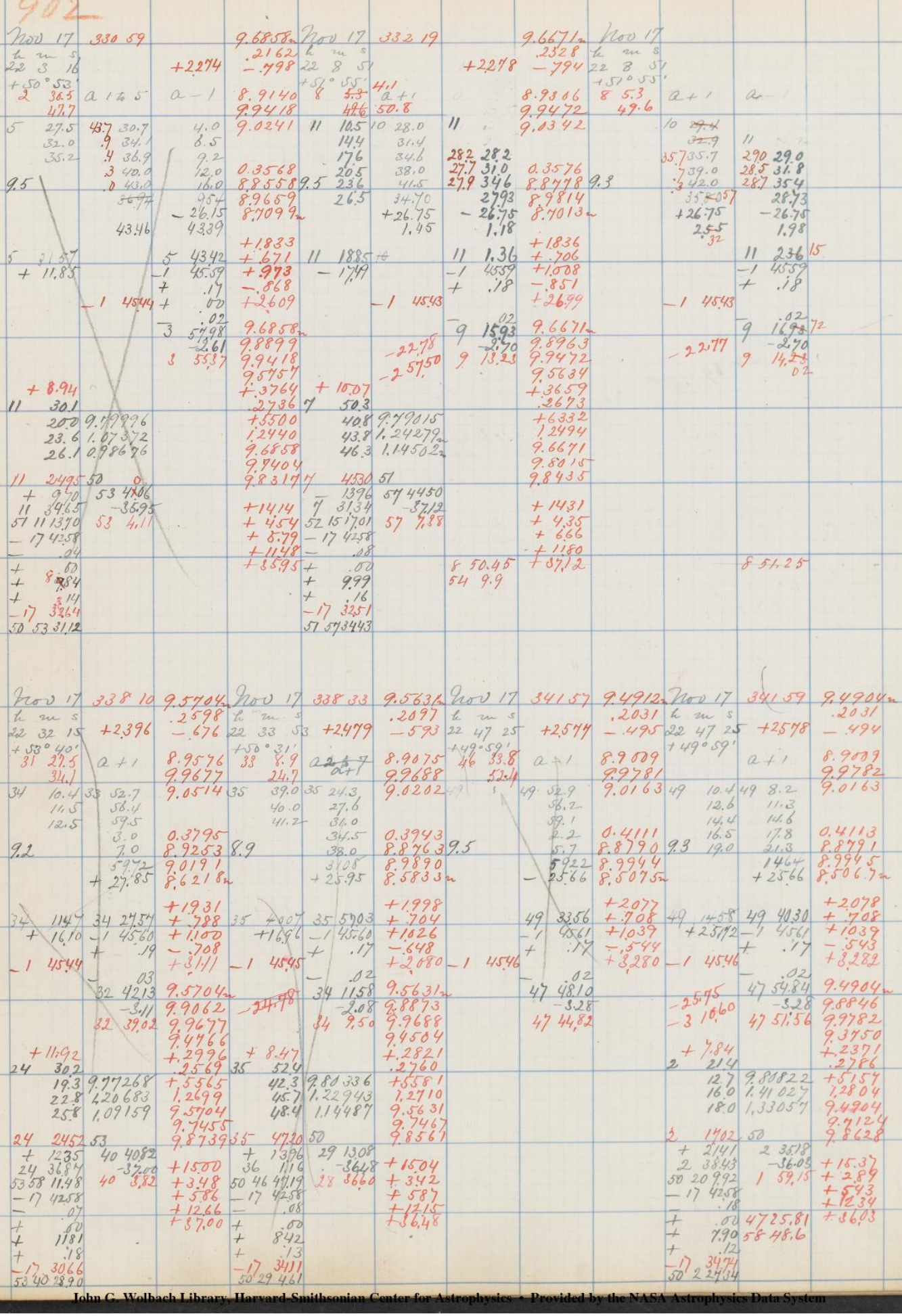
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7 34.80 53 9.9006
+ 10.75 57 32.53 −35.27
7 45.55 +1.590
54 15 2.80 56 57.26 +1.69
− 17 42.58 +4.22
− .05 +13.46
+ .00 17 57.81 +35.27
+ 12.17 53 40.1
+ .19
−17 30.27
53 57 20.22

Nov 17
h m s
23 18 1
+53° 55'
a+1

19 43.0
46.8
50.4
53.5
57.2
5018
+28.02

20 18.20
−1 4562
+ .19
−1 45.46
− .03
18 32.74
−3.88
18 28.86

Nov 17 350 21 9.2244
h m s .2038
23 21 35 +2.804 −.268
+49° 57' 19 55.2
20 38.7 a−1 8.9016
50.8 9.9938

23 11.5 23 29.1 9.0167
13.0 32.6
14.4 35.9
15.6 39.7 0.4478
9.3 16.7 43.27 8.8954
3610 9.0105
− 25.64 8.2411

+.2260
23 14.24 23 10.46 +.735
− 3.78 −1 4562 +1.078
+ .17 −.295
−1 45.47 +3.778
− .02
21 24.99 9.2244
−2803 −3.78
−3 17.70 21 21.21 9.8849
9.9938
+ 8.13 9.1093
+.1286
59 13.2 .2783
4.2 9.80852 +.4069
8.2 0.57749 1.2960
10.2 0.49809 9.2244
9.6095
59 8.95 58 9.8787
− 3.15 6 8.10
59 5.80 −34.58 +15.93
50 23 42.55 5 8.952 +1.57
−17 42.58 +4.28
− .01 +.1280
+ .00 20 53.18 +34.58
+ 8.02 2 15.8
+ .12
−17 34.45
50 5 59.97

Nov 17 353 8 9.0776
h m s .2364
23 31 59 +2.866 −.206
+52° 8' 8.9342
31 27 9.9969
1.2

34 2.9 33 43.5 9.0365
4.3 46.7
5.8 50.0
53.5
57.0 04573
8.0 50.14 8.9311
+ 26.88 9.0334
8.1141

+2.310
34 4.33 34 17.02 +.798
+ 12.69 −1 4563 +1.136
+ .18 −.220
−1 45.47 +4.024
− .02
32 31.55 9.0776
−28.64 −4.02 9.8977
−3 19.10 32 27.53 9.9969
8.9753
+ 10.36 +.0945
53 27.8 .2659
19.1 9.78805
22.3 1.10346
24.6 1.00359
9.5568
53 23.45 52 9.8946
+ 16.08 11 42.60
53 33.53 −34.23
52 29 14.82 11 8.37
−17 42.58
− .05
+ .02 31 58.89
+ 10.25 7 49.3
+ .16
−17 32.22
52 11 32.24

Nov 17 353 41 9.0415
h m s .2046
23 34 10 +2.896 −.176
+58° 5' 8.9024
33 12.8 a−1 9.9774
58.5 9.0172

36 37.4 36 48.0 0.4618
39.2 51.5 8.8998
41.2 54.9 9.0146
57.8 8.0587
1.0
54.64
− 25.71

+2.334
36 39.27 36 28.93 +.743
− 10.34 −1 45.63 +1.088
+ .17 −.194
−1 45.48 +3.971
− .02
34 43.45 9.0415
−28.94 −3.97 9.8852
−3 19.30 34 39.48 9.9974
8.9267
+ 8.12 +.0845
56 31.6 .2780
21.8 9.80731
26.2 1.01452
28.3 0.93391
9.0415
56 26.98 50 9.8826
− 8.59 8 55.50
56 18.39 −33.82 +16.07
50 26 29.96 8 21.68 +1.03
−17 42.58 +3.81
− .03 +12.91
+ .02 34 10.54 +33.82
+ 8.03 5 2.4
+ .12
−17 34.46
50 8 47.38

Nov 17 354 57 8.9446
h m s .2015
23 39 58 +2.932 −.140
+49° 57' 38 59.5 a−1 8.8993
58.8 9.9983

42 12.0 41 55.6 9.0153
13.3 58.6
14.5 0.8
8.3 0.4672
6.4 8.8976
094 9.0136
− 25.64 7.9599

+2.363
42 13.27 41 35.30 +.739
− 37.97 −1 45.63 +1.086
+ .17 −.154
−1 45.48 +4.084
− .02
39 49.82 8.9446
−4.03 9.8839
39 45.79 9.9983
8.8285
+.0674
.2791
8 22.4 +.3465
12.8 9.80852 1.3005
17.9 1.57944 8.9446
20.2 1.50004 95397
49 9.8822
− 31.63 57 26.73 +16.10
7 46.69 −33.17 + 82
50 15 16.6 56 53.26 +3.65
− 17 42.58 +12.90
− .39 +33.47
+ .02
+ 7.92
+ .12
−17 34.93
49 57 19.08

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Log Δ 9.9264 Nov 28.2
13 0.9806
C 0.8667
D 1.2743

1885 Nov 28 328 10 9.7222 Nov 28 331 1 9.6853 Nov 28 332 13 9.6685

	h m s				h m s				h m s														
	21 52 13		+2222		22 3 40		+2248		22 8 29				+2234										
+36	+50 50				+51°43'				+53° 17'														
.00	51 28.8		a+1		2 35.9		a+1		7 45.1		a+1		a−1										
	44.8				37.5				16.7														
	54 23.7	53 59.2			5 24.4	5 22.2			10 7.0	10 8.7			11 5.3										
	25.4	2.0			26.5	25.6			9.0	3.5			8.6										
	28.1	5.6			29.9	28.9			11.3	20.1			11.7										
	29.8	9.2			31.6	32.0			12.8	30.7			15.2										
9.0	32.1	12.6			33.5	35.4							18.9										
		5.72				2.82							11.94										
		+26.12				+26.63							− 27.60										
													44.34										
			+1875							+1898													
	54 27.82	54 31.84	+.653		5 20.15	5 55.45			10 10.02	+.710			10 44.34										
	+ 4.02	−1 50.58	+ 653		+ 26.27	−1 50.59			+ 34.32	+.694			−1 50.59										
		+ .44	−1036			+ .46				−.983			+ .48										
	−1 50.16	+ .50	+2.145		−1 50.15					+2.319													
		− .02				− .02							−1 50.14										
		52 41.68	9.7222			4 50.30			9.6853				− .03										
		−2.14	9.8864	−2.47		−2.32			9.8955				8 50.11										
		52 39.54	9.9292	−2 55.30		4 2.98			9.9419				−2.39										
			9.6086						9.5808				8 47.72										
	+ 8.54		+.4061	+ 15.06					+.3809	+ 11.58													
	45 13.8		.2769	18.7 1.6					.2681	44 20.4													
	1.3	9.80043	+.6830	49.2		9.79208			+.6490	9.0		9.77660											
	58.8	0.60423	1.2314	46.7		1.41946			1.2441	6.2		1.53535											
	3.6	0.51674	9.7222	51.0		1.32362			9.6853	11.4		1.42423											
			9.8344						9.8122														
	45 4.38	50	9.8156	156 62.12		51.49			9.8374	44 11.75		53											
	+ 3.29	20 7.36		+ 2.10		50 3.33				+ 2.66		20 39.73											
	45 7.67	−36.74	+1438	156 13.19		−3.14			+1481	44 38.31		−8.745											
	50 37 40.68	19 3.062	+.504	52 46 35.16		48 26.19			+4.63	53 38 10.04		20 2.28											
	− 17 41.89		+.502	− 17 41.89		.18			+4.77	− 17 41.89													
	− .01		+1.230	− .18					+12.93	− .31													
			+36.74	+ .00		3 40.51			+3.714	+ .00			8 29.47										
	+ .00			+ 10.25		45 30.9				+ 11.68			17 4.9										
	+ 8.42			+ .19						+ .21													
	+ .16			− 17 31.83						− 17 30.31													
	−17 33.32			51.49 53.27						53 20 28.15													
	50 19 58.79																						

Log Δ 9.9265 Nov 28.3
13 0.9805
C 0.8650
D 1.2746

Nov 28 338 11 9.5701 Nov 28 338 29 9.5644 Nov 28 342 7 9.4872 Nov 28 342 11 9.4857

	h m s				h m s				h m s														
	22 32 15		+2394		22 33 28		+2429		22 48 15		+2545						+2547						
	+53° 40'				+52° 36'				+52° 1'														
	31 27.5		a+1		8.9587	32 40.3		a−1		8.9413	47 23.8	11.1	a−1		8.9326	47 23.8	a−1		8.9326				
	34.1				9.9677	29.8				9.9686	57.2				9.9785	57.2			9.9787				
	34 20.7	33 56.8			9.0521	36 38.5		36		9.0409		50 39.6			9.0355	57 17.8	50 53.7		9.0355				
	23.7	3.3				41.8						42.8				21.7	57.5						
	26.2	8.0				45.0		13.1 13.1				46.5				24.3	1.0						
	27.9	11.4				46.8		14.2 17.6				49.7			0.4057	28.0	4.3		0.4060				
9.6		15.4			8.9264	9.3 48.5		13.8 20.6		8.9099	9.6	52.8			8.9111	8.7 30.3	7.4		8.9113				
		6.98			9.0198			13.70		9.0095		46.30			9.0140		0.78		9.0142				
		+ 27.85			8.6222			− 27.17		8.6053		− 26.81			8.5227		− 26.81		8.5212				
			+2021							+2050					+2148				+2150				
	34 24.62	34 34.83	+.807	36 44.12		35 46.53				+.777		50 19.49			+.779	51 24.42	50 23.97		+.780				
	+ 10.21	−1 50.60	+.770	− 57.59		−1 50.60				+.752		−1 50.61			+.760	− 50.45	−1 50.61		+.760				
		+ .49	−.788			+ .47				−.758		+ .46			− .627		+ .46		− .624				
	−1 50.14		+2.810	−1 50.15						+2.821	−1 50.17				+3.060	−1 50.17			+3.066				
		− .03				− .02						− .02					− .02						
		32 44.69	9.5701			33 56.38				9.5644		48 29.32					48 43.80		9.4857				
		−2.81	9.9066	−24.29		−2.82				9.9003	−25.44	−3.06				−2.546	−3.07		9.8971				
		32 41.88	9.9677	−3 6.50		33 53.56				9.9686		48 26.26				−3 10.90	48 40.73		9.9787				
			9.4767							9.4647									9.3828				
	+ 12.34		+.2997	+ 10.26						+.2915						+ 9.90			+.2414				
	20 41.6		.2565	27 20.6						.2632						0 20.0			.2665				
	27.3	9.77268	+.5562	7.2		9.78346				+.5547						7.0	9.78918		+.5079				
	24.0	1.08903	1.2699	4.3		1.46035				1.2708						4.6	1.70286		1.2809				
	29.7	0.89379	9.5701	9.6		1.63589				9.5644						9.4	1.60412		9.4857				
			9.7452							9.7441									9.7058				
	20 30.65	53	9.8743	27 10.42		52				9.8689						0 10.25	57		9.8758				
	+ 7.83	44.40 32		− 45.28		38 5.58										− 40.19	5 46.30						
	20 38.48	−37.44	+1.572	− 26 25.14		−37.25				+1.575						59 30.06	−36.91		+1.612				
	54 29.87	44 2.88	+.355	52 56 23.21		38 14.83				+.351						52 23 18.29	5 9.39		+.293				
	− 17 41.89		+.408	− 17 41.89						+.407						− 17 41.89			+.372				
	− .03		+1.409	− .86						+1.352						− .67			+1.414				
	+ .00		+37.44	+ .00		33 29.27				+3.725		48 0.82				+ .00	48 15.27		+3.691				
	+ 12.13			+ 10.92		35 7.8										+ 10.38	1 58.5						
	+ .24			+ .20												+ .19							
	−17 29.55			−17 31.63												−17 31.97							
	53 44 27.98			52 38 42.32												52 5 36.40							

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Nov 28 332 16 9.6678
h m s
22 8 29 +2.236 −.836 .2545
+53° 17′
7 555 a−1 8.9523
11.1 9.9470 48.6

10 40.7 10 15.722 9.0480
43.1 9.47 6
46.9 22.6
50.4 25.6 20.3495
8.9 53.6 29.5 18.8993
22.5 8.9950
− 27.60 8.7158

10 46.94 10 54.91 +.1888 +.758
+ 8.02 −1 50.59 +.727
7.96 + .48 −.977
−1 50.14 +.2396
− .03
−17.38 9 4.82 9.6678
−2 57.40 9 2.40 9.9043
2.42 9.9470
36 9.8721
+ 11.87 +.3733
44 20.4 .2590

9.0 9.977660 +.6323
6.2 0.90 447 1.2492
11.4 .479285 9.6678
.078959 9.8009
44 11.85 53 .42 9.8513
+ 6.29 21 0.37
44 17.14 −.8743 +14.98
53 38 30.39 4.20 22.92 + 4.45
−17 41.89 9 +4.65
− .02 +.1335
+ .01 8 39.98 +.3743
+ 11.68 17 25.6
+ .21
−17 30.02
53 20 48.50

Nov 28 334 40
h m s
22 18 14 +2.256
+54° 56′
17 29.2 a+1 a−1
48.6 51.6
20 22.1 54.6
24.5 58.7
27.4 2.4
29.6 6.0
9.2 5866
0.5 0.5 0.80
0.7 4.3 +28.72 − 28.72
1.2 8.4 29.52 29.94
12.4
+1.904
20 29.78 +.822
−1 50.60 +.772
+ .51 −.935
+2.563
−1 50.12 .2490
− .03 +.5994
18 39.66 1.2583
−2.56 9.6313
−22.55 9.9133
−3 1.20 18 37.10 9.9561
9.5446
+.3504
+ 13.80 .2490
6 26.7 9.975931
14.3 0.588883
11.2 0.46022
17.0
1730 54
+ .288 59 0.08
6 20.18 −.3772
55 16 28.17 58 22.36
− 17 41.89
− .01
+ .02 18 14.55
+ 13.56 55 21.2
+ .25
−17 28.09
54 58 46.28

Nov 28 335 21 9.6202
h m s
22 20 23 +.2404 −.668 .2048
+50° 7′
19 34.4 20 9.0 a−1
6.6 0.1 8.9026
8.9784 9.9585
9.9561
9.0651 23 20.7 23 33.5 9.0173
23.3 36.7
24.7 40.0
0.3533 25.8 43.0 0.3809
8.9345 9.2 26.5 46.2 8.8611 9.2
9.0212 3988 8.9758
8.6964 − 25.73 8.6375

+.1904 +2029
23 24.20 +.822 +.695
− 10.05 23 14.15 +.772 +.696
−1 50.60 + .43 −.935 −.816
+.2563 +2604
−1 50.19 −1 50.15
− .02 − .03
21 .2396 9.6202 25 .2336 9.6033
−24.03 −2.60 9.8853 −23.54 −2.68 9.9036
−3 2.20 21 21.36 9.9585 −3 3.60 25 20.68 9.9619
9.5055 9.5069
+.3203 + 11.76 +.3213
.2779 52 34.2 .2598
21.8 9.977795 +.5811
18.9 0.95809 1.2641
25.0 0.848 12 9.6033
9.7768 9.7642
9.8488 52 24.98 53 9.8655
+ .705 12.46.19
52 32.03 −37.46 +.1557
53 30 16.32 12 +.388
− 17 41.89 8.73 +.427
− .02 +13.80
+ .02 24 57.14 +37.46
+ 1.158 9 5.1
+ .20
−17 30.13
53 12 34.43

Nov 28 343 36 9.4508
h m s
22 54 15 +2.570 −.502 .2503
+58° 2′ 46
53 23.5 a−1 8.9481
553 660 9.9820 23.9

58 13.0 58 35.3 9.0453
16.6 39.2
18.3 42.8
20.8 45.7 0.4099
9.0 24.0 49.2 8.9301 9.0 14.5
4244 9.0273
− 27.44 8.4961

+.2169
56 18.54 56 15.00 +.814
− 3.54 −1 50.61 +.783
+ .48 −.589
−1 50.16 +3.179
− .03
54 .2484 9.4508
−25.69 .218 9.9028
−3 12.30 54 21.66 9.9820
9.3536
+.2257
+ 11.68 .2606
59 7.8 57.0 9.477913 +.4863
53.6 0.54900 1.2842
58.8 0.430212 9.4508
9.6869
59 X 59.30 53 9.8848

.269 5 2.153
59 56.67 −36.98
53 22 57.74 4.60
− 17 41.89
− .80
+ .02 53 55.97
+ 11.48 2 32.37
+ .20
−17 30.21
53 5 9.85

Nov 28 344 24 9.4296
h m s
22 57 9 +.2585 −.487 .2579
+53° 20′
56 18.0 a+1 8.9557
23.9 9.9837
58 53.4 59 2.0 9.0502
58.7 5.6
0.5 8.7
4.0 11.0
0.4125 7.2 14.5
8.9394 9.6 0.36
9.0339 + 27.74
8.4798

+.2182
59 2.810 −9 .836 +.832
+ 19.74 − 1.5062 +.795
+ .49 −.568
−1 50.16 +3.241
− .03
57 .3794 9.4296
−8.24 9.9055
57 34.70 9.9837
9.3351
+.2163
+ 12.14 .2596
30 58.3 45.6 9.477439 +.4739
42.6 1.29535 1.2859
47.8 1.78182 9.4296
9.6757
9.8892 30 48.58 53 9.9200

+ .1520 34 1.482
31 3.78 −36.98
53 51 44.57 33 37.89 +.1631
− 17 41.89 37.89 +.257
− .10 +.347
+ .02 57 8.86 +1.488
+ 11.203 36 24.8 +3.693
+ .21
−17 29.75
53 34 2.68

Nov 28 347 30 9.3353
h m s
23 9 82 +.2687 −.385 .2580
+53° 0′
8 38.3 a−1 8.9478
53.4 9.9896
12 41.3 12 13.8 9.0451
42.0 17.2
42.6 20.0
23.0
0.4293 26.1 8.9344 9.3
9.0347 20.02
− 27.42 8.3804

+.2268
12 4.197 11 .5260 +.828
− 49.37 −1 .5062 +.797
+ .48 −.452
−1 50.17 +3.441
− .03
10 .243 9.3353
−3.44 9.9027
−26.86 9.9896
−3 15.70 9 58.99 9.2380
+.1730
+ 11.04 .2607
2 18.0 6.2 9.477946 +.4337
3.9 1.67346 1.2918
8.7 1.58500 9.3353
9.6372
9.8923 2 9.20 53 9.9200

− .3846 3 4.476
1 .3074 −36.47
53 21 17.61 8 10.29 +16.53
− 17 41.89 +.207
− .64 +3.18
+ .02 9 32.13 +1469
+ 11.48 59 54.6 +3.647
+ .20
−17 30.85
53 3 35.72

Nov 28 349 37 9.2558
h m s
23 18 0 +.2741 −.331 .2643
+53° 55′
17 6.0 a−1 8.9621
48.3 9.9928
21 4.7 9.0543
8.3
10.0 20 47.3
12.5 473 50.9 0.4379
354.3 8.9549
4733 9.0471
− 28.02 8.3101

+.2314
20 19.31 +.862
−1 50.63 +.820
+ .49 −.384
−1 50.17 +3.612
− .03
18 .2914 9.2558
−3.61 9.9078
18 26.58 9.9928
9.1636
+.1457
+ .2552
8 33.7 21.3 9.477029 +.4009
18.8 1.69522 1.2950
24.6 1.57739 9.2558
9.6030
9.8923 8 24.60 53 9.9006

57 31.72
− 37.79 −36.28 +16.65
17 46.81 +1.72
54 15 1.54 56 55.44 +2.94
− 17 41.89 +1497
− .64
+ .02 17 58.14 +36.28
+ 12.48 53 38.2
+ .23
−17 29.82
53 57 19.65

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903

1885 Nov 28 350 34 9.2146m
h m s .2806
23 21 47 +27.59 −.313
+54° 55'
20 21.9 a−1 8.9784
18.6 9.9941

24 12.7 24 29.5 9.0651
13.6 34.8 34.2
14.0 37.7 37.7
37.2 40.8
9.6 0.4408
8.9725
24 37.35 9.0592
− 28.71 8.2797m

+.2329
24 1343 24 8.64 +.898
− 4.79 −1 30.63 +.843
+ .51 −.358
−1 50.15 + .00 +3.712
.03
22 18.48 9.2146m
−27.58 −.877 9.9133
−3 17.80 22 14.78 9.9941
9.1279
+ 13.82 +.1342
.2490
6 53.7 39 6.8
41.4 9.75949 +.3832
38.9 0.68034m 1.2963
43.4 0.55191m 9.2146
9.5834
6 44.35 54 9.9074 38 58.10 52
3.56 58 3949 + 3.37 26 1590
T 40.79 −36.29 39 1.47 −85.63
55 16 7.56 58 3.20 +.1670 52 43 46.88 25 4.087
− 17 41.89 + 157 − 17 41.89 .27
− .01 + 282 − .01
+ .00 21 47.20 + 1520 + .00
+ 13.58 54 45.41 +36.27 + 10.72
+ .25 + .20
−17 28.07 −17 30.98
54 58 25.67 52 26 4.99

Nov 28 357 55 9.1480m
h m s .2401
23 27 11 +2.828 − .244
+52° 23'
26 14.4 a+1 8.9379
16.5 9.9957

29 25.5 28 58.0 9.0388
26.4 47 1.1
27.4 5 44.4
28.2
29.0 4.53
+ 27.03

+2.387
29 2730 29 31.56 +.821
+ 4.26 −1 50.63 +.797
+ .47 −.289
−1 50.18 +3.716
.02
27 41.38 9.1480m
−3.72 9.8991
27 37.66 9.9957
9.0471
+10.91 +.1115
39 6.8 .2645
55.1 9.78560 +.3760
51.6 0.62941 1.2979
58.9 0.52709 9.1480
9.5752
38 58.10 52 9.8948
+ 3.37 26 1590
39 1.47 −85.63 +16.76
52 43 46.88 25 4.087 + 1.34
−17 41.89 .27 + 2.77
− .01 + 14.76
+ .00 + 33.63
+ 10.72
+ .20
−17 30.98
52 26 4.99

Nov 28 352 23 9.1224m
h m s .2216
23 28 59 +2.851 − .221
+51° 12'
28 3.6 a−1 8.9194
5.0 9.9962

32 0.8 31 40.7 9.0274
2.9 44.1
5.0 47.9
7.0 51.0 0.4550
8.38 8.8 54.6 8.9156
4.66 9.0236
− 26.33 8.1498m

+.2407
32 4.90 31 21.33 +.787
− 43.57 −1 30.63 +.777
+ .45 − .266
−1 50.20 +3.705
.02
29 31.13 9.1224m
−3.70 9.8920
−28.49 29 27.43 9.9962
−3 18.70 9.0144
+ 9.08 +.1034
50 43.3 .2715
31.2 9.79699 +.3749
29.8 1.63919m 1.2984
34.2 1.34826m 9.1224
9.5739
50 34.62 51 9.8888
− 35.34 15 16.26 + .1678
49 59.28 −85.36 + 1.277
51 32 49.07 +5.4991 + 2.776
−17 41.89 14 + 14.54
− .51 + 35.33
+ .00 28 58.94
+ 9.42 11 22.2
+ .17
−17 32.81
51 15 7.18

Nov 28 358 0 8.5428m
h m s .2852
23 52 46 +3.005 − .067
+55 16.50 26.3
51 45.7 a+1
8.8 5.4

53 12.2 53 14.5 9.0682
15.0 17.9
17.0 21.5
20.4 25.0 0.4778
8.5 23.5 28.5 8.9827
2.148 9.0679
28.96 7.6110m

+.2536
53 17.62 53 50.44 +.919
+ 32.82 −1 50.65 +.860
+ .52 −.077
−1 50.16 +4.238
.03
52 0.28 8.5428m
−30.03 −4.24 9.9148
−3 20.40 51 56.21 9.9957
.04 8.4576
+ 13.91 +.0287
49 3.4 .2472
50.5 9.75569 +.2759
48.2 1.51614 1.3019
53.6 1.38391 8.5428
9.4408
48 53.92 55 9.9145
+ 24.21 16 2.24
49 18.13 −34.43
55 33 30.22 15 27.51
− 17 41.89
− .28
+ .00 51 26.01
+ 13.93 12 7.1
+ .26
−17 27.98
55 15 48.23

Nov 28 358 46 8.3329m
h m s .2485
23 54 28 +3.034 − .038
+52° 55'
53 28.1 a s to 9
42.9 9.9999

56 37.7 57 54.2 9.0441
41.9 4 57.8
45.9 .6 1.5
48.0 .2 4.5 0.4820
49.6 .2 8.0 8.9462
7.20 9.0440
9.3770m

+.2561
56 44.62 56 54.32 +.845
+ 9.70 −1 50.65 + 844
+ .47 − .045
−1 50.20 +4.265
+4.175
55 4.12 8.3329m
−30.32 −4.18 9.9022
−3 20.50 54 59.94 9.9999
8.2351
+ 11.56 +.0172
7 26.3 .2613
13.8 9.78030 +.2785
11.4 0.98677 1.3021
16.6 0.87916 8.3329
9.4448
57 17.02 57 9.9021
+ 45.57 57 53.43
7 24.59 −34.19
53 15 23.46 57 19.24
− 17 41.89
− .03
+ .00 54 29.62
+ 11.39 53 58.7
+ .20
−17 30.33
52 57 41.87

Nov 28 359 22 8.0435m
h m s .2477
23 58 55 +3.052 − .020
+52° 51'
53 54.2 a−1 8.9455
44.3 00000

57 34.0 59 39.6 9.0436
37.7 43.4
43.7 46.5
49.5 0.4846
53.4 8.9455
46.48 9.0436
− 27.32 7.0871m

+.2576
59 19.16 +.844
− 19.31 −1 30.65 +.813
+ .47 −.023
−1 50.20 +4.286
.02 +4.210
57 28.96 8.0435m
−30.51 −4.21 9.9019
−3 20.50 57 24.75 00000
7.9454
+ 11.39 +.0088
11 11.6 .2616
58.6 9.78097 +.2704
56.0 1.28578m 1.3022
12 1.17883m 8.0435
9.4320
11 18.5 57 9.9019
− 15.09 54 31.09
10 46.76 −34.03 +16.93
53 12 1.59 53 57.06 + 111
− 17 41.89 + 199
− .09 +15.00
+ .00 56 54.24 +34.03
+ 11.28 56 36.6
+ .20
−17 30.50
52 54 19.70

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903

Nov 28	35 3 6	9.0797n	Nov 28	35 3 28	9.0561n	Nov 28	35 6 14			8.8175n
h m s		.2340	h m s		.2752	h m s				2726
23 31 52	+2866	−.206	23 33 18	+2858	−.214	23 44 23		33.1	+2.949	−.123
+51° 59'			+54° 36'			+54° 25'		36.7		
30 45.1	a+1	8.9318	32 21.0	a−1	8.9730	43 24.3		40.6		8.9704
52.5		9.9968	29.2		9.9972	18.7		43.6		9.9991
33 48.7	33 40.7	9.0350	36 23.0	36 4.3	9.0615	47 4.8	46 12.2	47.1	8.5	9.0598
52.0	44.0		26.6	7.9		6.9	15.2	50.6	12.2	
55.6	47.8		28.8	11.7		10.3	18.5	53.9	15.5	
59.0	50.9	0.4573	31.1	14.2	0.4561	12.6	22.3	58.0	18.2	0.4697
8.5 1.8	55.0	8.9286	9.3 33.1	18.1	8.9702	8.6 14.5	26.3	1.8	22.8	8.9695
	4768	9.0318		1124	9.0587		1890		1544	9.0589
	+26.79	8.1147n		−28.48	8.1176n					7.8773n
							46 47.17	47.27		
		+2419			+2413					+2489
33 55.42	34 14.47	+.811	36 28.52	35 42.76	+.893	47 9.82		46 47.22		+.891
+ 19.05	−1 50.63	+.792	− 45.76	−1 50.64	+.842	− 22.60		−1 50.64		+.843
	+ .46	−.245		+ .51	−.247			+ .50		−.142
−1 50.19		+3.777	−1 50.16		+3.901		−1 50.17			+4.081
τ	− .02			− .03				− .03		
	32 24.28	9.0797n		33 52.60	9.0561n			44 57.05		8.8175n
−28.64	−3.78	9.8968	−28.56	−3.90	9.9115		−29.47	−4.08		9.9106
−3 19.10	32 20.50	9.9968	−3 19.20	33 48.70	9.9972			44 52.97		9.9991
		8.9765			8.9676		−3 20.10			8.7281
+ 10.48		+.0947	+ 12.85		+.0928	+ 13.14				+.0535
1 57.2		.2668	26 52.9		.2510	36 31.6				.2520
45.0	9.78950	+3615	41.0	9.76289	+3438	18.7	9.76484			+3055
42.6	1.27989	1.2990	38.8	1.66049n	1.2994	16.0	1.35411			1.3013
47.7	1.18147	9.0797	44.2	1.53546n	9.0561	21.0	1.23103			8.8175
		9.5581			9.5363					9.4850
1 48.12	52	9.8936	26 44.22	54	9.9087	36 21.82	54			9.9097
+ 15.19	3 13.63		− 34.31	39 9.40		− 17.02	29 14.60 80			
2 3.31	−35.33	+16.80	26 9.91	−35.68	+16.82	36 4.80	−35.05			+16.89
52 20 45.04	2 38.30	+1.15	54 56 38.44	38 33.72	+1.09	54 46 43.55	28 39.75			+.63
−17 41.89		+2.66	−17 41.89		+2.53	−17 41.89				+2.25
− .10		+14.72	− .54		+15.24	− .14				+15.28
+ .00	31 51.86	+35.33	+ .00	33 20.14	+35.68	+ .00		44 23.50		+35.05
+ 10.39	59 19.2		+ 13.15	35 14.5		+ 13.04		25 19.6		
+ .19			+ .24			+ .24				
−17 31.41			−17 29.04			−17 28.75				
52 3 3.15			54 38 56.55			54 29 1.66				

h m s
0 2 59

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1885phae.proj.1615.

1885phae.proj.1615

Log φ 9.9275 Nov 29.2
B 0.9799
G 0.8482
D 1.2775

1885 Nov 29 327 46 9.7270n Nov 29 Nov 29 332 20 9.6668n

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1885phae.proj.1615

Log A 9.9276 Nov 29.3
B 0.9798
C 0.8464
D 4.2778

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1885phae.proj.1615.

1885 Nov 29 350 54 +2802 9.1999 .2309 −.270 8.9287 9.9945 9.0331 0.4475 8.9232 7.9 9.0276 8.2330

Nov 29 352 55 +2855 9.0910 .2464 −.217 8.9442 9.9967 9.0428 0.4556 8.94099.1 9.0395 8.1338

Nov 29 353 40 a+1 a−1 9.0426 .2237 −.185 +2.887 8.9215 9.9973 9.0286 0.4604 8.9188 9.0259 8.0712

2616 3052

+2371 +.800 +.748 −.324 +3.595 9.1999 9.8956 9.9945 9.0955 +.1246 .2680 9.8901

+2417 +.833 +.769 −.258 +3.761 9.0910 9.9014 9.9967 8.9924 +.0983 .2621 9.8981

+2443 +.792 +.745 −.223 +3.757 9.0426 9.8928 9.9973 8.9354 +.0862 .2707 +.3569 1.2995 9.0426 9.5526 9.8901

+16.76 +1.51 +2.76 +14.72 +35.75

+16.85 +1.18 +2.53 +1499 +35.35

+16.87 +.105 +2.51 +14.72 +35.15

19.93

1885phae.proj.1615

Log A 9.9300
B 0.9823
C 0.7845
D 2.2864

Dec 2.3
905

Dec 2 346 18 9.3744 Dec 2 346 34 9.3661 Dec 2 350 26 9.2206 Dec 2 352 55 9.0910

h m s +2661 .2393 h m s +2669 .2393 h m s +2752 .2849 h m s +2855 .2464
23 5 47 −.411 23 5 47 2.403 23 21 14 −.320 23 31 7 −.217
+39 +52° 17' 490 +52° 17' +55° 13' +52° 46'
.00 4. 8.9371 4 53.7 a − 1 8.9371 20 18.8 a+1 8.9827 30 10.4 8.9442
10.7 9.9875 6.5 9.9939 39.1 9.9967

7 42.7 7 28.2 9.0383 8 29.2 9.0383 24 13.2 23 0.1 9.0680 33 49.7 33 25.0 9.0428
45.2 28.6 33.0 14.1 4.2 51.2 28.4
46.8 31.9 36.7 15.3 7.7 52.4 31.8
48.3 35.0 39.8 11.0 54.0 35.2
9.2 50.2 38.4 0.4250 43.6 0.4264 14.5 0.4396 58.5 0.4556
3.82 8.9246 9.6 8.9251 9.6 8.9766 7.4 38.5 8.9409
− 26.97 9.0258 3646 9.0263 9.0619 3.78 9.0395
8.4127 − 26.98 8.4044 +28.92 8.2886 8.1338

+2265 +2272 +2342 +2430
7 46.4 8 4.85 +.807 8 9.48 +.808 24 14.20 23 36.42 +.910 33 52.6 33 31.78 +.838
− 41.79 −1 5277 +.646 −1 5277 +.647 − 37.78 −1 5278 +.702 −20.98 −1 5278 +.667
+ .60 − .500 + .50 − .491 − .56 − .376 + .51 − .263
−1 5229 + .00 +3.218 −1 5229 +3.236 −1 5225 +3.776 −1 5229 +3.672
− .02 − .02 − .63 .578 − .02
− 5 12.56 9.3744 6 14.19 21 44.14 9.2206 31 39.49 9.0910
−.2660 − .322 9.8988 −.2667 −.2750 −3.58 9.9147 −28.53 −3.67 9.9014
−3.1480 5. 9.34 9.9875 6 13.95 −3.1790 21 41.59 9.9939 −3.1900 31 35.82 9.9967
9.2732 40.59 9.1353 8.9924
+ 10.37 +.1876 + 13.62 +.1366 + 11.18 +.0983
42 38.0 .2648 51 52 .2473 16 11.3 .2621

44.7 9.78658 +.4524 52.8 9.75624 +.3839 57.1 9.78180 +.3604
46.0 1.62107 1.2897 48.8 1.54726 1.2961 53.2 1.32181 1.2989
46.7 1.51973 9.3744 54.2 1.44558 9.2206 59.0 1.21562 9.0910
9.6555 9.5842 9.5568
42 47.60 57 9.8863 50 54.25 55 9.9086 16 0.15 52 9.8981
− 33.09 .23 2.41 − 2.790 14 5382 − 16.43 49 34.01
42 14.51 −.3648 50 26.35 .3644 15 43.72 −.3560
52.40 33.84 22 2.593 +.1658 55 32 22.01 14 17.38 +16.83 53 7 4.63 48 58.41 +.1694
−17 41.80 + .227 − 17 41.80 + 1.60 + .118
− .47 + 2.755 − .37 + 2.34 − 17 41.80 + .219
+ .03 +.1488 − .01 21 13.09 +15.67 − .12 + 15.29
+ 10.66 +.3648 5 42.74 + 12.78 +3.644 − .01 31 7.29 +3.560
+ .21 + .27 + 11.10 4539.4
−17 31.43 −17 28.18 + .21
52 22 52.04 55 14 40.20 −17 30.62
52 49 22.83

4 42.74

+2.887
Dec 2 353 40 9.0426 Dec 2 356 35 8.7752 Dec 2
h m s −.2287 h m s +2.968 −.2419 h m s
23 34 6 309 17.6 −.185 23 45 49 −.104 23 45 49 48 2.0
+51° 19' .6 24.0 +52° 29' +52° 29' 4.9
33 8.7 8.9215 44 58.2 8.9397 44 58.2 8.2
12.4 9.9973 22.1 9.9992 22.1 12.0

35 58.6 35 58.3 5.272 9.0286 47 40.2 9.0399 48 39.7 15.3
39.7 0.4 .5 30.5 47 43.5 42.1 18.6
2.0 4.1 .3 23.6 47 47.7 44.4 22.3
4.6 7.9 0.4604 46.4 25.6
9.0 8.4 10.9 .8 40.7 8.9188 9.6 0.4725 8.9389 8.6 48.8 29.2
8.2 432 9.0259 47.20 9.0391
+ 2640 8.0712 +2.709 7.8151
3072 30.60 1534
+2.457 +2.526
36 29.2 36 30.66 +.796 48 14.29 +.834 48 44.28 48 15.34
+ 27.71 −1 5278 +.646 −1 5279 +.666 − 28.94 −1 5279 − 3.90
+ 49 − .228 + .51 − .126 + .51
−1 5231 +3.671 −1 5230 +3.900 −1 5230
− .02 − .02 − .02
34 32.35 9.0426 46 21.99 8.7752 − 46 23.04
−2.886 −3.67 9.8928 −3.90 9.8998 −2.966 − 3.90
−3.1930 34 34.68 9.9973 46 18.09 9.9992 −3.2020 46 19.14
8.9354 8.6750
+ 9.56 +.0862 +.0473 + 10.74
41 58.4 .2707 .2638 33 15.8
45.0 9.79589 +.3569 +.3111 1.8 9.78461
42.6 1.44311 1.2995 1.3014 57.1 1.46150
47.2 1.35108 9.0426 8.7752 3.9 1.35819
9.5526 9.4929
41 48.30 51 9.8901 9.8990 33 4.65 52
+ 22.44 23 5.37 − 2.281 32 36.15
42 10.74 −35.20 +16.96 −17.04 32 41.84 −34.82
51 40 37.61 22 0.17 + 1.06 + .57 52 50 6.51 32 0.63
−17 41.80 + .217 + 1.89 −17 41.80
− .20 + 15.01 + 15.82 − .22
− .02 34 5.82 + 35.20 + 34.82 − .03 4549.48
+ 9.59 19 10.9 + 10.78 28 40.41
+ .19 + .21
−17 32.24 −17 31.06
51 22 55.81 52 32 24.71

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905

1885 Dec 2 357 43 8.6003 Dec 2 357 45 8.5940 Dec 2 358 37 8.3828 Dec 2 358 44 8.3445

Dec 2 0 32 7.9689 Dec 2 2 5 8.5605 Dec 2 3 23 8.7710 Dec 2

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1885phae.proj.1615

Log A 9.9312
B 0.9843
C 0.7614
D 1.2890

Dec 3.3 906

Dec 3 347 30 9.3353 Dec 3 350 26 9.2206 Dec 3 351 7 9.1887 Dec 3 353 41 9.0415

Dec 3 355 9 8.9271 Dec 3 356 38 8.7731 Dec 3 358 37 8.3828 Dec 3 358 44 8.3445

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1885phae.proj.1615.

Log A 9.9370 Dec. 6.3
B 0.9901
C 0.6826
D 9.2958

907

1885 Dec 6 347 31 9.3348n Dec 6 353 6 9.0797n Dec 6 353 28 9.0561n Dec 6 356 3 8.8381n

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907

		+3.000							
Dec 6	357 42	8.6035n	Dec 6	358 36	8.3880n	Dec 6	358 47		8.3270n
h m s		.2543	h m s		.2048	h m s			.2033
23 50 14	52 31.7	−.072	23 53 50	+3.033	−.039	23 54 29	57	+3.038	−.034
+53° 22′	34.5		+50° 5′			+50° 7′			
49 ~~14.1~~	157 37.9	8.9521	52 50.2	a + i	8.9026	53 ~~28.5~~	32.8	a − 1	8.9011
~~15.5~~	9.5 41.4	9.9996	58.7		9.9999	6.3			9.9999
52 29.0	45.1	9.0478	56 5.8	55 46.4	9.0173	58 1.8		57 22.6	9.0164
31.0	48.6		7.0	51.1		2.9		25.7	
34.0	51.5		8.5	54.8		4.3		28.9	
36.8	55.5	0.4771		57.6	0.4819		25 12.2	32.0	0.4826
7.2 39.2	58.8	8.9517	8.6	0.7	8.9025	9.3	35 16.4	35.5	8.9010
		9.0474		54.12	9.0172			28.94	9.0163
		7.6513n		+ 25.71	7.4053n			− 25.73	7.3434n
	45.00						3.00	3.21	
		+2595			+2624				+2628
52 34.00	52 45.00	+.875	56 7.10	56 19.83	+.781	58 3.00		57 3.14	+.778
+ 11.00	−1 55.62	+.537	+ 12.73	−1 55.62	+.501	− 59.86		−1 55.62	+.500
	+ .54	−.089		+ .48	−.050			+ .48	−.044
−1 55.11		+3918	−1 55.16		+3876	56	−1 55.16		+3862
	− .03			− .02				− .02	
	50 49.89	8.6035n		54 24.67	8.3880n			55 7.98	8.3270n
−29.98	−3.92	9.9042	−30.31	−3.86	9.8853			−3.86	9.8847
−3 20.40	50 45.97	9.9996	−3 20.50	54 20.81	9.9999		−30.36	55 4.12	9.9999
		8.5077			8.2733		−3 20.50		8.2117
+ 11.79		+.0322	+ 8.36		+.0188	+ 7.32			+.0163
45 31.1		.2591	55 34.3		.2779	1 47.8			.2785
19.0	9.77575	+.2913	21.6	9.80731	+.2967	36.2	9.80701		+.2948
16.1	1.04139	1.3018	19.7	1.10483	1.3021	33.3	1.77714n		1.3021
21.6	0.92922	8.6035	25.2	1.02422	8.3880	38.7	1.69623n		8.3270
		9.4643			9.4723				9.4695
45 21.95	53	9.9038	55 25.20	50	9.8852	1 39.00	50		9.8846
+ 8.50	19 47.71		+ 10.57	9 38.96		− 49.68	4 24.37		
45 30.45	−34.95	+17.33	55 35.77	−34.18	+17.34	0 49.32	−34.12		+17.34
53 37 17.90	19 12.76	+ .39	50 27 12.58	9 4.78	+ .24	50 21 59.03	3 50.25		+ .21
− 17 41.98		+ 1.40	− 17 41.98		+ 1.43	− 17 41.98			+ 1.42
− .03		+ 15.83	− .05		+ 15.17	− .97			+ 15.15
− .50	50 15.99	+ 34.95	− .00	53 50.50	+ 34.18	− .02		54 33.76	+ ~~34.12~~
+ 11.59	16 52.4		+ 8.25	5 44.3		+ 8.15		0 29.8	+34.12
+ .23			+ .16			+ .16			
−17 30.19			−17 33.62			−17 34.66			
53 19 35.92			50 9 30.60			50 4 17.05			

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1885phae.proj.1615.

Log A 9.9894 Dec 7.3
B 0.9909
C 0.6525
D 1.2977

1885 Dec 7 350 5 9.2361n Dec 7 350 30 +2809 9.2176n Dec 7 350 59 9.1951n

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1885phae.proj.1615

908

Dec 7 353 8

Dec 7 356 3

Dec 7 357 44

Dec 7 4 41 7 39

Dec 7 18 20

Dec 7 18 15

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1885phae.proj.1615.

Log A 9.9483 Dec 12.2
B 0.9859
C 0.4613
D 0.3053

1885 Dec 12 343 37 9.4504 Dec 12 343 47 9.4460 Dec 12 344 10 +2.569 9.4359 Dec 12 350 47 +2.770 9.2046

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1885phae.proj.1615.

909

Log A 9.9484 Dec 123
B 0.9858
C 0.4564
D 1.3055

Dec 12 353 8

h m s
23 32 0
+50° 33'
31 2.5
2.6

34 6.8 33
8.2 38 57.3
10.2 38 0.6
12.0 41 4.1
8.3 15.0 3.4 9.9
3.78
+ 25.97
29.75

34 10.44
+ 19.34

−1 5807

−28.76
−3 19.10

+ 9.01
28 14.8
3.7 980305
0.6 1.28646
6.7 1.20159

28 6.45 50
+ 15.91 36 5286
28 22.36 −36.40
50 54 25.99 36 17.46
− 17 42.14
.10
− .03 31 59.67
+ 8.95 32 58.4
+ .19
−17 3313
50 36 4385

+2877

29.82

34 29.78
−1 58.55
+ .50
− .02
32 31.71
−3.38
32 28.33

9.0776n
.21.18
−.195
8.9096
9.9969
9.0215

0.4589
8.9065
9.0184
8.0991n

+2554
+.781
+.302
−.254
+3.383
9.0776n
9.8881
9.9969
8.9657
+.0924
.2752

+3676
1.2991
9.0776
9.5654
9.8850

+1768
+ 1.16
+ 1.06
+ 1550
+ 35.40

Dec 12 353 41

h m s
23 34 10
+50° 5'
33 12.8
38.3
37 36.2
42.0
44.7
46.5
8.9 47.7

+2896

a − 1

36 59.8
3.4
6.5
9.6
12.8
6.42
− 25.71

36 40.71
−1 58.56
+ .49
− .02
34 42.62

6.7 9.81731
4.1 1.79734
11.0 1.91673

57 1030 50
− 52.09 8 55.60
56 18.21 −35.22
50 26 30.14 8 20.38
− 17 42.14
.06
− .02 34 10.28
+ 8.51 5 1.1
+ .17
−17 3454
50 8 48.00

9.0415n
20.46
−.176
8.9024
9.9974
9.0172

0.4618
8.8998
9.0146
8.0587n

+2572
+.768
+.296
.231
+8.405

9.0415n
9.8852
9.9974
8.9267
+.0845
.2780

+3625
1.2996
9.0415
9.5593
9.8826

+17.70
+ 1.06
+ 1.04
+ 15.42
+ 35.22

Dec 12 18 32

h m s
1 11 3 28
+53° 3'
12 15.5
56.2

+3.638

a − 1

16 27.0
32.6
36.0
38.6
41.5
35 [illegible]
− 27.45

8.18

16 7.69
−1 58.60
+ .33
− .03
14 9.11

5.06
14 4.55
5.14

−36.35

13 28.79

9.5022
.2506
+.566

+3231
+.815
+.301
+.713
+5.060

1020

Dec 12

h m s
1 13 28
+53° 3'

a + 1

15 28.0 346
31.3 34.7
41.7 349
34.73
+ 27.45

16 2.18
−1 58.60
+ .55
− .03
14 4.10
5.06
13 59.04

Report.

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Log A 9.9506 Dec 15.3
B 0.9855
C 0.2713
D 1.3084

1885 Dec 15 18 31 | 9.5018 | Dec 15 18 32 | 9.5022 | Dec 15 22 35 | 9.5844

L m s | L m s | L m s
1 13 28 | +3.637 | 1 13 28 | +3.638 | 2503 | 1 29 31 | +3.794 | .2744
+35 | +53° 3' | +.565 | +53° 3' | +.566 | +54° 33' | | +.722
.00 | 12 15 5 | a 7 + 9 | 8.9481 | 12 15 5 | a-1 | 9.9769 | 28 26.8 | 22.4 a+1 | a 5 + 9 | 8.9722
9.9769 | 9.0453 | 56.2 | 9.9769 | 9.0610
15 59.2 16 | 17 3.6 16 | 32 12.7 31 46.6 | 32 22022.0
1.0 | 5.6 | 340 | 14.5 50.1 | 21925.4
3.0 5.1 11.9 | 7.7 | 37.7 | 15.8 54.0 | 21528.6
4.7 .2 15.5 | 9.3 | 41.5 | 58.0 | 22232.8 | 0.5791
9.4 6.7 .0 18.7 | 0.5607 | 9.7 10.5 | 0.5609 | 9.3 0.7 | 21535.7 | 8.9376
8.9250 | 37.73 | 53.88 | 28.90 | 9.0264
9.0222 | − 27.45 | +2845 | 8.6454
8.5471 | 22.33 | 21.82
+3246
16 292 16 510 | +.814 | 17 734 16 1028 | 32 14.23 | 22.33 | 32 2208 | +.838
+ 2.18 − 2 056 | +.197 | − 37.06 − 2 056 | + 7.75 | −2 057 | +.198
+ .47 | +.717 | + .47 | + .49 | +.899
−2 0.12 + .00 | +4974 | −2 0.12 | −2 0.11 | + 5.311 21
− .03 | − .03
14 4.98 | 9.5018 | 14 10.16 | 30 2197
−36.34 −4.97 | 9.9028 | −36.35 −4.97 | −5.32 | 9.5844
−3 10.20 14 0.01 | 9.9769 | −3 10.20 14 5.19 | −3791 | 30 16.65 | 9.9112
−3 5.30 | 9.9654
9.4046n | + 13.43 | 9.4956n
+ 11.73 | −.2539 + 10.88 | 29 0.1 | −.3130
59 57.4 | .2606 59 57.4 | 47.3 9.76342 | .2513
45.6 9.77896 | +.0067 45.6 9.77896 | 42.8 0.88930 | −.0617
40.6 0.33846 | 1.2791 40.6 1.75633n | 490 0.76480 | 1.2676
48.0 0.22950 | 9.5018n 48.0 1.64737n | 9.5844n
7.8261 | 8.7903n
59 47.90 53 | 9.8797 59 47.90 53 | 28 49.80 54 | 9.8766
+ 1.70 5 28.16 | − 44.46 6 13.41 | + 582 36 2384
59 49.60 −29.33 | 59 3.50 −29.33 | 28 5562 −2801 | +16.53
53 22 5875 4 58.83 | +1697 53 23 4485 5 44.08 | 54 33 5273 35 5583 | − 3.71
− 17 42.32 | − 3.07 − 17 42.32 | − 17 42.32 29 38.7 | − .12
− .00 | + .01 − .85 | − .02 | + 15.31
− .05 13 23.67 | +1542 − .05 13 28.84 | − .04 | 29 38.74 +2801
+ 11.54 1 48.6 | +2933 + 11.54 2 33.9 | + 13.21 | 32 50.5
+ .24 + .24 + .28
−17 30.59 −17 31.44 −17 28.89
53 5 16.43 53 6 25.3 54 36 10.41

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911

Log A 9.9515
B 0.9869
C 0.1861
D 1.3091

Dec 16

h m s
23 21 51
+34 +51° 49'
.00

Dec 16.3

+2.797

Dec 16 358 43' 9.2077
.2312
−.275
8.9290
9.9943
9.0333
0.4467
8.9233
9.0276
8.2410

Dec 16 358 8
h m s
23 32 0
+50° 33'
31 2.5
26.6

+2.877
9.0776
.2118
−.195
8.9096
9.9969
9.0215
0.4589
8.9065
9.0184
8.0991

Dec 16 2 8 8.5708
.2550
+.066
8.9478
9.9997
9.0451
0.4966
8.9475
9.0448
9.6159
+2.806
+.860
+.170
+.084
+3.920
8.5708
9.9027
9.9997
8.4735
−.0298
.2607
9.7786
1.8449
1.7351
+.2309
1.3019
8.5708
9.3634
9.9024

Dec 16 7 41 9.1261
.2291
+.227
8.9269
9.9961
9.0320
0.5184
8.9230
9.0281
8.1581
+2.951
+.813
+.164
+.293
+4.221
9.1261
9.8949
9.9961
9.0210
−.1050
.2687
9.7924
1.6099
1.5143
+.1637
1.2983
9.1261
9.2140
9.8910

Dec 16 8 42 9.1797
.2508
+.269
8.9486
9.9950
9.0456
0.5239
8.9436
9.0406
8.2253
+2.988
+.852
+.169
+.342
+4.351
9.1797
9.9030
9.9950
9.0827
−.1210
.2604
9.7786
1.8449
1.7351
+.1394
1.2972
9.1797
9.1443
9.8980

Dec 16 9.0776
.2118
−.195
8.9096
9.9969
9.0215
0.4589
8.9065
9.0184
8.0991
+2.573
+.782
+.160
−.256
+3.259
9.0776
9.8881
9.9969
8.9657
+.0929
.2752
+.3676
.12991
9.0776
9.5654
9.8850
+17.81
+1.16
+.56
+1564
+35.17

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911

1885 Dec 16 10 25 9.2572 Dec 16 11 35 9.3028 Dec 16 12 40 9.3410

Log

Dec 16 22 32 9.5834 Dec 16 27 23 9.6627 Dec 16 29 8 9.6874

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1885phae.proj.1615.

911

Dec 16 13 13 9.3591 Dec 16 18 20 9.4977 Dec 16 18 32 9.5022 Dec 16 21 56 9.5723

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1885phae.proj.1615.

Log t 9.9568 Dec 19.3
B 0.9918
C 9.7229
D 3104 912
1885 Dec19 0 32 +3089 7.9689 Dec19 2 12 8.5842 Dec19 7 39 9.1242 Dec19 7 41 9.1261
h m s .2516 h m s .2704 h m s .2291 h m s .2291
0 1 34 3 57.7 +.017 0 8 12 +3.144 +.072 0 30 2 +3298 +.226 0 30 2 +3.299 +.227
+37 +53° 6' 0.9 +54° 17' 7 9.5 a+1 +51° 41' 52.5 a−1 +51° 41' a−1
.00 8 33.2 4.0 8.9492 8.9682 28 54.9 8.9269 8.9269
59.1 7.7 0.0000 10.1 0.0000 34.9 9.9961 9.9961
4 15.5 11.3 9.0461 10 26.2 10 15.3 9.0584 33 30.0 32 27594 9.0320 33 11.98.5 9.0320
17.2 14.4 28.3 18.6 32.2 3.0 3.0
19.6 18.0 30.5 22.4 33.9
21.6 21.4 0.4898 32.2 25.5 0.4975 0.5182 0.5184
8.2 23.8 (24.8) 8.9494 8.5 35.6 29.4 8.9682 9.6 8.9230 9.7 8.9230
9.0461 37.0 2224 9.0584 285 9.0281 11.90 9.0281
40150 + 28.26 7.6426 −2661 8.1562 −2661 8.1581
1113
+2796 +2846 +2986 +2987
4 1954 4 11.13 +.87310 31.63 10 5050 +.912 33 3203 32 3624 +822 32 4529 +822
− 8.41 −2 1.92 +.059 + 18.87 −2 1.924 +.060 − 55.79 −2 1.93 +.056 −2 1.93 +.056
+ 49 + .021 + .51 + .090 + 47 + .293 + 47 + .294
−2 1.46 + .00 +3.749 −2 144 +3.908 −2 1.48 +4.157 −2 1.48 +4.159
03 .02 02
−2 9.67 8 4906 .02 30 4381
7.9689 8.5842 30 3476 9.1242 −4.16
−30.87 −8.75 9.9033 −31.40 −8.91 9.9099 −32.96 30 3060 9.8949 30 39.65
−3 20.50 2 3.92 00000 −3 20.40 8 45.15 00000 −3 1880 9.9961
7.8722 8.4941 9.0191
+ 11.53 −.0775 + 12.63 −.0312 +9.07 −1045
55 321 .2601 44 16.2 .2528 41 s 37.4 .2687
18.4 9.77846 +.2526 1.6 9.76625 +.2216 43.2 9.79240 +.1642
12.1 0.92480 1.3022 542 1.27577 1.3022 37.4 1.74656 1.2983
20.0 0.81534 7.9689 3.6 1.15410 8.5842 45.0 1.65104 9.1242
9.4024 9.3456 9.2154
55 2065 53 9.9033 44 3.90 54 9.9099 41 s 45.75 51 8.8910
− 654 10 3.17 + 1426 21 022 2 − 4478 44 1385
55 14.11 −34.56 +18.16 44 18.16 −34.51 +18.16 41 097 −3267 +1799
53 27 3424 9 2861 − .09 54 38 3019 20 25.71 − .38 52 41 4738 43 41.18 − .31
− 17 4260 + .13 − 17 4260 + .12 − 17 4260 + .09
− .02 + 16.36 − .09 +14.61 − .83 + 1590
− .00 1 35.05 +34.46 − 04 8 13.75 +84.51 − .02 29 57.64 +32.67
+ 11.30 6 8.1 567 + 1248 17 5.3 + 9.70 40 22.4
+ .25 + .28 + .22
−17 31.07 −17 2997 −17 3353
53 9 51.62 54204759 51 44478
4

Dec19 13 15 9.3602 Dec19 13 43 9.3750 Dec19 13 44 9.3755
h m s 2795 h m s .2857 h m s .2854
0 52 23 +3.508 + 436 0 54 14 +3.530 +.458 0 54 14 +3.530 + .458
+54°55' a+1 +55° 14' +55° 14'
51 13.2 8.9773 53 3.5 a+1 a−1 8.9835 53 64 a−1 8.9832
48.4 9.9883 7.7 9.9874 9.9874
54 28.9 54 29.3 9.0644 57 50.4 56 17.8 17.0 9.0686 58 46.9 55 49.5 9.0684
31.3 32.6 57.6 22.4 26.0 48.8 27.5
34.8 35.7 52.7 25.7 25.7 50.9 27.7
38.3 39.3 30.0 26.4 0.5478 0.5478
− 40.7 43.2 0.5451 33.8 26.6 8.9709 98 278 35.075 8.9706
8.9656 90 26.18 9.0560 27.70 9.0558
9.0527 +28.93 8.4436 − 28.938 8.4439
8.4246 55.16
+3176 +3196 77 +3196
54 3480 55 43 + 907 57 5157 56 5487 +.918 56 4887 56 58.17 +.917
+ 29.93 2 1.94 + .060 − 56.70 −2 1.94 +.060 + 9.30 −2 1.94 +.060
+ .53 + .543 41 + .53 +.568 + .90 + .53 +.568
−2 144 + 4.686 −2 144 +4742 −2 144 +4741
− .03 − .03 − 5733 03
53 2.29 54 5543 53.72 9.3750 54 5543 9.3755
−4.69 −35.27 −4.74 9.9150 −35.27 −4.74 9.9149
52 57.60 −3 14.90 54 4869 9.9874 −3 14.90 54 5199 9.9874
48.98 9.2900 52.59 9.2904
+ 13.02 −.1950 + 13.81 −.1952
6 31.2 48 150 .2470 48 150 .2471
9.75949 1.6 9.75605 136 1.6 9.75605 +.0520 +.0519
1.47611 54.9 1.45358 54.9 0.96848 1.2896 1.2896
1.34768 2.7 1.42171 2.7 0.83661 9.3750 9.3755
1.61949 8.7160 8.7152
48 3.55 55 3486 9.9024 48 305 55 20 9.9023
− 41.85 54 17 5707 +314 17 9145
47 21.91 −31.66 48 10.41 −31.66 +17.64
55 35 26.65 44 17 2541 55 34 3794 16 87.77 − 2.33
− 17 4260 25.26 − 17 4260 .54 + .03
− .82 − .03 +16.32
− .03 54 13.71 + .03 571 17.32 +31.66
+ 1356 14 10.3 + 1356 13 22.6
+ .31 + .31
−17 29.58 −17 2879
55 17 4485 55 16 5534
4384

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912

Dec 19	10 25	9.2572	Dec 19	10 49	+3396 9.2734	Dec 19	11 34	9.3021	Dec 19	12 40	9.3410
h m s		.2385	h m s		.2372	h m s		.2211	h m s		.2128
0 41 3	+3385	+.313	0 42 38	45 5.7	+324	0 45 59	+3.406	+.334	0 50 6	+3.430	+.358
+52° 15'			+52° 11'	9.0		+51° 12'	32.2		+50° 42'		
39 33.8	0+1	8.9363	41 30.3	12.4	8.9350	44 57.7	0+1	8.9189	48 57.7	0+1	8.9106
9.2		9.9928	4.8	15.8	9.9922	53	1.9	9.9911	36.1		9.9893
43 20.0	43 9.0	9.0378	45 44.6	19.1	9.0370	47 43.6	47 462	9.0271	52 12.2	52 11.0	9.0221
23.6	13.0		47.7	22.1		46.7	518 50.1		13.2	14.7	
28.0	16.1		50.0	25.5		48.7	534 54.1			17.6	
	19.5	0.5296	52.4	29.0	0.5310	52.2	582 56.4	0.5322		21.0	0.5353
8.8	23.3	8.9291	55.8	32.6	8.9272	54.5	5441.0	8.9100		24.4	8.8999
	1418	9.0306			9.0292		53597	9.0182		1774	9.0114
	+26.95	8.2950			8.3104		+26.33	8.3292		26.05	8.3631
				1902							
		+3065			+3075		2030	+3083			+3105
43 2387	43 4313	+.833	45 5010	45 1902	+830	47 4914	48 1909	+.798	52 1270	52 4379	+779
+ 19.26	−2 1.94	+.057	− 31.08	−2 1.94	+.057	+ 30.75	−2 1.94	+055	+ 31.09	−2 1.94	+054
	+ .48	+403		+ .48	+418	31.16	+ .46	+.436		+ .45	+.472
−2 1.48		+4358	−2 1.48		+4380	−2 1.50		+4372	−2 1.51		+4.410
	− .02			− .02			− 1860.02			− .02	
	41 4165	9.2572		43 1754	9.2734		46 1839	9.3021		50 4228	9.3410
−33.83	−4.36	9.8985	−33.94	−4.38	9.8980	−3403	−4.87	9.8918	−34.28	−4.41	9.8885
−3 17.30	41 3729	9.9928	−3 17.00	43 13.16	9.9922	−3 16.50	46 14.02	9.9911	−3 15.70	50 37.87	9.9893
		9.1557			9.1714		14.43	9.1939			9.2295
+ 10.48		− 1431	+ 10.21		− 1484	+ 9.10		− 1563	+ 8.54		− 1696
38 45 5 19.8		.2651	24 50 5 49.5		.2656	52 28.6		.2717	23 51.6		.2749
5.0	9.78691	+.1220	36.2	9.78756	+.1172	14.2	9.79699	+.1154	38.8	9.80166	+.1053
58.6	1.28466	1.2950	29.1	1.49248	1.2944	9.3	1.49330	1.2933	32.4	1.49262	1.2915
6.9	1.18365	9.2572	38.1	1.39212	9.2734	17.2	1.39422	9.3021	41.0	1.40636	9.3410
		9.0864			9.0689		1.40183	9.0622			9.0224
30 45 7.58	52	9.8913	28 50 3.82	52	9.8902	52 1.732	51 31	9.8829	23 40.95	50	9.8778
+ 1526	15 5339		− 2467	15 2.41		+ 3499	22 12 3259		+ 2549	41 785	
30 45 2284	−32.06	+1786	28 50 1355	−8.92	+1783	52 48 26	54 −81.49	+1779	24 644	−81.04	+1771
52 37 2551	19 21.33	− 1.77	5232 3480	14 3049	− 1.84	51 30 6981	12 +10	− 1.97	50 58 4191	4 3681	− 2.15
− 17 4260		+ .06	− 17 4260		+ .06	− 17 4260	75 0.82	+ .06	− 17 4260	40	+ .06
− .70		+1591	− .25		+1587	− .26		+1561	− .26		+1542
− .02	41 3.46	+32.06	− .01	42 39.22	+31.92	− .02	45 40.40	+3149	− .04	50 3.59	+31.04
+ 1034	16 4.0		+ 10.23	11 13.5		+ 917	8 44.3		+ 8.65	37 21.1	
+ .24			+ .24			+ .21			+ .19		
−17 3212			−17 3239			−17 3350			−17 3406		
52 17 4291			52 14 5220			51 12 2349			50 40 5931		

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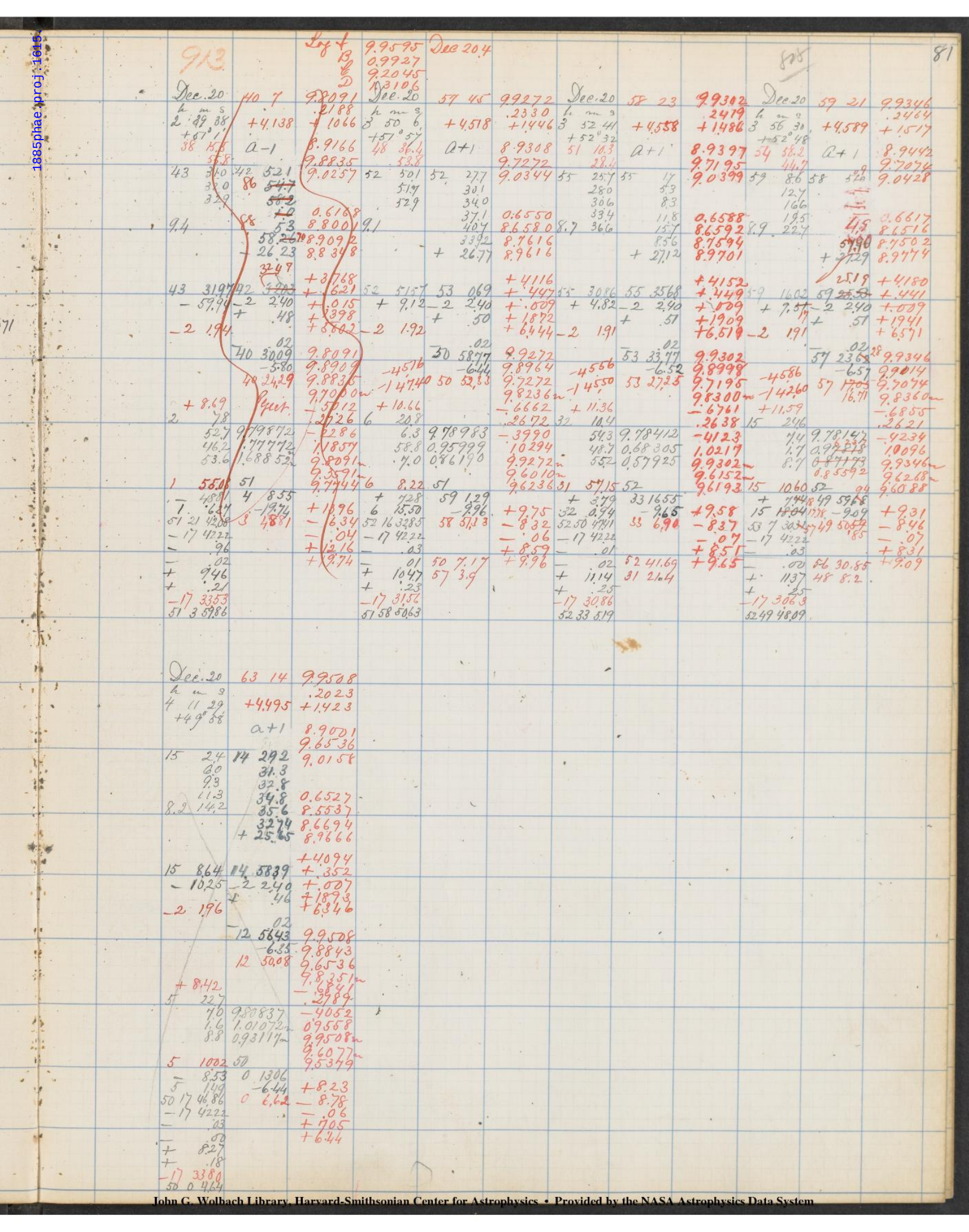
1885phae.proj.1615.

Log A 9.9593 Dec 20. 3
B 0.9927
C 9.2569
D 1.3106

1885 Dec 20 31 46 9.7214 Dec 20 32 28 9.7298 Dec 20 32 30 9.7302 Dec 20 37 20 9.7828

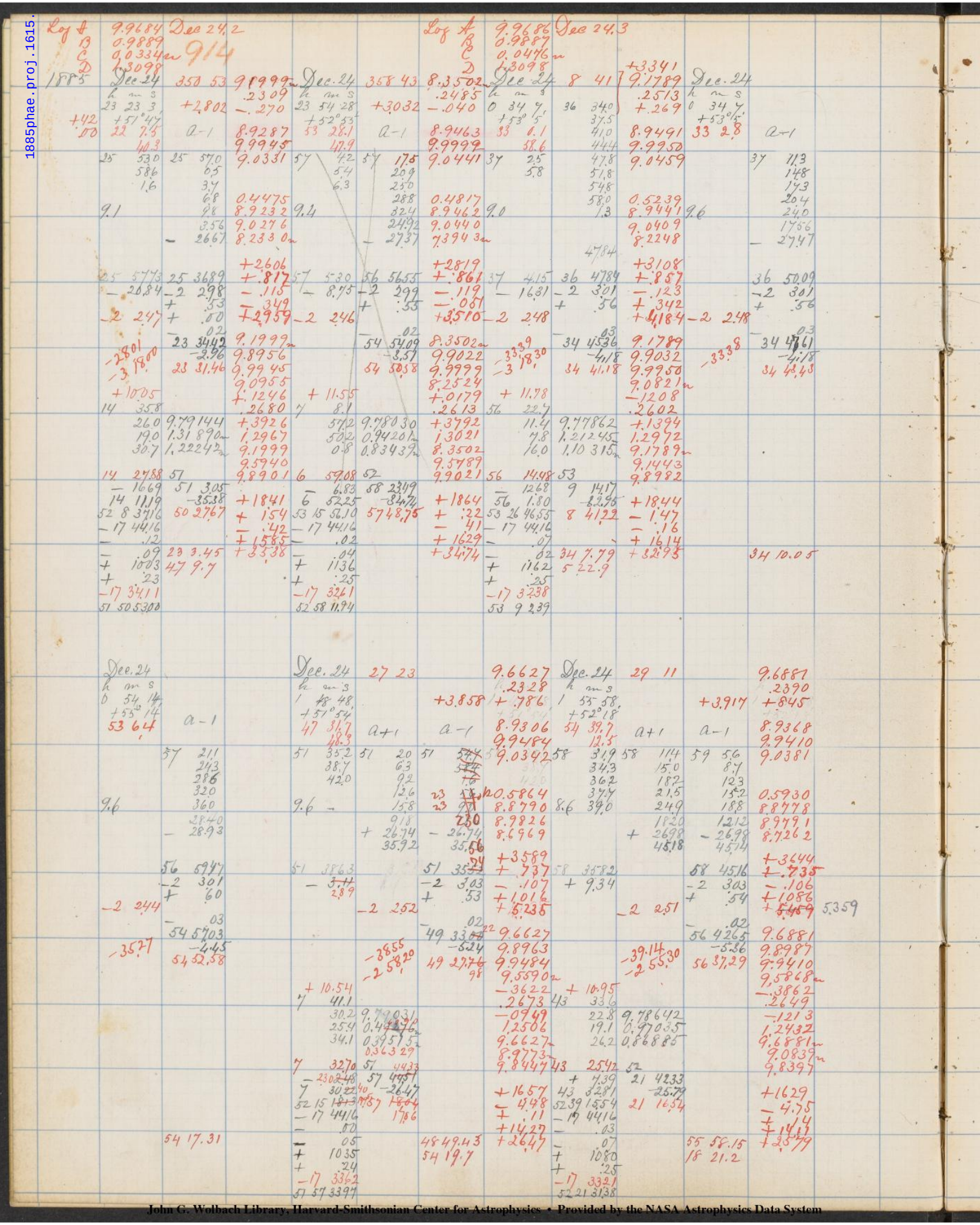
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914

Dec. 24 10 25 9.2572

h m s
0 41 3
+52° 15'
39 55.8
9.2

+3385 .2385 +.313 a+1 8.9363 9.9928

43 8.5 43 104 9.0378
12.7 136
15.8 175
19.3 206
23.3 245
1732

0.5296
8.9291
9.0306
8.2950

+ 26.95

+3149
+.828
−.123
+.403
+4.257

43 15.92 43 44.27
+ 28.35 −2 3.01
+ .54
−2 2.49
− .02
41 41.78

9.2572
9.8985
9.9928
9.1557m
−.1431
.2651

−3383
−3 17.30
+ 10.68

45 6.8
56.1 9.78691
51.4 1.45255
59.6 1.35154

44 58.48 52
+ 22.47 19 53.92
45 20.95 −32.84
52 37 27.40 19 20.58
−17 44.16
− .21
− .00 41 3.69
+ 10.64 16 4.3
+ .25
−17 33.48
52 19 43.24

Dec. 24 10 49 9.2572

h m s
0 42 38
+52° 11'
41 30.3
4.8

44 44.3 44 46.3
47.6 49.7
50.7 53.1
53.7 56.1
57.5 59.4
52.92

1994 2004

+10.46
49 54.0

43.3 9.78756
38.2 1.46583
47.7 1.36547

52

49 45.80
+ 23.20
50 9.00
52 32 39.35
−17 44.16
− .22
− .10
+ 10.55
+ .25
−17 33.70
52 14 55.19

44 50.76
+ 29.23

−2 2.49

45 19.99
−2 3.01
+ .54
− .02
43 17.50

−3394
−3 17.00

−4.28
43 13.22

42 39.28
11 16.4

9.2734 Dec. 24 13 44 9.3755

h m s
0 54 14
+53° 14'
53 3.5
7.7
57 10
46
8.6
1.6
13.8

+3.530
.2372 +.324 8.9350 9.9922 9.0370 0.5310 8.9272 9.0292 8.3104

+3.396
6.5
10.2
13.3
16.8
20.1
23.2
26.6
30.3
33.4
39.8
43.7
47.3
50.3
53.7
46.96

+3159
+.824
−.119
+.417
+4.281

9.2734
9.8980
9.9922
9.1714m
−.1484
.2656

−3527
−3 14.90
+ 14.19
47 39.8
+1172
1.2944
9.2734m
9.0689

9.890247 31.30

+18.32
− 1.83
− .13
+ 1585
+3291

56 42.3
45.6
43.4
33.6
57.1
05
44
8.0
11.2

5.690

56 56.90
−2 3.01
+ .60
54 54.46
−4.45
54 50.01

55
17 55.21
17 23.16

+.2857
+.458
8.9835
9.9874
9.0686

0.5478
8.9709
9.0560
8.4441

+3284
+.724
−.127
+.567
+4.448

9.3755
9.9150
9.9874
9.2905m
−.1952
.2470
+.0518
1.2896
9.3755m
8.7143
9.9024

+18.12
− 2.31
− .06
+ 16.30
+32.05

54 14.74
14 8.3

+ 13.95
+ 29.32
−17 34.97
55 17 41.02

Dec. 24 30 28 9.7050

h m s
2 1 6
+53° 16'
57 45.8
8.8

+4.051 a−1 8.9838 9.9355

3 50.8 39 19.0 4 16.8
54.2 22.8 20.7
57.6 26.9 24.5
59.5 30.5 28.2
9.2 2.0 33.9 31.9

2662 2442
+ 28.96 − 28.96
55.58 55.46

3 56.80 3 55.52
− 1.28 −2 3.04
+ .60
−2 2.47 − .03
1 53.05
−40.48 −5.68
−2 53.00 1 47.37

+ 14.33
46 37.2
26.0 9.75569
21.0 0.10721
29.2 9.97498

46 28.35 55
− 0.94 18 57.11
46 27.41 −35.79
55 36 20.94 18 21.32
−17 44.16
− .00
− .03
+ 14.04
+ .32
−17 29.83
55 18 36.78

0.6076
8.9193
9.0043
8.7738

+3.769
+.809
−.113
+12.12
+5.677

9.7050
9.9150
9.93555
9.6200m
−.4169
.2469

−1700
1.2377
9.7050m
9.2304m
9.85053

+1608
− 494
+ .19
+1446
+2.579

1 6.89
15 32.3

Dec. 24 Ex 31 49 9.7220

h m s
2 6 17
+53° 24'
4 57.2
21.7

+3.992 a−1 8.9397 9.9293

9 3.7 9187 18.7 9.0399
45 19.7 23.2
5.2 19.5 26.4
202 30.6
20.5 34.3

0.6012
8.8690
8.9692
8.7619

9.3 9.0

+3.714
+.721
−.164
+1.180
+5.511

9 447 9 1972 9.7220
+ 15.25 −2 3.04 9.8998
+ .57 9.9293
−2 2.50 − .03 9.6218m
7 17.22 −.4186
− 5.51 .2638
7 11.71 −1548
1.2315
9.7220m
9.1898m
9.8291

+ 12.19
32 18.8
4.9 9.77490
2.3 1.18327
11.6 1.07025

53
32 54.47
− 24.65
32 29.82

+ 11.76
32 21.91
53 50 26.44
−17 44.16
− .06
− .04
+ 1203
+ .26
−17 31.97
53 32 42.28

+1585
− 514
+ .17
+1377
+2.466

Dec. 24 31 46 9.7214

h m s
2 6 17
+53° 27'

+3.991 a−1 8.9397 9.9295 9.0399

33.9 37.4 0.6011
34.0 40.9 8.8692
33.95 8.9694
− 27.71 8.7613

+3.713
+.721
− .104
+1.178
+5.508

9.7

9 6.24
−2 3.04
+ .57
−2 2.50
− .03
7 3.74
− 5.51
6 58.23

Dec. 24 31 48 9.7218

h m s
2 6 17
+53° 8'

a−1 9.9294

9

42.2 45.4
42.1 49.0
42.15
− 27.71

9 14.44
−2 3.04
+ .57
− .03
7 10.94
− 5.51
7 5.43
6.43

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914

1885 Dec. 24 32 26

h m s
2 8 57
+53 11
7 35.7
5.3

11 480 11 110
502 146
527 185
560 220
8.6 592 256
18.34
47.18

11 5322
598
604
-2 247
-41.03
-24940
+14.20
51 414 0.78104
28.9 9.75660
24.8 0.77670
34.2 0.64538
0.64972
51 32.32 55 58
44.86 13 50.49
51 27.46 -24.89
55 31 20.45 9.13 25.68
-17 44.16
-.01
-.03
+13.93
+.31
-17 29.96
55 13 3.29

328 70 +4.105
365 71
40.3 73
43.8 74
47.0 70 88
50.9 73 12.4
585 160
587 19.6
16 233
1602

47.19
47.18
11 47.24
-2 3.04
+.60
+.00
-.03
9 44.78
-5.78
9 38.99

8 57.90
10 36.2

9.7294
.2846
+.1033
8.9824
9.9264
9.0679
0.6133
8.9088 8.8
8.9943
8.7973
+.3819
+.1790
-.110
+.1280
+.5779 -2 2.48
9.7294
9.9146
9.9264
9.6440m
-.4406
.2474
-.1932
1.2286
9.7294m
9.2860m
9.8410
+15.75
-.523
+.22
+1.415
+2.489

Dec. 24 37 16
h m s
2 28 34
+53 7
27 9.8
26 46.1
1.5
a+1
30 29.5
33.3
36.7
40.8
44.0
36.86
+ 28.85
31 59.1
+.3239
-2 .305
+.60
-.03
29 3.23
-6.02
28 57.21
-42.35
28 14.86

9.7821
.2836
+1.163
8.9814
9.9028
9.0671
0.6268
8.8822 9.2
8.9679
8.8492
+.3939
+.1743
-.104
+1.442
+6.020 -2 2.48
31 16.15
-2 3.05
+.60
-.03
29 13.14
-6.02
29 7.65
-42.35
28 25.30

Dec. 24 37 18
h m s
2 28 34
+53 7
26 58.2
a-1
31 45.0 41.4
4500
-28.85

9.7825

9.9006

Dec. 24 37 20
h m s
2 28 34
+53 7
27 9.8
a-1
+4.237
32 7.0
13.5
19.7
9.4
31 46.4
49.8
53.0
56.4
0.4
53.20
-28.85
32 13.40
-49.05
31 24.35
-2 3.05
+.60
-2 2.48
-.03
29 21.87
-6.02
-42.34
-2 39.60
29 15.85
+13.64
65 43.8
32.6 9.75733
26.7 1.69064
35.1 1.53005
55 34.55 55
36.31 10 19.59
54 58.24 -2.282
55 27 50.11 9 57.07
-17 44.16
-.62
-.01
28 33.51
+13.96
+.31
-17 30.52
55 10 3.95

9.7346
.2464
+15.17
8.9442
9.7074
9.0428
0.6617
8.6516
8.7502
8.9774
+4.271
+.437
-.065
+1.937
+6.580
9.9346
9.9014
9.7074
9.8360m
-.6855
-.2621
-.4234
1.0096
9.9346m
9.6268m
9.6088
+9.57
+.838
+.50
+8.29
+9.92

Dec. 24 57 57
h m s
3 57 11
+52° 37
49 44.4
33.9
a+1
53 18.1 53 16.5
20.7 20.4
24.6 24.0
27.7 27.1
29.2 30.1
33.62
+27.18
53 24.06 53 50.80
+26.74 -2 3.08
+.55
-2 2.55
-.02
51 48.25
-6.52
51 41.73
+11.13
27 50.6
39.2 9.78329
34.4 1.42716
42.0 1.32253
27 41.73 52
+21.01 37 12.58
28 24.44 -10.72
52 54 45.61 37 1.86
-17 44.16
-.19
-.05 50 56.20
+11.12 35 15.1
+.25
-17 33.03
52 37 1.45

9.9282
.2429
+1.483
8.9407
9.7248
9.0406
0.6585
8.6655
8.7654
8.9688
+.4239
+.451
-.067
+.1886
+.6522
9.9282
9.9001
9.7248
9.8283
-.6734
-.2634
-.4100
1.0270
9.9282
9.6128
9.6249
+9.90
+.8.25
+.47
+8.60
+10.72

Dec. 24 58 23
h m s
3 52 41
+52 32
51 10.3
28.4
a+1
55 26.2
29.4
32.5
36.0
38.2
+3.56
55 32.40
-.653
53 26.94
27.40
-4.657
-1 4.550
53 1.4
4.4
9.0
12.0
15.8
55 36.02
-27.12
36.48
53 33.46
-.653
53 32.81
-4.657
-1 4.550
52 27.60
+11.34
34 4.0
2 51.7
46.6
55.0
9.78412
0.55145
0.44765
52 3
34 18.41
-.046
34 17.75
3 7.89
52 41.83
31 22.4

+4.559
a-1
53 56.6
57.7
59.3
63.9
66.5
+.2.72
-27.12
36.48

9.9302
.2422
+1.487
8.9400
9.7195
9.0401
0.6589
8.6595 9.4
8.7596
8.9703
+4.243
+.448
-.066
+.1905
+6.527
9.9302
9.8999
9.7195
9.8301m
-.6762
-.2637
-.4125
1.0217
9.9302m
9.6154m
9.6194
+9.78
+.8.29
+.48
+8.49
+10.46

Dec. 24 59 21
h m s
3 56.30
+52°48
54 58.2
44.7
58 44.3 58 57.4
48.3 53.1
49.4 58.5
1.7
5.0
58.34
2.564
3.563
4.833
+37.30
59 25.63
-2 3.08
+.55
-2 2.55
-.02
57 23.08
-6.58
57 16.50
-45.86
-14.260
14 5.38
14.0 9.78147
39.0 1.57171
41.0 1.46526
14 45.95 52
+29.19 50 0.19
15 15.14 -9.92
53 7 33.21 49 50.27
-17 44.16
-.37
-.05
+11.85
+.25
-17 33.02
52 49 4.05

12.0 +4.589
15.2
18.3
22.3
28.4 52.9 46.1
29.2 53.0 49.6
32.6
36.1
39.6
52.95
56 30.64
48 7.7

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914

Left
R
D

9.9688 Dec 24.4
0.9885
0.0619m
1.3097

Dec.24 40 6

Dec.24 40 8

Dec.24 55 3

Dec.24 55 13

Dec.24 63 5

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Log A 9.9730 Dec 28.3
B 0.9838
C 0.3890n 915
D 1.3068

1885 Dec. 28 | 21 57 | 9.5726 | Dec. 28 | 21 59 | 9.5733 | Dec. 28 | 27 23 | 9.6627 | Dec. 28 | 28 59 | 9.6853

h m s
1 26 53 +3.707 .2302 +.635
+51° 37
+46 .00
8.9280
a−1 9.9673
30 59.0 30 17744 9.0326
0.0 17070
1.1 16820.1
16 8235 0.5690
8.8 8.8953
17.08 8.9999
− 26.58 8.6052
+3.483
31 0.02 29 50.50 +.757
− 69.53 −2 3.74 −.245
+ .58 +.817
−2 3.18 + .00 +4.812
− .02
27 47.32 9.5726
−4.81 9.8953
27 42.51 9.9673
9.4679n
+8.85 −.2937
18 30.4 .2683
28.3 9.79304 −.0254
9.0 1.84217 1.2695
18.4 1.74727n 9.5726n
8.4048n
18 19.02 51 9.8626
− 55.88 47 52.45
17 23.14 −28.71 +17.48
52 5 25.21 47 23.74 −3.60
−17 41.61 +.06
− 1.28 +14.77
− .07 +15.25
+ 9.96 +28.71
+ .24
−17 32.76
51 47 43.60

Dec. 28 (21 59):
h m s
1 26 53 +3.708 2302 +.636
+51 37
a−1 9.9672
30 24921.6
249249
24728.0
24531.2 0.5691
8.6
24.75
− 26.58
29 58.17
−2 3.74
+ .58
−2 3.18
− .02
27 54.99
−4.81
27 50.18

Dec. 28 (27 23):
h m s
1 48 48 +3.858 .2328 +.786
+57° 54
47 31.7 8.9306
48.3 a−1 9.9484
52 35.2 57 56.4 9.0342
38.6
41.7
44.2 6.9 0.5864
9.7 46.2 8.8790
3.35 8.9826
− 26.74 8.6969
+3.626
52 41.18 51 36.61 +.729
− 64.30 −2 3.74 −.235
.57 + .58 +1.009
−2 3.18 +5.129
49 33.43 .02 9.6627
−38.55 −5.13 9.8963
−2 58.20 49 28.57 9.9484
.30 9.5590n
+9.26 −.3622
8 35.0 18100.3 .2673
23.0 9.79031 −.0949
13.7 1.80821 1.2506
25.2 1.71242n 9.6627n
8.9773n
8 24.22 51 35 9.8447
57.36 57 43.14
7 32.86 −26.70 +16.73
52 15 15.49 57 16.44 −4.43
−17 41.61 .65 +.23
− 1.09 +14.17
− .07 48 49.75 +26.70
+ 10.18 54 18.4
+ .24
−17 32.35
51 57 33.88

Dec. 28 (28 59):
h m s
1 33 58 +3.900 .2328 +.828
+52° 18
54 39.7 8.9306 8.9306
12.5 a−1 9.9419
58 48.5 58 18.1 9.0342
49.5 21.6
50.5 24.6
51.5 27.9 0.5911
9.1 52.5 31.4 8.8725
24.72 8.9761
− 26.98 8.7195
+3.665
58 50.50 57 57.74 +.735
− 52.76 −2 3.75 −.232
+ .59 +1.062
−2 3.18 +5.230
− .02
55 54.56 9.6853
−5.23 9.8963
55 49.33 9.9419
9.5816n
+9.62 −.3816
7 0.8 .2673
47.8 9.78642 −.1143
37.7 1.72230 1.2441
48.2 1.62085n 9.6853n
9.0580n
7 48.62 51 9.8382
− 41.76 58 9.50
7 6.86 −26.06 +16.49
52 15 41.49 57 48.44 −4.67
−17 41.61 +.28
− .74 +13.96
− .06 +26.06
+ 10.18
+ .24
−17 31.99
51 57 59.88

Dec. 28 | 37 16 | +4.233 9.7821 | Dec. 28 | 37 18 | 9.7825 | Dec. 28 | 37 20 | 9.7828 | Dec. 28 | 40 7 | 9.8091

h m s
2 28 34 30 63 57.9 .2828 +1.161
+53° 7 4 55.6
27 9.8 2646.4 39.2 8.9806
1.5 40.8 9.9008
31 1.2 7 6.7 9.0666
2.6 6 10.2
5.0 6 13.8
4 17.2 0.6266
9.0 2 20.6 8.8814
8.9674
6.45 8.8487
+3.977
31 29.3 31 6.45 +.733
+ 3.65 −2 3.76 −.227
.52 + .66 +1.431
−2 3.13 +5.914
− .03
29 34.53 9.7821
−42.29 −5.91 9.9140
−2 39.80 28 57.54 9.9008
.41 9.6961n
+13.81 −.4967
58 26.7 .2481
14.6 9.75733 −.2486
3.8 0.56229 1.2030
15.0 8.41595 9.7821n
9.3955n
58 15.02 55 2.92 9.8148
+ 2.40 61 7 2.78
58 17.42 63 83 +15.00
55 24 30.63 −25.01 −5.83
72 6 37.82 +.61
− 17 41.61 .91 +13.23
− .01 +25.01
− .06 28 15.12
+ 13.57 3 58.1
1 .31
−17 27.80
55 6 49.02

Dec. 28 (37 18):
h m s
2 28 34
+55° 7
26 58.7
a−1 9.9006
31 38.3 45.5
42.3
45.4 .4
49.0 .4
9.1 52.6 .4
45.5 42
− 28.85
31 16.67 57
−2 3.76
+ .66
−2 3.13
− .03
29 13.54 44
−42.33 −5.92
29 7.62
52
28 25.19

Dec. 28 (37 20):
h m s
2 28 34 +4.235 .2828 +1.163
+53° 7
27 9.8 8.9806
a−1 9.9004
31 46.9 9.0666
50.5
54.0
57.5 0.6268
8.8 1.0 8.8810
53.98 8.9670
− 28.85 8.8494
+3.979
31 25.13 +.732
−2 3.76 −.227
+ .66 +1.433
−2 3.13 +5.917
− .03
29 22.00
−42.33 −5.92
29 16.08
28 33.75

Dec. 28 (40 7):
h m s
2 39 38 +4.138 .2188 +1.066
+51° 7
38 15.5 8.9166
53.8 a+1 9.8835
41 58.1 41 56.0 9.0257
1.0 59.2
3.9 2.4
6.6 6.4 0.6168
9.1 8.8001
2.68 8.9092
+ 26.23 8.8348
+3.889
42 24.0 42 28.91 +.608
+ 26.51 −2 3.76 −.199
+ .57 +1.385
−2 3.21 +5.683
− .02
40 25.70 9.8091
41.35 −5.68 9.8909
−2 33.60 40 20.02 9.8835
9.7000n
+9.23 −.5012
1 15.8 .2726
2.1 9.79872 −.2286
52.7 1.42341 1.1857
2.7 1.33421 9.8091n
9.3591n
1 3.32 57 9.7744
+ 21.59 3 51.06
1 24.91 −20.82 +14.41
51 21 23.44 3 30.24 −6.21
−17 41.61 +.56
− .18 +12.06
− .02 39 38.67 +20.82
+ 9.22 0 56.6
+ .21
−17 32.38
51 3 41.83

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915

Dec. 28 | Dec. 28 | Dec. 28 | Dec. 28

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1885phae.proj.1615.

Log A 9.9740 Dec 29.4
B 0.9843
C 0.4494n 916
D 3056

1885

Dec. 29 55 9 9.9142
h m s
3 39 44 +4.396 .2077
+38 +50° 19' + 1324
.00 38 16.5 8.9055
4.9 a+1 9.7570

41 56.4 42 69 9.0190
58.0 9.9
1.0 128
3.1 15.9 0.6431
8.6 5.7 19.4 8.6625
1298 8.7760
+ 2584 8.9332

+4141
42 084 42 3882 + .443
+ 37.98 −2 419 − .168
+ .46 + 1733
−2 3.75 + .00 + 6149
.02
40 35.07 9.9142
−43.92 −6.18 9.8865
−1 54.90 40 28.92 9.7570
9.8007n
+ 7.93 −.6320
43 470 .2768
34.7 9.80519 −3552
27.6 1.57955 1.0592
33.3 1.49682 9.9142n
9.5505n
43 36.15 50 9.6433
+ 31.39 21 669 + 16.79
44 7.54 −12.76 − 7.92
50 38 4081 20 53.93 + 100
− 17 42.05 + 889
− .39 + 12.76
− .07 39 45.00
+ 8.20 18 59.0
+ .19
−17 34.12
50 20 58.76

Dec. 29 55 13 9.9145
h m s
3 40 1 +4.382 .2028
+50° 0' + 1310
38 33.8 8.9506
36.3 a−1 9.7562

43 38.2 48 152 9.0161
38.7 18.2
37.2 214
244 0.6417
8.9 278 8.6568
2140 8.7723
− 2567 8.9306

+4128
43 5870 42 5573 + .438
− 62.97 −2 4.19 − .167
+ 45 + 1.723
+ 6.22
− 02 −2 3.72
40 51.94 9.9145
−43.80 −6.12 9.8845
−1 64.70 40 45.85 9.7562
9.7990n
+ 6.91 − .6295
4 24 .2787
50.1 9.80807 −3508
42.5 1.79913 1.0584
51.0 1.71928 9.9145n
9.5451n
50 9.6407
− 52.39 2 14.10
2 59.81 −12.68
50 19 49.24 2 1.42
− 17 42.05
− .07
− .08 40 2.05
+ 7.88 0 6.7
+ .18
−17 35.14
50 2 7.19

Dec. 29 58 0 9.9284
h m s
3 37 11 +4.558 .2437
+52° 37' + 1486
49 40.0 8.9415
33.9 a+1 9.7242

53 34.5 53 31.2 9.0411
37.4 34.2
39.0 33.5
41.1 41.9 0.6588
43.1 19 43.5 8.6657
21 8.7653
+ 27.18 8.9695
41.87
9.15 +4293
53 3902 54 544 + 447
+ 2.67 − 2 3.20 − .164
+ 36.13 + .50 + 1.884
− 2 3.72 + 6460
− 02
52 54.02 9.9284
−45.56 −6.46 9.9004
−1 46.60 51 58.46 9.7242
58.97 9.8288n
− 6742
25 28.2 .2631
14.8 9.78329 −4111
6.6 1.45859 1.0264
15.8 1.32058 9.9284n
1.37437 9.6140n
25 16.35 52 37.03 9.6246
+23 39.92 39 39.81
25 37.40.03 −11.51 +1081
52 57 11.08 39 25.30 − 818
− 17 42.05 2.549 + 116
− 24.19 + 852
− .01 51 13.41 +11.51
+ 10.73 37 38.9
+ .25
−17 31.87 32
52 39 29.03

Dec. 29 61 35 9.9442
h m s
4 5 29 +4.520 .2167
+50° 35' + 1448
3 58.6 8.9145
52.0 a+1 9.6775

8 30 7 51.9 9.0244
48 53.3
75 58.5
100 19
8.6 13.7 53 0.6551
58.58 8.5920
+ 26.17 8.7019
8.9886

+4257
8 780 8 24.75 + 377
+ 16.95 −2 4.21 − .142
+ .47 + 1.880
−2 3.76 + 6.372
− 02
6 20.99 9.9442
−46.19 −6.37 9.8901
−1 35.80 6 14.62 9.6775
9.8343n
+ 8.90 −.6828
8 45.6 .2734
33.3 9.79965 −4094
27.0 1.22917 0.9797
35.0 1.14090 9.9442n
9.6122n
8 35.22 50 9.5676
+ 13.83 56 26.15 + 8.99
8 49.05 −9.13 − 8.48
51 13 59.30 56 17.02 + 1.15
−17 42.05 + 747
− .08 + 9.13
− .07 5 29.43
+ 884 54 41.2
+ .21
−17 33.15
50 56 17.25

Dec. 29 61 38 +4.522 9.9444
h m s
5 29 8 242 + .2170
+50° 35' 280 + 1.450
4 46 314 8.9148
344 9.6768

9.0246
383
410
44.0
47.3 0.6553
50.7 8.5916
8.7014
8.9690

+4259
9 2690 8 3770 + 377
− 49.20 −2 4.21 − .142
+ .47 + 1.882
−2 3.76 + 6.376
− 02
6 33.90 9.9444
−6.38 9.8902
6 27.56 9.6768
9.8346n
− 6833
.2733
9.79965 −4100
27.0 1.69197 0.9790
35.0 1.60370 9.9444n
9.6128n
8 35.22 50 9.5670
− 40.15 57 19.56 + 8.97
4 55.07 −9.09 − 8.49
51 14 53.28 57 10.47 + 1.15
− 17 42.05 + 746
− .65
− .07 5 42.36
+ 884 55 34.9
+ .21
−17 33.72
50 57 11.23

Dec. 29 63 5 9.9502
h m s
4 11 29 .2170
+49° 38' + 1.450
9 59.7 9.6558
53.0 a−1

14 43.7 9.0246
47.0
50.2
53.2
56.9 −
50.20
− 25.65

14 24.55
−2 4.21
+ 45
− 02
12 20.77
− 6.31
12 14.46

−44.96

11 29.50

Dec. 29 63 6 9.9503
h m s
4 11 29 +4.492 .2020
+49° 58' − + 1420
10 53.2 14 28.2 .8.8998
53.9 23.5 9.6556
14 18.2 .28.4 9.0156
20.8 .31.4
23.5 .33.2
24.8 .38.4 0.6524
− 27.8 .84.16 8.5554
.8.6712
8.9659

+4231
14 2302 14 28.70 + 346
+ 5.68 −2 4.21 − 132
+ .45 + 1869
−2 3.78 + 6314
− 02
12 24.93 9.9503
−44.90 −6.31 9.8842
−1 31.11 12 18.61 9.6556
9.8345n
+ 8.03 − 6831
6 40.6 .2790
26.7 9.80837 − 4041
20.3 0.75435 0.9578
28.6 0.67480 9.9503n
9.6065n
6 29.05 49 9.5398
+ 4.73 58 40.55
6 33.78 − 8.09 + 8.55
50 16 14.57 58 32.46 − 860
−17 42.05 + 1.14
− .01 + 700
− .03 11 33.71 + 8.09
+ 789 57 1.4
+ .18
−17 34.02
49 58 32.52

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Dec. 29.
h m s
3 56 30
+52° 48'
Chf.

The End of Two Observations

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1885phae.proj.1615.

1885

Auwers 9.78379

(f)

Aug. 15 $n = -.22$ $C = 00$

Aug. 16 $-.18$

Aug. 18 Ch. f.

Aug. 19 $-.14$

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1885ymdc.ford.edu

Aug. 20 −.15 +.02 Sept. 30 Oct. 1 −.16 −.01 Oct. 5 −.08

Chf

43	17.3		29.5	43	49.7	43	39.0	43	51.8		12.2	43	46.8	43	54.5		15.0
	19.4		32.7		53.4		41.0		55.2		15.8		49.6		58.0		18.3
	23.4		36.0		56.5		43.2		58.4		18.9		52.0		1.5		21.7
	25.3		39.6		59.8		46.3		1.8		22.4		54.0		4.7		25.1
	28.3		43.0	3616	8.2		48.8		5.3	58500	25.6		56.8		8.4	1470	28.5
					6.7				+27.45		29.1				+27.45		32.0
43	52.0		23.4		10.3						32.6						35.3
	54.1		27.0		13.5						36.0						38.9
	58.5		30.4		16.8						39.4						42.2
	1.4		33.8														
	3.5		37.0	3026													
			12642		869.9			44	25645		2300				28565		
43	22.74	44	3.210	44	3.322	43	43.66	43	58.50	44	25.333	43	57.84	44	1.420	44	28.533
44	2.50																

				44	3.266					44	25.600					44	28.560		
				−	.025					−	.025					−	.025		
				44	324					44	25.558					44	28.54		
				−	58.352	−.03				−	8.1586	+.01				−	8.462		
				−	20	+.03				−	.21	−.01				−	.10		
					00						00						00		
					−3.67						−2.80						−2.68		
					−6.219						8.495						8.740		
					1.105	+.00					1.101	+.00					1.14		

31	9.85	+ 40.53	1.60778				29	28.95	+ 4.94	1.62263			29						
−	31.90	+ 0.77	9.88649				+	33.00		1.51850			34	3080	+ 36.72	1.56490			
30	37.95		1.50380n				30	1.95					+	28.89		1.46077			
			9.78254n										29	59.69					
30	44.30																		
−	.61																		
30	43.69																		
52	10.40						52	46.40					52	48.66					
−10	11.36						−10	12.47					−10	12.45					
1.01510n							1.01600n						1.01607n						
−	228n						+	295					+	522					
1.01282							1.00895						1.02122						
+	10.30						+	10.45					+	10.50					
−	.50						−	.46					−	.35					
−	.01						−	.04					−	.04					
+	10.29						+	9.95					+	10.11					
52	20.69						52	56.35					52	58.77					
−17	19.27						−17	45.00					−17	44.02					
+	.18						+	.12					+	.11					
	−23.36							−33.56						−34.16					
−17	42.45						−18	18.44					−18	18.05					
34	38.24						34	37.91					34	40.72					

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1885 Anwers. (Nr. ?)

h m s
20 42 58
+52° 34'

Oct. 10 −.04 | Oct. 11 −.04 | Oct. 12 −.02 +.01 | Oct. 14 +.01

43 46.2 43 58.0 320 18.4 44 19.4 | 43 58.2 44 19.0 | 44 11.0 43 58.7 19.4 44 35.5 | 43 59.6 44 19.9
49.0 1.2 322 22.0 21.6 | 1.7 22.1 | 13.8 2.4 22.8 37.3 | 2.9 23.4
52.7 5.0 318 25.0 24.0 | 5.4 26.0 | 16.3 5.9 26.0 39.4 | 6.3 26.6
54.7 8.5 319 28.5 26.3 | 8.5 29.3 | 19.8 9.1 29.5 41.4 | 9.6 30.0
58.0 11.7 4880 322 32.2 28.6 | 12.0 516 32.2 | 21.2 12.7 576 33.0 44.0 | 13.0 628 33.5
+27145 | 36.0 | 35.9 | 37.0
52.6 39.2 | 52.7 39.5 | 54.0 40.2
56.0 42.5 | 56.5 43.0 | 57.2 43.6
~~59.3~~ ~~46.0~~ | 59.5 46.4 | 0.5 47.0
~~2.6~~ | 3.2 | 4.0
6.3 5936 | 6.4 5966 | 7.4 0.62

44 32025 | 64.52 292.3 | 65.42 295.5 | 66.90 301.2
43 57.72 ~~44 4880~~ 44 32.020 44 23.98 44 32.260 44 32.478 44 16.42 44 32.710 44 32.833 44 39.52 44 33.450 44 33.466

	Oct. 10	Oct. 11	Oct. 12	Oct. 14
T_m	44 32.022	44 32.369	44 32.772	44 33.458
K	− .025	− .025	− .025	− .025
T_m+K	44 32.00	44 32.34	44 32.75	44 33.43
δ Fm	− 88.33 4	− 88.74 7	− 89.2× 0 +.01	− 90.0× 3
	− .05	− .05	− .03 +.0	+ .01
	.00	.00	.00	.00
	− 2.53	− 2.50	− 2.46	− 2.40
Sum	90.92	91.32	91.69	92.43
1885.0	20 49 1.08	1.02	1.06 +.02 / 1.08	1.0

29 31.05 + 40.30 1.60531 | 29 56.76 + 8.39 0.92376 | 29 50.20 +16.35 1.21352 | 30 +25 ~~25~~ 8.95 − 6.06 0.78247
+ 31.71 1.50118 | + 6.60 0.81963 | + 12.86 1.10939 | − 4.77 0.67834
30 2.76 | 30 3.36 | 30 3.06 | 30 4.18

52 45.59 | 52 44.99 | 52 45.29 | 52 44.17

−10 12 45	−10 12 19	−10 12 26	−10 12 7
1.01600	1.01560	1.01570	1.01550
+ 256	+ 352	+ 517	+ 623
1.01856	1.01912	1.02087	1.02173
+ 10.44	+ 10.45	+ 10.49	+ 10.51
− .43	− .02	− .07	− .01
− .04	− .00	− .00	− .00
+ 9.97	+ 10.43	+ 10.42	+ 10.50
52 55.56	52 55.42	52 55.71	52 54.67
−17 44.45	−17 43.88	−17 43.52	−17 44.02
+ .11	+ .11	+ .11	+ .11
− 34.83	− 34.95	− 35.06	− 35.26
−18 19.17	−18 18.72	−18 18.47	−18 19.17
34 36.39	34 36.70	34 37.24	34 35.50
			+ 2.50
			38.00

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1885 Answers 9.78950 (e)

h m s
20 44 23.0
+57° 59'
−9 36
Aug. 15 −.22

9.90173 m as to Sept 30
9.90158 Oct 15
+1.28
− .17

Aug. 16 −.18

Aug. 15 Chf.

Aug. 19 −.14

45	5.9		45	14.1	45	24.6	—	45	14.5	45	10.4	55.0	45	13.2	
	7.6			17.3		26.8	—		17.5		12.3	53.3		18.4	
	9.2			20.8		30.3	—		20.8		13.6	1.6		21.6	
	11.5			24.0		33.1	4.2 0.8		24.3		17.4	5.0		23.2	
	14.4			27.4		36.0	7.6 0.9		27.6		19.8	8.5 1.60		28.4	
				30.4			0.850		31.2			+26.790		—	
				34.3			+26.790		34.3					—	
				37.2					37.6					—	
				40.8					41.0					—	
				2466					2488						
45	9.72		45	27.400	45	30.160	45 27.640	45	27.644		45 15.10		45 28.470	45 28.440	

				45 27.400					45 27.643					45 28.455	
				— .025					— .025					— .025	
				45 27.38					45 27.62					45 28.43	
				— 5668 6					— 5688 5					— 5788 4	
				— .28					— .23					— .18	
				— 3.68 70					— 3.67 70					— 3.67	
				−1 0.684					−1 0.678					61.69	
				44 26.754					44 26.884					26.74	

6	16.10	+17.68	1.24748	5 6	57.30	−2.52	0.40140 m				6	10.12	+13.36	1.12581	
—	14.10		1.14921 m		+2.01		0.30313				—	10.65		1.02754 m	
6	2.00			65	59.31						5	59.47			

5' 52°
16 46.35

16 49.04

16 48.88

2	−9 36 30	−9 36 49	−9 36 36
	0.9889 m	0.9891 m	0.98950
	— 40	— 10	— 1556
	0.9849	0.9881	0.97344
	+ 9.66	+ 9.73	+ 9.41
	— .09	— .00	— .04
	— .01	— .01	— .01
	+ 9.56	+ 9.72	+ 9.36
+52	16 55.91	16 58.76	16 58.24
	−17 19.28	−17 19.40	−17 17.38
	+ .17	+ .17	+ .17
	− 21.78 3	− 21.92 22.04	− 22.98
	−17 40.89 4	−17 41.52 27	−17 40.19
+51	59 15.04 15.07	59 17.41 17.49	59 18.05

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1885 Answers.

h m s
20 44 23
+51° 59′

Aug. 20		-.15 +.02	Sept. 30		Oct. 1	-.16 -.01	Oct. 5	-.08
44 55.7	55.4	45 15.6	Cl. f.	46 8.6		45	45 41.2	45 40.9
57.6	58.6	29.0 18.6		12.0		58.7	43.2	44.2
1.0	2.0	28.6 22.2		14.3		1.4	45.9	47.6
3.6	5.5	28.9 25.6		16.7		4.8	48.0	51.0
6.4	8.8 20.60	28.9 29.1		19.6		8.6	50.0	54.4
	+26790	29.1 —				11.7		57.7
		—			11.7	52.0 58.7		0.8
		—			14.8	51.4 1.4		4.1
		—			18.2	51.5 4.9		7.5
					21.4			
					25.0 18220			
					−26790			
	28850				45 51.430			488.2
45 0.86	45 2060	45 28.900		46 14.24	45 18.220	45 51.633 45	45 45.66	45 54.244

Aug. 20	Oct. 1	Oct. 5
45 28.875	45 51.497 4	45 54.244
— .025	— .025	— .025
45 28.85	45 51.471	45 54.22
— 58.352 -.03	— 81.586 +.01	— 84.682
— .19 +.03	— .20 -.01	— .10
.00	.00	.00
— 3.66	— 2.82	— 2.70
62.17	84.58	87.42
44 26.68 +.02	26.83 +.00	26.80

6 22.62	+28.02	1.44747	5 41.08	−22.74	1.35679	5 17.10	+ 8.58	0.93349
−22.35		1.34920	−18.13		1.25837	+ 6.84		0.83507
6 0.27			5 22.95			5 23.94		

Aug. 20	Oct. 1	Oct. 5
16 48.08	17 25.40	17 24.41
−9 36 23	−9 36 35	−9 36 59
0.98880	0.98900	0.98930
— 228	+ 295	+ 522
0.98652	0.99195	0.99452
+ 9.69	+ 9.82	+ 9.87
— .21	— .14	— .03
— .01	— .01	— .00
+ 9.47	+ 9.67	+ 9.84
16 57.55	17 35.07	17 34.25
−17 19.27	−17 45.00	−17 44.00
+ .17	+ .11	+ .11
— 23.29	— 33.51	— 34.13
−17 42.39	−18 18.40	−18 18.02
59 15.16	59 16.67	59 16.23

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1885phae.proj.16157

Oct. 10 −.04

45	39.8	45	28.7	57.6	44.2	45	33.3	45	24.0	58.2	44.8
	43.5		27.3	57.7	47.7		36.0		27.8	58.1	48.1
	46.0		30.7	57.7	51.0		38.7		31.3	58.1	51.4
	48.0		34.0	57.7	54.4		41.3		34.7	58.3	55.0
	50.0		37.6	30660	58.0		43.7		37.9	31140	58.0
				+26790						+26790	

Oct. 11 −.04

45 45.46 45 ~~57450~~ ~~30660~~ 45 57740 45 38600 45 ~~57930~~ ~~31140~~ 58.140

45 57.595
− .025
45 57.57
− 88.34
− .05
.00
− 2.55
90.94
26.63

45 58.035
− .025
45 58.01
− 88.74
− .05
.00
− 2.52
91.34
26.67

5 1288 +12.13 1.08386 5 820 +19.44 1.28870
+ 9.67 0.98544 + 15.50 1.19028
5 2255 5 2370

17 2580
− 9 37 3
0.98930
+ 256
0.99186
+ 9.81
− .04
− .50
+ 9.77
17 35.57

17 2465
− 9 37 8
0.98940
+ 352
0.99292
+ 9.84
− .10
− .50
+ 9.74
17 34.39

− 17 4445
+ 30
− 3479
− 18 1914
59 16.43

− 17 4388
+ 10
− 3491
− 18 1869
59 15.70

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1885phae.proj.1615.

1885 Anvers 9.79431 (d)

h m s
20 45 11
+51° 29'
− 9 6

9.990634 June 30 to Sept 30
9.990639 Oct 1 to
+ 1.26
− .16

Aug. 15 −.22 Aug. 19 −.14 Aug. 20 −.15 +.02 Oct. 20 +.08

46	29.0			45	51.7		43.0	46	2.8	45	48.2		43.4	46	3.4	46	35.2		46	36.8
	31.2				54.6		46.2	16.0	6.0		50.3		46.8	16.6	7.0		38.1			39.7
	34.3				57.3		49.6	15.9	9.4		53.2		50.0	16.9	10.0		40.0			43.5
	37.3				59.3		53.0	16.0	12.9		55.8		53.5	16.6	13.2		42.0			46.7
	40.0				2.0		56.1	16.2	16.2		59.2		56.7	16.6	16.6		44.2			49.8
							49580						50080							53.2
		46	35.7				+26495						+26495							56.7
			38.0															9.8		59.9
			41.5															13.1		3.0
			45.0															16.3		
			48.0	41.520														19.6		
				−26495														23.2	16400	
																			−26495	
46	34.36	46	41.520	46	15.025	45	56.98	46	16.075	46	16.060	45	53.34	46	16.575	46	16.640	46	39.90	46	49.22
								45	49.580					45	02.080			47	16.400		

			46	15.025				46	16.068				46	16.608				46	49.919
				− .024					− .024					− .024					− .024
			46	15.00				46	16.04				46	16.58				46	49.89
				− 5668	7				− 5785	5				− 5838	3	−.03			− 93.51
				− .28					− .18					− .19		+.03			+ .10
				00					00					00					00
				− 3.66	9				− 3.66					− 3.65					− 2.25
				0.6x4					1.7069					6217					−95.66
			45	14.376				45	14345					14.41		+.02			14.23

35	59.78	−19.34	1.28646	36	29.50	+19.09	1.28081	36	32.35	+23.27	1.36680	35	27.75	+10.02	1.00087				
	+15.60		1.19300		− 15.39		1.18735		− 18.76		1.27334		+ 8.08		0.90726				
36	15.38			36	14.11			36	13.59			35	35.83						

8' 51																			
	46 32.97				46 34.24				46 34.76				47 12.52						
2	−9 6.46				−9 6 16				−9 6 14				−9 06 48						
	0.96558				0.96571				0.96510				0.96550						
	−.40				−156				− 228				− 114						
	0.9615				0.9495				0.96282				0.96436						
	+ 9.15				+8.90				+ 9.18				+ 9.21						
	− .10				− .10				− .14				− .03						
	− .01				− .01				− .01				− .00						
	+9.04				+8.79				+ 9.03				+ 9.18						
+51	46 42.01				46 43.03				46 43.79				47 21.70						
	−17 19.28				−17 17.38				−17 19.27				−17 44.65						
	+ .16				+ .16				+ .16				+ .10						
	− 21.75	2			− 23.41	22.98			−23.28				−35.70						
	−17 40.84				−17 40.43				−17 42.39				−18 20.25						
+51	29 +.15				29 2.80				29 1.40				29 1.45						
	1.17				2.83														

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1885phae.proj.1615

Oct. 26 +.07 ~~+~~

46 45.8
48.8
51.6
54.0
58.8

46 51.40

46 (40.4)
42.8
46.9
50.2
53.6
56.8
0.1
3.2
7.0

4810

46 53.444

46 53444
− .024
46 53.42
− 96888
+ .09
.00
− 2.06
98.85 8
14.57

35 33.25 + 2.04
+ 1.64
35 34.89

0.33963
0.21602

47 1346
−9 6 43
0.96550
+ 578
0.97128
+ 9.36
− .00
− .00
+ 9.36
47 22.82

−17 44.00
+ .11
− 36.03
−18 19.92
29 2.90

35 29.60 + 9.93
+ 800
35 37.60

46 46.0
46.5
47.5

46 46.67

47 10.75
−9 6 46
0.96550
+ 1352
0.97902
+ 953
− .03
− .00
+ 950
47 20.25

−17 41.83
+ .12
− 36.14
−18 17.85
29 2.40

46 43.2
47.0
49.9
53.0
56.5
56.7 0.0

46 56.660
45
46 56.615
− .024
46 56.43
− 10354
+ .23
.00
− 1.77
1 4208
14.36
.35

46 56.660

0.99695
0.90334

Nov. 4 +.18

Nov. 10
Ch. f.

47 7.2
8.6
10.1
11.8
14.3

47 1040

35 44.55 −10.84
− 8.74
35 35.81

47 1254
−9 6 32
0.96540
+ 108
0.96648
+ 9.26
− .03
− .00
+ 923
47 21.77

−17 43.81
+ .14
− 35.95
−18 19.61
29 2.16

1.03503
0.94142

Nov. 11 +.10

47 5.46 2.9
19.4 5.97 6.3
22.6 5.96 9.5
26.0 5.96 12.8
29.3
32.7 26.770
− 24.495

46 59.505
47 26.770

46 59.625

46 59.565
− .024
46 59.54
− 10.381
+ .13
.00
− 1.55
1 45.23
14.31

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1885phae.proj.1615.

1885 Auwers. 9.80489 (b)

h m s
20 45 55
+50°21'
−7 58
Aug. 16 −.18

9.91712 Mar 30 to Sept 30
9.91697 Oct 1 to
+1.21
−.14

Oct. 12 −.02 +.01

Oct. 14 +.01

Oct. 17 +.08 −.02

46 50.4 | 27.0 | 46 46.6 | 48 5.0
53.6 | 30.7 | 50.0 | 6.6
56.5 | 33.7 | 53.4 | 8.3
58.2 | 36.7 | 56.2 | 10.4
1.2 | 40.3 33.680 | 59.3 | 12.9
+25.858 | 2.7
6.0
9.0
12.3

47 50.0
53.3
56.4
59.7
3.2 56.520
− 25.858

46 52.4 | 46 58.9 | 47 18.3 | 47 7.0 | 47 0.0
54.1 | 2.0 | 21.5 | 3.6
56.3 | 5.3 | 24.7 | 6.7
59.1 | 8.6 | 27.8 | 9.9
1.3 | 11.9 | 5.34 31.0 | 13.4 6.720
34.4 | +25.858
50.6 | 37.7
53.8 | 41.1
56.8 | 44.4
0.3
3.5 57.00

46 55.98 | 46 59.538 33.680 | 46 59.500 53.55 | 48 8.64 | 47 56.520 | 47 30.62 | 46 56.64 | 47 31.170 62.34 | 47 31.211 28.09 | 47 7.00 | 47 6.72 32.578

46 59.519
−.024
46 59.50
−5.6885
−.22
.00
−3.65
60.702
45 38.80 78

47 30.62
−.024
47 30.64 59
−89.21 +01
−.02 +01
.00
−2.58 1
−1 31.784
45 58.85 +02
.85
58.87

47 31.190
−.024
47 31.17
−90.08 38
+.01
.00
−2.44 5
−1 32.437
45 58.70

47 32.578
−.024
47 32.55
−91.683 +03
+.10 −.02
.00
−2.36
93.89
58.66 +01
58.67

43 57.48 | +3.54 0.54900 | 43 51.10 | −37.98 1.57955 | 42 47.25 | +34.55 1.53845 | 42 48.38 | +25.58 1.40790
−2.92 | 0.46612n | −31.37 | 1.49652n | +28.54 | 1.45542 | +21.11 | 1.32457
43 54.56 | | 43 19.73 | | 43 15.79 | | 43 9.49

+50
38 53.79
−7 58 49
0.90700
−1652
0.89048
+7.77
−.00
−.04
+7.73
+50 39 1.52

50
39 28.62
−7 58 25
0.9067n
−49
0.9018
+7.98
−.39
+.00
+7.59
+50 39 36.21

39 32.56
−7 59 29
0.9076n
−61
0.9015
+7.97
−.32
+.00
+7.65
39 40.21

39 38.86
−7 59 28
0.90760
+204
0.90964
+8.12
−.18
+.00
+7.93
39 46.79

−17 19.40
+.14
−22.06
−17 41.32
+50 21 20.20

−17 43.52
+.09
−34.89 88
−18 18.31
+50 21 17.90

−17 44.02
+.09
−35.7 08.0
−18 19.01
21 21.20

−17 44.42
+.09
−35.35
−18 19.68
21 27.11

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1885phae.proj.16157

Oct. 18 −.04 | Oct. 20 | Nov. 12 +.10 | Nov. 15 +.15

46 55.7 58.1 0.5 2.3 4.0 | 47 1.2 4.3 7.4 10.6 13.9 7480 +25858 | 33.4 33.5 33.5 20.5 23.8 27.0 | Chf

47 210 239 270 290 312 | 120 154 185 217 250 | 1852 | 47 316 347 378 410 443 475 507 541 572 1012 | 48 375 384 394 | 48 6.0 11.4 8.0 11.2 11.7 11.6 16.0 | 11.520 −25858

47 0.12 | 47 33338 7480 | 47 33.467 | 47 2642 | 47 4432.0 8864 | 47 4432.2 3989 | 48 38.43 | 47 45.662

47 33.375 − .024 47 33.35 − 92284 − .05 00 − 2.33 − 9.62 58.73

47 44.324 − .024 47 44.30 − 104.132 + .12 00 − 1.56 1.4556 58.74

47 45.662 − .024 47 45.64 − 165.18 + .18 00 − 1.48 146.48 5916

42 4872 + 27.41 43 16.19 | +33.26 | 1.52192 1.43889

43 1.92 +14.78 43 16.70 | +1790 | 1.25285 1.16982 | 44 1.88 − 43.59 43 18.29 | −5277 | 1.72239 1.63936

39 3216 | −7 59 27 0.90760 − 34 0.90726 | + 8.08 − .30 + .00 + 7.78 39 39.94 | −17 43.73 + .09 − 35.43 −18 19.07 21 20.87

39 3165 | −7 59 14 0.90740 + 144 0.90884 | + 8.11 − .09 + .00 + 8.02 39 39.67 | −17 43.60 + .12 − 35.76 −18 19.24 21 20.43

39 30.06 | −7 58 14 0.90650 + 797 0.91447 | + 8.21 − .75 + .00 + 7.46 39 37.52 | −17 43.70 + .13 − 35.54 −18 19.16 21 18.36

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1885phae.proj.1615.

1885

Answers. (a)

h m s
20 44 53.6
+49 41
Nov. 16 +.14

Nov. 17 +.14

47 04	15.0	47 34.1	47 57.9	47 34.4
3.0	18.2	37.2	02	37.3
5.5	21.3	40.5	2.0	40.7
7.3	24.5	43.7	5.0	44.0
9.8	27.7	21.34 46.9	8.3	47.2
		50.2		50.3
	6.0	53.3	48 44.2	53.4
	9.2	56.5	46.0	56.6
	12.4	59.5	47.5	0.0
	15.3			
	18.7	12.36		
	93.70	421.9		423.9
47 5.20	47 46.850	47 46.877	48 2.68	47 47.100
			48 45.70	

47 46.864
− .024
47 46.84
−10542
+ .17
.00
− 1.46
−1 46.71
46 0.73

47 47.100
− .024
47 47.08
− 10.57
+ .17
.00
− 1.43
−1 46.83
46 0.25

22 51 5.60 +41.66 1.61972
+ 34.89 1,54271
22 40.40

22 37 54.32 − 15.58 1.19257
− 13.05 1.11556
22 41.27

+50 0 7.95

−7 20 10
0.87010
+ 1013
0.88023

+ 7.59
− .46
+ .00
+ 7.13
50 0 15.08

0 7.08

−7 19 22
0.86930
+ 824
0.87754

+ 7.54
− .07
+ .00
+. 7.47
0. 14.55

−17 43.25
+ .12
− 35.59
−18 18.78
+49 41 56.36

−17 42.62
+ .12
− 35.51
−18 18.01
41 56.54

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1885phae.proj.1615

1885 Anwers 9.81091 (a)

h m s
20 45 56
+49°41'
7 18

9.92314 Mar 30 to Sept 30
9.92299 Oct 6
+1.18

Aug. 19 -.14 — -.13 Aug. 20 -.15 +.02 Oct. 17 +.08 -.02 Oct. 18 -.04

46	49.6		30.0	46	49.3	46	46.5	—		46	49.7	48	14.5				48	14.2							
	51.4		33.0		52.3		48.7	—			52.8		18.1					17.3							
	53.9		36.3		53.4		51.0	36.7	36.7		53.8		21.2					20.0							
	56.7		39.5		55.5		53.1	39.2	36.7		57.2		23.6					21.8							
	58.9		42.8	36.32	1.8		55.3	43.2	36.8		2.4		26.7					23.0							
					5.0				36.733		5.9														
47	1.90		21.0		8.4	47	3.90	21.3			9.0	47	53.2							536					
	2.18		24.0		11.5		4.18	24.6			12.0		56.4						47	56.8					
	2.44		27.3		14.5		4.59	27.9			15.0		59.6							0.2					
	2.64		30.5				4.84	31.0					2.7							3.5					
	2.90		33.7	27.30			5.70	34.4	27.840				6.0	59.880						6.8	0.180				
														-25.502							-25.502				
		3.62			55.67						56.18														
46	53.90	47	1.810	47	1.855	46	50.92	47	2.286	47	2.422	48	20.82	47	33.678			48	19.26			47	35.678		
47	2.12					47	4.52																		

				47	1.832			47	2.354					47	33.418							47	35.678		
					.024				.024						.024								.024		
				47	1.81			47	2.33					47	33.45							47	35.65		
					5.785				5.836	3	-.03				4.16								9.228	4	
					.17				.18		+.02				9.166	3	+.03						.05		
					.00				.00						.09		-.02						.00		
					3.61				3.6	0					.00								2.33		
				+1	1.463			-1	2.13	1					2.36							1	3462		
				46	0.18			46	0.2	2	-.01			-1	3.390								1.03	2	
									0.21						5.975		+.01							1	
															0.27										
															0.276										
															0.27										

22	59.82	+7.93	0.89927	23	28.30	+1.43	1.05805	23	17.65	-47.14	1.67339	23	17.62	-43.58	1.63929										
	-6.64	-22.29	1.34811		-9.58	-42.87	1.63215		-39.48		1.59638		-36.50		1.56228										
22	53.18			23	18.72			22	38.17			22	41.12												
23	22.60			22	39.85																				
	-6.64				+35.91																				
23	17.96			23	15.76																				
49				59	29.63																				
59	30.39			59	33.59	59	32.59		0 10.18				0 7.23												
-7	19 21			-7	19 18	20	6																		
	0.86972				0.86922	0.87	02		-7 18 58				-7 18 58												
	-.156				-.21		-.21		0.868700				0.868900												
	0.8541				0.86771		0.86779		+.204				-.34												
									0.870904				0.86856												
	+7.15				+7.36		+ 7.38																		
	-.02				-.01		- .50		+ 7.43				+ 7.39												
	-.03				-.03		- .03		- .59				- .51												
	+7.10				+7.32		+ 6.85		+ .00				+ .00												
+49	59 37.49			59	36.96		37.44		+ 6.84				+ 6.88												
									0 17.02				0 14.11												
-17	17.38			-17	19.27				-17 44.42				-17 43.73												
	+ .13				+ .13				+ .08				+ .08												
	- 23.04	1			- 23.40	32			- 35.28				- 35.36												
-17	40.29	6		-17	42.54	6			-18 19.62				-18 19.01												
+49	41 57.20	3		41	56.98				41 57.40				41 55.10												

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1885

Annex.

h m s
20 45 16
+49° 41'

Oct. 26 +.07

48 14.5
17.2
19.1
20.8
22.8

264
47 29.6
32.7
35.9
39.0
42.3
45.6
48.7
51.9

58.2
1.2
4.5
7.6
10.8 4.460
−25.502

47 38958 3521
48 1888 ~~48~~ ~~.460~~ 47 39.122

47 39067
− .024
47 3904
− 9687
+ .08
OD
− 2.09
−1 36.88
0.16

23 13.85 + 3981 1.59999₂
− 3331 1.5-2298₂
22 40.51

0 7.84
−7 19 2
0.86890
+ 590
0.87480
+ 7.50
− .43
+ .00
+ 7.07
0 14.91

−17 4460
+ .09
− 35.82
−18 1973
41 55.18

Oct. 27
Chf.

Nov. 4 +.18

48 29.7
32.3
34.6
36.2
38.0

48 1.6
4.7
7.9
11.0
14.3 7.900
−25.502

48 3416 ~~48~~ ~~7.900~~ 47 42398

47 42398
− .024
47 42.37
− 100.54
+ .21
OD
− 1.82
−1 42.15
0.22

23 23.65 − 5176 1.71399₂
− 4335 1.63698₂
22 40.30

0 8.05
−7 18 52
0.87880
+ 795
0.87675
+ 7.53
− .72
+ .00
+ 6.81
0 14.86

−17 4183
+ .10
− 35.94
−18 17.67
41 57.19

Nov. 10 1
Chf.

See preceding page for Nov 16, 17

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1885phae.proj.1615

1886 Answers-

115

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1885

h m s
20 46 1
+50°53'
8 30
Aug. 15
a -1

Annuls.

9.79996 (C)

9.91219 m Mar 30 to Sept 30
9.91204 Cent to
+1.23
-.15

Aug. 16
No. Obs.

Aug. 18
Ch. f.

Sept 1-30
Ch. f.

47 39.8
41.8
44.6
46.6
48.6

47 25.7
28.4
31.4
34.7
38.0

31520
-26.153

47 53.9
56.5
59.2
1.5
4.0

47 44.28
47 59.02

~~47 31520~~ 47 5.367

47.5.367
-.024
47 5.34
-5669 7
-.27
60
-3.68
60.62
46 47.2

11 29.08
+31.79
12 50.87

-38.91 1.59006 m
-53.65 7.72957 m
1.50225 m
1.64174 m

11 17.45
+43.83
12 1.28

+51
10 47.48

10 47.07

-8 31 17
0.93590
-394
0.93196

-8 31 29
0.93610
0.93216

+8.55
-.41
-.01
+8.13

+8.55
-.77
-.01
+7.77

51 10 55.61
+51 10 55.22

10 54.84

-17 19.28
+.15
-21.71
-17 40.84
+50 53 14.38

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Oct-1 −.16 −.01 | Oct. 5 −.08 | Oct-10 −.04 | Oct-11 −.04

48 14.3 16.3 18.2 20.7 23.5 | 47 16.2 19.5 23.0 26.2 29.5 32.6 35.9 39.3 42.6 | 47 12.0 16.0 18.6 21.0 22.6 | 46 59.6 2.9 6.1 9.6 13.0 52.1 55.2 58.5 4.7 5.0 | 19.1 22.3 25.7 28.7 32.2 35.6 39.0 42.4 45.5 58.50 | 47 17.7 20.3 22.0 24.6 26.0 | 47 2.9 6.0 9.6 12.8 16.0 55.4 58.6 1.9 5.3 8.8 | 22.6 25.7 29.0 32.5 35.8 39.0 42.0 46.0 49.0 1.90 | 47 0.3 2.3 4.6 7.0 9.0 | 47 2.7 6.7 9.5 12.7 16.0 55.6 59.0 2.2 5.3 8.5 | 23.2 26.4 29.8 32.9 36.0 39.2 42.5 45.9 49.1 2.12

49.0 52.3 55.8 58.8 1.9 55560 − 26.153

48 1860 | 47 29407 ~~29566~~ | 2648 47 29.422 | 47 18.04 | 64.74 47 32.370 | 290.5 47 32.280 | 47 22.12 | 71 3.6 47 35.680 | 321.6 47 35.733 | 47 46.4 | 7164 47 35.820 | 325.0 47 35.111

36.11

47 29.414 − .024 47 29.39 − 8.158 −.20 .00 − 2.83 −1 24.60 46 4.79 +.01 −.01 +.00

47 32.325 − .024 47 32.30 − 8.462 − .10 .00 − 2.7 −1 27.434 46 4.886

47 35.706 − .024 47 35.68 − 88.304 − .08 .03 − 2.57 1 30.96 4.77

47 35.945 − .024 47 35.94 − 88.754 − .05 .02 − 2.54 1 31.36 4.58

12 2.18 −4.917 1.69188 11 12.30 +1.428 1.14473 11 12.20 +13.59 1.13322 10 57.92 +31.32 1.49582
−4.017 1.60392 +1.139 1.05677 + 11.11 1.04526 + 25.58 1.40786
11 22.01 11 23.69 11 23.31 11 23.50

50
11 26.34 | 11 24.66 | 11 25.04 | 11 24.85

−8.30 14 0.93502 1.37 0.9381 | −8.31 4 0.93581 + 51 0.9409 | −8.31 4 0.93580 + 269 0.93849 | −8.31 18 0.93590 + 387 0.93977

+ 8.67 − .65 − .02 + 8.50 | + 8.73 − .05 − .02 + 8.67 | + 8.68 − .05 + .00 + 8.63 | + 8.70 − .26 + .02 + 8.44

+50 11 33.34 | 11 33.33 | 11 33.67 | 11 33.29

−17 4500 + .10 − 3341 −18 18.353 +50 53 1599 1601 | −17 4409 + .09 − 3405 −18 17.926 53 1541 1537 | −17 4445 + .09 − 3469 −18 19.05 53 14.62 | −17 4385 + .09 − 3493 −18 18.72 53 14.57

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1886 Anwers. 9.95470 (d)

h m s
3 41 44
−25 43
+68 6
Jan.6 +.39 | 0.06678 Watts | −0.48 +.93 Jan.14 +.50 | Jan.17 +.51

43	50.0	43	33.6		47.4	44	2.4	43	34.3		48.0	43	56.3	43	34.3		48.0
	52.7		35.7		49.6		3.8		36.4		50.3		58.0		36.3		50.3
	56.7		38.2		52.0		6.0		38.9		52.4		58.8		38.6		52.6
	58.7		40.4		54.7		7.7		40.9		54.6		0.7		41.0		54.8
			42.9	3812	57.4		9.6		43.4	3878	57.0		2.5		43.3	3870	57.0
					59.3						59.3						59.5
			10.2		1.8				10.8		1.6				10.8		1.7
			12.5		4.0				13.0		4.4				13.1		3.9
			14.8		6.3				15.3		6.4				15.4		6.3
			17.0						17.9						17.7		
			19.3	14.76					20.0	15.40					20.2	15.44	
			11288		5125				5418		5140				11414		5141
43	54.52	43	56.440	43	56.944	44	5.90	43	57.090	43	57.111	43	59.26	43	57.070	43	57.122

				43	56.692					43	57.100			43	57.096
					−.017						−.017				−.017
				43	56.67					43	57.08			43	57.08
					−123.94						−124.41				−124.46
					−.19						−.24				−.24
					.07						.05				.05
					−0.86						−0.75				−0.73
				−2	4.99					−2	5.40			−2	5.43
				41	51.68					41	51.68			41	51.65
					−2.54						−2.54				−2.54
				41	44.14					41	49.12			41	49.11

45	35.45	+ 2.17	0.33646	45	41.72	−8.80	0.94448	45	42.60	−2.16	0.33445				
	+ 2.53		0.40324		−10.26		1.01126		−2.52		0.40123				
45	37.98			45	31.46			45	40.08						

−25															
	22 49.63				22 43.11				22 51.73						
+68	3 19				+68 3 26				+68 3 27						
	2.15205				2.15208				2.15212						
	+1665				+4754				+1991						
	2.16870				2.19962				2.17203						
	−147.47				−158.35				−148.60						
	+ .00				+ .01				+ .01						
	− .01				− .02				− .02						
	−147.48				−158.36				−148.61						
−25	25 17.11				25 21.47				25 20.34						
	−17 44.38				−17 42.40				−17 43.98						
	− 1.30				− 1.27				− 1.26						
	+17.10				+18.34				+18.75						
	−17 28.58				−17 25.33				−17 26.49						
−25	42 45.69				42 46.80				42 46.83						
	11.38				−11.38				−11.38						
−25	42 57.07				42 58.18				42 58.21						

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1886

Answers.

h m s
3 41 56 —
−20 13
+1 67 36

9.95651 (C)
0.06859
— .47
Jan. 23 +.45 + .92 Jan. 26. +.50 Feb. 1 +.49

44	6.3	43	36.1	59.1	50.0	43	57.3	43	36.0		50.0	43	33.7	43	37.3		60.9	57.0	
	9.0		38.6	59.6	52.8		59.4		38.4		52.7		35.6		39.7		59.7	52.9	
	10.6		40.4		56.6		1.5		40.6		54.4		37.0		41.8		59.6	55.0	
	12.3		42.5	59.1	56.8		3.0		43.0		56.8		38.7		43.9		60.1	57.8	
	13.5		45.2	59.2	57.2		4.8		45.3	40.66	59.0		41.3		46.2		60.3	0.3	
			40.580	0.1	24						1.3				41.780				
			+18.238								3.5				+18.238				
			225						12.4		5.4								
									15.0		8.0								
			199						17.2										
			22.5						19.5										
									21.9	17.26									
									11792										
44	10.34	43	58.818	43	59.250	44	1.20	43	58.960	43	58.999	43	37.26	44	0.008	44	0.120		

43 59.034
— .017
43 59.02
−124.48
— .21
+ .60
— 0.48
−2 5.17
41 53.85
.55
41 51.30

43 58.980
— .014
43 58.96
−124.64
— .24
+ .60
— 0.43
−2 5.17 21
41 53.85 66
— 2.55
41 51.30 11

44 0.064
— 0.17
44 0.05
−125.71
— .23
+ .80
— 0.32
−2 6.06 26
41 53.99 79
2.55
41 51.44 24

15 37.12 − 11.31 1.05346 15 38.87 − 2.22 0.34242 15 1.55 +22.80 1.35793
— 13.24 1.12205 — 2.58 0.41101 + 26.70 1.42652
15 23.88 15 36.29 15 28.25

−24
52 35.53

+67 33 21
2.14136
+4135
2.18271

— 152.30
+ .03
— .02
— 152.29
−24 55.782

−17 43.55
— 1.21
+ 19.34 +19.34
— 17.25.42
−25 12.33.24
— 11.39
−25 12.44.63

52 47.94

+67 33 23
2.14139
+1981
2.16120

— 144.94
+ .00
— .02
— 144.96
55 12.90

−17 42.00
— 1.20
+ 19.65 +19.65
−17 23.55
12 36.45
— 11.39
12 47.84

52 89.90

+67 32 45
2.14114
+3104
2.17218

— 148.66
+ .11
— .02
— 148.55
55 18.45

43.92
−17 44.42
— 1.15
+ 20.16 +20.16
−17 25.41 24.91
12 33.56 36
11.39
12 44.95
44.75

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1886 Answers 9.95994 (b)

0.07202 Dist to

h m s
3 42 38
−24° 14'
+66 37

Jan. 6 +.39 | −0.45 | + .92 Jan. 14 +.50 | Jan. 17 +.51

45	15.0				45	15.4				44	42.0	44	46.0			44	41.8		
	18.7					17.3					44.0		47.6				44.0		
	20.5					19.2					46.3		49.9				46.3		
	22.6					20.8					48.6		52.3				48.4		
	24.4					22.5					50.7		54.2				51.0		
											53.0						53.0		
		45	39					4.4			53.3			44			53.3		
			6.3					6.6			57.6				6.3		57.6		
			8.5					8.8			59.8				8.8		59.8		
			10.7					11.2							11.3				
			13.0	8.480				13.4	8880						13.6	8.920			
				−18.094					−18.094							−18.094			
									4573							4572			
45	20.42			44 50.386	45	19.04	44	50.786	44	50.811		44	50.00	44	50.826	44	50.880		

				44 50.386						44 50.803						44 50.809			
				− .017						− .017						− .017			
				44 50.37						44 50.79						44 50.79			
				−123.94						−124.41						−124.46			
				− .18						− .22						− .23			
				− .00						− .00						− .00			
				− 0.72						− 0.61						− 0.58			
				− 2 4.84						− 2 5.24						− 2 5.27			
				42 45.53						42 45.53						42 45.52			
				− 2.58						− 2.58						− 2.58			
				42 42.95						42 42.95						42 42.94			

					17	12.30						16							
17	2100	− 30.03	1.47756	17	42.30		−2824	1.45086	17	4660	+0.81	9.90849							
−	3545		1.54958	−	33.33			1.52288	+	96		9.98051							
16	45.55			16	38.97				16	47.56									

−23																			
	53 57.20				53 50.62					53 59.21									
	+66 35 5				+66 34 56					+66 34 31									
	2.12 12				2.12106					2.12092									
	+1665				+4754					+1991									
	2.13777				2.16860					2.14083									
	−137.33				−147.44					−138.30									
	+ 18				+ .16					+ .00									
	− 05				− .07					− .05									
	− 137.20				−147.35					− 138.35									
−23	56 14.40				56 17.97					56 17.56									

	−17 4438				−17 4240					−17 4398									
	− 129				− 126					− 124									
	+16.17				+17.98					+18.38									
	−17 2890				−17 2568					−17 2684									
−24	13 43.30				13 43.65					13 4440									
	−11.31				−11.31					−11.31									
−24	13 54.61				13 54.96					13 55.91									

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1886 Anvers. 9.95110 (e)

h m s
3 43 5
−26° 41'
+69 4

0.06318
− .50
± .93

Jan. 23. +45 Jan. 26 +50 Feb. 1 +49

45	45.1	44	54.5	17.8	86	44	+1.3	44	54.5		8.2	45	57.3		45
	47.9		56.6	17	11.0		53.6		56.8		10.7		52.2		
	50.7		59.2	18	13.7		53.6		59.2		12.9		53.1		
	55.0		1.5				54.0		1.5		15.3				
	56.4		3.8	59.12	18.4		58.4		3.6	59.12	17.3				18.7 18.4
											20.0				18.4 20.4
			31.3						31.6		22.1			31.6	18.6 23.2
			33.4		17.8 24.7				33.9		24.5			34.0	18.5 25.4
			36.0		17.6 24.8				36.0		26.6			36.8	18.6 27.8
			39.0						38.2					39.3	
			41.0	36.20					40.8	36.10				41.5	36.640
															−18.466
			3532						3522						
45	51.08	45	17.660	45	17.967	44	55.18	45	17.610	45	17.511	45	52.20	45	18.174	45	18.560

			45 17.660						45 17.560						45 18.367
			−.017						−.017						− 017
			45 17.64						45 17.54						45 18.35
			−124.48						−124.64						−125.71
			− .22						− .25						− 24
			− .50						− .50						− .50
		−0.48	− 0.48			−0.43			− 0.43			−0.22			− 0.32
			−2 5.18						−2 5.32						−2 6.27
			43 12.46						43 12.22						43 12.08
			− 2.52						− 2.52						− 2.52
			43 9.94						43 9.70						43 9.56

43	59.60	−33.42	1.52401$_2$	43	10.52	+22.38	1.34986	44	10.38	−33.83	1.52930$_2$				
−	38.65		1.58719$_2$	+	25.88		1.41304	−	39.13		1.59248$_2$				
43	20.95			43	36.40			43	31.25						

−26															
	20 32.60				20 48.05				20 42.90						
	+69 1 44				+69 0 54				+69 1 54						
	2.17340				2.17310				2.17347						
	+4135				+9981				+3104						
	2.21475				2.19291				2.20451						
	− 1639.7				−155.92				−160.15						
	+ .25				+ .11				+ 26						
	− 16				− .13				− 17						
	− 163.88				−155.94				−160.06						
−26	23 16.48				23 23.99				23 22.96						
	−17 43.58				−17 42.07				−17 ~~44.12~~ 43.92						
	− 1.22				− 1.21				− 1.16						
	+ 19.72				+2003				+2040						
	−17 25.05				−17 23.18				−17 24.88 68						
−26	40 41.53				40 47.17				40 47.84 64						
	−11.28				− 11.25				11.25						
	40 52.81 24				40 35.92				292						
									40 ~~36.09~~ 35.89						

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