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KG
11366
v.485

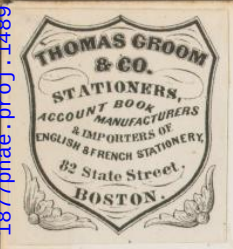
Maskelyne Fundamental
Observations and Reductions
From the 2nd to 16½ 30m
1877

B1

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Constants

1877	15 tan i
Jan 13 — Mar 1	0.12416
Mar 4 — May 14	0.12048
May 16 — July 4	0.11768
July 24 — Dec 31	0.12260

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6h Andromedae

1877

Sept. 23 — Oct. 18 — Oct. 23 — Oct. 27

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1877

Nov. 7 −.94

Nov. 13 −1.01

Nov. 14 −.79 −.03

Dec. 1 −.97 −.10

h	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s
0	2	6.8	2	12.7	2	33.8	2	21.7	2	22.5	2	43.7	2	35.2	2	[23.9]	2	45.0
		9.0		15.0		36.1		23.3		24.9		46.0		37.0		26.2		47.5
		10.7		17.2		38.4		24.3		27.2		48.4		39.4		28.4		49.8
				19.5		40.7				29.4		50.7				30.9		52.1
				22.0		43.1				32.0		53.1				33.3		54.4
				24.4						34.3						35.7		
				26.8		48.0				36.2		57.8	3	17.6		38.0		59.1
				29.2		50.1				39.0		0.1		19.7		40.3		1.5
						52.6						2.2		21.5				3.8
												4.7						6.0
												7.0						8.4
												9.4						10.8
	2	8.83		77.280		42.32				18.70		11.9		19.64				18.1
				+21.196			2	23.10				14.8	2	37.24				15.4
					2	38.473				48.700		48.355	3	19.60	2	49.640		49.745
						.476						.401						.741
					2	38.474					2	48.378					2	49.743
				-32.24	2	5.730				-42.09	2	5.682				-43.59	2	5.674
				-.50	+	32.74				-.585	+	42.70				-.42	+	44.07
				+ 32.71						+ 42.67						- 3	+	44.04
				- 3.83						- 3.78						- 3.77		
				-36.60 .57						-46.42						-47.81		
			2	+1.90						+1.96						+1.93		
				96														

h	m	s	m	s	m	s	m	s
0	2	64	1	—	1	58.7
		8.3		—		2.1
		10.2		—		4.5
				—		6.7
				—		8.8
				50.2		
				52.8		13.7
				53.0		16.0
						18.4
						20.9
						23.0
						25.3
				25.480		27.8
	2	8.30		-20.997		8.00
					2	4.355
						.403
					2	4.379
				+1.80	2	5.497
				-.52		1.12
				- .11		1.15
				- 3.60		
				-2.43		
				+1.98 5		

	+29.64	+25.28	+12.54	-29.86
	1.47188	1.40278	1.09830	1.47509n
	1.53874	1.46964	1.16516	1.54195n
	0 1	0 2	0 2	0 3
E	54.8	2.3	50.3	16.8
H	8.4	16.5	51.7	32.5
G	59.5	6.1	54.5	21.4
M	3.1	10.5	59.2	27.9
	58	354	2297	986
	2 1.45	2 8.85	2 57.42	2 24.65
	+ 3457	+ 2949		+ 1463
	2 36.02	2 38.34		2 39.28
	20 12.33	20 10.01		20 9.07
13	56 43	56 51		57 07
	1.15525	1.15530		1.15550
	+2183	+2441		+1210
	1.17708	1.17971		1.16760
	-1503	-1513		-1471
	- .20	- .14		- .04
	- .28	- .29		- .34
	+ .12	+ .13		+ .14
	-1539	-1543		-1495
+28	19 56.94	19 54.58		19 55.12
				19 54.46
	25 12.8	25 13.3		25 13.4
	+5 15.9	+5 18.7		+5 18.9
	15.7	18.5		18.7
	+5 17.36	+5 18.76		+5 18.96
	-0.4	-0.4		-0.4
	-32.1	-32.5		-32.6
	+4 44.86	+4 45.86		+4 45.96
	+24 4180	4044		4042

	-3.92	
	0.59329n	
	0.66015n	
	0 2	
	36.1	
	49.3	
	38.0	
	42.3	
	1657	
	2 41.42	
	- 457	
	2 36.85	
	20 11.50	
	56 23	
	1.15510	
	+ 2852	
	1.18362	
	-1526	
	- .00	
	- .43	
	+ .16	
	-1553	
	19 55.97	
	25 14.1	
	+5 18.1	
	17.9	
	+5 18.51	
	-0.4	
	-33.3	
	+4 44.81	
	4078	

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	m	s		'	"	
Nov 16	2	5.66	5	25	13.5	3
21		5.61	5		13.8	2
26		5.55	6		14.0	1
Dec 1		5.50	5		14.1	1
6		5.44	6		14.2	1
11		5.38	6		14.1	1
16		5.32	6		14.0	1
21		5.26	6		13.8	2
26		5.19	7		13.5	3

1877

Dec. 2 (−.85)			Dec. 9 (−.86)		Dec. 12 (−.79)			Dec. 15 (−.63, −.07)	
1 535	1 —	1 590	1 274	1 335	1 548	1 302	1 314	1 525	1 247	1 290	1 503
557	—	14	295	359	570	322	338	549	264	315	527
578	—	37	316	382	595	335	361	572	284	339	550
	—	61		405	16		383	596		362	574
	—	85		429	40		407	20		385	598
	498			453			432			409	
	521	132		477	89	2 252	455	65		434	45
	542	155		501	111	274	479	90		457	68
		178			135	294		112			90
		201			157			135			114
		223			180			160			138
		247			204			183			160
	24740	270		2930	227		2716	205		2495	184
1 5567	−20 997	296	1 2950		252	1 3197		230	1 2650		208
		2 3.755		1 59300	59409	2 2743	1 57160	57227		1 54950	1 55045
		.743			401			.261			.051
		2 3.749			1 59405			1 57.244			1 55048
	+2.22	2 5.185		+6.50	2 5.401		+8.61	2 5.365		+10.71	2 5.329
	−.45	— 1.74		−.46	— 6.00		−.42	— 8.12		−.34	— 10.28
		— 1.77			— 6.03			— 8.15		— 8	— 10.31
	−3.58			−3.50			−3.46			−3.43	
	−1.81			+2.54			+4.73			+6.86	
	+1.94			+1.94			+1.97			+1.91	

	Dec. 2	Dec. 9	Dec. 12		Dec. 15
	+8.08	+29.90	+25.27	−30.19	+28.55
	0.90741	1.47567	1.40261	1.47986n	1.45561
	0.97427	1.54253	1.46947	1.54672n	1.52247
	0 2	0 1	0 2	0 3	0 1
E	23.5	57.5	2.1	7.4	59.8
F	35.9	10.9	16.2	20.9	13.1
G	23.0	58.9	5.2	9.9	0.9
H	25.8	3.5	9.2	12.8	6.9
	1082	108	327	510	207
	2 27.05	2 2.70	2 8.18	3 12.75	2 5.18
	+9.42	+34.88	+29.48	−35.21	+33.30
	2 36.47	2 37.58	2 37.66	2 37.54	2 38.48
	20 11.88	20 10.77	20 10.69	20 10.81	20 9.87
13	57 09	56 45	56 50	57 55	56 47
	1.15550	1.15525	1.15530	1.15590	1.15530
	+3523	+2676	+1992	+1992	+736
	1.19073	1.18201	1.17522	1.17582	1.16266
	−15.51	−15.21	−14.97	−14.99	−14.88 54
	−.02	−.20	−.14	−.20	−.19
	−.40	−.32	−.34	−.51	−.34
	+.15	+.12	+.13	+.19	+.13
	−15.78	−15.61	−15.32	−15.51	−14.94
	19 56.10	19 55.16	19 55.37	55.30	19 54.93
			19 55.34		
	25 14.1	25 14.1	25 14.1		25 14.0
	+5 18.0	+5 18.9	+5 18.8		+5 19.1
	17.8	18.7	18.6		18.9

Dec. 2	Dec. 9	Dec. 12	Dec. 15
+5 19.05	+5 18.75	+5 19.21	+5 19.35
−0.4	−0.4	−0.4	−0.4
−33.3	−33.3	−33.4	−33.2
+4 46.35	+4 45.05	+4 45.41	+4 45.75
+24 41.45	40.21	40.75	+24 40.68

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	Dec. 16					Dec. 18			
h	m	S	m	S	m	S			
0	1	25.5	1	28.3	1	49.7	1	30.0	
		27.8		30.7		51.8		32.3	
		30.4		32.9		54.2		34.5	
				35.4		56.5			
				37.8		59.0			
				40.0					
				42.6		8.5	2	15.9	
				44.7		6.0		18.1	
						8.4		22.0	
						10.6			
						12.9			
						15.1			
				24.14		17.7			
	1	27.90				20.0	1	32.27	
			1	54.140		54.217	2	18.67	
						24.1			
					1	54.229			
				+11.58	2	5.319			
				-.41		11.09			
				-.8		11.12			
				-3.42					
				+7.67					
				+1.90					

	Dec. 18			
h	m	S		
0	1	26.5	1	48.0
		29.0		50.1
		31.2		52.6
		33.9		54.4
		36.0		57.0
		38.4		
		41.0		1.9
		43.3		4.4
				6.5
				8.8
				11.2
				13.4
		22.46		15.9
				18.4
	1	52.460		52.536
				.561
			1	52.548
		+13.36	2	5.293
		-.44		12.74
		-.11		12.77
		-3.39		
		-.94		
		+9.42		
		197		

	+26.33		+20.28	-26.12
	1.42045		1.30707	1.41697n
	1.48731		1.37393	1.48383n
	0' 2'		0 2	0 3
E	0.8		7.1	2.0
A	15.1		21.6	16.6
G	5.2		9.8	5.1
H	11.2		13.9	9.2
	32.3		52.4	32.0
	2 8.07		2 13.10	3 5.22
	+30.41		+23.66	-30.47
	2 38.48		2 36.76	2 37.75
	20 9.57		20 11.59	20 10.60
13	56 50		56 55	57 50
	1,15530		1,15530	1,15590
	+1206		+3371	+3371
	1.16736		1.18901	1.18961
	-14.70		-15.45	-15.47
	- .15		- .09	- .15
	- .34		- .33	- .46
	+ .13		+ .13	+ .18
	-1506		-1574	-1590
+28	19 54.51		19 55.85	54.70
		+5 19.43	19 55.28	+5 18.88
	25 14.0	-0.4	25 13.9	-0.4
	+5 19.5	-33.2	+5 18.6	-33.1
	19.3		18.4	
		+4 45.83		+4 45.38
		+24 40.34		40.66

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γ Pegasi

h m s
0 6 48
14° 29′ 18″
27 53 30

α_0 6 54.198
-.013
corr. α_0 6 54.178 +.01
$\frac{d\alpha}{dt}$ 3.084
δ_0 29′ 59.64
58.21
corr. δ_0 -1.43 +4
$\frac{d\delta}{dt}$ + 20.05

N.A. α

			N.A. δ	
Sept. 15	6m 58.04		30′ 24.6	7
20	09	5	25.2	6
25	58.12	3	25.9	6
30	14	2	26.5	6
Oct 5	58.16	2	27.1	4
10	16	0	27.5	4
15	58.17	+1	27.9	4
20	16	-1	28.3	3
25	58.16	0	28.6	

log cos δ 9.98594
R +19.257
R′ -19.076
R″ +.092
I 2.13
tan δ +.26
sec δ 1.03
log 15 cos δ tan i 0.10854
sin z + 47

Sept 17, 22, 27; Oct 2, 7

1877

z + 27 53 30

N.A. -1.09 Sept 23 — -1.02 Oct. 18 — -.97 N.A. Oct-23 — D. -.95 Oct. 27

h m s	m s	m s								
0 8 10.8	7 [56.36]	8 7.05	8 48.2	8 34.10	8 44.86	8 39.7	8 42.54	8 53.20	8 43.7	8 4m
12.4	58.60	9.85	50.4	36.32	47.00	41.7	44.50	55.25	45.2	12.38
14.7	0.55	11.40	52.0	38.38	49.23	43.6	46.60	57.40	46.9	.35
	2.73	15.68		40.60	53.52		48.78	1.67		.42 48.7
	4.94	17.89		42.66	55.60		50.81	3.68		.26 50.9
8 44.4	34.56	19.95	9 25.6	12.66	57.70	9 26.2	[20.70]	5.93	9 31.0	.23 53.2
46.3	36.68	22.00	27.1	14.70	59.80	28.0	22.85	8.05	33.7	.30 55.3
48.0	38.90	24.10	29.6	17.00	1.86	29.9	24.95	10.10	35.7	.37 57.4
	41.10	28.46		19.10	6.32		27.10	14.40		.34 59.6
	43.19	30.61		21.15	8.50		29.30	16.60		1.7
		32.79			10.60			18.64		3.9

A 8.0, 10.1, 12.3, 14.5, 16.6 (A+2, A+1)

31761 21928 27667 39499 63499 35821 24492 6492 53.100 +19.25

8 12.63; 8 46.23; 8 19.761; 8 19.935 .853; 8 19.894; 8 50.20; 9 27.43; 8 57.667; 8 57.726 .759 57.742; 8 41.67; 9 28.03; 9 5.821; 9 5.902 .913 5.908; 8 45.27; 9 33.47; 9 12.331 .357 12.344

-1 21.53 -.58; 6 58.108 58.11 +81.79 +81.78 +81.80 +81.787
-1 59.34 27 -.35 -.36; 6 58.16 58.17 +119.58 +119.57 +119.59 +119.586
-2 7.48 .28 -.52; 6 58.16 58.16 +127.75 +127.75 +127.76 +127.754
-2 13.94 .24 -.51; 6 58.149 +134.20 +134.19

-3.91 -1 25.72 +6 54.17
-3.96 -2 3.49 +54.25
-3.96 -2 11.69 +54.22
-3.956 -2 18.14 18 +54.20

+7.26	-26.34	+7.54	-29.69	+24.24	-22.12	+27.07	-21.13
0.86094	1.42062n	0.87737	1.47261n	1.38453	1.34479n	1.43249	1.32490n
~~0.96936~~	~~1.52904n~~	~~0.98579~~	~~1.58103n~~	~~1.49295~~	~~1.45321n~~		
0.96948	1.52916n	0.98591	1.58115n	1.49307	1.45333n	1.54103	1.43344n
55 1	55 2	55 1	55 2	55 1	55 2	55 1	55 2
ε 53.7	36.1	47.8	37.2	25.9	25.0	23.0	23.7
7.2	49.4	4.8	53.1	43.0	41.7	40.2	41.3
5.1	47.8	59.8	50.2	38.1	36.7	30.9	33.4
0.2	[40.3] 0.3	59.1	47.8	36.5	34.8	31.4	32.1
2462	1736	2315	1883	1435	1382	1255	1305
57 1.55	57 43.40	56 57.88	57 47.08	56 35.88	57 34.55	56 31.38	57 32.62
+9.32	-33.812	9.68	-38.112	31.112	-28.3440	+34.76	-27.13
57 10.87	57 9.588	57 7.56	57 8.976	57 7.00 6.99	57 6.165	57 6.14	57 5.49

+14 25 37.48 25 38.767; 25 40.79 25 39.389; 25 41.365 25 42.19 20; 25 42.21 25 42.86

27 51 42.4	52 28.5	51 38 40	52 27.9	51 18.8	52 15.7	51 23 13	52 15
1.48331	1.48352	1.48328	1.48354	1.48318	1.48848	1.48320	1.48350
-07	-07	+634	+634	+354 21	+354 21	+1791	+1791
1.48324	1.48345	1.48962	1.48988	1.48672 39	1.48702 669	1.50111	1.50141
-30.43	-30.44	-30.88	-30.89	-30.675	-30.687	-31.70	-31.73
-.01	-.09	-.07	-.11	-.08	-.07	-.09	-.06
-.1824	-.1832	-.1828	-.1839	-.1824	-.1639	-.22	-.37
+.12	+.16	+.12	+.17	+.10	+.16	+.09	+.15
-30.546	-30.679	-31.05 30.97	-31.122	-30.8597	-30.927	-31.92	-32.01

+14 25 6.94 6.92 8.09 8.08; 7.52 7.50 +5 17.78; 30 25.66 24.3 -0.6; +5 18.1 16.8 -26.1; 17.2
25 7.82 7.74 8.27 8.17; 9.04 8.96 +5 18.45; 30 28.1 26.7 -0.7; +5 19.1 17.7 -28.5; 18.1
25 10.51 10.38 11.27 11.23; 10.89 10.80 +5 17.18; 30 28.5 27.0 -0.7; +5 17.6 16.2 -28.8; 16.6
25 10.29 10.85; 25 10.57 +5 17.80; 30 27.2 -0.7; +5 16.6 -29.0; 17.0

-1.4 +5 18.3 16.9 +4 51.08; +29 58.60
19.3 17.9 +4 49.25; 58.29
17.8 16.4 +4 47.68; 58.57
+4 48.10; +29 58.67

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Oct. 7 — Oct. 28 — Oct. 30 — Nov. 4 — Nov. 6

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1877

Nov. 7 | Nov. 13 | Nov. 14 | Dec. 2

	Nov. 7			Nov. 13			Nov. 14			Dec. 2		
h 0	7 10.3	7 7.0	7 26.3	7 33.5	7 21.5		7 30.8	7 –	7 37.7	6 35.9	6 32.5	6 51.7
	12.4	9.2	28.7	35.4	29.6		32.7	–	39.8	37.8	34.6	53.9
	14.0	11.3	30.7	39.0	32.0		34.7	–	42.0	39.7	36.7	56.0
		13.3	32.7					22.57 24.7	44.1		38.8	58.1
		15.4	34.9		36.3			.64 26.9	46.0		40.9	0.3
	8 11.7	17.7			38.4			29.1			43.2	
		19.9	39.2		40.4		8 10.7	31.2	50.4	6 39.2	45.3	4.6
		22.0	41.3		42.6		12.3	33.3	52.5	3.0	47.5	6.7
			43.6		44.8		14.3		54.6	5.9		8.4
			45.6					22.605	56.8			10.7
			41.7		49.0			+19.257	58.9			12.8
			49.6		51.0				1.0			15.0
		3049	51.9		53.2			1.000	3.0		2583	17.0
	7 12.23		53.9	7 35.97	44.48		7 32.73	–19.076	5.3	6 37.80		19.3
	8 11.70	7 30.490	30.636		7 40.436		8 12.43		7 41.882	7 2.70	6 55.830	6 56.077
			.582						41.893			55.722
			7 30.609		7 40.436				7 41.888			6 55.961
		-32.24	6 58.102	-42.09	6 58.062			-43.60	6 58.054		+2.226	6 57.898
		-.24	+ 3251	-.26	+ 4237			-.20	+ 4383		-.22	– 1.94
			+ 3250		+ 4236			– 3	+ 4382			– 1.95
		- 3.91		- 3.87				- 3.86			- 3.71	
		- 36.39		-46.22				-47.69			- 1.71	
		+54.22		+54.22				+54.20			+54.86 2.23	
											2	
	+18.38	-41.09		+4.47			+9.15 6	-30.55 4		+18.16	- 6.74	
	1.26435	1.61374n		0.650 31			0.96190	1.48487n		1.25912	0.82866n	
	1.37289	1.72228n		0.75885			1.07044	1.59341n		1.36766	0.93720n	
	55 1	55 2		55 1			55 1	55 2		55 1	55 2	
ε	33.5	48.0		52.7			46.1	38.1		35.4	9.1	
H	49.2	4.1		9.4			3.9	55.3		49.1	23.1	
e	43.8	57.2		1.8			55.5	46.7		38.6	12.9	
R	42.2	58.1		2.0			66.8	48.9		38.1	11.4	
	1687	2274		59			2223	1890		1612	565	
	56 42.18	57 58.55		57 1.48			56 5558	57 4.25		56 40.30	57 14.12	
	+23.60	– 52.76		+ 5.74			+ 11.76	– 39.21		+23.32	– 8.65	
	57 5.78	57 4.09		57 7.22			57 7.34	57 8.04		57 3.62	57 5.47	
+14	25 42.57	25 44.26		25 41.13			25 41.01	25 40.31		25 44.73	25 42.88	
	52	52						52				
27	51 24	51 39		51 43			51 38	51 24		51 22	51 56	
	1.48320	1.48360		1.48330			1.48330	1.48353		1.48320	1.48340	
	+2191	+2191		+2449			+12.11	+12.11		+3531	+3531	
	1.50511	1.50551		1.50779			1.49541	1.49566		1.51851	1.51871	
	–3200	–3203		–32.19			–31.29	–31.31		–3307	–33.01	
	– .04	– .22		– .07			– .01	– .12		– .04	– .01	
	– .24	– .41		– .28			– .27	– .39		– .27	– .35	
	+ .10	+ .17		+ .13			+ .11	+ .17		+ .10	+ .13	
	–32.18	–32.49		–32.34			–31.46	–31.65		–33.21	–33.24	
+14	25 10.39	11.77		25 8.79			25 9.55	8.66		25 11.52	9.64	
+14	25 11.08	+5	17.36			+5	18.76	25 9.10	+5	18.96	25 10.58	+5	19.06
	30 27.6		- 0.8	30 27.7			- 0.8	30 27.8		- 0.8	30 27.7		- 0.9
	+5 16.5		- 29.4	+5 18.9			- 29.5	+5 18.7		- 29.6	+5 17.1		- 29.5
	16.9			19.3				19.1			17.5		
		+4	47.16			+4	48.46		+4	48.56		+4	48.65
		+29	58.24				57.25			57.66		+29	59.23

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Dec. 9 — −.86

Dec. 12 — −.79

Dec. 17 — −.79, −.10

Dec. 18 — Q −.83, −.10

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η Arietis

h m s 2 0 15	α₀	0 14 51.5	Jan 20	0 14.94 7	.52	58.9 3	log cos δ	9.96440	log cos δ 9.96440
	Corr α	+ .02	25	14.87 7		58.6 4			
° ′ ″ 22 52 49	dα/dt	+3.3684	30	14.80 7		58.2 3	15 cos δ tan i	0.08856	Jan.
			Feb. 4	14.73 7		57.9 4		0.08700	m. dec I
			9	14.66		57.5			I′ 2.24 .096
+19 29 59	δ₀	52 47.59	Mar 1	14.41		55.8	tang δ	+ 0.42	acc δ 1.09
	Corr δ	+ .00					sin z	+ .33	
	dδ/dt	+17.218							

1877

	P Jan 23 −.41 −.12			−1.02 Nov. 3			−1.01 Nov. 13		−.79 −.03 Nov. 14	
h m s (59) 57.0	(0) [10.1] 12.3 14.6 16.8 19.0 50.5 52.7 55.0 57.1 59.3	(0) 21.4 23.6 25.9 30.3 32.6 34.8 37.0 39.2 43.8 46.0 48.3	0 15.6 18.6 21.0	0 20.7 22.7 25.1 27.3 29.6 32.0 34.3 36.3	0 40.9 43.0 45.4 47.5 49.9	0 52.6 54.2 55.8	0 [37.3] 39.5 41.8 44.1 46.1 48.5 50.9 53.0	0 37.5 39.7 2.0 4.1 6.3	0 48.0 48.4 50.3	0 50.0 52.0 54.1
(1) 28.2 30.6 32.9			1 2.6 4.7 7.0		54.2 56.5 58.9 1.0 3.0 5.4 7.7 9.9	1 32.0 34.3 35.8		10.9 13.0 15.2 17.4 19.8 22.0 24.1 26.2	1 18.8 21.0 23.2	58.7 0.9 3.2 5.5 7.7 12.0 14.3 16.7 3.51
	34.74	38.29					31.83			
(59) 57.00 (1) 30.57	34.740	34.809 .836 (0) 34.822	0 18.40 1 4.73	15.26 0 45.260	45.355 .356 0 45.356	0 54.00 1 34.03	1 1.830	1.918 .926 1 1.922	0 48.23 1 2.03	1 3.193 1 3.191
	−19.66 −.17 −.13 −0.38 −20.34 +0 14.48	0 14.894 + 19.93 + 19.91		−25.86 −.42 −4.52 −30.81 +14.55	0 19.044 + 26.31 + 26.29		−42.31 −.42 −4.57 −47.30 +14.62	0 19.089 + 42.83 + 42.81	−43.76 −.33 −4.58 −5.41 −48.70 +14.49	0 19.085 93 + 44.10 + 44.08

	+37.82 1.57772 1.66628	−55.75 1.74624n 1.83480n	+26.96 1.43072 1.51772	−19.37 1.28713n 1.37413n	+7.92 0.89873 0.98573	−32.11 1.50664n 1.59364n	+14.96 1.17493 1.26193	−17.81 1.25066n 1.33766n
20	20 4		30 3	30 4	30 4	35 0	30 4	30 4
E F G H	54.8 58.4 6.4 2.2 24.18 25 0.45 + 46.37 25 46.82	−68.36	46.3 2.1 53.1 58.1 219.6 33 54.90 +32.94 34 27.84	43.6 59.9 51.5 56.5 211.5 34 52.88 −23.67 34 29.21	11.2 26.7 14.2 20.1 72.2 34 18.05 + 9.68 34 27.73	1.2 15.3 5.3 10.1 31.9 35 7.97 −39.23 34 28.74	3.0 18.3 5.9 14.1 41.3 34 10.32 +18.28 34 28.60	42.8 59.0 46.8 55.0 203.6 34 50.90 −21.76 34 29.14
+22	57 1.53		48 20.51	48 19.14	48 20.62	48 19.61	48 19.75	48 19.21
19	29 22 1.30920 +3072 1.33992 −21.87 −.28 −1.35 +.30 −23.20		28 37 1.30880 +1068 1.31948 −20.87 −.14 −.55 +.23 −21.33	29 35 1.30920 +1068 1.31988 −20.89 −.07 −.69 +.29 −21.36	29 00 1.30900 +2685 1.33585 −21.67 −.02 −.60 +.26 −22.03	29 50 1.30930 +2685 1.33615 −21.68 −.20 −.01 +.01 −21.88	28 52 1.30900 +1236 1.32136 −20.96 −.04 −.59 +.25 −21.34	29 33 1.30920 +1236 1.32156 −20.97 −.06 −.67 +.29 −21.41
+22	56 38.33 52 58.7 −4 39.6 39.6	−4 22.61 −0.8 −11.1 −4 10.71 34.51 +52 3.82	47 59.18 47 58.48 53 16.1 +5 17.6 17.6	57.78 +5 17.53 −0.5 −28.5 +4 48.53 +52 47.01	47 58.59 47 58.16 53 16.9 +5 18.7 18.7	57.73 +5 18.76 −0.5 −29.3 +4 48.96 47.12	47 58.41 47 58.10 53 16.9 +5 18.8 18.8	57.80 +5 18.96 −0.6 −29.3 +4 49.06 +52 47.16

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	Dec. 1			Dec. 2			Dec. 3			Dec. 9		
Oct-27	0	1899	4 53		1555	4						
Nov 1		1903	3		1539	4						
6		1906	2		1603	4						
11		1908	2		1627	3						
16		1910	1		1700	3						
21		1911	0		1733	2						
26		1911	0		1755	2						
Dec. 1		1910	1		1777	2						
6		1909	1		1799	1						
11		1907	2		1810	0						
16		1904	3		1810	0						
21		1901	3		1810	0						
26		1897	4		1810							
		-.97			-.85			-.78			-.86	
		-.10										
	59 47.5	59 53.3	0 13.7	59 48.2	59 52.5	0 12.7	59 48.5	59 51.7	0 11.9	59 51.9	59 [48.3]	0 8.5
	49.6	55.5	15.9	51.8	54.7	14.9	51.9	54.0	14.1	53.9	50.5	10.8
	51.3	57.8	18.0	53.5	56.9	17.0	53.0	56.0	16.3	56.5	52.8	13.0
		0.1	20.3		59.0	19.2		58.3	18.6		55.0	16.1
		2.3	22.4		1.4	21.7		0.6	20.8		57.1	17.4
	0 47.7	4.6		0 [3.0]	3.6		0 42.9	3.0		0 43.0	59.5	
	49.8	6.9	26.9	31.8	6.0	26.1	44.7	5.2	25.5	44.6	1.8	22.1
	51.7	9.0	29.3	33.5	8.2	28.5	46.2	7.3	27.7	46.4	4.0	24.1
			31.4			30.6			29.9			26.4
			33.4			33.0			31.9			28.6
			35.8			35.0			34.2			30.8
			38.1			37.2			36.4			33.0
		35.93	40.4		47.04	39.3		42.8	38.8		42.88	35.3
	59 49.47		42.6	59 51.50		41.4	59 51.47		40.9	59 54.10		37.4
	0 49.73	0 17.930	0 18.036	0 31.77	0 17.040	17.136	0 44.63	0 16.280	16.391	0 44.67	0 12.880	12.973
			.026			.136			.376			.976
			0 18.031			0 17.136			0 16.384			0 12.974
		+1.78	0 19.100		+2.24	0 19.098		+2.99	0 19.096		+6.44	0 19.057
		-.40	- 1.07		-.35	- 1.96		-.30	- 2.71		-.36	- 6.16
		-.11	- .109			- 1.98			- 2.73			- 6.12
		-4.58			-4.58			-4.58			-4.56	
		-3.31			-2.69			-1.89			+1.52	
		+14.72			+14.45			+14.49			+14.49	
	+28.56	-31.70		+25.64	-14.63		+24.91	-28.22		+18.87	-31.70	
	1.45576	1.58106n		1.40892	1.16524n		1.39637	1.45056n		1.27577	1.58106n	
	1.54276	1.58806n		1.49592	1.25224n		1.48337	1.53756n		1.36277	1.58806n	
	30 3	35 0		30 3	30 4		30 3	30 4		30 3	35 0	
E	46.9	4.1		51.0	40.1		52.1	57.9		58.6	0.4	
7	59.5	19.2		4.2	53.1		5.8	11.1		12.9	14.9	
9	45.0	7.6		48.0	37.1		51.9	56.6		57.8	2.1	
76	50.4	9.9		53.1	41.7		56.2	1.2		3.8	6.5	
	2018	40.8		2163	1720		2260	68		131	239	
	33 50.45	35 10.20		33 54.08	34 43.00		33 56.50	35 1.70		34 3.28	35 5.48	
	+3489	-3873		+31.33	-17.87		+3044	-3448		+2306	-3873	
	34 25.34	34 [illegible]		34 25.41	34 25.13		34 26.94	34 27.22		34 26.34	34 27.25	
	48 23.01			48 22.94	48 23.22		48 21.41	48 21.13		48 22.01	48 21.10	
19	28 32			28 36	29 25		28 37	29 44		28 45	29 48	
	1.30880			1.30880	1.30920		1.30880	1.30930		1.30870	1.30930	
	+3187			+3751	+3751		+2331	+2331		+2893	+2893	
	1.34067			1.34631	1.34671		1.33211	1.33261		1.33783	1.33823	
	-21.91			-22.20	-22.22		-21.48	-21.51		-21.77	-21.79	
	- .16			- .13	- .04		- .12	- .15		- .07	- .20	
	- .61			- .62	- .75		- .62	- .80		- .66	- .02	
	+ .23			+ .23	+ .28		+ .23	+ .30		+ .25	+ .31	
	-22.45			-22.72	-22.73		-21.99	-22.16		-22.25	-21.70	
	48 0.56			48 0.22	0.49		47 59.42	58.97		47 59.76	59.40	
		+5	18.51	48 0.36	+5	19.05	47 59.18	+5	18.96	47 59.58	+5	18.75
	53 17.7		-0.6	53 17.7		-0.6	53 17.8		-0.6	53 18.0		-0.6
	+5 17.1		- 30.1	+5 17.3		- 30.1	+5 18.6		- 30.2	+5 18.4		- 30.4
	17.1			17.3			18.6			18.4		
		+4	4781		+4	48.35		+4	48.16		+4	47.75
		+52	4837			4871			4734		+52	4733

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	Dec. 12		Dec. 13		Dec. 16		Dec. 17
	−.79		−.72		−.77 −.07		−.79 −.10
h	m s	m s	m s	m s	m s	m s	m s
2	(59) 56.0	(59) 46.2	0 6.5	59 44.4	59 45.4	0 5.6	59 41.2	59 43.3	0 3.3	59 46.3	59 53.7
	58.0	48.3	8.8	46.7	47.7	7.9	43.0	45.5	5.7	48.7	56.0
	59.2	50.5	10.9	48.5	49.8	10.0	45.0	47.7	7.8	50.4	58.0
		52.8	13.0		52.0	12.3		50.0	10.0		
		53.0	15.4		54.3	14.5		52.2	12.2		2.6
		57.4			56.6			54.5			4.8
	0 48.2	59.5	19.8	0 33.4	58.9	19.0	0 32.9	56.7	16.9		7.1
	50.0	1.8	21.9	35.6	1.2	21.2	34.4	59.0	19.0		9.3
	52.4		24.2	37.2		23.4	36.5		21.2		11.6
			26.4			25.7			23.5		
			28.6			27.9			25.5		16.0
			30.9			30.0			27.8		18.3
		40.70	33.2		39.97	32.4		37.80	30.2		20.6
	59 57.3		35.3	59 46.53		34.5	59 43.7		32.3	59 48.47	23.0
	0 50.20	0 10.700	10.836	0 35.40	0 9.970	10.055	0 34.60	0 7.850	7.845		0 7.091
			.796			.066			.896		
		0 10.816			0 10.060			0 7.870			0 7.091
		+8.58 0 19.062			+9.24 0 19.056			+11.57 0 19.038		+12.44	0 19.032
		−.33 − 8.25			−.30 − 9.00			−.32 − 11.17		−.33	− 11.94
		− 8.27			− 9.02			− 8 − 11.19		− 11	− 11.96
		−4.54			−4.54			−4.52		−4.51	
		+ 3.71			+ 4.40			+7.65		+7.49	
		+14.53			+14.46			+14.52		+14.58	
	+ 13.09	− 39.38		+ 23.53	− 25.34		+ 24.80	− 26.73		+ 18.62	
	1.11694	1.59528m		1.37162	1.40381m		1.39445	1.42700m		1.26998	
	1.20394	1.68228m		1.45862	1.49081m		1.48145	1.51400m		1.35698	
	30 4	35 0		30 3	30 4		30 3	30 4		30 3	
E	6.1	10.6		53.9	53.5		54.1	54.1		58.4	
H	20.1	25.8		8.1	7.2		6.5	9.1		18.9	
G	6.5	13.9		54.8	53.7		55.0	57.8		2.2	
H6	12.9	17.5		1.8	0.9		1.6	3.9		9.4	
	456	6.8		2386	2353		2342	2449		239	
	34 1140	35 16.95		33 59.65	34 58.82		33 58.55	35 12.2		34 59.75	
										5.98	
	+ 1599	− 48.11		+ 28.75	− 30.96		+ 30.30	− 32.66		+ 22.75	
	34 27.39	34 28.84		34 28.40	34 27.86		34 28.85	34 28.56		34 28.73	
+22	48 20.96	48 19.51		48 19.95	48 20.49		48 19.50	48 19.79		48 19.62	
19	28 53	29 59		28 42	29 41		28 41	29 43		28 48	
	1.30900	1.30940		1.30890	1.30930		1.30890	1.30930		1.30890	
	+2270	+2270		+444	+444		+1565	+1565		+622	
	1.33170	1.33210		1.31334	1.31374		1.32455	1.32495		1.31512	
	−2146	−2148		−2057	−2059		−2111	−2113		−2066	
	− .03	− .30		− .10	− .12		− .12	− .14		− .07	
	− .67	− .05		− .64	− .80		− .64	− .80		− .66	
	+ .25	+ .02		+ .24	+ .30		+ .24	+ .30		+ .25	
	−2191	−2181		−2107	−2121		−2163	−2177		−2114	
+22	47 59.05	57.70		47 58.88	59.28		47 57.87	58.02		47 58.48	
+22	47 58.38	+5 19.21		47 59.08	+5 18.41		47 59.94	+5 19.43			+5 18.31
	53 18.0	−0.6		53 18.0	−0.6		53 18.0	−0.6		53 18.0	−0.6
	+5 19.6	− 30.4		+5 18.9	−30.4		+5 20.1	−30.4		+5 19.5	−30.4
	19.6			18.9			20.1			19.5	
		+4 48.21			+4 47.41			+4 48.43			+4 47.31
		+52 4659			4649			4637			+52 4579

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Dec. 20

59 87.8 40.2 42.4

59 39.5 41.8 44.0 46.0 48.4 50.6 52.0 53.2

59 59.8 2.0 4.1 6.5 8.7 12.0 15.2 17.4 19.7 22.0 24.0 26.5 28.8

59 33.9 36.0 38.0

59 4013

3407

59 3597

0 4.070

0 4.151

+15.27 0 19014

−.38 − 14.86

.50 − 14.88

−4.~~49~~

+10.39

+14.55~~4~~

4.136 .166

-.70 -.08

Dec. 25

59 35.0 37.3 39.5 41.8 43.9 46.2 48.5 50.8

59 55.2 57.4 57.7 2.0 4.4 8.8 10.9 13.2 15.3 17.7 19.9 22.0 24.2

59 31.3 33.4 35.0

2966

59 59.660

59 59.746

+19.60 0 18.976

−.29 − 19.23

−.9 − 19.25

−~~4.46~~

+~~14.76~~

+14.76

+14.51

59.736 .756

-.64 -.08

Dec. 26

59 34.2 36.4 38.6 40.9 43.1 45.4 47.7 49.9

59 54.4 56.6 58.9 1.0 3.3 7.9 10.0 12.3 14.4 16.8 19.0 21.2 23.4

59 29.8 32.0 34.0

2880

59 58.800

59 58.855

59 58.876

+20.49 0 18.968

−.26 − 20.09

−.9 − 20.11

−4.45

+15.6~~79~~

+14.57

.896

-.78

Dec. 27

59 33.4 35.5 37.7 40.0 42.2 44.6 46.8 49.0

59 53.6 55.8 58.1 0.2 2.4 6.9 9.2 11.4 13.8 15.9 18.1 20.1 22.5

2792

59 57.920

59 58.~~208~~

+21.27 0 18.960

−.32 − 20.95

− 20.97

−4.44

+16.51

+14.52

58.~~000~~ .016

+24.02
1.38057
1.46757
30 3
49.1
4.1
53.5
58.1
2248
33 56.20
+29.35
34 25.55

48 22.80

+23.78
1.37621
1.46321
30 3
53.0
6.6
54.1
59.6
2333
33 58.32
+29.05
34 27.37

48 20.98

+25.65
1.40909
1.49609
30 3
50.0
3.2
51.9
57.1
2222
33 55.55
+31.34
34 26.89

48 21.46

+26.08
1.41631
1.50331
30 3
49.1
5.4
54.1
58.2
2268
33 56.70
+31.86
34 28.56

48 19.79

19

28 36
1.30880
+1851
1.32731
−.2125
−.11
−.58
+.23
−21.71
48 1.09

+5 17.99
−0.6
−30.4
+4 46.99
+52 4808

28 40
1.30890
+2098
1.32988
−21.37
−.11
−.60
+.24
−21.84
47 59.14

+5 19.30
−0.6
−30.4
+4 48.30
4744

28 38
1.30880
+~~2098~~ 1785
1.32665
−21.22
−.13
−.58
+.23
−21.70
47 59.76

+5 18.73
−0.6
−30.4
+4 47.73
4749

28 39
1.30890
+1753
1.32643
−.2120
−.13
−.58
+.23
−21.68
47 58.11

+5 18.56
−0.6
−30.4
+4 47.56
+52 4567

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1877

-83

Dec. 31

59 38.0	59 ~~30.4~~ 32.6	59 52.4
39.9	34.8	54.9
41.7	37.1	57.0
	~~39.8~~	59.4
	41.3	
	43.5	4.0
	45.9	6.0
		8.3
		~~10.5~~
		12.6
		15.0
	2489	17.2
		19.4
59 3987	59 54890	59 54827

+24.38 0 18918
-.34 — 24.09
— 24.11

-4.40
+19.64
+14.47
~~+29.71~~

+14.96
1.17493
1.26193

30 4

6 3.5
7 17.2
5 0.5
2 6.9
28.1
34 7.02
+18.28
34 25.30

+22 48 23.05

19 28 49
1.30890
+2056
1.32946
— 21.35
— .30
— .61
+ .25
— 2201
+22 48 1.04

53 17.9
+5 16.9
16.9

+5 19.41
— 0.6
— 30.3

+4 4851

+52 4955

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ε Ceti

m 55	s 51	α_0	m s 55 51.022
° 3	' 36	" 22	Corr α	+ s .01
38	46	26	$\frac{d\alpha}{dt}$	+ s 3.1290
1877			δ_0	° ' 36 20.57
			Corr δ	+ ".9
			$\frac{d\delta}{dt}$	+ " 14.325

log cos δ	9.99914	log cos δ	9.99914
15 cos δ tan i	0.12330	Jan 7 ... + 2	18680
	0.12174	mer. dec. I	207
		I'	.088
tang δ	+ 0.06	1.00	
sin Z	+ .63		

Jan. 21 Ch.-f.

Jan. 23: h 2; m s 55 44.0, 46.7, 48.6; 56 44.0, 46.0, 47.9; 55 46.43; 56 45.97

m s 55 49.0, 51.1, 53.2, 55.1, 57.2, 26.1, 28.1, 30.1, 32.2, 34.4; 41.65; 31.65; 56 11.650

m s 55 59.2, 1.3, 3.6, 7.6, 9.6, 11.6, 13.7, 15.9, 20.0, 22.0, 24.2; 1887; 1287; 11.518; 56 11.779; 55 51.871; + 19.84; + 19.83

−.41, −.12; −19.65; −.02; −12; −0.85; −20.64; +55 51.08

Jan. 24 Ch.-f.

55 38.0, 40.0, 41.7, 1197; 55 39.90; −17.02; −.02; −12; −0.76; −17.92; +51.07

Jan. 30: −.36, −.12

55 46.2, 48.3, 50.3, 52.3, 54.4; 50.300; 8.980

55 56.5, 58.7, 0.8, 4.8, 7.0, 9.0, 11.1, 13.1, 17.2, [19.3], [21.4]; 2189; 989; 8.991; 56 8.986; 55 51.777; + 17.21; + 17.20

	Jan. 23 (a)	Jan. 23 (b)		Jan. 30
	+25.29	−34.25		+29.09
	1.40295	1.53466n		1.46374
	1.52625	1.65796n		1.58704

	40 1	40 1	40 0	40 1	40 0	40 0	40 1	40 1
E			25.3	44.3	23.1	19.9	35.4	50.7
F			31.8	49.3	27.3	29.6	45.5	52.8
G			43.1	1.3	41.6	38.0	53.9	55.2
H			35.3	52.2	33.0	31.4	43.5	50.7
			135.5	207.1	1250	1189	1783	2094
			40 33.88	41 51.78	40 31.25	40 29.72	41 44.57	41 52.35
			+ 33.59	− 45.49		+38.64		
			41 7.47	41 6.29		41 8.36		
+3		+3	41 40.88	41 42.06		41 39.99		
38			44 56	46 14		44 52		
			1.66450	1.66480		1.66450		
			+3229	+3229		+2847		
			1.69679	1.69709		1.69297		
			−49.75	−49.78		−49.31		
			− .02	− .04		− .03		
			− .16	− .51		− .13		
			+ .04	+ .11		+ .03		
			−49.89	−50.22		−49.44		
		+ 3	40 50.99	51.84		40 50.55		
		+3	40 51.42	−4 22.61	−4 24.70		−4 22.12	
			36 25.9	−1.5	−1.5	36 25.5	−1.4	
			−4 25.5	−5.3		−4 25.8	−4.9	
			24.6			24.2		
				−4 29.41			−4 28.42	
				+36 22.01			+36 22.13	

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Jan 20	55 51.91 6	−36	26.1 3
25	51.85 7		25.8 3
30	51.78 6		25.5 3
Feb 4	51.72 7		25.2 2
9	51.65		25.0
Mar 1	51.37		24.5

Feb. 3 (−.47, −.15)

55 38.0	55 44.1	55 54.6	55 46.8
48.1	46.3	56.7	48.7
41.6	48.4	58.8	50.7
	50.5	3.0	
	52.5	5.1	
56 35.0	21.4	7.0	56 33.3
87.0	23.5	9.1	35.4
88.7	25.6	11.2	37.4
	27.6	15.4	
	29.7	17.3	
		19.5	
	3696	2577	
55 39.90	696	777	55 48.73
56 36.90	56 6.960	56 7.064	56 35.37
		.048	
		56 7.056	
	−15.16	55 51.729	
	−.03	+ 15.33	
	−15	+ 15.32	
	−0.71		
	−16.05		
	+51.01		

Feb. 4 (−.51, −.04)

55 43.8	55 54.4	55 39.7	
46.0	56.4	41.3	
48.0	58.5	43.0	
50.2	2.6	1240	
52.2	4.7		
21.1	6.8		
23.1	8.8		
25.3	11.0		
27.3	15.0		
29.4	17.1		
	19.1		
3664	2544		
664	744	55 41.33	
56 6.640	6.764		
	728		
	56 6.746		
−14.91	55 51.716		
−.03	+ 15.03		
−4	+ 15.02		
−0.70			
−15.68			
+51.07			

Feb. 6 (−.61)

55 43.4	55 53.8	55 38.7
45.6	56.0	41.3
47.6	58.0	43.1
49.7	2.1	1233
51.8	4.1	
20.5	6.1	
22.6	8.2	
24.8	10.3	
26.8	14.5	
29.0	16.6	
	18.5	
3618	2482	
618	682	55 41.10
56 6.180	6.200	
	268	
	56 6.234	
−14.43	55 51.688	
−.04	+ 14.55	
	+ 14.54	
−0.67		
−15.14		
+51.09		

Feb. 8 (−.59)

55 42.8	55 53.2
44.8	55.2
47.0	57.2
49.0	1.4
51.0	3.5
19.8	5.6
22.0	7.8
24.1	9.7
26.2	13.8
28.2	15.8
	17.8
3550	2410
550	610
56 5.500	5.545
	558
	56 5.566
−13.81	55 51.660
−.03	+ 13.91
	+ 13.90
−0.64	
−14.48	
+51.09	

	Feb. 3			Feb. 4			Feb. 6	Feb. 8
	+27.16	−29.84		+38.02	−28.62		+24.90	+24.47
	1.43393	1.47480n		1.25575	1.45667n		1.39620	1.38863
	1.55723	1.59810n		1.37905	1.57997n		1.51950	1.51193
	40 0	40 1	40 1	40 0	40 1	40 1	40 0	40 0
E	25.2	40.3	A. 54.4	36.7	38.9	A 55.0	26.8	27.9
F	34.1	48.5	B. 50.1	46.5	48.5	B 54.8	37.4	38.8
G	44.7	0.0	C. 50.3	57.0	58.8	C 49.5	48.2	48.8
H	39.6	55.8	D. 55.6	52.4	55.0	D. 54.0	40.5	40.1
	1436	2046	2104	1926	2012	2133	1529	1556
	40 35.90	41 51.15	41 52.60	40 48.15	41 50.30	41 53.32	40 38.22	40 38.90
	+ 3608	− 3964		+ 23.94	− 38.02		+ 33.08	+ 32.50
	41 11.98	41 11.51		41 12.09	41 12.28		41 11.30	41 11.40
	41 36.37	41 36.84		41 36.26	41 36.07		41 37.05	41 36.95
38	44 58	46 13		45 10	46 12		45 00	45 01
	1.66450	1.66480		1.66450	1.66480		1.66450	1.66450
	+1350	+1350		+1857	+1857		+1543	+2124
	1.67800	1.67830		1.68307	1.68337		1.67993	1.68574
	−4765	−4768		−4826	−4824		−4786	−4850
	− .03	− .03		− .01	− .03		− .02	− .02
	− .15	− .48		− .20	− .45		− .14	− .14
	+ .04	+ .11		+ .05	+ .11		+ .04	+ .04
	−4779	−4808		−4836	−4861		−4798	−4862
	40 48.58	48.76		40 47.90	47.46		40 49.07	40 48.33
	40 48.67	−4	20.47	40 47.68	−4	20.95	−4 21.20	−4 20.45
	36 25.2		−1.4	36 25.2		−1.4	36 25.1 −1.4	36 25.0 −1.3
	−4 23.5		−4.6	−4 22.5		−4.7	−4 24.0 −4.5	−4 23.3 −4.4
	22.6			21.6			23.1	22.4
		−4	26.47		−4	27.05	−4 27.10	−4 26.15
		+36	2220			2063	2197	+36 2218

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23

1877

	Nov. 13			Dec. 9			Dec. 13			Dec. 16		
	-1.01			-.86			-.72			-.77 -.07		
h	m s	m s	m s									
2	56 14.5	56 15.2	56 33.8	55 22.8	55 26.4	55 45.2	55 17.9	55 23.7	55 42.3	55 15.0	55 21.4	55 40.0
	16.0	17.6	35.9	24.4	28.5	47.3	20.2	25.8	44.4	17.0	23.6	42.1
	18.0	19.3	37.9	26.2	30.7	49.4	21.7	27.8	46.5	19.3	25.6	44.0
		21.3	40.0		32.6	51.3		29.9	48.5		27.7	46.1
		23.4	42.1		34.7	53.4		32.0	50.6		29.7	48.1
	56 57.4	25.7		56 17.5	37.0			34.0			31.8	
	59.2	27.7	46.2	20.1	39.0	57.5	55 13.3	36.0	54.7	56 16.0	33.9	52.3
	1.3	29.7	48.2	22.0	41.0	59.7	15.1	38.2	56.8	18.5	36.0	54.5
			50.4			1.8	16.8		58.8	20.3		56.5
			52.4			3.8			0.9			58.5
			54.5			5.8			2.9			0.7
			56.6			7.9			5.0			2.8
		3797	58.7	1924		10.0	1641		7.0	2017		4.9
	56 16.17		0.8	55 24.47		12.0	55 19.93		9.1	55 17.10		6.9
	56 59.30	56 37.970	56 37.964	56 19.87	55 49.246	49.327	56 1.507	55 46.410	55 46.436	56 18.27	55 44.170	55 44.178
			38.058			.328			.498			.258
			56 38.011			55 49.328			55 46.467			55 44.108
		-42.41	55 55.969		+6.42	55 55.620		+9.22	55 55.616		+11.56	55 55.609
		-.06	+ 42.50		-.05	— 6.29		-.04	— 9.15		-.05	— 11.42
		49	+ 42.49			— 6.30			— 9.16		-.7	— 11.43
		-4.56			-4.60			-4.60			-4.59	
		-46.96			+1.77			+4.58			+6.85	
		+51.05			+51.10			+51.05			+51.04	
	+21.84	-21.29		+24.86	-30.54		+26.54	-28.60		+27.09	-34.08	
	1.33925	1.32878m		1.39550	1.48487m		1.42390	1.45637m		1.43281	1.53250m	
	1.46099	1.44992m		1.51724	1.60661m		1.54564	1.57811m		1.55455	1.65424m	
	45 1/4	50 0		45 4	50 1		45 4	50 1		45 4	50 1	
E	51".5	48.9		51.2	3.2		50.9	4.2		49.1	7.9	
F	9.5	7.2		8.4	20.4		8.1	22.0		6.9	26.1	
G	57.2	55.8		53.1	6.0		55.0	10.5		55.7	15.9	
H	0.1	58.2		56.9	8.9		58.7	12.9		57.9	18.9	
	2383	2301		2296	3815		2327	496		2296	6848	
	49 59.58	50 57.52		49 54.40	51 9.62		49 58.18	51 12.40		49 54.40	51 17.20	
	+ 28.91	— 28.18		+ 32.90	— 40.42		+ 35.13	— 37.85		+ 35.85	— 45.11	
	50 28.49	50 29.34		50 30.30	50 29.20		50 33.31	50 34.55		50 33.25	50 32.09	
+3	32 19.86	32 19.01		32 18.05	32 19.15		32 15.04	32 13.80		32 15.10	32 16.26	
38	44 43.42	45 40		44 39	45 52 42		44 40	45 54		44 39	45 59	
	1.66440	1.66460		1.66440	1.66470		1.66440	1.66470		1.66440	1.66470	
	+2801	+2801		+2994	+2994		+518	+518		+1733	+1733	
	1.69241	1.69261		1.69434	1.69464		1.66958	1.66988		1.68173	1.68203	
	— 49.25	— 49.27		— 49.47	— 49.50		— 46.73	— 46.76		— 48.05	— 48.09	
	— .02	— .02		— .02	— .03		— .03	— .03		— .03	— .04	
	— .70	— .14		— .80	— .19		— .80	— .19		— .80	— .21	
	+ .30	+ .06		+ .30	+ .07		+ .30	+ .07		+ .30	+ .08	
	— 49.67	— 49.37		— 49.99	— 49.65		— 47.26	— 46.91		— 48.58	— 48.26	
+3	31 30.19	29.64		31 28.06	29.50		31 27.78	26.89		31 26.52	28.00	
+3	31 29.92	+5	18.76	31 28.78	+5	18.75	31 27.34	+5	18.41	31 27.26	+5	19.43
	36 45.7		-1.2	36 44.0		-1.3	36 43.7		-1.3	36 43.5		-1.3
	+5 15.8		-25.1	+5 15.2		-23.5	+5 16.4		-23.1	+5 16.2		-22.9
	16.7			16.1			17.3			17.1		
		+4	52.46		+4	53.95		+4	54.01		+4	55.23
		+36	2238			2273			2135		+36	2249

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		″		′ ″	
Oct. 27	55	55.33	6	36 46.6	2
Nov 1		55.39	5	46.4	3
6		55.44	5	46.1	2
11		55.49	5	45.9	3
16		55.53	4	45.6	3
21		55.56	3	45.3	3
26		55.59	3	44.9	4
Dec 1		55.61	2	44.6	3
6		55.62	1	44.2	4
11		55.62	0	43.9	3
16		55.61	1	43.5	4
21		55.59	2	43.1	4
26		55.57	2	42.7	4

−.70 −.08   −.78   −.83

Dec. 25			Dec. 27				Dec. 31
55 10.9	55 13.4	55 32.0	55 10.2	55 11.7	55 30.4	55 14.3	55 [18.7]
13.7	15.4	34.1	12.8	12.7	32.4	17.1	20.8
14.9	17.4	36.2	14.7	15.7	34.4	19.0	23.0
	19.4	38.2		18.0	36.3		
	21.6	40.2		20.0	38.3		26.8
55 56.5	23.7		56 2.6	22.0		55 51.5	29.2
58.4	25.9	44.4	4.6	24.0	42.5	53.2	31.4
0.3	28.0	46.6	7.3	26.0	44.6	55.1	33.2
		48.7			46.7		35.5
		50.7			48.9		
		52.7			50.9		39.6
		54.7			53.0		41.7
	3610	56.7		3440	55.0		43.7
55 13.17		58.8	55 12.57		57.1	55 16.80	34.36
55 58.40	55 36.100	36.182 .188	56 4.83	55 34.400	55 34.327 .488	55 53.27	55 31.236

55 36.185   55 34.408   55 31.236

+19.59 55 55.73   +21.26 55 55.565   +24.38 55 55.538

−.04 − 19.39   −.08 − 21.16   −.05 − 24.30

− 8 − 19.40   − 21.17   − 24.31

−4.55   −4.54   −4.52

+14.92   +16.70 .67   +19.81

+51.1×0   +51.11 .08   +51.05

Left margin: 55 40.0, 42.1, 44.0, 46.1, 48.1, 52.3, 54.5, 56.5, 58.5, 0.7, 2.8, 4.9, 6.9, 44.118, .258, 5 44.188, 55.609, = 11.42, = 11.43

+23.01	−22.22	+21.84	−30.42	+	+14.44	−22.03
1.36192	1.34674n	1.33925	1.48316n		1.15957	1.34301n
1.48366	1.46848n	~~1.45899~~ 1.46099	1.60490n		1.28131	1.46475n
45 4	[50] 55 0	45 4	50 1		50 0	50 0
E 55.7	55.9	54.9	7.8		9.8	57.4
F 12.4	12.1	13.2	26.0		25.9	14.9
G 1.0	1.9	1.4	15.4		13.8	0.2
H 3.0	3.1	4.1	17.9		14.0	2.1
121	51 130	136	671		635	146
50 3.02	51 3.25	50 3.40	51 16.78		50 15.88	51 3.65
+ 30.45	− 29.41	+ 28.91	− 40.26		+ 19.11	− 29.16
50 33.47	50 33.84	50 32.31	50 36.52		50 34.99	50 34.49
32 14.88	32 14.51	32 16.04	32 11.83		32 13.36	32 13.86
44 45	45 45	44 45	45 59		44 58	45 46
1.66440	1.66460	1.66440	1.66470		1.66450	1.66460
+2193	+2193	+1886	+1886		+2209	+2209
1.68633	1.68653	1.68326	1.68356		1.68659	1.68669
−48.57	−48.59	−48.22	−48.26		−48.59	−48.61
− .02	− .02	− .02	− .03		− .01	− .02
− .76	− .16	− .76	− .19		− .04	− .16
+ .30	+ .07	+ .31	+ .08		+ .02	+ .07
−49.05	−48.70	−48.69	−48.40		−48.62	−48.72
31 25.83	25.81	31 27.35	23.43		31 24.74	25.14
31 25.82	+5 19.30		+5 18.56		31 24.94	+5 19.41
36 42.8	−1.3	36 42.6	−1.3		36 42.2	−1.3
+5 17.0	−22.2	+5 15.2	−22.1		+5 17.3	−21.6
17.9		16.1			18.2	
	+4 55.80		+4 ~~56.16~~ 55.16			+4 56.51
	+36 21.62		22.51			+36 21.45

38

Left margin: 43, 3, 9, 23, 49

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Tauri

α_0 28m 52s 51.827

Corr^n − .01

$\frac{d\alpha}{dt}$ +3.4325

δ_0 16° 15′ 38″

Corr^n − .1

$\frac{d\delta}{dt}$ +7.601

1826 07 10

1877

log cosδ 9.98226 | log secδ 9.98226

15 cosδ tanζ 0.10642 | Jan. Fact. 19.248

0.10486 | Dec. I′ .092

tanζ +0.29 | 1.044

Lin 2 + 44

	Jan. 13		Jan. 14		Jan. 20		Jan. 23	
	−.41		−.35		−.38 −.12		−.41 −.12	
h	m s	m s	m s	m s	m s	m s	m s	m s
4	28 54.1	28 53.6	28 48.4	28 53.1	28 49.6	28 50.3	28 44.7	28 49.4
	56.6	56.0	51.6	53.3	57.2	52.2	46.6	51.7
	59.0	58.0	54.1	54.4	53.3	54.5	49.2	53.8
	197	0.2		55.5	54.1	56.5	205	56.0
		2.3		1.6		58.7		58.0
	29 44.5	32.4	29 49.4	32.0	29 42.0	28.7	29 43.0	28.1
	46.4	34.4	51.1	33.9	43.7	30.9	44.3	30.5
	48.0	36.5	54.6	36.1	45.9	33.0	46.1	32.6
	189	38.6		38.3	11.6	35.3	13.4	34.7
		40.7		40.4		37.4		36.8
		28.1		27.5		24.6		23.9
		30.2		29.9		26.7		26.0
	56.57	35.27		40.76		43.75		43.16
	28 54.92	17.27	28 51.70	16.76	28 51.37	13.75	28 46.83	13.16
	29 47.72	29 17.270	29 51.70	29 16.760	29 43.87	29 13.750	29 44.47	29 13.160
	46.30							
		17.391		16.873		13.855		13.164
		.362		.852		.842		.252
		29 17.376		29 16.862		29 13.848		29 13.208
		−23.98		−23.58		−20.39		−19.64
		28 53.277		28 53.273		28 53.238		28 53.219
		−.11		−.10		−.11		−.11
		+ 24.10		+ 23.59		+ 20.61		+ 19.99
		+ 24.11		+ 23.60		+ 20.62		+ 19.99
		−1.45		−1.44		−1.41		−1.38
		−25.44 54		−25.12		−22.03		−21.25
		+28 51.84		+51.74		+51.82		+51.96

	+20.81	−28.92	+25.16	−34.84	+22.48	−30.02	+26.38	−31.26
	1.31827	1.46120n	1.40071	1.54208n	1.35180	1.47741n	1.42127	1.49499n
	1.42469	1.56762n	1.50713	1.64850n	1.45822	1.58383n	1.52769	1.60141n
	0 1	0 2	0 1	0 2	0 1	0 2	0 1	0 2
E	33.9	38.3	29.8	47.3	31.2	38.7	26.8	40.6
F	35.6	39.6	33.4	48.3	36.1	42.1	29.5	43.2
G	45.2	49.1	43.3	0.0	52.9	57.7	43.0	57.7
H	38.8	45.4	37.2	54.3	43.2	49.3	31.9	46.4
	1535	1724	1437	1049	1634	1878	1312	1879
	1 38.38	2 43.10	1 35.92	2 52.48	1 40.85	2 46.95	1 32.80	2 46.97
	+ 26.59	− 36.95	+ 32.15	− 44.51	+ 28.72	− 38.35	+ 33.70	− 39.94
	2 4.97	2 6.15	2 8.07	2 7.97	2 9.57	2 8.60	2 6.50	2 7.03
+16	20 43.38	20 42.20	20 40.28	20 40.38	20 38.78	20 39.75	20 41.85	20 41.32
26	6 00	7 05	5 58	7 04 14	6 03	7 09	5 55	7 09
	1,450 30	1,450 60	1,450 30	1,450 70	1,450 30	1,450 60	1,450 30	1,450 60
	+3977	+3977	+4147	+4147	+765	+765	+3489	+3489
	1,449 07	1,449 37	1,449 77	1,449 17	1,457 95	1,458 25	1,458 19	1,458 49
	−30.91	−30.93	−31.03	−31.06	−28.70	−28.72	−30.56	−30.58
	− .06	− .12	− .09	− .18	− .07	− .13	− .10	− .14
	− .46	− .78	− .46	− .84	− .48	− .78	− .40	− .76
	+ .10	+ .16	+ .10	+ .17	+ .10	+ .17	+ .09	+ .17
	−31.33	−31.67	−31.48	−31.91	−29.15	−29.46	−30.97	−31.31
+16	20 12.05	10.53	20 8.80	8.47	20 9.63	10.29	20 10.88	10.01
+16	20 11.29	− 4 22.21	20 8.64	− 4 21.72	20 9.96	− 4 22.66	20 10.44	− 4 22.61
	15 46.8	− 1.2	15 46.8	− 1.1	15 46.6	− 1.1	15 46.5	− 1.0
	− 4 24.5	− 9.5	− 4 21.8	− 9.7	− 4 23.4	− 9.6	− 4 23.9	− 9.4
	24.9		22.2		23.7		24.3	
		− 4 33.21		− 4 32.52		− 4 33.36		− 4 33.01
		+15 3808		3612		3660		+15 3743

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	m	s			"	
Jan 0	28	53.31	1	15	47.1	1
5		53.30	1		47.0	1
10		53.29	2		46.9	1
15		53.27	3		46.8	2
20		53.24	4		46.6	1
25		53.20	5		46.5	1
30		53.15	6		46.4	2
Feb. 4		53.09	7		46.2	1
9		53.02			46.1	

Jan. 30 (−.36, −.12)

28 46.1	28 46.7	28 57.4	
48.4	48.8	59.6	
50.3	51.0	1.7	
144.8	53.0	6.0	
	55.2	8.1	
29 38.1	25.1	10.1	
40.0	27.4	12.4	
41.5	29.6	14.6	
119.6	31.7	16.8	
	33.7	21.0	
		23.1	
	402.2	232.8	
28 48.27	1 02.2	11 2.8	
29 39.87	29 10.220	10.255	
		.312	
		29 10.284	
	−16.94	28 53.147	
	−.10	+ 17.14	
	−.12	+ 17.15	
	−1.32		
	−18.48		
	+51.80		

Feb. 3 (−.47, −.15)

28 43.0	28 44.9	28 55.7	
45.3	47.1	57.9	
46.6	49.2	0.2	
	51.4	4.3	
	53.4	6.4	
29 37.2	23.7	8.6	
39.3	25.4	10.8	
41.0	28.0	13.0	
	30.1	17.3	
	32.2	19.4	
		21.6	
	385.7	215.2	
28 44.97	85.7	95.2	
29 39.17	29 8.570	8.655	
		.662	
		29 8.658	
	−15.15	28 53.099	
	−.13	+ 15.56	
	−.16	+ 15.57	
	−1.27		
	−16.71		
	+51.95		

Feb. 4 (−.51, −.04)

28 41.0	28 44.5	28 55.3	
42.7	46.6	57.4	
44.9	48.8	59.6	
	51.0	3.8	
	53.1	5.9	
29 36.2	23.1	8.0	
37.9	25.3	10.2	
39.7	27.4	12.5	
	29.5	16.7	
	31.5	19.0	
		21.1	
	380.8	269.5	
28 42.87	80.8	89.5	
29 37.93	29 8.080	8.136	
		.172	
		29 8.154	
	−14.90	28 53.086	
	−.14	+ 15.07	
	−4	+ 15.08	
	−1.26		
	−16.34		
	+51.81		

Feb. 5 (−.55, −.05)

28 34.0	28 44.2	28 55.2	
	46.5	57.4	
	48.6	59.4	
	50.8	3.8	
	53.0	6.0	
29 39.8	23.0	8.0	
41.6	25.1	10.1	
43.2	27.3	12.3	
	29.5	16.6	
	31.6	18.7	
		21.0	
	379.6	268.5	
28 34.0	79.6	88.5	
29 41.53	29 7.960	8.045	
		.052	
		29 8.048	
	−14.75	28 53.072	
	−.186	+ 14.98	
	−5	+ 14.99	
	−1.24		
	−16.20		
	+51.85		

	Jan. 30			Feb. 3			Feb. 4			Feb. 5		
	+22.01	−29.59		+23.69	−30.51		+25.28	−29.78		+34.05	−33.48	
	1.34262	1.47114n		1.37457	1.48444n		1.40278	1.47392n		1.53212	1.52479n	
	1.44904	1.57756n		1.48099	1.59086n		1.50920	1.58034n		1.63854	1.63121n	
	0 1	0 2	0 2	0 1	0 2	0 2	0 1	0 2	0 2	0 1	0 2	0 2
E	32.7	38.2	A 49.3	31.6	41.1	A 53.6	27.6	39.1	A 51.9	16.6	42.9	55.8
F	40.2	46.4	B 53.3	39.1	48.7	B 49.6	35.0	46.1	B 49.0	23.8	48.8	52.9
G	50.4	57.3	C 46.4	51.2	2.1	C 50.3	47.1	59.0	C 48.6	35.2	2.9	52.2
H	40.2	46.1	D. 52.6	44.1	53.6	D 57.2	36.0	48.9	D 55.7	26.5	52.9	58.8
	163.5	188.0	201.6	166.0	205.5	210.7	145.7	193.1	205.2	102.1	207.5	197
	1 40.88	2 47.00	2 50.40	1 41.50	2 51.38	2 52.67	1 36.42	2 48.28	2 51.30	1 25.52	2 51.88	2 54.92
	+ 28.12	− 37.81		+ 30.27	− 38.98		+ 32.30	− 38.05		+ 43.50	− 42.78	
	2 9.00	2 9.19		2 11.77	2 12.40		2 8.72	2 10.23		2 9.02	2 9.10	
	20 39.35	20 39.16		20 36.58	20 35.95		20 39.63	20 38.12		20 39.33	20 39.25	
26	6 03	7 09		6 04	7 13		5 58	7 10		5 48	7 14	
	1.45030	1.45060		1.45030	1.45070		1.45030	1.45070		1.45020	1.45070	
	+2931	+2931		+1608	+1608		+2102	+2102		+1755	+1755	
	1.47961	1.47991		1.46638	1.46678		1.47132	1.47172		1.46775	1.46825	
	− 30.17	− 30.19		− 29.27	− 29.29		− 29.60	− 29.63		− 29.36	− 29.59	
	− .07	− .13		− .08	− .13		− .09	− .13		− .17	− .16	
	− .44	− .73		− .45	− .73		− .40	− .70		− .35	− .70	
	+ .10	+ .17		+ .10	+ .17		+ .10	+ .17		+ .08	+ .17	
	− 30.58	− 30.88		− 29.70	− 29.98		− 29.99	− 30.29		− 29.80	− 30.08	
	20 8.77	8.28		20 6.88	5.97		20 9.64	7.83		20 9.53	9.17	
	20 8.52	−4	22.12	20 6.42	−4	20.47	20 8.14	−4	20.95	20 9.35	−4	21.87
	15 46.4		−1.0	15 46.2		−1.0	15 46.2		−1.0	15 46.2		−1.0
	−4 22.1		−9.4	−4 20.2		−9.1	−4 22.5		−9.2	−4 23.2		−9.1
	22.5			20.6			22.9			23.6		
		−4	32.52		−4	30.57		−4	31.15		−4	31.97
		+15	3600			3585			3759		+15	3738

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	m s		' "	
Feb 9	28 5302	7	15 461	1
14	5295	7	46.0	1
19	5288	8	45.9 .4	2
24	5280	9	45.7	1
Mar 1	5271		45.6	

1877

		−.61				−.55 −.03			−.64			−.57
		Feb. 6				Feb. 11			Feb. 13			Feb. 14
h	m s	m s	m s									28
4	28 38.8	28 44.0	28 57.8	28 47.8	28 41.8	28 52.6	28 40.0	28 41.1	28 57.8	28 45.9	28 40.4	57.2
	40.6	46.1	57.0	49.7	44.0	54.7	42.0	43.2	54.0	48.0	42.4	53.4
	42.7	48.4	59.1	51.9	46.1	57.0	44.3	45.4	56.1	50.1	44.6	55.4
		50.4	3.4		48.3	1.3		47.5	0.4	14 40	46.7	57.7
		52.6	5.6		50.5	3.4		49.6	2.5		49.0	2.0
	29 39.1	22.6	7.7	29 34.7	20.4	5.5	29 41.9	19.7	4.6	29 34.0	19.0	4.0
	41.2	24.7	9.9	36.7	22.7	7.6	43.7	21.7	7.0	35.7	21.1	6.2
	42.6	26.9	12.0	38.6	24.8	9.7	45.6	24.0	9.0	38.0	23.3	8.3
		29.0	16.3		27.9	14.1		26.1	13.3	17.7	25.4	12.6
		31.1	18.3		29.1	16.3		28.1	15.4		27.6	14.7
			20.4			18.4			17.6			16.9
		3758	2645		3547	2406		3464	2317		3395	2844
	28 40.70	758	845	28 49.80	547	606	28 42.10	464	517	28 48.00	395	444
	29 40.97	29 7.580	7.682	29 36.67	29 5.470	5.509	29 43.73	29 4.640	4.700	29 35.90	29 3.950	4.036
			.672			.562			732			.042
			29 7.677			29 5.536			29 4.716			29 4.039
		−14.42	28 53.058		−12.37	28 52.988		−11.53	28 52.960		−10.93	28 52.946
		−.18	+ 14.62		−.15 6	+ 12.55		−.18	+ 11.76		−.16	+ 11.09
			+ 14.63		− 3	+ 12.56			+ 11.77			+ 11.10
		−1.23			−1.16			−1.13			−1.12	
		−15.83			−13.72			−12.84			−12.21	
		+51.85			+51.82			+51.88			+51.83	
	+26.98	−33.29		+15.74	−31.13		+22.62	−39.01		+16.04	−31.86	
	1.43104	1.52231n		1.19700	1.49318n		1.35449	1.59118n		1.20520	1.50325n	
	1.53746	1.62873n		1.30342	1.59960n		1.46091	1.69760n		1.31162	1.60967n	
	0 1	0 2	0 2	0 1	0 2	0 2	0 1	0 2		0 1	0 2	
E	26.1	43.2	56.8	40.1	40.4	48.4	33.0	51.5		40.9	41.2	
F	34.5	50.8	53.9	47.2	46.9	52.0	39.4	57.0		49.1	48.8	
G	46.7	4.1	53.7	1.4	0.9	50.4	52.9	9.8		2.1	2.9	
H	37.9	55.1	58.3	52.4	53.4	55.7	40.1	59.3		50.1	51.8	
	1452	2132	227	2011	2016	65	1654	2376		2022	2047	
	1 36.30	2 53.30	2 55.67	1 50.28	2 50.40	2 51.62	1 41.35	2 59.40		1 50.55	2 51.17	
	+ 34.47	− 42.53		+ 20.11	− 39.77		+ 28.90	− 49.84		+ 20.49	− 40.71	
	2 10.77	2 10.77		2 10.39	2 10.63		2 10.25	2 9.56		2 11.04	2 10.46	
+16	20 37.58	20 37.58		20 37.96	20 37.72		20 38.10	20 38.79		20 37.31	20 37.89	
26	5 58	7 15		6 12	7 12		6 03	7 21		6 13	7 13	
	1.45030	1.45070		1.45040	1.45070		1.45030	1.45070		1.45040	1.45070	
	+1775	+1775		+2342	+2342		+3756	+3756		+2883	+2883	
	1.46805	1.46845		1.47382	1.47412		4.48786	1.48826		1.47923	1.47953	
	−29.38	−29.41		−29.77	−29.79		−30.75	−30.78		−30.15	−30.17	
	− .11	− .16		− .04	− .14		− .08	− .22		− .04	− .15	
	− .38	− .70		− .52 43	− .67		− .39	− .51 69		− .41	− .64	
	+ .10	+ .17		+ .11	+ .17		+ .10	+ .18		+ .11	+ .17	
	−29.77	−30.10		−30.13	−30.43		−31.12	−31.51		−30.49	−30.79	
+16	20 7.81	7.48		20 7.83	7.29		20 6.98	7.28		20 6.82	7.10	
+16	20 7.64	−4	21.20	20 7.56	−4	20.86	20 7.13	−4	21.19	20 6.96	−4	21.07
	15 46.2		−1.0	15 46.1		−0.9	15 46.0		−0.9	15 46.0		−0.9
	−4 21.4		−9.02	−4 21.5		−9.0	−4 21.1		−9.0	−4 21.0		−8.9
	21.8			21.9			21.5			21.4		
		−4	31.40		−4	30.76		−4	31.09		−4	30.87
		+15	3624			3680			3604		+15	3609

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Nov 16 — 28 56.69 — 15 55.4

Dec 6 — 56.97 4 — 55.0 1
11 — 54.91 4 — 54.9 1
16 — 57.05 3 — 54.8 1
21 — 57.08 2 — 54.7 1
26 — 57.10 — 54.5 2

Feb. 19

-.50

28	35.0	28	38.4	28	48.3	28	32.2	28	38.0	28	48.6	28	34.7	28	36.1	28	46.8	28	27.1	28	38.5	29	00
	38.1		40.6		57.3		34.6		40.0		50.7		36.8		38.3		49.1		29.2		40.6		2.1
	40.0		42.6		53.5		36.5		42.2		53.0		38.9		40.4		57.2		31.0		42.5		4.2
	113.1		44.8		57.8				44.3		57.3				42.5		57.3						6.2
			47.0		0.0				46.4		59.5				42.7		57.6				47.0		8.4
29	29.7		17.0		2.0	29	37.0		16.6		1.7	29	18.0		14.7		59.8	24	20.5		49.2		10.6
	32.0		19.2		4.2		38.7		18.7		3.7		20.0		16.8		2.0		22.4		51.3		12.8
	33.6		21.4		6.2		41.0		20.8		5.9		21.8		19.0		4.1		24.7		53.4		14.9
	95.3		23.4		10.7				23.0		10.2				21.1		8.4				55.7		
			25.6		13.6				25.2		12.3				23.3		10.6						
					13.0						14.5						12.6						
																					10.580		
			8200		2630				3152		3174				2969		3577				19.248		
28	37.70		200		230	28	34.48		152		174	28	36.80		5969		6577	28	29.10				
29	31.77	29	2.000		2.091	29	38.90	29	1.520		1.582	29	19.93	28	59.690		59.791	29	22.53			28	57.345
					.092						.612						.782						.332
				29	2.092					29	1.597					28	59.786					28	51.338
			-9.09	28	52.876				-8.57	28	52.860				-6.74	28	52.828				+5.80	28	56.788
			-.14	+	.922				-.15	+	8.74				-.15	+	6.96				-.286	-	5.65
				+	9.23					+	8.75				-1.00	+	6.97					-	5.64
			-1.05						-1.03						-7.93 .94						-5.16		
			-10.28						-9.75						+51.884 .85						+0.478		
			+51.81						+51.85						5						+51.550 34		51.82
																					82		

	+24.39		-29.68				+27.14		-37.30				+22.99		-20.14				+22.24		-31.19		
	1.38721		1.47246				1.43409		1.57174				1.36154		1.30406				1.34713		1.49402		
	1.49363		1.57888				1.54051		1.67813				1.46796		1.41048				1.46199		1.59888		
	0	1	0	2			0	1	0	2			0	1	0	2			10	1	10	2	
E	30.9		39.3				27.5		50.0				32.9		28.3				6.9		14.6		
F	37.6		46.2				35.4		56.7				39.5		34.4				21.2		29.1		
G	51.4		59.8				48.2		9.4				56.4		52.1				14.1		21.4		
H	46.5		56.2				43.4		5.6				55.9		51.5				13.4		21.6		
	164		2015				1545		2417				1847		1663				556		867		
	1	41.60	2	50.37			1	38.62	3	60.43			1	46.18	2	41.58			11	13.90	12	21.68	
	+	31.16	-	37.92			+	34.71	-	47.66			+	29.37	-	25.73			+	28.31	-	39.71	
	2	12.76	2	12.45			2	13.33	2	12.76			2	15.55	2	15.85			11	42.21	11	41.94	
	20	35.59	20	35.90			20	35.02	20	35.59			20	32.80	20	32.50			11	6.14	11	6.38	
																				56			
24	6	04	7	12			6	01	7	22			6	08	7	04			5	36	7	04	
	1.45030		1.45070				1.45030		1.45070				1.45030		1.45060				1.45030		1.45060		
		+2536		+2536				+2268		+2268				+961		+961				+2098		+2098	
	1.47566		1.47606				1.47298		1.47338				1.45991		1.46021				1.47128		1.47158		
	-	29.90	-	29.93			-	29.72	-	29.74			-	28.83	-	28.85			-	29.60	-	29.62	
	-	.08	-	.13			-	.11	-	.20			-	.08	-	.06			-	.07	-	.14	
	-	.37	-	.62			-	.35	-	.66			-	.38	-	.57			-	.19	-	.37	
	+	.10	+	.17			+	.10	+	.18			+	.11	+	.16			+	.07	+	.14	
	-30.25		-30.51				-30.25		-30.42				-29.18		-29.32				-29.79		-29.99		
	20	5.34		5.39			20	4.94		5.17			20	3.62		3.18			10	36.35		36.39	
	20	5.36	-4	19.00			20	5.06	-4	18.96			20	3.40	-4	18.05			10	36.37	+5	18.65	
	15	45.9		-0.8			15	45.8		-0.8			15	45.8		-0.8			15	55.0		-0.8	
	-4	19.5		-8.9			-4	19.3		-8.87			-4	17.6		-8.8			+5	18.6		-17.9	
		19.9						19.7						18.0						18.4			
			-4	28.70					-4	28.46					-4	27.65				2	+4	59.95	
			+15	3666						3660						3575					+15	3632	

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1877

-74

Dec. 29

28	14.5	28	10.1	28	29.9
	16.5		12.7		32.1
	18.6		14.7		34.2
			16.9		36.3
			19.0		38.5
29	2.7		21.0		
			23.6		43.0
			25.5		44.9
					47.2
					49.4
					51.5
					53.5
			34.10		55.5
28	16.53				57.7
29	2.70	28	34.100		34.208
					.192
				28	34.196
			+23.12	28	57.1048
			-.21		- 2291
			28		- 2290
			-5.38		
			+17.63		
			+51.83		

	+17.67	-28.50
	1.24724	1.45484m
	1.35210	1.55970m
	10' 1	10 2
E	12."9	20.1
T	26.9	36.7
G	20.4	27.6
H	20.2	28.3
	804	1127
11	20.10	12 28.18
	+ 2250	- 36.28
11	42.60	
+ 16	11 5.75	
26	6 02	
	1.45030	
	+2075	
	1.47105	
	-2958	
	- .05	
	- .20	
	+ .08	
	-29.75	
+16	10 36.00	
		+ 5 18.31
	15 54.4	- 0.8
	+5 18.4	- 17.4
	18.0	
		+5 0.11
		+15 36.11

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2

α Aurigae

h m s 5 7 36	α₀	7ᵐ 36.300ˢ	Jan 20	4ᵐ 38.38ˢ	6	52′ 29.3″	5	log cos δ	9.84282	log cos δ	9.84278
+45° 52′ 14″	Corr α	− .02ˢ	25	38.32	6	29.8	5	15 cos δ tan i	9.96698 thro' Mar	R+2	26.757
−3 29 26	$\frac{d\alpha}{dt}$	+4.4240ˢ	30	38.26	7	30.3	4		9.96542 Dec	R−2	26.524
	δ₀	52′ 13.52″	Feb. 4	38.19	8	30.7	4			I	296
	Corr δ	+ .1″	9	38.11	9	31.1	3	tang δ	+1.03	1.44 I′	.126
	$\frac{d\delta}{dt}$	+4.124″	14	38.02	10	31.4	2	sin Z	−.06		
			19	37.92	11	31.6	1				
			24	37.81	12	31.7	1				
			Mar. 1	37.69		31.8	1				

1877

Jan 20 (−.38, −.12)

h m s	m s	m s
5 7 31.7	7 26.6	7 41.6
34.7	29.5	44.4
39.0	32.4	47.5
15.4	35.4	53.4
	38.5	56.4
	19.8	59.4
	23.0	2.4
	25.8	5.3
	28.8	11.2
	31.6	14.0
		17.1
	29.14	35.27
7 35.13	59.14	65.27
	7 59.140	59.336
		.266
		7 59.301
	−20.39	7 38.377
	−.39	+20.92
	−.17	+20.94
	−2.08	
	−22.03	
	+7 36.27	

Jan 23 (−.41, −.12)

7 27.1	7 25.9	7 40.5
29.6	28.7	43.7
32.7	31.7	46.7
89.4	34.7	52.7
	37.4	55.6
	19.1	58.7
	22.2	1.7
	25.1	4.5
	28.7	10.2
	31.1	13.4
		16.3
	28.41	34.40
7 29.80	58.41	64.40
	7 58.410	58.545
		536
		7 58.540
	−19.63	7 38.341
	−.42	+20.20
	−17	+20.22
	−2.04	
	−22.24 .26	
	+36.30 .28	
	28	

Jan. 30 (−.36, −.12)

7 16.8	7 22.9	7 37.8
19.5	25.9	40.8
21.8	28.9	43.7
58.1	31.9	49.8
	34.8	52.6
	16.3	55.6
	19.3	58.6
	22.2	1.7
	25.2	7.6
	28.1	10.5
		13.4
	25.55	37.21
7 19.37	55.55	61.21
	7 55.550	55.645
		.676
		7 55.660
	−16.91	7 38.256
−.37	−.37	+17.40
	−17	+17.42
	−1.96	
	−19.41	
	+36.25	

Feb. 3 (−.47, −.15)

7 18.8	7 21.1	7 36.1
21.3	24.1	39.1
23.2	27.1	42.1
63.3	30.1	48.0
	33.1	51.0
	14.5	54.0
	17.4	57.0
	20.3	57.9
	23.3	5.9
	26.4	8.9
		11.8
	23.74	41.38
7 21.10	53.74	59.38
	7 53.740	53.982
		.866
		7 53.924
	−15.14	7 38.200
	−.48	+15.72
	−27	+15.74
	−1.90	
	−17.74	
	+36.18	

Reductions

	Jan 20	Jan 23	Jan 30	Feb 3
	+24.17	+28.74	+36.29	+32.82
	1.38328	1.45849	1.55979	1.51614
	1.35026	1.42547	1.52677	1.48312
	25′ 0	25 0	25 0	25 0
E	31.0″	27.4	19.1	21.9
F	32.2	26.5	24.2	26.0
G	46.1	40.1	32.7	37.2
H	40.6	31.6	26.1	33.8
	149.9	125.6	102.1	118.9
	25 37.47	25 31.40	25 25.52	25 29.72
	+22.40	+26.64	+33.63	+30.42
	25 59.87	25 58.04	25 59.15	26 0.14
+45	56 48.48	56 50.31	56 49.20	56 48.21
−3	30 01	30 07	30 12	30 08
	0.54680	0.54700	0.54720	0.54700
	+922	+3601	+2967	+1719
	0.55602	0.58301	0.57687	0.56419
	+3.60	+3.83	+3.77	+3.67
	−.16	−.22	−.36	−.30
	−.17	−.14	−.10	−.13
	+.04	+.03	+.02	+.03
	+3.31	+3.50	+3.33	+3.27
+45	56 51.79	56 53.81	56 52.53	56 51.48
	−4 22.66	−4 22.61	−4 22.12	−4 20.47
	+0.2	+0.2	+0.1	+0.1
	−15.8	−16.1	−16.8	−17.1
	52 29.3	52 29.6	52 30.3	52 30.6
	−4 22.5	−4 24.2	−4 22.2	−4 20.9
	22.4	24.1	22.1	20.8
	−4 38.26	−4 38.51	−4 38.82	−4 37.47
	+52 13.53	15.30	13.71	+52 14.01

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Feb. 4
−.51
−.04

7 [16.8, 20.0, 22.3] 59.1

7 21.0, 23.9, 26.9, 29.7, 32.8, 14.2, [17.3] 16.3, —, 20.12 —, 26 —

7 35.8, 38.8, 41.8, 47.5, 50.6, 53.6, 56.6, 58.6, 5.4, 8.2, 11.4

7 19.70 — 26860, 20.190 — 4093, 5893

7 53.573
642
7 53.608
7 38.186
+ 15.42
+ 15.44

−14.90
−.52
− 6
−1.89
−17.37
+36.24

+33.91
1.53033
1.49731
25′ 0′

E 20.3″
F 25.4
G 35.9
H 28.6
110 2
25 27.55
+ 31.43
25 58.98

56 49.37

−3 30 10
0.54720
+2208
0.56928
+ 3.71
− .32
− .13
+ .03
+3.29
56 52.66

52 30.7
−4 22.0
21.9

−4 20.95
+ .1
−17.2

−4 38.05

+52 1461

Feb. 14
−.57

7 8.9, 11.2, 13.8, 33.9

7 16.7, 19.7, 22.6, 25.6, 28.5, 10.0, 13.0, 16.0, 19.0, 21.9

7 31.6, 34.5, 37.6, 43.5, 46.4, 49.4, 52.4, 55.4, 1.4, 4.2, 7.1

7 11.30 — 1930, 4930 — 3635, 5435

7 49300
7 49.409
426
7 49.418
7 38.015
+ 11.40
+ 11.42

−10.92
−.58
−1.72
−13.22
+36.20

+38.12
1.58115
1.54813
25 0

15.6
21.2
32.1
24.0
92.9
25 23.22
+ 35.33
25 58.55

56 49.80

30 15
0.54720
+2937
0.57657
+ 3.77
− .39
− .09
+ .02
+3.31
56 53.11

52 31.4
−4 21.7
21.6

−4 21.07
+ 0.1
−17.8

−4 38.77

1434

Feb. 15 X
−.51

7 0.2, 2.5, 5.0, 7.7

7 16.0, 18.9, 21.8, 24.8, 27.8, 9.3, 12.2, 15.1, 18.1, 21.0

7 30.8, 33.8, 36.8, 42.7, 45.7, 48.6, 51.6, 54.6, 0.4, 3.4, 6.3

7 2.57 — 1850, 4850 — 3547, 5347

7 48.500
7 48.609
626
7 48.618
7 37.995
+ 10.62
+ 10.64

−10.13
−.52
−1.70
−12.35
+36.27

+46.05
1.66323
1.63021
25 0

7.9
13.1
25.8
21.9
68.7
25 17.17
+ 42.68
25 59.85

56 48.50

30 21
0.54740
+2022
0.56762
+ 3.69
− .58
− .07
+ .02
+3.06
56 51.56

52 31.4
−4 20.2
20.1

−4 20.48
+ 0.1
−17.9

−4 38.28

~~1338~~ 1328 2

Feb. 20
−.52

7 7.7, 10.5, 13.3, 31.5

7 14.1, 17.1, 20.1, 23.1, 26.1, 7.6, 10.5, 13.5, 16.5, 19.4

7 29.1, 32.1, 35.1, 41.0, 43.9, 46.8, 49.9, 52.9, 58.8, 1.7, 4.7

7 10.50 — 1680, 4680 — 3960, 5160

7 46800
7 46.909
926
7 46.918
7 37.892
+ 9.03
+ 9.05

−8.55
−.53
−1.59
−10.67
+36.~~35~~.25
2

+36.42
1.56134
1.52832
25 0

18.9
22.3
33.9
35.2
110.3
25 27.57
+ 33.75
26 1.32

56 47.03

30 10
0.54720
+2316
0.57036
+ 3.72
− .36
− .11
+ .03
+3.28
56 ~~51.75~~ 50.31

52 31.6
−4 18.7
18.6

−4 18.96
+ .01
−18.1

−4 36.96

+52 1335

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1877

Feb. 21 | Feb. 22 | Mar. 1 | Dec. 29

	Feb. 21			Feb. 22				Mar. 1				Dec. 29			
	h m s	m s	m s	m s	m s	h m s		h m s	m s	h m s		h m s	m s	h m s	
	5 7 25.6	7 13.1	7 28.2	7 8.2	7 12.6	7 27.4	6 58.2	7 8.8	7 23.7	6 43.4		6 48.2	7 14.7		
	28.6	16.2	31.1	11.0	15.7	30.3	0.2	11.9	26.7	46.0		51.2	18.0		
	30.5	19.1	34.0	13.7	18.4	33.1	3.5	14.7	29.5	48.5		54.0	21.0		
	84.7	22.2	40.0	32.9	21.2	39.2	19.9	17.7	35.6			57.0	23.9		
		25.2	43.0		24.2	42.1		20.7	38.5			59.9	26.8		
		6.5	46.0		5.8	45.0		21	41.5			3.0			
		9.6	48.9		8.6	48.0		5.0	44.4			6.0	32.6		
		12.4	51.9		11.5	51.1		8.0	47.5			8.8	35.5		
		15.4	54.8		14.7	54.1		11.0	53.4				38.6		
		18.4	57.7		17.6	57.0		14.0	56.3				41.8		
			0.7			0.0			59.3				44.5		
			3.6			2.9							47.4		
		1581	3852		1500	3762		1139	4564			5076	50.3		
	7 28.23	4581	5052	7 10.97	4500	4962	7 0.63	4139		6 45.97			53.3		
		7 45.810	45.927		7 45.000	45.109		7 41.390	41.491			7 20.760	20809		
			936			126			516				886		
			7 45.932			7 45.118			7 41.504				7 20.848		
		-7.69	7 37.870	-6.76		7 37.848		-3.26	7 37.684			+23.11	7 43.378		
		-.51	+ 8.06	-.53		+ 729		-.60	+ 3.82			-.76	- 22.48		
		+ 8.08		- .7		+ 7.29		+ 3.84					- 22.46		
		-1.57		-1.55				-1.38				-7.03			
		- 9.77		- 8.91				- 5.24				+15.32			
		+36.116		+36.71 .21				+36.26				+86.17			
				2											
	+17.70		+34	+34.15				+40.87		+34.88					
	1.24797			1.53339				1.61140		1.54258					
	1.21495			1.50037				1.57838		1.50800					
	1														
	25 0			25 0				25 0		35 0					
	35.8			18.5				8.4		2.7					
	42.1			22.9				19.0		16.1					
	53.4			37.9				31.1		5.1					
	50.4			42.5				35.2		8.8					
	18.7			1218				967		327					
	25 43.42			25 30.45				25 24.18		35 8.18					
	+ 16.40			+ 31.65				+ 37.88		+ 32.21					
	26 1.82			26 2.10				26 2.06		35 40.39					
+45	56 46.53			56 46.25				56 46.29		47 7.96					
-3	29 .53			30 08				30 14		30 10					
	0.54660			0.54700				0.54720		0.54720					
	+1391			+1091				+1716		+2126					
	0.56051			0.55791				0.56436		0.56846					
	+3.63			+3.61				+3.67		+3.70					
	- .09			- .32				- .46		- .33					
	- .17			- .10				- .08		- .02					
	+ .05			+ .03				+ .02		+ .01					
	+3.42			+3.22				+3.15		+3.36					
+45	56 49.95			56 49.47				56 49.44		47 11.32					
		-4 17.67			-4 18.05			-4 16.72				+5 18.31			
	52 31.6	+ 0.1		52 31.7	+ 0.1			52 31.8	+ 0.1	52 29.8		+ 0.1			
	-4 18.4	- 18.1		-4 17.8	- 18.2			-4 17.6	- 18.3	+5 18.5		- 16.2			
	18.3			17.7				17.5		18.6					
		-4 35.67			-4 36.15			-4 34.92				+5 2.21			
		+52 1428			1332			1452				+52 1353			

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14.7
18.0
21.0
23.9
26.8

32.6
35.5
38.6
41.8
44.5
47.4
50.3
53.3
20809
886
20.848
49.378
2248
2246

3

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1 Orionis

α 8 38

−8° 20′ 43″

1850 43 31

1877

Jan 20 | Jan 23 | Jan 30 | Feb 3

Corr α | Corr δ | dα/dt | dδ/dt | δ₀

log cos δ | log cos δ | 15 constant | Δ cos δ | sin z

Jan 20 | Jan 23 | Jan 30 | Feb 3

Jan 20 | Jan 23 | Jan 30 | Feb 3

Jan 20 | Jan 23 | Jan 30 | Feb 3

Jan 20 | Jan 23 | Jan 30 | Feb 3

Jan 20 | Jan 23 | Jan 30 | Feb 3

Jan 20 | Jan 23 | Jan 30 | Feb 3

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Feb. 4 (-.51, -.041) | Feb. 14 (-.57) | Feb. 15 (-.57) | Feb. 20 (-.52)

8 56.1 57.5 58.8 22.4 | — — — — — | 8 [41.3] 43.4 45.6 49.7 51.8 53.9 56.0 58.0 2.3 4.4 6.3 | 8 51.5 53.3 55.0 98 | — — — — — | 8 37.1 39.4 41.5 45.7 47.7 50.0 51.9 53.9 58.1 0.2 2.2 | 8 49.3 51.0 52.7 | 8 — — — — — | 8 [36.4] 38.5 40.6 44.8 47.0 49.0 51.1 53.1 57.3 59.5 1.6 | 8 46.7 48.7 50.1 | 8 — — — — — | 8 — — 47.26 43.1 .28 45.2 .20 47.2 .22 49.3 .34 51.5 .28 55.6 .30 57.7 .32 59.8

9 29.2 30.7 32.1 92.0 | 9 8.3 10.4 12.5 14.7 16.8 | 9 4.3 6.4 8.4 10.5 12.5 | 9 28.0 29.6 31.3 | 9 3.5 5.5 7.6 9.8 11.8 | 9 26.7 | 1.8 3.8 6.0 8.0 10.1

12540 4127 5927 | 8420 4277 5477 | 7640 5389 | 5940

8 57.47 | 8 53.27 | 8 51.00 | 8 48.50
9 30.67 | 53.875 | 8 53.882 | 49.755 | 49.791 | 9 29.63 | 48.975 | 8 48.991 | 9 26.70 | 47.275 | 8 47.275

8 53.878 | 8 49.773 | 8 48.983 | 8 47.275
-14.90 | 8 39.037 | -10.92 | 8 38.906 | -10.13 | 8 38.892 | -8.55 | 8 38.820
+.07 | + 14.84 | +.08 | + 10.87 | +.07 | + 10.09 | +.07 | + 8.46
— 4 | + 14.86 | + 10.89 | + 10.11 | + 8.48
-1.40 | -1.27 | -1.25 | -1.18
-16.27 | -12.11 | -11.31 | -9.66
+37.61 | +37.66 | +37.67 | +37.62

-3.59 | -36.79 | -3.50 | -2.02 | -40.65 | -1.72 | -39.42
0.55509n | 1.56573n | 0.54407n | 0.30535n | 1.60906n | 0.08636n | 1.59572n
0.67462n | 1.68526n | 0.66366n | 0.42488n | 1.72859n | 0.20589n | 1.71525n

35 2	35 3	35 3	35 2	35 2	35 3	35 2	35 3
46.3	30.7	44.6	46.7	46.0	37.8	46.6	36.8
54.2	38.5	42.6	55.2	53.8	44.9	53.4	43.3
8.1	53.4	41.3	9.1	9.8	0.7	9.6	58.9
57.1	41.7	48.7	54.7	2.8	53.9	2.9	52.8
2257	1643	1772	2257	2324	1973	2325	191.8
37 56.42	38 41.08	38 44.30	37 56.42	37 58.10	38 49.32	37 58.12	38 47.95
— 4.73	— 48.45		— 4.61	— 2.66	— 53.53	— 1.61	— 51.91
37 51.69	37 52.63		37 51.81	37 55.44	37 55.79	37 56.51	37 56.04

15 3.34 | 15 4.28 | 15 3.46 | 15 7.09 | 15 7.44 | 15 8.16 | 15 7.69

42 18	43 03	42 18	42 20	43 11	42 20	43 10
1.84670	1.84680	1.84670	1.84670	1.84690	1.84670	1.84690
+2206	+2206	+2937	+2022	+2022	+2315	+2315
1.86876	1.86886	1.87607	1.86692	1.86712	1.86985	1.87005
— 73.92	— 73.94	— 75.17	— 73.61	— 73.64	— 74.11	— 74.14
+ .00	+ .13	+ .00	+ .00	+ .13	+ .00	+ .12
— .72	— .92	— .67	— .69	— .87	— .66	— .84
+ .17	+ .22	+ .17	+ .18	+ .23	+ .18	+ .23
-1 14.47	-1 14.53	-1 15.67	-1 14.12	-1 14.15	-1 14.59	-1 14.63
16 17.81	18.81	16 19.13	16 21.21	21.59	16 22.75	22.32
16 18.31	-4 20.95	-4 21.07	16 21.45	-4 20.48	16 22.54	-4 18.96
20 42.8	-1.7	-1.6	20 43.7	-1.6	20 43.9	-1.5
-4 24.5	-1.2	-0.5	-4 22.3	-0.3	-4 21.4	-0.2
23.9		20 43.6 / -4 24.5 / 23.9	21.7		20.8	

-4 23.85 | -4 23.17 | -4 22.38 | -4 20.66

+20 42.16 | 42.30 | 43.78 | -20 43.20

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40

Nov 16 m 8 41.90 20 26.5

Dec 6 42.21 5 30.1 9
11 42.26 5 31.0 9
16 42.31 4 31.9 9
21 42.35 3 32.8 9
26 42.38 33.7

1877

-.50 -.52 -.05 -.59 -.74

Feb. 21 Feb. 22 Mar. 1 Dec. 29

h m s m s m s

5 8 40.0 8 — 8 33.8 8 40.5 8 — 8 33.0 8 37.1 8 — 8 29.3 8 12.8 19.26 8 15.1
42.6 — 36.0 42.7 — 35.1 39.1 — 31.4 14.2 .08 17.0
44.0 — 38.1 45.0 — 37.2 41.0 — 33.5 15.8 .00 17.0
— — 42.3 — — 41.3 — — 27.7 .22 21.3
— — 44.3 — — 43.4 — — 39.7 .44 23.6
9 13.1 9 1.0 46.4 9 15.2 — 45.6 9 18.4 37.3 41.9 .28 27.6
17.0 3.0 48.6 16.5 — 47.6 19.8 38.4 44.0 .20 29.6
18.8 5.1 50.6 19.0 — 49.7 21.8 0.5 46.0 .12 31.6
7.2 54.7 — 53.8 2.6 50.1 33.5
9.3 56.8 — 53.7 4.7 52.2 35.7
59.0 — 58.0 54.3 37.6
37.720 38.8
5.120 5106 .73 5006 0.500 4601 - 18.665 42.0
8 42.20 8 42.35
9 16.97 8 46.455 46.418 9 16.90 45.509 9 20.80 41.835 41.827 8 19.055 8 19.250
19.055
8 46.436 8 45.509 8 41.831 8 19.128
-7.69 8 38.804 -6.76 8 38.788 -3.26 8 38.665 +23.18 8 42.393
+.07 + 7.63 +.07 + 6.72 +.08 + 3.16 +.11 - 2326
+ 7.65 - .15 + 6.74 + 3.18 - 2324
-1.16 -1.15 -1.02 -4.75
- 8.78 - 7.89 - 4.20 + 18.47
+37.66 +37.62 +37.63 +37.60

+4.24 -30.53 +2.78 +31.39 +2.76 -38.17 +4.83
0.62 1.48473m 0.44404 1.49679m 0.44091 1.58172m 0.68395
0.74690 1.60426m 0.56357 1.61632m 0.55888 1.69697m 0.70192
0.56044 1.70125m 0.80192

35 2 35 3 35 2 35 3 35 3 45 2

E 41.1 27.7 41.0 25.0 38.3 31.9 48.6 7.7
H 48.9 34.8 48.1 32.8 51.9 45.4 48.8 24.8
G 3.4 49.9 6.8 51.4 6.5 0.5 47.6 18.0
K 59.2 45.5 7.9 52.6 10.9 4.8 40.6 16.5
21.6 15.9 22.8 16.8 22.6 20.6 18.6 6.0
37 53.15 38 30.48 37 55.95 38 40.45 37 50.20 38 50.65 38 46.40 47 16.75
+ 5.58 - 40.20 + 3.66 - 41.34 + 3.63 - 50.26 + 6.34
37 58.73 37 59.28 37 59.61 37 59.11 38 0.53 38 0.39 47 23.09

-8 15 10.38 10.93 15 11.26 10.76 15 12.18 12.01 24 34.74

60 42 15 43 01 42 18 43 02 42 19 43 13 41 59
1.84660 1.84680 1.84670 1.84680 1.84670 1.84690 1.84660
+1389 +1389 +1089 +1089 +1717 +1717 +2127
1.86049 1.86069 1.85759 1.85769 1.86387 1.86407 1.86787
-72.53 -72.56 -72.04 -72.06 -73.09 -73.12 -73.74
+ .00 + .07 + .00 + .07 + .00 + .11 + .00
- .61 - .78 - .61 - .78 - .58 - .76 - .34
+ .17 + .22 + .17 + .22 + .11 + .23 + .14
-1 12.97 -1 13.05 -1 12.48 -1 12.58 -1 13.50 -1 13.54 -1 13.97
-8 16 23.35 23.98 16 23.74 23.31 16 25.68 25.58 25 48.71
-8 16 23.66 - 4 17.67 16 23.52 - 4 18.05 16 25.63 - 4 16.72 + 5 18.31
20 44.0 1.5 20 44.0 - 1.5 20 44.3 - 1.4 20 34.3 - 1.7
-4 20.3 - 0.0 -4 20.5 - 0.1 -4 18.7 + 0.3 +5 14.4 - 9.8
19.7 19.9 18.1 15.0

- 4 19.67 - 4 19.65 - 4 17.82 + 5 0.81
-20 4283 4317 4345 -20 4190

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15.1
17.0
19.0
21.3
23.6

27.6
29.6
31.6
33.5
36.7
37.6
39.8
42.0

19.200
19.055
19.128
42.393
2326
2324

8.31
.7
.8

0.81

190

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4

β Tauri

h 5	m 18	s 31	α_0	m 18 s 31.038
+28°	30′	6″	Corr α	+ .00
			$\frac{d\alpha}{dt}$	+3.7892
+13	52	42	δ_0	30′ 4.″9
			Corr δ	+ 1.″1
			$\frac{d\delta}{dt}$	+3.″416

log cos δ	9.94390	log cos δ	9.94389
15 cos δ tan i	0.06806	R+2	21.214
		R−2	21.015
		I	235
tang δ	+0.54	1.14	I′ .180
sin Z	+.24		

1877

Jan 20 (−.38, −.12)

h m s	m s		
5 18 28.0	18 27.6	18 39.6
30.3	30.0	41.8
32.8	32.5	44.2
	34.6	49.0
	37.0	51.3
19 12.7	9.7	53.6
15.0	12.2	55.8
17.1	14.6	58.1
	16.8	3.0
	19.1	5.2
		7.5

18 30.37 | 2341 | 4091
19 14.93 | 5341 | 5891
18 53.410 | 53.555
.510
18 53532
−20.39 | 18 32838
−.20 | + 20.69
− 14 | + 20.69
−1.80
−22.53
+18 31.00

Jan. 30 (−.36, −.12)

18 17.2	18 24.0	18 36.0
19.2	26.3	38.3
21.3	28.8	40.6
	31.1	45.5
	33.6	47.7
19 21.2	6.4	50.0
23.2	8.8	52.3
25.6	11.3	54.4
	13.5	59.4
	15.8	1.8
		4.1

18 19.23 | 1996 | 4304
19 23.33 | 4996 | 5504
18 49.960 | 50.036
.060
18 50048
−16.90 | 18 32768
−.19 | + 17.28
− 14 | + 17.28
−1.73
−18.96
+31.09

Feb. 1 (−.48, −.12)

18 19.7	18 [23.0]	18 34.9
22.0	25.4	37.3
24.3	27.9	39.6
	30.1	44.3
	32.4	46.6
19 21.4	5.4	49.0
23.0	7.7	51.3
25.0	10.0	53.7
	12.3	58.2
	14.6	0.8
		3.1

18 22.00 | 1888 | 4188
19 23.13 | 4888 | 5388
48.880 | 48.982
.980
18 48981
−15.86 | 18 32748
−.25 | + 16.23
− 14 | + 16.23
−1.71
−17.96
+31.02

Feb. 3 (−.47, −.15)

18 17.1	18 22.3	18 34.1
19.1	25.0	36.5
20.8	27.2	38.9
	29.4	43.6
	31.8	46.0
	45	48.3
	70	50.6
	92	52.9
	11.5	57.6
	13.9	0.2
		3.3

18 19.00 | 1818 | 4120
4818 | 5320
18 48.180 | 48.364
280
18 48322
−15.14 | 18 32728
−.25 | + 15.59
− 17 | + 15.59
−1.69
−17.25
+31.07

Declination

	Jan 20	Jan 20		Jan 30	Jan 30	Jan 30	Feb 1	Feb 1	Feb 3	Feb 3	Feb 3
	+23.16	−21.40	+30.82 (struck)	+30.82	−33.28		+26.98	−34.15	+29.32		
	1.36474	1.33041n		1.48883	1.52218n		1.43104	1.53339n	1.46716		
	1.43280	1.39847n		1.55689	1.59024n		1.49910	1.60145n	1.53522		
	45′ 2′	45 3		45 2	45 3	45 3	45 2	45 3	45 2	45 3	45 3
E	17.″6	10.7		10.9	25.1	34.3	15.9	26.4	12.4	4.5	15.7
F	21.6	14.8		17.9	33.5	38.3	22.8	33.4	18.8	10.9	11.8
G	33.1	[257] 35.7		24.3	38.5	33.8	30.8	39.4	27.9	19.0	12.8
H	28.9	21.9		18.9	33.8	40.0	24.6	35.4	25.1	17.8	18.6
	1012	131		720	1309	1964	941	1340	842	522	589
	47 25.30	48 30.78 / 18.28		47 18.00	48 32.72	48 36.60	47 23.52	48 33.65	47 21.05	48 13.05	48 14.72
	+ 27.09	− 25.03		+ 36.05	− 38.93		+ 31.56	− 39.94	+ 34.29		
	47 52.39	47 53.25		47 54.05	47 53.79		47 55.08	47 53.71	47 55.34		
+28	34 55.96	34 55.10		34 54.30	34 54.56		34 53.27	34 54.64	34 53.01		
13	51 47	52 40		51 40	52 55		51 46	52 56	51 43		
	1.15260	1.15310		1.15255	1.15320		1.15260	1.15320	1.15255		
	+957	+957		+2975	+2975		+858	+858	+1744		
	1.16217	1.16267		1.18230	1.18295		1.16118	~~1.15878~~ 1.16178	1.16999		
	−14.53	−14.54		−15.22	−15.24		−14.49	−14.51	−14.79		
	− .12	− .10		− .22	− .25		− .16	− .26	− .19		
	− .67	− .92		− .60	− .91		− .62	− .94	− .58		
	+ .14	+ .20		+ .14	+ .21		+ .14	+ .22	+ .14		
	−15.18	−15.36		−15.90	−16.19		−15.13	−15.49	−15.42		
+28	34 40.78	39.74		34 38.40	38.37		34 38.14	39.15	34 37.59		
+28	34 40.26	−4 22.66		34 38.38	−4 22.12		34 38.64	−4 22.43		−4 20.47	
	30 15.5	−0.6		30 15.9	−0.6		30 15.9	−0.6	30 16.0	−0.5	
	−4 24.8	−11.3		−4 22.5	−11.7		−4 22.7	−11.7	−4 21.6	−11.8	
	23.7			21.4			21.6		20.5		
		−4 34.56			−4 34.42			−4 34.73		−4 32.77	
		+30 5.70			3.96			3.91		+30 4.82	

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	m s		' "	"	
Jan 20	18 32.84	3	30	15.5	2
25	32.81	4		15.7	2
30	32.77	5		15.9	1
Feb 4	32.72	6		16.0	1
9	32.66	7		16.1	1
14	32.59	7		16.2	0
19	32.52	9		16.2	1
24	32.43	9		16.3	1
Mar 1	32.34	9		16.3	0

	Feb 4 (−.51, −.04)			Feb 6 (−.61)			Feb 8 (−.59)			Feb 11 (−.55, −.03)	
18 12.6	18 22.0	18 33.9	18 19.0	18 21.4	18 33.4	18 19.8	18 20.9	18 32.6	18 16.0	18 19.3	18 31.1
15.0	24.3	36.2	21.0	23.9	35.6	22.2	23.2	35.0	18.2	21.8	33.6
17.0	26.7	38.5	23.3	26.1	38.0	24.4	25.6	37.4	20.5	24.0	35.8
	29.0	43.2		28.4	42.6		27.9	42.0		26.3	40.6
	31.4	45.6		31.0	45.0		30.2	44.3		28.7	43.0
19 20.2	4.2	47.8		3.7	47.3	~~19 (12.7)~~	3.1	46.7		1.6	45.3
21.8	6.6	50.2		5.9	49.7		5.4	49.1		3.8	47.6
24.1	9.0	52.5		8.4	52.0		7.7	51.6		6.2	49.9
	11.2	57.3		11.0	56.7		10.2	56.1		8.6	54.6
	13.6	59.6		13.2	59.1		12.5	58.4		11.0	57.0
		2.0			1.6			0.8			59.3
	1780	4668	18 21.10	1730	4610		1667	4540		1513	4978
18 14.87	4780	5268		4730	5210	18 22.13	4667	5140	18 18.23	4513	
19 22.03	18 47.800	47.891		18 47.300	47.364	~~19 12.70~~	18 46.670	46.727		18 45.130	45.255
		47.900			400			770			230
		18 47.896			18 47.382			18 46.748			18 45.242
	−14.90	18 32.717		−14.42	18 32.693		−13.85	18 32.669		−12.32	18 32.628
	−.27	+ 15.18		−.32	+ 14.69		−.31	+ 14.08		−.29	+ 12.61
	− 5	+ 15.18			+ 14.69			+ 14.08		− 3	+ 12.61
	−1.68			−1.65			−1.63			−1.59	
	−16.90			−16.39			−15.79			−14.23	
	+31.00			+ ~~31.09~~ 0	30.99		+30.96			+31.01	

+33.03	−34.13		+26.28			+24.62	~~25.95~~		+27.01		
1.51891	1.53314n		1.41963			1.39129	1.41414n		1.43152		
1.58697	1.60120n		1.48769			1.45935	1.48220n		1.49958		
45 2	45 3	45 3	45 2			45 2	45 3	45 3	45 2		
7.9	25.6	37.3	15.3			18.6	14.2	23.9	14.6		
14.2	32.2	34.3	21.9			25.5	21.0	21.8	19.6		
22.9	40.0	35.3	31.4			33.4	28.9	22.3	30.5		
17.1	36.2	43.2	26.8			26.2	22.4	28.6	25.6		
621	1340	1501	954			1037	865	966	903		
47 15.52	48 33.50	48 37.52	47 23.85			47 25.92	48 21.62	48 24.15	47 22.58		
+ 38.63	− 39.92		+ 30.74			+ 28.80	− 30.35		+ 31.59		
47 54.15	47 53.58		47 54.59			47 54.72	47 51.27		47 54.17		
34 54.20	34 54.77		34 53.76			34 53.63	34 57.08		34 54.18		
13 51 38	52 56		51 46			51 48	52 44		51 45		
1.15250	1.15320		1.15260			1.15260	1.15310		1.15260		
+2231	+2231		+1898			+2441	+2441		+2386		
1.17481	1.17551		1.17158			1.17701	1.17751		1.17646		
− 14.96	− 14.98		− 14.84			− 15.03	− 15.05		− 15.01		
− .25	− .28		− .15			− .14	− .15		− .16		
− .58	− .90		− .58			− .58	− .79		− .58		
+ .14	+ .22		+ .14			+ .14	+ .20		+ .14		
− 15.65	− 15.94		− 15.43			− 15.61	− 15.79		− 15.61		
34 38.55	38.83		34 38.33			34 38.02	~~41.29~~		34 38.57		
34 38.69	− 4	20.95		− 4	20.15 ~~21.20~~		− 4	20.45		− 4	20.86
30 16.0		− 0.5	30 16.0		− 0.5	30 16.1		− 0.5	30 16.1		− 0.5
− 4 22.7		− 11.8	− 4 22.3		− 11.8	− 4 21.9		− 11.9	− 4 22.5		− 11.9
21.6			21.2			20.8			21.4		
	− 4	33.25		− 4	32.45		− 4	32.85		− 4	33.26
	+30	544			588			517		+30	531

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1877

	Feb. 14			Feb. 15			Feb. 20			Feb. 21		
h	m	s	m	s	m	s	m	s	m	s	m	s
1	18 13.7		18 18.0		18 29.7		18 10.6		18 17.0		18 29.0	
	15.5		20.2		32.1		12.6		19.4		31.2	
	18.2		22.6		34.4		14.8		21.8		33.6	
			25.0		37.2				24.0		38.3	
			27.3		41.4				26.5		40.6	
	17 14.2		0.1		43.7		18 13.2		59.3		43.0	
	15.9		2.5		46.0		15.3		16		45.4	
	18.0		4.8		48.4		17.0		4.0		47.6	
			7.1		53.2				6.3		52.3	
			9.5		53.3				8.6		54.7	
					57.8						57.0	
			13.71		48.14				18.85		47.27	
	18 15.80		43.71				18 12.67		42.85			
	19 16.03		18 43.710		43.764		19 15.17		18 42.850		42.973	
					.810						950	
				18	43.787					18	42.962	
			-10.91	18	32.586				-10.14	18	32.577	
			-.30	+	1120				-.27	+	1039	
				+	1120					+	1039	
			-1.55						-1.53			
			-12.76						-11.94			
			+31.03						+31.02			
			+27.99		-32.24				+30.29		-32.21	
			1.44700		1.50840m				1.48130		1.50799m	
			1.51506		1.57646m				1.54936		1.57605m	
			45 2		45 3				45 2		45 3	
E			13.0		24.0				10.0		24.0	
F			20.4		30.4				17.8		29.7	
G			28.7		39.7				27.2		39.8	
H			19.4		30.5				23.9		38.8	
			81.5		124.6				78.9		132.3	
	47 20.38		48 31.15				47 19.72		48 33.08			
			+ 32.74		- 37.71				+ 35.43		- 37.67	
			47 53.12		47 53.44				47 55.15		47 55.41	
+28			34 55.23		34 54.91				34 53.20		34 52.94	
13			51 42		52 53				51 42		52 55	
			1.15255		1.15320				1.15255		1.15320	
			+2949		+2949				+2032		+2032	
			1.18204		1.18269				1.17287		1.17352	
			- 15.21		- 15.23				- 1489		- 14.91	
			- .18		- .23				- .20		- .23	
			- .53		- .81				- .53		- .81	
			+ .14		+ .21				+ .14		+ .22	
			-15.78		-16.06				- 15.48		- 15.43	
+28			34 39.45		3885				34 37.72		3721	
+28			34 39.15		- 4	21.07			34 37.46		- 4	20.48
			30 16.2			- 0.5			30 16.2			- 0.5
			- 4 23.0			- 12.0			- 4 21.3			- 12.0
			21.9						20.2			
					- 4	33.57					- 4	32.98
					+30	558						4.48

	Feb. 20			Feb. 21		
h	m	s	m	s	m	s
1	18 52.8		18 —		18 102	
	54.8		—		13.0	
	57.1		—		15.0	
			—			
			—			
	19 26.0		17 57.7		19 15.0	
	28.0		0.0		17.0	
	30.1		2.3	41.30 460	19.0	
			4.6	30 50.4		
			7.0	25 53.0		
				30 55.4		
			2320			
	18 54.90				18 12.73	
	19 28.03		41.305	41.288	19 17.80	
				18 41.296		
			-8.54	18 32.488		
			-.28	+ 880		
				+ 880		
			-1.46			
			-10.28			
			+31.02			
			-13.60	-46.73	+27.68	-36.59
			1.13354m	1.16960m	1.44217	1.56336m
			1.20160m	1.73766m	1.51023	1.63142m
			45 3	45 3	45 2	45 3
E			3.5	42.3	15.2	30.8
F			8.9	47.2	23.1	37.9
G			16.9	56.6	32.4	46.8
H			17.1	56.8	30.9	48.5
			46.4	202.9	101.6	164.0
			48 11.60	48 50.72	47 25.40	48 41.00
			- 1591	- 5466	+ 32.38	- 42.80
			47 55.69	47 56.06	47 57.78	47 58.20
			34 52.76	34 52.29	34 50.57	34 50.15
			52 34	53 18	51 47	53 03
			1.15310	1.15340	1.15260	1.15330
			+2327	+2327	+1422	+1422
			1.17637	1.17667	1.16682	1.16752
			- 15.01	- 15.02	- 1468	- 14.71
			- .04	- .49	- .18	- .30
			- .70	- .84	- .50	- .78
			+ .19	+ .23	+ .14	+ .22
			- 15.56	- 16.12	- 1522	- 15.57
			34 37.20	36.17	34 35.35	34.58
			34 36.68	- 4	18.96	34 34.96	- 4	17.67
			30 16.2		- 0.4	30 16.2		- 0.4
			- 4 20.5		- 12.0	- 4 17.8	18.8	- 12.0
			19.4			17.7		
				- 4	31.36		- 4	30.07
					532		+30	489

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-.61
-.05

Feb. 27

18	9.7	18	11.5	18	23.3	18	6.9	18	10.7	18	22.5	18	6.0	18	21.7
	11.8		13.8		25.6		9.0		13.0		24.8		7.8		24.1
	14.0		16.1		27.8		11.0		15.4		27.1		9.8		26.5
			18.4		32.6				17.7		31.8				31.1
			20.9		35.1				20.0		34.3				33.5
19	10.7		53.7		37.5	18	3.70		52.9		36.6	18	52.5		35.8
	13.3		56.0		39.7		52.3		55.2		38.9		54.2		38.2
	15.4		58.4		42.1		54.1		57.7		41.3		56.6		40.5
			0.8		46.8				0.0		46.1				45.3
			3.1		49.3				2.3		48.4				47.6
					57.6						50.7				49.9
			2527		4114				2449		4025				3942
18	11.83		3727			18	8.97		3649			18	7.87		
19	13.13	18	37.270		37.400	18	52.47	18	36.440		36.591	18	54.43		35.836
					370						590				
				18	37.385				79	18	36590			18	35.895
			-4.64	18	32.372				-3.87	18	32.354		-3.26	18	32.335
			-.32		+ 5.01				-.37		+ 4.24		-.31		+ 3.56
			- 2/3		+ 5.01				- 6		+ 4.24				+ 3.56
			-1.38						-1.31				-1.30		
			- 6.35						-5.53				-4.87		
			+31.03						+31.06				+31.03		

-.69
-.05

Feb. 28

-.59

Mar. 1

	+25.55		-35.75				+27.62		-15.88				+28.03		-18.53		
	1.40739		1.55328n				1.44122		1.20085n				1.44762		1.26788n		
	1.47545		1.62134n				1.50928		1.26891n				1.51568		1.33594n		
	45 2		45 3		45 3		45 2		45 3		45 3		45 2		45 3		45 3
E	11.9		23.4		38.8		8.9		0.8		14.9		10.4		4.5		17.9
F	24.8		36.7		38.4		21.1		13.1		15.4		23.1		16.6		18.8
G	34.5		45.4		38.7		31.7		22.9		15.2		32.2		25.8		19.6
H	38.1		50.2		22.5		37.1		28.7		8.6		41.0		34.6		13.1
	1093		1557		1484		98.8		65.5		541		1067		81.5		694
	47 27.32	48	38.92	48	37.10	47	24.70	48	16.38	48	13.52	47	26.68	48	20.38	48	17.35
	+ 29.88		- 41.82				+ 32.31		- 18.57				+ 32.79		- 21.67		
	47 57.20		47 57.10				47 57.01		47 57.81				47 59.47		47 58.71		
	34 51.15		34 51.25				34 51.34		34 50.54				34 48.88		34 49.64		
13	51 49		53 01				51 47		52 38				51 49		52 42		
	1.15260		1.15330				1.15260		1.15310				1.15260		1.15310		
	+2475		+2475				+1921		+1921				+1744		+1744		
	1.17735		1.17805				1.17181		1.17231				1.17004		1.17054		
	-15.04		-15.07				-14.85		-14.87				-14.79		-14.81		
	- .14		- .14				- .18		- .06				- .18		- .07		
	- .50		- .72				- .48		- .66				- .48		- .66		
	+ .15		+ .22				+ .14		+ .20				+ .14		+ .20		
	-15.53		-15.86				-15.37		-15.39				-15.31		-15.34		
	34 35.62		35.39				34 35.97		35.15				34 33.57		34.30		
	34 35.50		- 4		17.41		34 35.56		- 4		17.48		34 33.94		- 4		16.72
	30 16.3				- 0.4		30 16.3				- 0.4		30 16.3				- 0.4
	- 4 19.2				-12.1		- 4 19.3				-12.1		- 4 17.6				-12.1
	18.1						18.2						16.5				
			- 4		29.91				- 4		29.98				- 4		29.32.22
			+30		559						568				+30		472

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ζ Orionis

m 48	s 31	Corr α	s − .02	
7°	22′ 57″	dt/dt	s +3.2479	
34	59 51	δ₀	22′ 55.51″	
		Corr δ	+ 9″	
		dδ/dt	+1.505″	

α₀ 48m 30.786s

log cos δ	9.99638	log cos δ	9.99638
15 cos δ tan i	0.12054 (thro Mar I,		.089
	0.11686 Mar 4 to I		
	0.11898 Dec.		
tang δ	+0.13	1.01	
sin Z	+.57		

1877

Jan. 30 (−.36, −.12)

h m s		m s	m s
5 48 25.0		48 26.6	48 37.1
26.9		28.6	39.0
29.0		30.7	41.0
		32.9	45.2
		35.0	47.4
49 11.3		4.0	49.6
13.0		6.0	51.6
14.7		8.1	53.6
		10.2	57.7
		12.3	59.9
			2.0
		1944	4841
48 26.97		4944	5441
49 13.00		48 49.440	49.464
			529
			48 49.496
		−16.88	48 32.458
		−.04	+ 17.04
		− 12	+ 17.06
		−1.67	
		−18.71	
		+48 30.79	

Feb. 1 (−.48, −.12)

m s	m s	m s
48 23.4	48 25.5	48 36.0
25.0	27.7	38.1
26.7	29.7	40.1
	31.8	44.3
	33.8	46.4
49 23.0	3.0	48.5
25.0	5.1	50.6
26.6	7.1	52.7
	9.2	56.7
	11.3	58.9
		1.0
	1842	4733
48 25.03	4842	5333
49 24.87	48 48.420	48.482
		.509
		48 48.496
	−15.85	48 32.442
	−.06	+ 16.05
	− 12	+ 16.07
	−1.65	
	−17.68	
	+30.82	

Feb. 3 (−.47, −.15)

m s	m s	m s
48 20.1	48 24.4	48 35.2
22.2	26.8	37.3
24.2	29.0	39.5
	31.0	43.4
	33.1	45.8
49 16.0	2.1	47.7
18.2	4.2	49.8
19.8	6.3	51.9
	8.3	56.0
	10.5	58.1
		0.3
	1760	4650
48 22.17	4760	5230
49 18.00	48 47.600	47.727
		689
		48 47.708
−.06	−15.14	48 32.426
	−.06	+ 15.28
	−15	+ 15.30
	−1.64	
	−16.99	
	+30.72	

Feb. 4 (−.51, −.04)

m s	m s	m s
48 19.4	48 24.3	48 35.0
21.5	26.6	37.1
23.2	28.6	39.1
	30.7	43.2
	32.7	45.7
	1.8	47.4
	4.0	49.5
	6.0	51.5
	8.1	55.7
	10.2	57.8
		59.9
	1730	52.16
48 21.37	4730	
	48 47.300	47.418
		389
		48 47.404
	−14.90	48 32.418
	−.06 −.06	+14.99
	− 4	+15.01
	−1.63 −1.63	
	−16.63	
	+30.77	

	Jan. 30			Feb. 1			Feb. 3			Feb. 4
	+22.53	−23.50		+23.47	−36.37		+25.54	−30.29		+26.03
	1.35276	1.37107n		1.37051	1.56074n		1.40722	1.48130n		1.41547
	1.47330	1.49161n		1.49105	1.68128n		1.52776	1.60184n		1.53601
	50′ 4′	55 0	55 0	50 4	55 0	55 0	50 4	55 0	55 0	50 3
E	1.9″	3.5	13.1	1.7	21.2	32.8	0.1	13.6	25.5	57.5
F	9.1	12.1	17.8	8.2	28.4	31.4	7.8	22.1	24.4	5.4
G	16.4	19.8	10.6	17.5	39.1	29.8	18.0	32.5	22.6	15.1
H	9.4	11.5	14.8	11.6	30.4	35.7	12.8	24.6	29.4	9.2
	36.8	46.9	56.3	39.0	119.1	129.7	38.7	92.8	101.9	27.2
	54 9.20	55 11.72	55 14.08	54 9.75	55 ~~27.78~~	55 32.42	54 9.68	55 23.20	55 25.48	54 6.80
	+29.74	−31.02		+30.98	29.78 − 48.00		+33.71	−39.98		+34.36
	54 38.94	54 40.70		54 40.73	54 41.78		54 43.39	54 43.22		54 41.16
+7	28 9.41	28 7.65		28 7.62	28 6.57		28 4.96	28 5.13		28 7.19
34	58 31	59 34		58 32	59 (~~58~~) 52		58 32	59 45		58 29
	1.60490	1.60520		1.60490	1.60530		1.60490	1.60520		1.60490
	+3002	+3002		+854	+854		+1827	+1827		+2310
	1.63492	1.63522		1.61344	1.61384		1.62317	1.62347		1.62800
	−43.14	−43.17		−41.06	−41.10		−41.99	−42.02		−42.45
	−.03	−.04		−.04	−.08		−.04	−.06		−.04
	−1.09	−.05		−1.09	−.13		−1.05	−.10		−1.02
	+.25	+.01		+.25	+.03		+.25	+.02		+.25
	−44.01	−43.25		−41.94	−41.28		−42.83	−42.16		−43.26
+7	27 25.40	24.40		27 25.68	25.29		27 22.13	22.97		27 23.93
+7	27 24.90	−4	22.12	27 25.48	−4	22.43	27 22.55	−4	20.47	
	23 0.7		−1.3	23 0.6		−1.3	23 0.4		−1.2	23 0.4
	−4 24.2		−5.2	−4 24.9		−5.1	−4 22.2		−4.9	−4 23.5
	23.3			24.0			21.3			22.6
		−4	28.62		−4	28.83		−4	26.57	
		+22	5628			5665			5598	

Feb. 4 (continued): −4 20.95; −1.2; −4.9; −4 27.05; +22 5688

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	m s		′ ″	
Jan 20	48 32.50	2	23 1.4	4
25	32.48	2	1.0	3
30	32.46	4	0.7	3
Feb 4	32.42	4	0.4	2
9	32.38	6	0.2	2
14	32.32	6	0.0	2
19	32.26	7	22 59.8	2
24	32.19	8	59.6	1
Mar 1	32.11		59.5	

Feb. 6 (−.61)

48 19.9	48 23.8	48 34.3
22.1	25.8	36.5
24.2	28.0	38.6
	30.1	42.7
	32.1	44.7
	1.4	46.8
	3.5	49.0
	5.5	51.0
	7.6	53.2
	9.6	57.3
		59.4
	16.74	51.55
48 22.07	46.74	
	48 46.740	46.864
		829
		48 46.846
	−14.41	48 32.402
	−.07	+ 1444
		+ 1446
	−1.61	
	−16.09	
	+30.76	

Feb. 8 (−.59)

48 23.0	48 23.4	48 33.8
25.0	25.5	35.8
27.0	27.5	37.9
	29.6	42.1
	31.7	44.1
49 14.8	1.2	46.1
17.0	2.8	48.2
19.6	4.9	50.5
	6.8	54.4
	9.0	56.6
		58.8
	16.24	50.83
48 25.00	46.24	
49 17.13	48 46.240	46.209
		329
		48 46.269
	−13.86	48 32.386
	−.07	+ 1388
		+ 1390
	−1.60	
	−15.53	
	+30.74	

Feb. 14 (−.57)

48 19.0	48 20.3	48 30.7
21.7	22.4	33.0
24.0	24.4	35.1
	26.6	39.1
	28.6	41.2
49 9.7	57.8	43.3
11.6	59.9	45.4
13.5	1.9	47.5
	4.0	51.6
	6.0	53.7
		55.7
	25.19	47.63
48 21.57	43.19	
49 11.66	48 43.190	43.300
		279
		48 43.290
	−10.90	48 32.317
	−.07	+ 1097
		+ 1099
	−1.53	
	−12.50	
	+30.79	

Feb. 15 (−.51)

48 12.1	48 19.6	48 30.1
13.6	21.7	32.1
15.5	23.7	34.1
	25.8	38.4
	27.9	40.4
49 0.3	57.0	42.5
2.4	59.1	44.6
4.4	1.2	46.7
	3.3	51.0
	5.4	52.9
		55.0
	24.47	46.78
48 13.73	42.47	
49 2.37	48 42.470	42.527
		559
		48 42.543
	−10.14	48 32.305
	−.06	+ 1024
		+ 1026
	−1.51	
	−11.71	
	+30.83	

	+24.78	+21.27	−30.86		+21.72	−28.31	+28.81	−19.83	
	1.39410	1.32777	1.48940n		1.33686	1.45194n	1.45954	1.29732n	
	1.51464	1.44831	1.60994n		1.45740	1.57248n	1.58008	1.41786n	
	50 4	50 4	55 0	55 0	50 4	55 0	50 3	50 4	
E	0.1	5.7	14.6	25.5	4.1	9.8	55.0	59.4	
F	8.5	13.4	23.7	26.1	12.0	18.2	3.5	6.3	
G	18.5	23.5	33.7	23.8	22.9	30.7	14.8	17.8	
H	12.8	15.3	24.6	29.2	11.2	18.3	9.1	14.2	
	39.9	57.9	96.6	104.6	50.2	77.0	22.4	37.7	
	54 9.98	54 14.48	55 24.15	55 26.15	54 12.55	55 19.25	54 5.60	55 9.42	
	+ 32.71	+ 28.07	− 40.73		+ 28.67	− 37.37	+ 38.03	− 26.17	
	54 42.69	54 42.55	54 43.42		54 41.22	54 41.88	54 43.63	54 43.25	
	28 5.66	28 5.80	28 4.93		28 7.13	28 6.47	28 4.72	28 5.10	
34	58 32	58 36	59 46		58 35	59 41	58 28	59 31	
	1.60490	1.60490	1.60520		1.60490	1.60520	1.60490	1.60515	
	+1973	+2508	+2508		+2990	+2990	+2067	+2067	
	1.62463	1.62998	1.63028		1.63480	1.63510	1.62557	1.62582	
	−42.13	−42.66	−42.69		−43.13	−43.16	−42.22	−42.25	
	− .04	− .03	− .06		− .03	− .05	− .06	− .03	
	− 1.01	− 1.01	− .10		− .97	− .07	− .94	− 1.20	
	+ .25	+ .25	+ .02		+ .25	+ .02	+ .25	+ .31	
	−42.93	−43.45	−42.83		−43.88	−43.26	−42.97	−43.17	
	27 22.73	27 22.35	22.10		27 23.25	20.21	27 21.75	21.93	
		27 22.22	−4	20.45	27 23.23	−4	27 21.84	−4	20.48
	23 0.3	23 0.2		−1.2	23 0.0	−1.2	23 0.0		−1.2
	−4 22.4	−4 22.0		−4.7	−4 23.2	−4.5	−4 21.8		−4.6
	21.5	20.1			22.3		20.9		
	−4 21.20								
	−1.2								
	−4.8								
	−4 27.20		−4	26.35		−4 26.77		−4	26.18
	+22 5553			5587		5646		+22	5566

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1877

	Feb. 20				Mar. 1				March 4				March 6			
			-.52				-.59				-.64				-.69	
h	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s
5	48	15.8	48	17.9	48	28.2	48	22.0	48	12.3	48	23.0	48	8.3	48	11.1	48	21.5	48	8.8	48	9.7	48	20.1
		17.4		20.2		30.3		24.0		14.6		25.1		10.3		13.2		23.7		11.0		11.8		22.2
		19.3		22.0		32.5		26.0		16.6		27.1		12.3		15.3		25.8		13.0		13.8		24.2
				24.1		36.7				18.8		31.3				17.4		29.8				16.0		28.5
				26.2		38.7				21.0		33.4				19.4		31.7				18.0		30.5
	49	7.9		15.3		40.8	49	7.8		22.9		35.4	49	5.9		18.5		34.0	49	11.6		47.1		32.7
		9.7		17.3		42.9		10.0		25.0		37.6		7.5		19.5		36.0		13.2		49.1		34.7
		11.7		19.5		45.0		12.0		27.1		39.6		9.2		21.6		38.2		15.2		51.2		36.8
				1.5		49.1				29.1		43.7				23.7		42.3				53.3		40.8
				3.6		51.2				31.3		45.7				25.8		44.4				55.2		42.9
						53.4						48.0						46.5						45.2
				28.74		44.88				35.37		38.99				33.95		37.41				32.53		35.86
	48	17.50		40.74			48	24.05					48	10.30					48	10.93				
	49	9.77	48	40.40		40.850	49	9.93	48	35.370		35.445	49	7.53	48	33.950		34.009	49	13.33	48	32.530		32.600
						8.29						.459						.039						.619
					48	40.814					48	35.452					48	34.024					48	32.610
				-8.53	48	32.242				-3.26	48	32.106				-1.91	48	32.052				-0.53	48	32.016
				-.06		+ 8.57				-.07		+ 3.35				-.08		+ 1.94				-.08		+ 0.59
				+ 8.59						+ 3.37								+ 1.99						+ 0.61
				-1.45						-1.32						-1.26						-1.23		
				-10.04						-4.65						-3.25						-1.83		
				+30.77						+30.80						+30.77						+30.78		
		+23.31		-28.96				+11.45		-34.48				+23.72		-33.51				+21.68		-40.72		
		1.36754		1.46180m				1.05881		1.53758m				1.37511		1.52517m				1.33606		1.60981m		
		1.48808		1.58234m				1.17935		1.66811m				1.49197		1.64203m				1.45292		1.72667m		
		50 4		55 0				50 4		55 0		55 0		50 3		55 0		55 0		50 3		55 0		55 0
Ep		3.11		11.3				15.4		16.1		31.6		38.8		13.8		31.4		58.4		19.8		35.2
Fr		10.4		19.2				29.9		31.1		33.0		13.0		29.2		31.3		12.5		36.2		38.7
Gr		21.9		30.8				39.6		40.9		31.3		25.3		41.6		30.8		24.6		47.6		36.6
He		19.0		28.0				46.0		48.7		22.7		34.8		52.2		22.4		33.2		54.6		36.0
		544		893				1309		1368		1186		719		1368		1159		682		1582		265
	54	+8.43	55	12.32			54	32.72	55	34.20	55	29.65	54	17.98	55	34.20	55	28.98	54	17.18	55	39.58	55	36.62
		13.60		38.22				15.11		45.51				31.04		43.86				28.37		53.29		
		30.77																						
	54	44.37	54	44.10			54	47.83	54	48.69			54	49.02	54	50.34			54	45.55	54	46.26		
+7	28	3.98	28	4.25			28	0.52	27	59.66			27	59.33	27	58.01			28	2.80	28	2.09		
34	58	36.	59	44			58	55	59	56			58	40	59	56			58	39	60	02		
		1.60490		1.60520				1.60500		1.60530				1.60490		1.60530				1.60490		1.60530		
		+2363		+2363				+1828		+1828				+1282		+1282				+2903		+2903		
		1.62853		1.62883				1.62328		1.62358				1.61772		1.61812				1.63393		1.63433		
		-4251		-4254				-4200		-4203				-4147		-4151				-4305		-4308		
		- .03		- .06				- .01		- .08				- .04		- .07				- .03		- .12		
		- .92		- .09				- .90		- .12				- .86		- .12				- .82		- .13		
		+ .25		+ .01				+ .27		+ .04				+ .26		+ .04				+ .26		+ .04		
		-4321		-4268				-4264		-4219				-4211		-4166				-4364		-4329		
+7	27	20.37		21.57			27	17.88		17.77			27	17.22		16.35			27	19.16		18.80		
+7	27	21.17		-4	18.96		27	17.68		-4	16.72		27	16.78		-4	15.30		27	18.98		-4	15.10	
	22	59.7			+1.1		22	59.5			-1.0		22	59.4			+1.0		22	59.4			-1.0	
	-4	21.5			- 4.2		-4	18.2			- 4.0		-4	17.4			- 3.9		-4	18.6	19.6		- 3.9	
		20.6						17.3						16.5						18.7				
				-4	24.26					-4	21.72					-4	20.20					-4	20.00	
				+22	5691						5596						5658					+22	5898	

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			m s	″		′	″	
	Nov	16	48 35.30			33	7.4	
	Dec	6	35.71		8		5.3	5
		11	35.79		8		4.8	5
		16	35.87		6		4.3	5
		21	35.93		6		3.8	5
		26	35.99				3.3	
	1877							
			−.74					
			Dec. 29					
	47	42.8	47 50.0		48	8.8		
		44.9	52.0			10.9		
		51.5	54.0			13.0		
			56.1			15.0		
			58.3			17.2		
	48	41.3	0.5					
		42.6	2.6			21.3		
		45.0	4.7			23.4		
						25.6		
						27.6		
						29.6		
						31.6		
			42.88			33.8		
	47	49.73				35.8		
	48	42.97	48 12.880			13.000		
						12.989		
					48	12.994		
			+23.11		48	36.022		
			−.09			− 23.03		
						− 23.01		
			−5.23					
			+17.79					
			+30.78					
			+23.26	−29.98				
			1.36661	1.47683				
			1.48559	1.59581				
			0′ 3′	0 4				
			40.″2	51.2				
			59.2	9.2				
			48.0	56.7				
			48.2	59.0				
			1956	2361				
			3 48.90	4 59.02				
			+ 30.59	− 39.43				
			4 19.49	4 19.59				
			18 28.86	18 28.76				
	34		58 31	59 41				
			1.60490	1.60520				
			+2178	+2178				
			1.62668	1.62698				
			−.4233	−.4236				
			− .03	− .06				
			− .57	− .75				
			+ .23	+ .30				
			−.4270	−.4287				
			17 4616	4589				
			17 4602	+5	18.31			
			23. 3.0		−.11			
			+5 1.70		−7.5			
			149					
				+5	9.71			
				+22.5573				

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δ Canis Maj.

h m s		α_0	39 43.644	Feb 8	39 45.26	−5	−32 58.7	−7	log cos δ	9.98162	log cos δ	9.98163
6 39 44			s	13	.21	6	59.4	7				
		$\frac{d\alpha}{dt}$	+2.645	18	45.15	7	60.1	6				
−16° 32′ 55″			′ ″	23	.08	7	60.7	5	15 cos δ tan i	0.10578 this mark −2		19.266
		δ_0	32 54.96	28	45.01	8	61.2	4		0.10210 after Mar 1 I / I		.092
			″	Mar 5	44.93	8	61.6	4				215
−58 55 43		$\frac{d\delta}{dt}$	−4.67	10	44.85		62.0		tang δ	−0.30	1.04	
									sin Z	+.86		

N.A.

1877

Feb. 8 (−.59)

6 39 33.6	39 35.7	39 46.0	39 28.0
36.0	37.2	48.1	29.9
37.9	39.4	50.3	31.4
	41.5	54.6	
	43.7	56.6	
	13.8	58.8	
	16.0	1.0	
	18.0	3.2	
	20.1	7.5	
	22.3	9.6	
		11.7	
	2871	3474	
39 35.83	5871	6474	39 29.77
	39 58.710	58.855	
		.802	
		39 58.828	
	−13.87	39 45.26	
	+.02 / .18		
	−1.62		
	−15.31		
	39 43.52		

Feb. 11 (−.55, −.03)

39 33.6	39 44.5	39 29.3	
35.8	46.6	31.6	
38.0	48.9	33.8	
40.2	53.1		
42.3	55.2		
12.3	57.5	40 21.7	
14.5	59.6	24.6	
16.7	1.6	26.4	
18.7	6.0		
20.9	8.1		
	10.4		
2730	3919 (5)		
5730	6319 (5)	39 31.57	
39 57.300	57.445	40 24.23	
	392 / 09		
	39 57.400		
−12.24	39 45.23		
+.02 / .16			
−3			
−1.58			
−13.69			
39 43.71			

Feb. 14 (−.57)

39 32.1	39 43.1	39 27.7	
34.3	45.2	29.8	
36.4	47.5	31.7	
38.6	51.6		
40.7	53.7		
11.1	56.0	40 26.0	
13.0	58.1	28.2	
15.1	0.3	29.9	
17.3	4.6		
19.4	6.6		
	8.9		
2580	3756		
5580	6156	39 20.73	
39 55.800	55.964	40 28.03	
	.892		
	39 55.928		
−10.88	39 45.20		
+.02 / .17			
−1.55			
−12.26			
39 43.67			

Feb. 15 (−.51)

39 31.5	39 42.2
33.5	44.4
35.8	46.5
37.9	50.8
40.0	53.0
10.1	55.2
12.2	57.3
14.4	59.5
16.6	3.7
18.6	5.8
	8.0
2506	4264
5506	6064
39 55.060	55.127
	.152
	39 55.140
−10.15	45.19
+.02 / .15	
−1.55	
−11.55	
39 43.59	

	Feb. 8	Feb. 11	Feb. 14		Feb. 15	
	+23.00	+27.63	+24.36	−28.30	+25.41	−32.89
	1.36173	1.44138	1.38668	1.45179n	1.40500	1.51706n
	1.46751	1.54716	1.49246	1.55757n	1.51078	1.62284n
	45 4	45 3	45 3	50 0	45 4	50 0
E	2.3	56.5	59.9	8.1	1.5	15.7
F	14.0	8.1	11.5	19.7	13.1	27.4
G	24.1	20.5	22.8	33.2	25.5	39.8
H	14.3	9.9	10.3	19.3	18.6	36.8
	54.7	35.0	104.5	80.3	58.7	119.7
	49 13.88	49 8.75	48 26.12 / 49 11.12	50 20.08	49 14.68	50 29.92
	+29.34	+35.25	+31.08	−36.10	+32.42	−41.96
	49 43.02	49 44.00	49 42.20	49 43.98	49 47.10	49 47.96
−16	26 54.67	26 55.65	26 53.85	26 55.63	26 58.75	26 59.61
58	53 36	53 31	53 33	54 42	53 37	54 52
	1.97833	1.97830	1.97830	1.97864	1.97833	1.97870
	+2623	+2461	+3058	+3058	+2127	+2127
	2.00456	2.00291	2.00888	2.00922	1.99960	1.99997
	−10105	−10067	−10206	−10214	−9991	−9999
	+ .08	+ .11	+ .08	+ .11 (−4)	+ .10	+ .16
	− 1.01	− .98	− .97	− .07	− .99	− .12
	+ .25	+ .25	+ .25	+ .02	+ .25	+ .03
	−1 41.73	−1 41.29	−1 42.60	−1 42.08	−1 40.55	−1 39.92
−16	28 36.40	28 36.94	28 36.55 / 28 37.13	28 37.71	28 39.30 / 28 39.42	28 39.53
	−4 20.45 / −1.9 / +3.7	−4 20.86 / −1.8 / +4.1		−4 21.07 / −1.8 / +4.6		−4 20.48 / −1.8 / +4.7
	−4 18.65	−4 18.76 (56)		−4 18.27		−4 17.58
	32 58.7	32 59.1	32 59.5		32 59.7	
−16	32 55.05	32 55.70 (.50)		32 55.40		32 57.00

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Feb. 20 (−.52)

39	24.4	39	29.7	39	40.6
	26.2		32.0		42.7
	28.1		34.1		44.8
			36.3		49.2
			38.5		51.4
			8.6		53.5
			10.7		53.7
			12.9		54.8
			15.0		2.2
			17.2		4.3
					6.4
			2350		4086
39	26.23		5350		5886
		39	53.500		53.509
					.592
				39	53.550
			−8.50	39	45.12
			+.02 / 16		
			−1.48		
			−9.82		
		39	43.73		

Feb. 21 (−.50)

39	26.8	39	28.9	39	39.8
	28.5		31.0		41.8
	30.5		33.2		44.0
			35.4		48.3
			37.6		50.5
			7.7		52.6
			10.0		54.7
			12.0		57.0
			14.0		1.2
			16.1		3.5
					5.6
			2259		3990
39	28.60		5259		5790
		39	52.590		52.636
					.682
				39	52.659
			−7.67	39	45.11
			+.01 / 15		
			−1.46		
			−8.98		
		39	43.68		

Feb. 27 (−.61, −.05)

39	18.0	39	25.6	39	36.6
	20.0		27.8		38.6
	21.6		30.0		40.8
			32.1		45.1
			34.3		47.3
			4.3		49.5
			6.4		51.7
			8.6		53.8
			10.8		58.1
			13.0		0.2
					2.3
			1929		4240
39	19.87		4929		5440
		39	49.290		49.455
					382
				39	49.418
			−4.55	39	45.02
			+.02 / 18		
			− 5		
			−1.38		
			−5.80		
		39	43.62		

Feb. 28 (−.69, −.05)

40	0.80	39	58.6	39	—
			1.0		—
			2.8		—
					—
					—
					3.7
					5.8
					8.0
					10.2
					12.3
					8000
					48.734
					−3.82 (3)
					+.02 / 21
					− 5
					−1.37
					−5.04
				39	43.79

39	—	—
	—	—
	—	—
	—	—
	—	—
	4900	49.0
	4895	51.1
	4880	53.1
	4900	57.6
	4885	59.6
	4890	1.8
39	48.917	
39	48.826	
39	45.01	

Feb. 20	Feb. 21	Feb. 27	Feb. 28
+27.32	+24.06	+29.55	−11.97
1.43648	1.38130	1.47056	1.07869n
1.54226	1.48708	1.67634	1.18387n
45 4	45 4	45 3	45 4
E	7.5	52.2	46.7
F 9.7	19.1	9.9	4.1
G 23.1	29.5	21.5	15.4
H 18.4	27.7	23.2	17.9
	83.8	46.8	24.1
	49 20.95	49 11.70	50 6.02
+ 31.85	+ 30.70	+ 37.70	− 15.27
	49 51.65	49 49.40	49 50.75
	27 3.30	27 1.05	27 2.40
58	53 43	53 34	54 28
	1.97836	1.97833	1.97858
	+1699	+2588	+2031
	1.99535	2.00421	1.99889
	−98.94	−100.97	−99.74
	+ .08	+ .13	+ .02
	− .90	− .84	− 1.02
	+ .26	+ .25	+ .31
	−1 39.50	−1 41.43	−1 40.43
	28 42.80	28 42.48	28 42.83

Feb. 20	Feb. 21	Feb. 27	Feb. 28
−4 18.96	−4 17.67	−4 17.41	−4 17.48
−1.8	−1.8	−1.7	−1.7
+5.3	+5.5	+6.1	+6.2
−4 15.46	−4 13.97	−4 13.01	−4 12.98
32 60.3	32 60.4	32 61.1	32 61.2
	32 56.77	32 55.49	32 55.81

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-.59 Mean. 1 | -.64 March 4 | -.69 March 6 | -.59 March 7

	Mean. 1			March 4			March 6			March 7		
6	39 17.2	39 24.3	39 35.3	39 17.8	39 —	39 33.8	39 19.5	39 —	39 32.3	39 20.0	39 20.6	39 31.3
	17.3	26.4	37.3	17.3	—	35.9	21.3	—	34.4	21.9	22.5	33.6
	21.8	28.6	39.5	20.8	—	38.0	23.5	—	36.7	23.0	24.8	35.7
		30.7	43.7		—	42.3		—	41.0		27.0	39.9
		33.0	45.8		—	44.4		—	43.2		29.1	42.0
		35.1	47.9		—	46.6		—	45.3		32.2	44.4
		37.2	50.1		—	48.7		—	47.5		34.3	46.6
		39.2	52.3		—	51.0		—	49.6		36.4	48.5
		41.4	54.7		—	53.2		—	51.8		38.7	52.8
		11.6	58.7		—	57.4		—	56.0		79	53.0
			1.0			57.6			57.1			57.2
		1795	4683			51.29			4979		2017	4870
	39 19.43	4795	5283	39 19.30			39 21.43			39 21.63	4417	
		39 47.950	48.027			46.627			45.264		39 44.170	44.273
			.042									.62
		~~+.03~~	39 48.084		#	39 46627		39 45264			39	44268
		-3.26	39 45.00		-1.92	39 44.94	-0.51	39 4492			+0.39	44.90
		~~+.02~~			~~+.02~~		~~+.02~~				~~+.02~~	
		18			19		21				18	
		-1.35			-1.30		-1.28				-1.25	
		-4.43			-3.03		-1.58				-.68	
		39 43.60			39 43.60		39 43.68				39 43.59	

	+28.60			+27.33			+23.83			+22.64		
	1.45637			1.43664			1.37712			1.35488		
	1562/5			1,538.74			1,479.22			1,456.98		
	1 1											
	45 3			45 3			45 3			45 4		
E	56.0			58.1			58.6			03		
F	12.7			15.8			16.3			209		
G	25.6			28.6			27.4			31.7		
H	30.7			37.2			36.0			40.6		
	650			~~37.7~~			~~38.3~~			935		
	49 16.25			~~49 34.92~~			~~49 34.58~~			49 23.38		
	+ 36.49			19.92			19.58			+ 28.64		
	49 52.74			+ 34.57			+ 30.15			49 52.02		
				49 54.49			49 49.73					
-16	27 4.39			27 6.14			27 1.38			27 3.67		
38	53 38			53 42			53 42			53 45		
	1.97833			1.97836			1.97836			1.97836		
	+1973			+1526			+3506			+2366		
	1.99806			1.99362			2.00842			2.00202		
	-.9955			-.9854			-.10196			-.10047		
	+ .12			+ .11			+ .08			+ .08		
	- .86			- .86			- .82			- .84		
	+ .26			+ .26			+ .26			+ .26		
	-1 40.03			-1 39.03			-1 42.44			-1 40.97		
-16	28 44.42			28 45.17			28 43.82			28 44.64		
		-4 16.72			-4 15.30			-4 15.10			-4 15.15	
		-1.7			-1.6			-1.6			-1.6	
		+ 6.4			+ 6.5			+ 6.7			+ 6.9	
	32 61.3	-4 12.02		32 61.5	-4 10.40		32 61.7	-4 10.00		32 61.8	-4 9.85	
		32 56.44			32 55.57			32 5382			32 5449	

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−.61 March 11

39 25.5
27.3
29.1

39 17.0
19.3
21.6
23.7
25.8
26.0
28.2
0.3
2.4
4.6

39 28.0
30.2
32.3
34.6
38.7
41.0
43.0
45.7
49.8
51.7
53.9

39 16.6
18.5
21.0

2280
4089
40.890

39 27.30

45 04

39 18.70

40.945
.982
39 40.964

+3.72
+.02
18
−1.20
+2.70
39 43.66

39 43.84

−.63 March 13

39 12.9
15.1
17.4
18.6
21.7
23.0
25.0
26.1
30.5

39 23.9
26.0
28.1
32.5
34.6
36.8
39.0
41.1
45.4
47.7
49.8

3075
3675
36.750

4049

36.809
.842
39 36.826

+7.70
+.02
19
−1.12
+6.77
39 43.60

39 44.76

h m s
6 39 43.646

+13.66
1.135.45
1.23755

45 4

11.5
29.5
41.1
53.1
1352
49 33.80
+ 17.28
49 51.08

27 2.73

38 53 56
1.97841
+2763
2.00604
− 101.40
+ .03
− .87
+ .28
−1 41.96
28 44.69

−4 13.81
−1.6
+ 7.1

−4 8.31

32 62.1

32 53.90

+18.13
1.25840
1.36050

45 4

12.0
29.4
40.4
54.6
1364
49 34.10
+ 22.94
49 57.04

27 8.69

53 56
1.97841
+1946
1.99784
− 99.51
+ .05
− .83
+ .28
−1 40.01
28 48.70

−4 18.29
−1.6
+ 7.4

−4 7.49

32 62.4

32 56.19

−16° 32′ 55.43

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68

δ Geminor seq.

h 26 m	45 s	α_0	26 m 44.759 s	log cos δ	9.92771 cos δ 9.92768
+ 32° 9'	23"	Corr α	+ .02 s	15 cos δ tan i	0.05187 thro' Mar 1 — 2 21.814
+ 10 13	25	$\frac{d\alpha}{dt}$	+ 3.8384 s		0.04819 after Mar 1 — 242 — 104
		δ_0	9' 22.65"	tang δ	+ 0.63 — 1.18
		Corr δ	− .3"	' sin Z	+ .18
		$\frac{d\delta}{dt}$	− 7.487"		

1877

	Feb 27		Feb. 28		March 1		March 4
	−.61 −.05		−.69 −.05		−.59		−.64
7 { 26 − 15.3 ; 26 . 23.5 ; 27 23.7 ; 27 27.0	26: 24.9 25.3 / 27.2 27.6 / 29.8 30.1 / 32.2 32.6 / 34.6 34.9 / 8.7 9.1 / 11.2 11.6 / 13.6 13.8 / 15.9 16.3 / 18.5 18.8	26: 37.2 37.6 / 37.6 38.7 / 41.9 42.3 / 47.0 47.3 / 49.4 49.7 / 52.0 52.4 / 54.6 54.8 / 56.8 57.1 / 1.6 2.0 / 4.0 4.3 / 6.4 6.7	26 (39.3) ; 26 (42.4) ; 27 24.1 ; 27 28.3	26: [24.3] [24.6] / 26.8 27.0 / 29.1 29.4 / 31.6 32.0 / 34.0 34.3 / 8.1 8.5 / 10.5 10.8 / 12.9 13.2 / 15.4 15.7 / 17.8 18.1	26: 36.5 37.0 / 38.5 39.2 / 41.5 41.8 / 46.3 46.8 / 49.0 49.3 / 57.2 57.6 / 53.6 54.0 / 56.1 56.5 / 1.0 1.4 / 3.4 3.8 / 5.8 6.1	26 17.7 ; 26 21.5 ; 27 22.9 ; 27 26.5	26: 23.6 24.0 / 26.0 26.3 / 28.0 28.5 / 30.9 31.2 / 33.3 33.6 / 7.5 7.9 / 9.8 10.1 / 12.2 12.5 / 14.7 15.0 / 17.0 17.4 — 26: 35.8 36.1 / 38.3 38.6 / 40.8 41.2 / 45.6 46.0 / 48.0 48.4 / 50.4 50.8 / 52.9 53.3 / 55.4 55.7 / 0.3 0.6 / 2.6 3.0 / 5.1 5.5 — 26 15.5 ; 26 19.0 — 26: 23.1 23.6 / 25.6 26.0 / 28.0 28.4 / 30.4 30.8 / 32.8 33.1 / 6.0 6.3 / 8.4 8.7 / 10.9 11.2 / 13.3 13.6 / 15.8 16.0 — 26: 34.5 34.9 / 37.0 37.3 / 39.3 39.6 / 40.1 44.5 / 46.6 47.0 / 49.0 49.4 / 51.5 57.8 / 54.0 54.3 / 59.0 59.2 / 1.3 1.6 / 3.7 4.0
	2166 2201 3905 3941 / 5166 5201 5705 5741 / 51.660 52.010 51.864 52.191 / .764 .114 / 51.819 52.152			2106 2136 3829 3875 / 5106 5136 5629 5675 / 51.060 51.360 51.173 51.591 / .164 .464 / 51.168 51.528			2030 2065 3752 3792 / 5030 5065 5552 5592 / 50.300 50.650 50.473 50.886 / .404 .754 / 50.438 50.795 — 1943 1977 4200 4236 / 4943 4977 5400 5436 / 49.430 49.770 49.091 49.410 / .534 .879 / 26 49.312 26 49.646 / 26 46.994
	−4.50 26 47.058 / −.38 + 4.76 + 5.09 / − 6 + 4.74 + 5.07 / −2.30 / − 7.24 / + 26 44.58 + 44.91			−3.79 (86) 26 47.048 / −.43 + 4.12 + 4.48 / − 6 + 4.10 + 4.46 / −2.29 / − 6.64 / + 44.53 + 44.89			−3.26 26 47.036 / −.37 + 3.40 + 3.76 / + 3.38 + 3.74 / −2.28 / − 5.27 — .83 / + 44.47 (44.53) + 44.83 (89) — −1.93 / −.10 + 2.32 + 2.65 / + 2.30 + 2.63 / −2.23 / − 4.56 / + 44.75 + 45.09

+36.52 +28.65 −31.88 −34.85			+11.87 +9.13 −32.93 −36.77			+32.74 +29.30 −32.46 −35.75			+33.81 +30.65	
1.56253	1.45712	1.50352n 1.54220n	1.07445	0.96047	1.51759n 1.56549n	1.51508	1.46687	1.51135n 1.55328n	1.52905	1.48643
1.61440	1.47599 (1.50899)	1.55539n 1.59407n	1.12632	1.01234	1.56944n 1.61736n	1.56695	1.51874	1.56322n 1.60515n	1.57724	1.53462
5 3	5 4	5 4	5 3	5 4	5 4	5 3	5 4	5 4	5 2	
6.4	12.3	27.3	23.3	14.0	28.9	0.6	13.6	28.2	58.9	
17.8	25.1	27.7	36.1	26.0	29.6	12.2	25.5	32.1	10.1	
28.7	35.0	28.2	45.1	36.9	30.7	24.3	36.5	29.3	22.8	
34.6	41.4	20.8	52.6	44.6	26.8	35.3	47.5	22.7	36.3	
875	1138	1040	1571	1215	1160	724	1231	1123	8 1281	
8 21.88	9 28.45	9 26.00	8 39.28	9 30.38	9 29.0	8 18.10	9 30.78	9 28.08	8 32.02 (17.02)	
+41.15 +32.28	−35.92 −39.27		+13.38 +10.29	−37.11 −41.93		+36.89 +33.02	−36.58 −40.29		+37.78 +34.25	
9 3.03 8 54.16	8 52.53 49.18		8 52.66 49.57	53.27 48.95		8 54.99 51.12	8 54.20 50.49		8 54.80 51.27	

+ 32 13	54.19 55.82 59.17	13 55.69 58.78	55.08 59.40	13 53.36 57.23	54.15 57.86	13 53.55 57.08	
10	12 44 / 1.01590 / +2653 / 1.04243 / − 1103	13 50 / 1.01670 / +2653 / 1.04323 / − 1105	13 01 / 1.01610 / +2097 / 1.03707 / − 1089	13 52 / 1.01680 / +2097 / 1.03777 / − 1091	12 40 / 1.01590 / +2105 / 1.03695 / − 1089	13 53 / 1.01680 / +2105 / 1.03785 / − 1091	12 39 / 1.01580 / +1749 / 1.03329 / − 1080
	−.33 − .20 / −.66 − .66 / +.20 + .20 / −11.82 −11.69	−.25 − .30 / −.90 − .90 / +.27 + .27 / −11.93 −11.98	−.04 .08 / −.74 − .74 / +.22 + .22 / −11.45 −11.43	−.27 − .34 / −.90 − .90 / +.27 + .27 / −11.81 −11.88	−.27 − .21 / −.66 − .66 / +.20 + .20 / −11.62 −11.56	−.25 − .32 / −.90 − .90 / +.27 + .27 / −11.79 −11.86	−.28 − .24 / −.66 − .66 / +.20 + .20 / −11.54 −11.50
+ 32 13	42.50 43.89 47.19	13 44.24 47.35	43.27 47.52	13 41.74 45.67	42.36 46.00	13 42.01 45.58	
	13 43.20 / 9 29.8	47.0 − 4 17.41 / − 0.3 / − 7.2	13 43.76 / 9 29.8 / − 4 14.0 14.3	13 47.44 / − 4 17.6 17.9 / − 4 17.48 − 0.3 − 7.1	13 42.05 / 9 29.9 / − 4 12.1 12.4	13 45.84 / − 4 15.9 16.3 / − 4 16.72 − 0.3 − 7.3	13 42.01 / 9 30.2 / − 4 11.8 12.1 — 13 45.58 / − 4 15.4 15.7 / − 4 15.39 − 0.3 − 7.5
	− 4 24.91		− 4 24.88		− 4 24.32		− 4 23.10
	− 19 17.59 18.29 18.98 22.28		18.88 22.56		17.73 21.52		+ 9 18.91 22.48

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	2m	c		1	"
Feb. 9	26	4720	3	9	28.4 4
14		4717	3		28.8 4
19		4714	5		29.2 4
24		4709	5		29.6 3
Mar. 1		4704	7		29.9 4
6		4697	7		30.3 3
11		4690	8		30.6 3
16		4682	9		30.9 3
21		4673			31.2

-.69

March 6

	26				26			
26	19.5	21.0	21.4		33.1	33.5		
		23.5	23.7		35.5	35.7		
26	24.1	25.6	26.0		38.0	38.3		
		28.0	28.4		42.9	43.3		
		30.4	30.6		45.9	45.7		
27	20.3	4.5	4.9		47.7	48.0		
		7.1	7.4		52.1	52.5		
27	25.5	9.4	9.7		12.7	13.0		
		11.9	12.2		57.4	57.8		
		14.3	14.7		0.0	0.3		
					2.2	2.5		
		1757	1790		4049	4088		
		4737	4790		5249	5288		
		47.570	47.900		47.718	48.073		
					.674	.004		
					47.696	48.038		
		-0.50			26	46.966		
		-.63	+		0.73	+ 1.07		
			+		0.71	+ 1.05		
		-2.21						
		- 3.14						
		+44.56			+44.96			

-.59

March 7

	26				26			
26	21.8	19.8	20.1		32.0	32.5		
		22.3	22.7		34.6	35.0		
26	26.1	24.9	25.2		37.0	37.4		
		27.2	27.5		41.8	42.1		
		29.7	30.0		44.3	44.7		
27	18.0	3.7	4.0		46.6	47.0		
		6.2	6.6		49.2	49.6		
27	22.3	8.6	9.0		52.7	53.0		
		11.0	11.3		56.5	57.0		
		13.3	13.7		59.0	59.3		
					1.4	1.8		
		1667	1701		4541	4584		
		4667	4701		5141	5184		
		46.610	47.010		46.727	47.127		
					.36	.114		
					.774			
					46.755	47.120		
		+0.41			26	46.952		
		-.37			020	+0.17		
					- 022	+0.15		
		-2.19						
		- 2.15						
		+44.61			+44.97			

-.61

March 11

	26				26			
26	18.5	16.5	17.0		28.6	29.0		
		19.0	19.3		31.1	31.5		
26	22.5	21.4	21.7		33.4	34.0		
		23.7	24.0		38.5	39.0		
		26.2	26.5		41.0	41.4		
27	17.0	0.4	0.7		43.5	43.8		
		2.8	3.1		45.9	46.3		
27	20.7	5.2	5.6		48.4	48.7		
		7.6	7.9		53.0	53.4		
		10.0	10.4		55.6	55.9		
					58.0	58.4		
		1328	1362		4772	4814		
		4338	4362					
		43.380	43.620		43.382	43.764		
		.280			.384	.724		
					43.383	43.744		
		+3.74			26	46.896		
		-.38	-		351	-3.15		
			-		353	- 317		
		-2.14						
		+1.22						
		+44.60			+44.96			

-.63

March 15

	26				26			
26	13.2	12.3	12.7		24.5	24.8		
		14.7	15.2		27.0	27.4		
26	16.7	17.8	17.6		28.4	29.8		
		19.6	20.0		34.5	34.9		
		22.2	22.5		37.0	37.4		
27	19.3	56.3	56.6		39.4	39.7		
		58.7	59.0		41.8	42.2		
27	23.0	1.1	1.4		44.1	44.4		
		3.6	3.9		49.1	49.4		
		5.8	6.1		51.6	51.9		
					54.0	54.4		
		2116	2150		4324	4363		
		3916	3950					
		39.160	39.300		39.664			
					39.309			
					224			
					39.286	39.434		
		+7.75			26	46.832		
		-.39	-		7.55	-7.20		
			-		4.57	- 7.22		
		-2.07						
		+5.29						
		+44.58			+44.92			

+2820 +2394 −3260 −3746
1.45025 | 1.37912 | 1.51322 | 1.57357
1.49844 | 1.42731 | 1.56141 | 1.62162

+2496 +2102 −3124 −3518
1.39724 | 1.32263 | 1.49471 | 1.54630
1.44543 | 1.37082 | 1.54298 | 1.59492

+2533 +2124 −3317 −3696
1.40364 | 1.32715 | 1.52075 | 1.56773
1.45183 | 1.37534 | 1.56894 | 1.61592

+2609 +2293 −4081 −4337
1.41647 | 1.36040 | 1.60217 | 1.63719
1.46466 | 1.40859 | 1.65036 | 1.68538

	5	3	5	4	5	4	5	3	5	4	5	4	5	3	5	4	5	4
	5.8		13.8		25.9		9.7		11.9		24.5		8.8		14.4		26.6	
	16.1		26.6		30.0		21.2		25.6		27.8		20.6		26.1		29.4	
	27.9		36.1		28.5		32.8		36.6		27.8		32.3		38.2		28.5	
	41.1		49.8		20.8		48.9		52.4		19.9		49.2		55.9		20.8	
	90.9		126.3		105.2		112.6		126.5		100.0		110.9		134.6		105.3	
8	22.72	9	31.58	9	26.30	8	28.15	9	31.62	9	25.00	8	27.72	9	33.65	9	26.32	
	+3151	+2675	−3443	−4186			+2789	+2349	−3491	−3931			+2830	+2373	−3706	−4130		
8	54.23	49.47	55.15	49.72			56.04	51.64	56.71	52.31			56.02	51.45	56.59	52.35		
13	54.12	58.88	53.20	58.63		13	52.31	56.71	51.64	56.04		13	52.33	56.90	51.76	56.00		13
	10	12	45	13	54		12	50	13	54			12	50	13	56		
		1.01590		1.01680			1.01600		1.01680				1.01650		1.01680			
		+3101		+3101			+2474		+2474				+2880		+2880			
		1.04691		1.04781			1.04074		1.04154				1.04480		1.04560			
		−11.14		−11.16			−10.98		−11.80				−11.09		−11.11			
		-.19	-.14	-.27	-.34		-.15	-.11	-.24	-.30			-.15	-.11	-.27	-.34		
		-.65	-.65	-.85	-.85		-.67	-.67	-.85	-.85			-.67	-.67	-.87	-.87		
		+.20	+.20	+.27	+.27		+.21	+.21	+.27	+.27			+.20	+.20	+.28	+.28		
		-11.78	-11.73	-12.01	-12.08		-11.59	-11.55	-11.82	-11.88			-11.71	-11.67	-11.97	-12.04		
13	42.34	47.15	41.19	46.55		13	40.72	45.16	39.82	44.16		13	40.62	45.23	39.79	43.96		
	13	41.76	13	46.85	-4		13	40.27	13	44.66	-4		13	40.20	13	44.60	-4	
	9	30.3					9	30.4					9	30.6				
	4	11.5	-4	16.5			-4	9.9	-4	14.3			-4	9.6	-4	14.0		
		11.8		16.8				10.2		14.6				9.9		14.3		
					-4						-4						-4	

	5	4	5	4
	8.2		21.1	32.5
	19.2		32.9	36.2
	31.0		43.2	36.2
	49.6		35.5	27.1
	108.0		132.7	132.0
8	27.00		9 33.18	9 33.00
	+2915	+2562	−4471	−4846
8	56.15	52.62	56.47	44.72
	12	49	13	55
	1.01600		1.01680	
	+2065		+2065	
	1.03665		1.03745	
	−10.88		−10.90	
	-.17	-.13	-.39	-.45
	-.63	-.63	-.83	-.83
	+.21	+.21	+.28	+.28
	-11.47	-11.13	-11.84	-11.90
	4073	4430		
	4073	44.30		-4
	9	309		
				-4

15.39 −.03 −7.5 = 7.86 → 7.91

23.10

-4 23.15

-4 22.11

-4 21.79

891 2248 +9 1866 2375 1712 2154 1809 2849 +9 1894 2254

18.94

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1877

March 20 −.53

		26		26				26		26	
26	41.2	—	—	—	—	25	56.9	3.7	4.0	16.0	16.4
		—	—	—	—			6.2	6.5	18.4	18.7
26	45.7	—	—	—	—	26	0.8	8.7	9.0	20.9	21.3
		—	—	29.3	29.6			11.1	11.3	25.9	26.2
		—	—	31.7	32.0			13.5	13.8	28.3	28.6
27	9.0	51.0	51.4	34.2	34.5	27	3.9	47.6	47.9	30.7	31.1
		53.6	53.9	36.6	37.0			50.0	50.3	33.0	33.4
27	13.2	56.0	56.4	39.0	39.4	27	6.6	52.5	52.8	35.6	35.9
		58.4	58.7	44.0	44.4			54.9	53.2	40.4	40.7
		0.9	1.2	46.2	46.6			57.3	57.6	42.9	43.1
				48.7	49.0					45.3	45.6
		55.980	56.320					3055	3084	3374	3410

34.175	34.489	30.550	30.840
.156	.176		
34.165	34.498		
+12.72	26 46.744	+16.26	26 46.665
	−1258 −1225		−1600 −1569
−.33	−1260 −1227	−.39	−1602 −1571
−1.98		−1.90	
+10.41		+13.97	
+44.57	+44.91	+44.63	+44.94

7 26 44.594 ℓ'

	−7.04	−10.90	−34.84	−38.70			+33.76	+30.17	−33.24	−35.63	
	0.84787m	1.03743m	1.54208m	1.58771m			1.52840	1.47958	1.52166	1.55182	
	0.89576m	1.08562	1.59027m	1.63590m			1.57659	1.52777	1.57983m	1.60001m	
	5 3		5 4		5 4		5 3 (23)		5 4		5 4
ℰ	44.1		15.0		29.8		56.8		11.6		28.2
ℋ	55.1		26.8		31.6		7.4		22.3		25.7
ℊ	7.4		38.0		30.2		20.5		35.0		27.2
ℳ	26.6		56.6		21.7		43.2		58.7		20.7
	1432		1364		1135		1379		1276		1019
	8 48.24		9 34.10		9 28.38		8 46.68		9 31.90		9 25.45
	9 3.30						16.98				
	−7.87	−12.18	−38.93	−43.24			+37.72	+33.71	−37.14	−39.81	
8	55.43	51.12	55.17	50.86		8	54.70	50.69	8 54.76	52.09	
+32 13	52.92	57.23	53.18	57.49		13	53.65	57.66	53.59	56.26	
10	13 25		13 56				12 39		13 54		
	1.01640		1.01680				1.01580		1.01680		
	+28.70		+28.70				+13.50		+13.50		
	1.04510		1.04550				1.02930		1.03030		
	−11.09		−11.10				−10.70		−10.72		
	−.02	−.03	−.30	−.37			−.28	−.22	−.27	−.32	
	−.70	−.70	−.78	−.78			−.56	−.56	−.77	−.77	
	+.25	+.25	+.28	+.28			+.20	+.20	+.27	+.27	
	−11.56	−11.57	−11.90	−11.97			−11.34	−11.28	−11.49	−11.54	
+32 13	41.36	45.66	41.28	45.52		13	42.31	46.38	42.10	44.72	
	13 41.32		13 45.59		−4 14.15		13 42.20		13 45.55		−4 13.46
	9 3.12				−0.3		9 3.14				−0.3
	−4 10.1		−4 14.4		−8.6		−4 10.8		−4 14.2		−8.7
	10.4		14.7				11.1		14.5		
					−4 23.05						−4 22.46
			+9		1827	2251			+9		1974 2309

+32° 9′ 18.46″ ℓ'

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Can. Min.

^{h} 7	^{m} 32	^{s} 52	α_0	^{m} 32	^{s} 51.689
			Corr α	−	.02
+5°	32'	19"	dα/dt	+3.1473	
+36	50	29	δ_0	32'	19.24
			Corr δ	+	.8"
			dδ/dt	−8.778"	

log cos δ	9.99797	log cos δ	9.99797
15 cos δ tan i	0.12213 thro' Mar 1		I 207
	0.11845 after Mar 1		I' 088
tang δ	+0.10	1.00	
sin Z	+.60		

1877

Feb. 27 (−.61, −.05)

7	32 33.0	32 35.3	32 45.5	32 27.5		
	34.7	37.3	47.7	29.7		
	36.7	39.4	49.8	32.1		
		41.4	53.9			
		43.5	55.9			
	33 27.2	12.4	58.0	33 24.0		
	29.0	14.5	0.2	25.4		
	30.8	16.7	2.1	27.4		
		18.8	6.4			
		20.8	8.4			
			10.5			
		2801	3384			
	32 35.80	5801	6384	32 29.77		
	33 29.00	32 58.010	58.036	33 25.66		
			.098			
			32 58067			
		−4.49	32 53534			
		−.06	+ 453			
		− 5	+ 455			
		−1.84				
		−6.45				
		+32 51.62				

Feb. 28 (−.69, −.05)

32 34.7	32 45.7	32 28.4
36.6	47.1	30.0
38.8	49.1	32.0
40.9	53.4	
42.8	55.4	
12.0	57.4	33 23.2
14.0	59.5	25.0
16.1	1.7	27.3
18.1	5.9	
20.3	7.8	
	9.9	
2743	3923	
5743	6323	32 30.13
32 57.430	57.482	33 25.17
	518	
86	32 57.500	
−3.78	32 53526	
−.07	+ 3.94	
− 5	+ 3.99	
−1.84		
−5.82		
+51.68		

March 1 (−.59)

32 33.8	32 44.4	32 27.6
35.9	46.5	29.2
38.0	48.6	31.0
40.0	52.7	
42.2	55.7	
11.1	56.8	33 23.9
13.3	58.8	25.5
15.5	1.0	27.2
17.6	5.1	
19.6	7.2	
	9.3	
2670	3861	
	6261	32 29.27
32 56.700	56.918	33 25.53
	788	
	32 56833	
−3.26	32 53517	
−.06	+ 3.34	
	+ 3.36	
−1.83		
−5.15		
+51.70		

March 4 (−.64)

[32.4] 32 33.4 32	42.9
34.6	45.0
36.6	47.1
38.6	51.2
40.7	53.3
9.7	55.3
11.8	57.4
13.9	59.5
16.0	3.6
18.0	5.7
	7.8
2583	4288
5583	6088
32 55.830	55.345
	.318
	32 55.332
	32 53.481
−1.93	+ 1.85
−.06	+ 1.87
−1.79	
−3.78	
+5 1.55	

	Feb. 27			Feb. 28			March 1			March 4		
	+22.27	−30.93	+27.73	+27.73	−28.10		+26.72	−28.32		+26.06	−30.20	
	1.34772	1.49038n		1.44295	1.44871n		1.42684	1.45209n		1.41597	1.48001n	
	1.46985	1.61251n		1.56508	1.57084n		1.54897	1.57422n		1.53442	1.59846n	
	40 4	45 0	45 1	40 4	45 0	45 1	40 4	45 0	45 1	40 4	45 0	45 1
E	35.1"	46.8	53	29.5	43.6	2.6	31.4	44.6	1.8	30.9	44.7	3.5
F	51.6	3.2	4.0	47.0	0.6	1.6	48.1	0.3	1.6	47.1	1.4	2.7
G	0.9	12.4	3.3	55.3	10.2	1.2	58.6	10.4	1.3	58.1	12.2	2.5
H	3.8	14.8	52.6	0.8	14.6	50.2	8.4	19.0	51.7	9.9	24.3	52.5
	211.4	257.2	52	192.6	249.0	235.6	208.4 / 146.5	254.3	236.4	206.0	22.6	12
	44 52.85	46 4.30	47 1.30	44 48.15	46 2.25	46/45 58.90	44 36.64	46 3.58	46/45 59.10	44 51.50	46 5.65	46/47 0.30
	+ 29.50	− 40.97		+ 36.74	− 37.23		+ 35.40 / 51.62	− 37.52		+ 34.23	− 39.67	
	45 22.35	45 23.33		45 24.89	45 25.02		45 27.02	45 26.06		45 25.73	45 25.98	
+5	37 26.00	37 25.02		37 23.46	37 23.33		37 21.33	37 22.29		37 22.62	37 22.37	
36	49 15	50/48 26		49 10	50/48 24		49 14	50/48 26		49 14	50/48 28	
	1.63430	1.63460		1.63430	1.63460		1.63430	1.63460		1.63430	1.63465	
	+2661	+2661		+2105	+2105		+2122	+2122		+1777	+1777	
1.66091	1.65691	1.66121		1.65535	1.65565		1.65552	1.65582		1.65207	1.65242	
	−45.80	−45.84		−45.22	−45.25		−45.24	−45.27		−44.88	−44.92	
	− .03	− .05		− .04	− .04		− .04	− .04		− .04	− .05	
	− .98	− .22		− .96	− .20		− .96	− .22		− .96	− .22	
	+ .29	+ .07		+ .29	+ .06		+ .29	+ .07		+ .29	+ .07	
	−46.52	−46.04		−45.93	−45.43		−45.95	−45.46		−45.59	−45.12	
+5	36 39.48	38.98		36 37.53	37.90		36 35.38	36.83		36 37.03	37.25	
+5	36 39.23	−4	17.41	36 37.72	−4	17.48	36 36.10	−4	16.72	36 37.14	−4	15.30
	32 18.8		−1.1	32 18.7		−1.1	32 18.7		−1.0	32 18.6		−1.0
	−4 20.4		+0.4	−4 19.0		+0.5	−4 17.4		+0.6	−4 18.5		+0.6
	19.6			18.2			16.6			17.7		
		−4	18.11		−4	18.08		−4	17.12		−4	15.70
		+32 21 12				19 64			18 98			+32 21 44

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	m s		′	″	
Feb 9	32 5365		32	19.8	3
14	5363	2		19.5	3
19	5360	3		19.2	3
24	5356	4		18.9	2
Mar 1	5352	4		18.7	2
6	53.46	6		18.5	1
11	53.40	6		18.4	1
16	5333	7		18.3	0
21	5325	8		18.3	

March 6 (−.69)

32 30.6	32 31.1	32 41.6
33.4	33.1	43.8
35.7	35.4	45.9
	37.0	50.0
	39.3	52.0
33 21.3	8.4	54.0
23.8	10.5	56.2
25.6	12.6	58.2
	14.7	2.4
	16.7	4.4
		6.4
	2388	4149
32 33.23	5388	5949
33 23.57	32 53.880	54.082
		53.968
		32 54.025
	−0.49	32 53.457
	−.07	+ 0.57
		+ 0.59
	−1.77	
	− 2.33	
	+51.69	

March 7 (−.59)

32 26.0	32 30.2	32 40.6
28.3	32.3	42.7
30.7	34.4	44.9
	36.5	49.0
	38.5	57.0
33 19.7	7.5	53.0
21.8	9.6	55.1
24.0	11.6	57.3
	13.7	1.4
	15.8	3.5
		5.5
	2301	4040
32 28.33	5301	5840
33 21.83	32 53.010	53.091
		.098
		32 53094
	+0.41	32 53.445
	−.06	− 0.35
		− 0.33
	−1.75	
	−1.40	
	+51.69	

March 15 (−.63)

32 20.3	32 22.5	32 33.0
22.0	24.9	35.2
25.0	26.9	37.4
	29.0	41.3
	31.0	43.5
33 8.8	0.1	45.5
10.7	2.1	47.6
12.0	4.0	49.7
	6.2	53.7
	8.3	55.7
		58.0
	1550	50[illegible]6
32 [illegible]43	4550	
33 10.50	32 45500	45782 (509, 588)
		32 45.548
	+7.76	32 53.340
	−.06	− 779
		− 777
	−1.65	
	+6.05	
	+51.60	

March 20 (−.53)

32 13.7	32 [17.8]	32 28.2
16.0	19.9	30.3
17.9	21.8	32.4
	24.0	36.5
	26.0	38.5
33 12.5	53.0	40.8
14.0	57.1	42.7
16.4	59.0	44.8
	1.3	49.0
	3.3	51.0
		53.0
	2852	4472
32 15.87	4052	
33 14.30	40520	40.655
		.608
		32 40632
	+12.72	32 53262
	−.05	− 1263
		− 1261
	−1.57	
	+11.10	
	+51.73	

March 6

	+20.79	−29.55	
	1,31785	1,47056n	
	1,43630	1,58901n	
	40 4	45 0	45 0
	37.5	44.2	59.8
	54.1	0.3	2.4
	4.1	11.0	1.0
	13.5	19.9	49.9
	229.2	15.4	2~~3~~5 31
	44 57.30	46 3.85	~~45 58.28~~ 46 13.28
	+ 27.31	− 38.82	
	45 24.61	45 25.03	
	37 23.74	37 23.32	
36	49 19	50 26	
	1,63430	1,63460	
	+3113	+3113	
	1,66543	1,66573	
	−4628	−4632	
	− .02	− .05	
	− .95	− .21	
	+ .30	+ .07	
	−46.95	−46.51	
+5	36 36.79	36.81	
+5	36 3680	−4	15.10
	32 18.5		−1.0
	−4 18.3		+0.7
	17.5		
		−4	15.40
		+82 2140	

March 7

+24.76	−28.74	
1,39375	1,45849n	
1,51220	1,57694n	
40 4	45 0	45 1
33.5	43.9	0.5
50.6	0.4	1.7
1.8	11.9	0.7
14.9	23.8	49.8
220.8	20.0	232.7
44 55.20	46 5.00	~~46~~ 45 58.18
+ 32.52	− 37.75	
45 27.72	45 27.25	
37 20.63	37 21.10	
49 17	50 27	
1.63430	1,63460	
+2487	+2487	
1,65917	1,65947	
−4562	−4565	
− .04	− .05	
− .93	− .21	
+ .29	+ .07	
−46.30	−45.84	
36 34.33	35.26	
36 34.80	−4	15.15
32 18.5		−1.0
−4 16.3		+0.8
15.5		
	−4	15.35
		1945

March 15

+23.12	−24.95	
1,36399	1,39707n	
1,48244	1,51552n	
40 4	45 0	45 0
37.8	38.5	57.3
54.1	53.9	56.1
3.7	5.8	55.3
20.0	20.0	43.7
235.6	238.2	212.4
44 58.90	45 59.55	45 53.10
+ 30.37	− 32.77	
45 29.27	45 26.78	
37 19.08	37 21.57	
49 21	50 22	
1,63430	1.63460	
+2080	+2080	
1,65510	1,65540	
−4520	−4523	
− .03	− .04	
− .90	− .18	
+ .30	+ .06	
−45.83	−45.39	
36 33.25	36.18	
	−4	13.29
32 18.3		−1.0
−4 14.9		+0.9
14.1		
	−4	13.39
		1986

March 20

+24.76	−33.67	
1,39375	1,52724	
1,51220	1,64569	
40 4	45 0	45 1
34.9	51.8	10.3
50.1	7.3	10.4
0.5	18.6	7.9
16.6	33.4	55.9
222.1	51.1	245
44 55.52	46 12.78	~~47~~ 46 6.12
+ 32.52	− 44.23	
45 28.04	45 28.55	
37 20.31	37 19.80	
49 18	50 35	
1.63430	1.63470	
+2885	+2885	
1,66315	1,66355	
−46.04	~~−45.83~~	4608
− .04	− .07	
− .83	− .20	
+ .29	+ .07	
−46.62	−46.28	
36 33.69	33.52	
36 33.60	−4	14.15
32 18.3		−1.0
−4 15.3		+0.9
14.5		
	−4	14.25
	+82	1935

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March 24

32	10.1	32	14.1	32	24.6
	11.7		16.2		26.6
	13.4		18.3		28.7
			20.4		32.8
			22.4		35.0
33	8.0		57.4		37.0
	9.3		53.4		39.0
	12.0		55.5		41.2
			57.7		45.3
			59.7		47.3
					49.4
			3691		4069
32	11.73				
33	9.77		36.910		36.991
					.998
				32	36.994
			+16.26	32	52.178
			-.06		16.20
					16.18
			-1.51		
			+14.69		
			+51.68		

	+25.26	-32.78
	1.40243	1.51561
	1.62088	1.63406
	40 4	45 0 45 1
E	31.1	49.9 11.2
H	49.2	5.2 7.2
G	1.2	17.8 7.4
K	21.9	38.1 58.4
	22.64	51.0 24.2
	44 56.60	46 12.5 + 47/46 6.05
	+ 33.18	- 43.06
	45 29.78	45 29.69
+5	37 18.54	37 18.66
36	49 19	50 35
	1.63430	1.63470
	+1370	+1370
	1.64800	1.64840
	-44.46	-44.50
	- .04	- .06
	- .83	- .20
	+ .29	+ .07
	-45.04	-44.69
+5	36 33.53	33.97
+5	36 33.75	-4 13.46
	32 18.3	- 1.0
	-4 15.4	+ 1.0
	14.6	
		-4 13.46
		+324129

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Geminorum

	m	s
α	7	37 47
δ	28°	19' 19"
	14	03 29

1877

Feb. 27

α 37 47.242
Corr. +.01
dα/dt +3.6889
δ 19 19.09
Corr. +.4
dδ/dt −8.359

−.61
−.05

7	37	29.5	37	28.6	37	40.2	37	19.6	37	27.9	37	39.6	37	23.2	37	27.3	37	39.0	
		31.9		31.0		42.5		21.7		30.1		42.0		24.6		29.6		41.3	
		33.6		33.1		44.9		23.4		32.5		44.4		26.4		32.0		43.7	
				35.5		49.6				34.9		49.0				34.3		48.5	
				37.8		52.0				37.2		51.4				36.6		50.7	
	38	24.2		10.7		54.3	38	22.0		10.3		52.7	38	23.2		9.4		53.0	
		26.3		13.1		56.7		23.4		12.3		56.0		25.0		11.7		55.3	
		27.8		15.6		59.1		25.2		14.6		58.4		27.0		14.0		57.8	
				17.8		3.7				17.0		3.1				16.3		2.4	
				20.0		6.1				19.4		5.4				18.7		4.9	
						8.4						7.8						7.1	
	37	31.67		24.32		41.75				23.62		41.08				22.99		40.37	
				54.32		59.75	37	21.63		53.62		59.08	37	24.73		52.99		58.37	
	38	26.10	37	54.320		54.318	38	23.63	37	53.620		53.709	38	25.67	37	52.990		53.064	
						.420						.720						.103	
					37	54.369					37	53.714					37	53.082	
				−4.49	37	49.488				−3.86	37	49.478				−3.26	37	49.467	
				−.33		+ 4.88				−.37		+ 4.24				−.31		+ 3.62	
				−.6		+ 4.87				−.6		+ 4.23						+ 3.61	
				−2.25						−2.24						−2.23			
				−7.13						−6.53						−5.80			
			+37	47.24					+47.18						+47.28				

				+22.70		−31.73				+32.08		−29.92				+28.35		−31.99	
				1,35603		1,50147m				1,50623		1,47596m				1,45255		1,50501m	
				1,42484		1,57028m				1,57504		1,54477m				1,52136		1,57382m	
				55 3		55 4		55 4		55 2		55 4		55 4		55 3		55 4	
ε				10.1		13.1		28.5		57.8		11.9		26.1		4.1		14.4	
ζ				23.0		26.0		28.2		11.5		25.2		27.7		17.0		27.0	
η				31.1		34.4		28.2		21.3		33.4		28.3		26.6		35.8	
Η				38.5		41.8		22.2		28.4		42.2		19.7		38.0		48.4	
				102.7		115.3		107.1		161.5		112.7		101.8		85.7		125.6	
			58	25.64	59	28.82	59	26.78	58	32.25	59	28.18	59	25.45	58	21.42	59	31.40	59
				+2.660		−37.18				+ 37.59		− 35.06				+ 33.22		− 37.48	
			58	52.28	58	51.64			58	52.84	58	53.12			58	54.64	58	53.92	
+ 28	23	56.07	23	56.71			23	55.51	23	55.23					23	53.71	23	54.43	
14	2	48.	3	51			2	37	3	50					2	43	3	53	
	1,15860		1,15910				1,15850		1,15910						1,15850		1,15910		
		+2668		+2668				+2111		+2111						+2076		+2076	
	1,18528		1,18578				1,17961		1,18021							+2136		+2134	
		−14.94		−14.94											1,17986		1,18046		
		−15.32		−15.34				−15.12		−15.14						−15.13		−15.15	
		− .12		− .23				− .23		− .20						− .18		− .23	
		− .68		− .90				− .66		− .90						− .66		− .90	
		+ .20		+ .27				+ .20		+ .27						+ .20		+ .27	
		−1592		−1620				−1581		−1597						−1577		−1601	
+ 28	23	40.15		40.51			23	39.70		39.26					23	37.94		38.42	
+ 28	23	40.33		− 4	17.41		23	39.48		− 4	17.48				23	38.18		− 4	16.72
	19	22.4			− 0.4		19	22.5			− 0.4				19	22.5			− 0.4
	− 4	17.9			− 5.3		− 4	17.0			− 5.4				− 4	15.7			− 5.4
		17.5						16.6								15.3			
				− 4	23.11					− 4	23.28							− 4	22.52
				+19	1722						1620								1566

Feb. 28

−.69
−.05

March 1

−.59

log cos δ 9.94465
15 cos δ tan i 0.06881 thro' Mar 1
0.06513 after Mar 1
tan g δ +0.54
sin Z +.24

March 4

−.64

log cos δ 9.94463
1.14

R-2 29979
I 234
I 100

	37	17.0	37	26.7	37	37.5													
		19.0		29.0		39.8													
		22.0		31.3		42.1													
				33.7		46.6													
				36.0		49.2													
	38	23.7		7.8		51.6													
		25.5		10.2		54.0													
		27.7		12.6		56.3													
				15.0		1.0													
				17.3		3.3													
						5.6													
	37	19.33		21.86		38.73													
			37	51.86		56.73													
	38	25.63	37	51.860		51.573													
						52.060													
					37	51.816													
				−1.93	37	49.431													
				−.34		+ 2.38													
						+ 2.37													
				−2.19															
				− 4.46															
				+47.36															

				+32.49		−33.81													
				1,51175		1,52905m													
				1,57688		1,59418m													
				55 2		55 4		55 4											
ε				57.5		14.6		28.0											
ζ				10.1		28.2		29.0											
η				20.4		36.6		29.7											
Η				35.4		52.2		23.8											
				63.4		131.6		110.5											
			58	15.85	59	32.90	59	27.62											
				+ 37.75		− 39.28													
			58	53.60	58	53.62													
			23	54.75	23	54.73													
			2	38	3	55													
			1,15850		1,15920														
				+1999		+1999													
			1,17849		1,17919														
				− 15.01		− 15.04													
				− .23		− .26													
				− .66		− .90													
				+ .20		+ .27													
				− 15.70		− 15.93													
			23	39.05		38.80													
			23	38.92		− 4	15.30												
			19	22.7			− 0.4												
			− 4	16.2			− 5.6												
				15.8															
						− 4	21.30												
						+19	1762												

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Feb 9	37 49.61	2	19 21.3	3
14	49.59	3	21.6	3
19	49.56	4	21.9	3
24	49.52	5	22.2	3
Mar 1	49.47	6	22.5	3
6	49.41	6	22.8	3
11	49.35	8	23.1	3
16	49.27	8	23.4	2
21	49.19		23.6	

March 6 (−.69)			March 7 (−.59)			March 11 (−.61)			March 15 (−.63)		
37 27.2	37 [24.6]	37 36.0	37 17.3	37 23.6	37 35.2	37 37.8	37 3	37 31.9	37 6.3	37 16.0	37 27.8
29.5	26.9	38.5	19.0	25.8	37.6		—	34.1	8.1	18.2	30.1
31.4	29.3	40.7	21.3	28.1	39.9		—	36.6	9.6	20.6	32.5
	31.4	45.5		30.4	[44.6] 42.6		—	41.2		22.9	37.1
	33.7	47.9		32.8	46.9		—	43.6		25.3	39.4
38 19.0	6.6	50.2	37 57.8	5.6	49.3	38 16.0	2.3	46.0	38 11.3	58.1	41.7
22.0	8.8	52.6	1.8	8.0	51.6	18.0	4.7	48.4	13.7	0.5	44.1
24.6	11.3	54.8	3.8	10.3	54.0	20.0	7.0	50.7	16.3	2.8	46.4
	13.6	59.6		12.6	58.6		9.3	53.4		5.2	47.2
	15.8	1.9		15.0	0.9		11.6	57.8		7.5	53.5
		4.3			3.4			0.1			55.9
	20.20	43.20		19.22	42.20		69.80	44.58		17.71	45.97
	50.20	55.20		49.22	41.99			50.58		41.70	
37 29.37			37 19.20		55.96	37 37.8			37 8.00		
38 21.87	37 50.200	50.182	38 1.80	37 49.220	49.082	38 18.00	46.001	45.982	38 13.77	37 41.710	41.791
		50.300			273						.810
		37 50.241			37 49.296			37 45.992			37 41.800
	−0.49	37 49.407		+0.41	37 49.395		+3.74	37 49.346		+7.76	37 49.282
	−.37	+ 0.83		−.31	− 0.10		−.33	− 3.35		−.34	− 7.48
	−.37	+ 0.82			− 0.11			− 3.36			− 7.49
	−2.17			−2.16			−2.11			−2.04	
	− 3.03			− 2.06			+1.30			+5.38	
	+47.21			+47.24			+47.29			+47.18	

+20.87	−31.63		+30.10	−12.50		+8.19	−32.01		+33.60	−31.97	
1.31952	1.50010n		1.47857	1.09691n		0.91328	1.50529n		1.52892	1.50474n	
1.38465	1.56523n		1.54370	1.16204n		0.97841	1.57042n		1.59405	1.56987n	
55 3	55 4	55 4	55 3	55 3	55 4	55 3	55 4	55 4	55 2	55 4	55 4
12.4	14.1	25.7	1.7	49.9	2.1	27.8	13.9	25.5	58.0	13.3	28.3
24.3	25.8	29.3	13.7	2.6	5.3	40.1	26.2	29.7	10.1	25.2	28.0
33.9	34.7	28.2	24.1	11.6	4.9	49.9	35.6	27.8	19.7	34.9	28.0
46.9	48.8	20.2	39.6	28.9	57.3	7.4	54.2	20.1	39.4	54.9	19.9
117.5	123.4	103.4	79.1	33.0	96	185.2	129.9	103.1	67.2	128.3	104.2
58 29.38	59 30.85	59 25.85	58 19.78	59 8.25	59 2.40	58 46.30	59 32.48	59 25.78	58 16.80	59 32.08	59 26.05
+ 24.25	− 36.75		+ 34.97	− 14.52		+ 9.51	− 37.19		+ 39.27	− 37.14	
58 53.63	58 54.10		58 54.75	58 53.73		58 55.81	58 55.29		58 56.07	58 54.94	
23 54.72	23 54.25		23 53.60	23 54.62		23 52.64	23 53.06		23 52.28	23 53.41	
2 51	3 53		2 42	3 30		3 08	3 54		2 39	3 54	
1.15860	1.15910		1.15850	1.15895		1.15870	1.15920		1.15850	1.15920	
+3123	+3123		+2499	+2499		+2906	+2906		+2091	+2091	
1.18983	1.19033		1.18349	1.18394		1.18776	1.18826		1.17941	1.18011	
−15.48	−15.50		−15.26	−15.27		−15.41	−15.43		−15.12	−15.14	
− .10	− .23		− .20	− .03		− .02	− .23		− .26	− .23	
− .67	− .85		− .63	− .78		− .72	− .86		− .59	− .81	
+ .21	+ .27		+ .20	+ .25		+ .23	+ .27		+ .20	+ .27	
−16.04	−16.31		−15.89	−15.83		−15.92	−16.25		−15.77	−15.91	
23 38.68	37.94		23 37.71	38.79 38.39		23 36.62	36.81		23 36.51	37.80	
23 38.31	−4	15.10	23 38.25	−4	15.15	23 36.72	−4	13.81	23 37.60	−4	13.29
19 22.8		−0.4	19 22.9		−0.4	19 23.1		−0.4	19 23.3		−0.4
−4 15.5		−5.7	−4 15.3		−5.8	−4 13.6		−6.0	−4 13.4		−6.2
15.1			14.9			13.2			13.3		
	−4	21.20		−4	21.35		−4	20.21		−4	19.89
	+19	17.11			16.90			16.51		+19	17.11

14

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-.53

March 20

37	4.4		37	10.9	37	22.7	37	6.0		37	7.4	37	18.0		
	7.3			13.3		23.0		7.7			9.8		21.5		
	9.3			15.5		27.3		10.0			12.0		23.9		
				18.0		32.1					14.4		28.6		
				20.2		34.4					16.6		30.8		
38	7.9			53.1		36.6	38	4.4			49.4		33.1		
	10.0			53.4		39.0		6.0			51.8		35.5		
	11.9			57.7		41.4		8.0			54.1		37.8		
				0.0		46.1					56.5		42.6		
				2.3		48.4					59.0		45.0		
						50.7							47.3		
				2464		4037					3310		3651		
37	7.50			3664			37	7.90							
38	9.73		37	36.640		36.700	38	6.13		37	33.100		33.191		
						428							288		
					37	36.410						37	33.196		
				+12.73	37	49.202					+16.26	37	49.132		
				-.28		- 1249					-.33		- 1594		
						- 1250							- 1595		
				-1.96							-1.89				
				+10.49							+14.04				
				+47.20							~~47.24~~				

	+29.41		-33.22				+25.30		-32.93						
	1.44290		1.52140n				1.40312		1.51759n						
	1,53803		1,58653n				1,46825		1,58272n						
	55	3	55	4	55	4	55	3	55	4	55	4			
E	1.0	"	15.1		28.6		5.1		13.5		30.3				
F	12.1		26.8		29.7		11.6		25.0		28.0				
G	23.9		36.5		28.7		28.2		36.3		27.7				
H	42.1		36.3		20.7		52.2		0.9		22.6				
	79.1		134.7		104.7		97.1		135.7		108				
58	19.78	59	33.68	59	26.42	58	24.28	59	33.92	59	27.15				
	+ .3452		- .3860				+ .2939		- .3826						
	58 54.30		58 55.08				58 53.67		58 55.66						
+28	23 54.05		23 53.27				23 54.68		23 52.79						
14	2	42	3	56			2	46	3	56					
	1.15850		1.15920				1.15860		1.15920						
	+2897		+2897				+1387		+1387						
	1.18747		1.18817				1.17247		1.17307						
	- 15.40		- 15.42				- 14.88		- 14.90						
	- .20		- .25				- .14		- .25						
	- .56		- .78				- .58		- .78						
	+ .20		+ .28				+ .20		+ .28						
	- 1596		- 1617				- 1540		- 1565						
+28	23 38.09		37.10				23 39.28		37.14						
+28	23 37.60		- 4	14.15			23 38.21		- 4	13.46					
	19 23.6			- 0.4			19 23.7			- 0.4					
	- 4 14.0			- 6.5			- 4 14.5			- 6.6					
	13.6						141								
			- 4	21.05					- 4	20.46					
			+19	1755 1635					+19	1775					
				6											

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Hydrae

	h m	s					
	21	33	α_0	21 32 57.3	log cos δ 9.99561	log cos δ 9.99562	
	8° 7'	34"	Corr α	+ .01	15 cos δ tan i 0.11609		I 2.08
			$\frac{d\alpha}{dt}$	+2.9491			I .089
	850 30	22	δ_0	7 35.44	tan δ − 0.14	1.01	
			Corr δ	+ .2	sin z + .77		
			$\frac{d\delta}{dt}$	− 15.409			

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March 24 (−.62)			April 9 (−.68, −.10)			April 13	April 15 (−.64, −.04)		
9 20 56.4	20 55.1	21 5.6	20 31.0	20 44.0	20 54.5		20 30.1	20 38.7	20 50.3
58.3	57.2	7.7	32.6	46.0	56.5		31.9	41.8	52.3
0.0	59.3	9.7	34.5	48.1	58.7		33.9	44.0	54.3
	1.4	13.9		50.3	2.8			46.0	58.6
	3.4	16.0		52.3	4.8			48.0	0.6
21 49.5	32.6	18.1	21 42.6	21.7	6.9		21 37.9	17.1	2.9
50.8	34.6	20.2	44.6	23.6	9.1		39.3	19.3	4.9
52.6	36.7	22.2	46.5	25.6	11.2		40.9	21.3	6.9
	38.9	26.3		27.7	15.2			23.5	11.1
	41.0	28.5		29.8	17.5			25.5	13.0
		30.5			19.5			8	15.1
	360.2	198.7		369.1	256.7			326.2	270.0
20 55.23	180.2		20 32.70	69.1	76.7		20 31.97	26.2	30.0
21 50.97	21 18.020	18.064	21 44.57	21 6.910	6.973		21 39.37	21 2.620	2.727
		10.9			.999				.709
		21 18.086			20 6.986				20 2.718
	+16.30	21 34.418		+27.24	21 34.239			+31.41	21 34.166
	+.08	− 16.33		+.09	− 27.25			+.08	− 31.45
		− 16.34		− .10	− 27.26			− .4	− 31.46
	−1.85			−1.67				−1.60	
	+14.53			+25.56				+29.85	
	+21 32.62			+32.55				+32.57	

	+19.86	−32.88	+34.29	+34.29	−37.58	+30.75	−36.65
	1.29798	1.51693n		1.53517	1.57496n	1.48785	1.56407n
	1.41407	1.63302n		1.65126	1.69105n	1.60394	1.68016n
	20 4	25 0	25 0	20 3	25 0	20 3	25 0
E	17.6	24.6	44.7	59.8	34.4	55.8	21.2
F	31.0	38.9	40.9	14.1	48.7	18.8	44.6
G	46.4	55.9	39.7	14.2	50.2	21.1	49.2
H	0.2	11.2	33.7	14.2	50.2	25.5	52.0
	95.2	130.6	159.0	24 42.3	183.5	61.2	167.0
	24 23.80 (38.80)	25 32.65 (47.65)	25 39.75	23 10.58	25 45.88	24 15.30	25 41.75
	+ 25.95	− 42.96		+ 44.80	− 49.10	+ 40.17	− 47.88
	25 4.75	25 4.69		24 55.38	24 56.78	24 55.47	24 53.87
−8	2 16.40	2 16.34		2 7.03	2 8.43	2 7.12	2 5.52
50	29 01	30 10		28 33	30 08	28 37	30 04
	1.84320	1.84350		1.84310	1.84350	1.84310	1.84350
	+1744	+1744		+1356	+1356	+776	+776
	1.86064	1.86094		1.85666	1.85706	1.85086	1.85126
	−72.55	−72.60		−71.89	−71.95	−70.93	−71.00
	+ .03	+ .08		+ .09	+ .11	+ .07	+ .10
	− .78	− .14		− .63	− .12	− .60	− .10
	+ .28	+ .05		+ .25	+ .05	+ .26	+ .04
	−1 13.02	−1 12.61		−1 12.24	−1 11.91	−1 11.20	−1 10.96
−8	3 29.42	28.95		3 12.18 / 19.21	20.34	3 18.32	16.48
−8	3 29.18	−4	13.46	3 19.78	−4 22.72	3 17.40	−4 26.35
	7 44.8		−1.4	7 45.5	−1.4	7 45.6	−1.4
	−4 15.6		+9.4	−4 25.7	+10.1	−4 28.2	+10.1
	15.4			25.5		28.0	
		−4	5.46	−4	14.02	−4	17.65
		+59 23.72			5.76		
		−7 34.64			33.80	−7	35.05

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	2m	2		1	"
Mar 21	21	3445	5	1	446 3
26		3440	5		449 3
31		3435	6		452 2
Apr 5		3429	6		454 2
10		3423	6		455 1
15		3417	7		456 1
20		3410	7		456 0
25		3403	7		456 0
30		3396	7		455 1

-.70

April 16

20	28.3	20	39.0	20	49.5	20	28.9	20	36.8	20	47.3	20	34.3	20	36.3	20	46.7		
	29.6		41.0		67.7		31.4		[38.9] 36.9		49.5		35.8		38.4		48.8		
	32.0		43.3		53.8		32.8		41.0		51.7		37.7		40.4		50.9		
			45.3		58.0				43.2		53.7				42.5		55.0		
			47.3		0.0				45.3		57.8				44.6		57.2		
21	36.7		[46.6]		2.0	21	35.6		14.3		59.8	21	25.2		13.1		59.2		
	37.9		18.7		4.2		37.6		16.4		1.9		26.8		15.8		1.3		
	39.2		20.7		6.2		39.7		18.5		4.0		29.0		17.9		3.4		
			22.7		10.4				20.6		8.2				20.0		7.6		
			24.8		12.6				22.7		10.4				22.0		9.6		
					14.6						12.3						11.7		
			3174		2630				2977		3586				2916		3514		
20	29.97		194		230	20	31.03		2977		6586	20	35.93		5916		6514		
21	37.98	21	1940	21	2860	21	37.63	20	59770		59873	21	27.00	20	59160	20	59218		
					.029						1859						249		
				21	2.060					20	59866					20	57233		
			+32.00	21	34152				+34.08	21	34068				+34.74	21	34.054		
			+.09		− 3209				+.09		− 34.20				+.11		− 3482		
					− 32.10						− 34.21						− 3483		
			−1.58						−1.50						−1.48				
			+30.51						+32.67						+33.37				
			+32.57						+32.54						+32.60				

	+32.09		−35.87				+28.84		−37.76				+23.30		−27.77				
	1.50637		1.55473m				1.46020		1.57703m				1.36736		1.44358m				
	1.62246		1.67082m				1.57609		1.69312m				1.48345		1.55967m				
	20 3'		25 0				20 3		25 0				20 4		25 0				
E	54.1		22.2				55.9		22.5				5.9		11.7				
F	14.8		43.5				19.0		45.3				24.2		30.8				
G	19.4		48.9				22.6		50.3				30.2		38.9				
H	23.7		52.9				26.6		54.6				37.2		45.9				
	520		167.5				641		172.7				97.5		127.3				
	24 13.00	25	41.88				24 13.52	25	43.18				24 24.38	25	31.82				
	+ 41.92		− 46.86				+ 16.02		− 49.33				+ 30.44		− 36.28				
	24 54.92	24	55.02				+ 37.68	24	53.85				24 54.82	24	55.54				
							24 53.70												
	2 6.57	2	6.67				2 5.35	2	5.50				2 6.47	2	7.19				
30	28 35	30	04				28 38	30	05				28 46	29	54				
	1.84310	1.84	350				1.84310	1.84	350				1.84320	1.84	350				
	+505	+	505				+1048	+	1048				+188	+	188				
	1.84815	1.84	855				1.85358	1.85	398				1.84508	1.84	538				
	−.7049	−	.7056				−.7138	−	.7145				−.7080	−	.7094				
	+ .08	+	.09				+ .06	+	.11				+ .04	+	.06				
	− .59	−	.10				− .55	−	.09				− .57	−	.06				
	+ .25	+	.04				+ .26	+	.04				+ .26	+	.03				
−1	10.95	−1	10.53				−1	11.61	−1	11.39			−1	10.27	−1	10.91				
	3 17.32		17.20				3 16.96		16.89				3 16.74		17.20				
5	3 17.26		− 4		26.28		3 16.92		− 4		26.84		3 16.97		− 4		26.84		
	7 45.6				−1.4		7 45.6				−1.4		7 45.6				−1.4		
	−4 28.3				+10.2		−4 28.7				+ 10.2		−4 28.6				+ 10.1		
	28.1						28.5						28.4						
65			− 4		17.48				− 4		~~37.44~~ 18.04				− 4		~~38.34~~ 18.14		
5											~~5536~~ 34.96								
			− 7		3474										− 7		~~5531~~ 3511		

-.67

April 22

-.82

April 23

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St. Louis

h m s
0 1 49
+12° 34' 5
+29 48 43

1877

α_0 m s 1 49.188
Corr^n + .01
$\frac{d\alpha}{dt}$ +3.2014
δ_0 34 3.06
Corr^n + .2
$\frac{d\delta}{dt}$ −17.428

log cosδ 9.98947
15 cosδ tan$i$ 0.10995
Langδ +0.22
sinΣ +.50

log cosδ 9.98947
K-2 18.921
I 2.11
I' .090
1.02

-.67 -.64 -.70 -.67
-.06 -.04

April 12

10 0 57.3 / 57.5 / 57.5
0 58.9 / 59.5 / 1.0 / 3.0 / 5.2 / 7.2 / 36.8 / 38.8 / 41.0 / 43.1 / 45.2
1 9.5 / 11.5 / 13.8 / 17.9 / 20.0 / 22.1 / 24.3 / 26.4 / 30.7 / 32.7 / 34.6
0 59.43
2802 / 2202
1 22.020
22.155 / .110
1 22.132
+29.40 / -.14 / -6 / -2.11 / +27.09
1 51.298 / 29.14 / 29.18
+1 49.22

April 15

0 50.1 / 52.5 / 54.3
0 52.30
32.01 / 20.01
1 20.010
20.091 / .100
1 20.096
+31.410 / -.14 / -4 / -2.08 / +29.10 / +49.28
1 51.267 / 31.17 / 31.18

0 56.7 / 59.0 / 1.0 / 3.1 / 5.2 / 34.7 / 36.9 / 39.1 / 41.1 / 43.3
1 7.4 / 9.5 / 11.7 / 16.0 / 18.0 / 20.0 / 22.1 / 24.3 / 28.6 / 30.6 / 32.8
0 52.4 / 54.3 / 56.0

April 16

0 47.6 / 49.3 / 50.9
0 49.27
54.30
0 56.1 / 58.2 / 0.4 / 2.4 / 4.6 / 34.1 / 36.2 / 38.3 / 40.5 / 42.5
1 6.8 / 8.9 / 11.0 / 15.2 / 17.3 / 19.4 / 21.5 / 23.7 / 27.9 / 30.0 / 32.1
0 43.40
1 19.330
19.436 / .423
1 19.428
+32.00 / -.15 / -2.07 / +30.08 / 29.98 / +49.51 / .21
1 51.255 / 31.83 / 31.84

0 41.2 / 43.4 / 45.6
— / 57.6 / 59.7 / 1.8 / 3.8 / 5.9 / 8.0 / 10.0 / 12.1 / 14.2 / 16.3 / 18.4 / 20.5 / 22.6 / 24.8 / 26.9 / 29.0 / 31.1 / 33.2 / 35.3 / 37.4 / 39.5 / 41.6 / 43.7 / 45.8 / 47.9 / 50.0 / 52.1 / 54.2 / 56.3 / 58.4
1 [57.6] / [59.7] / 1.8 / 3.8 / 5.9 / 8.0 / 10.0 / 12.1 / 14.2 / 16.3 / 18.4 / 20.5 / 22.6 / 24.8 / 26.9 / 29.0 / 31.1 / 33.2 / 35.3 / 37.4 / 39.5 / 41.6 / 43.7 / 45.8 / 47.9 / 50.0 / 52.1 / 54.2 / 56.3 / 58.4
1 17.227
1 17.227
+34.68 / -.14 / -1.99 / +31.95 / +49.28
1 51.182 / -3396 / -3397

April 22

+22.70 / 1.35603 / 1.46598 / 40 3 / 1.1
+27.2 / +25.7 / +28.6 / 82.6 / 43 20.65 / +2.924 / 43 49.89
+12 38 58.46
29 47 43 / 1.51800 / +1879 / 1.53679 / −34.42 / −.06 / −.46 / +.20 / −34.74
+12 38 23.72
33 568 / −4 269 / 26.7
−4 19.84
+34 3.88

+27.80 / 1.44404 / 1.55399 / 40 2 / 55.1 / 18.3 / 19.4 / 24.5 / 1.73 / 43 29.32 / 43 14.32 / +35.81 / 43 50.13
38 58.22
47 36 / 1.51800 / +960 / 1.52760 / −33.70 / −.09 / −.45 / +.19 / −34.05
38 24.17
33 569 / −4 27.3 / 27.1
−4 26.35 / −.9 / +6.2
−4 21.05
3.12

+36.16 / 1.47943 / 1.58938 / 40 2 / 53.1 / 14.2 / 16.0 / 23.5 / 46.8 / 43 11.71 / +38.85 / 43 50.55
38 57.80
47 34 / 1.51880 / +636 / 1.52436 / −33.45 / −.11 / −.45 / +.19 / −33.82
38 23.98 / 38 23.54 / 33 570 / −4 265 / 26.3
−4 26.28 / −.9 / +6.0
−4 21.18
2.36

−34.87 / 1.54745 / 1.65240 / 40 4 / 16.4 / 42.1 / 39.6 / 46.6 / 144.7 / 44 36.18 / −44.92 / 43 51.26
38 57.09
48 58 / 1.51840 / +686 / 1.52476 / −33.48 / −.15 / −.64 / +.28 / −33.99
23.10

+33.83 / 1.52930 / 1.63925 / 40 2 / 45.5 / 8.8 / 10.9 / 16.4 / 2.16 / 43 5.40 / +43.58 / 43 48.98
38 59.37
47 27 / 1.51790 / +1156 / 1.52946 / −33.84 / −.14 / −.40 / +.19 / −34.19
38 25.18
33 573 / −4 27.9 / 27.7
−4 21.94
3.24

40 4 / 13.3 / 36.7 / 39.2 / 45.2 / 1344 / 44 33.60
−4 26.84 / −.9 / +5.8

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April 23 — April 26 — May 3 — May 5

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ρ Leonis

℞	42^m	47^s
+ 15°	15′	36″
+ 27	07	12

α_0	$42^m\ 47.072^s$
Corr α	+ .01
$\frac{d\alpha}{dt}$	+ 3.0651
δ_0	15 34.29″
Corr δ	+ .0″
$\frac{d\delta}{dt}$	− 20.098″

log cos δ	9.98440	log cos δ	9.98441
15 cos δ tan i	0.10488 thro' May 14	R − 2	19.143
	0.10208 after May 14	I	214
		I′	.091
tang δ	+ 0.27	1.04	
sin Z	+ .46		

1877

April 26 (−.95)

11 41 46.9	41 50.2	42 1.0
49.0	52.3	3.1
51.1	54.4	5.2
	56.6	9.6
	58.6	11.7
42 38.2	28.6	13.8
39.7	30.8	15.9
41.4	32.9	18.0
	35.1	22.4
	37.2	24.4
		26.5
	4367	1516
41 49.00	1367	
42 39.77	42 13.670	13.782
		761
		42 13.772
	+36.00	42 49.510
	−.25	− 35.74
		− 35.75
	−2.44	
	+33.31	
	+42 47.08	

May 3 (−.80)

41 40.0	41 47.5	41 58.3
41.9	49.6	0.5
43.4	51.8	2.6
	54.0	6.9
	56.0	9.0
42 33.9	26.0	11.2
35.7	28.2	13.3
38.2	30.3	15.4
	32.5	19.8
	34.5	21.9
		24.0
	4104	1829
41 41.77		1229
42 35.93	42 11.040	42 11.173
		131
		42 11.152
	+38.49	42 49.454
	−.21	− 38.30
		− 38.31
	−2.38	
	+35.90	
	+47.05	

May 5 (−.82, −.05)

41 44.9	41 46.9	41 57.7
47.4	48.7	59.8
	51.2	1.9
	53.3	6.2
	55.4	8.3
42 42.6	25.4	10.4
44.6	27.4	12.5
46.4	29.7	14.7
	31.8	19.0
	33.9	21.0
		23.3
	4037	2348
41 46.15		1148
42 44.53	42 10.370	42 10.430
		.461
		42 10.448
	+39.28	42 49.438
	−.22	− 38.99
	− 5	− 39.00
	−2.37	
	+36.64	
	+47.09	

May 6 (−.85, −.07)

41 43.7	41 46.5	41 57.3
45.7	48.5	59.3
47.5	50.8	1.4
	52.8	5.7
	55.0	7.8
42 32.7	24.9	9.9
35.5	27.0	12.2
37.7	29.0	14.3
	31.3	18.6
	33.4	20.6
		23.0
	3992	2301
41 45.63		1101
42 35.30	42 9.920	10.009
		011
		42 10.010
	+39.75	42 49.430
	−.22	− 39.42
	− 7	− 39.43
	−2.36	
	~~2.68~~	
	+37.07 .09	
	+47.07 .10	

Declination reductions

	April 26			May 3		May 5		May 6	
	+24.77	−26.00	~~+29.38~~	+29.38	−24.78	+24.30	−34.08	+24.38	−25.29
	1.39393	1.41497n		1.46805	1.39410n	1.38561	1.53250n	1.38703	1.40295n
	1.49881	1.51985n		1.57293	1.49898n	1.49049	1.63738n	1.49191	1.50783n
	10′ 1′	10′ 3′		10′ 1′	10′ 2′	10′ 1′	10′ 3′	10′ 1′	10′ 2′
E	57.2″	1.7″		50.0″	58.4″	56.9″	9.7″	55.2″	58.9″
F	9.6	13.8		4.1	12.1	9.7	23.1	7.5	11.9
G	15.5	18.9		7.9	15.7	14.6	26.4	13.8	17.2
H	50.6	55.6		49.7	54.6	51.8	3.5	50.1	53.8
	12.9	30.0		231.7	20.8	13.0	62.7	6.6	21.8
	12 3.22	13 7.50		11 57.92	13 5.20	12 3.25	13 15.68	12 1.65	13 5.45
	+ 31.54	− 33.10		+ 37.40	− 31.55	+ 30.94	− 43.39	+ 31.04	− 32.20
	12 34.76	12 34.40		12 35.32	12 33.65	12 34.19	12 32.29	12 32.69	12 33.25
+ 15	10 13.59	10 13.95		10 13.03	10 14.70	10 14.16	10 16.06	10 15.66	10 15.10
27	6 ~~25~~ 21	7 26		6 16	7 23	6 21	7 34	6 20	7 23
	1.46930	1.46970		1.46930	1.46970	1.46930	1.46970	1.46930	1.46970
	+ 180	+ 180		+ 107	+ 107	+ 596	+ 596	+ 813	+ 813
	1.47110	1.47150		1.47037	1.47074	1.47526	1.47566	1.47743	1.47783
	− 29.59	− 29.61		− 29.54	− 29.56	− 29.87	− 29.90	~~32.02~~ − 30.02	~~32.05~~ − 30.02
	− .08	− .09		− .11	− .08	− .08	− .16	− .08	− .08
	− .27	− .40		− .26	− .40	− .25	− .40	− .24	− .37
	+ .13	+ .19		+ .12	+ .19	+ .13	+ .19	+ .12	+ .19
	− 29.81	− 29.91		− 29.79	− 29.85	− 30.07	− 30.27	− 30.22	− 30.28
+15	9 43.78	44.04		9 43.24	44.85	9 44.09	45.79	9 45.44	44.82
+15	9 43.91	+ 5 / 40.30		9 44.04	+ 5 / 40.46	9 44.94	+ 5 / 40.23	9 45.13	+ 5 / 40.21
	15 23.6	− 0.9		15 24.3	− 0.9	15 24.5	− 0.9	15 24.6	− 0.9
	+5 39.7	+ 10.7		+5 40.3	+ 10.0	+5 39.6	+ 9.8	+5 39.5	+ 9.7
	39.7			40.3		39.6		39.5	
		+ 5 50.10			+ 5 49.56		+ 5 49.13		+ 5 49.01
		+15 3401			3360		3407		+15 3414

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	m	2		'	"	
Apr 30	42	49.48	4	15	24.0	5
May 5		49.44	4		24.5	4
10		49.40	4		24.9	5
15		49.36	4		25.4	4
20		49.31	5		25.8	4
25		49.26	5		26.2	4
30		49.21	5		26.6	4
June 4		49.16	5		27.0	3
9		49.11	5		27.3	

-.88 -.90 -.90 -.93

May 7 May 12 May 14 May 16

	41	42.5		—		41	35.6					41	38.7		—	41	32.8	41	38.7	41	41.5	41	52.2
		44.3		—			38.8						40.8		—		35.0		41.8		43.6		54.3
		45.9		—			40.9						42.6		—		37.0		43.9		45.7		56.4
				—			42.2								—		41.4				47.9		60.7
				—			43.3								—		43.5				50.0		62.8
	42	38.4	42	32.4			38.5					42	27.3		—		37.6	42	31.1		39.9		55.0
		38.1		36.5			41.7						29.1		—		37.8		33.0		42.0		57.0
		37.3		38.6			43.8						30.7		—		39.9		34.7		44.1		59.2
				40.8			46.0								—		42.2				46.3		61.4
				43.0			48.2								—		44.3				48.4		63.6
				45.2			50.3								—		46.4				50.6		65.7
				28.60			22.42								24.19						34.94		23.49
	41	44.23					10.42					41	40.70		41.9	41	41.80						54.9
	42	35.27		9.517		42	9.473					42	29.23			42	0.563	42	32.93	42	4.940	42	4.991
																	5.627						5.531
						42	9.495									42	5.627					42	5.011
				+40.18		42	49.422								+43.96	42	49.366				+44.63	42	49.348
				-.23			39.93				-.24				-.24		43.74				-.27		44.34
							39.94										43.75						44.35
				-2.35											-2.30						-2.28		
				+37.60											+41.42						+42.08		
				+47.10											+47.05						+47.09		

	+25.27		-25.77						+24.93		-23.40			+23.21		-27.92				
	1.402 61		1.411 11 m						1.396 72		1.369 22 m			1.365 68		1.445 92 m				
	1.507 49		1.515 99 m						1.501 60		1.474 10 m			1.467 76		1.548 00 m				
	10 ' 1		10 ' 2			10 ' 1		10 ' 2			10 ' 1		10 ' 2			10 ' 3				
E	54.2		58.4			53.6		55.1			56.7		57.2			57.5				
H	8.8		13.5			6.6		8.8			8.5		9.9			11.4				
C	12.6		17.1			12.1		13.6			15.0		15.6			18.9				
K	49.3		53.9			49.1		51.9			52.6		53.5			54.9				
	49		42.9			1.4		1.94			1.31		1.62			2.27				
	12 1.22		12 35.72			12 0.35		13 2.35			12 3.28		13 4.05			12 5.68		13 10.42		
			13 5.72																	
	+32.17		- 32.81						+31.74		- 29.79			+29.36		- 35.32				
	12 33.39		12 32.91						12 35.02		12 34.26			12 35.04		12 35.10				
	10 14.96		10 15.44						10 13.33		10 14.09			10 13.31		10 13.25				
27	6 19		7 24						6 21		7 22			6 24		7 28				
	1.469 30		1.469 70						1.469 30		1.469 70			1.469 30		1.469 70				
	+ 385		+ 385						- 944		- 944			- 1527		- 1527				
	1.473 15		1.473 55						1.459 86		1.460 26			1.454 03		1.454 43				
	- 29.13		- 29.75						- 28.83		- 28.86			- 28.15		- 28.47				
	- .08		- .09						- .08		- .07			- .07		- .11				
	- .25 24		- .37						- .25		- .37			- .25		- .38				
	+ .12		+ .19						+ .13		+ .19			+ .13		+ .19				
	- 29.93		- 30.02						- 29.03		- 29.11			- 28.64		- 28.77				
	9 45.03		45.42						9 44.30		44.98			9 44.67		44.48				
	9 45.22		+ 5 39.92				+ 5 40.27		9 44.64		+ 5 40.47			9 44.58		+ 5 41.66				
	15 24.7		- 0.8				- 0.8		15 25.3		- 0.8			15 25.5		- 0.8				
	+5 39.5		+ 9.6						+5 40.7		+ 9.0			+5 40.9		+ 8.8				
	39.5								40.7					40.9						
			+ 5 48.72								+ 5 48.67					+ 5 49.66				
			+ 15 33.94								33.31					+ 15 34.24				

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May 28 −1.00

11	41	29.1	41	34.80	41	43.57	41	33.9		41	44.28
		30.9		36.86		47.80		35.9			46.40
		32.6		38.80		49.80		38.0			48.58
				41.21		54.19					52.88
				43.32		56.22					55.00
	42	15.6		13.32		58.30	42	11.8			57.20
		16.9		15.16		0.50		16.9			59.28
		18.8		17.16		2.62		18.8			1.40
				18.67		6.87					5.63
				21.86		9.00					7.68
						11.28					9.80
				28286		34225					38813
	41	30.87				64225	41	35.93			62813
	42	17.10	41	58.286		58.386	42	16.83		41	57.103
						377					
					41	58.382				41	57.103
				+51.12	42	49228			+52.42	42	47218
				−.27		−5085			−.30		−5212
						−5086					−5213
				−2.16					−2.15		
				+48.69					+49.97		
				+47.07					+47.07		

	+27.51	−18.72	+21.17	−19.73
	1.43949	1.27231n	1.32572	1.29513n
	1.54157	1.37439n	1.42780	1.39721n
	10 1	10 2	10 1	10 2
ℰ	47.8	47.0	56.0	47.9
☿	3.8	1.5	10.2	2.1
♀	11.1	9.8	18.5	10.1
♂	51.4	50.1	0.1	50.9
	41	2284	248	2310
	13 +.02	12 57.10	12 6.20	12 57.75
	+3480	−23.68	+26.78	−24.96
	12.3582	12 33.42	12 32.98	12 32.79
+15	10 12.53	10 14.93	10 15.37	10 15.56
27	6 19.	7 15	6 24	7 16
	1.46930	1.46960	1.46930	1.46960
	−864	−864	−1193	−1193
	1.46066	1.46096	1.45737	1.45767
	−28.88	−28.90	−28.87	−28.89
	−.10	−.05	−.06	−.05
	−.22	−.33	−.23	−.33
	+.12	+.18	+.13	+.18
	−2908	−2910	−28.83	−2889
+15	9 4345	4583	9 4654	4667
+15	9 4464	+5 41.15	9 4660	+5 40.65
	15 26.5	−0.8	15 265	−0.8
	+5 41.9	+7.8	+5 39.9	+7.8
	41.9		39.9	
		+5 48.15		+5 47.68
		+15 3279		+15 34.28

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N.S.

	Virginia				May 9													
h	m	s		m s		m s												
13	18	43		18 42909		18 4541			−31 25.1									
				2	14	.40	1		.1		log cos δ	9.99264		log cos δ	9.99264			
			dt	+3.153	19	4539	1		250									
10°	31	7"	dt		24	.38	2		0		15 cos δ sin t	0.11312	thru May 14	K−2	−18.783			
			δ₀	31 6.40	29	4536	2		249			0.11032	after May 14	I	2.10			
					June 3	34	3		8					I'	.090			
52	53	55	dv/dt	−18.91	8	4531	3		24.6		tang δ	−0.19	1.02					
					13	28	4		.4		sin Z	+.80						
					18	4524			24.2									

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−.90 −.88 −1.03 −1.00

May 12 May 13 May 16 May 28

13	17	37.3	17	[39.4]	17	49.8	17	36.7	17	38.5	17	48.1	17	40.3	17	37.6	17	—	17	36.6	17	30.83	17 41.42
		53.2		41.5		51.8		38.8		40.6		51.1		42.5		39.7		—		38.5		32.98	43.57
		54.8		43.5		54.0		40.8		42.8		53.3		44.9		41.9		—		40.2		35.05	45.60
				45.6		58.1				44.8		54.4				44.0		—				37.15	49.78
				47.5		0.3				46.8		56.6				[46.1]	0.8	58.7				39.28	51.81
	18	33.7		17.0		2.3	18	26.0		16.3		17.7	18	29.2		13.6	.7	0.7	18	13.7		8.70	13.00
		36.4		19.0		4.4		29.8		18.4		8.7		30.9		17.4	.8	2.8		15.8		10.73	16.05
		38.2		21.1		6.6		31.8		20.5		5.9		32.5		19.5	.8	5.0		17.6		12.87	18.27
				23.3		10.9				22.6		10.0				21.6	.6	8.0				14.89	21.33
				25.4		12.9				24.6		12.1				23.8	.7	11.2				17.00	24.37
						15.0						14.3					.7	13.3					6.66
				3233		2661				3159		3182				3072		484				23950	41413
	17	53.10		23.3		261	17	38.77					17	42.57						38.43			57413
	18	36.10	18	2.330	18	2.373	18	29.57	18	1.590	18	1.655	18	30.57	18	0.720		0.714	18	15.70	17	53.950	54.012
						.23						.680						.810					.040
					18	2.398					18	1.668					18	0.762				17	54.026
				+42.84	18	45.40				+43.56	18	45.40				+44.62	18	45.40				+51.10	18 45.36
				+.16						+.02						+.02						+.19	
				−2.49						−2.49						−2.49						−2.46	
				+40.52						+41.23						+42.32						+48.84	
			18	42.92					18	42.90					18	43.08					18	42.87	

		+9.30		−33.70				+22.90		−28.20				+18.19		−30.11				+15.6		−21.67	
		0.96848		1.52763n				1.35984		1.45025n				1.25983		1.47871n				1.19312		1.33586n	
		1.08160		1.64075n				1.47296		1.56337n				1.37015		1.58903n				1.30344		1.44618n	
		55 3		55 4				55 3		55 4				55 3		55 4				55 3		55 3	
E		14.9		11.5				1.0		7.1				7.6		11.3				8.9		56.0	
A		28.1		24.4				13.9		19.7				20.2		23.6				22.2		10.0	
G		37.2		32.1				23.6		28.1				32.1		35.5				33.5		21.6	
K		11.4		7.6				58.6		4.6				5.8		9.2				11.2		58.0	
		916		756				371		595				657		796				758		25.6	
		58 22.90		59 18.90				58 [4.25]		59 14.88				58 16.42		59 19.90				58 18.95		59 6.40	
		+12.07		−43.73				+2.91		−36.59				+23.45		−38.82				+20.11		−27.94	
		58 34.97		58.35.17				58 38.99		58 38.29				58 39.87		58 41.08				58 39.06		58 38.46	
−10	35	4662	35	46.82			35	50.64	35	49.94			35	51.52	35	52.73			35	60.71	35	50.11	
52	52	41	53	37			52	27	53	33			52	34	53	38			52	37	53	24	
		1.88040		1.88070				1.88030		1.88070				1.88040		1.88070				1.88040		1.88060	
		+783		+783				−35		−35				−1170		−1170				−457		−457	
		1.88823		1.88853				1.87995		1.88135				1.86870		1.86900				1.87583		1.87603	
		−74.31		−74.36				−75.85		−75.92				−73.91		−73.96				−75.13		−75.17	
		+.01		+.12				+.05		+.08				+.03		+.09				+.03		+.05	
		−.41		−.51				−.38		−.50				−.40		−.54				−.36		−.45	
		+.20		+.26				+.19		+.25				+.20		+.26				+.20		+.25	
	−1	17.51	−1	17.49			−1	15.99	−1	16.09			−1	14.08	−1	14.12			−1	15.26	−1	[15.42]	32
−10	37	4.13		4.31			37	6.63		6.03			37	5.60		6.85			37	5.97		5.59	
	37	4.22		+5	40.27		37	6.33		+5	40.49		37	6.22		+5	41.66		37	5.70		+5	41.15
					−1.3						−1.3						−1.3						−1.3
					+18.7						+18.7						+18.7						+18.5
				+5	57.67					+5	57.89					+5	59.06					+5	58.35
	−31	25.1					31	25.1					31	25.1					31	24.9			
−10				31	6.55					31	8.44					31	7.16					31	7.40
																							.35

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−1.13 | −1.19 | −1.20 | −1.12 − .05

May 29 | May 30 (24) | May 31 | June 19

	17	37.3	17	29.50	17	40.18	17	52.6	17	—	17	39.17	17	31.8	17	—	17	38.50	17	14.6
		39.2		31.60		42.13		54.8		—		41.27		33.9		—		40.40		21.4
		41.6		33.70		44.28		56.8		—		43.37		35.8		—		42.50		23.1
				35.95		48.36				—		47.60				—		46.74		
				24.97		50.64				—		49.80				—		49.60		
	18	20.6		1.41		52.77	18	20.5		6.36		51.90	18	24.0		5.54		51.00	18	10.5
		22.2		4.36		54.85		22.2		8.40		54.00		24.5		7.63		53.10		12.0
		24.1		11.48		57.00		23.8		10.43		56.10		27.9		9.76		55.10		14.2
				13.57		1.20				12.65		0.12				11.90		58.47		
				15.70		3.25				14.73		2.23				14.00		1.48		
						5.29						4.38						3.60		
				22626		40017				10.538		38994				9.766		44089		
	17	39.03		52626		58017	17	54.72				58994	17	33.83				56089	17	21.37
	18	22.30	17	52626	17	52.743	18	22.17		57.955	17	51.813	18	25.50		38983	17	50.990	18	12.23
						716														
					17	52.730					17	51.784					17	51.986		
				+52.40	18	45.36				+53.31	18	45.36				+54.07	18	46.35		
				+.21						+.22						+.22				
				−2.45						−2.45						−2.44				
				+ 6716						+ 57.08						+ 51.85				
			18	42.89					18	42.86					18	42.84				

		+ 13.70		−29.57				− 2.95		− 30.39				+ 17.76		− 31.81				+ 23.97
		1.13672		1.47085				0.46982		1.48273				1.23452		1.54170				1.37967
		1.24704		1.58117				0.58014		1.59305				1.34484		1.65202				1.48999
		55 3		55 4				55 3		55 4				55 3		55 4				55 3
E		10".3		6".8				33.1		8".2				8".9		16".9				1".1
H		25.6		22.2				48.6		24.4				25.1		34.1				16.9
G		36.1		32.3				55.1		35.2				37.1		43.4				32.2
H		14.5		9.9				34.8		11.0				12.5		21.1				3.9
		86.5		71.2				1746		788				83.6		115.5				74.1
	58	21.62	59	17.8			58	43.65	59	19.70			58	20.90	59	28.88			58	13.52
		+ 17.66		− 38.12				− 3.80		− 39.18				+ 22.12		− 44.88				+ 30.90
	58	39.28	58	39.68			58	39.85	58	40.52			58	43.02	58	44.00			58	44.42
		35 50.93		35 51.33				35 51.50		35 52.17				35 54.67		35 55.65				35 56.07
52	52	40	53	36			63	02	53	38			52	39	53	47			52	32
		1.88040		1.88070				1.88050		1.88070				1.88040		1.88070				1.88040
		−732		−732				−1178		−1178				−1381		−1381				−2369
		1.87308		1.87338		18687		1.87870		1.86892				1.86659		1.86689				1.85671
		−74.66		−74.71				−73.91		−73.95				−73.55		−73.60				−71.90
		+ .02		+ .09				+ .00		+ .09				+ .03		+ .13				+ .06
		− .36		− .44				− .41		− .44				− .36		− .49				− .32
		+ .20		+ .26				+ .22		+ .26				+ .20		+ .27				+ .19
	−1	1.480	−1	1.483			−1	14.10	−1	14.07			−1	13.68	−1	13.69			−1	11.97
	37	5.73		6.16			37	5.60		6.24			37	8.35		9.34			37	8.04
	37	− 5.91		+5	40.68		37	5.92		+5	41.49		37	8.84		+5	42.12		37	7.84
					− 1.3						− 1.3						− 1.3			
					+ 18.5						+ 18.5						+ 18.5			
				+5	57.88					+5	58.69					+5	59.32			
	31	24.9					31	24.9					31	24.9					31	24.2
				31	8.06					31	7.23					31	9.52			

		− 2397		−26.69																
		1.37967		1.42959																
		1.48999		1.53991																
		55 3		55 4																
		1".1		7".0																
		16.9		21.9																
		32.2		37.1																
		3.9		8.4																
		54.1		74.4																
	58	13.52	59	18.60																
		+ 30.90		− 34.67																
	58	44.42	58	43.93																
		35 56.07		35 55.58																
		52 32		53 37																
		1.88040		1.88070																
		−2369		−2369																
		1.85671		1.85701																
		−71.90		−71.95																
		+ .06		+ .07																
		− .32		− .37																
		+ .19		+ .26																
	−1	11.97	−1	12.05																
	37	8.04		7.63																
	37	7.84		+5	43.29															
					− 1.4															
					+ 17.8															
				+5	59.69															
	31	24.2																		
				31	8.15															

13 18 42.899

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+19° 49' 27"
+122 33 21

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Jan. 23

Jan. 25

May 28

May 30

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	m	s		′	″	
May 20	10	5.83	1	−49	11.3	8
25		5.82	2		12.1	7
30		5.80	2		12.8	7
June 4		5.78	2		13.5	7
9		5.76	3		14.2	6
14		5.73	4		14.8	6
19		5.69	4		15.4	6
24		5.65	4		16.0	6
29		5.61	4		16.6	

−1.35 June 2

14 9 22.7, 24.8, 27.0
10 10.3, 13.3, 17.0
9 | 10.58 6.20 | .65 8.46 | .68 10.68 | .81 13.00 | .67 13.05 | .77 19.53 | .81 21.76 | .66 23.80
9 26.00, 28.10, 30.33, 32.50, 84.63
303.12
9 24.83 / 10 13.53
10.680 | 9 10.704 | 9 10.692 | 10 5.787 | − 55.10 | − 55.13
+55.56 / −.48 / −2.73 / +52.35 / +3.04

8 40.2, 42.3, 44.3
9 31.0, 33.2, 35.3
8 42.27 / 9 33.17

−1.30 / −.04 June 4

8 46.00, 48.25, 50.35, 52.60, 54.71, 25.42, 27.66, 29.84, 32.00, 34.17
401.00
9 10.100
+56.101 / −.46 / −4 / −2.72 / +52.89 / +3.08

8 56.96, 59.26, 1.48, 3.73, 8.00, 10.15, 12.36, 14.58, 19.00, 21.10, 23.33
231.95 / 111.95 / 10.177 / 194
9 10.186 / 10 5.779 / − 55.59 / − 55.62

8 40.0, 41.7, 44.0
8 21.90

−1.20 / −.05 June 17

8 42.65, 44.88, 47.05, 49.23, 51.50, 22.10, 24.28, 26.44, 28.76, 31.00
367.89
9 6.789
+59.25 / −.43 / −5 / −2.64 / +56.13 / +3.03

8 53.77, 56.00, 58.25, 2.62, 4.68, 6.80, 9.00, 11.36, 15.76, 17.85, 20.00
256.09 / 76.09 / 6.917 / 883
9 6.900 / 10 5.704 / − 58.80 / − 58.83

8 39.7, 41.6, 43.8
8 41.70

−1.23 / −.05 June 18

8 42.60, 44.72, 47.00, 49.15, 51.48, 22.00, 24.22, 26.38, 28.57, 30.80
366.92
9 6.692
+59.38 / −.44 / −5 / −2.64 / +56.25 / +3.05

8 53.63, 55.91, 58.05, 2.36, 4.59, 6.81, 9.00, 11.23, 15.60, 17.81, 19.86
254.85 / 74.85 / 6.805 / 786
9 6.796 / 10 5.696 / − 58.90 / − 58.93

−14.14 | −62.84
1.15045n
1.24162n
35′ 4′
E 2.6″
F 18.3
G 25.4
H 4.8
511
39 12.78
− 17.44
38 55.34

43 53.01

22 33 31
1.37870
−1386
1.36484
−23.17
− .03
− .46
+ .25
−23.41
43 29.60
49 13.3
+5 43.7
43.2

+5 42.88 / −0.6 / +12.0
+5 54.28
+49 23.88

+27.92
1.44592
1.53709
35′ 3′
9.9″
24.0
32.7
10.9
775
38 19.38
+34.44
38 53.82
43 54.53
32 37
1.37840
−1383
1.36457
−23.15
− .14
− .36
+ .20
−23.45
43 31.08
43 30.56
49 13.5
+5 42.9
42.4

−22.98
1.36135n
1.45252n
35′ 4′
13.2″
28.2
36.2
15.1
927
39 23.18
−28.35
38 54.83
43 53.52
33 41
1.37880
−1383
1.36497
−23.17
− .09
− .48
+ .26
−23.48
30.04

+5 42.69 / −0.6 / +11.8
+5 53.89
2445

+25.00
1.39794
1.48911
35′ 3′
11.3″
26.3
39.8
11.1
885
38 22.12
+30.84
38 52.96
43 55.39
32 40
1.37840
−1196
1.36644
−23.25
− .11
− .34
+ .20
−23.50
43 31.89
49 15.2
+5 43.3
42.8

+5 43.35 / −0.6 / +10.1
+5 52.85
2474

+25.10
1.39967
1.49084
35′ 3′
11.8″
27.8
39.5
12.5
916
38 22.90
+30.96
38 53.86
43 54.49
32 41
1.37840
−1114
1.36726
−23.29
− .11
− .34
+ .20
−23.54
43 30.95
49 15.3
+5 44.4
43.9

+5 43.29 / −0.6 / +10.0
+5 52.69
+49 23.64

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1877

June 25 — −1.14

14 9 19.7 / 21.5 / 23.7

21.14 / 23.35 9 / 23.52 5.92 1030 / 27.67 .86 1462 / 29.80 .92 66.87 / .86 19.60

25.520

9 21.63

5.888 9 5.890

9 5.889

+1 0.18 10 5.640

−.41 — 59.75

— 59.98

−2.58

+57.19

+3.08

June 27 — −1.20

9 26.9 / 28.8 / 31.0

9 21.10 / 23.28 / 25.28 9 / 27.41 5.86 1462 / 29.72 .75 16.70 / .86 19.00

25.364

9 28.91

5.732 9 5823

9 5.778

+1 0.37 10 5.624

−.43 — 59.85

— 59.88

−2.56

+57.38

+3.16

July 4 — −1.25

8 56.3 / 58.0 / 0.2

8 41.38 / 43.53 / 45.72 / 47.90 / 50.80 / 20.72 / 23.00 / 25.15 / 27.30 / 29.58

8 52.52 / 54.60 / 56.30 / 1.15 / 3.30 / 5.50 / 7.75 / 10.00 / 14.36 / 16.48 / 18.65

35428

24061 / 6061

8 58.17

9 5.428

9 5.510 / .522

9 5.516

+1 0.54 10 5.568

−.45 — 60.05

— 60.08

−2.51

+57.58

+3.10

−15.74 / 1.19700n / 1.28817n

35' 3"

59".0 / 16.1 / 27.2 / 1.9 / 4442

39 11.05 / −1942

38 51.63

+19 43 56.72

22 33 29 / 1.37870 / −2376 / 1.35494 / −2264 / −.04 / −.42 / +.25 / −2285

+19 43 33.87

49 162 / +5 42.3 / 41.8

+5 42.86 / −0.6 / +9.1

+5 51.36

+49 2523

−23.12 / 1.36399n / 1.45516n

35' 4"

6".5 / 22.4 ~~2.4~~ / 34.5 / 9.6 / 530

39 13.25 / −2852

38 ~~44.73~~ 49.73

43 ~~3.62~~ 58.62

33 31 / 1.37870 / −566 / 1.37304 / −2361 / −.09 / −.42 / +.25 / −2387

43 34.75

49 164 / +5 41.6 / 41.1

+5 42.58 / −0.6 / +8.9

+5 50.88

2563

~~+7.35~~ / 0.86629 / 0.95746

35' 3"

33".1 / 46.9 / 58.5 / 30.1 / 1686

38 42.15 / +907

38 51.22

43 57.13

33 00 / 1.37850 / −1382 / 1.36468 / −2316 / −.02 / −.37 / +.22 / −2333

43 33.80

49 171 / +5 43.3 / 42.8

+5 48.37 / −0.6 / +8.2

+5 5097

+49 2477

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α^2 Librae

h 14 m 44 s 5	α	44 m 4.550 s	June 8	44 m 7.43 s	−1	−32′ 3.6″
−15° 31′ 45″	δ		13	.42	1	.5
+57 54 33	dα/dt	+3.307 s	18	7.41	2	3.4
	δ₀	31′ 41.87″	23	39	2	3
	dδ′/dt	−15.19″	28	7.37		3.2

log cos δ 9.98384 log cos δ 9.98385

15 cos δ tan i 0.10152

I 2.14
I′ .091

tang δ −0.28 +1.04

sin Z +.85

1877

June 19			June 20		
−1.12			−1.21		
−.05			−.05		
14 43 12.3			43 6.7	42 43.52	42 54.37
15.0			8.6	45.86	56.50
17.4			10.1	47.80	58.67
	43			52.00	3.00
	7.56 5.42			52.10	5.24
43 48.7	.42 7.42		43 39.7	22.00	7.28
50.9	.38 9.52		42.0	24.15	9.47
52.2	.39 11.67		44.3	26.35	11.50
	.44 16.00			28.50	15.70
	.40 18.10			30.64	17.78
	.38 20.22				20.00
				37072	25951
43 14.90			43 8.47	7072	7951
43 50.60	43 7.424		43 42.00	43 7.072	42 7.228
					.163
	43 7.424				43 7.196
+59.66	44 7.41		+59.87		44 7.40
+.31			+.384		
−5			−5		
−2.86			−2.85		
+57.06			+57.31		
44 4.48			44 4.51		

h 14 m 44 s 4.495 α^2

−7.48	−43.18	−1.27	−34.80
0.87390n	1.63528n	0.10380n	1.54158n
0.97542n	1.73688n	0.20532n	1.64310n
55′ 4″	55′ 4″	55′ 3″	55′ 4″
ξ 2.4″	48.9″	53.9″	34.7″
η 20.5	7.4	10.4	51.9
ζ 34.8	19.8	21.9	3.1
Ω 4.3	50.3	53.6	36.0
620	64	1398	1857
59 15.50	00 1.60	~~58 34.95~~ 59 4.95	59 0 ~~1.42~~ 46.42
−945	−5455	1.60	−43.96
59 6.05	59 7.05	59 3.35	59 ~~7.46~~ 2.46
−15 36 17.70	36 18.70	36 15.00	36 14.11
57 53 34	54 20	53 23	54 ~~05~~ 4
1.96145	1.96164	1.96139	1.96159
−1862	−1862	−547	−547
1.94283	1.94302	1.95592	1.95612
−87.67	−87.70	−90.35	−90.39
+ .01	+ .27	+ .00	+ .18
− .43	− .50	− .41	− .48
+ .26	+ .30	+ .25	+ .29
−1 27.83	−1 27.63	−1 30.51	−1 30.40
−15 37 45.53	37 46.33	37 45.51	37 44.51
37 45.93	+5 43.29	37 45.01	+5 42.64
	−1.5		−1.5
	+18.5		+18.5
	+6 0.29		+5 59.64
−32 3.4		32 3.4	
−15	31 45.64		31 45.37

−15° 31′ 45.50″ α^2

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α Coronae Bor. α₀ 29ᵐ 28.817ˢ

h	m	s
15	29	29
+27°	7′	48″
+15	15	00

Corr. + .02ˢ

dα/dt +2.5589ˢ

δ₀ 7′ 47.55″

Corr. − .7″

dδ/dt −12.308″

log cos δ 9.94936 log cos δ 9.94938

15 cos δ tan i 0.07352 Jan. Feb. R+2 20.948

0.06704 June & Jan. July 4) R−2 20.751

0.07196 0.19612 July 24 I 2.32

tan δ +0.51 1.12 I′ .099

sin z +.26

1877

Feb. 1 (−.48, −.12)

15 29 30.9 / 32.7 / 34.5; 29 19.9 / 22.0 / 24.5 / 26.8 / 29.0 / 1.5 / 3.8 / 6.2 / 8.5 / 10.8; 29 31.5 / 33.8 / 36.2 / 40.7 / 43.1 / 45.4 / 47.7 / 50.0 / 54.7 / 57.0 / 59.3; 30 15.6 / 18.0 / 20.5

1530 / 4330; 4994

29 32.63; 29 45.300; 45.400 / .399; 29 45.400; 30 18.03

−15.74; 29 29.276; +.24; + 1618 (2); − 13; + 1610; −0.46; −16.57; +29 28.83

Feb. 6 (−.61)

29 — ; 30 0.0 / 2.4 / 4.8 / 7.0 / 9.4; 29 —; 4388 57.8

4.720; 29 43.880; 29 43.924; −14.32; 29 29.446; −.31; + 1448; + 1446; −0.63; −15.56 (.26); +28.86 (.66)

Feb. 7 (−.60)

29 29.0 / 31.4 / 33.5; 29 18.0 / 20.4 / 22.5 / 25.1 / 27.5 / 59.9 / 2.2 / 4.4 / 6.7 / 9.1; 29 29.9 / 32.2 / 34.5 / 39.2 / 41.4 / 43.8 / 46.0 / 48.4 / 53.1 / 55.2 / 57.7; 29 36.2 / 38.9 / 41.0

1960 / 4360; 4814

29 31.30; 29 43.600; 43.764 / .699; 29 43.732; 29 38.70

−13.97; 29 29.480; +.30; + 1426; + 1423; −0.66; −14.93; +28.80

Feb. 12 (−.60)

29 —; 29 —; 41.4 37.2 / 72 39.4 / 57.8 / 0.4 78 44.1 / 2.5 76 46.4 / 4.8 88 51.1 / 7.1 80 53.4 / 78 55.7

2520; 41.761; 29 41.809; 29 41.789

−11.78; 29 29.650; −.30; + 1214; + 1212; −0.83; −12.91; +28.88

	Feb. 1		Feb. 6			Feb. 7		Feb. 7	
	+12.77		−34.11			+12.43		+3.09	
	1.18619		1.53288n			1.09447		0.49996	
	1.17971		1.60640n			1.16799			
	10′ 0″	10′ 0″	10′ 1″		10′ 1″	10′ 0″		10′ 0″	
E	24.9	A 34.6	18.3	A	30.0	24.3	A	35.6	A.R.
F	30.3	B 31.4	25.2	B	27.3	30.5	B	31.7	
G	38.2	C 31.2	34.3	C	27.2	39.2	C	32.3	
H	34.6	D 40.5	31.8	D	34.5	36.6	D	40.3	
	1280	1377	1096		1190	1306		1399	
	10 32.00	10 34.42	11 27.40		11 29.75	10 32.65		10 34.98	
	+ 1513		− 4040			+ 14.72			
	10 47.13		10 47.00			10 46.77 / 47.34			
+27	12 1.22		12 1.35			12 0.98			
15	14 54		15 49			14 54 (55)			
	1.19585		1.19630			1.19585			
	+1259		+2394			+1797			
	1.20844		1.22024			1.21382			
	−16.16		−16.61			−16.36			
	− .04		− .26			− .03			
	− .13		− .36			− .12			
	+ .03		+ .09			+ .03			
	−16.30		−17.14			−16.48			
+27	11 44.92		11 44.21			11 44.50			
	7 24.2		7 23.5			7 23.3			
	−4 20.7		−4 20.7			−4 21.2			
	21.4		21.4			21.9			

Feb. 1	Feb. 6	Feb. 7	Feb. 12
−4 21.10	−4 19.97	−4 21.95	−4 22.48
−0.6	−0.6	−0.5	−0.5
+23.4	+24.0	+24.3	
−3 58.30	−3 56.57	−3 58.25	
+7 46.62	+7 47.64	+7 46.25	

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1877

Jan 23

Jan 24

Jan 25

June 14

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	m	s		′	″	
June 9	29	31.78	1	7	37.3	10
14		31.77	1		38.3	10
19		31.76	3		39.3	9
24		31.73	3		40.2	9
29		31.70	4		41.1	8
July 4		31.66	5		41.9	8
9		31.61	6		42.7	7
14		31.55	6		43.4	6
19		31.49	7		44.0	5
24		31.42	7		44.5	4
29		31.35	8		44.9	3
Aug. 3		31.27	8		45.2	3
1877 8		31.19			45.5	

−1.20 −.05 **June 17**

15 | 28 5.2, 6.7, 8.6 | 28 7.64, 9.90, 12.20, 14.37, 16.82 | 28 19.28, 21.59, 23.96, 28.44, 30.85
28 59.3, 1.2, 3.0 | 49.29, 51.55, 54.00, 56.22, 58.68 | 33.25, 35.55, 37.88, 42.44, 44.77, 47.00
33067 | 36501
28 6.83
29 1.17 | 28 33.067 | 33.183, .166, 28 33.174, 29 31.764
+59.24, −60, −6, −2.94, +55.63, +28.80 | −58.59, −58.61

−1.16 **June 24**

28 3.7, 5.6, 7.6 | 28 6.70, 9.15, 11.46, 13.64, 16.00 | 28 18.50, 20.78, 23.10, 27.66, 30.05
28 58.0, 59.7, 1.7 | 48.53, 50.80, 53.20, 55.50, 57.80 | 32.86, 34.65, 37.00, 41.70, 44.00, 46.35
32278 | 35615
28 5.63
28 59.80 | 28 32.278 | 32.377, .37, 28 32.3?, 29 31.728
+59.92, −.59, −2.91, +56.42, +28.80 | −59.35, −59.37

−1.20 **June 27**

28 4.5, 6.6, 9.1 | 28 6.80, 8.58, 11.00, 13.20, 15.65 | 28 18.00, 20.20, 22.57, 27.30, 29.55
48.05, 50.25, 52.46, 55.10, 57.36 | 31.85, 34.28, 36.59, 41.22, 43.50, 45.85
31815 | 35091
28 6.73
28 31.815 | 31.901, .914, 28 31.908, 29 31.710
+1 0.33, −.60, 2.89, 56.83, +28.74 | −59.80, −59.82

−1.25 **July 4**

28 21.1, 22.7, 24.6 | 28 6.18, 8.42, 10.68, 13.00, 15.41 | 28 17.90, 20.18, 22.41, 27.05, 29.35
47.85, 50.15, 52.53, 54.78, 57.23 | 31.88, 34.05, 36.37, 41.15, 43.40, 45.66
31623 | 34940
28 22.82
28 31.623 | 31.764, .72, 28 31.743, 29 31.658
+1 0.48, −.60, −2.84, +57.008, +28.74 | −59.90, −59.94

	June 17		June 24		June 27	July 4
	+26.34	−28.00	+26.75	−27.42	+25.18	+8.94
	1.42062	1.44716n	1.42732	1.43807n	1.40106	0.95134
	1.48766	1.51420n	1.49436	1.50511n	1.46810	1.01838
	15 4	20 1	15 4	20 0	15 4	20 0
E	56.9	2.0	54.1	56.9	54.8	16.1
F	10.0	15.4	8.8	11.5	9.8	26.8
G	20.0	25.9	17.8	23.0	19.1	41.1
H	56.7	0.9	55.2	59.5	58.2	13.3
	143.6	44.2	15.9	30.9	21.9	97.3
	19 35.90	21 11.05	20 30.45	21 7.72	20 5.48	20 24.32
	+ 34.45	− 32.67	+ 31.21	− 32.00	+ 29.38	+ 10.43
	20 36.64	20 38.38	20 35.19	20 35.72	20 34.86	20 34.75
+27	2 11.71	2 9.97	2 13.16	2 12.63	2 13.49	2 13.60
15	14 24	15 29	14 22	15 26	14 23	14 42
	1.19560	1.19615	1.19560	1.19610	1.19560	1.19575
	−854	−854	−1232	−1232	−296	−1024
	1.18706	1.18761	1.18328	1.18378	1.19264	1.18551
	−15.38	−15.40	−15.25	−15.27	−15.58	−15.33
	−.15	−.17	−.16	−.16	−.14	−.02
	−.51	−.12	−.51	−.11	−.51	−.04
	+.31	+.07	+.31	+.07	+.31	+.02
	−15.73	−15.62	−15.61	−15.47	−15.92	−15.37
+27	1 55.98	54.35	1 57.55	57.16	1 57.57	1 58.23
+27	1 55.16		1 57.36			
	7 39.0		7 40.2		7 40.8	7 41.9
	+5 43.8		+5 42.8		+5 43.2	+5 43.7
	43.1		42.1		42.5	43.0

	June 17	June 24	June 27	July 4
+5	43.35	43.06	42.58	43.37
	−0.4	−0.4	−0.4	−0.4
	+8.5	+7.4	+6.7	+5.6
+5	51.45	50.06	48.88	48.57
+7	46.61	47.42	46.45	46.80

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−1.38

July 24

29	1.75	29	10.05	29	21.67	
	19.7		12.37		24.10	
	21.9		14.72		26.47	
			17.10		31.00	
			17.35		33.43	
30	8.3		51.19		35.69	
			54.05		38.00	
			56.36		40.30	
			58.77		45.00	
			1.20		47.25	
					47.50	
			35.36		39.251	
29	19.70			29	35.683	
30	8.30		35.536		.685	
				29	35.659	
			−3.62	29	31.416	
			−0.70		+ .424	
					+ 4.22	
			−2.60			
			−6.92			
			+28.74			

	+15.96	−32.64
	1.20303	1.51375
	~~1.39915~~	~~1.70987~~
	1.27499	1.58571
	15 4	20 0
E	42.1	39.6
7	51.1	60.1
9	60.4	49.5
10	48.8	47.1
	1024	1863
19	48.10	20 46.58
	+ 18.84	− 38.52
20	6.94	20 8.06
	2 41.41	2 40.29
15	14 30	15 29
	1.19565	1.19615
	−1898	−1898
	1.17667	1.17717
	−1502	−1504
	− .56	− .24
	− .48	− .08
	+ .29	+ .05
	−1527	−1531
	2 2614	2498
	2 2556	+ 5 18.86
	7 445	−0.4
	+5 18.9	+ 3.1
	18.2	
		+ 5 21.06
		+7 4662

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