

KG
11366
m 610

Zone Stars
Observations and Reductions
From Jan. 22, 1885 to Aug. 6, 1885
C. 48

W. C. DEMAIN & SON,
STEAM PAPER RULERS,

AND DEALERS IN BLANK MUSIC PAPER.

8 HAWLEY AND 9 ARCH STREET.

63- Passenger Elevator at 31 Milk Street. Freight Elevator on Arch Street.

1885 Jan 22
 2 6 27

To be applied to Circle Readings.

$i = -4^{\circ} 54' 50''$ From Jan. 8. 1885 to Mar. 29 1885

$\log \tan i = 8.93437n$ " " " " "

$\log 15 \tan i = 0.11046n$ " " " " "

$i = -4^{\circ} 56' 2''$ From Mar. 30 1885 to Sept. 30 1885

$\log \tan i = 8.93614n$ " " " "

$\log 15 \tan i = 0.11223n$ " " " "

log cos δ	9.75624	Log A	9.1203	Jan 22.2					9.75569	
land	829	B	0.9718							
Sec	885	3	1.0106							
Jan 22	31 46	Jan 22	31 47		9.7216	Jan 22	32 24	9.7290	Jan 22	32 27
2 6 27	+4087	2 6 27	+10.15	2 6 27	2.2	2 9 5	+4107	+1035	2 9 5	+4109
n + 66	+55 13	+55 13	5 5 6	5.9	7 43 3	51.7	8.9838	9.9265	7 43 3	a-1
C + 00	5 5 6	5 5 6	5 5 6	9.2	12.7	100	9.0688	9.0688	10 38.6	10 15.7
	6840	6840	5 5 6	16.5	9.9294	9 40.5	93048.5	9.0688	41.1	19.3
6 40.5	38.5	9.0680	6 40.5	20.2		50.8	36.52.7		43.3	22.6
42.4	42.0		42.4	24.9		51.8	28.55.6	0.6135	45.1	26.7
45.1	45.7	0.6114	45.1	27.2			28.59.2	8.9103	47.3	30.4
47.5	47.5	8.9122	47.5	30.9	8.4			8.9953	10 22.94	
8.2	50.3	8.9975	8.8	1663				8.7978	-28.96	
7 42.22	8.7894		6 47.30	37						
-28.92			+28.92	16.22						
			7 16.22							
S. R.A	6 45.16	7 13.30	6 45.16	7 16.65		9 50.78	9 44.82	+542	10 43.08	9 53.98
ΔT + m	+28.14	+7.82	+31.22	+29.33		-5.91	+7.82	+764	-49.10	-7.82
n land	27.79	+95	+1054	-690			+95	+1014		+95
c seed sum	-690	+1.00	+1.341	-690		-6.90		+1075	-6.90	
Land d	4084	7 13.30	9.7214	4087				+1.367		
	4.91	9.9147	9.9147	25060		-41.08	9 56.403	9.7290	-41.08	9 47.08
		9.9295	9.9295			-24940	-1.37	9.9150	-1.37	9 47.08
		9.6361	9.6361				9 56.55	9.7265	-24940	9 45.71
		-432.6	-432.6				54.77	9.6410		
Sum Sane	+1492	-2473	+1490	-149443		+1523		-4406		
Log cos δ	50 14.6	9.75624	50 14.6	9.75624		45 38.1	9.75569	-19.37	45 38.1	9.75569
Land	242	1.44932	21.2	1.46731		45.1	0.77152	1.2287	45.1	1.69108
" Rm	228	1.31602	22.8	1.33401		45.6	0.63774	9.7290	45.6	1.55723
Mean Rm	50 18.67	55 27.94	50 18.67	55 30.30		39.2		9.2875	39.2	
Rm	-20.7057	15 28.65	-22.7158	15 28.91		45 42.00	55	9.8415	45 42.00	55
Corr. E.R.	49 57.97	-11.16	49 57.97	-11.16		+ 43.4	19 39.99	+223	+ 36.08	19 7.61
O - G.R.	55 32 50.38	15 16.89	55 32 50.38	15 17.75		45 46.34	-11.06	-5.03	46 18.08	-11.06
Ray	-17 37.25	16.78	-17 37.25	17.14		55 37 20.1	19 28.93	+1.98	55 36 30.27	18 56.58
Rand	-20	+11.96	-22			-17 37.25		+1.88	-17 37.25	
Rot	-20	+11.16	-20			-17 37.25			-17 37.25	
Rot	+14.83		+14.83		6 27.26					
Rfl	+29		+29		12 28.5					
Sum	-17 22.33		-17 22.33							
55 15 13/3			55 15 1401							

For zone observations from Jan 17 1885 to Jan 21 1885 see Zone Book
(L 47) of Aug 9 1884. Following that date.

9.7296	Jan 22	39 56	9.8075	Jan 22	56 38	9.9218	Jan 22	59 10	9.9338
.2860	h m s		.2556	h m s		.2346	h m s	+4594	.2487
+1037	38 59	37.5	+4228	+1156	3 45 44	+4505	+1433	3 55 53	36.0
8.9838	+52° 21'	40.6	8.9534	+52° 21'	44 13.8	8.9324	+52° 57'	39.4	8.9465
9.9263	37 38.0	44.2	9.8847	44 13.8	58.0	9.7404	54 22.0	42.7	9.7097
9.0688	37 16.0	47.7	9.0487			9.0354	56 34.0	46.3	9.0443
	39 28.0	39 17.0	51.2	12.3	46 58.1	56 3.7	58 15.1	49.4	
	32.3	30.3	54.5	76.1	1.3	6.5	18.3	52.8	
0.6137	35.0	23.6	57.7	19.3	4.6	9.1	21.5	55.7	0.6622
8.9101	37.0	26.7	1.6	22.7	8.3	12.4	24.7	59.5	8.6562
8.9951	8.5	41.0	29.8	5.0	11.8		27.3	3.2	8.7540
8.7984		23.48	51.11	19.24	46 36 48.3	47 48.2	21.78	49.44	8.9781
		39 51.36	8.8381		-2682	8.9572	+27.38		
+542			8.8562		38.30		56 47.4		
+764	39 34.4		+558			+595	56 47.4	21	+607
-1013	+1657	39 51.23	+640		46 38.05	+442	56 79.2	56 49.35	+426
+1076		-	-879		-130	-613	+41.45	-	-583
+2347		-	+1229		-	+84	29	+7.87	+1626
+1369		-6.98	+1548		-704	+1560		-	+2076
9.7296						+1974			
9.9150		39 44.25	9.8075		46 38.05	9.9218			9.9338
9.9263		-4225	9.9047		-197	9.8970		56 42.4	9.9023
9.6446		-23390	9.8847		46 29.04	9.7404	-4593	-2.08	9.7097
-4412			9.7122			9.8188	-14300	56 40.2	9.8361
2469			-5155			-6589		12	-6856
-1943	+1286		.2586			.2666	+12.02		-2612
1.2285	40 51.3	9.71592	-2569		-3923	6 34.8	9.71994		-4244
9.7296	59.1	1.21932	1.1869		1.0426	42.1	1.6175		1.0119
9.2885	59.1	1.10570	9.8075		9.9218	40.7	1.5076		9.9338
9.8413	53.8		9.4098		9.5936	33.9	6.29		9.6278
+223	40 55.8	53	9.7894		9.6374	6 37.8	52 33		9.6120
-504	-1276	24 4090	+203		+1.46	-6	32.48		+1.36
+1.99	40 43.06	-9.17	-6.03		-7.85	53 16.42	54 59 12.79		-8.07
+1188	53 42 5.29	24 3173	+2.63		+4.03	-17 37.25	5.68		+4.36
+16.66	-17 37.25		+10.54		+7.42	-	45		+7.02
+11.06	-		+9.17		45 44.04	+5.06		55 54.79	+4.65
	-	39 0.45						57 29.7	
	+1270	21 57.8							
	+25								
	-17 2439								
	53 24 2804								

9.76218

829

1885 Jan 22

h m s
3 59 5
+50° 36.1
57 35.3
33.0

59 54.1 59 26.4 58.6 18.3
58.9 29.0 1.8 21.6
59.0 32.3 5.5 25.0
1.7 36.1 8.5 28.0
3.8 39.2 12.0 31.6

32.70
59 58.50

59 59.06
- 0.20

- 7.09

81
-44.81
-140.70

+ 9.60

27 12.1 9.80259
20.0 9.30103
30.2 9.24408
13.7

27 16.50 50

+ 0.18 38 4.02
27 16.68 -3.86

50 55 31.67 38 0.16

- 17 37.25

- 0.02

+ 9.44

-17 27.65

50 37 54.42

59 58 9.9374 Jan 22

45.8+4483
49.4
52.3
55.4

58.6 18.3
1.8 21.6
5.5 25.0
8.5 28.0
12.0 31.6

58.91 24.90

59 58.86

+ 7.87
+ 1.80
+ 0.00

59 51.14 9.9374
-1.99 9.8882
59 49.78 9.6994

9.8256

-27.51 + 14.51

-39.42 25 108

1.0016 16.1

9.9374 178

9.5957 10.1

9.5876 25 1370

+ 13.2 25.24 48.4 47.2

-8.13 54.57 54.4 48.5

+ 4.05 -17 37.25

+ 6.62 -0.3 29

+ 8.76 0.00

59 4.97 86

06 19.5

9.9374 Jan 22

2.121 4 5 19
+14.11 4 5 19
8.9099 8 45.1
9.6994 36.8
9.0216 5 44.7

0.6516
8.6093 8.4
8.7210
8.9590 6 40.0

+5.92 6 40.0

+3.82 5 47.0

-5.40 +33.57

9.9374 147.29
9.8882 -135.70
9.6994 -135.70

9.8256

-27.51 + 14.51

-39.42 25 108

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+ 8.76 0.00

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06 19.5

61 32 9.9440 Jan 22

2.258 4 5 19
+47.31 +16.59
8.9736 8 45.1
9.6782 36.8
9.0619 5 44.7

0.6750
8.6518 9.0
8.7401 5 47.6
9.0059

+6.25 5 47.6

+4.21 6 47.0

-5.65 +25.11

9.9440 47.30
9.9117 -135.70
9.6782 6 7.68

9.8557

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9.6782 36.8
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9.5876 25 1370

+ 13.2 25.24 48.4 47.2

-8.13 54.57 54.4 48.5

+ 4.05 -17 37.25

+ 6.62 -0.3 29

+ 8.76 0.00

59 4.97 86

06 19.5

61 36 9.9443

2.258 4 5 19
+47.31 +16.59
8.9736 8 45.1
9.6782 36.8
9.0619 5 44.7

0.6750
8.6518 9.0
8.7401 5 47.6
9.0059

+6.25 5 47.6

+4.21 6 47.0

-5.65 +25.11

9.9443 47.30
9.9116 -135.70
9.6773 6 7.68

9.8559

-27.51 + 14.51

-39.42 25 108

1.0016 16.1

9.9374 178

9.5957 10.1

9.5876 25 1370

+ 13.2 25.24 48.4 47.2

-8.13 54.57 54.4 48.5

+ 4.05 -17 37.25

+ 6.62 -0.3 29

+ 8.76 0.00

59 4.97 86

06 19.5

9.9443

2.258 4 5 19
+47.31 +16.59
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+ 8.76 0.00

59 4.97 86

06 19.5

9.9443

2.258 4 5 19
+47.31 +16.59
8.9736 8 45.1
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9.0619 5 44.7

0.6750
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8.7401 5 47.6
9.0059

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+4.21 6 47.0

-5.65 +25.11

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9.6773 6 7.68

9.8559

-27.51 + 14.51

-39.42 25 108

1.0016 16.1

9.9374 178

9.5957 10.1

9.5876 25 1370

+ 13.2 25.24 48.4 47.2

-8.13 54.57 54.4 48.5

+ 4.05 -17 37.25

+ 6.62 -0.3 29

+ 8.76 0.00

59 4.97 86

06 19.5

1885 Jan 26

h m s
3 55 52
+52° 31'

58 5.6 58 14.3
8.6 17.9
12.5 21.2
15.3 24.5
18.3 27.8

Jan 26

h m s
5 58 57
+54° 54'

58 47.1 58 59.4 01.5 50.7
49.5 4.6 33.0 54.0
52.7 6.0 38.2 57.4
54.1 9.0 41.2 60.3
56.4 11.9 44.5 63.7

Jan 26

h m s
4 5 52
+50° 32'

58 47.1 58 59.4 01.5 50.7
49.5 4.6 33.0 54.0
52.7 6.0 38.2 57.4
54.1 9.0 41.2 60.3
56.4 11.9 44.5 63.7

830	9.80852		9.75642		9.75660
885 Jan 26	63 1 9.9500	Jan 26	66 0 9.9607	Jan 26	66 40 9.9629
h m s	.2018	h m s	.2844	h m s	.2838
4 11 18	0.3+4.90	4 23 9	+4.830	4 25 57	+4.837
+49° 57'	3.5	+55° 12'		+55° 11'	
9 46.6	6.7	21 33.1	8.9822	24 14.3	8.9816
53.5	10.0	21 38.9	9.6093	24 18.1	9.5978
11 36.2	11 42.0	23 18.6	9.0677	26 10.7	9.0673
36.1	44.4	23 31.7		26 13.7	
38.2	47.2	21.2	38.7	15.0	17.4
40.1	50.7	23.3	39.0	18.6	20.8
42.3	54.2	25.4	38.7	21.7	24.5
	57.3	27.2	38.4	23.9	28.3
	60.3	29.2	38.9	26 20.94	8.6651
	63.3	31.2	38.9	+ 28.90	9.0302
	66.3	33.2	38.9		
	69.3	35.2	38.9		
	72.3	37.2	38.9		
	75.3	39.2	38.9		
	78.3	41.2	38.9		
	81.3	43.2	38.9		
	84.3	45.2	38.9		
	87.3	47.2	38.9		
	90.3	49.2	38.9		
	93.3	51.2	38.9		
	96.3	53.2	38.9		
	99.3	55.2	38.9		
	102.3	57.2	38.9		
	105.3	59.2	38.9		
	108.3	61.2	38.9		
	111.3	63.2	38.9		
	114.3	65.2	38.9		
	117.3	67.2	38.9		
	120.3	69.2	38.9		
	123.3	71.2	38.9		
	126.3	73.2	38.9		
	129.3	75.2	38.9		
	132.3	77.2	38.9		
	135.3	79.2	38.9		
	138.3	81.2	38.9		
	141.3	83.2	38.9		
	144.3	85.2	38.9		
	147.3	87.2	38.9		
	150.3	89.2	38.9		
	153.3	91.2	38.9		
	156.3	93.2	38.9		
	159.3	95.2	38.9		
	162.3	97.2	38.9		
	165.3	99.2	38.9		
	168.3	101.2	38.9		
	171.3	103.2	38.9		
	174.3	105.2	38.9		
	177.3	107.2	38.9		
	180.3	109.2	38.9		
	183.3	111.2	38.9		
	186.3	113.2	38.9		
	189.3	115.2	38.9		
	192.3	117.2	38.9		
	195.3	119.2	38.9		
	198.3	121.2	38.9		
	201.3	123.2	38.9		
	204.3	125.2	38.9		
	207.3	127.2	38.9		
	210.3	129.2	38.9		
	213.3	131.2	38.9		
	216.3	133.2	38.9		
	219.3	135.2	38.9		
	222.3	137.2	38.9		
	225.3	139.2	38.9		
	228.3	141.2	38.9		
	231.3	143.2	38.9		
	234.3	145.2	38.9		
	237.3	147.2	38.9		
	240.3	149.2	38.9		
	243.3	151.2	38.9		
	246.3	153.2	38.9		
	249.3	155.2	38.9		
	252.3	157.2	38.9		
	255.3	159.2	38.9		
	258.3	161.2	38.9		
	261.3	163.2	38.9		
	264.3	165.2	38.9		
	267.3	167.2	38.9		
	270.3	169.2	38.9		
	273.3	171.2	38.9		
	276.3	173.2	38.9		
	279.3	175.2	38.9		
	282.3	177.2	38.9		
	285.3	179.2	38.9		
	288.3	181.2	38.9		
	291.3	183.2	38.9		
	294.3	185.2	38.9		
	297.3	187.2	38.9		
	300.3	189.2	38.9		
	303.3	191.2	38.9		
	306.3	193.2	38.9		
	309.3	195.2	38.9		
	312.3	197.2	38.9		
	315.3	199.2	38.9		
	318.3	201.2	38.9		
	321.3	203.2	38.9		
	324.3	205.2	38.9		
	327.3	207.2	38.9		
	330.3	209.2	38.9		
	333.3	211.2	38.9		
	336.3	213.2	38.9		
	339.3	215.2	38.9		
	342.3	217.2	38.9		
	345.3	219.2	38.9		
	348.3	221.2	38.9		
	351.3	223.2	38.9		
	354.3	225.2	38.9		
	357.3	227.2	38.9		
	360.3	229.2	38.9		
	363.3	231.2	38.9		
	366.3	233.2	38.9		
	369.3	235.2	38.9		
	372.3	237.2	38.9		
	375.3	239.2	38.9		
	378.3	241.2	38.9		
	381.3	243.2	38.9		
	384.3	245.2	38.9		
	387.3	247.2	38.9		
	390.3	249.2	38.9		
	393.3	251.2	38.9		
	396.3	253.2	38.9		
	399.3	255.2	38.9		
	402.3	257.2	38.9		
	405.3	259.2	38.9		
	408.3	261.2	38.9		
	411.3	263.2	38.9		
	414.3	265.2	38.9		
	417.3	267.2	38.9		
	420.3	269.2	38.9		
	423.3	271.2	38.9		
	426.3	273.2	38.9		
	429.3	275.2	38.9		
	432.3	277.2	38.9		
	435.3	279.2	38.9		
	438.3	281.2	38.9		
	441.3	283.2	38.9		
	444.3	285.2	38.9		
	447.3	287.2	38.9		
	450.3	289.2	38.9		
	453.3	291.2	38.9		
	456.3	293.2	38.9		
	459.3	295.2	38.9		
	462.3	297.2	38.9		
	465.3	299.2	38.9		
	468.3	301.2	38.9		
	471.3	303.2	38.9		
	474.3	305.2	38.9		
	477.3	307.2	38.9		
	480.3	309.2	38.9		
	483.3	311.2	38.9		
	486.3	313.2	38.9		
	489.3	315.2	38.9		
	492.3	317.2	38.9		
	495.3	319.2	38.9		
	498.3	321.2	38.9		
	501.3	323.2	38.9		
	504.3	325.2	38.9		
	507.3	327.2	38.9		
	510.3	329.2	38.9		
	513.3	331.2	38.9		
	516.3	333.2	38.9		
	519.3	335.2	38.9		
	522.3	337.2	38.9		
	525.3	339.2	38.9		
	528.3	341.2	38.9		
	531.3	343.2	38.9		
	534.3	345.2	38.9		
	537.3	347.2	38.9		
	540.3	349.2	38.9		
	543.3	351.2	38.9		
	546.3	353.2	38.9		
	549.3	355.2	38.9		
	552.3	357.2	38.9		
	555.3	359.2	38.9		
	558.3	361.2	38.9		
	561.3	363.2	38.9		
	564.3	365.2	38.9		
	567.3	367.2	38.9		
	570.3	369.2	38.9		
	573.3	371.2	38.9		
	576.3	373.2	38.9		
	579.3	375.2	38.9		
	582.3	377.2	38.9		
	585.3	379.2	38.9		
	588.3	381.2	38.9		
	591.3	383.2	38.9		
	594.3	385.2	38.9		
	597.3	387.2	38.9		
	600.3	389.2	38.9		
	603.3	391.2	38.9		
	606.3	393.2	38.9		
	609.3	395.2	38.9		
	612.3	397.2	38.9		
	615.3	399.2	38.9		
	618.3	401.2	38.9		
	621.3	403.2	38.9		
	624.3	405.2	38.9		
	627.3	407.2	38.9		
	630.3	409.2	38.9		
	633.3	411.2	38.9		
	636.3	413.2	38.9		
	639.3	415.2	38.9		
	642.3	417.2	38.9		
	645.3	419.2	38.9		
	648.3	421.2	38.9		
	651.3	423.2	38.9		
	654.3	425.2	38.9		
	657.3	427.2	38.9		
	660.3	429.2	38.9		
	663.3	431.2	38.9		
	666.3	433.2	38.9		
	669.3	435.2	38.9		
	672.3	437.2	38.9		
	675.3	439.2	38.9		
	678.3	441.2	38.9		
	681.3	443.2	38.9		
	684.3	445.2	38.9		
	687.3	447.2	38.9		
	690.3	449.2	38.9		
	693.3	451.2	38.9		
	696.3	453.2	38.9		
	699.3	455.2	38.9		
	702.3	457.2	38.9		
	705.3	459.2	38.9		
	708.3	461.2	38.9		
	711.3	463.2	38.9		
	714.3	465.2	38.9		
	717.3	467.2	38.9		
	720.3	469.2	38.9		
	723.3	471.2	38.9		
	726.3	473.2	38.9		
	729.3	475.2	38.9		
	732.3	477.2	38.9		
	735.3	479.2	38.9		
	738.3	481.2	38.9		
	741.3	483.2	38.9		
	744.3	485.2	38.9		
	747.3	487.2	38.9		
	750.3	489.2	38.9		
	753.3	491.2	38.9		
	756.3	493.2	38.9		
	759.3	495.2	38.9		
	762.3	497.2	38.9		
	765.3	499.2	38.9		
	768.3	501.2	38.9		
	771.3	503.2	38.9		
	774.3	505.2	38.9		
	777.3	507.2	38.9		
	780.3	509.2	38.9		
	783.3	511.2	38.9		
	786.3	513.2	38.9		
	789.3	515.2	38.9		
	792.3	517.2	3		

[illegible]

[illegible]

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[illegible]

831 9.77913				9.77233							
4 16	9.9834	Jan 29	74 40	9.9843	Jan 29	77 5	9.9889	Jan 29	77 7	9.9889	
492	.2841	h m s		.2498	h m s	+4847	.2603	h m s		.2601	
	+1.851	4 57 52	+4.786	+1.714	5 7 27	286 14.7	+1.775	5 7 27	+4846	+1.774	
	8.9814	+53° 21'	a-1	8.9476	+53° 42'	4 18.0	8.9581	+53° 42'		8.9579	
	9.4332	36 16.2		9.4223	40.8	6 21.6	9.3493			9.3482	
140	9.0675	59 20.7	59 10.5	9.0449	7 50.8	8428.4	9.0517	9 36.8	a-1	9.0516	
147		23.3	14.2		52.4	.782.2		38.5	58.2	5.2	
	0.6922	25.2	17.7	0.6850	54.3	57.5		40.3	5.3		
	8.4146	27.0	21.1	8.3699	57.8	4.2	9.39.3	41.7	9.0	5.5	0.6854
	8.5007	29.7	24.7	8.4672	6.6	0.2	8.3074	9.3			8.3061
	9.0509		17.54	9.0292		0.90	8.4010		5.33		8.3998
			-27.94			+27.87	9.0406		-28.77		9.0405
	+786			+764		28.77					+774
1459	+243	59 25.28	58 50.20	+220	7 55.10	8 28.56	+1.90	9 40.06	8 36.56	+1.90	
949	-385	-3508	-9.49	-356	+33.46	+9.49	-306	-63.50	+9.49	-305	
78	+1752		+72	+1666	61	+78	+1711		+73	+1710	
	+2896	-8.80		+1888	2294		+2.369	-8.79		+2369	
03	9.9834		03	9.9843		8 19.32	9.9889		03	9.9889	
580	9.9144	58 41.40	-2.29	9.9026		8 19.32	9.9064	8 27.87	58 41.40	9.9063	
-240	9.4332	58 39.11		9.4223		8 17.40	9.3493	8 25.40		9.3482	
340	9.8978			9.8869		55	9.8953			9.8952	
	-1903			-7707			-7858			-7856	
	-2476	+1202		-2608	+1281		-2567	+1205		-2568	
	-5427	1 24.2	9.77913	-5099	22 35.0	9.77233	-5291	22 35.0	9.77233	-5288	
	0.734	35.7	1.54506	0.7245	40.9	1.52453	0.6515	40.9	1.50277	0.6504	
	9.9834	48.1	1.43465	9.9843	54.7	1.40752	9.9889	54.7	1.68556	9.9889	
	9.7346	29.4		9.7075	35.1	9.26	9.7235	35.1		9.7233	
	9.3476	1 35.60	53	9.3249	22 41.42	53	9.2557	22 41.42	53	9.2545	
	+87	+27.20	3 21.85	+85	22 25.55	43 9.54	+72	23 48.48	41 54.78	+71	
	-9.02	28.0	-1.29	-9.04	54 0 32.48	43 8.75	-9.13	53 59 18.45	41 53.98	-9.13	
	+6.59	53 20.45	3 20.56	+6.17	54 0 32.48	43 8.75	+6.42	53 59 18.45	41 53.98	+6.42	
	+3.47	-17 35.72		+3.29	-17 35.72	43 8.86	+2.81	-17 35.72		+2.80	
	+1.91	32		+1.29	29		+0.82	105		+0.80	
		02 57 51.26			03			03			
		+12.13	2 27.2		+12.89			+12.89			
		23			24			24			
		-17 23.70			-17 22.91			-17 23.67			
		53 3 9.88			53 42 56.76			53 41 42.73			

[illegible]

832

9.80290

18

4.50	9.9445	Jan 31	63 4	9.9501	Jan 31	66 49	9.9634	Jan 31	70 45	9.9750
	.2110	h m s		.2506	h m s		.2432	h m s		.2095
	+1.431	4 11 29	mag#	+1.587	4.26 29		+1.609	4 42 1/8	+4.601	+1.529
	8.9088	+52° 47'		8.9484	+52° 37'		8.9410	+50 34	0-1	8.9073
	9.6766			9.6560	24 55.2		9.5951	41 13.5	32.1	9.5181
	9.0210			9.0454	26 48.8		9.0408	43 26.0	43 26.7	9.0201
		11 46.7	11 52.4	24.4 43.7	26 57.7		25.8 45.9	43 26.0	43 26.7	
		49.8	55.7	27.7 47.0	52.0		29.0 49.0	36.3	38.8	
		51.5	58.7	30.9 50.3	55.5		32.2 62.6		33.4	
	0.6535	53.0	2.0	34.2 53.4	57.2		35.8 56.4		37.0	0.6628
	8.5854	8.3	56.0	37.5 56.8	57.2		39.1 57.8		40.0	8.9254
	8.6976		58.76	50.24	8.7014		58.24		52.74	8.5382
	8.9655		24.50	24.49	8.9955		25.49		25.58	8.9951
	+7.45			+7.71			+7.75			+7.61
	+3.56	11 51.40	12 24.50	+3.72	26 54.54		+3.18	43 31.15	43 7.51	+2.46
	-630	+ 33.10	- 9.49	-6.35	+ 31.00		- 9.49	- 23.64	- 9.49	-4.36
	+1395		+ .99	+1.495			+1.525		+ .91	+1.493
	+1.866		-8.52	+2.003			+2.071	-8.60		+2.064
	9.9445			9.9501			9.9634			9.9750
	9.8878			9.9029			9.9002			9.8872
	9.6766			9.6560			9.5951			9.5181
	9.8323			9.8530			9.8636			9.8622
	-6797			-7128			-7305			-7281
	-2755			-2605			-2633			-2761
	-4042			-4523			-4672			-4520
	0.9788	59 4.14	9.78163	0.9582	27 18.6		0.8993	36 53.2	9.80290	0.8203
	9.9445	51.2	1.51983	9.9501	26.6		9.9634	15.7	1.37365	9.9750
	9.6066	4.6	1.41192	9.6554	40.0		9.6675	15.7	1.28701	9.6551
	9.5644	47.1		9.5589	21.8		9.4953	57.6		9.4053
		59 51.20	53	26.75	52 96			2.00	50	
	+1.58	- 25.82	5 59.53	+1.50	- 24.78		+1.31	+ 123.6	27 59.79	+1.09
	-8.14	59 25.38	-4.44	-8.25	27 25.74		-8.51	37 21.36	-1.90	-8.74
	+5.11	53 23 22.91	5 55.09	+5.72	52 55.45		+5.90	50 45 26.99	27 57.89	+5.71
	+5.34	-17 35.07		+5.47	-17 35.07		+4.72	-17 35.07		+3.84
	+4.09	- .05		+4.44	- .02		+3.42	- .15		+1.90
		+ 11.73		+ 11.18				+ 8.86		
		+ .23		+ .23				+ .18		
	-17 23.44			-17 23.93				-17 26.20		
	53 5 47.20			52 38 10.44				50 27 51.72		

9.80351

70	9.9887	Jan 31	77 59	9.9904	Jan 31	Jan 31	Jan 31
	.2561	h m s		.2100	h m s		
4.829	+1.757	5 11 8	+4.658	+1.586	5 14 50		
	8.9539	+50° 30'		8.9078	+51° 31'		
	9.3521	9 34.9	0+1	9.3185			
	9.0492	11 28.4	11 32.7	9.0204			
		31.0	35.3				
		33.7	38.0				
	0.6839	36.1	41.8	0.6682			
	8.3060	8.7	38.7	8.2263			
	8.4013		38.62	8.3389			
	9.0379		+ 25.94	9.0108			
	+7.99			+7.71			
	+1.87	11 33.58	12 4.56	+1.56			
	-3.18	+ 30.98	- 9.49	-2.76			
	+16.48		+ .91	+15.49			
	+2.316		-8.60	+2.200			
	9.9889			9.9904			
	9.9050			9.8874			
	9.3521			9.3185			
	9.8937			9.8778			
	-7829			-7548			
	-2584			-2759			
	-5245			-4789			
	0.6543	35 57.8	9.80351	0.6204			
	9.9887	57 1.49	0.8	9.9904			
	9.7198	19 1.90	56.5	9.6802			
	9.2571	08		9.2059			
		36 6.00	50				
	+ .75	- 25.48	29 41.52	+ .69			
	-9.02	35 40.55	-0.12	-9.05			
	+6.63	60 47 7.80	29 41.40	+6.05			
	+2.73	-17 35.07		+2.43			
	+1.09	- .26		+6.12			
		+ .01	11 7.19				
		+ 8.88	28 59.3				
		+ .18					
	-17 26.28						
	50 29 32.73						

1885

Jan 31
h m s
5 28 42
+50° 54'Jan 31
h m s
5 29 40
+51° 16'

Log A	9.2257	Feb 23
B	0.9620	
C	1.1179 _m	883
D	1.1646	

15

9.2257 0.9620 1.1179 1.1646	Feb 23 883			9.78113		9.76218		15
Feb 2 h m s 4 26 32.9 +52° 37' +7.8 +10	66 49 22.2 +4.681 15.5 18.8 22.3 27 18.0 26 57.8 25.8 46.1 21.5 55.0 29.2 49.5 24.3 58.5 32.5 53.0 27.0 2.0 35.8 56.4 8.1 29.5 5.2 39.4 59.8 58.50 52.96 25.73 25.72	9.9634 2.432 +1.609 8.9410 9.5951 9.0408 0.6703 8.5361 8.6359 9.0042 +787 +315 -5.67 +1475 +2.010 9.9634 9.9002 9.5951 9.8636 -73.05 -2633 -4672 0.8973 9.9634 9.6695 9.9953 -2472 +1.33 -8.42 +6.13 +4.57 +5.61 -09 +1181 +22 -17 52.51 0.16	Feb 2 h m s 4 45 21 +52 50 43 47.0 47.9 45 (55.6) 45 46.4 42.1 46.7 50.0 9.0 54.6 59.3 52.82 +2731 46 2013 -9.88 +103 -02 46 11.26 -2.12 46 9.14 1.50 2.15 9.78113 1.53 567 54.1 34.6 4087 52 984 14 11.94 14 11.94 53 34.2 17 34.07 51 7.30 45 21.69 50 3.5 22 22440 52.51 0.16	9.9771 2.466 +1.674 8.9444 9.5013 9.0429 0.6763 8.4444 8.5432 9.0200 +798 +255 -458 +1530 +2125 -882 9.9771 9.9015 9.5003 9.8786 -75.61 -2620 -4941 0.8025 9.9771 9.6938 9.9018 -15.68 +1.07 -8.69 +6.48 +3.68 +2.54 -02 +1404 +26 -17 54.39 27.34	Feb 2 h m s 4 52 20 +54° 40' a +1 50 12.8 38.0 52 52.8 52 43.9 56.2 47.7 58.9 51.4 2.1 55.2 8.6 4.2 58.5 (6.7) 51.34 +28.53 52 58.84 53 19.87 +21.03 -9.89 +1.10 -03 53 11.05 -2.25 53 8.80 -58.00 -75.61 -2620 +14.17 25 58.0 18 1.32284 14.6 1.19548 56.1 26 2.62 54 -15.68 25 46.94 54 57.141 17 34.07 11 02 52 20.03 35 40.9	9.9813 2.755 +1.806 8.9733 9.4584 9.0617 0.6882 8.4317 8.5201 9.0420 +820 +248 -435 +1613 +2246 9.9813 9.9116 9.4584 9.8929 -78.14 -2509 -5305 0.7606 9.9813 9.7247 9.3700 -2.57 +97 -8.78 +6.96 +342 +2.57		
9.76747		9.77913		9.77507				
Feb 2 4 56 27 +54° 10' 54 8.3 58 56.0 56 52.2 59.5 55.3 7.5 59.0 11.2 2.9 9.1 0.2 (9.9) 59.12 +25.18 57 3.55 +23.75 -8.84 -48.53 -54.50 +13.53 56 0.5 48 1.37566 172 1.25359 58.7 56 5.30 54 10.44 55 47.34 54 27 0.95 -17 34.07 -15 -02 +13.45 +25 -17 54 9 26.91	9.9836 2.675 +1.783 8.9653 9.4314 9.0564 0.6862 8.3967 8.4878 9.0400 +8.16 +2.28 -403 +16.02 +2.243 9.9836 9.9089 9.4314 9.8925 -78.07 -25.40 +12.27 -8.267 0.7336 9.9836 0.7216 9.3403 +9.1 -8.82 +6.91 +3.20 +2.20 +9.1 -8.82 +6.91 +3.20 +2.20 +9.1 -8.82 +6.91 +3.20 +2.20	Feb 2 h m s 4 57 52 +53° 2' 56 16.2 0.7 59 1.0 58 50.4 4.5 53.8 7.2 57.0 11.1 0.5 13.2 4.1 59 4.40 58 50.30 -17.10 7 1.04 -03 58 41.41 -2.20 58 39.21 9.77913 1.23 302 1.12259 5.8 46.8 53 15.15 3 2014 -7.83 3 18.31 57 51.36 2 24.9 +13.26 6.41 53 20.41 17 34.07 -08 -04 12.17 +22 -17 53 3 48.74	9.9843 2.498 +17.14 8.9476 9.4223 9.0449 0.6800 8.3699 8.4672 9.0292 +805 +2.15 -385 +1562 +2197 9.9843 9.9026 9.4223 9.8869 -77.05 -26.08 -5099 0.7245 9.9843 9.7075 9.3249 38 52.8 57.7 116 536 58.92 29.29 38 29.63 53 44.18 17 34.07 -38 -08 12.52 +24 21.77 53 26 44.65	Feb 2 h m s 5 7 7 +53° 26' 5 31.0 24.6 7 25.0 26.8 35.9 29.0 31.1 34.2 7 29.22 +38.12 -8.88 7 58.46 -2.26 7 56.20 -4.550 +12.30 38 52.8 57.7 116 536 58.92 29.29 38 29.63 53 44.18 17 34.07 -38 -08 12.52 +24 21.77 53 26 44.65	9.9887 2.561 +17.57 8.9539 9.3521 9.0490 0.6839 8.3060 8.4011 9.0377 +8.12 +1.85 -330 +1593 +2.260 9.9887 9.9049 9.3521 9.8936 -78.29 -2.584 -524.3 0.6543 9.9887 9.7196 9.2570 +76 -8.93 +6.88 +2.64 +1.35			

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834

Feb 7 74 4 9.9830 Feb 7
 h m s 2524 h m s 2319.3
 4 55 25 +4.791 +1.719 4 55 25 22712.4
 +53° 12' 50.2 8.9502
 53 48.2 54.2 9.4386
 10.1 54.2 9.0466
 55 44.0 55 57.6 1.0
 44.6 4.6
 47.6 4.6
 57.0 7.8 0.6804
 9.2 57.52 8.4852 9.0
 +27.54 9.0296

+837
 55 46.30 56 25.06 +225
 +38.76 -1056 -436
 +1.11 +1423
 -9.48 +2049 -9.48
 56 15.58 9.9830
 -2.05 9.9036
 56 13.53 9.4386
 9.8866
 -7702
 -2598
 +11.74

52 47.1 9.77744 52 47.1 9.77744
 55.2 1.58838 0.7408
 9.0 1.47628 9.9830
 50.2 9.7079
 52 55.37 53 9.3422 52 55.37
 29.94 13 1.83
 52 25.43 -2.31 +.96
 53 30.22 12 59.52 -884
 -17 32.83 +7.27
 40 +2.72
 06 55 25.63 +2.31
 +11.99 12 4.1
 +2.1
 -17 21.09
 53 12.52 0.9

9.77694

Feb 7 80 29 9.9940 Feb 7 81 3 9.9947
 h m s 2529 h m s 2255
 5 21 57 +4.838 +1.766 5 23 22 +4.732 +1.660
 +53° 15' 23.1 1.7
 19 30.3 a+1 8.9507 21 47.1 6.17.0 8.9233
 13.1 9.2184 26.7 3.20.0 9.1919
 21 49.5 21 32.0 9.0470 24 10.9 5.23.5 9.0297
 59.9 35.2 13.0 4.26.7
 54.7 38.8 15.1 4.30.0
 50.3 42.2 0.6847
 7.8 58.8 45.7 8.1691 8.9 15.3 0.6750
 38.78 8.2654 8.1152
 27.58 9.0410 9.0244

+845
 21 54.24 22 6.36 +1.36 24 13.74 24 23.44 +8.27
 +12.12 -10.58 -2.63 +7.14 24 23.44 +12.0
 +1.11 +1460 -2.37 +10.58 -2.37
 -9.50 +2.178 -9.55 +1.05 +1406
 21 56.86 9.9940 24 13.98 9.9947
 -48.38 21 56.86 -47.32 24 13.98 9.9947
 -33.50 21 56.86 -31.50 24 11.56 9.9947
 9.8978 9.8882
 9.8903 -7730
 +12.07 -2596 +10.14

49 598 9.77694 -5307 34 52.2 9.79415 -5029 10 38.0 9.79981
 7.2 1.58350 0.5206 0.89844 0.4941 452 1.13098
 22.2 0.97090 9.9940 0.78997 9.9947 0.0 1.04455
 27 9.7248 55.0 0.78997 9.7015 4.01 1.03314
 50 798 53 9.1222 35 0.92 51 1 9.0854 10 45.82 50 01
 9.35 15 28.96 6.2417 30 30.98 -1279 45.82 54 50.22
 49 58.63 -0.84 +.58 34 54.68 5 -0.25 +54 10 34.82 35.24 50.43
 53 32 49.72 15 28.12 -9.06 51 47 53.60 80 30.78 +9.08 51 12 13.53 32.54 50.43
 -17 32.83 +7.56 -17 32.83 +7.17 +7.17
 24 +1.76 -0.2 24. +1.62
 10 21 6.30 +0.84 -10 23 25.45 +0.25
 +12.00 14 54.6 +10.7 29 59.2
 +2.1
 -17 20.76 -17 22.89
 53 15 16.89 51 30 20.84

9.78379

Feb 7 75 8 9.9852 Feb 7
 h m s 2422 h m s 2422
 4 59 48 +4.760 +1.688
 +53° 34' 58 9.4 part of a a-1 8.9400
 31.8 43.6 8.4092
 6 30.4 0.8337 1 3.7 9.0401
 31.6 1.437.6 8.0
 32.6 8.40.4 10.5
 33.5 17.2 0.6776
 9.5 34.3 21.4 8.3492
 34.8 10.56 8.4493
 -27.14 9.0253
 44.00 43.42 +832

1 32.87 0 43.61 +205
 -49.26 -10.57 -401
 -9.50 +1.09 +1409
 -47.60 0 34.11 9.9852
 -51.80 0 32.07 9.8999
 +10.87 9.4092
 9.8851
 -7675
 -2637
 -5038
 0.7114
 9.9852
 9.7023
 9.3091

30 15.4 9.78379
 22.0 1.69249
 36.2 1.58674
 17.2
 30 22.70 52
 +38.61 34 25.08
 31 1.31 -1.91
 52.51 47.04 34 23.17
 -17 32.83
 -64
 -01
 +11.31
 +21
 -17 21.96
 52 34 14.21

9.79981

Feb 7 82 23 9.9962 Feb 7 82 23 9.9962
 h m s 2164 h m s 2164
 5 28 42 +4.704 +1.632 5 29 40 30 24.7 +4.725 +2.219
 +50° 54' 28.4 16.1
 27 8.9 a+1 8.9142 28 5.6 31.8 8.9197
 53.4 9.1224 14.9 35.0 9.1089
 29 24.5 29 9.5 9.0243 30 30.0 38.3 9.0275
 26.7 33.6 41.4
 29.0 35.6 45.0
 19.8 37.7 48.0 0.6744
 9.2 33.5 22.5 8.0366 8.6 40.3 51.6 0.6286
 16.4 17 8.1467
 +26.16 9.0205 9.0239

+822
 29 29.06 29 42.58 +1.00 30 35.52 30 38.44 +826
 +13.52 -10.58 -2.00 +2.92 -10.58 -1.95
 27 +1.02 +13.93 +1.04 +1404
 -9.58 -9.56 -9.56 +2.133
 29 32.82 9.9962 30 28.88 9.9964
 29 32.82 9.9962 30 28.88 9.9964
 -47.03 29 30.88 47.24 30 26.75 9.9964
 -26.90 29 30.88 26.10 30 26.75 9.9964
 9.8862 -7695
 -7730 +9.96

10 38.0 9.79981 -4960 49 21.0 9.79636 -5022
 452 1.13098 0.4246 28.9 0.46538 0.4111
 0.0 1.04455 9.9962 44.6 0.37220 9.9964
 4.01 1.03314 9.6958 24.3 9.7009
 10 45.82 50 01 9.0124 49 29.70 51 9.0010
 -1279 45.82 54 50.22 2.36 15 58.14
 10 34.82 35.24 50.43 +4.6 49 27.34 +0.47
 51 12 13.53 32.54 50.43 -9.11 51 33 21.01 15 58.31 +4.5
 -17 32.83 +7.07 +7.07
 -0.5 +1.37
 -0.2 28 43.60 -0.21 0.9 29 39.57
 +9.41 54 23.3 +9.86 15 32.2
 +1.8
 -17 23.31 -17 22.89
 50 54 40.70 51 15 48.18

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836				9.77456				9.80397				9.79367				21
Feb 15	74 33	9.9840	Feb 15	76 3	9.9870	Feb 15	76 50	9.9884	Feb 15	78 4	9.9905	Feb 15	78 4	9.9905		
h m s	27.4720	.2330	h m s	25.66	.2566	h m s	25.66	.2566	h m s	25.66	.2566	h m s	25.66	.2566		
4 57 22	38.8 8.4	+1.648	5 3 20	+4.824	+1.752	5 6 24	+4.651	+1.579	5 12 16	+4.722	+1.650	5 12 16	+4.722	+1.650		
+51° 58'	13.11.3		+53° 29'			+50° 27'			+51° 33'	9.580		+51° 33'	9.580			
55 47.4	0.714.0	8.9308	1 43.6	a+1	8.9544	4 51.1	a+1	8.9078	10 44.3	a-7.8.9	8.9249	10 44.3	a-7.8.9	8.9249		
56.3	0.717.6	9.4255	27.1		9.3822	25.7		9.3575	31.4		9.3155	31.4		9.3155		
58 26.8	1.021.0	9.0344	3 58.5		9.0493	7 8.3	6 56.4	9.0204			9.0307					
30.2	1.224.5		58.3	52.492		6.3	59.6									
33.3	1.628.3		0.2	52.6		8.7	2.7									
36.3	12.34.8	0.6739	1.3	52.65.0	0.6834	10.7	6.0	0.6676								
37.6		8.3563	2.2	52.79.5	8.3366	12.1	9.6	8.2653	9.6							
		8.4599		52.80.6	8.4315			8.3779								
		9.0184		+27.73	9.0363			9.0088								
		+9.25		41	+9.46			+9.12								
58 33.24	58 21.2	+2.03	3 59.70	4 20.58	+1.94	7 8.22	7 28.77	+1.65				12 26.37	+1.55			
- 120.3	- 11.2	-4.56	+ 20.83	- 11.22	-4.27	+20.55	- 11.22	-3.78				- 11.23	-3.57			
	+ 1.02	+1.144		+ 1.08	+1.193		+ 1.97	+1.119				+ 1.01	+1.152			
-10.22		+1.816	-10.17		+1.906	-10.27		+1.818				-10.24	+1.882			
	.02			.03			.02					.02				
58 16.99	9.9840		4 10.324	9.9870		7 18.57	9.9884					12 16.13				
-47.20	-1.82	9.8964	-1.91	9.9051		-1.82	9.8874					-1.88				
-53.80	58 9.17	9.4255	-48.24	4 8.45	9.3822	7 16.68	9.3575					12 14.245				
		9.8804	-48.70	33	9.8921		9.8758									
		-45.93			-7.800		-7.513									
+10.57		-26.72	+12.18		-2.582	+8.81	-2.757									
5 6.72	9.98967	-49.21	36 28	9.77456	-52.18	35 25.6	9.80397	-47.54								
6.3	1.0802	0.7274	108	1.31869	0.6844	36.7	1.31281	0.6597								
21.8	0.98040	9.9840	25.8	1.20371	9.9870	37.4	1.22724	9.9884								
13		9.6920	70		9.7175	32.2		9.6771								
6 66.51	9.3219	36 11.60	53	9.2873	35 36.48	30	9.2447									
+9.56	59 7.81	-15.78	29 30.01		-16.87	30 2.65										
6 16.21	-2.53	+1.05	35 53.62	-2.67	+9.5	35 19.61	-1.65	+9.0								
52.16	32.14	59 5.28	53 46.5273	29 27.34	-8.67	50 47.2874	30 1.00	-8.70								
-17 34.90		+7.79	-17 34.90		+8.26	-17 34.90		+7.52								
	.04	+2.30		.12	+2.13		.12	+1.93								
	.02	+2.33		.02	+2.67		.01	+1.65								
+10.44	57 21.97		+12.11	3 20.09		+8.79						31 27.06				
+19	58 11.5		+21	28 38.6		+15										
-17 24.33			-17 22.72			-17 26.09										
51 58 57.24			53 29 17.83			50 29 53.84										
Feb 15	82 34	9.9963	Feb 15	82 34	9.9963	Feb 15	82 34	9.9963	Feb 15	82 34	9.9963	Feb 15	82 34	9.9963		
h m s	20.23	.2023	h m s	20.23	.2023	h m s	20.23	.2023	h m s	20.23	.2023	h m s	20.23	.2023		
5 29 27	+4.652	+1.580	5 29 27	+4.652	+1.580	5 29 27	+4.652	+1.580	5 29 27	+4.652	+1.580	5 29 27	+4.652	+1.580		
+49° 59'			+49° 59'			+49° 59'			+49° 59'			+49° 59'				
27 31.2	a+1	8.9001	27 31.2	a+1	8.9001	27 31.2	a+1	8.9001	27 31.2	a+1	8.9001	27 31.2	a+1	8.9001		
52.8		9.1118	52.8		9.1118	52.8		9.1118	52.8		9.1118	52.8		9.1118		
30 8.0	29 56.5	9.0158	30 8.0	29 56.5	9.0158	30 8.0	29 56.5	9.0158	30 8.0	29 56.5	9.0158	30 8.0	29 56.5	9.0158		
9.7	59.8		9.7	59.8		9.7	59.8		9.7	59.8		9.7	59.8			
18.7	3.4		18.7	3.4		18.7	3.4		18.7	3.4		18.7	3.4			
18.7	6.5	0.6676	18.7	6.5	0.6676	18.7	6.5	0.6676	18.7	6.5	0.6676	18.7	6.5	0.6676		
18.7	9.2	8.0119	18.7	9.2	8.0119	18.7	9.2	8.0119	18.7	9.2	8.0119	18.7	9.2	8.0119		
18.7	3.08	8.1276	18.7	3.08	8.1276	18.7	3.08	8.1276	18.7	3.08	8.1276	18.7	3.08	8.1276		
18.7	+25.67	9.0121	18.7	+25.67	9.0121	18.7	+25.67	9.0121	18.7	+25.67	9.0121	18.7	+25.67	9.0121		
30 28.75	+9.12		30 28.75	+9.12		30 28.75	+9.12		30 28.75	+9.12		30 28.75	+9.12			
+16.83	-11.23	+0.92	+16.83	-11.23	+0.92	+16.83	-11.23	+0.92	+16.83	-11.23	+0.92	+16.83	-11.23	+0.92		
+19.90	+9.5	-2.12	+19.90	+9.5	-2.12	+19.90	+9.5	-2.12	+19.90	+9.5	-2.12	+19.90	+9.5	-2.12		
-10.48		+11.28	-10.48		+11.28	-10.48		+11.28	-10.48		+11.28	-10.48		+11.28		
	.20	+1.220		.20	+1.220		.20	+1.220		.20	+1.220		.20	+1.220		
30 18.24	9.9963		30 18.24	9.9963		30 18.24	9.9963		30 18.24	9.9963		30 18.24	9.9963			
-46.51	-1.92	9.8843	-46.51	-1.92	9.8843	-46.51	-1.92	9.8843	-46.51	-1.92	9.8843	-46.51	-1.92	9.8843		
-26.30	30 16.35	9.1118	-26.30	30 16.35	9.1118	-26.30	30 16.35	9.1118	-26.30	30 16.35	9.1118	-26.30	30 16.35	9.1118		
		9.8806			9.8806			9.8806			9.8806			9.8806		
		-7.596			-7.596			-7.596			-7.596			-7.596		
+8.31	1.29885	-2.789	+8.31	1.29885	-2.789	+8.31	1.29885	-2.789	+8.31	1.29885	-2.789	+8.31	1.29885	-2.789		
5 24.8	9.80822	-4.807	5 24.8	9.80822	-4.807	5 24.8	9.80822	-4.807	5 24.8	9.80822	-4.807	5 24.8	9.80822	-4.807		
34.2	+2.2608	0.4140	34.2	+2.2608	0.4140	34.2	+2.2608	0.4140	34.2	+2.2608	0.4140	34.2	+2.2608	0.4140		
49.0	1.14446	9.9963	49.0	1.14446	9.9963	49.0	1.14446	9.9963	49.0	1.14446	9.9963	49.0	1.14446	9.9963		
29.9	1.21753	9.6819	29.9	1.21753	9.6819	29.9	1.21753	9.6819	29.9	1.21753	9.6819	29.9	1.21753	9.6819		
5 34.48	50 3.78	8.9961	5 34.48	50 3.78	8.9961	5 34.48	50 3.78	8.9961	5 34.48	50 3.78	8.9961	5 34.48	50 3.78	8.9961		
-16.13.96	0 1.82		-16.13.96	0 1.82		-16.13.96	0 1.82		-16.13.96	0 1.82		-16.13.96	0 1.82			
5 24.8	1.78	+5.1	5 24.8	1.78	+5.1	5 24.8	1.78	+5.1	5 24.8	1.78	+5.1	5 24.8	1.78	+5.1		
50 17 29.83	30.37	-8.86	50 17 29.83	30.37	-8.86	50 17 29.83	30.37	-8.86	50 17 29.83	30.37	-8.86	50 17 29.83	30.37	-8.86		
-17 34.90	0	+7.61	-17 34.90	0	+7.61	-17 34.90	0	+7.61	-17 34.90	0	+7.61	-17 34.90	0	+7.61		
	.08	+1.09		.08	+1.09		.08	+1.09		.08	+1.09		.08	+1.09		
	.01	+0.35		.01	+0.35		.01	+0.35		.01	+0.35		.01	+0.35		
+82.5	59 37.1		+82.5	59 37.1		+82.5	59 37.1		+82.5	59 37.1		+82.5	59 37.1			
+7.5			+7.5			+7.5			+7.5			+7.5				
-17 26.59			-17 26.59			-17 26.59			-17 26.59			-17 26.59				
49 59 52.95			49 59 52.95			49 59 52.95			49 59 52.95			49 59 52.95				

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456.17	77 5	9.9889	Feb 17	47 59	9.9904	Feb 17	78 40	9.9914
h m s		.2603	h m s		.2100	h m s		.2105
5 7 27	16.3 +4847	+1775	5 11. 8	50 +4658	+1586	5 13 55	+4664	+1592
+ 53° 42'	19.5	8.9581	9 31.9	55.8	8.9078	+50° 32'	α +1	8.9083
50.5	23.5	9.3493	28.2	59.7	9.3185	12 21.3		9.2234
46.3	26.5	9.0517	11 59.9	3.0	9.0204	30.2		9.0207
8 14.9	7 55.2	80.4	50.5	6.0		14 16.1	14 20.0	
18.0	58.5	54.0	54.4	9.5		19.4	23.0	
21.1	2.0	37.3	57.9	12.9		22.0	26.4	
23.0	5.6	40.5	1.4	15.7	0.6682	24.9	29.6	0.6688
8.9 27.0	9.0	44.0	5.0	19.0	8.2263	27.0	33.0	8.2014
	206	57.84			8.3389		36.0	8.3141
					9.0108		+ 25.96	9.0121
8 29.95	30.22	+953		6.4821	+916			+917
		+181	12 30.4	12 6.09	+150	14 21.88	14 52.36	+142
8 20.80	8 30.08	-407	+ 3.05	- 11.45	-353	+ 3.048	- 11.45	-333
+ 9.28	- 11.45	+7137	17	+ .87	+1062		+ .87	+1065
	-10.50	+1864		-10.60	+1.775	-10.60		+1.791
		9.9889		11 55.49	9.9904		14 41.76	9.9914
	8 19.58	9.9064		-178	9.8874		-17.79	9.8876
-4846	8 17.72	9.3493		11 53.71	9.3185	-4664	14 39.97	9.2934
-4520		9.8953		86	9.8778	-39.70		9.8779
		-7858			-7547			-7568
+ 12.81		-2567	+ 9.17		-2759	+ 887		-2557
22 13.9	9.77233	-5291	35 38.0	9.80351	-4788	33 16.8	9.80320	-4811
20.2	0.96755	0.6515	44.8	0.44450	0.6207	24.7	1.48401	0.5956
34.2	0.85034	9.9889	58.2	0.39827	9.9904	38.3	1.39767	9.9914
15.1		9.7235	39.8	0.41503	9.6802	18.3		9.6822
22 20.85	53	9.255735	45.20	50	9.2059	33 24.52	50	9.1810
- 7.08	43 1387		2.5210	29 41.30		24.98	32 24.16	
22 13.77	-1.63	+ .88	35 42.70	-1.52	+ .82	32 59.54	-1.40	+ .77
54.0 34.58	43 9.24	-8.67	50.47	5.6575	-8.70	50.49	48.81	-8.72
-17 33.52	11.24	+8.55	-17 33.52		+7.74	-17 33.52	32 22.76	+7.78
		+1.87			+1.66			+1.57
		+2.63			+1.52			+1.40
+ .05	7 29.26		- .02	11 7.28		.07	13 53.33	
+ 12.68	42 26.0		+ 9.04	28 57.8		+ 9.04	31 43.1	
+ .21			+ .15			+ .15		
-17 20.71			-17 24.35			-17 24.65		
53 43 1.06			50 29 32.13			50 32 15.29		

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9.2948 Feb 18.3 0.9493 1.2131 1.0019 1885 Feb 18	69.32 9.9717 Feb 18 +4.657 9.6154 12.7 154 18.7 40 38 30.0 37 45.8 38 31.2 52.3 38 36.8 52.3 38 38.7 52.3 38 40.6 52.3 38 42.5 52.3 38 44.4 52.3 38 46.3 52.3 38 48.2 52.3 38 50.1 52.3 38 52.0 52.3 38 53.9 52.3 38 55.8 52.3 38 57.7 52.3 38 59.6 52.3 38 61.5 52.3 38 63.4 52.3 38 65.3 52.3 38 67.2 52.3 38 69.1 52.3 38 71.0 52.3 38 72.9 52.3 38 74.8 52.3 38 76.7 52.3 38 78.6 52.3 38 80.5 52.3 38 82.4 52.3 38 84.3 52.3 38 86.2 52.3 38 88.1 52.3 38 90.0 52.3 38 91.9 52.3 38 93.8 52.3 38 95.7 52.3 38 97.6 52.3 38 99.5 52.3 38 101.4 52.3 38 103.3 52.3 38 105.2 52.3 38 107.1 52.3 38 109.0 52.3 38 110.9 52.3 38 112.8 52.3 38 114.7 52.3 38 116.6 52.3 38 118.5 52.3 38 120.4 52.3 38 122.3 52.3 38 124.2 52.3 38 126.1 52.3 38 128.0 52.3 38 129.9 52.3 38 131.8 52.3 38 133.7 52.3 38 135.6 52.3 38 137.5 52.3 38 139.4 52.3 38 141.3 52.3 38 143.2 52.3 38 145.1 52.3 38 147.0 52.3 38 148.9 52.3 38 150.8 52.3 38 152.7 52.3 38 154.6 52.3 38 156.5 52.3 38 158.4 52.3 38 160.3 52.3 38 162.2 52.3 38 164.1 52.3 38 166.0 52.3 38 167.9 52.3 38 169.8 52.3 38 171.7 52.3 38 173.6 52.3 38 175.5 52.3 38 177.4 52.3 38 179.3 52.3 38 181.2 52.3 38 183.1 52.3 38 185.0 52.3 38 186.9 52.3 38 188.8 52.3 38 190.7 52.3 38 192.6 52.3 38 194.5 52.3 38 196.4 52.3 38 198.3 52.3 38 200.2 52.3 38 202.1 52.3 38 204.0 52.3 38 205.9 52.3 38 207.8 52.3 38 209.7 52.3 38 211.6 52.3 38 213.5 52.3 38 215.4 52.3 38 217.3 52.3 38 219.2 52.3 38 221.1 52.3 38 223.0 52.3 38 224.9 52.3 38 226.8 52.3 38 228.7 52.3 38 230.6 52.3 38 232.5 52.3 38 234.4 52.3 38 236.3 52.3 38 238.2 52.3 38 240.1 52.3 38 242.0 52.3 38 243.9 52.3 38 245.8 52.3 38 247.7 52.3 38 249.6 52.3 38 251.5 52.3 38 253.4 52.3 38 255.3 52.3 38 257.2 52.3 38 259.1 52.3 38 261.0 52.3 38 262.9 52.3 38 264.8 52.3 38 266.7 52.3 38 268.6 52.3 38 270.5 52.3 38 272.4 52.3 38 274.3 52.3 38 276.2 52.3 38 278.1 52.3 38 280.0 52.3 38 281.9 52.3 38 283.8 52.3 38 285.7 52.3 38 287.6 52.3 38 289.5 52.3 38 291.4 52.3 38 293.3 52.3 38 295.2 52.3 38 297.1 52.3 38 299.0 52.3 38 300.9 52.3 38 302.8 52.3 38 304.7 52.3 38 306.6 52.3 38 308.5 52.3 38 310.4 52.3 38 312.3 52.3 38 314.2 52.3 38 316.1 52.3 38 318.0 52.3 38 320.0 52.3 38 321.9 52.3 38 323.8 52.3 38 325.7 52.3 38 327.6 52.3 38 329.5 52.3 38 331.4 52.3 38 333.3 52.3 38 335.2 52.3 38 337.1 52.3 38 339.0 52.3 38 340.9 52.3 38 342.8 52.3 38 344.7 52.3 38 346.6 52.3 38 348.5 52.3 38 350.4 52.3 38 352.3 52.3 38 354.2 52.3 38 356.1 52.3 38 358.0 52.3 38 360.0 52.3 38 361.9 52.3 38 363.8 52.3 38 365.7 52.3 38 367.6 52.3 38 369.5 52.3 38 371.4 52.3 38 373.3 52.3 38 375.2 52.3 38 377.1 52.3 38 379.0 52.3 38 380.9 52.3 38 382.8 52.3 38 384.7 52.3 38 386.6 52.3 38 388.5 52.3 38 390.4 52.3 38 392.3 52.3 38 394.2 52.3 38 396.1 52.3 38 398.0 52.3 38 400.0 52.3 38 401.9 52.3 38 403.8 52.3 38 405.7 52.3 38 407.6 52.3 38 409.5 52.3 38 411.4 52.3 38 413.3 52.3 38 415.2 52.3 38 417.1 52.3 38 419.0 52.3 38 420.9 52.3 38 422.8 52.3 38 424.7 52.3 38 426.6 52.3 38 428.5 52.3 38 430.4 52.3 38 432.3 52.3 38 434.2 52.3 38 436.1 52.3 38 438.0 52.3 38 440.0 52.3 38 441.9 52.3 38 443.8 52.3 38 445.7 52.3 38 447.6 52.3 38 449.5 52.3 38 451.4 52.3 38 453.3 52.3 38 455.2 52.3 38 457.1 52.3 38 459.0 52.3 38 460.9 52.3 38 462.8 52.3 38 464.7 52.3 38 466.6 52.3 38 468.5 52.3 38 470.4 52.3 38 472.3 52.3 38 474.2 52.3 38 476.1 52.3 38 478.0 52.3 38 480.0 52.3 38 481.9 52.3 38 483.8 52.3 38 485.7 52.3 38 487.6 52.3 38 489.5 52.3 38 491.4 52.3 38 493.3 52.3 38 495.2 52.3 38 497.1 52.3 38 499.0 52.3 38 500.9 52.3 38 502.8 52.3 38 504.7 52.3 38 506.6 52.3 38 508.5 52.3 38 510.4 52.3 38 512.3 52.3 38 514.2 52.3 38 516.1 52.3 38 518.0 52.3 38 520.0 52.3 38 521.9 52.3 38 523.8 52.3 38 525.7 52.3 38 527.6 52.3 38 529.5 52.3 38 531.4 52.3 38 533.3 52.3 38 535.2 52.3 38 537.1 52.3 38
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888

25

Feb 18	74 4	9.9830	Feb 18	74 25	9.9837	Feb 18	75 8	9.9852	Feb 18	76 2	9.9870
h m s		2.524	h m s	2.524	2.265	h m s	2.265	2.424	h m s	2.569	
4 55 25	+4.791	+1.719	4 56 51	+4.695	+1.623	4 59 41	+4.761	+1.689	5 3 20	+4.825	+1.753
+53° 12'			+53° 34'			+52° 34'			+53° 29'		
33 41.2	a+1	8.9502	35 17.6	57 46.2	8.9243	38 9.4	a-1	8.9402	1 45.6	a+1	8.9544
16.1		9.4386	32.5	528	9.4292	31.8	4.6	9.4092	27.1		9.3827
58 14.7	55 58.8	9.0466	58 37.9	526 52.6	9.0304	1 29.7	8.0	9.0403	4 38.0	3 46.0	9.0495
21.2	58.8		40.3	52.7 58.0		31.7	11.1		41.8	50.1	
25.0	58.5		41.9	53.4 0.0		33.3	15.0		45.8	53.5	
27.7	1.5	0.6804		528 2.8	0.6716	34.7	18.5	0.6777	49.7	56.8	0.6835
29.7	5.1	8.3888	24	533 6.8	8.3535	36.0		8.3494	52.2	59.7	8.3374
	58.1	8.4852			8.4596		11.44	8.4495		53.2	8.4322
	+27.54	9.0296			9.0191		-27.15	9.0255		+27.73	9.0365
	8.1	+9.45			+9.26			+9.39		7.3	+9.51
56 23.6	56 23.6	+2.18	58 48.3	57 52.3	+2.01	1 33.08	0 44.29	+1.99	4 45.62	4 20.15	+1.94
+2.02	-11.57	-4.99	-47.10	-11.57	-4.71	-48.19	-11.57	-4.60	-24.64	-11.57	-9.42
-10.64	+9.6	+10.75		+9.6	+10.38		+9.4	+10.65		+9.7	+10.92
		+1.789	-10.68		+1.694	-10.65		+1.743	-10.63		+1.795
	56 15.2	9.9830		57 42.25	9.9837		0 33.64	9.9852		4 10.32	9.9870
-47.99	-1.74	9.9036		-1.69	9.8939		-1.74	9.9020		-1.80	9.9052
-55.40	56 13.0	9.4386	-46.94	57 40.56	9.4292	-47.60	0 31.90	9.4092	-48.24	4 8.5	9.3827
	50	9.8866	-54.20		9.8776	-51.80		9.8852	-48.70	30	9.8922
		-7.702			-7.544			-7.677			-7.502
+12.05		-2.598	+9.69		-2.694	+10.80		-2.636	+12.28		-2.580
52 19.7	9.77744	-510.4	30 29.1	9.79351	-48.47	30 7.0	9.78379	-50.41	35 2.61	9.77456	-52.22
25.8	0.38535	0.7408	34.8	1.67302	0.7314	12.8	1.68833	0.7114	31.0	1.39377	0.6849
39.6	0.19325	9.9830	47.8	1.57699	9.9837	2.68	1.58258	9.9852	4.47	1.27747	9.9870
20.2	0.23425	9.4079	3.0		9.8855	8.0		9.7025	2.62	1.28104	9.7178
52 26.32	53 28.4	9.93422	30 35.42	51	9.323130	13.65	52	9.3092	35 32.00	53 35.97	9.2879
-17.15	13 2.8		+37.76	34 11.30	+38.25	34 33.69		+39.14	14.73	29 36.14	
52 24.6	60 -3.08	+1.09	31 13.18	-2.52	+1.06	30 57.90	-2.69	+1.01	35 50.93	510 -2.79	+9.5
53 30 23.4	75 12 52.04	-8.56	57 51 35.77	34 8.78	-8.57	52 51 56.95	34 31.00	-8.60	53 46 57.45	29 33.25	-8.64
-17 33.56		+8.34	-17 33.56		+7.92	-17 33.56		+8.23	-17 33.56		+8.53
-	0.0	+2.21	-	58	+2.11	-	62	+2.05	-	16	+1.95
-	0.5	55 25.60	+3.08	-	0.1	56 53.62	+2.52	-	0.0	59 44.30	+2.69
+11.91	12 3.8		+10.11	33 14.6		+11.23	33 39.2	+2.69	-	0.1	3 20.06
-17 21.51			+17 23.87			+17 22.76			+12.25	25 44.5	+2.79
53 12 58.05			51 34 1.61			52 34 22.87			+2.0		
Feb 18	79 26	9.9926	Feb 18	79 48	9.9931	Feb 18			80 29	9.9940	
h m s		20.48	h m s		20.79	h m s				2.532	
5 16 59	+4.647	+1.575	5 18 23	+4.661	+1.589	5 21 7			+4.839	+1.767	
+50° 10'			+50° 22'			+53° 15'					
18 26.5	a+1	8.9026	16 49.6	a-1	8.9057	19 30.3				8.9510	
8.5		9.2634	21.1		9.2482	13.4				9.2184	
17 19.7	17 25.0	9.0173	17 23.0	19 45.05	9.0192	22 31.8	21 32.9	7.3	27.6		9.0471
23.0	28.1		23.0	53.2		36.0	36.3	10.3	31.5		
25.1	31.5		25.1	57.3	0.6685	38.5	40.0	13.8	34.7		0.6848
26.7	34.5	0.6672	26.7	57.3	8.1539	40.2	42.7	17.2	38.2		8.1694
8.3 32.0	37.7	8.1660	8.3 32.0	51.10	8.2644	43.2	46.3	20.7	41.5		8.2655
	31.36	8.2807		25.87	9.0123		39.84		34.70		9.0411
	+26.77	9.0099					7.27	7.02			+9.54
		+9.16			+9.19						+1.31
17 24.96	17 57.3	+1.30	17 25.23	19 25.23	+1.27	22 37.94	22 37.94	20 7.14	20 7.14		-3.01
+32.17	-1.58	-3.12	11.58	11.58	-3.02	-30.80	-30.80	-11.58	-11.58		+1.104
-10.74	+9.6	+10.28			+10.33			+9.6	+9.6		+1.888
		+1.762	-10.73		+1.777						+1.888
	02										
	17 46.39	9.9926		14.50	9.9931			21 56.40			9.9940
-46.47	-1.76	9.8853		-1.78	9.8866			-1.89			9.9039
-39.10	17 44.63	9.2634		19 12.72	9.2482						9.2184
		9.8779			9.8777						9.8979
		-7.549			-7.580						-7.905
+8.42		-2.779			-2.767	+11.88					-2.595
55 14.8	9.80656	-4.770			-4.813	49 24.4	9.77694				-5.810
19.8	1.50745	0.5656			0.5504	29.3	1.48855				0.5206
35.8	1.42447	9.9926			9.9931	45.0	1.37595				9.9940
15.9		9.6785			9.6824	25.3					9.7251
55 21.58	50	9.1487			9.1348	49 31.00	53				9.1223
26.5	10 28.20					+23.77	15 31.90				
54 53.01	-1.18	+7.3			+4.0	49 54.77	-1.87				+6.5
50 24 53.34	10 27.02	-8.75			-8.76	53 32 53.58	15 30.03				-8.78
-17 33.56		+7.79			+7.86	-17 33.56					+8.67
-	0.1	+1.41			+1.37	-	20				+1.33
-	8.57	+1.18			+1.17	-	0.9				+1.87
+17 23.14						+12.02					
52 10 19.46						-17 21.68					
						53 15 20.02					

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Log A
B
C
D

27

9.2973 0.9502 1.2174 0.9881	Feb 1933 839								
Feb 19	70 9	9.9734	Feb 19	74 32	9.9840	Feb 19	74 40	9.9843	
h m s		.2623	h m s		.2333	h m s		.2023	
4 39 48	+4.792	+1.1720	4 58 56	+4.721	+1.649	4 57 4	+4.609	+1.537	5 6 24
+7.9			+52° 0'	47.4		+49° 59'			
+0.0	38 10.9	8.9600	35 21.8	12 +1	8.9311	55 32.4	a -1	8.9081	
	47.8	9.5309	44.8	56.3	9.4260	57.8		9.4223	
	41 67.	9.0529	57 47.8		9.0346	59 8.7		9.0158	
	11.4		51.4			11.6			
	14.4		54.0			15.7			
	13.0	0.6805	57.9	0.6740		19.8	0.6636		
9.1	21.8	8.4909	1.6	8.3571	9.8	24.0	8.3224		
	14.6	8.5838	54.54	8.4606		15.84	8.4381		
	-27.96	9.0263	+26.80	9.0186		-25.66	9.0001		
		+9.50		+9.36			+9.14		
	40 46.50	+2.76	58 21.34	+2.203		58 50.18	+1.87		
	-11.76	-6.33	-11.77	-4.76		-11.77	-4.52		
	+1.08	+10.34	+4.01	+10.16		+9.94	+9.73		
-10.71	+ .80	+7.627	-10.78	+7.679	-10.85		+1.622		
	+ .03								
	40 35.79		- .02						
	-1.63		58 10.56			58 39.33			
-47.92	40 34.16		-1.68			-1.62			
		-47.20	58 8.88			58 37.71			

Feb 19	76 49	9.9884	Feb 19	78 11	9.9907	Feb 19	78 40	9.9914
6 4 3	2095	2095	6 4 3	2237	2237	6 4 3	2105	2105
5 5 24	13.8 + 4.649	+1.577	5 5 24	+4.710	+1.638	5 5 24	+4.664	+1.592
+50° 27'	16.7	8.9073	+50° 27'	22.0	Q + 1	+50° 32'	21.5	Q + 1
4 51.4	19.7	9.3581	4 51.4	20.0	8.9215	4 51.4	30.2	8.9083
25.7	23.4	9.0201	25.7	21.4	9.3113	25.7	30.2	9.2934
8 4.8	26.5 45.1	9.0201	8 4.8	10.0 12 23.4	9.0286	8 4.8	14 07.7 14 20.3	9.0207
7.7	29.2 49.0		7.7	13.0 26.5		7.7	41.4 23.5	
12.0	32.7 51.9		12.0	15.3 29.7	0.6730	12.0	44.0 26.8	0.6688
14.6	35.8 55.2	0.6674	14.6	17.8 33.0	8.2328	14.6	46.1 29.3	8.2017
9.1 17.1	39.3 58.4	8.2654	9.1 17.1	21.4 36.2	8.3399	9.1 17.1	49.0 33.1	8.3141
	0.27	8.3782		24.6	9.0193		25.7	8.3141
	26.102634	9.0085		+26.42			+25.96	9.0121
8 1124	7 2622	+9.22	8 1124	12 15.62	+9.34	8 1124	14 43.64	+9.25
- 4502	11.77	+1.64	- 4502	+ 40.56	+1.52	- 4502	14 52.66	+1.42
	7 9.6	- 394		7 9.6	- 361		16.78	- 340
- 10.83	+ 992	+ 992	- 10.83	+ 10.17	+ 10.17	- 10.83	7 9.6	+ 1000
	+ 1684	+ 1684		+ 1742	+ 1742			+ 1727
	02			02			02	
7 1539	9.9884	9.9884	7 1539	12 45.37	9.9907	7 1539	14 41.82	9.9914
- 4648	9.8872	- 4709	- 4648	- 1.72	9.8928	- 4648	- 1.73	9.8876
- 4610	9.3581	- 42.30	- 4610	12 43.63	9.3113	- 4610	14 40.09	9.2934
	9.8756	- 42.30			9.8835			9.8790
	- 75.09				- 76.47			- 75.68
+ 8.46	- 27.61	+ 9.55	+ 8.46	- 27.07	+ 8.89	+ 8.46	- 27.57	- 27.57
36 52.8	9.80397	- 4448	36 52.8	9.99558	- 4940	36 52.8	9.80320	- 4817
09	1.65341	0.6603	09	26.1 1.69810	0.6135	09	68 0.95521	0.5956
128	1.56784	9.9884	128	38.3 1.57914	9.9907	128	19.7 0.86887	9.9914
55.2	9.6765	20.2	55.2	9.6937	11	55.2	11	9.6822
37 04.2	9.2453	43 25.80	37 04.2	9.2041	33 6.52	37 04.2	33 6.52	9.1810
+ 36.97	27 46.18	32.67	+ 36.97	22 31.53	7.39	+ 36.97	32 24.87	7.39
37 37.39	- 1.77	32.67	37 37.39	- 1.79	7.39	37 37.39	- 1.46	7.39
50 45 10.96	27 44.51	57 39 53.22	50 45 10.96	22 29.74	57 39 53.22	50 45 10.96	32 23.41	57 39 53.22
- 17 33.24		- 17 33.24	- 17 33.24		- 17 33.24	- 17 33.24		- 17 33.24
- 54		44	- 54		44	- 54		44
- 04		07	- 04		07	- 04		07
7 89.0	6 27.23	11 56.54	7 89.0	21 47.4	11 56.54	7 89.0	13 53.45	11 56.54
+ 14	26 58.3	21 47.4	+ 14		21 47.4	+ 14	31 43.7	21 47.4
- 17 24.78		17 23.64	- 17 24.78		17 23.64	- 17 24.78		17 23.64
50 27 34.72		51 22 21.98	50 27 34.72		51 22 21.98	50 27 34.72		51 22 21.98

1885

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Feb 19

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- 10.72

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9.0477

+ 9.68

+ 146

- 333

+ 1086

+ 1867

9.9930

9.9080

9.2510

9.9010

- 7962

- 2550

+ 1022

- 5412

0.5532

9.9930

9.7334

4.1590

+ 71

- 8.77

+ 8.93

+ 1.40

+ 2.27

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Feb 19

6 m 5

5 37 5

+ 51.24

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+ 16.68

8.9220

8.7907

9.0290

0.6758

7.9124

8.0197

9.0269

+ 9.40

+ 0.73

- 1.73

+ 1035

+ 1875

9.9979

9.8930

8.9907

9.8909

- 7779

- 2705

+ 9.82

- 5074

0.2929

9.9979

9.7054

8.8837

+ 39

- 8.87

+ 8.37

+ 7.4

+ 0.68

18 6.80

59 17.7

Feb 19

6 m 5

5 57 42

+ 51.25

36 6.9

25.2

58 8.5

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58 13.0

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89 38

29.8

+ 4.748

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0.0000

22.42

+ 16.76

8.9220

7.8062

9.0290

0.6765

6.7282

6.8352

9.0290

+ 9.41

+ 0.05

- 0.11

+ 1.040

+ 1.975

0.0000

9.8930

7.8062

9.8930

- 7816

- 2905

- 5111

9.1084

0.0000

9.7054

7.6992

+ 0.03

- 8.92

+ 8.43

+ 0.5

- 0.41

18 6.80

59 17.7

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1885	78 21	79 41	9.9929	78 21	84 17	9.9978	78 21	84 30	9.9780	78 21	89 13	0.0000
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
5 18 23	+4664	+1592	5 36 15	+4886	+1814	5 37 5	+4739	+1667	5 57 42	+4750	+1678	
+50° 22'			+53° 44'			+50° 24'			+57° 25'			
16 21 6	2-1	8.9068	34 37 6	a +1	8.9587	35 36 8	a -1	8.9217	56 6 2	54 27 6	8.9225	
21 6		9.2531	43 7		8.9983	23 4		8.9816	252 27 7		8.1358	
18 58.0	9.1573	9.0198	36 42.9	36 42.6	9.0521	38 34.5	38 32.6	9.0288	57 33.2	57 32.3	9.0293	
1.0	222 19.3		46.6	46.3		37.2	36.0		35.0	26.0		
3.2	231 23.1		48.8	49.8		39.9	39.5		37.6	29.0		
244 27 6		0.6688	52.0	53.4	0.6890	44.6	42.4	0.6757	40.3	35.4	0.6767	
		8.1599	54.7	56.7	7.9570	44.6	45.9	7.9033	42.7	35.7	7.0583	
		8.2729		49 76	8.0504		39 28	8.0104		29 08	7.1651	
		9.0127		+27.89	9.0499		-26.45	9.0268		-26.46	9.0293	
		+947			+992			+962			+966	
19 073	18 57 18	+130	36 49 00	37 17 65	+0.81	38 39 56	38 12 83	+0.72	57 37 76	57 26 2	+0.70	
-3.55	1220	-315	+28.65	-1220	-1.89	-26.73	-12.20	-1.72	-35.14	-12.21	-0.25	
	+80	+936		+90	+1020		+82	+967		+82	+969	
-11.42	+02	+1698	-1133		+1904	-1140		+1829	-1141		+1920	
	18 45 7	6.9929	37 6 3	9.9978		38 1 43	9.9980		56 51 21	0.0000		
	-170	9.8870	-48 86	9.9066	-47 36	-1.83	9.8929	-47 50	-1.92	9.8932		
18 44 06	9.2531	-20 40	37 4 42	8.9983	-19 60	37 58 60	8.9816	-310	56 49 29	8.1358		
		9.8799		9.9044			9.8909			9.8932		
		-7584		-8024			-7779			-7820		
		2763	+1228	-2565	+9.68		-2706	+9.56		-2703		
39 38 2	9.80473	-4821	30 52.8	9.77199	-5459	41 159	9.79510	-5073	37 48.7	9.79494	-5119	
442	0.55023	0.5553	12 1.45712	0.3005	24.7	1.42702	0.2838	58.0	1.54580	9.4380		
00	0.96542	9.9929	15.2	1.33957	9.9978	39.6	1.33256	9.9980	13.9	1.45120	0.0000	
400		9.6831	55.8	9.7371	9.7371	212	9.7053	53.7		9.7070		
39 44 25	50	9.1401	21 12.5	8.9049	41 25.35	51	8.8745	37 58.58	51	8.0290		
	+292	25 36.58	-2186	44 48.57	+2151	23 38.50	+2826	26 58.10				
39 47 77	-1.27	+73	20 39.39	-1.89	+41	41 48.66	-0.67	38 26.84	+0.21	+0.6		
50 48 0.58	25 35.31	-882	54 2 8.96	44 47.18	-8.92	51 41 1.99	23 37.83	-8.92	51 44 21.51	26 58.10	-8.97	
-17 32.67		+810	-17 32.67		+9.17	-17 32.67	+8.52	-17 32.67	58.61	+8.60		
	0.1	+1.26	21		+73	19	+68		33		+8.0	
	0.9	+1.27	02	36 15.56	+1.39	03	37 12.24	+0.67	06	56 1.79	-0.21	
	863		+12.32	44 26.8		+9.74	23 18.2		+9.74	26 55.5		
	14		+19			16			16			
-17 2400			-17 2039			-17 2299			-17 2311			
50 25 27.71			53 44 36.29			51 23 28.82			51 26 48.84			
78 21	94 46	9.9985	78 21	98 16	9.9955	78 21	98 27	9.9953				
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s				
6 18 12	19 65 9.4	+4.929	6 33 0	+4.829	+1.757	6 33 0	+4.829	+1.757				
+54° 19'	163 12.8		+53° 1'	30 38.2		+53° 1'	a -1	8.9471				
	165 6.8	8.9680	31 27.7	8.9471	9.1571	31 23.2	a -1	8.9473				
19 40 78	15 9 19.4	9.0582	33 48.5	33 37.4	9.0446	33 26 48.5	34 21.9	9.0448				
7.6	47.6	40.7	48.5	41.0		28 50.4	25.2					
10.4	49.6	43.7	50 29.3	44.3		27 53.7	28.7					
13.4	52.8	47.5	55.1	48.0		55.8	32.1					
8.2	159 30.0	51.4	55.1	51.1		57.7	35.7					
		4406	7977.8	4436		38.42	38.42					
		-2829	9.0567	-27.43		-27.43						
	15.90		+1.003	53.26	+982	28.20	+982					
19 8.65		19 15.85	-0.69	33 16.93	-114	33 16.93	-117					
18 49 00		-1222	+1.60	-12.23	+2.68	+8.03	+2.74					
+26.38		+92	+1032	36.33	+994	33.29	+994					
+7.00			+2.126	-1138	+2.130	-11.38	+2.133					
	-11.33											
	49.28	19 45.2	9.9985	33 5.53	9.9955	33 49.91	9.9953					
	+16.30	19 2.13	9.9098	-2.13	9.9024	-2.13	9.9025					
		19 2.39	8.9196	33 3.42	9.1571	33 47.78	9.1672					
			9.9083		9.8979		9.8978					
			-80.97		-79.05		-79.03					
			25.29	+11.60	-26.10	+11.61	-26.07					
45 48.8	9.76590	-55.68	3 49.8	9.77930	-52.95	3 49.8	9.77930	-52.94				
55.8	1.42 77.4	0.2218	58.2	1.42 77.4	0.4599	58.2	1.42 77.4	0.4694				
9.8	1.30530	9.9985	11.8	9.9955	9.9955	11.8	9.9955	9.9953				
51.2	0.72 14.6	0.7457	53.2	0.7457	0.7239	53.2	0.7457	0.7238				
45 56.40	54 37.0	8.8294	58.25	53 0.54	9.0601	58.25	53 0.54	9.0697				
			+8.72 28.1	20.29		25.6 37	1 35.41					
-5.27	-2.22	19 52.46	+0.53	4 26.49	+1.60	3 57.88	+1.63					
45 51.13	45 36.20			53 18 43.60	2.14	53 18 56.49	1 37.04					
54 36 57.22	54 37 12.15	19 38.4		-17 32.67		-17 32.67						
-17 32.67		38.23										
02												
-02												
+12.98												
+21												
-17 19.52												
54 19 27.48												

840

31

Feb 21	92 40	9.9995	Feb 21	92 49	9.9995	Feb 21	94 49	9.9985
6 9 45	+4.930	.2696	6 9 45	11 12.2+	.2696	6 18 12	+4.929	.2702
+54° 18'		+18.58	+54° 18'	15.8	+18.58	+54° 19'	a+1	+1.857
82(8.8)		8.9674	82(8.8)	19.0	8.9674	16 33.8		8.9680
11 12.9	10 25625.6	8.6672	11 12.9	22.6	8.6672	18 46.4		8.9241
14.6	24527.8	9.0578	14.6	27.1	9.0578	18 47.6	18 51.6	9.0582
16.4	24131.2	3.1425	16.4	30.7	3.1425	476.6	51.7	
17.7	3346.2	33.5	17.7	34.2	33.5	496.104	58.2	
19.7	3349.8	0.6928	19.7	37.8	0.6928	528.184	1.6	0.6928
	24.50	7.6351		41.4	7.6351		5.3	7.8921
	+28778	7.7255			7.7255		58.28	7.9823
	53.28	9.0573			9.0573		+2829	9.0567
		+1.003			+1.003			
11 15.02	10 53.18	-0.39	11 15.02	11 26.73	-0.39	18 49.00	19 26.57	+1.003
-21.84	-12.22	+0.89	-21.84	-12.22	+0.89	19 8.85	-12.22	-0.70
	+ .92	+1034		+ .92	+1034	+17.42	+ .72	+1.161
	-11.33	+2.087		-11.33	+2.087	+5.157		+1032
		-0.03			-0.03	-11.33		+2126
	10 41.85	9.9995		11 15.40	9.9995		19 15.24	9.9985
	-2.09	9.9096		-2.09	9.9096		-2.13	9.9098
	10 39.76	8.6677		11 13.31	8.6677		19 13.11	8.9241
		9.9091			9.9091			9.9083
		-8.111			-8.111			-8.097
		-2.532			-2.532			-2.529
		+13.09			+13.09			
47 11.2	9.76607	-5.719	47 11.2	9.76607	-5.719	45 4.88	9.76590	-5.568
20.1	1.33925	9.9699	20.1	0.86392	9.9699	55.8	1.34346	0.2263
33.8	1.21578	9.9995	33.8	0.79045	9.9995	9.8	+12482	9.9985
46		9.7466	46		9.7466	51.2	1.45120	9.7457
47 19.92	54	8.5773	47 19.92	54	8.5773	45 56.40	54.20 0.13	8.8339
+16.44	17 52.30	-19	+16.44	17 52.30	-19	28.2333	19 48.40	
47 36.36	+0.11	-8.96	47 36.36	+0.11	-8.96	45 45.07	28.14 +0.54	-34
54 35 11.99	17 52.41	+9.38	54 35 11.99	17 52.41	+9.38	54 37 52.87	19 46.24	-8.94
-17 32.67		-34	-17 32.67		-34	-17 32.67	20 0.67	+936
-13		-0.11	-13		-0.11	-36.08		-62
-0.5		+12.95	-0.5		+12.95	-0.2		-0.54
+12.95		+21	+12.95		+21	+12.98		
-17 19.69		-17 19.58	-17 19.69		-17 19.58	-17 19.5886		
54 17 39.32		54 17 40.26	54 17 39.32		54 17 40.26	54 19 26.1		
						47.32		
Feb 21	102 57	9.9888	Feb 21	103 27	9.9879			
6 51 0	46.9 +4934	.2811	6 51 0	46.9 +4934	.2811			
+55° 1'	50.6	+1.862	+55° 1'	50.6	+1.862			
49 21.3	54.1	8.9789	49 21.3	54.1	8.9789			
2.1	58.0	9.3504	2.1	58.0	9.3504			
51 18.2	57 25.6	9.0655	51 18.2	57 25.6	9.0655			
20.3	29.0	4.9	20.3	29.0	4.9			
23.2	32.7	8.7	23.2	32.7	8.7			
26.0	36.0	33.7	26.0	36.0	33.7			
28.0	39.3	37.5	28.0	39.3	37.5			
	32.62	30.18		32.62	30.18			
	52 140	144		52 140	144			
57 23.14	52 14.2	+1.024	57 23.14	52 14.2	+1.024			
+38.28	-12.24	-1.91	+38.28	-12.24	-1.91			
	+ .94	+438		+ .94	+438			
	-11.33	+1.027		-11.33	+1.027			
		+2.278			+2.278			
		-17.33			-17.33			
		9.9888			9.9888			
	57 50.09	9.9134		53 48.83	9.9137			
-49.35	-2.28	9.3504	-49.35	-2.28	9.3504			
+44.60	51 47.81	9.9022	+44.60	51 47.81	9.9022			
		-7.984			-7.984			
		-2.488			-2.488			
		+13.53			+13.53			
4 5.96	9.75841	-5.496	4 5.96	9.75841	-5.496			
8.7	1.58297	6.6526	8.7	1.58297	6.6526			
23.1	1.46184	9.9888	23.1	1.46184	9.9888			
38		9.7400	38		9.7400			
5 8.20	55	9.2638	5 8.20	55	9.2638			
-28.30	0 48.70	+32.65	-28.30	0 48.70	+32.65			
4 40.50	+2.07	-91	4 40.50	+2.07	-91			
55 18 78.5	50.77	-8.74	55 18 78.5	50.77	-8.74			
-17 32.67		+9.24	-17 32.67		+9.24			
-38		-1.66	-38		-1.66			
-10		-2.07	-10		-2.07			
+13.78		+13.84	+13.78		+13.84			
+22		+22	+22		+22			
-17 19.15		-17 19.14	-17 19.15		-17 19.14			
55 0 33.18		55 3 17.46	55 0 33.18		55 3 17.46			

[illegible]

Feb 23	74 22	99836	Feb 23	77 0	99887	Feb 23	78 4	99905
h m s		2545	h m s		2785	h m s		2265
4 56 41	+4.802	+1730	5 7 4	58.44922	+1.850	5 12 16	+4.720	+1648
+53.20			1.9			+51.33		
55 5.1	a-1	8.9523	5 26.0		8.9763	55 5.1	a-1	8.9243
18.6		9.4305	19.5		9.3521	18.6		9.3155
57 59.0	58 2.9	9.0480	8 14.6	7 37.3	9.0637	12 27.3	12 47.6	9.0304
1.4	6.0		18.3	40.3	15.7	29.8	54.3	57.0
3.1	9.5		20.3	43.5	19.8	31.2		
4.5	13.0	0.6814	22.8	47.5	23.8			
8.3	7.7	8.3828	8.7	24.8	51.2	53.7	57.0	0.6739
	95.2	8.9785		43.96	41.34			8.2398
	-27.63	9.0316		12.65	12.69			8.3459
		+10.11			+1036			9.0209
58 31.4	57 41.91	+2.17	8 20.14	8 12.67	+191	12 29.43	12 27.50	+994
-21.23	-12.41	-5.14	-7.47	-12.41	-445	-1.93	-12.41	+156
	+7.99	+9.08		+84	+953		+7.94	-379
-11.65		+1.622	-11.60		+1735	-11.69		+886
	0.8			8 1.03				+1657
57 30.26	9.9836			8 1.07	9.9887			9.9905
-4801	9.9043		-49.21	-1.74	9.9126	-47.19		9.8939
-54.30	9.4305		-45.50	7 37.3	9.3521	-41.80		9.3155
	9.8879				9.9013			9.8844
	-77.25				-79.67			-76.63
+120.2	-25.90	+13.92			-24.98	+10.28		-26.97
44 13.4	9.77609	-51.35	14 15.2	9.76021	-54.69	31 26.2	9.99367	-4966
32.8	1.32695	0.7327	22.8	0.87332	0.6543	33.8	0.28556	0.6177
47.1	1.21350	9.9836	37.8	0.74399	9.9887	4.91	0.18969	9.9905
27.6		9.7105	17.8		9.7372	2.90		9.6960
44 32.72	53 9.3348	14 23.40	54		9.2647	31 34.52	51	9.2094
+16.35	20 40.21	+5.55	51 2.23			+153	33 51.57	
44 49.07	-3.08	+1.14	14 28.95	-3.10	+95	31 36.07	-1.94	+87
53 37.5928	20 37.13	-8.66	53 8 19.40	50 59.18	-8.74	57 51 12.28		-8.78
-17 31.09		+8.77	-17 31.09		+934	-17 31.09	33 49.53	+848
		+1.83			+155			+1.37
-0.9	56 40.63	+3.08			+3.10			+1.94
+120.4	19 42.8		+13.81	7 10.12		+0.3	11 26.96	
+1.19			+2.22	50 13.6		+1.25	33 7.7	
-17 19.07			-17 19.07			-17 28.81		
53 20 28.19			54 50 48.31			57 33 41.19		

Log # 13
1885
+ .71
+ .02

[illegible]

Feb 25	94 46	9.9985	Feb 25	95 32	9.9980	Feb 25	95 43	9.9978
6 m 5		2.702	6 m 5		2.801	6 m 5		2.798
6 18 12	1.4 49.29	+1.857	6 22 1	5.6 49.69	+1.897	6 22 1		+1.895
+54° 19'	4.8		+54° 56'	9.3		+54° 56'		
16 33.8	8.9 68.0	8.9 68.0	20 21.7	8.9 77.9	20 21.7	20 21.7	a b c a-1	8.9 77.6
19.6	8.9 196.6	8.9 196.6	56.5	8.9 84.2	56.5	56.5		8.9 84.2
18 34.5	18 40.4	16.3 37.5	9.0582	21 38.9	21 44.0	19.8 41.3	23 39.2	23 37.3
37.9	44.7	19.6 40.8		0.4 47.7	23.6 45.0		42.6	40.11.2
45.4	47.9	23.2 44.0		2.5 51.0	27.2 48.5		45.6	40.14.7
50.2	51.0	26.7 47.3	0.6928	5.0 54.7	30.5 52.0	0.6963	48.6	37.18.0
8.7 55.2	54.8	30.1 51.2	7.8876	7.5 58.5	34.0 56.7	7.8876	51.0	39.7
	47.76	44.26	7.9718	5.118	48.50	8.0490		33.58
	16.01	15.94	9.0567			9.0628		28.72
				22 1984	1989		385	3.86
18 44.64	19 15.98	+1.074	22 286	22 19.86	+1.076	23 45.40	23 3.86	+1.083
+31.34	-12.63	+1.165	+17.00	-12.63	+1.194	-4.154	-12.63	-0.84
	+ .99	+1.887		+1.01	+899		+1.01	+2.00
-11.67		+2.057		-11.65	+2.087		-11.65	+899
	19 4.31	9.9985						+2.098
	-2.06	9.9098	49.69	22 8.21	9.9980			9.9978
-49.28	19 2.25	8.9196	+19.60	22 61.2	9.9131		22 52.21	9.9130
+16.30		9.9083			8.9842		22 30.11	8.9983
		8.096			9.9111			9.9108
+12.88		2.529	+13.83		-8.149			-8.143
46 18	9.76590	-5.567	8 44.0	9.75931	-5.567	8 44.0	9.75931	-5.565
10.4	1.49610	0.2218	54.9	1.23045	0.2264	54.9	1.61847	0.3005
24.6	1.37246	9.9985	9.3	1.10022	9.9980	9.3	1.48824	9.9978
63		9.7456	53.12 4.99	54.52	9.7526	49.9		9.7520
46 10.78	54	8.8294.8	54.52	54	8.8973.8	54.52	54	8.9113
-23.58	19 41.25	-36	8 41.92	56 47.48	+30.78	56 36.2		-44
45 47.20	+0.13	-8.89	55 14.643	56 47.58	-8.88	55 13.2305	56 3.77	-8.87
54 37.115	19 41.38	+9.65	-17 32.78	46.98	+9.81	-17 32.78		+9.80
-17 32.78		-5.3	-0.13		-61			-64
-26					-0.10			-0.15
-0.2	18 12.97			21 16.43			22 0.43	
+12.96	19 47.7			57 7.2			56 23.4	
+20				6.6				
-17 19.90								
54 19 28.37								

[illegible]

843

85 32 99987

Mar 2

 $\frac{1}{2} m s$
 5 46.56
 $+51^{\circ} 31'$

88914

 $\frac{1}{2} m s$
 46 44.7 46 47.2
 46.5 50.4 23.8 43.6
 49.6 51.0 27.0 46.9
 52.0 57.2 30.2 50.0
 54.4 6.4 33.6 54.0
 53.84 46.96

47 2040 2038

 $\frac{1}{2} m s$
 46 49.44
 $+30.95$
 $\frac{1}{2} m s$
 47 2039
 13.56
 $+96$
 -12.75
 -1.13
 -0.02
 -1.63
 $-47 5.99$
 -47.52
 -1080
 $+9.31$
 33 318 979399
 433 1.49066
 24 1.39511
 426

 $\frac{1}{2} m s$
 33 4502 51
 -2484
 $33 2018$
 $51 49 28.17$
 $-17 35.36$
 -25
 -07
 $+9.49$
 $+1.14$
 $-17 26.05$
 $51 31 52.81$

Mar 2

 $\frac{1}{2} m s$
 6 33 0
 $+53^{\circ} 1'$
 31 22.8
 -1.0
 $\frac{1}{2} m s$
 33 34.3 33 38.4
 36.7 42.0 16.2 36.7
 39.3 45.1 19.7 40.3
 41.3 48.7 23.0 43.7
 44.7 52.0 26.5 47.2
 45.24 40.24

 $\frac{1}{2} m s$
 33 39.26
 $+33.48$
 $\frac{1}{2} m s$
 33 38.4
 -12.75
 -0.03
 -48.37
 $+29.30$
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 33 39.26
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86 47 99993

Mar 2

 $\frac{1}{2} m s$
 7.0 47.52
 $+1680$
 10.5
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 1000.3
 $\frac{1}{2} m s$
 8.9238
 8.7491
 9.0301
 9.06769
 9.07729
 9.0294
 $+1.066$
 $+0.41$
 -1.08
 $+6.53$
 $+1.652$
 9.9993
 9.8937
 8.7491
 8.8930
 -78.16
 -2.699
 -5.117
 0.0513
 9.9993
 9.7090
 8.6428
 $+0.25$
 -8.70
 $+9.16$
 $+2.7$
 $+0.98$
 $\frac{1}{2} m s$
 49 58.56
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 -2833
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843

1885

Mar 2

6 47 12 47 5.1
 +50 10' 0.1
 35.6 3.7
 43 213 6.7
 48 22.0 10.2 29.2
 23.9 13.0 32.4
 26.4 16.3 35.7
 28.8 19.6 38.8
 30.9 22.8 42.0
 994
 48 26.30 48 9.89
 -16.41 -13.62
 +91 +623
 -12.85 -12
 +1909
 47 57.02 9.9904
 -4.91 9.8863
 47 55.13 9.3173
 9.8767
 -75.28
 -2770 +13.35
 45 37.6 9.80656
 50.2 1.21511
 10.1 1.13213
 50.1
 45 53.00 50
 +13.56 19 15.74
 46 5.56 +1.91
 50 36 42.79 19 27.65
 -17 35.36 17.65
 -0.7
 -0.2
 +8.28
 +.12
 -17 27.05
 50 19 7.43

Mar 2

6 47 12 47 5.1
 +50 10' 0.1
 35.6 3.7
 43 213 6.7
 8 14.1 8 7.4
 16.7 10.5
 20.0 12.9
 22.0 15.9
 9.8 23.9 19.0
 13.14
 +26.39
 8 19.4 8 39.53
 +20.19 -13.63
 +95 +624
 -12.83 -1.3
 8 26.20 9.9803
 -2.02 9.8934
 8 24.68 9.4688
 9.8737
 -7.476
 -27.01
 36 38 9.79605
 150 1.30514
 34.2 1.21165
 14.0
 36 16.75 51
 16.28 29 22.09
 36 0.47 +1.51
 51 46 47.88 29 23.60
 -17 35.36
 -1.1
 -0.3
 +9.57
 +7.4
 -17 25.79
 51 29 12.82

101 59

9.9904

Mar 2

2072
 +4.648 +1.576
 8.9050
 9.3173
 9.0187
 51 53.6
 56.2
 59.1
 1.1
 5.3
 35.1
 31.7 38.8
 316 424
 315 46.1
 51 59.06
 -2740
 -12.70
 -49.41
 +44.20
 51 31.66
 -13.62
 +1.09
 -1.14
 51 18.96
 -2.08
 51 16.88
 733
 59 34 9.75844
 18.1 1.43775
 368 1.30652
 170
 59 19.32 55 81
 +20.28 5 46.4
 59 39.53 +0.74
 55 23 8.40 82.5 47.5
 -17 35.36
 -1.9
 -0.9
 +13.44
 -17 22.01
 55 5 33.46

102 50

9.9890

Mar 2

28.25
 +4.941 +1.869
 8.9803
 9.3466
 9.0664
 5 53.3
 56.8
 0.7
 4.2
 7.9
 0.58
 28.85
 31.73
 +1.109
 -1.85
 51 31.66
 -13.62
 +1.09
 -1.14
 51 18.96
 -2.08
 51 16.88
 18.9
 8.3269
 8.4130
 9.0554
 +1.109
 -1.85
 5 23.14
 5 39.62
 -13.63
 +1.09
 -1.14
 5 26.91
 -3.14
 5 24.77
 13.68
 510 9.75805
 19 1.21696
 20.3 1.08547
 0.9
 51 35.2 55
 12.17 14 35.32
 50 57.35 +1.36
 55 31 57.00 14 36.68
 -17 35.36
 -0.7
 -0.2
 +13.58
 -17 21.68
 55 14 21.64

106 22

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28.49
 +4.921 +1.849
 8.9827
 9.4499
 9.0680
 5 17.5 5 3.7
 20.5 7.4
 22.9 11.0
 26.1 14.5
 28.7 17.5
 10.82
 +28.89
 +1.104
 -2.36
 +5.90
 +6.85
 +21.43
 9.9820
 9.9147
 9.4499
 9.8967
 -78.83
 -24.78
 -54.10
 0.7521
 9.9820
 9.7332
 9.3646
 -1.27
 -8.36
 +9.68
 -1.41
 -1.3.6

[illegible][illegible]

844
Mar 4
h m s
5 49 48
+54° 23'
48 6.6
22.8

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02220 2079 +4686 +1614 8.9057 7.3088 9.0192 8 13.0 8 25.8 15.8 29.4 18.0 33.1 20.3 36.3 7.8 23.2 22.96 +27.97 +1052 +201 -024 +566 +16185 -1343 8 47.50 -48.91 +730 +11.47 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842 9.0517 9 29.5 8 49.1 32.2 34.9 37.0 39.9 8.8 7.5423 7.6359 9.0514 +1098 -030 +078 +610 +1756 8 47.50 9.9997 9.9064 8.5842 9.9061 -8056 -2567 +11.92 23 11.1 23.3 41.3 21.6 23.3 24.32 53 32.61 22.51 53.59 -17.34 -48 -07 +11.86 +16 -17.23 53.42 98	Mar 4 92 12 9.9997 2603 +4892 +1820 6 8 19 +53° 141 8.9581 8.5842
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1885	Mar 4	102.50	9.9890	Mar 4	102.57	9.9888	Mar 4	104.9	9.9866	Mar 4	104.8
6 58 0.8	+4.941	28.25	+1.869	6 51 50	+4.934	28.11	6 55 42	+4.736	23.46	6 55 42	
+55° 7'		48 18.9	a + 1	+55° 7'		49 21.3	a - 1	+52° 3'	11.5	+52° 3'	a - 1
50 49.3	50 56.6	9.9803	9.3466	52 33.7	52 24.9	8.9789	54 7.0	11.5	8.9324	54 7.8	a - 1
52.0	0.1	9.0664	9.0664	35.9	28.5	9.3504	54 7.9	7.9	9.3882	54 4.3	
54.3	0.3	0.6938	0.6938	38.5	32.2	9.0655	56 33.2	56 15.9	9.0354	57 5.4	
57.3	6.8	8.3269	8.3269	40.8	36.3	0.6932	35.7	20.3	0.6754	8.9	
8.6	57.0	11.1	8.4130	43.5	39.2	8.3293	38.0	23.0	8.3206	12.0	
	358	9.0554	9.0554	7.0	43.5	8.4159	40.5	26.4	8.4236	15.4	
	+28.78				3222	9.0543	43.7	29.5	9.0220	18.7	
					-28.80			2302		1208	
								+2683		-2683	
50 54.48	51 32.36	-185	52 38.48	52 3.42	-186	56 38.22	56 49.85	-183	56 45.25		
+37.88	-1420	+468	-35.06	-1420	+471	+11.63	-1420	+480	-1420		
	+77	+615		+77	+614		+69	+370	+69		
-13.41	+0.5	+2.007	-13.41	+0.5	+2.007	-13.48	+0.5	+1.930	+0.5		
	51 18.95	9.9890		51 50.01	9.9888		56 36.34	9.9866	56 31.57		
-49.141	-2.01	9.9139	-49.35	-2.01	9.9134	-47.38	-1.93	9.8970	-1.93		
+44.20	51 16.84	9.3466	+44.60	51 48.00	9.3504	+48.70	56 34.44	9.3882	+47.38	56 28.84	
	94	9.9029			9.9022			9.8836			
	9996				-9984			-9649			
+13.16	733	2.482	+13.13		2.488	+10.31		2.666			
45.9 52.4	9.7584	-55.14	3 56.1	9.75805	-54.96	0 133	9.78886	-49.83	0 133		
4.9	1.5484	0.6488	99	1.5448	0.6526	35.0	1.06558	0.6904	25.0		
2.13	1.4472	9.9800	2.70	1.41332	9.9888	42.0	0.96490	9.9866	42.0		
2.7	620	9.7415	7.0		9.7400	236		9.6975	336		
505 5.22	55 34	9.2605	4 100.55		9.2638	2588	52	9.2852	25.98		
27.801	5 49.54		4 23.90	0 50.79		9.22	5 7.11				
58 37.38	5 40.53	-1.00	4 35.90	+0.57	-1.01	0 16.76	5 1.59	-1.10			
55 23 11.04	5 49.24	-8.51	55 18 12.95	0 51.36	-8.51	52 22 31.59	5 8.70	-8.46			
-17 34.79		+9.97	-17 34.79		+9.94	-17 34.79		+9.01			
		-9.9			-9.9			-10.4			
	50 27.53	-0.53		50 58.65	-0.57		55 47.06	-1.59	55 42.46		
+13.44	6 34.1		+13.33	1 42.0		+10.21	5 57.4				
-17 21.63			-17 21.66	360		-17 24.48					
55 5 36.25			55 0 37.66			52 4 56.80					
Mar 4	106.14	9.9823	Mar 4	107.17	9.9799	Mar 4	107.38	9.9791	Mar 4		
6 58 0.8		28.14	6 58 0.8		23.33	6 58 0.8		28.30	6 58 0.8		
7 4 2	4 54.78	+4.907	7 3 14	+4.706	+1.634	7 9 41	+4.901	+1.829	7 9 41		
+55° 3'		0.678	+52° 1'	a + 1		+55° 7'	a - 1		+55° 7'	a - 1	
2 24.2	0.678	8.9792	6 40.2	8.9311	8.9311	8 3.6	8.9	8.9808	8 3.6		
4 26.9	4.278	9.4465	2.5	9.4729	9.4729	8 8.9	8.9	9.4813	8 8.9		
4 26.9	7.373	9.0657	8 50.8	9.0346	9.0346	10 43.4	11 7.1	9.0668	10 43.4		
29.6	32.7	50.8	50.1	46.0	46.0	46.0	10.5	46.0	46.0		
32.3	15.078	54.0	53.7	48.8	48.8	48.8	14.6	48.8	48.8		
35.0	39.4	56.0	57.2	51.3	51.3	51.3	18.0	51.3	51.3		
9.6 35.9	43.7	57.6	0.5	8.9 54.5	8.9 54.5	8.9 54.5	21.4	8.9 54.5	8.9 54.5		
	36.12	8.5122	53.0	8.5075	8.5075	8.5075	14.92	8.5075	8.5075		
	28.80	9.0480	+26.81	9.0145	9.0145	9.0145	-28.85	9.0459	9.0459		
	7.82										
	50	+1.102		+1.056	+1.056			+1.100			
4 31.24	5 7.52	-2.33	8 54.22	-2.21	-2.21	10 48.80	10 45.44	-2.53	10 45.44	10 46.41	
+35.62	-14.21	+5.88	+26.29	-14.21	-14.21	-3.33	-14.21	+2.38	-14.21	+1.37	
56	+77	+605		+69	+69		+77	+602	+77		
-13.42	+0.5	+2.062	-13.49	+0.5	+1.977	-13.42	+0.5	+2.088	-13.42	+0.5	
	54.20	9.9823		9.9799	9.9799		10 32.05	9.9791	10 32.05		
-49.08	-2.06	9.9135	-47.07	-1.98	9.8915	-49.01	-2.09	9.9141	-49.01		
+55.70	4 32.14	9.4465	+59.20	9 50.4	9.4729	+1.040	10 29.96	9.4813	+1.040	10 30.90	
	02	9.8958			9.8764			9.8932			
		-78.67			-75.23			-78.20			
+13.14		2.487	+10.5	2.671	2.671	+13.60		2.480	+13.45		
3 24.4	9.75805	-53.80	5 52.6	9.78918	-48.52	57 23.86	9.75733	-53.40	67 23.86	9.75733	
37.2	1.5542	0.7487	59.8	1.41979	0.7751	44.1	0.52244	0.7835	4.11	1.37785	
54.1	1.4103	9.9823	16.4	1.31943	9.9799	58.4	0.39023	9.9791	58.4	1.24564	
34.3	1.41949	9.7308	57.9		9.6859	39.1		9.7275	41.0		
37.50	55 15.47	9.3606	60.9	44.31	9.3694	57 44.30	55 42.90	9.3954	57 44.30	55 28.2	
262 25.76	2 44.46		20.87	59 42.06		57 44.30	55 42.90		57 44.30	55 28.2	
3 11.42	23 +1.15	-1.26	5 47.55	39.30	+2.11	-1.28	57 44.30	+1.37	-1.36	57 44.30	
55 19 36.4	137.2	-8.88	52 17 6.49	59 44.77	-8.33	55 25 1.59	44.77	-8.32	55 25 1.59	44.77	
-17 34.79	16.62	+9.73	-17 34.79	59 44.77	+8.77	-17 34.79	44.77	+9.66	-17 34.79	8 +6.9	
		-1.24		18	-1.27			-1.35		41.9	
		-1.15		0.2	-2.11			-1.37		9 41.89	
+13.34	4 2.94		+10.10	8 17.97		+13.46	9 40.95		+13.46	9 4.6	
-17 21.65	3 12.3		-17 21.74	0 45.6		-17 21.74	8 44.7		-17 21.74		
55 2 1.62			51 59 32.01			55 7 21.80			55 7 21.80		

Log A	9.3653	Mar 8.3
B	0.9461	
C	1.2645	845
D	0.6050	

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8050	Mar 8	87 50	9.9997	Mar 8	89 51	9.9997	Mar 8	95 41	9.9979
5 50 32	206	+4.728	+1.656	5 58 34	25.1 4.686	+1.614	6 22 1	+4.963	+1.891
+61	57 23.9			+50 22.1	28.3		+540 58		
+02	48 57.2			57 0.4	31.2		20 21.2	+1.10	
	6.2			22.2	34.7		46.4	52.1	
51 10.1	33.9	53.5	9.0260	59 7.2	59 5.3	37.7	22 26.8	22 22.8	
	12.9	56.3		9.1	9.1	41.0	29.2	26.5	
	16.9	59.8		12.3	12.0	44.6	33.8	30.0	
	19.5	6.2	0.6747	14.3	15.0	47.6	36.2	33.5	0.6957
8.8	21.9	6.7	4.4947	17.8	18.1	52.0	39.8	37.0	9.9723
		59.40	7.6036		11.90	3.44		29.6	8.0597
		-25.87	9.0257		37.7	37.91		+28.72	9.0618
	33.78	34.03	+1.096						
51 16.26	51 33.86	+0.28	59 12.26	59 37.79	+0.22	22 33.16	22 58.68		+1.151
+17.60	-14.72	-0.74	+25.53	-14.72	-0.05	+25.52	-14.73		-0.83
	+76	+4.27		+74	+4.21		+87		+2.11
-1395	+0.03	+1.477		+0.03	+1.505	-13.85	+0.04		+4.64
	51 19.61	9.9997		59 23.82	5.0000		-0.03		+1.743
	-1.48	9.8911		-1.50	9.8866		22 44.23		9.9979
-47.28	51 18.43	8.5776		59 22.32	7.4180	-49.64	-1.74		9.9127
-8.00		9.8908			9.8866	+19.50	22 43.08		8.9958
		-7777			-7702				9.9106
+9.38		2.724	+8.54		-2.767	+13.63			-8.140
59 11.2	9.99793	-5053	43 6.1	9.80473	-4935	13 160	9.95931		-2.497
220	1.24 551	9.8798	168	1.40 705	8.7202	352	1.40 688		-56.43
380	1.15390	9.9997	322	1.32224	8.6933	394	1.27665		0.2980
17.4		9.7036	130		7.3046	214	547		9.9979
59 2.15	51	8.4687	43 1702	50		13 2550	54		9.9515
-14.25	6 17.76		-2100	22 2880		18.9186	52 23.32		8.9085
59 79.0	-0.76	+1.18	42 56.02	-0.26	+0.1	13 6.5864	-0.80		-4.6
51 23 40.45	6 17.00	-8.83	50 37 52.33	22 2854	-8.83	55 9 41.76	52 22.52		-8.79
-17 32.07		+9.29	-17 32.07		+9.07	-17 32.07	47		+10.38
-0.09		+1.2	-18		+0.1	-18			-33
+0.09		+0.76	-0.07		+0.26	-0.07	21 53.38		+0.80
+9.44		+8.68	+8.68		58 35.45	+13.70	52 42.0		
+12		-11	-11		59 24.42	+18			
-17 22.69		-17 23.53	-17 23.53		22 27.6	-17 18.44			
51 6 8.38		50 22 20.26	50 22 20.26			54 52 9.69			
95 32	+4.968								
Mar 8	9.99980	Mar 8	97 52	9.9959	Mar 8	100 40	9.9924	Mar 8	101 6
6 m 5	2.798	6 m 5	4.963	2.809	6 m 5	4.963	2.146	6 m 5	4.963
6 22 1	+1.896	6 30 35		+1.891	6 41 42	+4.683	+1.611	6 44 0	4.4 26.1
+540 56		+550 1			+50 51			+510 39	29.4
19 35.9	8.9776	28 55.6		8.9787	40 163	0-1	8.9124	42 34.30	32.5
8.98 42	1.6	1.6		9.1363	49.7		9.2674	39.9 40.4	36.0
22 43.2	9.0646	31 11.3		9.0653	42 41.8	43 13.7 202	9.0232	44 58.4	39.2
		15.0			45.5	16.6 48		58.4	42.6
		18.5			48.4	19.8 178		1.0	45.9
8.6	0.6962	22.6		0.6957	51.3	23.4 202	0.6705	3.4	49.3
54.2	9.9618	25.8		8.1150	54.2		8.1798	6.3	52.8
59.8	8.0488	11.86		8.2016		2000	8.2906		
50.48	9.0626	+28.78		9.0612		-26.13	9.0156		8.3157
-28.72		40.56							9.0230
	+1.152	18.64		+1.151			+1.086		+1.097
22 21.76	-0.81	31 12.44		-1.15	42 48.24	42 53.87	-1.34	45 110	144 39.31
-14.73	+2.06	+22.47		+2.92	+5.63	-14.74	+3.59	-21.79	-14.74
+87	+4.65	+22.02		+4.64		+75	+4.17		+380
+0.04	+1.742			+1.792	-13.98	+0.03	+1.728	-13.96	+4.25
22 7.91				31 26.48	9.9959		9.9924		+1.765
-1.74				-1.74	9.9134	-46.83	9.8893	-47.32	9.9918
-49.68	22 6.17			31 24.98	9.9093	+36.80	9.2674	+38.30	9.8944
				25.91	-8.115		9.8817		9.8862
					-2.489	+9.19	-76.15		-7.695
					-56.26		2.742	+10.22	2.692
					0.4385		9.80027	-48.73	9.79272
					9.9959		0.75057	25 429	9.79272
					6.7802		0.66124	522	1.33 82.6
					9.0497	17 47.50	9.1567	74 124 194	0.5867
						50		25 478	9.6992
								51 29	9.1787
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Mar 10

6 m s
 6 41 10
 +57° 17'

39 36.1

18.2

38.3

40.5

42.8

45.4

47.8

+26.38

41 42.46

42 13.68

-15.20

+3.59

+3.49

+1.696

-14.55

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100 30

9.9927

.2221

+4.912

+1.640

8.9199

9.2606

9.0277

0.6732

8.1805

8.2883

9.0204

+1.121

-1.13

+3.59

+3.49

+1.696

-14.55

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Mar 10

6 m s
 6 41 42
 +50° 51'

39 36.1

18.2

38.3

40.5

42.8

45.4

47.8

+26.38

41 42.46

42 13.68

-15.20

+3.59

+3.49

+1.696

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100 47

9.9923

.2157

+4.686

+1.614

8.9135

9.2721

9.0238

0.6708

8.1856

8.2959

9.0161

+1.115

-1.15

+3.59

+3.49

+1.696

-14.55

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846

1885	Mar 10	107 17	9.9799	Mar 10	107 38	9.9791	Mar 10
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
7 8 14	7 8 14	7 9 41	7 9 41	7 9 41	7 9 41	7 9 41	7 9 41
+520 1.1	+520 1.1	+550 7.1	+550 7.1	+550 7.1	+550 7.1	+550 7.1	+550 7.1
6 4.2	6 4.2	8 3.0	8 3.0	8 3.0	8 3.0	8 3.0	8 3.0
2.5	2.5	8.9	8.9	8.9	8.9	8.9	8.9
8 56.8	8 56.8	11 16.3	11 16.3	11 16.3	11 16.3	11 16.3	11 16.3
542.542	542.542	8.0	8.0	8.0	8.0	8.0	8.0
540.58.3	540.58.3	11.7	11.7	11.7	11.7	11.7	11.7
4.7	4.7	15.0	15.0	15.0	15.0	15.0	15.0
8.2	8.2	18.7	18.7	18.7	18.7	18.7	18.7
9.4 10.23	9.4 10.23	22.4	22.4	22.4	22.4	22.4	22.4
5433	5433	15.16	15.16	15.16	15.16	15.16	15.16
+2681	+2681	-28.85	-28.85	-28.85	-28.85	-28.85	-28.85
21.14	21.14	9.0145	9.0145	9.0145	9.0145	9.0145	9.0145
9 21.36	9 21.36	+1.120	+1.120	+1.120	+1.120	+1.120	+1.120
9 4.06	9 4.06	-2.23	-2.23	-2.23	-2.23	-2.23	-2.23
+17.23	+17.23	+5.95	+5.95	+5.95	+5.95	+5.95	+5.95
-14.54	-14.54	+3.44	+3.44	+3.44	+3.44	+3.44	+3.44
9 6.75	9 6.75	+1.836	+1.836	+1.836	+1.836	+1.836	+1.836
-1.84	-1.84	-14.47	-14.47	-14.47	-14.47	-14.47	-14.47
9 4.91	9 4.91	9.9799	9.9799	9.9799	9.9799	9.9799	9.9799
+47.07	+47.07	9.8965	9.8965	9.8965	9.8965	9.8965	9.8965
+59.20	+59.20	2.4729	2.4729	2.4729	2.4729	2.4729	2.4729
+10.44	+10.44	9.8764	9.8764	9.8764	9.8764	9.8764	9.8764
5 45.8	5 45.8	-7523	-7523	-7523	-7523	-7523	-7523
552 1.23 629	552 1.23 629	26.71	26.71	26.71	26.71	26.71	26.71
8.8 1.13593	8.8 1.13593	+13.75	+13.75	+13.75	+13.75	+13.75	+13.75
4.92	4.92	-485.2	-485.2	-485.2	-485.2	-485.2	-485.2
5 54.75 51	5 54.75 51	0.7751	0.7751	0.7751	0.7751	0.7751	0.7751
-13.67	-13.67	9.9799	9.9799	9.9799	9.9799	9.9799	9.9799
5 41.08	5 41.08	9.6859	9.6859	9.6859	9.6859	9.6859	9.6859
52.17 7.27	52.17 7.27	9.3694	9.3694	9.3694	9.3694	9.3694	9.3694
-17 30.64	-17 30.64	+22.12	+22.12	+22.12	+22.12	+22.12	+22.12
-0.8	-0.8	7 44.86	7 44.86	7 44.86	7 44.86	7 44.86	7 44.86
+10.41	+10.41	+0.79	+0.79	+0.79	+0.79	+0.79	+0.79
+1.13	+1.13	-1.42	-1.42	-1.42	-1.42	-1.42	-1.42
-17 20.20	-17 20.20	-8.41	-8.41	-8.41	-8.41	-8.41	-8.41
51.59 36.63	51.59 36.63	+8.78	+8.78	+8.78	+8.78	+8.78	+8.78
		-7.8	-7.8	-7.8	-7.8	-7.8	-7.8
		-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
		8 17.84	8 17.84	8 17.84	8 17.84	8 17.84	8 17.84
		0.17.9	0.17.9	0.17.9	0.17.9	0.17.9	0.17.9
		-1.63	-1.63	-1.63	-1.63	-1.63	-1.63
		+13.86	+13.86	+13.86	+13.86	+13.86	+13.86
		+1.17	+1.17	+1.17	+1.17	+1.17	+1.17
		-17 16.89	-17 16.89	-17 16.89	-17 16.89	-17 16.89	-17 16.89
		55 7.23 31	55 7.23 31	55 7.23 31	55 7.23 31	55 7.23 31	55 7.23 31
		36	36	36	36	36	36
		9 40.88	9 40.88	9 40.88	9 40.88	9 40.88	9 40.88
		8 45.2	8 45.2	8 45.2	8 45.2	8 45.2	8 45.2
		-0.79	-0.79	-0.79	-0.79	-0.79	-0.79
		+13.86	+13.86	+13.86	+13.86	+13.86	+13.86
		+1.17	+1.17	+1.17	+1.17	+1.17	+1.17
		-17 16.66	-17 16.66	-17 16.66	-17 16.66	-17 16.66	-17 16.66
		55 7.50 74	55 7.50 74	55 7.50 74	55 7.50 74	55 7.50 74	55 7.50 74
		9 41.64	9 41.64	9 41.64	9 41.64	9 41.64	9 41.64
		8 5.51	8 5.51	8 5.51	8 5.51	8 5.51	8 5.51

Log 4
B
6
59.3847 Mar 12.3
0.9413
6.2695
8.4185

Mar 12

+35
-05+55° 1'
-0528 55.6
1.6

a+1

31 5.7 31 5.3

7.4 1299.3

8.7 1299.3

10.3 1299.3

8.8 11.0 1299.3

1295 1252

+28.78

31 8.62 31 41.22

+32.68

33.11 +

-1502

-0.03

31 2628 19.9959

-1.69 9.9134

31 2459 9.1363

2502 9.9093

-8.115

+2.489

36.2 9.75841

44.8 1.51 422

56.4 1.33 511

38.7 1.37 797

5 4402 55 67 9.0498

-285 2476 0 1298

5 1462 207 -0.85

55 17 28 918 0 -12.18

-17 29.59 0 1182

-27

01 30 35.38 +0.85

+ 1419 0 38.9

-17 15.51

54 59 58.90

Mar 12

h m s

7 4 2

+50° 46'

2 29.1

48.0

4 32.6 4 31.5 30.8 23.7

34.8 34.4 37.6 26.8

36.6 37.2 37.0 29.7

39.0 39.7 13.7 33.0

8.3 41.0 44.3 33.7 2

37.4 62 2992

3.54 398

+ 36.80

+ 27.02

-1509

-464.5

+55.60

+ 9.22

20 39.9 9.80105

4.86 1.43 169 265

1.8 1.34 224

4.33 416

20 4840 50

-2204 9 45 1.62 7

20 26361 +1.59

51 2 2492 278 8.21

-17 29.59 4.5 326

-19

+ 02

+ 931

+ 12

-17 20.37

50 44 52.40

Mar 12

h m s

6 33 0

+4827

+53° 1'

31 23.2

1.6

33 21.6 33 30.2 370

27.3 34.0 574

30.9 36.3

33.1 37.6

8.6 358

+27.43

33 2974 34.4 83

+38.49

+ 47

-1505

-0.08

33 4955 83

-1.65 9.9952

33 5718 9.9024

-1.65 9.1697

33 5753 9.8976

-7900

+2.611

3 249 9.77930

33.0 1.53 769

4.51 1.42 745

26.6 1.43 207

5 3240 53 2512

-2704 26.76 0 2484

5 5.64 36 -0.17

53 17 42 749 0 24.67

-17 29.59 24.75

-31

01 32 59.62 +0.17

+ 11.70 0 54.0

-17 1787

53 0 12.12

Mar 12

h m s

7 9 41

+55° 7'

8 3.0

8.9

10 47.4 10 10.5

50.3 13.8

50.4 18.0

56.4 21.2

58.2 25.4

1778 1524

4651 4697

10 5294

-6.20

-1504

-4902

+1040

+ 1448

-4692 57 38.7

0.74 78 462

9.9824 582

9.6714 410

9.3346 57 4602 55

+ 457

-1.36 57 50.59

-8.39 55 24 57.76

+ 8.73 -17 29.59

-57

-1.59

+ 06

+ 14.38

+ 17

-17 13.11

55 7 28.17

Mar 12

h m s

6 41 42

+4683

+50° 51'

40 16.3

49.7

42 54.6 43 14.7

56.3 17.5

58.4 20.5

0.7 23.3

3.1 26.7

2054

-26.13

42 5862 42 54.41

-4.21

+ 43

-1508

-0.08

42 3933 9.9924

-1.64 9.8893

42 37.69 9.2674

+36.80

-76.15

+2742

17 342 9.80027

426 0.62 428

566 0.53 501

373

17 42.68 50

+ 343 48 42.11

17 46.11 +0.80

57 5 2.24 47 42.91

-17 29.59

-0.01

-0.05 41 50.56

+ 910 48 19.7

+ 12

-17 20.13

50 47 32.65

Mar 12

h m s

32 44 49.01

36.0

40.0

43.3

47.1 8.5

50.7 11.3

54.1 15.0

57.9 18.8

65.4 22.6

1778 1524

4651 4697

10 4674

-15.42

+ 50

+ 09

+ 03

10 31.70 9.9791

-1.88 9.9141

10 2982 9.4813

-7820 9.8932

-2480

-5340

0.78 35

9.9791

9.72 75

9.39 54

-1.47

-8.33

+ 9.93

-65

-0.52

9 40.80

8 43.6

49

Mar 12

h m s

44 53.8

+4429

57.1

0.5

3.7

8.9

10.4

13.7

16.7

20.4

702

+1147

-143

+1541

+ 44

-0.08

44 51.95 9.9916

-1.67 9.8943

44 50.28 9.2890

+38.60 9.8859

-76.90

+2693

9.79272 -4997

212 1.35 908 0.5912

342 1.26 224 9.9916

142 6 9.69 87

2040 51 9.18 33

+ 1829 37 50.31

27 38.69 +0.63

57 55 9.66 37 50.94

-17 29.59 +9.29

-14

-0.05 44 2.98

+ 10.31 38 29.5

-17 19.35

57 37 40.07

<p>Log 4 9.3873 Mar 14.3 0.9373 1.2712 m 84.8 0.2820</p> <p>1885 Mar 14 101 13</p> <p>6 m 5 4 44 0 +54 +51 39' -05 42 26.8 39.9</p> <p>a+1 a-1</p> <p>45 13.1 44 16.5 19.2 44.1 41.1 21.7 44.4 41.4 25.4 44.7 41.7 29.9 44.8 41.8 26.59 44.6 41.6 7.16 +1.154 -1.42 +3.90 +2.02 +1.608 4 -15.14 9.9916 9.8943 9.2890 9.8859 -7690 -2693 +13.87 -4997 0.5912 9.9916 6.6987 9.1833 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>9.9916 Mar 12 107 38</p> <p>2.276 +1657 +5587 8.9254 9.2890 9.0310 10 41.0 11 8.5 43.5 12.0 46.6 15.5 48.2 19.2 52.8 23.2 15.68 -2885 +1.196 -2.51 +660 +2.13 +1.818 -15.14 9.9916 9.9141 9.4813 9.8932 -7820 -2480 +13.63 9.75733 0.7835 9.9791 9.7275 9.3954 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>9.9791 Mar 14</p> <p>2.830 +1829 7 9 41 +5507 8.9808 9.4813 9.0668 10 12.6 11 9.4 14.8 13.0 18.7 16.9 21.7 20.4 25.0 24.2 15.78 -2885 +1.196 -2.51 +660 +2.13 +1.818 -15.14 9.9791 9.9141 9.4813 9.8932 -7820 -2480 +13.63 9.75733 0.7835 9.9791 9.7275 9.3954 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>Mar 14 110 28</p> <p>6 m 5 4 44 0 +54 +51 39' -05 42 26.8 39.9</p> <p>a+1 a-1</p> <p>21 31.6 21 34.0 35.5 36.6 39.7 39.3 43.4 43.1 47.1 40.02 +26.95 21 38.4 22 697 +28.13 -15.79 +70 -1.05 -15.19 -1.02 21 51.78 -1.79 +1 990 21 4999 +10.44 9.78691 1.46790 1.33569 41.2 1.34654 8.21 51 3287 52 31 366 -17 3287 -02 +10.54 +1.13 -17 2243 52 14 379</p>	<p>9.9791 Mar 14</p> <p>2.830 +1829 7 9 41 +5507 8.9808 9.4813 9.0668 10 12.6 11 9.4 14.8 13.0 18.7 16.9 21.7 20.4 25.0 24.2 15.78 -2885 +1.196 -2.51 +660 +2.13 +1.818 -15.14 9.9791 9.9141 9.4813 9.8932 -7820 -2480 +13.63 9.75733 0.7835 9.9791 9.7275 9.3954 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>Mar 14 110 28</p> <p>6 m 5 4 44 0 +54 +51 39' -05 42 26.8 39.9</p> <p>a+1 a-1</p> <p>21 31.6 21 34.0 35.5 36.6 39.7 39.3 43.4 43.1 47.1 40.02 +26.95 21 38.4 22 697 +28.13 -15.79 +70 -1.05 -15.19 -1.02 21 51.78 -1.79 +1 990 21 4999 +10.44 9.78691 1.46790 1.33569 41.2 1.34654 8.21 51 3287 52 31 366 -17 3287 -02 +10.54 +1.13 -17 2243 52 14 379</p>	<p>9.9791 Mar 14</p> <p>2.830 +1829 7 9 41 +5507 8.9808 9.4813 9.0668 10 12.6 11 9.4 14.8 13.0 18.7 16.9 21.7 20.4 25.0 24.2 15.78 -2885 +1.196 -2.51 +660 +2.13 +1.818 -15.14 9.9791 9.9141 9.4813 9.8932 -7820 -2480 +13.63 9.75733 0.7835 9.9791 9.7275 9.3954 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>Mar 14 110 28</p> <p>6 m 5 4 44 0 +54 +51 39' -05 42 26.8 39.9</p> <p>a+1 a-1</p> <p>21 31.6 21 34.0 35.5 36.6 39.7 39.3 43.4 43.1 47.1 40.02 +26.95 21 38.4 22 697 +28.13 -15.79 +70 -1.05 -15.19 -1.02 21 51.78 -1.79 +1 990 21 4999 +10.44 9.78691 1.46790 1.33569 41.2 1.34654 8.21 51 3287 52 31 366 -17 3287 -02 +10.54 +1.13 -17 2243 52 14 379</p>	<p>9.9791 Mar 14</p> <p>2.830 +1829 7 9 41 +5507 8.9808 9.4813 9.0668 10 12.6 11 9.4 14.8 13.0 18.7 16.9 21.7 20.4 25.0 24.2 15.78 -2885 +1.196 -2.51 +660 +2.13 +1.818 -15.14 9.9791 9.9141 9.4813 9.8932 -7820 -2480 +13.63 9.75733 0.7835 9.9791 9.7275 9.3954 57 368 486 51.1 428 448 0.30 57 428 55 25 -17 3287 -05 -02 +9.87 +12 -17 2295 51 37 4503</p>	<p>Mar 14 110 28</p> <p>6 m 5 4 44 0 +54 +51 39' -05 42 26.8 39.9</p> <p>a+1 a-1</p> <p>21 31.6 21 34.0 35.5 36.6 39.7 39.3 43.4 43.1 47.1 40.02 +26.95 21 38.4 22 697 +28.13 -15.79 +70 -1.05 -15.19 -1.02 21 51.78 -1.79 +1 990 21 4999 +10.44 9.78691 1.46790 1.33569 41.2 1.34654 8.21 51 3287 52 31 366 -17 3287 -02 +10.54 +1.13 -17 2243 52 14 379</p>	<p>9.9791 Mar 14</p> <p>2.830 +1829 7 9 41 +5507 8.9808 9.4813 9.0668 10 12.6 11 9.4 14.8 13.0 18.7 16.9 21</p>
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Log #	9.3864
B	0.9368
C	1.2727
D	9.9277

Log # 9.3864 B 0.9368 6 1.2727 8 9.9277	Mar 17 100 20 9.9929	Mar 17 100 25 9.9928	Mar 17 106 13 9.9824	Mar 17 107 1 9.9896
9.9717 2369 +1617	h m s 2 6 41 42 +4.683	h m s 5 6 41 57 +4.739	h m s 3 7 4 2 +4.908	h m s 8 7 7 18 8 8.3 +1.575
8.9347 9.5436 9.0368	+50° 51' 0 43.7 41.3 32.8 41 50.7 60.36.0 54.3 61.39.3 57.1 60.42.5 0.1 60.45.7 35.4 48.4	40 22.0 46.2 42 15.2 18.5 21.5 24.7 28.4 216.6 26.65	2 24.2 4.9 5 5.0 5 30.3 7.2 34.0 9.4 37.4 11.3 41.4 45.1 376.4 -28.81	5 44.6 20.0 8 23.7 25.7 25.7 28.3 30.7 31.6 33.0 34.8
0.6711 8.4783 8.5804 9.0085	9.1 0.6705 8.1657 8.2766 9.0157	0.6757 8.1841 8.2892 9.0248	0.6909 8.4252 8.5117 9.0487	0.6690 8.3863 8.4941 9.0083
+1.144 -260 +7.11 +1.95 +1790	41 53.18 41 35.92 -1.26 -16.31 +7.4 +.05 -15.54 +.02 41 20.38 -1.46 41 18.92	41 55.01 -1.22 -16.31 +.365 +7.6 +.090 + .05 +1.477 41 39.49 -1.48 41 38.01	5 8.83 -2.30 -16.31 +.609 + .86 +.095 + .05 +1.669 4 53.40 -1.67 4 57.73	8 21.74 -16.31 +.585 + .75 +1.086 + .05 +1.597 8 6.21 -1.60 8 4.61
9.9717 9.8979 9.5436 9.8696 -7406 -2657 -4749 0.8458 9.9717 9.6766 9.4415	19 1.18 9.88027 21.6 1.23 70.4 32.2 1.14 777 1.66 19 20.58 50 +14.05 45 53.65 19 34.60 +0.37 51 3 13.75 45 54.02 -17 29.28 - .08 - .04 + 9.19 + .11 -17 20.10 50 45 44.7	9.9929 9.8891 9.2538 9.8829 -76.27 -27.44 -48.77 0.8560 9.9929 9.6882 9.1429 -88 -8.51 +9.14 -12 =0.37	9.9824 9.9135 9.4460 9.8959 -78.69 -24.87 +9.85 3 12.2 9.75805 9.49136 223 9.35987 9.9824 9.7309 3 22.25 55 + .023 2 10.67 3 22.98 -0.23 55 19 25.87 2 10.44 -17 29.28 - .03 + .03 4 2.64 + 13.95 3 6.1 + .16 -17 15.20 55 1 58.59	9.9806 9.8922 9.4664 9.8728 -74.61 -27.13 -44.48 0.7686 0.72209 9.9806 9.6765 9.3586 +527 16 40.85 48 48.07 +0.99 51 34 02.8 16 41.84 -17 29.28 - .01 - .04 7 17.93 + 7.78 17 40.3 + .12 -17 19.43 51 16 31.00
9.9469 2614 +1615	Mar 17 107 16 9.9800	Mar 17 110 28 9.9717	Mar 17 110 48 9.9707	9.9707
8.9592 9.6681 9.0524	h m s 2 7 8 14 +4.706	h m s 5 7 20 59 +4.689	h m s 26 7 22 32 +4.582	2082 +1.510
0.6709 8.6272 8.7204 8.9993	+52° 1' 0 6 1.2 2.5 10 4.0 9 44.8 7.1 48.45.6 10.9 49.049.0 13.9 57.7 9.1 16.9 55.2 8.5071 -26.81	19 25.2 17.3 21 33.7 37.1 40.4 43.6 47.4 40.44 +26.95	23 12.1 22 54.8 14.5 58.0 16.5 53.5 19.1 4.4 21.3 7.7 12.2 40.1 27.10 27.13	8.9060 9.5504 9.0193 46.6 49.8 53.0 58.1 59.4 52.98
+1.143 -367 +981 +1.91 +1.948	10 10.56 9 22.14 -48.72 -16.31 +7.77 +.088 -15.51 +.05 9 6.34 9.9800 -47.07 -1.62 +59.20 9.8965 5.01 9.47.25 9.8765 -75.25 -26.71 4 53.9 9.789.8 5 1.68 7.22 14.8 1.58 4.26 50.4 4.66 5 34.2 57 47.21 +38.64 39 46.98 5 42.8 41.5 +0.82 52 17 6.59 50 59 42.5 -17 29.28 59 48.08 - .63 + .05 8 17.94 + 10.53 0 47.2 + .12 -17 19.29 51 59 36.99	9.0346 0.6726 8.4036 8.5071 9.0146 +1.146 -2.19 +6.02 + .088 +16.17 9.9800 9.8965 9.47.25 9.8765 -75.25 -26.71 0.7747 9.9800 9.6861 9.3690 -1.45 -8.26 +9.09 -2.0 -0.82	9.9717 +1.517 8.9347 9.5436 9.0368 0.6711 8.4783 8.5804 9.0085 +1.142 -2.60 +7.13 +0.86 +1.681 9.9717 9.8979 9.5436 9.8696 -7406 -26.57 +8.85 -4.77 49 42 32 9.80443 13.8 1.01 7.87 22.1 0.93 27.6 76 42 11.68 50 -8.57 23 24.81 42 3.11 +1.78 50 40 45.24 23 26.54 -17 29.28 - .03 + .02 + 8.80 -17 20.43 50 23 13.96	23 27.12 +16.31 + .73 + .05 23 11.57 -1.65 23 9.92 +1.116 -2.47 +6.96 +0.83 +1.648 9.9707 9.8867 9.5504 9.8574 -72.01 -27.66 -44.35 0.8526 9.9707 9.6469 9.4371 -1.73 -8.08 +8.31 - .23 -1.73

1885phae.pro

1885	Mar 17	113 1	9.9640	Mar 17	113 25	9.9627	Mar 17	113 46	9.9615	Mar 17	115 57	9.9538
	h m s		2.811	h m s		2.795	h m s		2.477	h m s		2.367
	7 31 48	+4.830	+1.758	7 32 56	+4.819	+1.747	7 34 16	6.3	+1.619	7 43 9	+4.623	+1.551
	+55° 4'	29 37.3	a+1	+54° 54'	a+1	+52° 57'	32 48	9.5	+52° 14'	29.2	a+1	8.9345
	30 11.3	2.0	5.4	31 18.7	56.6	32 58.3	13.3	8.9455	41 36.7	17.6	37.7	9.6411
	31 41.8	31 44.4	9.0655	33 21.9	33 19.3	9.0644	35 44.7	17.0	9.0436	43 26.7	43 31.8	9.0367
	44.8	47.7		25.4	22.9		48.6	23.1		27.7	385	
	48.1	51.3	0.6840	29.8	26.3	0.6830	52.3	27.0		28.5	37.3	0.6649
	50.3	53.7	8.5716	32.7	31.0	8.5765	55.1	30.2	0.6713	29.7	37.6	8.5756
	79 54.1	58.7	8.6577	37.0	33.7	8.6636	57.5	33.7	8.6489	30.4	37.7	8.6778
	56.8	51.8	9.0295		26.4	9.0271			9.0051		37.7	8.9905
		+2882			+28.70			1998			+26.94	
		2012	+1176		+1173				+1142		484	+1125
	31 49.32	32 19.2	-322	33 20.36	33 53.34	-326	35 5.164	35 19.98	-307	43 28.60	44 46.4	-325
	+30.66	-1631	+852	+25.98	+1631	+864	-31.66	-1631	+835	+36.04	-1631	+892
	-15.43	+86	+0.91	-15.44	+85	+0.90	-15.48	+80	+0.86	-15.51	+89	+0.83
		+0.05	+1.797		+0.05	+1.801		+0.05	+1.756		+0.05	+1.775
		0.3			0.3			0.2			0.2	
	48.33	32 4.5	9.9640	38 39.90	38 39.90	9.9627	35 4.50	9.9615		43 4.50	36 9.9538	
	+1 18.10	-180	9.9134	-180	9.9129	9.9129	-1.76	9.9019	-46.24	43 4.50	-1.78	9.8978
		32 2.75	9.5922	33 38.10	33 38.10	9.5992	35 2.74	9.6053	+1 27.50	43 4.50	37.5	9.6411
		89	9.8774			9.8756	+1 20.50	9.8634		43 4.50	58	9.8516
			-7540			-7509		-7301				-7106
			-2488	+13.87		-2494	+11.43	-2616	+10.58			-2658
	4 390	9.75787	-5052	10 154	9.75967	-5015	9 409	9.77997	-4685	52 35.8	9.78707	-4448
	587	1.48657	0.8944	242	1.41464	0.9014	518	1.50051	0.9075	46.7	1.5565	0.9433
	582	1.35490	9.9640	30.2	1.28477	9.9627	00	1.39094	9.9615	04	1.4545	9.9538
	440		9.7035	190		9.7003	451		9.6707	410	708	9.6482
	4 4998	55	9.5056	10 22.20	54	9.51219	4945	52	9.5072	52 48.98	52 32	9.5389
	-22.64	1 559	-1927	35 3001	35 3001	+2460	55 16.45		-28.46	13 12.15		
	4-2734	+0.67	-1.91	10 2.93	+0.75	-1.94	10 14.05	+1.37	-1.97	52 17.523	+1.87	-2.14
	55.18	21.01	-7.96	55.12	45.92	-7.93	53 12.3430	55 17.82	-7.91	52.30	34.83	-7.77
	-17 29.28	1 6.26	+9.47	-17 29.28		+9.40	-17 29.28	+8.78	-27	-17 29.28	19	+8.33
	-24		-27	-17		-28	-17	-26	-27	-17		-29
	-0.05	31 14.56	-0.67		00	-0.75	-0.05	34 15.81	-1.37	-0.03	43 1.34	-1.87
	+13.99	2 24.4		+13.88			+11.61	56 38.3		+10.83	14 41.7	
	+16			+16			+73			+12		
	-17 15.42			-17 15.41			-17 17.85			-17 18.70		
	55 0 51.73			54 55 16.14			52 55 5.02			52 13 1.55		
A	9.3864	Mar 17, 4										
B	0.9369											
C	1.2728											
D	9.9116	Mar 17	122 6	9.9280	Mar 17	123 11	123 13	9.9227	9.9227			
	h m s		2.445	h m s		2.276						
	7 36	+4.560	+1.488	8-12 3		+4.486	+1.414					
	+52° 46'	a+1	8.9423	+51° 40'	a+1	10 33.2	a-1	8.9254				
	6 5.0		9.9254	10 33.2				9.7382	9.7382			
	48.3		9.0416	13 20.0	12 26.0	13 27.5		9.0310				
	8 30.9	8 6.0		21.0	27.6	30.6						
	33.7	10.3		22.1	33.0	34.0						
	36.5	14.4	0.6590	23.8	36.2	37.2		0.6519				
	39.5	17.4	8.6677	39.7	40.4	41.4		8.6636				
	8.8 43.4	21.0	8.7670	32.90	33.02	33.02		8.7692				
		13.52	8.9696	-26.60	-26.60	-26.60		8.9537				
		+27.27	+1110					+1092				
	8 36.80	8 11.09	-402	13 22.84	12 59.50	13 7.34		-399				
	+4.29	-16.31	+1096	-22.84	-16.31	-16.31		+1102				
		+7.9	+0.76	-15.00	+7.6	+7.6		+0.73				
	-15.49	+0.05	+18.80	-15.52	+0.05	+0.05		+1.868				
		0.2		-15.52	-0.02	-0.02						
	8 25.60	9.9280		12 43.98	12 51.82			9.9227				
	-45.62	-1.88	9.9007	-1.87	-1.87			9.8943				
	+1 46.30	8 23.72	9.7254	12 42.11	12 49.95			9.7382				
			9.8287	+14.95				9.8170				
			-6741					-6561				
			-2628	+10.16	+10.24			-2693				
	22 30.8	9.78150	-4113	25 4.16	9.79256	9.79256		-3868				
	40.1	0.63246	1.0276	30 1.35870	1.17609	1.17609		1.0404				
	52.8	0.52472	9.9280	7.2	1.26172	1.07911		9.9227				
	34.2		9.6142	46.2				9.5875				
	22 39.48	52	9.6261	26 52.00	51	51		9.6325				
	-33.5	42 54.0	+18.27	+12.00	38 18.96	38 25.31						
	22 36.13	+2.55	-2.59	27 10.27	27 4.00	+8.01		-2.67				
	53 0 12.22	42 57.01	-7.33	57 55 38.08	57 55 44.35	58 21.77	38 28.32	-7.24				
	-17 29.28		+7.71	-17 29.28	-17 29.28			+7.25				
	-0.1		-34	-14	-0.6			-3.5				
	-0.3	7 38.10	-2.55		0.2							
	+11.43	44 43.3		+10.20	+10.20	11 57.23	12 5.07	-3.01				
	+13			+12	+12	40 11.6	40 17.9					
	-17 17.76			-17 19.12	-17 19.04							
	57 42 42.91			57 38 8.80	57 38 15.07							

849				58											
Mar 17 115 59 9.9537				Mar 17 116 33 9.9516				Mar 17 117 43 9.9471				Mar 17 117 47 9.9468			
h m s 2367				h m s 2036				h m s 1989				h m s 1987			
7 43 9 +4.622				7 45 48 46 15.4 +14.30				7 50 28 +4.472				7 50 28 51 9.0 +13.98			
+52° 14'				+50° 51'				+49° 51'				+49° 51'			
41 36.3				44 18.6				48 58.8				8.8965			
17.2				22.0				54.3				16.2			
45123.58.9				43556				537.54.3				19.7			
9.0367				9.0166				9.0139				9.0137			
46 13.2 28.0				50 06.1 50 38.0				51 58.0				51 58.0			
22.0 4.5.7				57.9 41.0				57.9 41.0				57.9 41.0			
23.5 4.5.7				59.3 44.2				59.3 44.2				59.3 44.2			
25.4 5.2.5				47.6 0.6585				47.6 0.6585				47.6 0.6585			
9.3 27.4 0.15.4				8.5512 49.5				8.5643 9.1				8.5643 9.1			
8.6783				8.6664				8.6815				8.6815			
8.9904				8.9682				8.9610				8.9610			
30 +1.125				38.14 +1.096				51 9.88 +1.089				51 9.88 +1.088			
44 23.70 44 12.4 -326				46 17.70 46 28.14 -308				50 56.90 51 9.88 -317				52 60.2 51 23.31 -318			
-11.23 -16.31 +8.93				-16.31 +8.70				-16.31 +9.00				-16.31 +9.01			
40 +7.71 +0.83				+7.71 +0.79				+7.71 +0.77				+7.71 +0.77			
-15.51 +.05 +1.775				-15.56 +.05 +1.737				-15.57 +.05 +1.749				-15.57 +.05 +1.748			
0.2				0.2				0.2				0.2			
43 56.9 9.9537				46 10.84 9.9516				50 54.31 9.9471				51 5.99 9.9468			
-46.24 -1.78 9.8978				-45.03 -1.74 9.8848				-1.75 9.8829				-1.75 9.8828			
+1 27.60 43 55.1 9.6416				+1 2.930 46 10.84 9.6503				50 52.56 9.6676				51 5.99 9.6685			
01 9.8515				9.8364				9.8300				9.8296			
-7.104				-6.861				-6.761				-6.755			
+10.89 2.658				+8.17 2.784				+7.73 2.801				+7.73 2.802			
52 35.8 9.78707				32.2 9.80731				179 9.80942				179 9.80942			
46.7 1.05852				42.8 1.01870				28.2 1.11327				28.2 1.63053			
04 0.94797				57.6 0.93647				42.9 1.03315				42.9 1.55047			
41.0 0.95843				3.70				22.1				22.1			
52 45.98 52 00				42.40 50				27.77 49				27.77 49			
+8.877 12 35.11				-8.64 4 53.85				10.79 47 10.24				35.51 46 23.52			
52 54.8676 +1.87				0 33.76 +2.36				18 16.98 +2.80				19 3.28 +2.82			
52 29 53.50 12 36.98				50 22 14.59 4 56.41				50 4 31.37 47 13.06				50 3 45.07 46 26.34			
-17 29.28 87				-17 29.28				-17 29.28				-17 29.28			
-0.03				-0.03				-0.03				-0.03			
+10.83 43 8.77				+8.49 45 25.81				+8.16 47 10.24				+8.16 46 23.52			
+12 14 4.5				+0.09 6 25.7				+0.09				+0.09			
-17 18.39				-17 20.74				-17 21.11				-17 21.33			
52 14 24.22				50 4 45.31				49 47 2.09				49 46 15.79			

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Mar 18	110 48	9.9707	Mar 18	112 47	9.9647	Mar 18	113 9	9.9635	Mar 18	113 26	9.9626
7 22 8	+4.574	.2069	7 30 16	+4.701	.2471	7 31 48	+4.830	.2814	7 32 50	+4.815	.2787
+50° 24'		+1.505	+52° 55'		+1.629	+55° 4'		+1.758	+54° 54'		+1.743
20 33.9	a + 1	8.9047	28 24.4	a + 1	8.9449	30 11.3	a + 1	8.9792	31 19.7	a - 1	8.9765
26.0		9.5504	57.9		9.5880	7.0		9.5946	16.6		9.5925
22 55.2	22 56.5	9.0186	31 10.8	30 52.3	9.0433	32 16.0	32 17.5	9.0657	34 47.4	34 23.2	9.0639
58.0	57.5		12.0	58.3	58.3	18.0	20.8		50.6	50.6	
0.8	0.7		13.5	58.4	58.4	19.3	24.4		57.4	30.8	27.2
4.4	8.0	0.6606	15.5	58.2	1.6	22.0	27.8	0.6840	30.3	30.4	
8.6	7.7	8.4551			0.6722	23.4	31.3	8.5738	1.3	30.3	33.9
		8.5690			8.5329			8.6603	4.1	36.5	0.6826
		8.9893			9.0080			9.0292		30.4	36.5
											8.6634
											9.0265
23 12.2	23 28.66	+1.117	31 12.95	31 25.7	+1.147	32 19.74	32 53.8	+1.178	34 56.16	34 1.54	+1.175
+ 27.44	- 16.51	- 247	+ 16.52	- 16.52	- 296	+ 33.44	- 16.52	- 325	- 58.62	- 16.52	- 327
	+ .54	+ .695		+ .59	+ .802		+ .64	+ .858	5	+ .64	+ .864
- 15.99		+ .047	- 15.95		+ .050	- 15.91		+ .052		+ .052	
		+ 1.612			+ 1.703			+ 1.763	- 15.91	+ 1.764	
23 12.67	9.9707	- 1.02	31 12.22	9.9647	- 1.03	32 37.27	9.9635	- 1.03	33 45.87	9.9626	- 1.03
- 1.61	9.8461	- 1.70	- 1.70	9.9017	- 1.76	- 1.76	9.9135	- 1.76	- 1.76	9.9127	- 1.76
23 11.06	9.5508	- 4.703	31 8.33	9.5880	- 4.831	32 35.51	9.5946	- 4.818	33 43.87	9.5925	- 4.818
	9.8568	+ 1.1740	4.92	9.8664	+ 1.1850		9.8740	+ 1.1940	44.11	9.8753	+ 1.1940
	.7191			.7352			.7534			.7504	
+ 8.48	- 2.771	+ 11.58		- 2.618	+ 13.69		- 2.487	+ 13.12		- 2.497	
47 4.92	9.80448	- 4.420	12 12.2	9.78030	- 4.734	4 5.8	9.75787	- 5.047	12 20.3	9.75967	- 5.007
5.76	1.43838	0.8526	220	0.86461	0.8902	148	1.52401	0.8968	28.3	1.73452	0.9017
10.7	1.35322	9.9707	31.3	1.00552	9.9647	261	1.39234	9.9638	400	1.60448	9.9626
51.6		9.6454	12.3	0.87394	9.6752	70		9.7030	216	1.61536	9.6996
47 57.27	50	9.4365	12 19.45	52 18.2	9.48944	1342.55		9.5081	12 27.56	54 28.7	9.5122
- 22.56	17 52.31	- 1.74	- 21.6	53 20.7	- 1.89	3 48.74	1 43.59	- 1.92	41.44	52 26.6	- 1.95
17 34.71	+ 1.69	- 8.11	12 9.33	11.7	- 8.00	3 48.74	49	- 7.98	13 8.45	59	+ 0.68
50 35 13.64	17 54.00	+ 8.29	53 10 39.42	53 21.93	+ 8.88	55 18 59.61	+ 0.60	+ 9.46	55 9 40.30	58.2	+ 7.96
- 17 29.81		- 1.3	- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
- 20		- 1.69	- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
- 03			- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
+ 8.61			- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
+ 10			- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
- 17 21.33			- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		
50 17 43.83			- 17 29.81	19.28	- 1.16	- 17 29.81	1 44.09	- 16	- 17 2		

Mar 18

Log 4	9.3987	Mar 21	3																	
13	0.9438																			
8	1.2729																			
3	9.7279																			
1885	Mar 21	110	28	9.9717	Mar 21	110	48	9.9707	Mar 21	112	43	9.9649	Mar 21							
	h m s			23.69	h m s			20.82	h m s			24.79	h m s							
	7 20 59			+4689	7 22 31	23	15.6	+1.510	7 30 16			+4704								
+50	150° 15'			8.9347	150° 24'			18.6	150° 55'			288								
+0.0	19 23.2			9.5436	20 33.9			21.6	28 22.4			0.8								
	17.3			9.0368	26.0			25.0	27.9			8.9457								
	21 38.4	21 34.2		9.0368	23 46.6			28.3	30 40.3	30 35.0		9.0438								
	42.0	38.0			49.2			31.6	43.0	38.2										
	47.3	41.6			51.0			34.7	45.0	41.4										
	50.9	48.0		0.6711	50.5			37.9	46.6	44.7		0.6725								
9.3	48.5	48.5		8.4783	55.8			41.3	47.0	48.5		8.5325								
		41566		8.5804					8.5697			8.6306								
		+26.95		9.0085					8.9900			9.0087								
		8.61		+1174					+1148			+1178								
	21 44.65	22 8.21		-264	23 51.22	23 28.29		-257	30 44.98	31 8.93		-299								
	+23.56	-17.41		+713	-22.93	-17.41		+6.96	+23.95	-17.41		+8.01								
		+64		-0.54		+60		-0.52		+66		-0.55								
	-16.79	+0.0		+15.69	-16.83			+15.41	-16.7			+16.25								
		0.02				-0.02														
	21 51.42	8.9717			23 11.46	9.9707			30 52.16	9.9649										
	-1.57	9.8979		-45.84	-1.54	9.8867		-47.06	-1.62	9.9020										
-46.91	21 48.5	9.5436		+10.90	23 9.92	9.5504		+17.10	30 50.54	9.5868										
+1 9.80	50.25	9.8696				9.8574				9.8669										
		-7406				-7201				-7360										
		2657		+8.78		2766			+1159	2615										
51	506	9.7869		4749	41 418	9.80443		4435	9 418	9.78030		4745								
	390	1.37218		0.8458	502	1.36040		0.8526	498	1.37931		0.8890								
	503	1.26955		9.9717	06	1.27529		9.9707	18	1.27007		9.9649								
	513			9.6766	42.8			9.6469	410			9.6762								
51	8780	52 60		9.4415	41 48.85	50		9.4371	9 48.60	52		9.4888								
	-1860	91 14 14.29			+1885	23 23.76			-1862	56 4.29										
	51 14.29	0.94		-1.76	42 77.0	+1.53		-1.78	9 29.98	+0.99		-1.94								
	52 31 29.16	16 14 15.28		-8.23	50 40 40.65	23 25.29		-8.21	53 13 18.37	56 5.28		-8.10								
	-17 25.67	54		+8.90	-17 25.67			+8.31	-17 25.67			+8.89								
	-15			+15	-14			+15	-15			+16								
	-0.02	21 3.34		-0.94	-0.02	22 2.408		-1.53	-0.05	30 3.48		-0.99								
	+10.86	15 25.3			+8.84	24 36.2			+11.66	57 22.4										
	+12				+10				+13											
	-17 14.86				-17 16.89				-17 14.08											
	52 14 3.48				50 23 14.98				52 55 57.70											

Notes
h m s

Observations doubtful

57

17

1885 ~~9 Nov 28~~
7 30 16
+52° 55'

Log

Log A 9.4273 Mar 29.3
 B 0.9378
 C 1.2671
 D 0.5269

59

Mar 29	121 54 +	9.9289	Mar 29	123 11	9.9227
8 7 36	+4.561	+1489	8 12 3	+4.492	+1420
+50	+520 46	8.9418	+51 40	2 + 1	8.9275
+00	5.1782	9.7230	43.3		9.7382
7 58.0	19.51.9	9.0413	12 6.0	12 28.0	9.0323
58.0	19.55.3		7.5	31.4	
1.8	23.09.1	0.6591	9.0	34.9	0.6524
4.5	22.21.4	8.6648	10.3	38.0	8.6657
8.3 6.9	21.5.7	8.7643	11.4	40.7	8.7705
	19.24	8.9702		44.0	8.9550
	-27.27			+26.60	
	52.07	51.97			+1201
		+1220			-401
8 144	7 5202	-402	12 884	13 120	+1090
-942	-17.94	+1075	+5236	-1794	-303
	+ .66	-314		+ .63	+1587
-17.30	+ .00	+1.581	-1733	- .02	
	- .02	9.9289		12 4384	9.9227
-45.64	7 34.42	9.9025		-1.59	9.8951
+145.70	7 33.14	9.7230		12 4228	9.7382
		9.8294			9.8178
		-6757			-6574
+11.27		-2630	+9.54		-2685
23 592	9.78180	-4121	19 466	9.79256	-3889
12.9	0.97405	10252	599	1.71900	1.0404
579	0.86631	9.9289	15.8	1.62202	9.9227
8.7		9.6150	552		9.5898
24 12.18	52	9.6235	19 5938	51	9.6333
+735	41 2729		-4188	46 2762	
24 19.53	+1.16	-283	79 1750	+2.55	-2.94
52.68 28.82	41 2845	-7.36	52 3 3085	46 3017	-7.25
-17 12.80		+7.62	-17 1280		+7.19
- .02		+1.41	- .73		+1.45
+ .00	6 47.50	-1.16	+ .60		-2.55
+ 11.17	43 14.2		+ 10.18		
+ .12			+ .12		
-17 1.53			-17 323		
52 41 16.02			51 46 18.05		

[illegible]

Log A	9.4279
B	0.9420
C	1.2628
D	0.6436

61

[illegible]

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Log A	9.4475	Apr 6.3
B	0.9497	
C	1.2529 _n	853
D	0.7852 _n	

65

52m	Apr 6	1226	-	9.2280	Apr 6	12257	9.9238
	2 m s			.2445	2 m s		.2283
+33	8 7 36		+4.560	+1488	8 12 3	+4491	+1419
+00	+52 46	a+1	a-1	8.9423	+510 40	934.2	8.9261
	6 5.0			9.7254	43.2	46.2	9.7355m
	49.3			9.0416	12	33.0 12 28.4	9.0315
9	17.5	8162.6				34.9	32.0
	21.2	15315.3				37.6	35.2
	24.5	15919.3				40.0	38.4
	27.6	16022.6	104 7.0	0.6590	8.7	42.0	41.6
9.0	30.2		108 10.8	8.6674			35.12
		15.80	1060	8.7670			-26.60
		+27.27	-27.27	8.9696			
		43.07	43.33	+1.278			+1.258
9	24.20		8 43.16	-414	12 37.50	12 852	-409
-	41.04		-18.59	+1047	-28.98	-18.59	+1047
			+44	-369		+42	-550
		-1817	+ .00	+1.342	-1819		+1.346
			8 02			-02	
			8 24.99	9.9280		11 50.33	9.9238
			1.34	9.9007		-1.35	9.8946
	-45.62		8 23.65	9.7254	-44.94	11 48.98	9.7355m
	+1746.30			9.8284	+148.80		9.8184
				-8741			-6583
				-2628	+9.62		-2690
	+1047			-4113	24 30.4	9.79256	-3893
21	597	978180		1.0276	35.7	1.46210	1.0377m
	142	1.61321		9.9280	541	1.36689	9.9238m
	324	1.50724		9.6142	34.3		9.5903m
	12.8			9.6261	24 36.12	51	9.6301m
22	1477	52					
	+3215	42 59.98					
	22 46.92	+0.60		-299	+2327	40 46.15	
53 0.193				-755	24 59.39	+0.96	-306
-17 1243	43 0.07			+7.36	51 57.48.96	40 47.11	-747
-17 49				+258	-17 1243		+6.97
				-0.60	-22		+260
			7 38.03		+07	11 4.04	-0.96
			414 46.4		+9.73	42 35.9	
					+11		
					-17 28.1		
-17 1956					57 40.36.53		
52 42 49.00							

[illegible]

[illegible]

[illegible]

Log 9.5011 Apr 25.3
 0.9560
 1.1815m
 1.0790m

Apr 25 147 41
 9 50 4
 +13 52° 10'
 +0.0 48 44.4
 15.6

50 55.0 50 27.6
 58.9 30.7
 0.0 34.0
 3.7 37.6
 7.0 41.0
 34.18
 099 114

51 0.52
 + 0.54
 -17.29
 -39.94
 +24.930
 +10.11

58 186 9.78772
 34.5 9.73239
 5.1 9.63234
 4.18
 58 4.000 52
 0.43 7 4.44
 58 39.54 -0.6
 52.24 8.78 7 4.28
 -17 14.45
 -0.0
 + .07
 + 9.93
 + 11
 -17 4.34
 52 6 54.33

Apr 25 150 58 9.6860
 10 3 46 +3.848
 +50° 6' 2 28.5
 11.4
 3 36.4
 39.2
 42.3
 45.5
 48.8
 42.44
 + 25.73

7.5
 3 36.4
 39.2
 42.3
 45.5
 48.8
 42.44
 + 25.73
 4 1817
 -19.44
 + .16
 -17.30
 -0.02
 3 50.87
 -1.36
 3 49.51

2 472 9.80716
 38
 35.1
 10.9
 3 9.25

+3.991

+9.19

8.9329

9.9269

9.0357

0.6011

8.8598

8.9626

8.7637

+1265

-6.54

+13.93

-6.96

+1308

9.7280

9.8972

9.9269

9.6252

-42.19

-26.64

-15.55

1.2291

9.7280

9.1917

9.8247

-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

9.9269

9.6252

-42.19

-26.64

-15.55

1.2291

9.7280

9.1917

9.8247

-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

9.9269

9.6252

-42.19

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Apr 25 149 16

9.7280

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9.9269

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-42.19

-26.64

-15.55

1.2291

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9.1917

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-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

9.9269

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-42.19

-26.64

-15.55

1.2291

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-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

9.9269

9.6252

-42.19

-26.64

-15.55

1.2291

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-4.83

+2.36

+8.00

+0.16

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Apr 25 149 16

9.7280

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-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

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-42.19

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+2.36

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-42.19

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Apr 25 149 16

9.7280

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-42.19

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-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

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-42.19

-26.64

-15.55

1.2291

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9.1917

9.8247

-5.37

-4.83

+2.36

+8.00

+0.16

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-42.19

-26.64

-15.55

1.2291

9.7280

9.1917

9.8247

-5.37

-4.83

+2.36

+8.00

+0.16

9.7280

9.8972

9.9269

9.6252

-42.19

-26.64

-15.55

1.2291

9.7280

[illegible]

Log # 9.5417 May 11.3
 B 0.9713
 C 1.0680
 D 1.2036

May 11 172.58 9.0880
 11 31 16 +3.274 +.202
 +14
 +.00 30 11.0

32 3.6 31 37.2
 5.0 41.0
 5.9 44.0
 47.3
 50.8
 44.06
 +25.26

32 483 32 1032
 + 5.49 -2025
 + .17
 -19.90 +.00
 - .02 +1398

31 5042 9.0880
 -1.40 9.8906
 31 42.02 9.9967
 8.9786
 -0.952
 +27.29 +7.75

4 32.0 9.79825 +17.77
 46.7 0.73957 1.2589
 97 0.65005 9.0880
 500 9.2497
 4 49.60 51 9.8873

4 44.7 1 131
 4 45.13 -2.17
 54 18 322 X 59.14
 -17 11.00 0
 .01
 + 14 31 16.26
 + 8.86 4 18.1
 + 10
 -17 1.91
 510 52.22

31 16.26 +2.17
 4 18.1
 31 16.26 +2.17
 4 18.1
 31 16.26 +2.17
 4 18.1

May 11 178.38 9.3775
 11 54 1 +3.110 +.038
 +49° 51'

54 38.1 54 20.3 267
 40.0 23.5 267
 42.7 26.4 264
 45.4 33.1 267
 47.7 33.1 267
 26.5 62
 +25.60

54 42.78 54 52.58
 + 9.60 -2006
 44 + .17
 -19.91 +15.13

54 32.47 8.3775
 -1.37 9.8831
 +3 20.50 54 30.78
 8.2606
 -0.182
 +27.29

16 47.0 9.80942 +26.17
 18 0.98327 1.3021
 25.0 0.90392 8.3775
 43 0.87662 9.4178
 17 45.2 49 9.8830

16 48.68 48 48.68
 16 56.50 44 -1.95
 50 5 51.85 48 46.65
 -17 11.00 51
 .03
 + 06 53 59.68
 + 7.63 52 7.0
 + .09
 -17 3.25
 4998 40.85

54 32.47 8.3775
 -1.37 9.8831
 +3 20.50 54 30.78
 8.2606
 -0.182
 +27.29

May 11 178.41 8.3613
 11 54 1 +3.108 +.036
 +49° 51'

54 38.1 54 20.3 267
 40.0 23.5 267
 42.7 26.4 264
 45.4 33.1 267
 47.7 33.1 267
 26.5 62
 +25.60

54 42.78 54 52.58
 + 9.60 -2006
 44 + .17
 -19.91 +15.13

54 32.47 8.3775
 -1.37 9.8831
 +3 20.50 54 30.78
 8.2606
 -0.182
 +27.29

16 47.0 9.80942 +26.17
 18 0.98327 1.3021
 25.0 0.90392 8.3775
 43 0.87662 9.4178
 17 45.2 49 9.8830

16 48.68 48 48.68
 16 56.50 44 -1.95
 50 5 51.85 48 46.65
 -17 11.00 51
 .03
 + 06 53 59.68
 + 7.63 52 7.0
 + .09
 -17 3.25
 4998 40.85

54 32.47 8.3775
 -1.37 9.8831
 +3 20.50 54 30.78
 8.2606
 -0.182
 +27.29

[illegible]

8.8098m 2020 -103 8.8998 9.9996m 9.0156	May 21 184 19 8.8766 h m s 12 16 44 +2949 +50 44 13 44 2-1 17 44.0 17 58.7 46.2 48.0 50.2 53.3	8.8766 21 28 -123 8.9106 17 33.5 55.7 9.0221 20 6.2 7.4 8.2 11.8 15.0 18.4 22.0 15.28 -25.57	May 21 184 51 8.9272 h m s 13 18 52 +2938 +54 49 17 33.5 2-1 48 21.5 48 9.7 24.2 27.4 30.0 33.2	8.9272 19 89 -134 8.8967 46 58.1 23.8 9.0139 48 21.5 48 9.7 13.3 16.6 20.2 23.2	192 5 30.7 34.5 38.2 41.7 45.3 48.5 52.1 55.6 59.4 13.26 45.00 45.11 48 21.30 -1.60 48 19.70	9.3208 2686 -389 8.9664 9.9923 9.0571 0.4286 8.9567m 9.0474m 8.3779m +1029 -863 +1009 +427 +1602 9.3208 9.9092 9.9903 9.2300 +1698 -2536 +4234 1.2925 9.3208 9.6268 9.8995m -7.52 +200 -383 +1421 +4.86
0.4726 8.8989m 9.0147m 4.8254m +1139 -756 +936 +120 +1439 8.8098 9.8842 9.9991m 8.6940 +0.494 +2790 +3284 1.3013 8.8098 9.5164 9.8833m -7.68 +62 -297 +1369 +3.66	May 21 17 48.34 17 38.94 -9.37 +2388 +12 +142 +1450 -23.78 77 0.2 159 8.8766 -1.63 9.8888 -29.40 9.9988 +31990 8.7651 +31990 +0.582 +2749 +7.70 24 31.3 9.80136 +3331 18 45.0 9.80972 +3447 52 36 9.76625 +4234 1.2925 9.3208 9.6268 9.8995m -7.52 +200 -383 +1421 +4.86	8.8766 21 28 -123 8.9106 17 33.5 55.7 9.0221 20 6.2 7.4 8.2 11.8 15.0 18.4 22.0 15.28 -25.57 +1132 -774 20 7.27 19 49.71 -749 48 27.26 +931 +1780 +156 +1465 -23.76 8.9271m 19 25.93 -1.46 9.8829 9.9984m 8.8100 +0.646 +2801 +12.27 24 31.3 9.80136 +3331 18 45.0 9.80972 +3447 52 36 9.76625 +4234 1.2925 9.3208 9.6268 9.8995m -7.52 +200 -383 +1421 +4.86	May 21 192 5 30.7 34.5 38.2 41.7 45.3 48.5 52.1 55.6 59.4 13.26 45.00 45.11 48 21.30 -1.60 48 19.70 +2444 9.5625 23.57 -628 13 27 36 +2416 -656 8.9335 26 47.3 a +1 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 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8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 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9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410 9.9672m 9.0408 9.0360 27 49.1 27 58.3 58.3 59.0 59.6 59.0 0.6 0.35 0.3881 8.9024 8.4 1.8 8.5985 +27.21 8.6144 +925 -772 +922 +787 +1814 9.5736 2432 -656 8.9410			

862

1885

21 202 17 $+2375$
 $9.5788m$
 26.43
 $13.28.40$ 29. 17.2 -697
 $+54.0$ 20.3
 $27.52.0$ 24.2 8.9621
 6.7 27.5 $9.9663m$
 $29.41.4$ 31.1 9.0543
 43.7 34.5
 46.2 38.3
 49.2 40.9 0.3757
 $8.6.52.4$ 45.0 $8.9284m$
 $9.0206m$
 $8.6331m$
 3100
 $+911$
 $29.46.55$ 29. 31.07 -809
 -15.58 -2387 $+949$
 $+ .14$ $+769$
 -23.76 $+ .07$ $+1820$
 $- .03$
 $29.72.4$ $9.5788m$
 -1.82 9.9078
 23.76 29. 5.42 $9.9663m$
 $+3.560$ 9.4866
 $+3066$
 $+1209$ 12552
 7.7 9.76922 $+5618$
 0.6 1.19257 $1.2685m$
 17.3 1.07402 9.5788
 69 9.7496
 $7.8.12$ 53 $9.8741m$
 $+1186$ 58. 31.28
 $7.19.8$ -4.81 -712
 54152837 58. 26.47 $+3.62$
 $-17.9.18$ -509
 $- .07$ $+1340$
 $+ .08$ 2841.66 $+4.81$
 $+11.95$ 132.1
 $+ .13$
 -16.5709
 $53.58.19.19$

Log A 9.5721 May 26.3
 B 0.9848
 C 0.8850
 D 1.2707

73

May 26 184 19				May 26 192 5				May 26 193 41			
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
12 16 44	+2.949	-123	12 47 53	34.0 +2.683	-389	12 51 53	+2.622	-450			
+01											
+00											
17 43.0	17 9.7	9.0221	48 38.2	48 12.5	48.2	9.4	9.0571	58 0.1	53 31.5	9.0644	
44.6	12.9		43.5	16.0	51.3	12.9		3.3	35.7		
46.0	16.2		47.0	19.9	55.2	16.1		5.6	39.0		
47.8	19.3	0.4697	49.7	23.3	58.8	19.3	0.4286	7.9	43.0	0.4186	
48.8	22.5	8.9094	51.9	27.0	2.3	23.4	8.9567	10.0	46.6	8.9648	
	16.12	9.0209		1974	1632		9.0474		39.16	9.0519	
	+26.07	7.8987		4803	4814		8.3779		-28.70	8.4383	
		+1.153					+1049			+1025	
17 45.94	17 42.9	-784	48 46.06	48 48.08	-874	56 5.38	55 10.46	-890			
-3.75	-26.7	+805	+2.02	-26.79	+856	-54.92	-26.80	+865			
	+ .01	+1.48		+ .01	+445		+ .01	+512			
-26.78	+ .00	+1.322		-26.81	+1476	-26.82		+1512			
	.02										
17 15.41	8.8766		48 21.2	9.3208		54 43.4	9.3739				
-1.32	9.8885		48 19.79	9.9092		-1.51	9.9129				
17 14.09	9.9988			9.9903		54 44.54	9.9875				
	8.7651			9.2300		42.13	9.2868				
	+0.582			+16.98			+19.36				
	2.749	+11.89		2.536	+11.97		2.494				
24 27.8	9.80136	+33.31	51 4.22	9.76625		4.00	9.75967	+4430			
26.2	0.57403	1.3010	38.2	0.30535		38.0	1.73973	1.2897			
45.9	0.48762	8.8766	57.2	0.18383		57.0	1.61163	9.3739			
33.8	9.5226	4.57				4.49		9.6464			
24 33.42	50	9.8873	51 4.58	54	9.89959	44.98	54	9.9004			
+3.07	41 8.28		51 1.53	14 39.8		+40.69	55 22.45				
24 36.49	-4.74		51 4.29	-5.70		10 25.84	-6.09	-7.62			
50.58	11.86	41 3.54	54.31	4.06	13 58.05	55.12	22.48	55 16.36	+2.28		
-17 12.00		-2.56	-17 12.00			-17 12.00			-3.40		
	.01	+14.39		.02			.78		+14.83		
+18	16.44.58	+4.74	+ .07		47 52.94	+5.90	+19	54 15.90	+6.09		
+8.16	44 23.5		+1.69		17 14.2		+12.41	58 31.3			
+ .09			+ .13				+ .16				
-17 3.58			-17 0.11				-17 0.03				
50 40.54.86			54 13 52.06				54 55 10.48				
May 26 198 11				May 26 199 59				May 26 200 3			
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
13 12 14	+2.568	-504	13 19 30	+2492	-580	13 19 30	+2491	-581	13 25 13	+2444	-628
+50° 26'			+50° 48'			+51° 48'			+52° 12'		
11 22.7	a+1	8.9057	18 14.4		8.9272	18 54.6	a-1	8.9269	24 23.7	a-1	8.9335
32.4		9.2778	34.2		9.9730	53.4		9.9728	18.8		9.9689
12 42.0	37.6	9.0192	20 23.0	23.0	9.0321	21 25.0	20 59.0	9.0320	26 7.2	26 24.4	9.0360
44.2	40.6		23.7	27.0		29.4	2.3		10.9	30.0	
45.5	43.9		24.3	31.1		30.8	5.6		14.2	33.5	
46.7	47.3	0.4096	23.7	33.7	0.3966	32.9	9.0	0.3964	17.0	37.0	0.3881
48.0	50.4	8.8835	24.0	37.3	8.9002	35.7	9.2	8.8997	20.3	40.3	8.9024
49.7	43.46	8.9970	50.4		9.0054		5.62	9.0048	33.02		9.0049
	+25.90	8.5134			8.5658		-26.68	8.5671	-26.92		8.5985
		+1.004			+974			+974			+955
12 46.02	13 9.86	-738	20 23.7	-767	21 30.76	20 38.94	-766	26 13.92	26 6.10	+42.771	
+23.84	-26.81	+762	-26.82	+776	-51.82	-26.82	+776	-7.22	-26.82	+776	
	+ .01	+608	+ .01	+686		+ .01	+688	34	+ .01	+740	
-26.82		+16.28	36 -26.83	+16.69	-26.83		+16.72	-26.83		+1700	
	.02			.02							
12 43.09	9.4942		19 56.93			20 12.11	9.5351		25 3.92	9.5625	
-1.64	9.8866		19 56.7			-1.67	9.8949		-1.70	9.8974	
12 41.40	9.9778		19 55.26			-24.92	9.9728	-24.45	25 32.59	9.9689	
	9.3808					+3 8.50	9.4300	+3 6.80	38.05	9.4599	
	+2.403						+2.692			+2.884	
	2.767						+2.687	+9.82		2.662	
43 55.3	9.80412	+5.140	21 23.4			21 23.4	9.79128	+5.379	56 9.9	9.78739	+5.546
	1.37731	1.2800	18.4			18.4	1.71450	1.2750	43 0.89322	1.2711	
	1.29366	9.4942	38.1			38.1	1.61801	9.5351	23.6	0.79283	9.5625
	9.7135		25.7			25.7		9.7307	130.5	12.7	9.7440
44 3.55	50	9.8644	21 26.40			21 26.40	51	9.8677	56 12.6	52	9.8663
	19.66	22 0.44					43 37.09		+57.22	9 27.34	
43 43.89	-8.24	-7.45				22 7.90	-5.87	-7.36	56 18.83	-5.68	-7.30
50 39 4.96	21 33.20	+3.01				52.0	40.48	+3.31	52 26 23.52	9 21.66	+3.53
-17 12.00		-3.97				-17 12.00		-4.13	-17 12.00		-4.26
	.15	+13.65					.71	+13.75		.02	+13.71
+16	12 15.70	+5.24				+ .06	19 45.52	+5.57	+ .05	25 13.60	+5.68
+7.88	25 6.8					+9.18	46 40.0		+9.68	12 28.5	
+ .09						+ .11			+ .11		
-17 4.02						-17 3.36			-17 2.18		
50 21 52.46						51 43 28.45			52 9 17.52		

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June 9 201 25				June 9 202 6				June 9 202 17				June 9 207 0			
13 25 13	26 2.3	23.59	2.23	13 28 1	27 11.3	20.38	2.23	13 28 40	29 29.0	31.8	2.23	13 47 34	42 22.75	2.23	
+52° 12'	5.3	8.9337	27 11.3	+50° 8'	11.7	2.23	2.23	+52° 40'	31.8	35.0	2.23	+52° 46'	46 48.0	2.23	
24 18.8	8.5	9.9687	27 11.3	24 18.8	11.7	2.23	2.23	24 18.8	35.0	38.7	2.23	24 18.8	46 48.0	2.23	
25 57.4	15.2	9.0362	28 48.6	25 57.4	15.2	2.23	2.23	25 57.4	42.3	45.8	2.23	25 57.4	49 33.6	2.23	
59.5	18.6	0.3879	48.6	59.5	18.6	2.23	2.23	59.5	45.8	49.4	2.23	59.5	49 33.6	2.23	
2.6	21.8	8.9026	50.0	2.6	21.8	2.23	2.23	2.6	49.4	53.0	2.23	2.6	49 33.6	2.23	
5.7	24.8	9.0051	51.8	5.7	24.8	2.23	2.23	5.7	53.0	56.4	2.23	5.7	49 33.6	2.23	
8.9	29.0	8.5987	52.8	8.9	29.0	2.23	2.23	8.9	56.4	59.8	2.23	8.9	49 33.6	2.23	
15.24		+1.054		15.24		+1.054		15.24		+1.054		15.24		+1.054	
26 2.80	26 15.24	-785	28 50.13	26 2.80	26 15.24	-785	28 50.13	26 2.80	26 15.24	-785	28 50.13	26 2.80	26 15.24	-785	
+12.44	35.86	+3.54	+11.85	+12.44	35.86	+3.54	+11.85	+12.44	35.86	+3.54	+11.85	+12.44	35.86	+3.54	
-3582	+ .06	+797	-3583	-3582	+ .06	+797	-3583	-3582	+ .06	+797	-3583	-3582	+ .06	+797	
25 39.42	9.5625	9.8975	28 26.15	25 39.42	9.5625	9.8975	28 26.15	25 39.42	9.5625	9.8975	28 26.15	25 39.42	9.5625	9.8975	
-24.45	-1.42	9.9687	-24.45	-24.45	-1.42	9.9687	-24.45	-24.45	-1.42	9.9687	-24.45	-24.45	-1.42	9.9687	
+3.6.80	25 38.00	9.9687	28 24.69	+3.6.80	25 38.00	9.9687	28 24.69	+3.6.80	25 38.00	9.9687	28 24.69	+3.6.80	25 38.00	9.9687	
+10.10	2.661	+7.86		+10.10	2.661	+7.86		+10.10	2.661	+7.86		+10.10	2.661	+7.86	
56 236	9.78739	+5545	0 24.0	56 236	9.78739	+5545	0 24.0	56 236	9.78739	+5545	0 24.0	56 236	9.78739	+5545	
188	1.09482	1.2911	18.4	188	1.09482	1.2911	18.4	188	1.09482	1.2911	18.4	188	1.09482	1.2911	
341	0.97444	9.5625	35.0	341	0.97444	9.5625	35.0	341	0.97444	9.5625	35.0	341	0.97444	9.5625	
236	9.7439	2.36	5	236	9.7439	2.36	5	236	9.7439	2.36	5	236	9.7439	2.36	
56 2502	52	9.8664	0 25.35	56 2502	52	9.8664	0 25.35	56 2502	52	9.8664	0 25.35	56 2502	52	9.8664	
56 15.15	9 32.67	-8.05	0 15.51	56 15.15	9 32.67	-8.05	0 15.51	56 15.15	9 32.67	-8.05	0 15.51	56 15.15	9 32.67	-8.05	
52 26 33.20	9 24.80	+3.59	50 22 32.84	52 26 33.20	9 24.80	+3.59	50 22 32.84	52 26 33.20	9 24.80	+3.59	50 22 32.84	52 26 33.20	9 24.80	+3.59	
-17 10.63		-1.94	-17 10.63	-17 10.63		-1.94	-17 10.63	-17 10.63		-1.94	-17 10.63	-17 10.63		-1.94	
+ .04		+14.77	+ .04	+ .04		+14.77	+ .04	+ .04		+14.77	+ .04	+ .04		+14.77	
+ .07	25 13.55	+8.37	+ .07	+ .07	25 13.55	+8.37	+ .07	+ .07	25 13.55	+8.37	+ .07	+ .07	25 13.55	+8.37	
+ 9.95	12 31.1		+ 9.95	+ 9.95	12 31.1		+ 9.95	+ 9.95	12 31.1		+ 9.95	+ 9.95	12 31.1		
+ 12			+ 12	+ 12			+ 12	+ 12			+ 12	+ 12			
-17 0.53			-17 0.53	-17 0.53			-17 0.53	-17 0.53			-17 0.53	-17 0.53			
52 9 22.57			50 5 22.21	52 9 22.57			50 5 22.21	52 9 22.57			50 5 22.21	52 9 22.57			
June 9 208 20				June 9 208 54				June 9 208 52				June 9 208 52			
13 52 50	+2244	-828	13 55 14	+2223	-849	13 55 14	+2224	-848	13 55 14	+2224	-848	13 55 14	+2224	-848	
+52° 36'	a+1	8.9397	54 29.0	a+1	8.9426	54 18.8	a-1	8.9423	54 18.8	a-1	8.9423	54 18.8	a-1	8.9423	
52 11.6	42.1	9.9446	53.0	52 11.6	42.1	9.9446	53.0	52 11.6	42.1	9.9446	53.0	52 11.6	42.1	9.9446	
53 46.6	53 23.3	0.3510	55 39.4	53 46.6	53 23.3	0.3510	55 39.4	53 46.6	53 23.3	0.3510	55 39.4	53 46.6	53 23.3	0.3510	
49.7	26.6	8.8843	43.2	49.7	26.6	8.8843	43.2	49.7	26.6	8.8843	43.2	49.7	26.6	8.8843	
52.5	30.0	8.9845	46.3	52.5	30.0	8.9845	46.3	52.5	30.0	8.9845	46.3	52.5	30.0	8.9845	
54.6	33.2	8.7162	49.8	54.6	33.2	8.7162	49.8	54.6	33.2	8.7162	49.8	54.6	33.2	8.7162	
8.3	37.0	+968	53.4	8.3	37.0	+968	53.4	8.3	37.0	+968	53.4	8.3	37.0	+968	
	50.2	-752	46.4		50.2	-752	46.4		50.2	-752	46.4		50.2	-752	
	+27.17	+337	+27.28		+27.17	+337	+27.28		+27.17	+337	+27.28		+27.17	+337	
53 52.02	53 51.19	+1045	56 13.70	53 52.02	53 51.19	+1045	56 13.70	53 52.02	53 51.19	+1045	56 13.70	53 52.02	53 51.19	+1045	
+ 5.17	-3589	+1598	+ 5.17	+ 5.17	-3589	+1598	+ 5.17	+ 5.17	-3589	+1598	+ 5.17	+ 5.17	-3589	+1598	
-3585	+ .06	-3584	-3584	-3585	+ .06	-3584	-3584	-3585	+ .06	-3584	-3584	-3585	+ .06	-3584	
	53 21.34	9.6763	55 37.86		53 21.34	9.6763	55 37.86		53 21.34	9.6763	55 37.86		53 21.34	9.6763	
-22.44	-1.60	9.9446	-22.23	-22.44	-1.60	9.9446	-22.23	-22.44	-1.60	9.9446	-22.23	-22.44	-1.60	9.9446	
+2 56.00	53 19.74	9.5761	55 36.25	+2 56.00	53 19.74	9.5761	55 36.25	+2 56.00	53 19.74	9.5761	55 36.25	+2 56.00	53 19.74	9.5761	
+10.61		+3768		+10.61		+3768		+10.61		+3768		+10.61		+3768	
32 25.1	9.78346	+6406	22 26.8	32 25.1	9.78346	+6406	22 26.8	32 25.1	9.78346	+6406	22 26.8	32 25.1	9.78346	+6406	
205	0.71349	1.2468	31.2	205	0.71349	1.2468	31.2	205	0.71349	1.2468	31.2	205	0.71349	1.2468	
364	0.60918	9.6763	37.2	364	0.60918	9.6763	37.2	364	0.60918	9.6763	37.2	364	0.60918	9.6763	
358		9.8066	26.3	358		9.8066	26.3	358		9.8066	26.3	358		9.8066	
32 26.98	52	9.8444	22 27.88	32 26.98	52	9.8444	22 27.88	32 26.98	52	9.8444	22 27.88	32 26.98	52	9.8444	
40.7	33 25.15	-7.62	56 13.70	40.7	33 25.15	-7.62	56 13.70	40.7	33 25.15	-7.62	56 13.70	40.7	33 25.15	-7.62	
32 22.88	-8.84	+466	53 0 6.03	32 22.88	-8.84	+466	53 0 6.03	32 22.88	-8.84	+466	53 0 6.03	32 22.88	-8.84	+466	
52 50 25.47	33 16.61	-2.24	42 52.14	52 50 25.47	33 16.61	-2.24	42 52.14	52 50 25.47	33 16.61	-2.24	42 52.14	52 50 25.47	33 16.61	-2.24	
-17 10.63		+1404	-17 10.63	-17 10.63		+1404	-17 10.63	-17 10.63		+1404	-17 10.63	-17 10.63		+1404	
+ .01		+8.84	+ .01	+ .01		+8.84	+ .01	+ .01		+8.84	+ .01	+ .01		+8.84	
+ .12	52 54.30		+ .12	+ .12	52 54.30		+ .12	+ .12	52 54.30		+ .12	+ .12	52 54.30		
+ 10.88	36 13.2		+ 10.88	+ 10.88	36 13.2		+ 10.88	+ 10.88	36 13.2		+ 10.88	+ 10.88	36 13.2		
+ .12			+ .12	+ .12			+ .12	+ .12			+ .12	+ .12			
-17 0.02			-16 59.99	-17 0.02			-16 59.99	-17 0.02			-16 59.99	-17 0.02			
53 33 44.24			52 42 55.10	53 33 44.24			52 42 55.10	53 33 44.24			52 42 55.10	53 33 44.24			

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 13 43 29 +2.227 2798 13 55 14 +2.222 2451
 +.00 +54° 58' 44.14.8 +52° 47' 0-1 8.9429
 +.00 44.4 4.1 8.9776 54 29.0 8.9429
 45 42.0 45 21.8 9.9524 53.0 9.9422
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 45 22.08 9.6470 55 38.21 9.6842
 - 22.28 - 1.30 9.9130 - 1.59 9.9009
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 10 26.6 9.75895 + 6.124 20 37.7 9.78163 + 6.473
 13.8 1.18327 1.2546 16.2 1.70740 1.2444
 36.1 1.05445 9.6470 37.2 1.60126 9.6842
 34.8 9.7870 25.8 9.8111
 10 27.82 54 9.8654 20 36.72 52 9.8431
 11.34 55 32.75 + 39.93 44 39.84
 10 16.48 - 9.39 - 7.82 21 6.65 - 9.11 - 7.64
 55 12 31.87 55 23.36 + 4.38 53 1 41.70 44 30.55 + 4.77
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 + 12.64 58 23.2 + 10.56 57 47.26.2
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 54 55 20.0 52 44 29.83

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1885	June 11	220 9	9.8094	June 11	221 2	9.8172	June 11	224 2	9.8420
h m s			20791	h m s		2678	h m s		2007
14 40 14	+2.031	-1.041	14 43 50	33.2	+1.856	-1.216	14 55 47	+1.969	-1.103
+50° 24'			+54° 14'	36.0			+49° 56'		
39 33.1	a-1	8.9057	43 13.2	39.7	8.9656	33 8.0	a+1	8.8985	
29.1		9.8833	19.1	43.0	9.8776	0.6		9.8567	
41 12.5	41	9.0192	44 41.6	44 11.0	9.0566	53 18.2	56 13.6	9.0149	
17.4			43.0	15.0	49.9	21.4	16.7		
22.2	38.738.7		45.5	18.3	53.4	24.5	20.0		
9.6	38.842.0	0.3077	48.7	21.7	56.5	26.0	23.2	0.2942	
	390 45.5	8.7890	51.9	25.5	0.6	28.4	26.3	8.7552	
	3883	8.9025		18.30	14.42		19.6	8.8716	
	-25.88	8.8286		46.36	46.52		+25.63	8.8569	
		+8.94				+8.17		+8.67	
41 17.40	41 12.95	-6.09	44 46.14	44 46.44	-6.90	56 23.70	56 45.59	-5.64	
-4.45	-36.49	+2.28	+0.30	-36.49	+2.45	+21.89	-36.49	+2.12	
	+ .05	+1.359		+ .06	+15.11		+ .05	+1.454	
-36.46	+ .00	+1.872		-36.46	+1.883	-36.46		+1.969	
	+ .02								
	40 36.49	9.8094		44 9.98	9.8172		56 9.13	9.8420	
-20.32	-1.87	9.8866		-1.88	9.9090		-1.97	9.8836	
	40 34.62	9.8833	-18.56	44 8.10	9.8776	-1.969	56 7.16	9.8567	
		9.6960	+2 31.40		9.7202	+2 24.30		9.7256	
		+4.966			+5.323			+5.316	
+8.31		.2767	+12.29		.2539	+7.62		.2994	
43 48.2	9.80443	+7.733	54 19.6	9.76677	+7.862	12 26.2	9.80867	+8.110	
	0.64836	1.1855	88	9.47712	1.1798	14.9	1.34025	1.1589	
	0.56502	9.8094	20.8	9.35612	9.8172	38.0	1.26115	9.8420	
Rejoice	43 18.20	9.8884	1.8		9.8955	25.7		9.9090	
43 18.20	50	9.7699	54 19.0	54	9.7866	12 26.20	49	9.7403	
+3.67	21 52.36		0.23	11 29.44		-18.24	53 35.58		
43 51.87	-9.33	-6.75	54 18.74	-9.96	-6.66	12 7.98	6 -9.48	-6.20	
50 38 56.48	21 43.08	+6.38	54 28 29.58	11 19.48	+6.50	50 10 40.39	9.53 26.48	+6.88	
-17 12.43		-2.20	-17 12.43		-2.24	-17 12.43		-2.31	
- .01	✓	+11.90	- .02		+12.36	- .13		+11.11	
+ .19	40 14.30	+9.33	+ .21		+9.96	+ .12	55 47.47	+9.48	
+ 8.03			+ 11.94			+ .07	55 50.4		
+ .10			+ .14						
-17 4.12			-17 0.14			-17 4.81			
50 21 44.05			54 11 17.15			49 53 27.92			

June 13 208 57 2495 +05 13 55 20 +53° 44' +00 54 37.3 9.8 56 4.7 55 50.0 7.0 63.4 9.6 57.0 11.6 0.3 8.2 14.4 3.7 5658 + 27.46 + 997 - 769 + 216 + 1089 + 1533 - 37.23 + 10.78 4 26.1 9.77879 15.0 1.17 268 38.4 1.06362 26.3 4 26.45 53 11.58 4 1487 53 18 33.58 - 17 12.18 - 17 12.18 + 14.19 + 964 + 1049 + 13 - 17 1.40 53 1 2130	June 13 210 28 2495 14 1 30 +50° 15' 0 43.3 26.9 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 56.7 51.7 81 59.2 56.5 2.4 59.4 8.0 1.9 8.9 4.4 12.5 5.84 3154 2 5938 - 27.77 + 1089 + 1533 - 37.22 - 22.59 + 252.90 53 132 9.80580 1.0 1.44382 2.48 1.36192 118 53 1270 50 + 2301 12 8.18 53 35.71 -9.17 50 29 12.64 11 5899 - 1.44 -17 12.18 - 21 + 16 + 7.68 + .09 - 17 4.46 50 12 846	June 13 212 59 2495 14 11 32 +50° 41' 10 48.3 47.2 5
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June 13	213 3	9.7367m	June 13	214 7	9.7489m	June 13	215 1	9.7611m
14 11 51	+2.169	.2188m	14 16 35	+2.105	.2364m	14 16 35	+2.105	.2364m
+51° 6'		-903	+52° 9'		-967	+52° 9'		-967
11 28	a - 1	8.9166	12 08	a - 1	8.9342	15 20.8	a - 1	8.9518
11.9		9.9234	15.4		9.9180	21.4		9.9358
13 34.8	13 11.2	9.0257	17 45.8	17 24.0	9.0365	16 50.5	17 24.9	9.0473
37.0	14.5		48.6	27.5		52.9	28.5	
39.0	18.0		50.3	30.8		54.5	31.7	
41.4	21.2	0.3363	51.5	34.0	0.3232	53.3	34.7	
7.8 43.8	24.4	8.8400	8.7 52.8	37.8	8.8522	8 58.0	38.4	
	18.86	8.9491		50.82	8.9545		316.4	
	-26.61	8.7624		-26.89	8.7854		-26.89	
	28							
13 39.20	12 51.25	+9.78	17 50.00	17 3.93	+9.49	16 54.44	17 4.75	
-4.795	-37.24	-689	-46.07	-37.25	-706	+10.31	-37.25	
82	+ .06	+1.175		+ .06	+1.239		+ .06	
-37.22		+1.664	-37.21		+1.683	-37.21		
	.02			.02			.02	
12 14.83	86.7367m		16 26.42	9.7489m		16 27.54	9.7611m	
-21.78	-1.66	9.8909	-21.06	-1.68	9.8977	-21.06	-1.68	
+24.820	12 12.37	9.9234	+24.610	16 25.04	9.9180	+24.610	16 25.86	
	70	9.6276			9.6466			
		+4.4242			+4.4332			
		-2.726	+9.39		-2.659	+9.92		
1 20.3	9.79793	+6.968	52 49.8	9.78788	+7.091	52 49.8	9.78788	
9.1	1.66340	1.2256	39.2	1.66340	1.2202	39.2	1.01326	
32.6	1.59495	9.7367	18	1.56353	9.7489	18	0.91337	
19.3	1.58745	9.8431	50.1		9.8507	50.1		
1 20.32	51 27	9.8143	52 50.22	52	9.8157	52 50.22	52	
+38.23	45.04		+36.60	12 18.74		-8.19	13 40.6	
1 59.404	-9.52	-7.58	53 26.82	-9.85	-7.42	52 42.03	-9.85	
51 20 49.04	31.3 33.48	+5.41	52 29 21.53	12 8.89	+5.57	52 30 6.32	12 8.89	
-17 12.18		-1.55	-17 12.18		-1.58	-17 12.18	54.21	
	.61	+13.24			+13.28			
+ .06	11 51.00	+9.52	+ .14	16 3.98	+9.85	+ .14	16 4.80	
+ 8.59	6 24.0		+ 9.69	14 55.0		+ 9.69	15 40.3	
+ .10			+ .12			+ .12		
-17 40.4			-17 2.79			-17 2.79		
51 3 36.8			52 12 33.5			52 12 33.5		

867

1885 June 13 215 49

14 22 55
+51° 32'
22 15.0 a.
32.1

24 33.4 23 39.3
34.6 53.5 42.8
35.6 53.4
36.5 53.5 53.5
9.6 37.4 53.5 7.4

53.58

24 35.50
- 42.02

-37.21

-19.76
+2 42.70

+ 11.79
36 78.9 9.76360
56.8 1.62346
19.0 1.49929
56

36 73.0 54
+ 31.57 29 909
36 38.87 -10.26
54 46 9.98 28 58.83
- 17 12.18
- 45
+ .06
+ 12.03
+ .15
- 17 0.39
54 28 57.30

+1.976

a-1

15.4
18.6
21.4
25.0
28.6
21.80
28.43
53.57

23 53.48

-37.25

+ .07

+ .00

+ .03

23 16.24

-1.71

23 14.56

-7.33

+5.81

-1.62

+13.40

22 64.80

3141.5

9.7673 June 13 217 14

27 26
-1.096 14 28 33 +2.099
+50° 18'
8.9704 27 51.3
9.9090 23.9

9.0598 29 30.0 29 2.5
32.2 5.5
34.6 8.7
36.4 12.0
38.7 15.4
8.2958
8.8794 23 38.7
8.9688
8.8271 +25.83

+8.91

-7.52 29 34.35

+2.08 +0.29

+13.63 +.06

+1.710 -37.21

9.7673 28 57.44

9.9106 -1.78

9.9090 -2.100

9.6779 +2.3980

+4.763 +7.82

2.520 +7.82

+7.283 50 52.8

1.2112 39.8

9.7673 46

9.8623 506

9.8196 50 51.95

-7.33 50 51.73

+5.81 50 31 56.62

-1.62 17 12.18

+13.40 17 12.18

+10.26 +.04

+7.69 17 22.5

+7.69 17 22.5

-17 4.36

50 14 44.14

9.7818 June 13 217 42

20611
- .973 14 30 26
+50° 12'
8.9039 29 45.1
9.9010 17.8

9.0181 32 9.1 30 43.7
11.3 56.8
14.2 0.2
16.2 3.7
18.8 6.8
0.24
26.51 26.62

+9.46

-6.33 32 13.92

+1.85 -47.36

+12.81 +.06

+1.779 -37.21

9.7818 28 49.35

9.8858 -1.78

9.9010 -2.057

9.6676 +2.3880

+4.652 +8.21

2.774 +8.21

+7.426 55 32.8

1.2032 20.9

9.7818 45.1

9.8708 32.1

9.7868 55 32.72

+38.43 9 33.83

56 11.15 33.23

57 26.3720 -9.76

-17 12.18 9 23.47

+12.43 6.0

+9.57 +.02

+8.69 +.10

-17 3.87

57 9 25.02

13.7

17.4

20.3

23.5

26.5

29.6

33.1

36.1

39.4

42.8

46.0

49.5

52.7

56.0

59.7

63.5

67.3

71.1

74.9

78.7

82.5

86.3

90.1

93.9

97.7

101.5

105.3

109.1

112.9

116.7

120.5

124.3

128.1

131.9

135.7

139.5

143.3

147.1

150.9

154.7

158.5

162.3

166.1

169.9

+2.056

-1.016

8.9181

9.8983

9.0266

0.3130

8.8164

8.9249

8.8130

+9.27

-6.50

-1.88

+13.20

+1.785

9.7864

9.8915

9.8983

9.6779

+4.763

2.720

+7.483

1.2005

9.7864

9.8741

9.7898

-7.15

+6.07

-1.67

+12.51

+9.76

June 13
14 40 14
+50° 24'

41 15.0 40
17.4
18.6
19.8

867

June 13 220 9

h m s
14 40 14+59° 24'
39 38.1 a +1
29.141 15.0 40 41.9
17.4 45.2
18.7 47.5
9.5 19.8 50.1
52.8a 1.2 3
138 0.9
13.5 3.8
13.9 7.247.50
+25.88
13.3841 17.92
- 4.2241 13.50
- 37.24
+ .06- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.5

9.8094 June 13 221 2

h m s
14 43 50+20.31
-10.41 14 43 50
+54° 14'8.9057 43 13.2 a +1
9.8833 19.1
9.0192 44 30.0 44 11.7
15.1 6.9 50.4
35.4 18.0
22.1 7.0 57.6
38.9 7.1 1.2
25.8 18.54
8.9022 18.54
8.8286 28.23
+ 4.6770.3077
8.7890 9.1 46.1
8.9022
8.8286
+ 9.16
- 6.11 44 35.64
+ 1.78 + 11.26
+ 13.68
+ 18.5141 13.50
- 37.24
+ .06- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.546.9 46.9
6.9 50.4
7.2 54.2
7.0 57.6
7.1 1.2
18.54
28.23
4.677

47.02

44 46.90
- 37.24
+ .07- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.5

9.8172 June 13 224 2

h m s
14 55 47+18.55
-12.17 14 55 47
+49° 58'8.9658 55 8.0 a
9.8776 0.6
9.0568 56 32.1 56 14.3
17.5 34.2 17.5 49.4 8.6
36.0 20.7 52.8 11.9
38.4 23.7 55.8 14.9
40.8 27.1 59.0 18.0
20.66 11.760.2683
8.8434
8.9344
8.8740
+ 8.36
- 6.92 56 36.30
+ 1.92 + 9.91
+ 15.19
+ 18.5544 46.90
- 37.24
+ .07- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.532.1 56 14.3
17.5 34.2 17.5 49.4 8.6
36.0 20.7 52.8 11.9
38.4 23.7 55.8 14.9
40.8 27.1 59.0 18.0
20.66 11.76

46.21 46.22

44 46.90
- 37.24
+ .07- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.538.6 +1.969
36.5
39.7
43.0
46.2 5.4
17.5 49.4 8.6
20.7 52.8 11.9
23.7 55.8 14.9
27.1 59.0 18.0
20.66 11.76

46.21 46.22

44 46.90
- 37.24
+ .07- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.5

81

9.8420 June 13 224 2

h m s
14 55 47+18.55
-12.17 14 55 47
+49° 58'8.9658 55 8.0 a
9.8776 0.6
9.0568 56 32.1 56 14.3
17.5 34.2 17.5 49.4 8.6
36.0 20.7 52.8 11.9
38.4 23.7 55.8 14.9
40.8 27.1 59.0 18.0
20.66 11.760.2683
8.8434
8.9344
8.8740
+ 8.36
- 6.92 56 36.30
+ 1.92 + 9.91
+ 15.19
+ 18.5544 46.90
- 37.24
+ .07- 37.20
- .02
40 36.30-20.32
+2.3340 40 34.45

+ 8.20

44 96 9.80443
01 0.62534
23.6 0.54197
8044 100.8 50
+ 3.48 21 22.81
44 13.56 38
50 38 34.99 -9.71
- 17 12.18 21 21.10
- .01+ .21
+ 7.90
+ .10
- 17 34.98
50 21 22.6140 14.13
23 54.5

1885	0.2898 ^m 1.3083 ^m June 14 12 m 5 13 55 13 +04 +00 54 29.0 53.0 55 37.3 39.4 42.0 43.7 - 46.4 55.3 48.36 +27.28	208 54	9.6842 ^m 2451 - 8.50 13 55 22 8.9428 ^m 9.9422 ^m 9.0419 ^m 5.3 7.8 10.0 12.5 15.0 0.3467 8.8851 ^m 8.9841 ^m 8.7261 ^m +10.12 - .761 + .188 +10.82 +1.521 9.6842 ^m 9.9009 ^m 9.9422 ^m 9.5851 ^m +38.47 26.26 +6.973 1.2444 ^m 9.6842 ^m 9.8111 ^m 9.8431 ^m -7.99 +4.79 -1.26 +14.17 +9.771 +10.30 +1.13 -17 2.71 53 1 22.12	June 14 12 m 5 13 55 22 54 37.3 54 37.3 57 5.3 58 45.1 48.6 52.0 55.4 59.1 52.04 -27.46 +1007 -768 +189 +1091 +1519 - .03 55 46.94 -1.32 55 40.2 9.6849 ^m 9.9025 ^m 9.9420 ^m 9.5874 ^m +38.67 26.09 +6.476 1.2442 ^m 9.6842 ^m 9.8113 ^m 9.8445 ^m +35.43 1 32.19 -9.77 53 18 34.90 1 22.42 +480 -1.26 +14.22 +9.77 +10.30 +1.13 -17 2.71 53 1 22.12	208 57	9.6849 ^m 2495 - 8.60 13 55 22 8.9473 ^m 9.9420 ^m 9.0448 ^m 5.3 7.8 10.0 12.5 15.0 0.3448 8.8893 ^m 8.9868 ^m 8.7297 ^m +1007 -768 +189 +1091 +1519 - .03 55 46.94 -1.32 55 40.2 9.6849 ^m 9.9025 ^m 9.9420 ^m 9.5874 ^m +38.67 26.09 +6.476 1.2442 ^m 9.6842 ^m 9.8113 ^m 9.8445 ^m +35.43 1 32.19 -9.77 53 18 34.90 1 22.42 +480 -1.26 +14.22 +9.77 +10.30 +1.13 -17 2.71 53 1 22.12	June 14 12 m 5 13 55 22 54 37.3 54 37.3 57 5.3 58 45.1 48.6 52.0 55.4 59.1 52.04 -27.46 +1007 -768 +189 +1091 +1519 - .03 55 46.94 -1.32 55 40.2 9.6849 ^m 9.9025 ^m 9.9420 ^m 9.5874 ^m +38.67 26.09 +6.476 1.2442 ^m 9.6842 ^m 9.8113 ^m 9.8445 ^m +35.43 1 32.19 -9.77 53 18 34.90 1 22.42 +480 -1.26 +14.22 +9.77 +10.30 +1.13 -17 2.71 53 1 22.12
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Log A 9.6875 June 25.4
 B 0.9970
 C 0.1776
 D 1.3092

88

June 25 227 50 9.8699				June 25 229 7 9.8786				June 25 229 9 9.8788			
h m s				h m s				h m s			
15 10 59	+1.839	-1.233	15 16 15	+1.745	-1.327	15 16 15	+1.744	-1.328	15 16 15	+1.744	-1.328
+50° 15'			+52° 44'	34.2	+52° 44'			+52° 44'			
10 22.3	a - 1	8.9189	15 44.5	+1	8.9421	15 40.5	a - 1	8.9421	15 40.5	a - 1	8.9421
19.9		9.8269	48.3	48.8	9.8159	48.3		9.8156	48.3		9.8156
12 8.3	12 20.2	9.0271	16 54.1	16 35.3	9.0414	17 36.9		9.0414	17 36.9		9.0414
10.0	23.0		56.8	29.0		40.4			40.4		
14.7	26.5		58.8	42.3		43.2			43.2		
13.1	29.9	0.2646	1.0	45.2	0.2418	47.0		0.2416	47.0		0.2416
21.2	33.7	8.7458	2.8	48.6	8.7580	50.3		8.7577	50.3		8.7577
	26.66	8.8540		41.50	8.8573	43.6		8.8570	43.6		8.8570
	-26.36	8.8970		+27.25	8.9200	-27.25		8.9202	-27.25		8.9202
		+1.896			+1.850			+1.849			+1.849
12 14.46	12 0.30	-5.53	16 58.70	17 9.33	-5.69	17 16.31		-5.68	17 16.31		-5.68
-14.16	-39.88	-1.08	+10.63	-39.88	-1.08	-39.88		-1.08	-39.88		-1.08
	.11	+1.608	35	.12	+1.695	.12		+1.696	.12		+1.696
-40.01	+ .00	+1.843	-40.02	+1.868	-40.02			+1.869			+1.869
	.02	9.8699		.02	9.8786				.02		
11 20.29	-1.84	9.8918	16 29.31	-1.87	9.9006	16 36.29		-1.87	16 36.29		-1.87
-1839	11 18.45	9.8269	-17.45	16 27.44	9.8159	-17.46		16 34.42			16 34.42
+2 14.70		9.7617	+2 11.40		9.7792						
		+57.77			+60.14						
+8.82		2.717	+10.45	1.08 49.4	2.629						
52 36	9.79652	+8.494	23 36.9	9.78213	+8.643	23 36.9			23 36.9		
528	1.15 106	1.1291	26.1	1.02 65.3	1.1181	26.1			26.1		
192	1.05981	9.8699	51.8	0.22089	9.8786	51.8			51.8		
40		9.9291	56.0	6.90930	9.9367	56.0			56.0		
52 49.0	51	9.7187	23 37.70	52 14.98	9.7165	23 37.70			23 37.70		
+11.48	13 26.55	-6.56	23 29.45	-13.03	-6.39						
52 16.38	-12.74	+7.36	52.59 18.76	7.142	+7.51						
51 30 31.97	13 13.81	+1.28	-17 14.24	8.95	+1.30						
-17 14.24		+10.66		.03	+10.61						
	.05	+12.74	+ .18	16 9.71	+13.03	16 16.96					
+ .10	11 0.06		+ 10.16	44 13.4							
+ 8.65	15 26.5		+ .14								
+ .12			-17 3.99								
-17 5.42			52 42 4.74	53							
51 13 17.73											
June 25 232 6 9.8977				June 25 232 9 9.8974				June 25 232 26 9.8991			
h m s				h m s				h m s			
15 28 13	+1.635	-1.437	15 28 13	+1.634	-1.438	15 29 26	+1.678	-1.394	15 32 43	+1.541	-1.531
+53° 45'			+53° 45'			+53° 45'		+53° 45'			
27 39.9	a + 1	8.9581	27 39.9	29 4.7	8.9581	28 52.2	a - 1	8.9429	32 12.5	a - 1	8.9789
42.6		9.7884	49.6	8.0	9.7879	58.6		9.7851	6.2		9.7769
28 50.6	28 30.7	9.0517	29 32.3	29 14.3	9.0517	31 5.3	30 45.5	9.0419	34 20.2	34 3.6	9.0655
52.9	34.0		34.4	14.9		8.7	49.0		22.0	7.0	
54.7	37.6		36.8	18.5		11.2	53.4		24.5	10.5	
57.0	41.1	0.2135	39.4	21.7	0.2132	13.3	55.5	0.2248	26.3	14.1	0.1878
8.4	59.7	8.7465	8.5	41.6	8.7460	15.2	58.2	8.7280	29.4	17.9	8.7558
		8.8401			8.8396			8.8270		10.62	8.8424
		8.9488			8.9491			8.9410		-28.79	8.9693
		+7.96			+7.96			+8.17			+7.50
28 54.08	29 3.52	-5.54	29 36.90	29 11.35	-5.53	31 10.74	30 25.03	-5.31	34 24.48	33 41.83	-5.66
+10.54	-39.89	-1.04	-22.52	-39.89	-1.04	-45.81	-39.89	-1.01	-42.65	-39.89	-1.05
	.12	+1.811	-25.55	.72	+1.813	7	.12	+1.779		.19	+1.899
-40.04		+1.949	-40.04		+1.952	-40.05		+1.964	-40.05		+1.978
	.03	9.8977		.03	9.8974				.03		
21.48	28 25.48	9.9064	28 31.31	28 34.86	9.9064	45.00	29 44.99	9.8991	33 1.78	33 41.83	9.9038
	-1.95	9.7884	28 29.36	28 32.41	9.7879	-16.79	-1.96	9.7851	-15.41	-1.98	9.9134
28 22.11	28 23.53	9.8035	28 32.41	28 32.41	9.8038	+2 2.40	29 42.74	9.8000	+2 0.10	32 59.80	9.7769
		+63.61	+163.4	32.0	+63.65		43.04	+63.10			9.8172
+14.42		25.67	+11.32	1.40739	2.567	+9.79	1.08	2.626	+12.43		+65.64
22 23.4	9.77181	+8.928	22 23.4	9.77181	+8.932	20 18.7	9.78180	+8.936	4	30.3	9.75823
11.6	1.02 28.4	1.0906	11.6	1.02 28.4	1.0901	6.7	1.66096	1.0873	10.3	1.62992	+9.052
38.2	0.90688	9.8971	38.2	0.90688	9.8974	52.2	1.55974	9.8971	36.0	1.50038	1.0991
2.20		9.9508	2.20	1.29143	9.9510	161	9.9511	9.9511	192		9.9567
22 33.80	53	9.6948	22 33.80	53 2.07	9.6943	20 18.42	52 6.7	9.6860	4	21.45	9.6703
	80.7										
22 15.43	43 29.90	-6.00	22 46.44	43 44.3	-5.99	20 54.34	43 13.15	-5.95	4 53.10	73.47	-5.84
54.0	33.62	+7.84	54.0	7.41	+7.84	53.1	54.44	+7.87	55.17	53.25	+7.96
-17 14.24	43 16.65	+1.34	-17 14.24	42 51.52	+1.34	-17 14.24	52	+1.34	-17 14.24		+1.36
	.03	+1.029		.13	+1.008		.58	+9.89		.46	+9.99
+ .12		+13.27	+ .12	28 13.02	+13.27	+ .04	29 26.25	+13.15	+ .22	32 44.39	+13.47
+ 11.18			+ 11.18	44 52.0		+ 10.16	46 38.9		+ 12.50	2 40.1	
+ .15			+ .15			+ .14			+ .17		
-17 2.82			-17 2.82			-17 4.45			-17 18.1		
53 43 12.38			53 42 53.45			52 44 39.88			55 0 41.01		

869									
1885	June 25	238 12	9.9294	June 25	238 16	9.9297	June 25	239 42	9.9362
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
15 52 39	+1.484	-1.588	15 52 39	+1.483	-1.589	15 58 28	+1.668	-1.404	16 0 20
+54° 26'			+54° 26'			+50° 37'			+52° 35'
52 9.7	a-1	8.9693	52 9.7	a-1	9.7210	57 34.3	a+1	8.9091	57 34.3
30.0		9.7218	30.0		9.7210	40.3		9.7029	40.3
53 47.0	54 1.1	9.0591	54 30.4	54 6.0	59 33.8	58 54.0		9.0212	58 54.0
49.4	6.0		33.2	8.4	37.0	57.2			37.0
52.9	8.4		35.4	12.0	38.5	0.4			38.5
55.8	12.4	0.1714	37.4	15.4	40.2	4.0		0.2222	40.2
9.2 58.9	54 1.1	8.6911	9.5 40.0	10.0 17.0	9.38	42.2	7.3	8.6120	9.38
85854.10		8.7809					0.58	8.7241	
-2836		8.9885					+26.01	8.9574	
	40.22	+7.23		41.64				+8.12	
53 52.80	53 25.74	-488	54 35.28	53 43.40	59 38.34	59 26.59		-406	
-27.06	-39.90	-0.91	-51.88	-39.90	-11.75	-39.91		-0.80	
-12.58	-1.13	+1.985	-53.64	-1.13				+1848	
-40.06	+0.03	+2.127	-40.06	-0.03	-40.04			+2.174	
53 016	52 45.68	9.9294	53 33.4	1.58		58 46.55	9.9362		
-14.83	-2.13	9.9102	-14.83	-2.13	-16.67	-2.17	9.8879		
+7.3513	52 43.55	9.7218	+7.3513	53 1.21	+1.4130	58 44.38	9.7029		
+14.570	52 58.03	9.8396	+14.570	2 57.45			9.8241		
+12.04	+6.912	+2.524	+11.38	1.72949	+8.15		+6.670		
+15.89							+2.754		
40 200	9.76466	+9.436	40 200	9.76466	30 6.2	9.80249	+9.424		
80 1.43	2.33	1.0240	80 1.43	2.33	56.1	1.07004	1.0051		
33.8	1.30	9.294	33.8	1.30	21.2	0.78971	9.9362		
178	20	9.9748	178	20	5.8		9.9742		
40 1990	54 16.98	9.6320	40 1990	54 16.98	30 7.32	50	9.5908		
+7.47	+26.38	25 5.82	+7.47	+26.38	+9.65	35 25.29			
40 2937	40 40.28	-13.44	40 2937	40 40.28	30 16.97	-13.00	-4.93		
42 1718	54 42.80	24 5.38	42 1718	54 42.80	50 52.3138	35 1.229	+8.57		
-17 14.24	25 3.54	+1.412	-17 14.24	25 3.54	-17 14.24		+1.42		
-0.44		+8.73	-0.44		-0.44		+7.94		
+0.01	52 43.20	+13.44	+0.01	52 43.20	+0.00	58 27.71	+13.00		
+11.91	26 49.2		+11.91	26 17.4	+8.08	36 53.6			
+16			+16		+11				
-17 2.250			-17 2.250		-17 6.09				
54 24 53.83			54 24 53.83		50 35 17.14				
June 25 240 9									
h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
16 0 20	1 4.8	-1.509	16 0 20	1 51.2	-1.512				
+52° 35'			+52° 35'						
59 48.7	11.2	8.9384	0 34.5	57.8	8.9384				
36.4	14.6	9.6970	31.5	1.6	9.6943				
11.6	17.8	9.0391	12.4	4.6	9.0391				
14.0	21.2		14.0	8.0					
16.3	24.5		16.7	11.4					
18.9	27.8	0.1940	18.8	14.8	0.1931				
9.6 21.5	36.4	8.6354	8.7 20.5	18.3	8.6327				
		8.7361			8.7334				
		8.9773			8.9781				
	17.88	+7.61		4.69	+7.60				
1 16.46	1 17.88	-4.29	2 17.38	2 4.69	-4.26				
+1.42	-39.91	-0.82	-12.69	-39.91	-0.81				
	-1.2	+1.934		-1.2	+1.938				
-40.05		+2.184	-40.05		+2.191				
	0.02	9.9382		0.02	9.9390				
0 3.83		9.8993		7 24.64	9.8993				
-2.18		9.6970	-15.60	-2.19	9.6943				
0 35.65		9.8375	+1.3930	1 22.45	9.8383				
		+6.879			+6.891				
+10.28		+2.643	+10.23		+2.643				
37 57.0	9.78362	+9.522	37 57.0	9.78362	+9.534				
4.52	0.15229	0.9992	4.52	1.10346	0.9965				
1.19	0.04814	9.9382	1.19	0.99931	9.9390				
5.58		9.9787	5.58		9.9793				
37 57.48	52	9.5963	37 57.48	52	9.5936				
11.2	27 48.03		11.2	27 36.88					
37 56.36	13.22	-4.86	38 4.46	13.24	-4.83				
52 44 51.99	27 3.481	+8.61	52 44 40.89	27 23.64	+8.63				
-17 14.24		+1.43	-17 14.24		+1.44				
-0.02		+8.04	-0.05		+8.00				
+16		+13.22	+15	1 6.85	+13.24				
+9.99	0 20.02		+9.99	29 2.9					
+1.14			+1.14						
-17 39.6			-17 40.1						
52 27 27.75			52 27 26.65						

[illegible]

870

1885	July 4	249 17	+1.521	July 4	250 2	9.9731	July 4	250 52	9.9753	July 4	
16 36 49	37 508 37.7	21 95	-1.551	16 39 48	+1.585	-1.487	16 43 8	+1.397	-1.675	16 43 8	
+50 54	50.740.9	8.9173	59 16.8	2 - 1	8.8970	42 74.5	42.2	0.1	8.9465	42 40.5	2 - 1
36 18.4	510 45.4	9.5487	50.4	41 26.3	9.5334	3.9	36.2	9.5156	9.0443	44 28.8	
38 33.7	508 50.8	9.0261	41 26.3	41 9.6	9.0140	43 59.5	43 59.6	43 59.6	44 28.8	44 28.8	
34.8	508 54.1		27.9	12.6		4.0	43.3	43.3		32.6	
36.2	508 57.3		29.5	15.6		7.3	46.2	46.2		35.8	
37.6	508 60.6	0.1821	30.8	19.0	0.2000	10.7	50.2	50.2	0.1452	39.3	
9.3 38.6	506 37.7	8.4660	32.4	22.2	8.4304	8.8	14.0	43.10	8.4621	42.9	
		8.5748		15.80	8.5474			43.10	8.5599	35.8	
		8.9971		-25.56	8.9871			+27.44	9.0196	-27.44	
	5101	+7.81			+8.13				+7.17		
38 36.18	37 50.0	-2.84	41 29.38	40 50.24	-2.62	44 710	44 10.54	-2.82		44 8.44	
-45.4	-43.50	-1.61	-39.14	-43.50	-1.51	+3.44	-43.50	-1.55		-43.50	
39	10	+1.977		109	+1.932			+2.083		11	
-43.62	+ .02	+2.313	-43.61		+2.332	-43.64		+2.363	-43.64		
	37 7.34	9.9710		40 6.63	9.9731		43 26.90	9.9753		43 26.90	
-15.22	37 5.08	9.8912		40 2.33	9.8830	-14.00	43 2.36	9.9023		43 2.36	
+111.10	486	9.5487	-15.86	40 43.0	9.5334	+1.590	43 24.54	9.5156	-14.00	43 22.44	
		9.8622	+1.860		9.8561			9.8776			
		+7.281			+7.180			+7.544			
		2.723	+7.13		2.800	+10.77		2.612			
58 27.4	9.79934	+1.0004	17 32.8	9.80987	+9.9807	8.7	9.77913	+1.01567	8.7		
8 19.1	1.65485	0.8509	238	1.59262	0.8356	0.2	0.53656	0.8178	0.2		
43.6	1.56645	9.9710	48.2	1.51972	9.9731	239	0.42792	9.9753	23.9		
28.0	8.53	0.8002	35.0		9.9991	8.4		0.0067	8.4		
58 29.52	58 34.38	9.4399	17 34.45	49	9.4164	10.30	52	9.41797	10.30		
+3.64	56 33.26		+32.71	47 33.14		2.68	58 36.32				
59 6.37	55 -15.22	-3.64	18 7.16	-15.09	-3.51	7	7.62	-15.38	-3.37		
51 23 41.98	56 14.94	+9.10	50 4 41.19	47 18.05	+9.14	53 15 40.73	58 2.094	+9.19			
-17 15.18	56 17.76	+4.28	-17 15.18		+4.27	-17 15.18		+4.35			
		+5.48		41	+5.19			+5.21			
		+15.22		13	+15.09			+15.38			
				7.30							
				11							
				-17 8.05							
57 6 26.80			49 47 26.01			52 58 25.58					
	36 49.64			39 48.44		43 10.54				43 8.44	
	57 18.9			48 26.6		58 26.8					
	309					58					

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1885	July 8	246 19	9.9618	July 8	247 18	9.9651	July 8	249 17	9.9
16 24 58	+1.617	-14.55	28 57	+1.421	-1.651	16 28 57	16 36 49	38.7	+15.21
+49° 56'		+53° 15'			+53° 15'		+50° 57'	43.2	
24 26.1	a+1	8.8988	28 28.9	a+1	8.9505	a-1	36 18.4	45.7	8.9
39.1		9.6037	18.0		9.5865		59.9	48.7	9.5
25 58.3	25 29.7	9.0150	29 44.3	29 24.3	9.0468	30 34.8	30 27.0	37 49.0	37 18.4
59.2	33.0		47.6	27.6		35.9	30.6	51.5	22.2
0.2			47.0	31.0		36.6	33.6	54.6	25.2
1.0	39.3	0.2087	49.7	34.8	0.1526		37.0	56.8	28.8
1.9	42.6	8.5022	51.5	37.8	8.5370	9.1	40.0	58.1	32.0
	36.15	8.1892	54.4	37.10	8.6333		33.64		25.32
	+25.63	8.9768		+27.58	9.0118		-27.58		15.10
		+8.50			+7.47			51.71	57.98
26 0.12	26 1.78	-3.13	29 48.5	29 58.68	-3.38	30 35.77	30 6.06	37 54.00	37 51.84
+1.66	-44.46	-2.28	+9.93	-44.46	-2.36	-29.77	-44.46	-2.16	-44.47
	24	+1.853	+9.93		+2.079				
-44.72	+ .00	+2.162	-44.76		+2.182	-44.76			-44.74
	.02								
25 1.06	9.9618		29 13.92	9.9650		29 21.30			
-2.16	9.8837		-2.18	9.9037		-2.18			
25 14.90	9.6039	-14.21	29 11.74	9.5865		29 19.12			
	9.8455	+17.50		9.8687					
	+7.006			+7.391					
+7.41	2.793	+10.75		2.597	+10.55				
10 8.7	9.80867	+9.799	51 26.6	9.77694	+9.988	51 36.6	9.77694	59.9	9.79934
08 0.22017	0.9061		17.8	0.99695	0.8887	17.8	1.47290	52.5	0.33445
27.1	0.14101		4.32	0.88612	0.9650	4.32	1.36207	18.2	0.24602
11.0	9.9912	25.082		9.9995	9.9950	28.2		20	
10 11.90	49	9.4876	51 28.05	53	9.4902	51 28.95	53	29 31.8	57.0
10 1.38	55.2941		14 22.01		+23.02	13 51.10		+9.176	56 36.38
10 10.52	-16.16	-4.23	51 21.26	-16.52	-4.07	51 51.77	-16.52	54 4.94	-16.33
50 12 37.83	85 13.25	+9.00	53 31 27.07	14 5.49	+9.07	53 30 56.38	13 34.58	51 23 43.41	56 20.05
-17 15.83		+5.38	-17 15.83	39	+5.48	-17 15.83		-17 15.83	
- .02		+6.01	- .03		+6.04	- .23		- .02	
+ .01	24 58.73	+16.16	+ .07	28 57.53	+16.52	+ .07		+ .20	36 49.63
+ .128	56 34.0		+ .1055	15 23.0		+ .1055		+ .8.47	57 31.2
+ .12			+ .16	22.9		+ .16		+ .13	
-17 8.42			-17 8.08			-17 8.28		-17 7.03	
49 55 22.00			53 14 11.26			53 13 40.55		57 6 27.58	
July 8	255 33	9.9860	July 8	255 59	9.9869				
16 1 54		.1997	16 3 32		.2289				
+49° 49'	+1.538	-1.534	+51° 37'	440.37.5	384 +1.428	-1.644			
1 23.6		8.8975	3 36.82	41031.0	376	8.9267			
51.1		9.3971	34.344	41635.0	38.3	9.3842			
2 33.7	2 27.2	585 45.7	9.0143	41441.4	381.80	479.0318			
36.6	30.0	448.8		41544.8	382.8	5.565			
39.9	33.3	452.0		41648.2	383.6	8.6531			
41.8	38.0	8.55.6	0.1870			7 12.05	40.1547		
-44.4	38.7	6.58.6	8.2946			522	18.3109		
	3304	52.74	8.4114			552	8.9160		
	+25.57		9.0003			4156	9.0187		
	58.61	58.34	+8.08			38.03	-20.58		
2 39.28		2 58.58	-194			4156	-20.58		
+19.30		-44.48	-141			36.64	+7.50		
		-24	+19.56			4156	-20.1		
	-44.74		+24.29			4156	-143		
		2 13.84	9.9860			25	+20.41		
		-243	9.8832				+24.47		
	-15.39	2 11.41	9.3971						
+50.20			9.8692						
			+7.400						
			2.798						
			+1.0198						
16 132	9.80972		0.6993						
3.2	1.28556		9.9860						
314	1.20756		0.8085						
147			9.2803						
16 16.2	49								
15 59.99	49 39.81		-2.63						
50 6 48.36	49 23.60		+9.52						
-17 15.83			+5.59						
-10			+3.73						
+ .06		156.02	+14.21						
+ 7.20		50 13.8				3 36.53			
+ 12									
-17 8.55									
49 49 32.53									

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1885phae,pro

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9.9710	July 8 250 2	9.9736	July 8 250 11	9.9735	July 8 250 53	9.9754
.2195	16 39 48 +1585	.1992	16 39 47 +1345	.2638	16 43 8 +1391	.2503
-1551	+49° 48'	-1487	+58° 49'	-1727	153° 2' 42.3	-1681
8.9173	39 16.8 a +1	8.8970	39 16.4 a -1	8.9616	42 44.5 a -1	8.9481
9.5487	36.4	9.5334	31.8	9.5302	42 44.5	9.5152
9.0261	40 40.5 40 19.6	9.0140	43 25.6 41 51.1	9.0540	45 8.6 44 39.6	9.0453
	42.7 22.6		27.4 58.0		10.0 42.0	
	47.0 25.8		28.6 59.7		11.3 45.4	
0.1821	50.3 29.2	0.2000	30.2 3.3	0.1287	12.6 49.0	0.1433
8.4660	8.7 53.6 32.3	8.4304	9.4 31.4	8.4918	52.5	8.4633
8.5748	25.90	8.5474		8.5842	45.70	8.5605
8.9971	+25.56	8.9871		9.0275	-27.44	9.0207
+799		+833		+707		+731
-287	40 4682 40 5146	-265	42 2864 41 2789	-305	45 1062 44 1826	-286
-206	+464 -4447	-193	-61.05 -4447	-211	-5236 -4447	-199
+1942	-264	+1898	.27	+2083	-27	+2050
+2248	-4473	+2273 -4477	.03	+2274 -4477		+2296
9.9710	- .02	9.9731	40 42.82	9.9735	43 33.49	9.9754
9.8912	40 6.73	9.8830	-227	9.9076	230	9.9028
9.5487	-1586	9.5334	40 40.58	9.5302	-1391	9.5152
9.8622	+1 860 40 4.46	9.8561		9.8811	+1.580	9.8782
+7281		+7180		+7605		+7554
2723	+7.45	2850 + 1069		2554 + 991		2606
+1.0004	18 53 9.80987	+9980 9 170 9.77112		+1.0159 0 71 9.77913		+1.0160
0.8509	57.4 0.66652	0.8356 90 9.78569		0.8324 578 1.71900		0.8174
9.9710	242 0.58862	9.9731 342 1.66904		9.9735 237 1.61036		9.9754
0.0002	80	9.9991 184		0.0068 85		0.0069
9.4399	18 872 49	9.41649 1972 53		9.43780 928 53		9.4180
-373	- 388 47 3513	+4667 55 3682		+4677 4 5238		
+919	18 484 -1621	10 639 -1661		0 5005 -1653		-345
+549	50 4 4351 47 1892	+9.24 5412 4196		+9.25 53 21 5830 4 3585		+929
+538	-17 1583	+547 -17 1583		+557 -17 1583		+557
+1633	- .01	+510 -96		+536 -72		+512
	+ .15 3948.60	+16.21 + .21		+16.61 + .01 43 17.28		+16.53
	+ 7.19 4827.5	+ 11.26 + .18		+ 10.46 541.6		
	+ 12	+ .18		+ .16		
	-17 8.38	-17 5.14		-17 5.92		
	4947 2768	53 55 2613		53 4 4247		

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Log # 9.7448 July 16.4

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1.2691m
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July 16 246 20 9.9618 July 16 246 16 9.9616 July 16 255 59 9.9819 July 16 257 11 9.9890

16 25 1 +1359 -1713 16 25 1 +54° 30' 8.9698 24 21.8 34.0 9.6036 9.0594 26 12.0 15.6 19.6 23.2 26.8 1944 -28.41

-04 +54° 30' 8.9698 24 21.8 34.0 9.6036 9.0594 26 12.0 15.6 19.6 23.2 26.8 1944 -28.41

25 53.0 25 30.9 55.4 34.7 58.0 38.2 41.7 45.0 38.10 +28.41

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+28.41

25 56.95 26 6.51 +754 -359 -360 -1951 +1986 -46.89 +.00 +1986 -46.89

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873

1885 July 16	264 13	9.9978	July 16	265 1	9.9984	July 16	266 47	9.9993
h m s		25.45	h m s		22.83	h m s		27.47
17 36 35	+12.84	-1.788	17 39 47	+1.384	-1.685	17 47 20	+1.193	-1.879
+53° 21'			+57° 40'			+54° 42'		
36 7.5	a - 1	8.9523	39 19.5	a + 1	8.9261	46 36.4	a - 1	8.9725
21.8		9.0233			8.9388	42.8		8.7492
38 30.0	38 1.2	9.0480	40 41.0	40 18.8	9.0315	48 42.2	48 18.2	9.0612
31.3	5.0		43.5	22.0		44.2	21.7	
32.0	7.8		46.5	25.2		46.0	24.8	
8.8	11.1	0.1086	49.1	28.1	0.1421	47.5	29.6	0.0766
	14.2	7.9556	52.0	32.9	4.8642	49.4	33.4	7.7216
	7.86	8.0513		25.40	4.9703		25.54	7.8103
-2.764		9.0458	+26.60		9.0292	-26.60	-28.55	9.0605
		+7.13			+7.70			+6.62
38 31.10	37 40.22	-0.86	40 46.22	40 52.00	-0.70	40 45.06	47 56.99	-0.50
-50.88	-46.87	-0.88	+5.78	-46.87	-0.73	-46.87	-46.88	-0.51
	-0.5	+2.065		-0.5	+1.991		-0.5	+2.136
-46.95	+0.02	+2.604	-46.94		+2.618	-46.97		+2.697
	0.03			-0.02			-0.03	
36 53.27	9.9978		40 50.6	9.9984		39 58.12	47 10.02	9.9993
-2.66	9.9043		-2.62	9.8946		-2.62	-2.70	9.9113
-12.84	36 54.67	-13.84	40 2.44	8.9388	-13.87	39 53.50	47 7.32	8.7492
+20.30		9.9021		9.8930				9.9106
		+7.982		+7.816				+8.140
+10.52		2.590	+9.57	2.690		+11.91		2.512
44 5.4	9.77592	+1.0572	24 30.0	9.79256	+1.0506	24 30.0	38 35.4	9.76182
56.8	1.70655	0.3055	22.0	0.76193	0.2410	22.0	36.2	1.68904
216	1.59470	9.9978	46.3	0.66672	9.9984	46.3	50.2	1.56309
60	6.4	0.0242	31.0	0.0214	0.0214	31.0	35.6	9.9993
44 7.45	53 55.92	8.9076	24 32.32	51	8.8284	24 32.32	28 36.85	54
+39.33	20 56.54		-4.64	41 14.09			+36.57	36 30.69
44 46.78	-18.18	-1.12	24 27.68	-18.03	-97	29 13.42	-18.12	-6.2
53 38 21	20 38.86	+9.53	51 58 20.67	40 56.06	+9.54	54 53 34.93	36 12.57	+9.56
-17 16.15		+8.27	-17 16.15		+8.21	-17 16.15		+8.33
		+1.50			+1.25			+8.5
+2.20	36 37.53	+18.18	+2.22	39 48.57	+18.03		+2.18	+18.12
+10.82	20 58.7		+9.20	41 13.7			+12.15	
+1.8			+1.6				+2.0	
-17 56.3			-17 6.58				-17 4.24	
53 20 46.02			51 41 45.2				54 36 18.78	

Log 4 9.7476 July 19.3
 0.9817
 0.9375
 0.2585
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July 19 249 56 9.9728
 16 39 47
 +53° 50'
 39 20.4
 51.8
 0-1

40 51.7
 55.2
 58.6
 2.0
 5.8
 58.66
 -27.96

40 307.0
 -47.46
 +.15
 -47.64
 +.00
 39 430.6
 -2.03
 39 41.01

16 478
 402
 39
 50.2
 16 50.52

9.5354

July 19 250 1
 16 39 47
 +53° 50'
 39 20.4
 51.8
 a+1

41 34.2 40 17.7 41 13.5
 36.0 21.2 17.3
 39.3 24.6 20.3
 41.8 27.8 24.5
 42.5 31.8 28.0
 24.62 20.68
 +27.96 -27.96
 52.58 52.72

41 38.96
 -46.31
 -47.64
 -13.55
 +1 8.70

16 478 9.77095
 402 1.66587
 39 1.54885
 50.2
 16 50.52 53
 + 35.39 48 16.29
 17 25.91 -18.96
 54.5 22.44 47 57.33
 -17 17.12
 +.56
 +.07
 + 11.26
 +.20
 -17 6.15
 53 48 5.32

39 49.41
 49 6.0
 +18.96
 +.00
 + 10.45
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 -17 6.63
 53 0 45.32

+1.355

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9.9730 July 19 250 51
 16 39 47
 +53° 50'
 39 20.4
 51.8
 a+1

43 45.5 43 37.5 51.5 44 32.3
 47.2 41.5 8.7 36.5
 48.8 44.8 12.3 39.6
 50.4 48.3 15.6 43.0
 51.7 19.1 12.24 46.4
 44.76 12.24 39.56 8.5605
 +27.44 -27.44 9.0199
 1220 1224 12.12

43 48.86
 -29.8 43 48.86
 -47.46 -334 +2343
 -1.15 +19.24
 +2.050
 -47.64

43 24.65
 -2.08
 43 22.87
 -13.97
 +1 5.90

16 478 9.77913
 402 1.66587
 39 1.54885
 50.2
 16 50.52 53
 + 35.39 48 16.29
 17 25.91 -18.96
 54.5 22.44 47 57.33
 -17 17.12
 +.56
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 + 11.26
 +.20
 -17 6.15
 53 48 5.32

39 49.41
 49 6.0
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

9.9730 July 19 250 51
 16 39 47
 +53° 50'
 39 20.4
 51.8
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43 45.5 43 37.5 51.5 44 32.3
 47.2 41.5 8.7 36.5
 48.8 44.8 12.3 39.6
 50.4 48.3 15.6 43.0
 51.7 19.1 12.24 46.4
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 +27.44 -27.44 9.0199
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43 48.86
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 -47.46 -334 +2343
 -1.15 +19.24
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43 24.65
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 +1 5.90

16 478 9.77913
 402 1.66587
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 16 50.52 53
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 17 25.91 -18.96
 54.5 22.44 47 57.33
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 + 11.26
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 -17 6.15
 53 48 5.32

39 49.41
 49 6.0
 +18.96
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 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
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 + 10.45
 +.18
 -17 6.63
 53 0 45.32

+1.395

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9.9753 July 19 250 51
 16 39 47
 +53° 50'
 39 20.4
 51.8
 a+1

44 32.3
 36.5
 39.6
 43.0
 46.4
 39.56
 -27.44
 12.12

44 12.29
 -47.46
 -1.15
 -47.64

43 24.65
 -2.08
 43 22.87
 -13.97
 +1 5.90

16 478 9.77913
 402 1.66587
 39 1.54885
 50.2
 16 50.52 53
 + 35.39 48 16.29
 17 25.91 -18.96
 54.5 22.44 47 57.33
 -17 17.12
 +.56
 +.07
 + 11.26
 +.20
 -17 6.15
 53 48 5.32

39 49.41
 49 6.0
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

9.9753 July 19 250 51
 16 39 47
 +53° 50'
 39 20.4
 51.8
 a+1

44 32.3 34.8
 36.5 38.4
 39.6 41.5
 43.0 45.0
 46.4 48.1
 39.56 41.56
 -27.44

44 14.12
 -47.46
 -1.15
 -47.64

43 24.65
 -2.08
 43 22.87
 -13.97
 +1 5.90

16 478 9.77913
 402 1.66587
 39 1.54885
 50.2
 16 50.52 53
 + 35.39 48 16.29
 17 25.91 -18.96
 54.5 22.44 47 57.33
 -17 17.12
 +.56
 +.07
 + 11.26
 +.20
 -17 6.15
 53 48 5.32

39 49.41
 49 6.0
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

43 8.60
 1 42.8
 +18.96
 +.00
 + 10.45
 +.18
 -17 6.63
 53 0 45.32

874

885

July 19

259 24

9.9925

July 19

262 26

+1455

17 17 20

11.5 +1377

-1695

17 29 35

30 16.6

-1617

+52 13.6

14.8

8.9345

+58 37.1

20.5

8.9104

16 52.6

18.5

9.2647

58.1

23.2

9.1195

17 41.0

17 51.7

24.5

48.2

9.0367

31 30.8

47.7

54.5

28.3

48.7

34.7

29.6

55.2

58.4

31.7

51.8

32.7

36.7

8.9

1.7

35.0

55.1

0.1389

0.1629

5.0

38.6

58.5

8.1992

9.1

34.7

55.26

58.6

8.3014

9.0292

43.0

8.0299

2506

2494

+770

3996

+814

17 48.30

18 25.00

-152

31 32.72

30 29.96

-103

+36.70

-47.49

-173

-62.76

-47.50

-120

-47.65

+14

+1940

+2385

-47.65

+1891

-13.77

-2.38

9.9925

29 42.33

9.9962

+37.00

17 34.97

9.8978

-2.48

9.8884

+9.57

-2.38

9.2647

29 39.83

9.1195

52 47.8

9.78723

+10426

34 31.6

9.80244

+1.0416

416

1.56467

0.5669

256

1.79768

0.4217

52 1.46413

52

9.9925

499

1.71235

9.9962

516

0.0181

9.1625

362

3582

50

52 51.55

13 18.37

-206

+5756

40 11.26

9.0079

-29.12

-19.03

+9.42

50 57.2097

39 52.37

-1.48

52 22.43

12 39.34

+9.03

-17 17.12

+1.05

+9.50

-17 17.12

35

+264

+1.05

+9.02

+11

17 21.20

+19.03

+1.18

+18.89

+9.64

13 36.3

+8.14

+1.14

+18.89

+17

-17 7.55

-17 7.71

50 40.3885

-17 7.55

52 13 8.80

Log A 9.7519 July 21.4
 B 0.9838
 C 0.9643
 D 1.2507
 July 21 257 41
 16 m s
 17 8.1027
 +15 54.0 17.1
 +00 10 2.6
 18.8

11 30.4 10 56.8
 32.4 59.9
 36.0 3.2
 38.0 6.9
 40.3 10.3
 3.42
 +28.19
 31.61

11 35.42
 - 3.69
 -48.22

10 43.51
 -2.28
 10 41.23
 -12.56
 +42.90

49 15 976625
 540 0.56703
 190 0.44551
 33

49 445 54
 + 2.79 16 3452
 49 7.34 -19.71
 5433 41.11 16 1481
 -17 1843
 - 21

+ 12
 + 1152
 + 21
 -17 6.59
 54 16 2289

July 21
 16 m s
 17 39 47
 +51.0 41
 39 13.5 a-1
 41 534 40 7.7 41 6.5
 550 12.8 10.0
 565 16.3 13.2
 57.7 8 19.0 16.5
 58.8 21.3 20.2
 59.6 13.28
 - 26.61

41 5680 +0 1582 40 4667
 +70.13 +3085 -4803
 -4824 -19
 -02
 39 5843
 -253
 39 53.90

-1388
 +1760
 +7.98
 +7.08

24 507 979240
 433 1.448926 1.845902
 94 1.393889 1.750532
 536
 24 5425 51 39 47.35

+ 5630 -2427 40 17.63
 25 5058 -1902 93
 56 5780 -57 29.33 -1949
 -17 1843 40 0.44
 -130.25 39 27.64
 + 15 39 42.02
 + 8.97 39 45.5
 + 16
 -17 9.76 10.45
 51 40 10.90

+12.55
 9.9899 July 21 257 39 9.9898 July 21 265 1
 2694 16 m s
 17 39 47
 +51.0 41
 39 13.5
 41.4
 9.3302
 11 45.5
 48.3
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0.0986
 8.2962 8.2
 8.3867
 9.0476
 31.80

11 31.73
 -191
 -47.98
 -224
 +1.987
 +2.281
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9.9899
 9.9095
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 +7.732
 -2.533
 +1.0465 49 15
 0.6312 540
 9.9899 190
 0.0197 33
 9.2385 49 445

-242
 +941
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 10 28.67
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July 21 266 40
 16 m s
 17 46 20
 +40.0 54
 45 30.3 a+1
 57.0
 47 18.5 46 54.5 51.1 47.9
 20.9 57.4 6.516
 25.2 0.7 6.548
 27.7 3.5 1.575
 31.4 6.7
 0.56
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47 24.74
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 +11.80
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 +1.907
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 9.0297
 +7.83
 -0.71
 -0.86
 +1.907
 +2.533

9.9993 July 21 285 9
 20.15 16 m s
 -1588 19 0 17 10.4
 +51.0 20 13.1
 8.8993 59 47.8 15.8 8.9210
 8.7645 8.0 19.7 9.4172
 9.0153 1 56.9 22.9 9.0283
 58.3 26.4
 59.8 29.5
 1.2 32.5 0.1638
 8.4 2.3 36.12 8.3382
 7.798 8.4455
 9.0146 9.0129
 +8.38
 -0.44 1 2294 +8.24
 -0.55 -36.7 48.14 +2.10
 +1842 -48.19 +2.08
 +2.581 -48.35 +1833
 +3125
 9.9993 0 3459 9.9846
 9.8839 -3.12 9.8926
 8.7645 -14.59 9.4172
 9.8832 -52.20 9.8772
 +7.642 +7.537
 2.791 +8.51 2.709
 +10433 44 149 9.79573 +1.0246
 0.0667 64 1.58538 0.7194
 9.9993 332 1.47339 9.9846
 0.0184 15.2 0.0106
 8.6484 44 1742 51 9.3098
 + 2977 20 5727 +296
 44 4716 -18.10 +9.30
 51 38 119 20 33.17 +9.47
 +9.61 17 1843 -3.63
 +7.79 37
 +19.36 + 13 0 16.88 +18.10
 + 8.59 19 41.0
 + 16
 -17 9.92
 51 20 4.76

9.9993 July 21 285 9
 20.15 16 m s
 -1588 19 0 17 10.4
 +51.0 20 13.1
 8.8993 59 47.8 15.8 8.9210
 8.7645 8.0 19.7 9.4172
 9.0153 1 56.9 22.9 9.0283
 58.3 26.4
 59.8 29.5
 1.2 32.5 0.1638
 8.4 2.3 36.12 8.3382
 7.798 8.4455
 9.0146 9.0129
 +8.38
 -0.44 1 2294 +8.24
 -0.55 -36.7 48.14 +2.10
 +1842 -48.19 +2.08
 +2.581 -48.35 +1833
 +3125
 9.9993 0 3459 9.9846
 9.8839 -3.12 9.8926
 8.7645 -14.59 9.4172
 9.8832 -52.20 9.8772
 +7.642 +7.537
 2.791 +8.51 2.709
 +10433 44 149 9.79573 +1.0246
 0.0667 64 1.58538 0.7194
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 0.0184 15.2 0.0106
 8.6484 44 1742 51 9.3098
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 44 4716 -18.10 +9.30
 51 38 119 20 33.17 +9.47
 +9.61 17 1843 -3.63
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 +19.36 + 13 0 16.88 +18.10
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 51 20 4.76

9.9993 July 21 285 9
 20.15 16 m s
 -1588 19 0 17 10.4
 +51.0 20 13.1
 8.8993 59 47.8 15.8 8.9210
 8.7645 8.0 19.7 9.4172
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 8.4 2.3 36.12 8.3382
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 -0.55 -36.7 48.14 +2.10
 +1842 -48.19 +2.08
 +2.581 -48.35 +1833
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 9.9993 0 3459 9.9846
 9.8839 -3.12 9.8926
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 9.8832 -52.20 9.8772
 +7.642 +7.537
 2.791 +8.51 2.709
 +10433 44 149 9.79573 +1.0246
 0.0667 64 1.58538 0.7194
 9.9993 332 1.47339 9.9846
 0.0184 15.2 0.0106
 8.6484 44 1742 51 9.3098
 + 2977 20 5727 +296
 44 4716 -18.10 +9.30
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 +19.36 + 13 0 16.88 +18.10
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9.9993 July 21 285 9
 20.15 16 m s
 -1588 19 0 17 10.4
 +51.0 20 13.1
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 9.0153 1 56.9 22.9 9.0283
 58.3 26.4
 59.8 29.5
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 8.4 2.3 36.12 8.3382
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 -0.55 -36.7 48.14 +2.10
 +1842 -48.19 +2.08
 +2.581 -48.35 +1833
 +3125
 9.9993 0 3459 9.9846
 9.8839 -3.12 9.8926
 8.7645 -14.59 9.4172
 9.8832 -52.20 9.8772
 +7.642 +7.537
 2.791 +8.51 2.709
 +10433 44 149 9.79573 +1.0246
 0.0667 64 1.58538 0.7194
 9.9993 332 1.47339 9.9846
 0.0184 15.2 0.0106
 8.6484 44 1742 51 9.3098
 + 2977 20 5727 +296
 44 4716 -18.10 +9.30
 51 38 119 20 33.17 +9.47
 +9.61 17 1843 -3.63
 +7.79 37
 +19.36 + 13 0 16.88 +18.10
 + 8.59 19 41.0
 + 16
 -17 9.92
 51 20 4.76

9.9993 July 21 285 9
 20.15 16 m s
 -1588 19 0 17 10.4
 +51.0 20 13.1
 8.8993 59 47.8 15.8 8.9210
 8.7645 8.0 19.7 9.4172
 9.0153 1 56.9 22.9 9.0283
 58.3 26.4
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 44 4716 -18.10 +9.30
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 +9.61 17 1843 -3.63
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19 2 8	+1351	-1721	19 2 8	+530 10	10.8 3.9
+53 10	3102 3.3	8.9499			10.9 7.5
4.7 0	4.7 0	9.4292			
3 5.0	8.10.8	9.0465	3 39.2	11.1 11.1	
0.3	9.14.3		41.5	11.1 14.5	
1.9	5.17.4		43.8	10.7 17.6	
9.0	5.20.8	0.1307	46.2	10.8 21.1	
	4.24.2	8.379 4.2	49.0	10.7 24.5	
		8.4757			
		9.030 2			
		+763			
2 5073	3 1053	+231	3 4394	3 1201	
+1080	-4884	+276	-3293	-4884	
	-20	+1.908		-20	
-48.37	+ .00	+31.78	-4837		
	.03			.03	
2 2216	9.9837		2 2264		
-1352	-3.78	9.9035	-1352	-3.78	
-53.90	2 18.98	9.4292	-53.90	2 19.46	
		9.8872			
		+7713			
		2.599	+10.50		
54 116	9.77778	+1.0312	54 116	9.77778	
52 1.03342	0.7314		52 1.51759		
292 0.92343	9.9837		292 1.90760		
132	0.0133		132		
54 1430	53 9.3327	54 1430	53		
-8.38	11 3475	+2556	11 6.56		
54 5.92	1802	+3.04	54 3986	-1802	
53 28 42.43	11 16.73	+9.28	53 28 84.9	10 42.54	
-17 18.43		+9.53	-17 18.43	54	
-10.3		-3.83	-10.3		
+ .13	2 5.46	+18.02	+ .13	2 5.94	
+ 10.47			+ 10.47	9 48.6	
+ .18			+ .18		
-17 7.68			-17 7.93		
53 11 24.00			53 10 52.06		

July 21 286.28	9.9818	July 21 286.32	9.9817
19 5 34	+1434	19 5 49	+1434
+51.56		+51.56	
5 5.7	a +1	5 20.8	a +1
53.9	a -1	53.9	a -1
6 41.1	7 1.8	6 21.8	7 1.8
43.0	4.5	53.6	25.0
44.7	7.7	55.3	28.3
46.7	10.8	56.6	31.3
9.1 48.2	14.2 142	57.9	34.8
	18.4 151	8.7	28.24
	21.0 144	8.3828	26.76
	14.57	8.4866	55.00
	+20.74	9.0159	
	41.23	+8.10	
6 44.74	6 41.12	+2.33	6 55.16
-3.62	-48.15	+283	-0.27
	-19	+1.846	
		+31.72	
		9.9818	
	5 52.76	9.8962	
	-3.17	9.4525	
	5 49.59	9.8780	
		+7551	
		2.674	+9.46
+9.45		+1.0225	
8 37.8	9.78999	8 37.8	9.78999
30.0	0.55876	30.0	9.43136
55.4	0.96093	55.4	9.33358
39.6		34.6	
8 40.70	51 56.5578	8 40.70	51
+2.89	-17.93	+0.22	56 58.46
43.59	56 37.83	40.92	-17.92
52 14 47.6		52 14 74.3	56 40.54
-17 18.43		-17 18.43	
-0.1		-0.1	
+ 11	5 35.24	+ 11	5 49.01
+ 9.18	55 41.2	+ 9.18	55 43.6
+ .17		+ .17	
-17 8.98		-17 8.98	
51 56 46.23		51 56 49.00	

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Long

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 2 47.9 2.635 2.564
 18 3 13 4 5.30 18 8 26 +1269 -1.803
 80 8.9613 8.9542
 116 8.1797 8.5776
 157 2.76 2.76
 190 9.0538 10 21.3 9.0492
 226 24.1 338 23.4 546 583
 263 265 344 27.5 1.3
 300 279 346 34.1 5.0
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 0.0927 1.54 0.1035
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 - 30.66 - 52.29 +.013 10 51.77 9 34.5 10 25.10
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 3 26.66 +.2446 - 51.77 9 34.5 10 25.10
 12.37 9.9999 8 41.57 9.9997 8 42.08 8 41.38
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 10 28 9.77409 10.0635 36 466 9.77473 10.0613 9.77473
 561 1.4865 9.4819 394 1.70408 9.8798 1.70408
 140 1.36889 5.9999 407 1.581 1.60104 9.9997 1.59691
 41 0.0267 407 1.581 1.60104 9.9997 1.59691
 10 42.55 8.0872 36 466 9.77473 10.0613 9.77473
 + 2338 55 14.84 36 466 9.77473 10.0613 9.77473
 10 2763 -2.95 36 466 9.77473 10.0613 9.77473
 54 12 20.72 54 51.92 +.18 36 466 9.77473 10.0613 9.77473
 - 17 17.06 +.940 36 466 9.77473 10.0613 9.77473
 - 24 +.1355 36 466 9.77473 10.0613 9.77473
 + 80 3 11.81 +.18 36 466 9.77473 10.0613 9.77473
 + 1124 54 49.0 +.2295 36 466 9.77473 10.0613 9.77473
 + 21 3 11.81 +.2295 36 466 9.77473 10.0613 9.77473
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879															
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h m s	283 23	9.9880	2822	h m s	284 0	9.9869	25 11	h m s	284 4	9.9868	25 11	h m s	285 35	9.9837	25 11
18 53 27	+1209	-1.863	18 53 58	+1.342	-1.730	18 53 58	+52054	19 2 5	+1354	-1718	19 2 5	+5309	+1354	-1718	19 2 5
53 2.5	a+1	8.9800	55 31.0	Q+1	8.9489	55 31.0	55 31.0	1 38.3	a+1	8.9491	55 31.0	1 38.3	a+1	8.9491	55 31.0
7.0		9.9645	55.2		9.9837	55.2		6.5		9.9422	55.2	6.5		9.9422	55.2
54 11.9	53 463	9.0662	57 24	56 180	57 260	57 280	57 260	3 102	2 400	9.0459	57 280	3 102	2 400	9.0459	57 280
14.4	506		4.3	226	284	31.4	284	15.7	43.7		31.4	15.7	43.7		31.4
16.9	543		55	25.7	300	344	300	18.7	46.9		344	18.7	46.9		344
19.3	581	0.0824	6.9	29.3	32.4	380	32.4	21.7	50.6	0.1316	32.4	21.7	50.6	0.1316	32.4
5.87 (25.2)	1.8	8.3445	8.9	8.1	333	41.8	33.4	24.7	53.9	8.3783	41.8	24.7	53.9	8.3783	41.8
		8.4307			8.4295				4.72	8.4751			4.72	8.4751	
	+ 28.86	9.0542		+ 27.38	9.0327				+ 27.50	9.0296			+ 27.50	9.0296	
		+ .725			+ .805					+ .812				+ .812	
54 1760	54 2308	+208	57 544	56 5331	+202	57 3004	57 734	3 1820	3 1452	+225	57 734	3 1820	3 1452	+225	57 734
+ 5.48	- 52.33	+343	- 12.13	- 52.33	+343	- 22.70	- 52.33	- 3.68	- 52.34	+380	- 52.33	- 3.68	- 52.34	+380	- 52.33
	- .13	+1700		- .12	+1608		- .12		- .12	+1606			- .12	+1606	
- 52.49		+2.976	- 52.47		+2.968	- 52.47		- 52.49		+3023			- 52.49	+3023	
	53 3059	9.9880	56 0.84	9.9869	56 1484	56 1484	56 1484		2 2203	9.9837	56 1484		2 2203	9.9837	56 1484
	- 2.98	9.9138	55 57.87	9.9031	- 2.97	9.9031	- 2.97		- 3.02	9.9032	- 2.97		- 3.02	9.9032	- 2.97
	53 27.61	9.3645		9.3837	- 13.44	56 11.90	- 13.44		- 13.54	9.4292	- 13.44		- 13.54	9.4292	- 13.44
		9.9018		9.8900	- 48.60		- 48.60		- 53.80	9.8869	- 48.60		- 53.80	9.8869	- 48.60
		+7.76		+7.763						+7.707				+7.707	
+ 12.70		2.483	+ 10.64	2.603	+ 10.54			+ 10.35		2.602			+ 10.35	2.602	
1 8.1	9.95714	+1.0459	1 3.46	9.977997	+1.0366	57 34.6	9.77997	56 9.6	9.77812	+1.0309	57 34.6	56 9.6	9.77812	+1.0309	57 34.6
15 0.73878	0.6667	0.6667	15 0.73878	0.6859	0.6859	26.8	1.35603	22 0.56585	0.7314	0.7314	26.8	22 0.56585	0.7314	0.7314	26.8
194 0.60815	9.9880	4.63	194 0.60815	9.9869	4.63	1.24823	1.24823	21.6	0.45620	9.9837	1.24823	21.6	0.45620	9.9837	1.24823
9.1	0.0195	9.2783	57 35.70	53 35.1	9.2868	57 35.70	53 35.1	10.8	0.0132	9.3324	57 35.70	10.8	0.0132	9.3324	57 35.70
1 9.65	55 3840	+2.79	1 9.65	57 9.46	7 56.7	57 9.46	7 56.7	56 2.86	9 28.13	+323	57 9.46	56 2.86	9 28.13	+323	57 9.46
- 2.06	- 2.441	+9.14	55 21 42.96	53 25 31.9	57 34.43	57 34.43	57 34.43	56 13.91	- 22.18	+905	57 34.43	56 13.91	- 22.18	+905	57 34.43
55 21 42.96	4 15.54	+13.33	- 17 1706	- 17 1706	- 17 1706	- 17 1706	- 17 1706	53 26 34.44	9 5.95	+13.13	- 17 1706	53 26 34.44	9 5.95	+13.13	- 17 1706
- 17 1706	.01	- 2.85		- .04	- 2.90		- 2.90	- .01		- 3.23		- .01		- 3.23	
+ .01		+22.53	+ .03	+ .03	+22.34	+ .03	+22.34	+ .01	2 5.47	+22.18	+ .03	+ .01	2 5.47	+22.18	+ .03
+ 12.47		41	+ 10.46	+ 10.46		+ 10.46	+ 10.46	+ 10.56	8 12.2		+ 10.46	+ 10.56	8 12.2		+ 10.46
+ 23			+ .19	+ .19		+ .19	+ .19	+ .19			+ .19	+ .19			+ .19
- 17 4.36			- 17 6.42	- 17 6.42		- 17 6.52	- 17 6.52	- 17 6.31			- 17 6.52	- 17 6.31			- 17 6.52
55 4 25.10			53 7 46.13	53 7 46.13		53 7 32.88	53 7 32.88	53 9 17.38			53 7 46.13	53 9 17.38			53 7 46.13
Aug. 4				Aug. 4				Aug. 4				Aug. 4			
h m s	286 28	9.9818	23 25	h m s	286 32	9.9817	23 25	h m s	287 45	9.9788	23 25	h m s	287 45	9.9788	23 25
19 5 34	+1434	-1638	19 5 34	+1434	-1638	19 5 34	+1434	19 10 53	+1245	-1827	19 10 53	+1245	-1827	19 10 53	19 10 53
+57 56	a+1	8.9303	5 20.8	a+1	8.9303	5 20.8	5 20.8	+53 10	a+1	8.9808	5 20.8	+53 10	a+1	8.9808	5 20.8
53.9		9.4525	53.9		9.4542	53.9	53.9	28.0		9.4841	53.9	28.0		9.4841	53.9
3 35.4	6 11.4	9.0341	6 53.2	7 186	6 53.2	7 186	6 53.2	11 29.0	11 8.0	9.0668	6 53.2	11 29.0	11 8.0	9.0668	6 53.2
38.9	39.7		54.8	230	54.8	230	54.8	41.4	21.6		39.7	41.4	21.6		39.7
41.9	44.0		56.0	25.8	56.0	25.8	56.0	44.3	25.0		44.0	44.3	25.0		44.0
45.1	46.8		57.4	29.5	57.4	29.5	57.4	46.7	28.7	0.0952	46.8	46.7	28.7	0.0952	46.8
9.0	49.0		58.5	32.7	58.5	32.7	58.5	49.3	32.4	8.4649	49.0	49.3	32.4	8.4649	49.0
	4206		18.22	8.3828	8.3828	8.3828	8.3828	25.42	25.14	8.5509	4206	25.42	25.14	8.5509	4206
- 27.50		+ 26.76		9.0159	9.0159	- 26.76	9.0159		+ 28.89	9.0456	- 27.50		+ 28.89	9.0456	- 27.50
		+ 861		+ 861						+ 747				+ 747	
	3 14.56	+2.27	6 4.98	6 59.16	+2.28	6 59.16	+2.28	11 4.14	11 54.03	+2.74	3 14.56	11 4.14	11 54.03	+2.74	3 14.56
- 52.34	+ 1.82	+391	- 52.34	+ 3.78	+392	+ 3.78	+392	+ 7.89	- 52.35	+453	- 52.34	+ 7.89	- 52.35	+453	- 52.34
- .12		+1556	- .11		+1556		+1556		- .13	+1666	- .12		- .13	+1666	- .12
- 52.49		+3.035	- 52.47		+3.037	- 52.47		- 52.51		+3140			- 52.51	+3140	
	5 52.51	9.9818	5 52.51	6 6.69	9.9817	6 6.69	9.9817		11 1.52	9.9788	5 52.51	6 6.69	9.9817	6 6.69	9.9817
	- 3.04	9.8962	- 3.04	- 3.04	9.8962	- 3.04	9.8962		- 3.14	9.9141		- 3.04	- 3.14	9.9141	
2 19.05	- 14.35	9.4525	5 49.47	- 14.35	9.4542	- 14.35	9.4542		10 58.88	9.4841	2 19.05	- 14.35	9.4542	9.4841	2 19.05
	- 56.70	9.8780		- 56.90	9.8779		9.8779			9.8929		- 56.70	9.8779	9.8929	
		+7.551		+7.551	+7.550		+7.550			+7.814			+7.551	+7.814	
	+ 9.57	2.674	+ 9.57	+ 9.57	2.674	+ 9.57	2.674	+ 12.70		2.680			+ 9.57	2.680	
56 9.6	388	9.78999	8 388	9.78999	+1.0225	8 388	9.78999	57 52.3	9.75678	+1.0294	56 9.6	388	9.78999	+1.0294	57 52.3
22	326	0.26007	326	0.26007	0.7547	326	0.7547	44.8	0.99520	0.7863	22	326	0.26007	0.7863	44.8
21.6	51.1	0.16222	51.1	0.16222	9.9818	51.1	0.40465	3.8	0.86422	9.9788	21.6	51.1	0.16222	9.9788	3.8
10.8	402		402		0.0097	402		52.3		0.0126	10.8	402		0.0126	52.3
56 11.05	4068	57 1.63	57 1.63	57 1.63	9.3487	57 1.63	9.3487	57 53.30	55 7.31	9.3782	56 11.05	4068	57 1.63	9.3782	57 53.30
	145	22.10		22.10	+3.41		22.10		7 58.00	+3.67		145	22.10	+3.67	7 58.00
	3923	56 39.53		56 40.62	+9.01		56 40.62		57 45.99	+8.95		3923	56 39.53	+8.95	57 45.99
52 14 9.12	- 17 1706	+1303	- 17 1706	- 17 1706	+1303	- 17 1706	- 17 1706	- 17 1706	- 17 1706	+13.12	52 14 9.12	- 17 1706	- 17 1706	+13.12	- 17 1706
- 17 1706	.02	- 3.35		- 3.35	+2.210		+2.210		.03	- 3.75	- 17 1706	.02	- 3.35	- 3.75	- 17 1706
+ .04	5 35.12		+ .04	5 49.30		+ .04	5 49.30		+ .03	+2.199	+ .04	5 35.12		+2.199	+ .04
+ 9.36	55 42.8		+ 9.36	55 43.7		+ 9.36	55 43.7		+ 12.47		+ 9.36	55 42.8			+ 12.47
+ 17			+ 17			+ 17			+ 2.3		+ 17			+ 2.3	
- 17 7.49			- 17 7.49	- 17 7.49		- 17 7.49	- 17 7.49		- 17 4.36		- 17 7.49			- 17 4.36	
57 56 52.06			57 56 52.06	57 56 52.06		57 56 52.06	57 56 52.06	57 56 52.06			57 56 52.06	57 56 52.06			57 56 52.06

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Aug. 6	272 19	9.9996	Aug. 6	272 19	9.9996
h m s			h m s		
18 49 2		2203	18 49 2		2203
+57° 8'		+1413	+57° 8'		+1413
8 33.3		8.9181	8 33.3		8.9181
26 39.0	A+1	8.6066	26 39.0	A-1	8.6066
9 41.2	9	9.0266	9 41.2	9	9.0266
43.4		10.210	43.4		10.210
143		23.2	143		23.2
429 429		24.6	429 429		24.6
440		26.0	440		26.0
92 52.6		0.1501	92 52.6		0.1501
		7.5244			7.5244
		7.6332			7.6332
		9.0262			9.0262
		+860			+860
		+0.31			+0.31
		+0.57			+0.57
		+1543			+1543
		+2491			+2491
		-5322			-5322
		9.9996			9.9996
		9.8915			9.8915
		8.6066			8.6066
		9.8911			9.8911
		+7782			+7782
		2720			2720
		+890			+890
		+10582			+10582
		99088			99088
		9.9996			9.9996
		0.0213			0.0213
		84981			84981
		+1069			+1069
		56 20.1			56 20.1
		51 26 28.24			51 26 28.24
		-17 18.22			-17 18.22
		-46			-46
		+23.28			+23.28
		+8.79			+8.79
		+15			+15
		-17 9.44			-17 9.44
		51 9 40.71			51 9 40.71

Aug. 6	282 21	9.9898	Aug. 6	282 23	9.9898
h m s			h m s		
18 49 8		2208	18 49 8		2208
+57° 11'		-1624	+57° 11'		-1624
48 39.0		8.9186	48 39.0		8.9186
9.4		48 47.4	9.4		48 47.4
50 12.0		9.3302	50 12.0		9.3302
14.0		9.0269	14.0		9.0269
17.3		0.1608	17.3		0.1608
20.5		8.2488	20.5		8.2488
84 22.2		8.3571	84 22.2		8.3571
		9.0167			9.0167
		+881			+881
		+167			+167
		+300			+300
		+1510			+1510
		+2858			+2858
		-5326			-5326
		9.9898			9.9898
		9.8917			9.8917
		9.3302			9.3302
		9.8815			9.8815
		+7612			+7612
		2718			2718
		+10330			+10330
		0.6324			0.6324
		9.9898			9.9898
		0.0141			0.0141
		9.2219			9.2219
		+261			+261
		+9.18			+9.18
		+1363			+1363
		-242			-242
		+2799			+2799
		+23.00			+23.00
		49 16.65			49 16.65

Aug. 6	275 7	9.9983	Aug. 6	275 48	9.9978
h m s			h m s		
18 20 43		2593	18 22 54		2038
+53° 43'		+1262	+50° 15'		-1591
20 128		8.9571	22 24.4		8.9016
12.9		8.9503	14.6		9.0246
21 24.4	A+1	9.0511	24 38.3		9.0167
20 45.9		0.1011	24 38.3		0.1011
255		7.9074	24 38.3		7.9074
270		8.0014	24 38.3		8.0014
280		9.0494	24 38.3		9.0494
9.3 23.4		+768	24 38.3		+768
		+0.76	24 38.3		+0.76
		+132	24 38.3		+132
		+1628	24 38.3		+1628
		+2604	24 38.3		+2604
		-5323	24 38.3		-5323
		9.9983	24 38.3		9.9983
		9.9060	24 38.3		9.9060
		8.9503	24 38.3		8.9503
		9.9043	24 38.3		9.9043
		+8022	24 38.3		+8022
		2571	24 38.3		2571
		+747	24 38.3		+747
		+10593	24 38.3		+10593
		0.2525	24 38.3		0.2525
		9.9983	24 38.3		9.9983
		0.0250	24 38.3		0.0250
		8.8563	24 38.3		8.8563
		+313	24 38.3		+313
		59 57.58	24 38.3		59 57.58
		50 22 50.77	24 38.3		50 22 50.77
		-17 18.22	24 38.3		-17 18.22
		-38	24 38.3		-38
		+23.39	24 38.3		+23.39
		+1.09	24 38.3		+1.09
		+936	24 38.3		+936
		+1398	24 38.3		+1398
		-104	24 38.3		-104
		+23.39	24 38.3		+23.39
		+0.4	24 38.3		+0.4
		22 55.25	24 38.3		22 55.25
		4 56.7	24 38.3		4 56.7
		-17 10.75	24 38.3		-17 10.75
		50 5 32.55	24 38.3		50 5 32.55

Aug. 6	283 26	9.9880	Aug. 6	283 26	9.9880
h m s			h m s		
18 53 27		212	18 53 27		212
+53° 8'		250	+53° 8'		250
53 2.5		281	53 2.5		281
7.0		320	7.0		320
53 51.2		860	53 51.2		860
53.2		393	53.2		393
58.7		430	58.7		430
2.4		467	2.4		467
8.6 5.9		50.2	8.6 5.9		50.2
		76.2			76.2
		56.11			56.11
		35.72			35.72
		54 35.72			54 35.72
		-5300			-5300
		-27			-27
		9.9880			9.9880
		9.9142			9.9142
		9.3661			9.3661
		9.9022			9.9022
		+7984			+7984
		2479			2479
		+10463			+10463
		0.6683			0.6683
		9.9880			9.9880
		0.0197			0.0197
		9.2803			9.2803
		+284			+284
		+914			+914
		+1381			+1381
		-277			-277
		+2302			+2302

880										881										882									
Aug. 6 285 36										Aug. 6 286 32										Aug. 6 286 32									
h m s										h m s										h m s									
19 2 5										19 2 5										19 5 50									
+53° 8'										+53° 8'										+51° 56'									
1 38.3										1 38.3										5 20.8									
6.5										6.5										53.9									
a+1										a-1										a+1									
2 578										2 414										6 490									
2 407										3 361										6 490									
2 445										450										526									
2 480										485										526									
2 517										520										532									
2 552										534										570									
9.1										8.9										8.8									
4802										4852										484									
+2750										+2750										+26.76									
1552										1602										1552									
3 338										3 1577										6 5444									
+1200										-5329										+5.82									
-5329										-5329										-53.28									
-13.54										-53.29										-11.35									
-53.90										-53.29										-56.90									
+11.01										+11.01										+9.73									
56 197										56 197										8 406									
116 1.07918										116 1.07918										348 0.96492									
332 0.96953										332 0.96953										54 0.66714									
218										218										43.7									
56 2158										56 2158										8 4845									
9.32										9.32										465									
56 12.26										56 12.26										57 1.06									
53 26.3609										53 26.3609										52 14 9.53									
-17 18.22										-17 18.22										-17 18.22									
-04										-04										-01									
+01										+01										+04									
+1085										+1085										+9.53									
+19										+19										+17									
-17 7.21										-17 7.21										-17 8.49									
53 9 1787										53 9 1787										51 56 5733									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
35 121										36 442										39 13.4									
35 158										36 486										39 167									
35 189										36 514										39 197									
35 224										36 543										39 230									
35 254										36 572										39 263									
8.7										8.8										8.9									
1848										1848										1848									
26.49										26.49										26.49									
35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
487 1.39099										487 1.39099										487 1.39099									
101 1.29764										101 1.29764										101 1.29764									
582										582										582									
35 5805										36 5926										39 5190									
51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									
+914										+914										+914									
-17 9.07										-17 9.07										-17 9.07									
51 29 51.92										51 29 51.92										51 29 51.92									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
35 121										36 442										39 13.4									
35 158										36 486										39 167									
35 189										36 514										39 197									
35 224										36 543										39 230									
35 254										36 572										39 263									
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26.49										26.49										26.49									
35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
487 1.39099										487 1.39099										487 1.39099									
101 1.29764										101 1.29764										101 1.29764									
582										582										582									
35 5805										36 5926										39 5190									
51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									
+914										+914										+914									
-17 9.07										-17 9.07										-17 9.07									
51 29 51.92										51 29 51.92										51 29 51.92									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
35 121										36 442										39 13.4									
35 158										36 486										39 167									
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35 224										36 543										39 230									
35 254										36 572										39 263									
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1848										1848										1848									
26.49										26.49										26.49									
35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
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101 1.29764										101 1.29764										101 1.29764									
582										582										582									
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51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									
+914										+914										+914									
-17 9.07										-17 9.07										-17 9.07									
51 29 51.92										51 29 51.92										51 29 51.92									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
35 121										36 442										39 13.4									
35 158										36 486										39 167									
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35 224										36 543										39 230									
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8.7										8.8										8.9									
1848										1848										1848									
26.49										26.49										26.49									
35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
487 1.39099										487 1.39099										487 1.39099									
101 1.29764										101 1.29764										101 1.29764									
582										582										582									
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51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									
+914										+914										+914									
-17 9.07										-17 9.07										-17 9.07									
51 29 51.92										51 29 51.92										51 29 51.92									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
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35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
487 1.39099										487 1.39099										487 1.39099									
101 1.29764										101 1.29764										101 1.29764									
582										582										582									
35 5805										36 5926										39 5190									
51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									
+914										+914										+914									
-17 9.07										-17 9.07										-17 9.07									
51 29 51.92										51 29 51.92										51 29 51.92									
Aug. 6 293 43										Aug. 6 294 1										Aug. 6 294 42									
h m s										h m s										h m s									
19 34 33										19 36 13										19 38 32									
+57° 28'										+57° 28'										+50° 14'									
34 2.4										35 15.2										38 0.2									
25.6										25.6										17.8									
35 176										36 416										39 57.9									
35 121										36 442										39 13.4									
35 158										36 486										39 167									
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1848										1848										1848									
26.49										26.49										26.49									
35 2087										36 5926										39 5190									
+2460										+2460										+2460									
-5330										-5329										-5329									
-1534										-1534										-1534									
-120.50										-120.50										-120.50									
+9.15										+9.15										+9.15									
35 552										36 5926										39 5190									
487 1.39099										487 1.39099										487 1.39099									
101 1.29764										101 1.29764										101 1.29764									
582										582										582									
35 5805										36 5926										39 5190									
51										51										51									
1984										1984										1984									
35 38.21										36 5926										39 5190									
51 4710.14										51 4710.14										51 4710.14									
-17 18.22										-17 18.22										-17 18.22									
-16										-16										-16									
+01										+01										+01									

[illegible]

1885

B

Comparison of a new clock^B made by the Ballou Mfg. Co
of Hartford Conn. with Rodham 1327

These comparisons are made at the request of Prof. O. H.
McLeod of McGill College Observatory Montreal.

It is the understanding that he will purchase the new
clock if its running qualities are as good as those of 1327.

The clock was set up the latter part of August. When I re-
turned from my vacation in the early part of October, no com-
parisons had been made. I found that the galvanic
connections had not been made and that the clock
had a very large gaining rate.

Mr. Aston made the connections Oct-2 but it was not until
Oct-5 that ~~the~~ I succeeded in reducing the rate to near, and
then only by the use of weights instead of the screw-bob.

The real comparisons began Oct-18.

The results are given on the opposite page.

Date	S.T. of event Ministry B + 4 ^h m s	Corrected S.T. and S.T. of M. n.	Sidereal Interval h m s	Reduction to M.T. interval m s	M. T. B	hourly rate h
18 Oct-11	21 25 57.63 - 1 25.76	21 01 24.88 13 21 43.86	4 39 45.01	- 1 15.32	7 38 29.65	.035
Oct-11	21 9 58.82 - 1 25.76	21 08 30.06 13 21 43.86	7 46 46.20	- 1 16.47	7 45 29.93 7.7 ^h 29.718	.035
Oct-12	21 40 59.12 - 1 29.21	21 39 29.91 13 25 40.41	8 13 49.50	- 1 20.90	8 12 28.60	.048 .040
Oct-12	22 30 7.11 - 1 29.28	21 28 37.83 13 25 40.41	9 2 57.42	- 1 24.95	9 1 25.47 8.6 28.83	.040
Oct-14	22 31 58.51 - 1 30.02	22 30 28.49 13 33 33.52	8 56 54.97	- 1 27.96	8 55 27.01	.032 .040
Oct-14	2 246 0.75 - 1 30.01	22 44 30.74 13 33 33.52	9 10 57.22	- 1 30.26	9 9 26.96 9.0 26.98	.039
Oct-16	18 59 14.00 - 1 31.45	18 52 42.55 13 41 26.62	5 11 15.93	- 0 50.99	5 10 24.94 5.2 24.94	.046 .038
Oct-17	19 38 16.61 - 1 31.66	19 36 44.95 13 45 23.17	5 51 21.58	- 0 57.56	5 51 24.22	.029 .038
Oct-17	19 44 17.62 - 1 31.66	19 42 45.96 13 45 23.17	5 57 22.77	- 0 57.57	5 56 24.21 5.9 24.23	.030
Oct-18	21 33 21.26 - 1 32.29	21 31 58.97 13 49 18.73	7 42 39.24	- 1 15.79	7 41 23.45 7.9 23.45	.030 .029
Oct-19	23 26 45.43 - 1 33.06	23 25 12.37 13 53 16.28	9 31 56.09	- 1 33.69	9 30 22.40 9.5 22.40	.029
Oct-20	20 0 7.32 - 1 33.47	19 58 33.45 13 57 12.83	6 1 21.02	- 0 59.20	6 0 21.82 6.0 21.82	.028 .029
Oct-22	10 49 24.90 - 1 35.02	10 47 49.47 5 5.94	20 42 43.53	- 3 23.57	20 39 19.91 20.9 19.95	.030 .029
Oct-27	0 19 19.90 - 1 36.28	24 17 43.21 14 29 49.40	9 52 53.81	- 1 37.13	9 51 16.88 9.9 16.88	.028 .029

Oct-30 1885-

Wound the clock B, Saturday morning at 9 AM. On
 Saturday night at 6 P.M. Mr. Chandler found it $1^m 42^s$ slow.
 Mr. Chandler kept up the comparison with 399 from this time
 till Monday morning when the clock ^{was} found stopped.
 During this interval the old rate of 0.50 was kept up.

Nov. 5

Mr. Aston came out and looked over the new clock.
 He found that the arbor of the bevel wheel had ^{been} ~~was~~ ^{examined} ~~not~~ ^{checked} ~~up~~ ^{and} ~~that~~ ^{probably} the slight change in temperature had ^{interfered} ~~interfered~~ with the freedom of the movement.
 Started clock at this ^{new} ~~old~~ rate 11 AM. 1^s slow.

Nov. 9

$$\begin{array}{r} h \sim s. \\ 21 \ 41 \ 22.31 \\ -15 \ 16 \ 3.91 \end{array}$$

6 41 18.40 - 1 5.74

6 40 12.66

h

Nov. 11

$$\begin{array}{r} 21 \ 41 \ 22.50 \\ -1 \ 43.82 \end{array} \begin{array}{r} 21 \ 39 \ 18.68 \\ -15 \ 23 \ 5.02 \end{array}$$

6 15 21.61 - 1 1.49

$$\begin{array}{r} h \sim s. \\ 6 \ 19 \ 20.17 \\ 6.4 \end{array}$$

.038

Nov. 11

$$\begin{array}{r} 22 \ 6 \ 6.57 \\ -1 \ 43.82 \end{array} \begin{array}{r} 22 \ 4 \ 22.75 \\ 15 \ 23 \ 5.02 \end{array}$$

6 40 25.73 - 1 5.60

$$\begin{array}{r} 6 \ 39 \ 20.13 \\ 6.4 \ 20.15 \end{array}$$

.038

Nov. 15

$$\begin{array}{r} 0 \ 18 \ 9.57 \\ -1 \ 45.78 \end{array} \begin{array}{r} 0 \ 16 \ 24.29 \\ 15 \ 39 \ 43.24 \end{array}$$

8 36 41.05 - 1 24.65

$$\begin{array}{r} 8 \ 35 \ 16.40 \\ 8.7 \ 16.43 \end{array}$$

.038

Nov. 15

$$\begin{array}{r} 0 \ 30 \ 11.52 \\ -1 \ 45.29 \end{array} \begin{array}{r} 0 \ 28 \ 26.24 \\ 15 \ 39 \ 43.24 \end{array}$$

8 48 42.97 - 1 26.57

8 47 16.46

.038

Dec. 3

Nov. 19 The clock B stopped. Sent to Mr. Astor for investigation.

Dec. 3 Clock B started at 5^h P.M. 10^s on. of B 94

Mr. Astor's report upon the clock is as follows:

Date Sid. T. J. J. J. Corrected Sidereal Epoch Reduction M.T.B.
 Minute of Sid. T. J. J. J. Interval to M.T. in time
 Dec 5 $\left[\begin{array}{ccc|ccc|ccc} h & m & s & h & m & s & h & m & s & h & m & s \\ 13 & 46 & 31.10 & 13 & 44 & 35.71 & 20 & 46 & 1.36 & -3 & 24.13 & 20 & 42 & 37.23 \\ - & 1 & 55.39 & 16 & 58 & 34.35 & & & & & & & \end{array} \right]$

Dec 6 $\begin{array}{ccc|ccc|ccc} 23 & 41 & 59.57 & 23 & 40 & 3.88 & 6 & 37 & 32.97 & -1 & 5.13 & 6 & 36 & 37.64 \\ - & 1 & 55.69 & 17 & 2 & 30.51 & - & 1 & 5.13 & & & & & \end{array}$

Dec 6 $\begin{array}{ccc|ccc|ccc} 21 & 12 & 34.86 & 21 & 10 & 39.24 & 4 & 8 & 8.33 & -0 & 40.65 & 4 & 7 & 27.68 \\ - & 1 & 55.62 & 17 & 2 & 30.51 & & & & & & 5.3 & 27.76 & \end{array}$

Dec 7 $\begin{array}{ccc|ccc|ccc} 23 & 3 & 49.01 & 23 & 1 & 52.62 & 5 & 55 & 25.19 & -0 & 58.23 & 5 & 54 & 26.92 \\ - & 1 & 56.39 & 17 & 6 & 47.47 & & & & & & 5.9 & 26.92 & \end{array}$

Dec 8 $\begin{array}{ccc|ccc|ccc} 21 & 24 & 38.98 & 21 & 25 & 42.08 & 4 & 15 & 18.06 & -0 & 41.83 & 4 & 14 & 26.23 \\ - & 1 & 56.90 & 17 & 10 & 24.02 & & & & & & & & \end{array}$

Dec 8 $\begin{array}{ccc|ccc|ccc} 21.54 & 34.01 & 21 & 55 & 34.08 & 4 & 45 & 13.06 & -0 & 46.23 & 4 & 44 & 26.28 \\ - & 1 & 56.93 & 17 & 10 & 24.02 & & & & & 4.5 & 26.25 & \end{array}$

Dec. 15

